

Debate on the threats of ground-level ozone on life, based on a jim robbins' arti...

[Environment](#), [Nature](#)



The article I read for this week is named In New Ozone Alert, A Warning of Harm to Plants and to People and is written by Jim Robbins. The article talks about the research conducted by a man named Jack Fisherman, a professor of meteorology at St. Louis university and a researcher of ground-level ozone at NASA. While at NASA, Fisherman started studying the effects of ground-level ozone on the health of humans and plants and has been warning people of its effects since the 1980's. Ozone is toxic to life when it is ground level and according to an MIT study, caused between 4, 700 - 19, 000 deaths annually in the United States because it exacerbates heart and lung problems. We know that potato farmers in the coastal US states had to stop growing Chipper potatoes because the ozone was destroying their crops, soybeans have been reduced by 10% in places with high levels of ozone and a certain strain of tobacco for cigar wrappers can no longer grow because of the ozone. And while we know a lot about how ozone effects human and domestic plant health, we know very little about how it effects wild plants. "Visible injury to plants in the Smokies have gone down, ozone levels have gone down, but what does that mean? Are there still effects? We just don't know. The forests could be recovering, or they could be in a long-term decline" says experts. We know that ozone paralyzes the stomata of tree leaves, which makes trees lose more water than they naturally would. In order to compensate for the loss of water, they take in more water from the ground, leading to the depletion of the nearby watershed. Ozone also shortens the time that leaves stay on the tress and that means that trees have less food, making them more susceptible to drought and insects.

Finally, trees reduce their photosynthesis due to ozone and this in turn reduces the amount of CO₂ that the trees absorb.

Fisherman likes to refer to ozone as “ Good up high, bad nearby” to help people remember that while the ozone layer does good for us in the stratosphere by protecting us from harmful radiation, it is toxic at the ground level and we need to control it. The major contributors to the growing ozone problem have been oil and gas fields in the US. Over the last 40 years we have cut ethane levels by 60% but we have reversed this effect in just the past 5 years. “ If this rate continues, we are on the track to return to the maximum ethane levels we saw in the 1970’s in only about three more years” says Detlev Helmig. And yet, nothing is being done to significantly affect the trajectory of the ozone level. According to Neufeld, “ if the climate continues to warm we’re going to have to clean up the environment even more because otherwise we’ll make more ozone faster.” Likewise, Fisherman states that “ there should still be a global alert about ozone, in fact, more than ever.

If the ground-level ozone continues to grow, all parties will be harmed.

Without plants, we as human cannot survive. As our plants try to survive, we have seen in the above summary that some trees compensate for lost water by taking in more from the watershed and streams nearby. This act leaves less water for humans and leads to larger and more prolonged droughts.

Without plants, our biodiversity declines and this leads to a breakdown in our ecosystem where certain species rely on another. We have seen this recently with our bee population and we will continue to see this decline in important

species if we continue on this path. Humans that are already experiencing heart and lung issues will be the first ones to notice the change in our air but as the ozone continues to increase, more and more people will begin to notice the difference in their overall health. However, there are some benefits of the lack of a global alert about our ozone. If people are not worried about the ozone surrounding us, they will be less likely to fight for stricter rules for companies who produce a lot of ground level ozone. Oil and gas companies do not have to spend as much money trying to control their emissions and this leads to lower prices for their services and products and this makes the consumer happy. One of the largest contributors to ground level ozone is the emissions you get from cars when gas is not burned thoroughly. If we aren't worried about controlling ground-level ozone, car companies do not have to worry about making cars more efficient, which may make cars cheaper. Also, people who cannot afford the more efficient cars are not forced to get new cars because their current vehicle cannot pass an emissions inspection.

So what is being done? Well, according to the article, many power plants have been under scrutiny for their emissions so these companies have been more controlled over the past couple of decades, leading to the overall decline in ethane production. Currently, the EPA is enforcing the National Ambient Air Quality Standards (NAAQS) as part of the Clean Air act. This act controls for certain chemicals in the environment that lead to more a more rapid acceleration of climate change. However, I think more could be done. If we send out a global warning about ground-level ozone and teach people

how to help with it, they will be more likely to make a change. People today are already trying to make a difference by recycling and using reusable bags but if they knew other ways to help with ground-level ozone, it might make a difference. We also need to do research into how to burn gasoline more efficiently because this would allow people to still use their cars while cutting back on the overall impact of the cars.