




## Benjamin Schmidt

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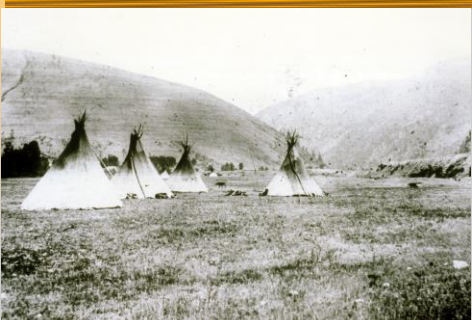
Air Quality Specialist  
Missoula City-County Health Department  
[www.missoulacounty.us/airquality](http://www.missoulacounty.us/airquality)

FNSB's 2<sup>nd</sup> Clear the Air: Home Heating Forum & Expo  
September 23, 2017




## Historic Missoula Valley

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## Particulate Pollution in the Good Old Days

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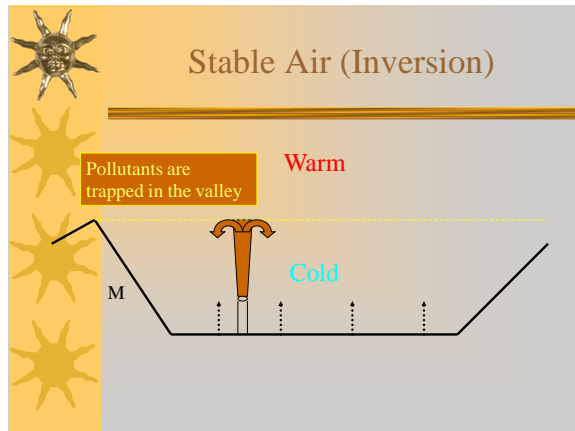
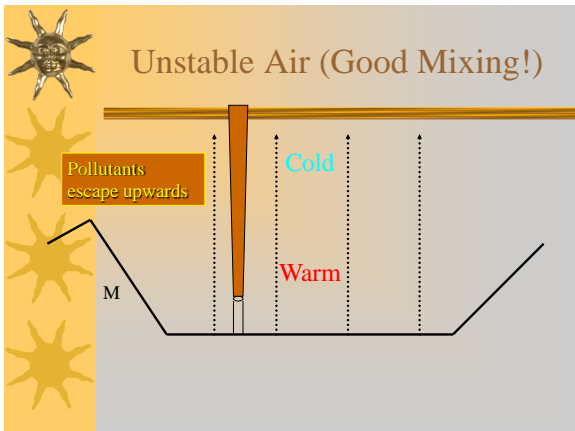



## Topography and Inversions Trap Air Pollutants

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★ Mountain Valley Topography

- City in a Bowl
- Strong Winter Inversions
- Woodstoves, Motor Vehicles, Industry etc.
- Spring and Summer Heat Outs (turn on the furnace – increased energy improves dispersion)





*Missoula Air Pollution History*

- ★ 1968 Montana Clean Air Act
- ★ 1969 Missoula County becomes primary responsible party for air quality
- ★ Montana Air Pollution Study: Children's Health Effects, 1977-1980
  - Children in Missoula had poorer lung function

*Missoula Makes Top Ten*

*Wood Stoves: 1975 to 1986*

- ★ Oil Embargoes Increased Wood Stove Use Dramatically
- ★ Health Studies Completed
- ★ Wood Stove Use Surveys
- ★ Education
- ★ Voluntary Wood Stove Curtailments
- ★ Air Chemical Mass Balance Studies Completed



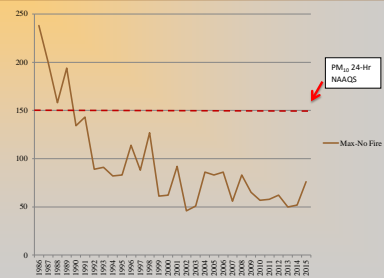


## Wood Stoves: 1986 to 1994

- \* Wood Stove Use Surveys
- \* Education
- \* Wood Stove Installation Rules
- \* Air Alert System Incorporated into rules
- \* Mandatory Wood Stove Curtailments
- \* Enforcement Part of Solution
  - Two Person Teams for Wood Stove Emission Checks



## Boyd Park Maximum 24-Hour $PM_{10}$ No Wildfire Data 1986-2015



## Rule Changes – 1994

- \* Only pellet stoves allowed in the urban area
- \* Wood stove removal program for older devices
- \* No new wood stove Air Alert permits
- \* Large wood central heating boilers possible



## Other Measures & Resources

- \* Reduce Need for Heating
  - super insulation
  - passive solar heating
  - appropriately sized and installed eaves
  - wind breaks
- \* Ground Source Heat Pumps
- \* Natural gas
- \* Community Heating Systems
- \* Subdivision Review
  - Heating and Energy Recommendations in Covenants



## Solid Fuel Burning Devices 2010 Rule Update

- \* Require all new solid fuel burning devices throughout Missoula County to get a permit.
- \* Adopt minimum emissions standards for solid fuel burning devices installed anywhere in the county.
- \* Expand restrictions and enforcement for solid fuel burning device curtailment to the Air Stagnation Zone for Stage I Alerts, and to Impact Zone M for Stage II Warnings.
- \* Larger wood boilers that meet emission guidelines still allowed. Most would need to be over 1,000,000 Btu per hour heat input.

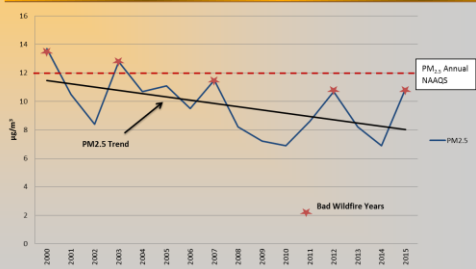


## $PM_{2.5}$ Ambient Standards

- \* NAAQS for  $PM_{2.5}$ 
  - Annual Standard =  $12 \mu\text{g}/\text{m}^3$  ( $15 \mu\text{g}/\text{m}^3$  is old standard, 2012)
  - 24-hour Standard =  $35 \mu\text{g}/\text{m}^3$  ( $65 \mu\text{g}/\text{m}^3$  is old standard, 2006)
- \* No Montana Ambient Air Quality Standard (MAAQS) for  $PM_{2.5}$
- \*  $PM_{2.5}$  is a regulated air pollutant and the county is required to maintain compliance with the NAAQS. Therefore, MCCHD must address  $PM_{2.5}$ .
- \* The 24-hour (daily) standard is threatened throughout western Montana.



### Missoula Annual Average $PM_{2.5}$ Levels 2000-2015



### Missoula Winter $PM_{2.5}$ Source Contribution Estimates, 2006-2007

