

Recommended Precautions for Forest Fire Smoke

Air Quality (1)	24-hour AQI (2)	<u>Short-Term Health Effects:</u>		<u>Cautions:</u>	
		For people with heart or lung disease and the elderly, aggravation of heart or lung disease and premature mortality is:	Among the general population, the risk of respiratory effects is:	For People At Risk (2)	For Everyone Else
Good	0-50	Essentially unaffected	Essentially unaffected	None	None
Moderate	51-100	Possible	Essentially unaffected	None	None
Unhealthy for Sensitive Groups	101-150	Present	Increasingly likely in sensitive individuals	Limit prolonged exertion.	None
Unhealthy	151-200	Increased	Increased	Avoid prolonged exertion.	Limit prolonged exertion.
Very Unhealthy	201-300	Significant	Significant	Avoid any outdoor activity.	Avoid prolonged exertion.
Hazardous	301-500	Serious	Serious	Remain indoors.	Avoid any outdoor exertion.

1. The Air Quality Index is for the criterion pollutant with the current highest score. When smoke is heavy, the highest score pollutant is probably but not necessarily fine particulates (PM 2.5). Precautions address fine particulates.
2. The current day's AQIs for Colorado's real-time monitors are available at http://www.colorado.gov/airquality/air_quality.aspx.
3. Includes people with respiratory or heart disease, the elderly and children

Estimating Instantaneous PM2.5 Concentrations from Visibility

PM2.5, ug/m ³	Instantaneous AQI for PM2.5 (1)	Instantaneous Visibility in Miles (2)			
		Montana smoke (3)	Hayman fire smoke (4)	Theoretical A (5)	Theoretical B (6)
15	50	no data	25-30	73	46
35	100	12	15	32	20
65	150	6-7	6-7	17	11
150	200	3	3	7	5
250	300	1.5-2	no data	4	3

1. Precautions in the table on the previous page apply to 24-hour average pollution concentration. The visibility table is for the concentration at one moment in time. To apply the precautions table, consider not instantaneous but likely **24-hour average** concentration.
2. To estimate visibility through smoke without monitoring equipment:
 - a) Face away from the sun. Also, the observed data was generated within a plume, not viewing it from a distance.
 - b) Determine the limit of your visible range by looking for targets at known distances (miles). Visual range is that distance at which even high contrast objects totally disappear.
 - c) Particulates other than from smoke also will reduce visibility, to a similar but not the exact extent as smoke.
3. Source: Observed data reported at <http://deq.mt.gov/FireUpdates/BreakpointsRevised.mcp>, accessed on 8/21/10
4. Source: Observed data for 6/9/02 in Denver on file at Colorado Air Pollution Control Division
5. Source: R.J. Charlson. 1969. Atmospheric Visibility Related to Aerosol Mass Concentration: A Review. Environmental Science and Technology 3:10 pp. 913-918. Extinction at 1.8 g/m².
6. Source: <http://dsp-psd.pwgsc.gc.ca/Collection/H46-2-98-220E.pdf>, accessed on 8/21/10. Extinction at 1.135 g/m².