Ozone Production

Ozone is created by energetic UV radiation with a wavelength less than 240 nm. The process involves the reaction of oxygen ($O_2$) and oxygen atoms ($O$) with the aid of a third body ($M$) to form ozone ($O_3$). The equation for this reaction is:

$$O + O_2 + M \rightarrow O_3 + M$$

The process begins with oxygen molecules ($O_2$) being excited by UV light ($h\nu$) to form oxygen atoms ($O$):

$$O_2 + h\nu \rightarrow 2O$$

The oxygen atoms then react with other oxygen molecules or other atoms to form ozone:

$$O + O_2 + M \rightarrow O_3 + M$$

This cycle continues, creating a layer of ozone in the stratosphere that protects life on Earth from harmful UV radiation.