



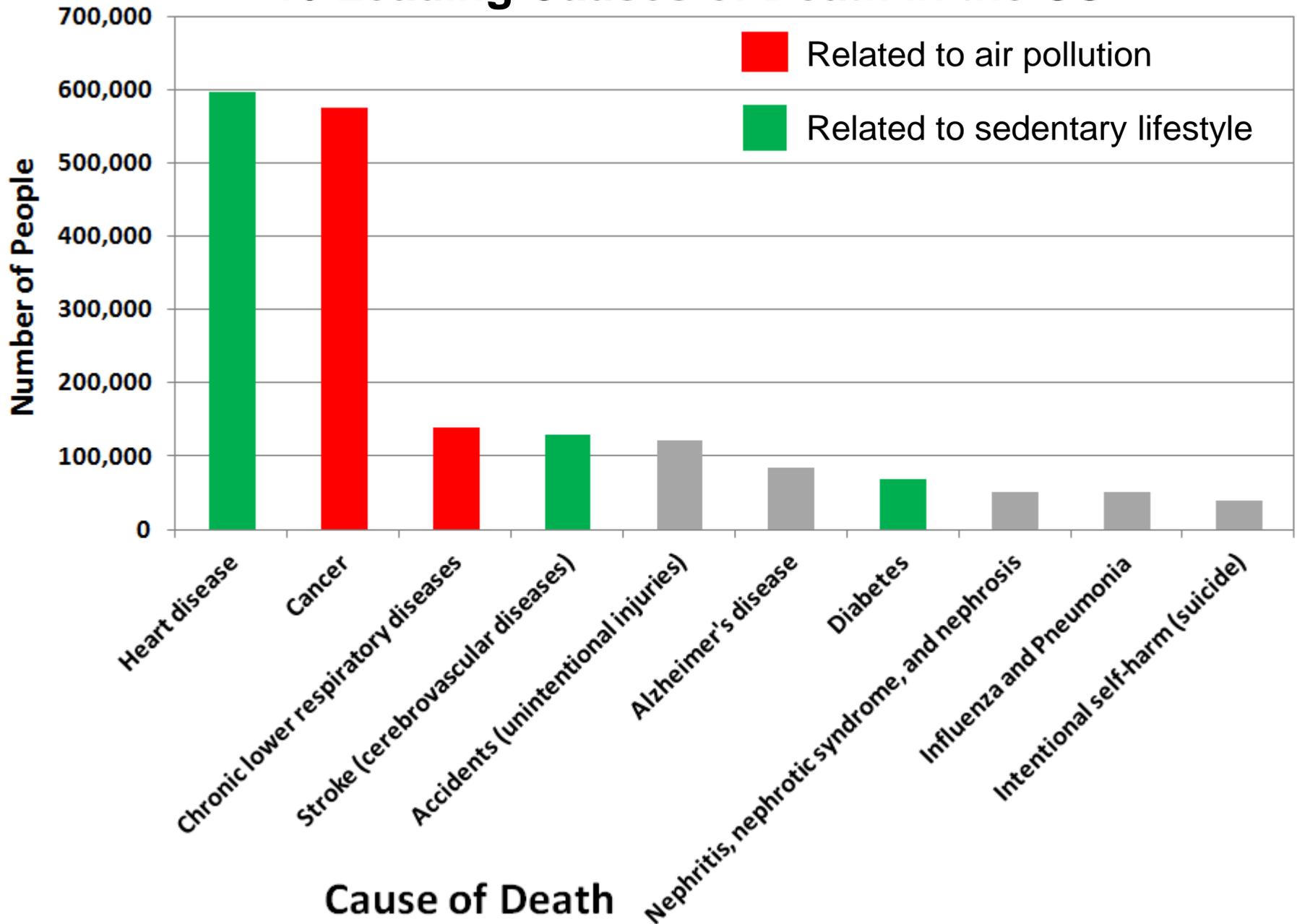
Changing Weather in the SW New Mexico Mountain Range: Impacts to Health

