



Inside Energy

Published by the Caesar Rodney Institute
Center for Energy & Environment

RE: COVID lockdowns support revised ozone standard

DATE : 6/11/20

David T. Stevenson, Director

We can measure the amount of health harming ground level ozone in the air to parts per billion, but haven't a clue how to accurately model the atmospheric soup it formed in. The national COVID lockdown in March and April may provide an important clue to solve one part of the puzzle; how much ozone is manmade, and how much is just nature.

An initial look at "air quality data" is a strong indicator manmade air pollution fell by about half in the Philadelphia area in the last third of March while ozone only fell 2.5 percent. Computer models used by the Environmental Protection Agency (EPA) to set national air quality standards project ozone levels should have fallen up to four times more during the lockdowns. If additional data confirms this finding, it means no amount of regulation will likely result in urban areas meeting the current EPA ozone standard of 70 parts per billion (PPB) averaged over three years. That means the continuation of futile, economy killing regulation.

High levels of ozone heighten symptoms for people with respiratory ailments, such as asthma, and COPD (chronic obstructed pulmonary disease) and can result in more hospitalizations. Ozone is not emitted directly, but forms from precursor chemicals in sunlight. Ozone forms naturally from emissions from plants, insects and animals, wildfires, soil, lightning, and volcanoes that account for almost 70 percent of precursor emissions.

Emissions from burning fuel in motor vehicles, power plants, and industrial processes add to the natural sources, and are regulated. Air pollution from other countries add to the problem, and can't be regulated. Nationally, median ozone levels fell 32-percent from 1980 to 2017, with half the reduction since 2008, as manmade emissions fell.

Manmade sources of ozone precursors fell dramatically in March and April. The Delaware Department of Transportation reports traffic on Interstate 95 near Wilmington was down 40 to 55-percent on weekdays, and 60 to 70 percent on weekends. Air traffic was down up to 96-percent based on TSA records. The American Petroleum Institute estimated refinery operation fell 20-percent.

Electric generation in the PJM regional electric grid dropped 7-percent while generation from coal fired power plants fell 40-percent. Nitrogen dioxide emissions from power plants fell 60-percent from April, 2019, to April, 2020. Nitrogen dioxide is a catalyst for ozone creation, and a marker for manmade air pollution.

Recent checks on air quality in sixteen counties that constitute the Philadelphia ozone non-attainment area showed the daily ozone average for the month to be only 3-percent, or about one part per billion, less than last April. Urban stations did average about 8-percent higher than the most rural stations, so manmade emissions had some impact on ozone levels. Ozone formation peaks on hot, sunny days. The average April high temperature in 2020 was 8 degrees cooler with ten percent less sunshine, so much of the change was likely influenced by weather rather than manmade air pollution reduction.



Inside Energy

Published by the Caesar Rodney Institute
Center for Energy & Environment

Only one air quality station of four that measure nitrogen dioxide has reported March data and none have reported April data. The available data shows the pollutant fell 54 percent in the last eleven days of March when the lockdowns became fully effective, while ozone only dropped 2.5 percent. With the potential to only reduce ozone a few PPB through regulatory action, it is likely weather conditions could stack up in any given summer to lead to exceedances in urban areas for the foreseeable future.

The ozone air quality standard is up for review in 2020. A preliminary public policy assessment concludes the most up to date science supports previous findings ozone does impact respiratory health, especially in people with asthma. However, the assessment also concludes the only relevant health impact tests are controlled human exposure studies and admits there are no such studies for people with limited lung function. That translates to the fact there is no solid scientific evidence to distinguish health impacts with ozone standards between 60 to 80 parts per billion.

The assessment also concludes EPA Administrator, Gina McCarthy, relied heavily on a single, non-peer reviewed study to reduce the ozone standard from 75 parts per billion to 70 in 2015. The study claimed short term exposure to ozone resulted in cardiovascular symptoms, and possible mortality. That study was discredited in the latest assessment.

The 2015 decision to reduce the ozone standard should be overturned, and we should return to a 75 parts per billion standard. That appears to be the “Goldilocks choice” that would leave headroom for nature’s impact while protecting health from manmade pollution. With a revised standard, the entire Philadelphia non-attainment area, and much of the country, should reach attainment in 2020, allowing easing of economy killing emission regulations. We need seventy-five to thrive.

Link to full study: https://www.caesarrodney.org/pdfs/Covid_lockdowns_impact_on_ozone_pollution.pdf