Air Pollution And How It Affects Plants And Animals Essay, Research Paper

Air, like water is essential for life. Air pollution, like water pollution is a problem that

threatens us all. We are all aware that air and water are the most precious of all our

natural resources. We need clean air and accessible water to carry on normal life

functions. In past generations, the amounts of fuels burned in home and industry have

greatly increased. This increased burning has also increased the amount of impurities

discharged into the air. And since a pollutant is an impurity, we cannot have clean air as

long as it is being bombarded with impurities.

Ever since man discovered how to use fire, he has been polluting the atmosphere.

Man being able to burn thing provides us with power but, when we burn things we

contribute much waste to the atmosphere. Ancient Romans complained of odor and soot

deposits on clothing and crops due to coal burning, wood burning and oil lamp usage.

During the middle ages and the colonial periods complaints have also been reported of

soot deposits were registered as a result of burning fuels. With the beginning of the

Industrial Revolution an increase in the amount of fuels burned to run the factories and

heat homes. Not until recently has air pollution been considered a serious threat to our

environment. Air pollution is treating to our environment for two main reasons 1) the

rapid growth of the earth s population 2) the expansion of our technological activities.

The same growth has created various new waste products harmful to heath and

detrimental to the growth of living things.

What exactly air pollution? Air pollution is a substance in our atmosphere

consisting of man-made contaminants that may be harmful to humans, plants, animal life

or property. Air pollution is made up of gaseous materials that make up more then 90%

of the total air pollution. Some of these gaseous materials include; carbon monoxide

(CO), hydrocarbons, and nitrogen oxides (see pie charts for source of these gaseous

materials in the atmosphere).Suspended particles make up the other less then 10% of the

total air pollution.

All the major air pollution incidences effect animals, primarily zoo or domestic

animals . Dogs exhibit the same symptoms of respiratory disease as do humans. The

oxides and fluorides are known to be highly toxic to animals. Animals appear to be

tougher than man, when exposed to air borne contaminants, but there is evidence of the

deterioration of livestock When exposed to photochemical smog. Studies conducted in

large urban zoos show that wolves and lions developed a susceptibility to lung cancer.

Fluorides have been know to cause crippling skeletal defects in cattle. Many instances of

fluoride poisoning in livestock have been reported and documented.

Water is polluted if it is not suitable for its first intended uses for example,

agricultural and industrial uses, recreation, propagation of fish and wildlife and domestic

water supply. The natural purification process use oxygen to break down natural

contaminants. Excessive amounts of organic matter will cause a decomposition process

which will be without oxygen. This decomposition without oxygen produces hydrogen

sulfide, a bad smelling gas.

There are about eight categories of pollutants that may affect the aquatic life of a

community. They are heat, sediments, radioactive substances, synthetic organic

chemicals, plant nutrients, sewage and disease causing organisms and inorganic

substances. Heat can reduce the capacity of water to absorb oxygen. Increased water

temperature, caused by the introduction of water from a power generating plant or other

industries may upset the ecological balance. When heated water is returned to a stream, it

can raise the temperature of the cooler water a few degrees. This slight temperature

change is enough to be lethal to many aquatic animals that are used to a specific

temperature. Increasing water temperature also makes aquatic plants and animals grow

faster. It also speeds up the use of food, rate of gas exchange and heartbeat in animals.

The organisms grow faster, but do not grow as large or live as long as normally in cooler

water. Many aquatic animals will not reproduce if the temperature is raised even a few

degrees. Studies show that water temperature above 30.C decreases the number of

diatoms and increases the number of blue-green algae. Besides the blue-green algae

producing an unpleasant odor and unpleasant taste, they seem not to be a good source of

food for algae-eating organisms. This type of pollution; dumping hot water into streams,

lakes or rivers is called thermal pollution.

The other categories also have bad effects on aquatic life. Excessive sedment will

reduce the amount of sunlight hitting the water and will affect the photosynthesis in

green aquatic plants. These plants are necessary for oxygen production which help

maintain a normal balance in the water. Many of these green plants are a necessary food

source for the animal life found in the water body. Radioactive substances can

accumulate in living organisms, aquatic life as well as in humans when the exposure is

sufficiently severe. Synthetic organic chemicals include detergents and cleaning agents

used in homes, synthetic organic pesticides and the residue from synthetic chemicals

used during industrial processes. These chemicals are toxic to fish and other aquatic life

and cause serious taste and odor problems. Inorganic substances include many of acids,

metal salts, solId matter and various other chemical compounds. These materials include

ammonia, arsenic, barium, boron, cadmium, chloride, chromium, copper, fluoride, iron,

lead, manganese, nitrates, nitrites, phosphorus, selenium, silver, sulfates and zinc.