Dr. Dave DuBois

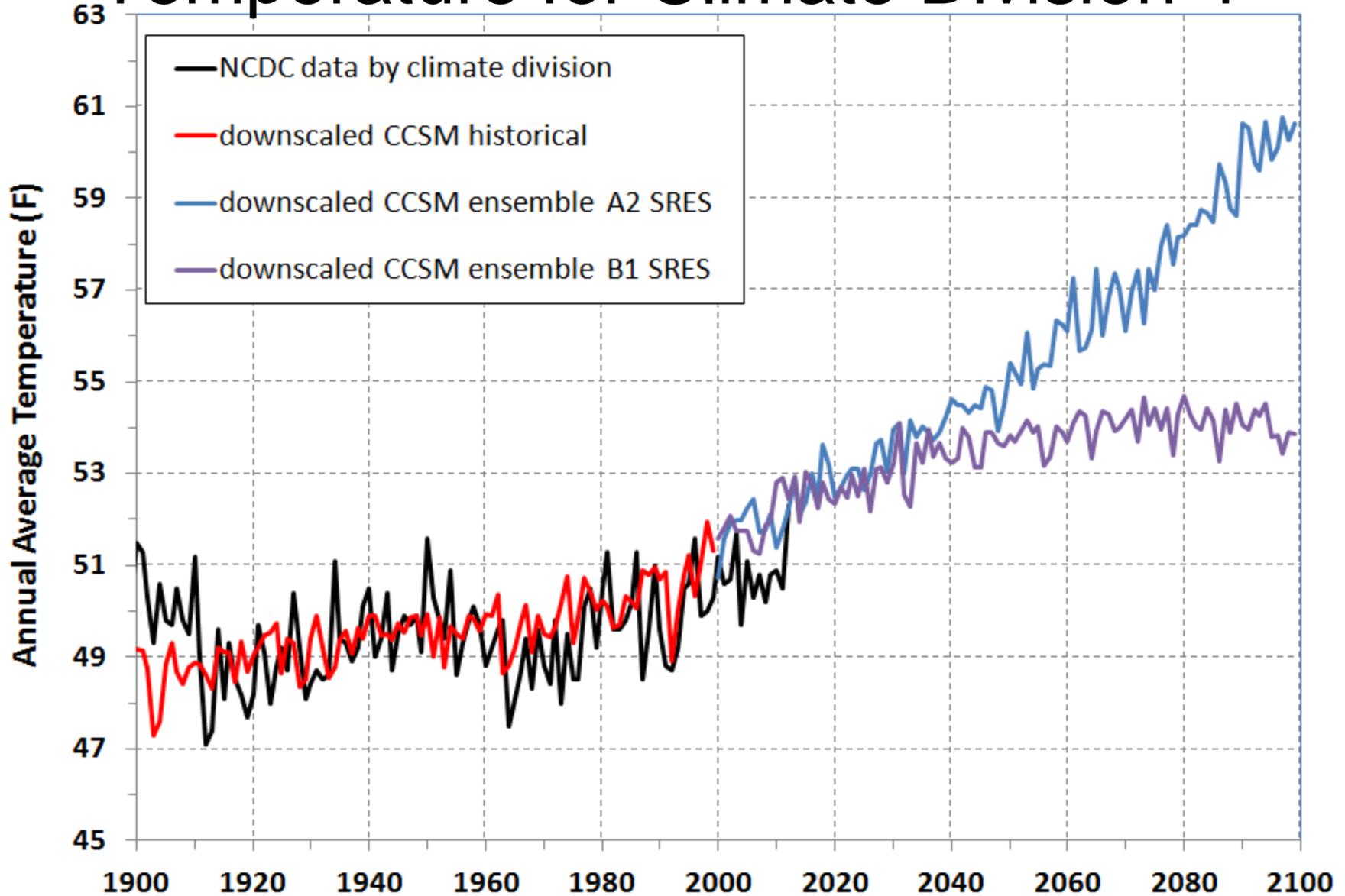
New Mexico State Climatologist

Presented at the community meeting on a Sustainable
Silver City
April 10, 2013

10 Leading Causes of Death in the US



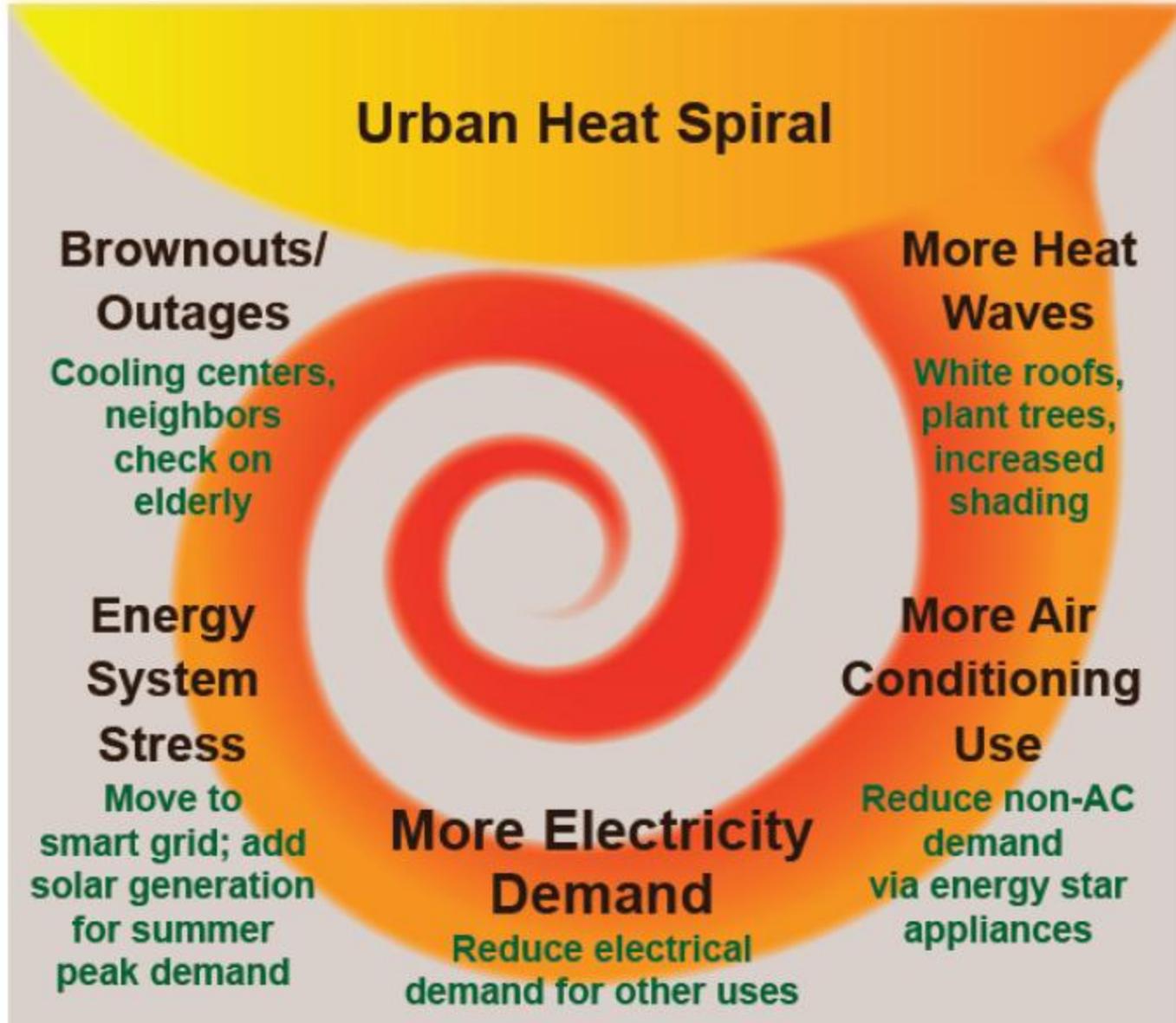
Temperature for Climate Division 4



Climate Change Impacts to Health

- Heat waves
- Extreme weather events
- Increases in particulate matter
- Increases in ozone
- Changes in allergens
- Food-borne diseases
- Water-borne diseases
- Animal-borne diseases

