Wildfire-Related Air Quality Impacts on Vermonters with Respiratory Conditions

May 2026

The hotter and drier conditions associated with climate change are increasing the length of wildfire season in the U.S., impacting even places where the effects of wildfires have historically been rare like Vermont (Environmental Protection Agency).

Air pollution from wildfire smoke can impact our health, particularly among sensitive groups such as people with respiratory conditions like asthma and chronic obstructive pulmonary disease (COPD). High concentrations of particles in the air during and after wildfires may irritate the respiratory system and make these conditions harder to manage or even life-threatening.

This data brief highlights associations between periods of poor air quality resulting from wildfire smoke and rates of emergency department visits for those with symptoms of respiratory illness in several regions of Vermont.

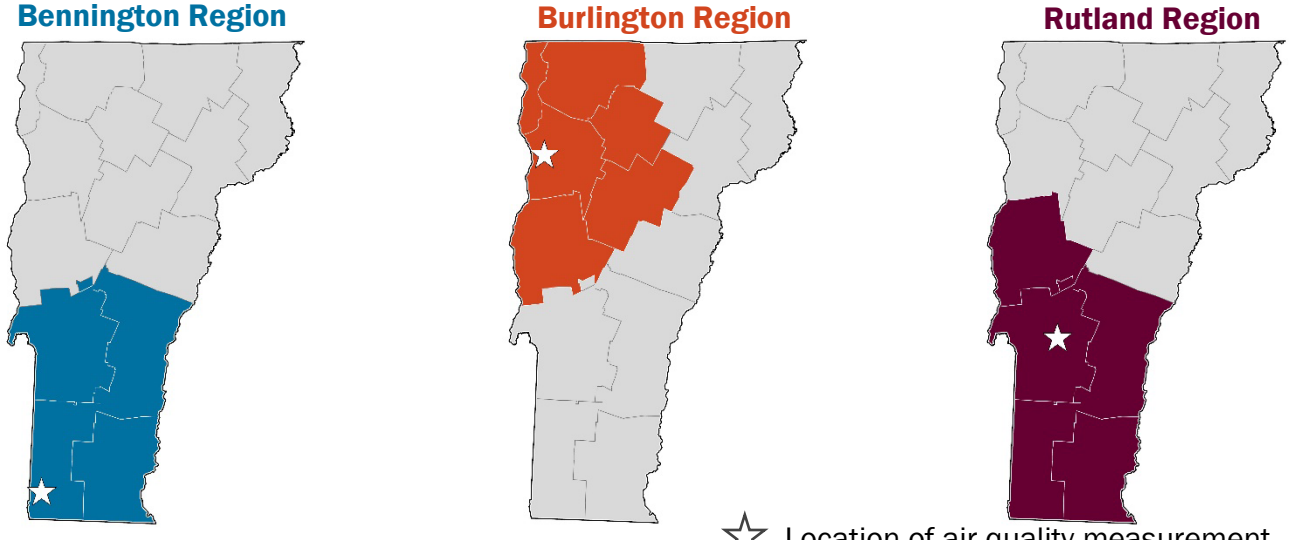
If you need help accessing or understanding this information, contact ahs.vdhhpdpanalytics@vermont.gov.

Key Points

- **There was a spike in rates of respiratory illness-related emergency department visits in the Burlington region during two periods of poor air quality due to wildfire smoke in summer 2023.**
- **Regions around the state appear to have an increased respiratory illness-related emergency department visit rate during wildfire-affected periods.**

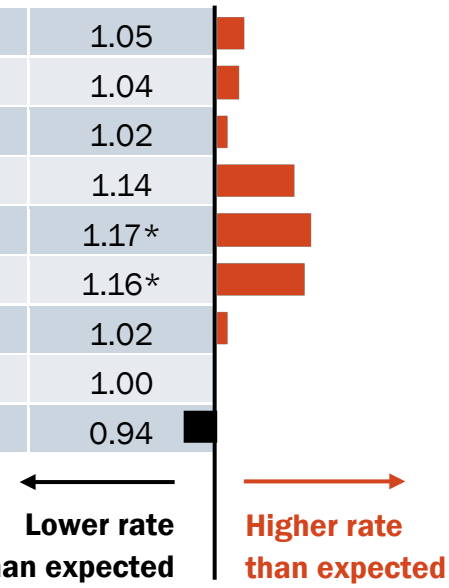
Air Quality & Respiratory Illness

Air quality varies over time and by region. In the summer of 2023, nine periods with poor air quality related to Canadian wildfires were observed in three regions[1] of Vermont.



