Fact Sheet: Uinta Basin Air Quality

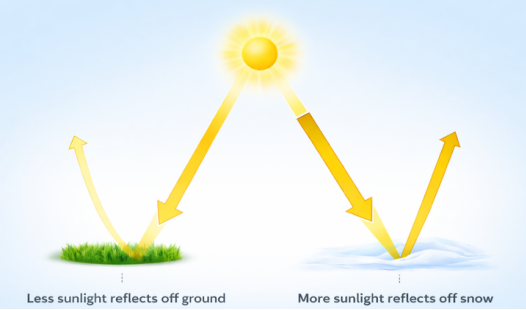
What We Know

Wintertime ozone forms in the Uinta Basin when persistent temperature inversions, snow cover, and locally emitted pollutants from oil and gas activities occur together. USU's Bingham Research Center conducts research and outreach to understand and resolve the issue. **Over the past decade, measured declines in key emissions such as organic compounds and nitrogen oxides have contributed to improved winter ozone levels, even under similar meteorological conditions.**

What is Ozone?

- Ozone is an air pollutant regulated by the U.S. Environmental Protection Agency because it impacts human health, especially for those with asthma and other lung conditions.
- Ozone is formed in the atmosphere from chemical reactions involving nitrogen oxides (NO_x) and volatile organic compounds (VOCs), air pollutants commonly emitted from vehicles, industry, and many other sources.
- Because it requires plenty of (1) air pollution and (2) sunlight, ozone usually forms in urban areas during the summer.

Why the Uinta Basin?

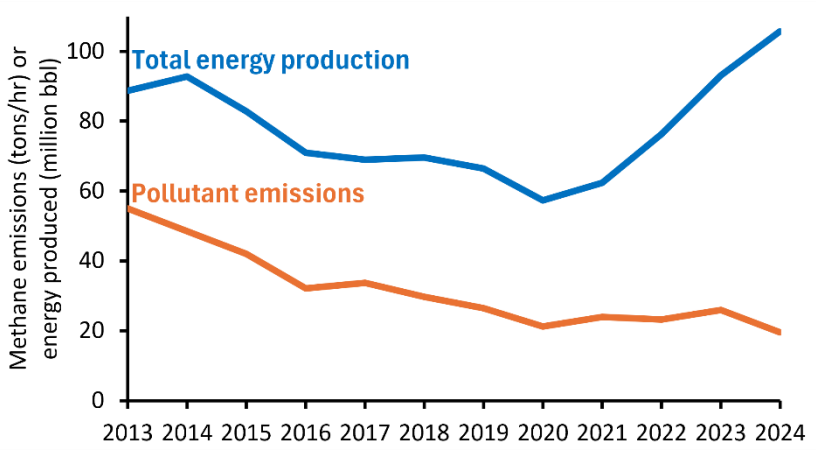


- The Uinta Basin is one of the only places worldwide that regularly experiences high ozone levels in winter.
- Winter ozone occurs when a temperature inversion (a shallow layer of cold air) concentrates pollutants close to the ground. Also, snow cover enhances sunlight reflection, increasing chemical activity in the atmosphere, which speeds up ozone formation.
- In the Uinta Basin, we have a small population and a large oil and gas industry, so oil and natural gas development is the largest local source of these ozone-forming emissions.

Trends Over Time

- From its discovery in 2009 through the present, how often winter ozone occurs and how much ozone there is have both decreased. Several lines of evidence show that the improvement in winter ozone is not caused by more favorable weather conditions, but instead by reductions in oil and gas industry-related pollution.

- These pollution reductions have occurred because of new federal, state, and tribal regulations designed to limit air pollution from the oil and gas industry, and also because of voluntary actions by the industry.
- Winter ozone still occurs when snow cover and persistent temperature inversions are present, and more work is needed to continue reducing air pollution.



What You Can Do

✓ Reduce air pollution, especially during winter inversion episodes. The USU Bingham Research Center's Ozone Alert program provides winter ozone forecasts to help (email ozonealert@usu.edu to sign up).

✓ For those in the oil and gas industry, join the Utah Petroleum Association's Latch the Hatch program, which provides comprehensive guidance on reducing air pollution.

✓ Track real-time ozone levels in the Uinta Basin at basinwx.com.

What USU's Bingham Research Center does

✓ USU's Bingham Research Center has conducted more than 15 years of research on air quality in the Uintah Basin, partnering with industry and governments at all levels.

✓ The Center works to understand the meteorology, pollutant emissions, and atmospheric chemistry that leads to wintertime ozone. They also track long-term trends, evaluate emission control effectiveness, and forecast ozone events.

✓ This work is helping industry and regulatory agencies know how to achieve the biggest air pollution reductions at the lowest cost.

More Information

This research was conducted by Utah State University's Bingham Research Center. Contact us at bingham.research@usu.edu or visit binghamresearch.usu.edu for more information. Technical information about this topic is available at https://www.usu.edu/binghamresearch/cumulative-research-summary and https://www.usu.edu/binghamresearch/papers-and-reports.