

Question 21 (7 marks)

Evaluate the impact of industrial sources of sulfur dioxide and nitrogen oxides on the environment, making use of appropriate chemical equations.

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Sulfur dioxide in the environment is formed from industrial sources such as the combustion of S in different industries

$$S_2 + O_2 \rightarrow SO_2$$

Sulfur dioxide gas is soluble with water & this is what causes ~~the~~ the formation of acid rain. Acid rain is harmful to the environment as it affects the pH levels of ~~lakes, which can~~ ~~water bodies~~ kill living organisms. It can cause leaching of chemicals & metals from earth into our drinking water as well as affecting photosynthesis in pine forests.

Nitrogen oxides (NO , N_2O , NO_2) are formed from the combustion of nitrogen in combustion chambers (ie in cars, power plants). $N_2 + O_2 \rightarrow 2NO$.

~~These nitrogen oxides are affected by UV light~~
~~is due to absorption~~ These nitrogen oxides form a photochemical smog. The smog contains toxic chemicals as well as promotes the formation of ozone in the lower atmosphere. Oxygen atoms are broken of the nitrogen oxides by UV light & react with other oxygen molecules to form ozone (O_3) which is extremely toxic to all life forms at as little as 0.2 ppm.