During most poor air quality periods, the rate of visits to the emergency department for air quality-related respiratory illness[2] exceeded the expected rate.

Region	Period *2023*	Incidence Rate *Visits/Day*	Comparison Incidence Rate *Visits/Day*	Incidence Rate Ratio
Bennington	Jun 6-12	20.3	19.4	1.05
Bennington	Jun 30 - Jul 5	20.2	19.4	1.04
Bennington	Jul 17-21	19.8	19.4	1.02
Burlington	Jun 6-10	43.8	38.4	1.14
Burlington	Jun 25-30	44.8	38.4	1.17*
Burlington	Jul 1-5	44.6	38.4	1.16*
Burlington	Jul 18-22	39.0	38.4	1.02
Rutland	Jul 1-5	22.2	22.3	1.00
Rutland	Jul 18-22	21.0	22.3	0.94



Data Source: AirNow.gov, ESSENCE[3] 2023

* Statistically significant difference between observed and expected rates

Interpreting Incidence Rates

The **incident rate** shows how many emergency department visits per day there were during the period of interest. The **comparison incidence rate** shows how many visits per day there were during a comparison period not affected by poor air quality. The **incidence rate ratio (IRR)** compares the rate observed during a period of poor air quality to the comparison period. An IRR greater than one suggests a higher-than-expected rate of visits during that period.

Two wildfire smoke affected-periods, June 25-30 and July 1-5, had rates of emergency department visits that were significantly higher than expected.

- From **July 1-5**, there were approximately **six** more emergency department admissions per day in the Burlington region than expected.
- From **June 25-30**, there were approximately **six** more emergency department admissions per day in the Burlington region than expected.

Although six additional visits per day may not seem like a large increase, this number could be even higher during a longer or more severe wildfire smoke event. Additional increases could burden already busy emergency departments and negatively impact those with chronic respiratory illness.

VERMONT DEPARTMENT OF HEALTH

Preparing and Responding to Wildfires

There are some things that people with respiratory conditions, such as asthma and COPD can do to prepare themselves for periods of poor air quality due to wildfire smoke.

To prepare for wildfire season:

- ✓ Sign up for VT-Alert to stay updated on severe weather and emergency information.
- ✓ Monitor the air quality levels in your area at AirNow.gov.
- ✓ Talk to your provider about a plan to protect yourself against poor air quality.
- ✓ Stock up on prescribed medication to manage your respiratory condition.

During a wildfire smoke event:

- ✓ Follow your provider's advice and your Asthma Action Plan.
- ✓ Stay inside as much as possible. If you must go outside, use a mask.
- ✓ Keep windows and doors shut and use an air filter if available. Close the damper on your air conditioner or set it to recirculate indoor air to avoid bringing smoke indoors.
- ✓ Avoid frying or grilling as this can worsen air quality.
- ✓ Consider evacuating to another area if you have trouble breathing or other symptoms that do not get better.

Source: Centers for Disease Control and Prevention

Learn more about air quality, wildfires, and your health: Air Quality Alerts, Wildfires & Your Health | Vermont Department of Health

Data Notes

[1] Each region is formed by the county in which the air quality measurement was taken, as well as any neighboring counties in order to capture all residents most likely to have been affected by periods of poor air quality measured at that site. The **Bennington region** includes Bennington, Windham, Rutland, Windsor Counties. The **Burlington region** includes Chittenden, Addison, Washington, Lamoille, Franklin, Grand Isle Counties. The **Rutland region** includes Rutland, Addison, Windsor, Windham, Bennington Counties.
An analytic limitation was the lack of available air quality data for the Northeast Kingdom region of Vermont, despite the area likely experiencing significant impact from wildfires.

[2]Air quality-related respiratory illness is a standard definition from the National Syndromic Surveillance Program that includes symptoms of asthma, COPD, and other breathing problems, excluding those associated with a cold or flu-like illness.

[3]Electronic Surveillance System for the Early Notification of Community-based Epidemics

Learn more about how the way these data were collected may impact this data brief: HealthVermont.gov/EquityData