

Upper Green River Basin Air Quality Citizens Advisory Task Force Joint Fact Finding Summary Points

- The Wyoming Department of Environmental Quality (DEQ) air quality monitoring stations have recorded 8-hour daily average ozone concentrations above the National Ambient Air Quality Standard (NAAQS) of 75 parts per billion (ppb) during late winter and early spring in 2005, 2006, 2008, and 2011.
 - High ozone events are usually observed in late January–March and for relatively short periods of 1–4 days (Figures 2a, b, c).
 - Ozone concentrations are non-uniform across the UGRB and fluctuate both throughout the day and among monitoring sites.
 - Regional transport (from outside the UGRB) is not adding to ozone pollution in the UGRB.
- An elevated level of ozone in the wintertime is unusual and the mechanisms that lead to elevated ozone levels are not well understood.
- A combination of meteorological conditions and emissions sources are adding to ozone formation in the Upper Green River Basin (UGRB).
 - A combination of snow cover, low wind speeds, sunlight, and temperature inversions lead to conditions favorable to the formation of localized elevated ozone events.
 - Natural gas activity is the major emissions source for nitrous oxide (NO_x) and volatile organic compound (VOC) emissions (ozone precursor emissions) in the region.
 - Speciated VOC data collected (that shows compounds of VOC emissions) in the UGRB during elevated ozone episodes have a dominant oil and gas signature; VOCs tend to be emitted by gas production and its storage and handling.
 - NO_x comes from the combustion of fuels (primarily diesel and natural gas) via stationary engines, heaters, and drill rigs.
- It is not well understood if VOCs or NO_x are limiting agents in the formation of ozone; preliminary studies show conditions can arise in which either reactant is limiting.
 - Data analysis during future elevated ozone episodes will be important in determining unambiguously which reactant exerts more of a controlling effect on ozone formation.
 - In the meantime, the current strategy that is being pursued involves reductions in emissions of both precursors.
- Development of efficient and effective emission reduction strategies for the UGRB will require development of full three-dimensional photochemical modeling simulations capable of reproducing the key features of the winter episodes.
 - The DEQ Air Quality Division (AQD) is working to develop this model capability; however, it will not be available within the timeframe of the task force efforts and action is needed now.
- The Environmental Protection Agency (EPA) announced it will designate the Upper Green River Basin as a marginal nonattainment area.
 - The state must now create a plan to reach attainment.