



Environmental Services
215 N. Mason
PO Box 580
Fort Collins, CO 80522
970.221-6600
970.224-6177 - fax
fcgov.com

MEMORANDUM

TO: Mayor Weitkunat and City Councilmembers

THRU: Darin Atteberry, City Manager
Jeff Mihelich, Assistant City Manager
Bruce Hendee, Chief Sustainability Officer
Lucinda Smith, Environmental Services Director

FROM: Melissa Hovey, Sr. Environmental Planner

DATE: August 5, 2014

SUBJECT: **Air Quality Annual Report**

The Environmental Services Department has prepared a summary of air quality and air monitoring data for 2013 for the City of Fort Collins. A discussion of air quality programs and initiatives completed in 2013 is included below. The Attachment 1 is a graphic display of air monitoring results from the four air monitoring stations located within the City. The first page shows the compliance status of Fort Collins' air quality relative to national and state air quality standards during 2013, and the second page shows multi-year trends. Additional information on air pollutants and sources of air emissions in Fort Collins is included in Attachment 2.

In summary, Fort Collins air quality in 2013 complied with the National Ambient Air Quality Standards (NAAQS) established by the Environmental Protection Agency (EPA) for carbon monoxide and particulate matter, but did not attain the standard for ground level ozone during 7 days in June, July, and August. In addition, Fort Collins did not meet the state's guideline standard for visibility during 2013 for approximately 15% of the days measured. Three air pollutants, for which EPA has established NAAQS, are not measured in Fort Collins; nitrogen dioxide, sulfur dioxide, and lead. Based on air monitoring results from other areas of the state, it is assumed that Fort Collins air quality is meeting these standards.

Fort Collins is located within the Denver Metro Area/North Front Range ozone non-attainment area. This area was designated "non-attainment" for the 8-hour federal ozone standard on November 20, 2007. This means that ground level ozone concentrations are higher than the national standard on several occasions throughout a three year averaging period. Ozone is a strong oxidant that can trigger asthma attacks, cause respiratory disease, and damage vegetation among other impacts. Ground level ozone is formed when hydrocarbons and nitrogen oxides react chemically in the presence of sunlight.

A non-attainment designation triggers stringent permitting, reporting, and pollution control requirements for industrial sources. In addition, the state regulatory agency is required to implement a plan to bring the area back into attainment through a variety of mechanisms including transportation planning, vehicle emissions testing, and expansion of regulations for controlling emissions. Ground level ozone is a regional issue and concentrations can be affected by local and regional emission sources as well as long range transport from several states away.



The City of Fort Collins is not a regulatory agency but has been actively engaged in the control and reduction of ozone through many local, regional, and state-wide efforts. Recent efforts include:

- participation on the Regional Air Quality Council (RAQC)
- participation in stakeholder group for revisions to regulations affecting oil and gas development
- participation on the technical advisory panel for the Northern Front Range Oil and Gas Emissions and Dispersion Study
- implementation of the lawn and garden equipment rebate program
- outreach and education on vehicle idling
- education on sources of ozone forming pollutants within the home through the Healthy Sustainable Homes program
- support and advocacy for alternative fuels and alternative vehicle infrastructure
- development of the interdisciplinary Green Built Environment team
- involvement in industrial sources of air pollution that contribute to ozone formation including oil and gas development and asphalt production.

In addition to efforts to reduce ozone smog, the City works to improve air quality through implementation of programs and strategies that seek to reduce particulate matter pollution and poor visibility. City staff address wood smoke issues by enforcing the City's wood burning codes, responding to citizen complaints regarding wood smoke, providing education and outreach on clean burning and efficient woodstoves, and offering zero interest loans for woodstove replacement. Dust emissions from construction sites and other activities are addressed through education and outreach, response to complaints, and enforcement of the air pollution nuisance code. City staff is developing additional mechanisms for controlling dust emissions and responding to the increasing number of dust complaints which will be presented to Council this year. Other City programs that reduce air pollution include street sweeping, optimized traffic signal timing, promotion of bicycling and public transit, use of cleaner vehicle fuels, and vehicle idle reduction strategies.

