EEE Assignment 3 [Garvit Shah F-24]

1. **What is the purpose of a landfill ?**

- The purpose of landfill is to bury trash in such a way that it will be isolated from groundwater, will be kept dry and will not be in contact with air, The isolation from the surrounding environment is accomplished with a bottom liner and daily covering of soil. Unlike a compost pile, a landfill is designed to keep the trash away from people, but does not allow it to decompose quickly.

2. **Why ozone holes are more prevalent in the Antarctic region than Arctic region ?**

- The formation of the Antarctic ozone hole requires abundant reactive halogen gases, temperatures low enough to form polar stratospheric clouds (PSCs). Isolation of air from other stratospheric regions and sunlight.

- Halogen source gases emitted at Earth's surface are present in comparable abundances throughout the stratosphere in both hemisphere even though most emissions occur in the northern hemisphere. This is because most source gases have no important natural removal process in the lower atmosphere and because winds and warm air convection redistribute and mix air efficiently throughout the troposphere.

- In the southern hemisphere, the south pole is part of very large land mass (Antarctica) that is completely surrounded by ocean. This symmetry is reflected in the meteorological conditions that allow the formation, in winter, of a very cold region in the stratosphere above the Antarctic continent, isolated by a band of strong winds circulating around the edge of that region.

- The very low stratospheric temperatures lead to the formation of polar stratospheric clouds that are responsible for chemical changes that promote the production fo chemically active chlorine and bromine.

- This chlorine and bromine activation results in a rapid ozone loss when sunlight return to Antarctica in September or October of each year.

- Similar conditions do not exist over the Arctic. The winter time temperature in the Arctic stratosphere is not persistently low.

3. **Write a short note of Bhopal Gas Tragedy (search a paper from Google Scholar/Sciencedirect/springer and write your views after reading it. Refer the paper.)**

Bhopal Gas Tragedy

Citation: Sriramachari, S. "The Bhopal Gas Tragedy: An Environmental Disaster." *Current Science* 86, no. 7 (2004): 905–20. http://www.jstor.org/stable/24109273.

According to the report, there was a massive leak of MIC stored for a long period of time in the tank 610 of the pesticide plant of Union Carbide of India Ltd., which on the night of 2-3 December 1984 caused one of the worst chemical disasters in the history of mankind.

People started dying within hours and more than 2000 lives were lost in the first few days of the leakage of the fatal gas.

According to one fo the earliest 'rescue teams' to reach Bhopal, patients could be graded symptomatically into below categories -

- Minor eye ailments, throat irritation & cough
- Severe conjunctivitis, keratitis, acute bronchitis and drowsiness
- Severe pulmonary oedema leading to cardio-respiratory distress
- Convulsions, followed by cardio-respiratory arrest

Hareesh Chandra and his colleagues started performing autopsies within 72 hours of the disaster

There was a pinkish discolouration all over the body, a gross increase in the weight of lungs (nearly 2-3% times the normal) and the entire respiratory tract shows a series of pathological changes: water logged lungs with a distinctive cherry-red colour, necrotising or ulcerative changes in the trachea and major divisions of the bronchi.

Other organs like the brain and kidneys were also affected.

Practically nothing was known about the toxicity of MIC prior to the leak.

Top ICMR projects performed on histopathology and toxicology have more than fulfilled the initial hopes and expectations.

Sriramachari, S. "The Bhopal Gas Tragedy: An Environmental Disaster." *Current Science* 86, no. 7 (2004): 905–20. http://www.jstor.org/stable/24109273.

4. What are the objectives of environmental impact assessment ?

- To describe the proposed project and associated works together with the requirements for carrying out the proposed developments.

- To identify & describe elements of community & environment likely to be affected by the proposed developments and / or likely to cause adverse impacts to the proposed project, including natural & man-made environment.
- To identify and quantify any potential losses or damage to flora, fauna and natural habitats.
- To identify any negative impacts to sites of cultural heritage and to propose measures to mitigate these impacts.
- To investigate the extent of side effects of proposed mitigation measure that may lead to other forms of impacts.

5. In a developing country like India, in your opinion, who should bear the expenses of environmental protection and why ?

In developing countries like India, the no. of people who are poor is comparatively a lot higher than other developed countries. Quoting Dr. Jordan B Peterson, “The fastest way to make a planet sustainably green and ecologically viable is to make poor people as rich as possible as fast as possible”. I agree to this statement as well. The reason for this is that poor people tend to use very non-environmentally friendly resources in general. Moreover, since even their basic daily needs are not met properly, they are not worried about the large scale implications of their actions. Only when the burden of overcoming these daily difficulties is off their shoulders, can these people see the “big picture” about everything that they do. Due to large scale poverty it is very difficult for a developing country like India to handle environmental issues on an individual level.

Therefore, in my opinion, the expenses of environmental protection should be taken by the government and philanthropists.