

# Science Communication Regarding the Collective Impact of Weather Modification Programs on the Hydroxyl Radical: A Warning About Large Scale Hydroxyl Losses and Hydroxyl Inundation Contributing to Global Drought and Inclement Weather Events.

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## Abstract

A warning about the collective effects on hydroxyl levels of the prevailing particulate-matter based weather modification operations.

## Communication

The doublet (2) hydroxyl radicals that form on contact with water come from the Ozone atom, which comes from a deteriorated O<sub>3</sub> (ozone) molecule. This is widely known in atmospheric chemistry. What is also widely known is that hydroxyl attaches or reacts with everything in the atmosphere, which includes inorganic particulates found in weather modification recipes. In fact these programs are relying on a lighter fraction of the particulate to eventually contact hydroxyl, make it a heavier particle, and then it will deposit at ground. Hydroxyl is a removal agent.

Another function of hydroxyl radicals, which are also infinitely soluble in water, is enhancing coalescence of particles, water, and pollution, which includes acting as a surfactant via its hydrogen ligand that eases energetic air particles and air fronts together for cloud formation. With pollution, it may either oxidize it, or hydrolyze it (such as in the case of CO<sub>2</sub>, which forms HCO<sub>3</sub> on contact, and rains out, and, at ground, it then mineralizes and is stored in the Earth's carbon sink), and the GHG water vapour, which it removes by triggering precipitation through enhanced front coalescence. (No hydroxyl- no consistent, moderate rainfall).

These are all important functions. Can we afford to overlook these functions given the worldwide drought due to lack of precipitation? This problematic aspect of "aerosol based hydroxyl depletion" has been overlooked until now.

Hydroxyl forms over the day while the Sun shines, having a flux of a million molecules/cc of air, and presenting more particulate to this flux depletes it and diverts it from its absolutely critical work on greenhouse gases, including PFAS-forever chemicals-, HCFC and refrigerant gases, CO<sub>2</sub> hydrolysis into carbonates (enhanced weathering), methane removal, and removal of criteria air pollutants like VOC's, Nox, PM </=2.5. The weather modification pulses of particulates are costing society health on all of these fronts, and is definitely not delivering on precipitation as a whole. There is widespread drought now and this must be partly attributed to this -and the heat content of the atmosphere- which widely altered the wet bulb temperatures at both climate extremes: too much precipitation due to areas of excess water buildup due to atmospheric heat content, and areas with not enough precipitation because of particulate-hindered hydroxyl action.

This particulate/aerosol forcing and detrimental dilution of the key and main atmospheric cleansing ingredient, hydroxyl, is lost via its uptake on weather modification aerosols. This loss also contributes to interrupting precipitation mechanics in weather fronts that are mediated by hydroxyl, reducing the incidence, and yields, of precipitation. Particle counters can quantify this loss relatively well by estimating the particle numbers per cc of air, and comparing it to the molecules/cc/air of hydroxyl which is about a million. I am calling on particulate-based weather modification scientists to estimate and total these losses through further adding their emissions to the 441.186 ppm total of other reactant flux, and making a conservative year-round quantified estimate of OH\* contact on particulates. From here, we can determine the level of global damage from these programs on the climate, and air quality.