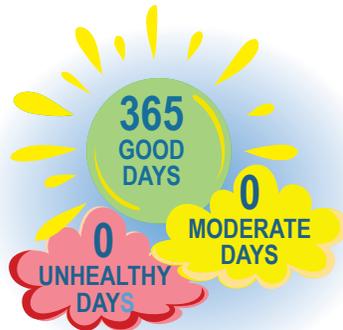
The City's Air Quality program focuses on indoor air quality as well as outdoor air quality. In 2013 the Healthy Sustainable Homes program provided free home health assessments to 101 homes and reached over 2,000 citizens through public presentations and educational forums. The program educates participants on free and low-cost solutions for identifying biological contaminants and chemical pollutants and improving indoor air quality in their homes. The radon program continued to provide zero interest loans for radon mitigation systems and in 2013 expanded the loan program to include mold mitigation projects in response to the September floods. The program also continued to sell low-cost radon test kits at two City locations, and provide public education about the risks of radon in the home.

2013 FORT COLLINS AIR QUALITY REPORT

DAILY AIR QUALITY INDEX 2013 Levels At-A-Glance

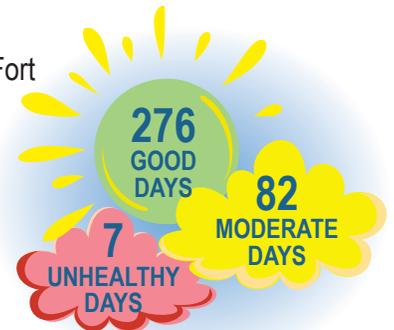
CARBON MONOXIDE (CO)

CO levels in Fort Collins are significantly better than the national air quality standard, and have been steadily improving for the last 20 years. CO is emitted mainly by cars and trucks and the improvement is largely due to federal emission standards for motor vehicles.



OZONE

The ozone level at the Fort Collins West monitoring site was worse than the national air quality standard on 7 days in 2013, with the highest reading of 82 (parts per billion) compared with the 75 ppb standard. The

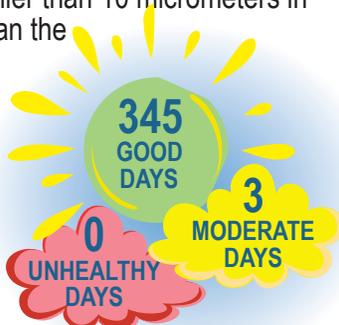


U.S. Environmental Protection

Agency has designated Denver and the Front Range including Fort Collins as a non-attainment area for ozone, meaning that the national air quality standard for health is not being met in this region. Ozone can damage lungs and causes smog. Ozone is formed when hydrocarbons and nitrogen oxides react in sunlight. These pollutants are emitted by motor vehicles and industrial sources.

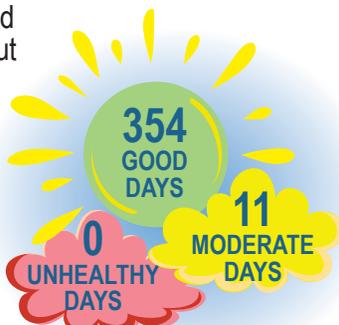
PARTICULATE MATTER PM10

PM10 (particulate matter smaller than 10 micrometers in diameter) measured better than the national air quality standard throughout 2013. These particles consist mostly of dust and smoke and come mainly from roads, fields, construction sites, and wood smoke. Daily readings do not total 365 due to monitor down time.



