

# CRUDE ACCOUNTABILITY

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## A PROFILE OF PETROCHEMICAL EMISSIONS

### Ground-Level Ozone (O<sub>3</sub>)

Unlike the protective ozone layer in the stratosphere, ground-level, or tropospheric, ozone is a secondary [pollutant](#) formed by reactions between nitrogen oxides (NO<sub>x</sub>), [methane](#), CO, and VOCs in the presence of sunlight. It is a pale-blue, highly reactive [gas](#) with a sharp, irritating odor.

O<sub>3</sub> damages trees and other plants by affecting them at the cellular level. High ozone levels negatively affect plant growth, photosynthesis, vitality, flowering, water balance, and plant defense. Chronic exposure [leads](#) to visible leaf injury, reduced biomass, and significant decreases in [crop yields](#) for wheat, soy, and rice. The negative effects ripple through entire ecosystems, damaging biodiversity, harming insects, wildlife, and even soil ([Yale](#)).

In humans, O<sub>3</sub> oxidizes cells lining the respiratory tract, often described as a “sunburn” of the lungs. Short-term exposure causes coughing, throat irritation, and chest pain, while making the lungs more susceptible to infection ([EPA](#)). It is a [major driver](#) of premature mortality—responsible for hundreds of thousands of deaths annually—and millions of asthma-related emergency room visits.

Children are at a [higher risk](#) because their lungs are still developing and they have to breathe more air relative to body weight. Repeated exposure during childhood is a likely [contributor](#) to the initial development of asthma.

Ozone is the [third](#) most important greenhouse gas in addressing climate change. It also has a [secondary “doubled” climate impact](#): by damaging vegetation and reducing photosynthesis, it impairs the ability of forests and plants to act as carbon sinks, leaving more CO<sub>2</sub> in the atmosphere.