Pollution by these substances is a result of oil field activities, mining processes,

manufacturing processes and agriculture.

Plants are the way the sun s energy can be used by all animals. The plants provide

oxygen in the air we breathe. Plant life is much more sensitive to air pollution than

animal life. Many times plants are used to gather new data about air contaminants

because they are sensitive. The pollutants that harm plants are sulfur dioxide, hydrogen

fluoride, and ethylene. Some plant damage is caused by the contaminants in

photochemical smog and by ozone.

Air pollution determines where come vegetable crops can be raised. Every urban

area in the United States has vegetative damage from air pollution, especially in New

Jersey, California and parts of Florida. Substances that come from combustion react with

sunlight and moisture to form the oxidant called PAN, is the cause of death of plants and

trees along California highways. PAN is toxic to many forms of farm produce. Damage

to vegetation as a result of air contaminants is so bad that commercial and

non-commercial production of crops and forests in many areas has been jeopardized and

in some areas discontinued.

Human s are also effected by air pollution. There are three major diseases related

to air pollution. The first is asthma, an asthma attack is when a persons bronehioles

narrow. This is caused by a muscle spasm, and enlargement of a persons mucous

membrane causing increased mucous secretions. Bronchits and Emphysema are also

caused by air pollution. These two diseases occur ethier simultanously or emphysema

may be followed-up by bronchitis. When you have emphysema your aveoli become

enlarged and eventually break down or burst. Both bronchitis and emphysema include

shortness in breath. In advance cases people are unable to blow out a lit match only a few

inches from their mouth. Cancer is also caused by air pollution. Cancer is an

uncontrolled cell growth. Lung cancer is the abnormal and uncontrolled growth of cells

which usually starts in the bronchial mucous membranes.

The main reason for controlling pollution is to protect human health and the

balance of human s life-support systems. Other benefits can result from clean-up

measures for example, financial savings and more efficient productivity. All arguments

against pollution controls are silenced with the money factor. We cannot afford clean air:

it costs too much. Electric utility spokespersons say that the cost of adequate filtration of

smokestacks is too much. They claim the public won t stand for the additional cost of

electricity. Still, we pay regular increases on our utility bills, for whatever reasons. The

auto makers argue that the car-buying public won t accept the cost of too many emission

control devices on new car prices. Still, we pay time and time again for yearly model

changes and practicaly usless gadgets like hidden headlights, vinyl tops and recessed

windshield wipers. We all pay for air pollution. We pay in human life and the destruction

of all other life on the earth. Even though we know that air pollution shortens the life

span of every living thing that needs air to breathe, these facts seem to have little effect

compared to the money factor. For example, life insurance companies have statistics

comparing the life expectancies of urban and rural dwellers. The person who lives and

works away from urban centers has a longer life expectancy. One main reason being the

urban persons poorer quality of air. The total cost to the nation is billions and billions of

dollars.

Threre are many ways of controling air pollution being studied, experimented

with or employed in an attempt to clean up air pollution caused by industry, power

generating plants, space heating and refuse disposal activities. The four main types of

control devices are filter bag systems, cyclone treatment, electrostatic precipitators and

scrubber systems. Other processes are being studied and tested for the removal of sulfur

oxides from smokestack emissions. Tall smokestacks do not reduce the emission of

pollutants, but they do reduce the concentration of pollutants at ground level. During the

1960 s, the average height of smokestacks for power generating plants was about 240

feet. Today, the average height of these stacks is well over 600 feet with many as high as

1,000 feet or more. Still, this sort of measure, at the most, can only be considered as a

sort of interim step or partial solution.

Some cities, like Los Angeles, have banned all backyard incinerators and have

laws that require apartment house incinerators to include wet scrubbers on their

smokestacks for reduction of particulate emission. Many big cities still dispose of

garbage by burning it in huge incinerators. Incinerators can be built that will completely

burn the garbage and emit little, if any, contaminants into the air. However, most cities

lack such units.