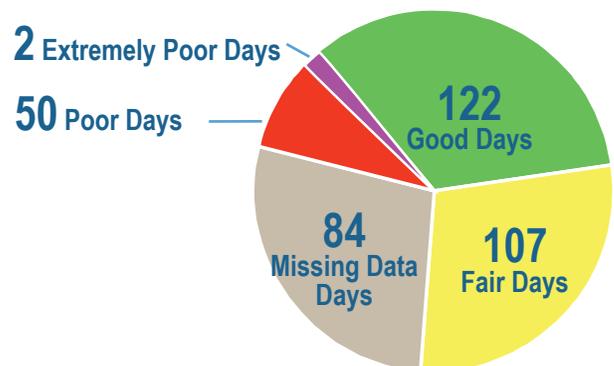
PM2.5

Fine particles or PM2.5 (particulate matter smaller than 2.5 micrometers in diameter) measured better than the national air quality standard for 2013. Elevated concentrations were measured on 11 different days throughout the year. PM2.5 comes from the incomplete combustion of fossil fuels and from reactions between certain pollutants in the atmosphere. Fine particles are small enough to penetrate the lungs and enter the bloodstream. In addition, PM2.5 is the principle factor in poor visibility (haze).



VISIBILITY

Visibility is a measure of how clear the air looks. The Colorado visibility standard is based on observer preference or aesthetics rather than health impact. Visibility is measured using an instrument that measures the amount of light that is able to pass through the atmosphere on an hourly basis. The data is compared to the Visibility Standard Index with categories good, fair, poor, extremely poor, and "missing." Missing data occur on days when high humidity interferes with visibility measurements. In 2013, over half of the days measured were rated fair or worse for visibility. Poor visibility can be due to smoke, haze, and the brown cloud.



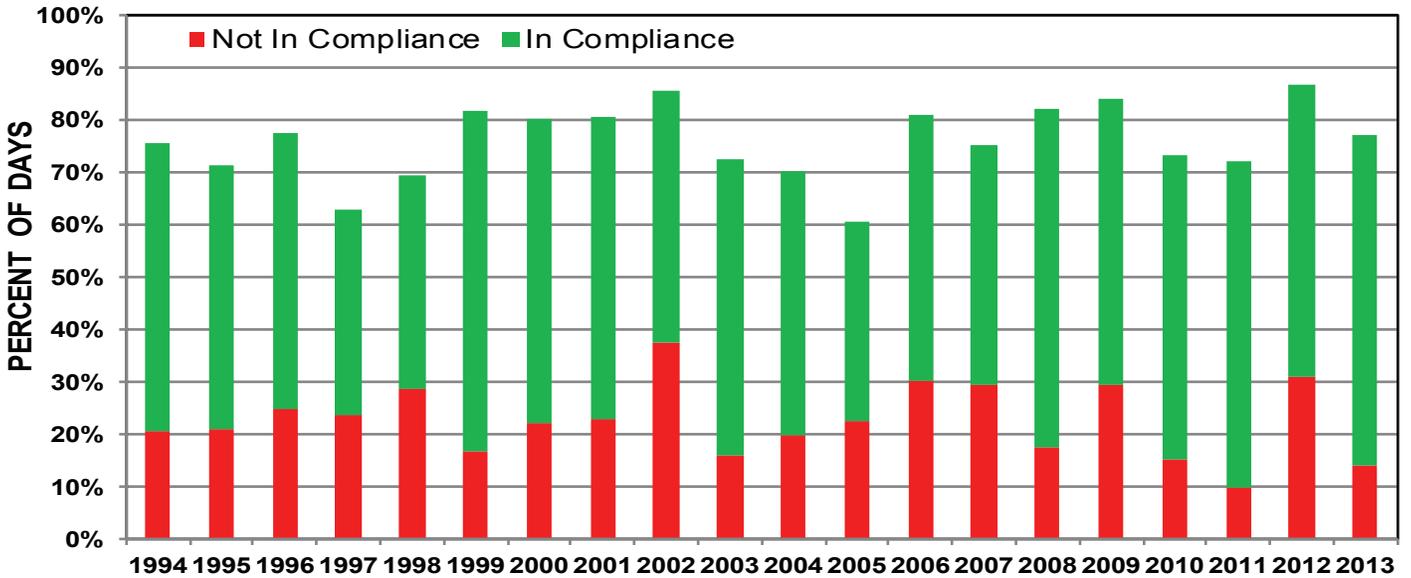
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2013 FORT COLLINS AIR QUALITY TRENDS

