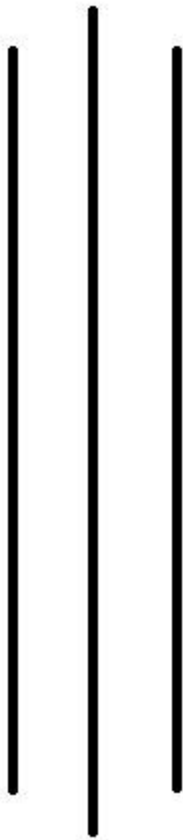


REPORT NO: 1
**A REPORT
ON
THE STUDY OF CAUSES AND EFFECT OF
AIR POLLUTION IN THE URBAN AREAS
IN NEPAL**



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**MINISTRY OF ENVIRONMENT
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11TH APRIL 2011

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ABSTRACT

Air pollution is the degradation of the quality of air due to mixture of harmful substance in the atmosphere. Air is very much essential for all life forms and its pollution can have adverse effects on them.

The major concern arises in urban area where the population is very dense and the pollutants producing factors are also numerous. In the City like Kathmandu, the dense number of population itself is causing air pollution. The increasing number of vehicles and improperly constructed industries are but aiding air pollution. Due the increase in air pollution the risk of people getting sick is rising. The life expectancy rate of people is declining due to diseases such as lung cancer, asthma, throat infection etc. In order to improve the life standard of people in urban areas proper awareness must be created which can be done by making people aware about the causes and effect of air pollution.

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INTRODUCTION

Air consists of mixture of different gases and this composition in whole is termed as atmosphere. The gases present in atmosphere are 78 percent nitrogen, 21 percent oxygen, 0.9 percent argon, 0.03 percent carbon dioxide, and the remaining 0.07 percent is a mixture of hydrogen, water, ozone, neon, helium, krypton, xenon, and other trace components. Air is one of the most essential elements necessary for the survival of different life forms. It is necessary for photosynthesis, by which plants prepare food, it is necessary for combustion of fuel, which drives our locomotives. In human being oxygen is necessary for combustion of food, which is again present in air.

Air pollution is the addition of harmful substances in air which degrades environment and causes adverse effect in the life of living beings. It mainly occurs due to increase in the dust particles, carbon dioxide, carbon monoxide and other harmful elements in the air. The pollution level is even more critical in urban areas of Nepal.

1.1 Background

Air pollution has become a major issue in today's world. With the increase in Human population there has been tremendous increase in the pollutants in the air. Increasing deforestation, number of vehicles has just but aided the pollution. The increasing number of industries releasing the harmful and toxic gases to the environment has degraded the environment. The pollution of air has threatened the whole existence of human being as the threat of global warming is rising. Ozone layer depletion has increased the temperature of Earth. Unlike past we are bound to wear masks every day, the risk of lung cancer and other air related diseases is increasing. In the Urban areas like Kathmandu , Pokhara, Dharan etc of Nepal the condition of air pollution is rather intensified due to concentrated developmental projects and rapid internal migration. Hence the pollution level should be controlled from these urban areas in order to prevent the pollution from increasing.

1.2. Objective of Study

The main objective of this report is to present the factual data regarding the cause and the effect of the air pollution in urban areas of Nepal. The other objectives can be listed down as follows.

1. To find out the causes of air pollution in urban areas.
2. To analyze the effect of air pollution to the habitants in urban areas.
3. To present the methods to reduce air pollution.
4. To make the concerned authority known about the air pollution and its effect.

1.3 Methodology

The data collected in the report are of following types:

- a. Primary: These data were collected by preparing questionnaires and making the locals and the company owners of the urban areas like Kathmandu valley, Pokhara etc answer the questions provided to them.
- b. Secondary: These data were collected from the secondary source such as government, non-governmental agencies etc.

1.4 Limitation of the Study

The data collected in the report might not be accurate for the fact that many industry owners hide the real fact about the toxic gas released from their plant. Due to this the data observed might not seem critical.

The secondary source of data from governmental and non-governmental agencies are not accurate either as they are not recent. Especially since our government is not too keen about conducting research regarding the effect of air pollution it is rather a milestone, a researcher needs to achieve, in order to acquire the data regarding sources of pollution.

Due to the time limit research regarding the presence of different kinds of pollutants in the air was not conducted rather the data was taken from previous research.

Due to the above mentioned drawbacks this report will only provide us the basic idea about the cause and effect of air pollution in the urban areas of Nepal.

1.5 Scope and significance

Without the facts we will not be aware about the air pollution. And it has become crucial to make the denizens aware about causes and effect of air pollution. This report will serve as a small effort to provide the data regarding so. In handing this to the government the present situation of the air pollution will be made clearer so that further research can be done regarding it. On analyzing the data a better equipped project can be launched to reduce the air pollution in the urban areas of Nepal.

DESCRIPTION

2.1 Causes of Air pollution

The Causes of Air pollution in the Urban Areas were as follows.

