Natural Sources - Lighting Bolts

A natural source of nitrogen oxides occurs from a lightning stroke. The very high temperature in the vicinity of a lightning bolt causes the gases oxygen and nitrogen in the air to react to form nitric oxide.

\[
\text{N}_2 + \text{O}_2 \rightarrow \text{NO}
\]

The nitric oxide very quickly reacts with more oxygen to form nitrogen dioxide.

\[
\text{NO} + \text{O}_2 \rightarrow \text{NO}_2
\]

Both of the nitrogen compounds are known collectively as nitrogen oxides or \(\text{NO}_x\).

Human Sources of Nitrogen Oxides

At normal temperatures the oxygen and nitrogen gases do not react together. In the presence of very high temperatures nitrogen and oxygen do react together to form nitric oxide. These conditions are found in the combustion of coal and oil at electric power plants, and also during the combustion of gasoline in automobiles. Both of these sources contribute about equally to the formation of nitrogen oxides.

In areas of high automobile traffic, such as in large cities, the amount of nitrogen oxides emitted into the atmosphere can be quite significant. In the Los Angeles area, the main source of acid rain is from automobiles. In certain national parks such as Yosemite and Sequoia, automobile traffic is banned to limit the amount of air pollution damage to the trees and plants. This also has the effect of reducing the visual smog in the air.
Outside Links


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