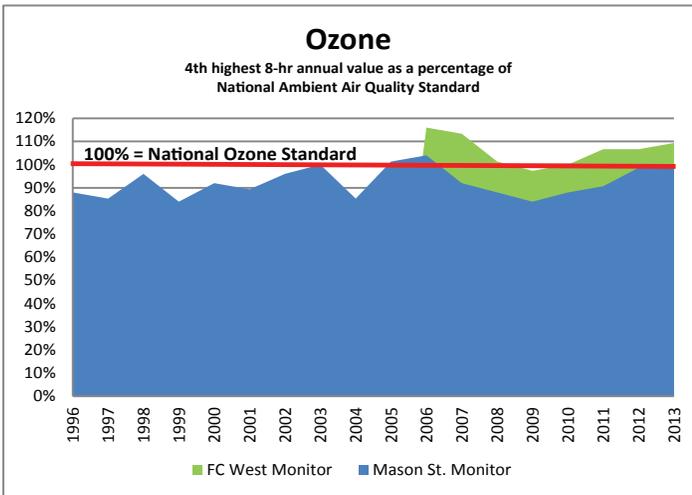


VISIBILITY Fort Collins visibility remains consistently worse than the Colorado standard an average of one day out of four.



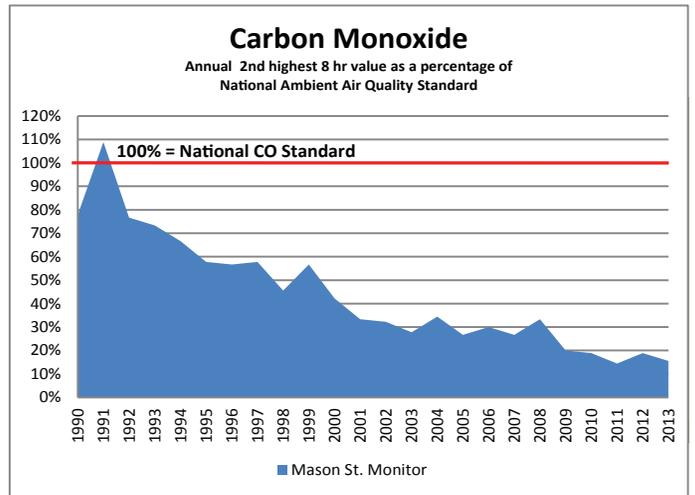
OZONE

For the last several years, ozone levels at the downtown site have been near the health standard. Levels at the Fort Collins West site violate the health standard.



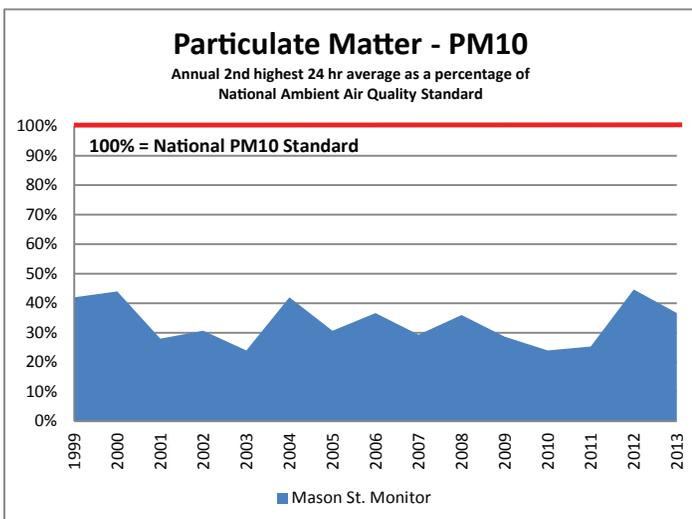
CARBON MONOXIDE

The CO level has steadily decreased due to vehicle emission standards and vehicle emission testing.