Combustion of fuel was one of the major causes of air pollution in urban areas. Burning of fossil fuels such as natural gas and gasoline lead to the emission of carbon dioxide and other gases, which deteriorated the quality of air, making it polluted. Increased level of carbon dioxide in the atmosphere was one of the prime causes of air pollution. Power plants, exhaust fumes of automobiles, airplanes and other human activities involving the burning of gasoline and natural gas resulted in the emission of this greenhouse gas. The chlorofluorocarbons (CFCs), a class of synthetic chemicals used in refrigerants and aerosol propellants, have caused hole in Earth's ozone layer. Sulfur dioxide was one of the components of smog, which contaminated the Earth's atmosphere. This synthetic chemical was the prime cause of acid rain. Air pollution was partially caused by the particulates formed by a variety of substances, such as dust, pollen and other organic materials. Increased road and air traffic was another reason related to the high level of air pollution.

The major substances causing air pollution can be tabulated as below:

Cause of Air pollution and its source	
Carbon monoxide (CO)	Motor-vehicle exhaust; some industrial processes
Sulfur dioxide (SO ₂)	Heat and power generation facilities that use oil or coal containing sulfur; sulfuric acid plants
Particulate matter	Motor-vehicle exhaust; industrial processes; refuse incineration; heat and power generation; reaction of pollution gases in the atmosphere
Lead (Pb)	Motor-vehicle exhaust; lead smelters; battery plants
Nitrogen dioxide (NO ₂)	Motor-vehicle exhaust; heat and power generation; nitric acid; explosives; fertilizer plants
Ozone (O ₃)	Formed in the atmosphere by reaction of nitrogen oxides, hydrocarbons, and sunlight

2.2 Effects of air pollution in urban areas.

Due to intense population in the urban areas the effect of air pollution was even severe. Some of the effects of air pollution on human health were as follows:

1. The quality of air was very low for the life of human life.
2. Asthma, a chronic disease was found to be a common among children and adults living in urban areas.
3. Lung infection was seen among the denizens, which occurred due to inhalation of polluted air.
4. Air pollution influenced the development of Chronic Obstructive Pulmonary Disease (COPD).
5. It can also lead to lung cancer.
6. Air pollution resulted in blockage in the coronary artery or blood vessels that supply blood to the heart.
7. High level of pollution in the air also led to heart failure. Irregular or abnormal rhythms of heartbeat were often cited as health problems related to air pollution.

Questionnaire:

During the study questionnaire was prepared to collect data. Some of the answers collected from the people residing in Bhaktapur area were as follows:

1. How is the Brick factory causing air pollution?

Ans: They burn coals which is the major source of heat for drying the clay. Due to this thick smoke are released from the big pipes which is causing air pollution.

2. How is air pollution hampering you?

Ans: It's hampering us a lot. We have to wear mask every day. Our eyes burn due to the smoke released from the factory. The whole air is filled with dust particles.

3. Haven't you complained the concerned authority regarding this?

Ans: Yes, we have. But they don't act upon it. They don't care about the environment. We have no option but to cope with the rising air pollution.

CONCLUSION

Air pollution has become a major problem in the urban area. Due to increase in the pollutants the city's environment is becoming a harsh place to live in. More and more people are getting sick every day. The life expectancy rate is decreasing. Urban areas, being more vigorous in developmental activities, have caused negative impact in the environment of the whole nation. Government has issued environmental conservation Act but it alone hasn't been able to solve the problem of air pollution. Kathmandu has been listed as one of the most polluted cities in the world. This has created a negative image in tourism industry thus hampering one of the major sources of Nepal's economy. It's time for all the citizens to work hand in hand to reduce air pollution. If air pollution is not controlled our cities will be inhabitable.

RECOMMENDATION

It is a shame that we cannot properly maintain the environment we live in. If we continue to degrade the air it will affect us in many ways. Pollution is dynamic hence pollution of one resource will affect other and this will in turn degrade the whole environment. In order to control air pollution there are few things I'm able to recommend such as:

1. Public awareness is must for controlling any sort of pollution hence media and government should concentrate in providing data regarding the air pollution to its citizen.
2. Development of industries should be delocalized and monitored carefully by government. Environmental rules must be passed regarding the emission of gas particles from the industries.
3. Vehicles running in the valley must be checked for green stickers regularly. Old vehicles emit more harmful gases so they must be removed from the streets.
4. Dust particles arise mainly from the roads which are improperly made. Plantation should be done on the sides of the road.
5. Forestation should be done in large scale.
6. Environmental ministry should be more active in solving the air pollution problem by making projects and conducting research regarding it now and then.

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GLOSSARY

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|------------------|---|--------------------|
| 1. Atmosphere` | : | Mixture of Air |
| 2. Combustion | : | Burning, ignition |
| 3. Contamination | : | Infectivity |
| 4. Degrade | : | make it worse |
| 5. Emission | : | Release, discharge |
| 6. Obstructive | : | Disruptive |
| 7. Pollutant | : | Impurity |

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