



wildsight golden

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For Immediate Release

Meteorology and Air Quality in Golden

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Several questions are often raised by folks in Golden about how weather affects our air quality in town. Weather patterns coupled with our topography do have large influence on the levels of air pollution that we may experience in the areas where we live on any given day regardless of the quantity of emissions being released.

Thermal Inversions

A thermal inversion refers to the situation in which the normal decrease in air temperature with increasing altitude is reversed so that a layer of air above the ground is warmer than the air below it. Inversion layers can occur close to ground level and up to thousands of feet into the atmosphere. They can be significant for air quality as a warm upper layer will prevent cooler air from rising and trap pollutants at ground level instead of circulating them away.

In Golden as in other communities located in river valleys, *nocturnal* or *radiation* temperature inversions are common occurrences. The energy that the earth receives from the sun during the day is radiated back to space during the night. The ground and air in contact with it cools and with poor mixing creates a cool layer under a warmer upper layer. Light winds, cloudless skies and long winter nights assist the development of deep, strong radiation inversions.

Certain other meteorological conditions, such as strong high-pressure systems over the area can create higher level inversions which can persist for several days.

Katabatic winds drain air pollutants down the slopes into the valley.

On clear nights the surface air cools on the hillsides surrounding Golden. This denser air flows downhill to the valley floor displacing the warm air which is forced up. These *drainage* or *katabatic* winds, are a regular occurrence during clear nights in most mountainous regions. Pollutants released at ground level on the upper slopes will travel with these katabatic flows and accumulate in the valley bottom within the inversion layer. This is one reason why the control of emissions in the whole air shed is important to the air quality in town.

Air contaminants are carried on the wind.

Elevated ambient particulate levels measured at the Golden hospital site on days with calm or very light winds may indicate that local pollutants such as wood stove smoke, industrial emissions, road dust and automobile exhaust are building up near the point of origin. The same levels of particulate associated with a moderate wind may indicate transport of pollutants from a source outside of the local area such as forest fires or slash burning. During a strong wind event elevated particulate levels may be due to wind blown soil particles.

Wood smoke from home heating is most noticeable in residential areas close to the source on calmer days. When smoke and other air contaminants are dispersed slowly, they may create a haze, the source of which is not readily identifiable to the casual observer.

For more information about the wood stove exchange rebates, air quality issues, or to find out how to join the Golden and District Air Quality Committee, please see <https://wildsight.ca/branches/golden/air-quality/>.

*For more information, please contact Leslie Adams, Branch Manager,
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