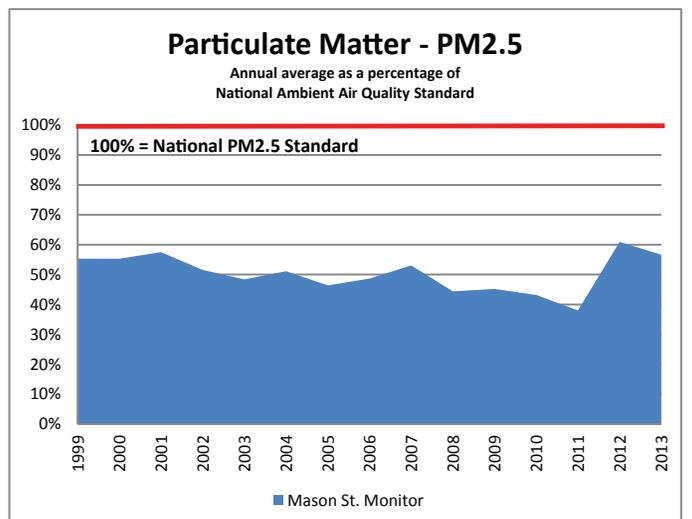
PM10

For the past 15 years, PM10 levels have remained low and at less than half of the health standard.



PM2.5

For the past decade, PM2.5 levels have consistently measured below 70% of the current health standard.



EPA Regulated Air Pollutants				
Criteria Air Pollutants		Misc.	Hazardous Air Pollutants	Greenhouse Gases
CO	Carbon monoxide	Volatile organic compounds	Benzene	Carbon dioxide
NO2	Nitrogen dioxide	Diesel emissions	Mercury	Methane
PM10	Particulate matter (10 microns)	Hydrogen sulfide	Formaldehyde	Nitrous oxide
PM2.5	Particulate matter (2.5 microns)	Ammonia	Trichloroethylene	Sulfur hexafluoride
SO2	Sulfur dioxide		Toluene	Hydrofluorocarbons
O3	Ozone		Radon	Perfluorocarbons
Pb	Lead		Asbestos	

Outdoor Air Pollution Sources				
Mobile Sources and Engines	Industrial (Point)	Area	Fugitive	Natural
Cars, trucks	Electricity generation	Gas stations	Agricultural	Wildfire
Trains	Manufacturing	Dry cleaners	Mining	Radon
Boats, ships	Refining	Auto body shops	Upstream oil & gas	Wind-blown dust
ATVs, snowmobiles		Restaurants	Leaks	Vegetation
Lawn & garden		Woodstoves/fire pits	Construction dust	Geothermal
Generators		Paints/solvents	Nuisance dust	Volcanoes
Drill rigs		Wastewater treatment		
Construction equip.		Building heating		

Indoor Air Pollution Sources				
Combustion	Materials	Stored Chemicals	Moisture	Radon
Hot water heater	Insulation	Cleaners	Mold	Radon gas
Furnace	Carpet	Paints	Mildew	
Woodstove	Varnish, paint	Solvents	Allergens	
Cook stove	Composites	Deodorizers	Pests	
Nat. gas fireplace	Vinyl	Auto maintenance		
Car in garage	Plastics	Gas powered equip.		

**Contributors to Air Pollution
in Fort Collins**

Fort Collins sources		Examples
	Motor vehicles	cars, trucks, motorcycles, boats, ATVs
	Non-road engines	lawn&garden equipment, construction equip.
	Breweries	Anhueser Busch, New Belgium
	Gas stations	
	Manufacturing	Avago, Intel, Woodward
	Institutional	CSU, Poudre Valley Hospital
	Wood burning	wood stoves, fire pits
	Waste water treatment	City of Fort Collins
	Auto body shops	auto repair and painting shops
	Construction related	earthwork, demolition, asphalt paving and production
Long range transport		
	Electricity generation	coal fired power plants
	Oil and gas	oil and gas development in adjacent counties
	Metro-Denver	industrial and vehicle emissions from Denver
	Agriculture	animal feed lots, field/ditch burning
	Wildfire	smoke from fires in CO and states to the west