Impacts to our infrastructure



2002



2004



Photographer: Craig D. Allen , USGS

Wildfires

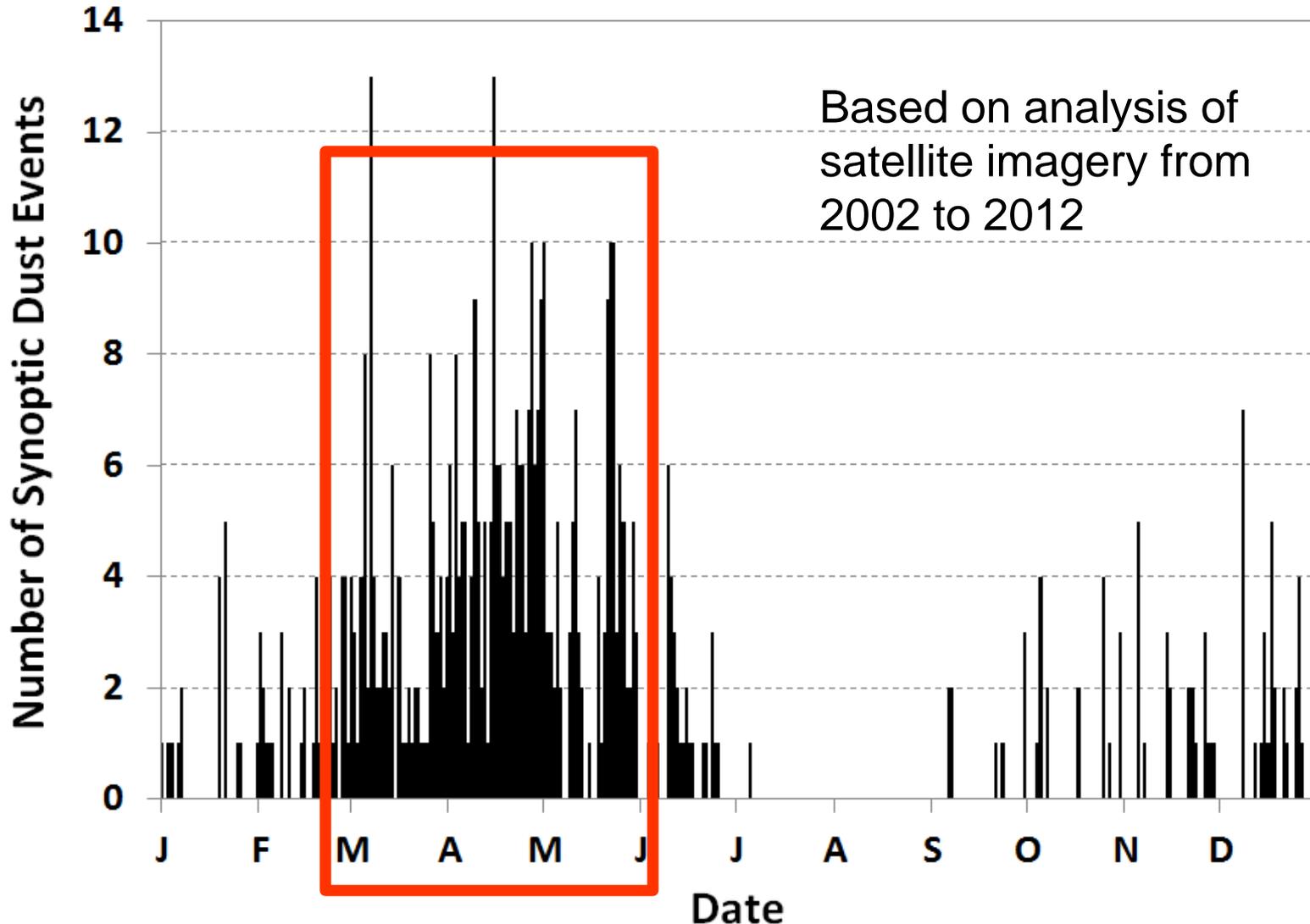
- **Who is at highest risk?**
 - Heart or lung disease, COPD, emphysema, or asthma
 - Older adults and children
- **Protect yourself**
 - Pay attention to air quality reports/advisories
 - Use visibility guides
 - Stay indoors if advised
 - Don't add to indoor pollution
 - Follow doctor's advice



Health, Safety, and Air Quality

- Major Impacts to
 - Human health
 - Travel safety
 - Worker down time
- 2012 wildfire size was about 1.5x the 10-year average (based on 2001-2010)
- 2011 and 2012 had above average number of dust storms in southern NM and west TX
- March 18, 2012 dust storm was worst since 2003
 - More than 10x EPA standards for 24-hour PM₁₀

Spring dust events



Mainly in March, April and May

Health Effects of Dust

- A recent study linking dust levels in El Paso with hospital admissions (Grineski et al. 2010)
 - Dust events were significantly associated with children's acute bronchitis admissions
 - Dust and low wind events were associated with increased odds of hospital admissions for asthma and acute bronchitis amongst all ages and children, and the same was true for adults and dust
 - Low wind events were significantly associated with children's asthma hospitalizations

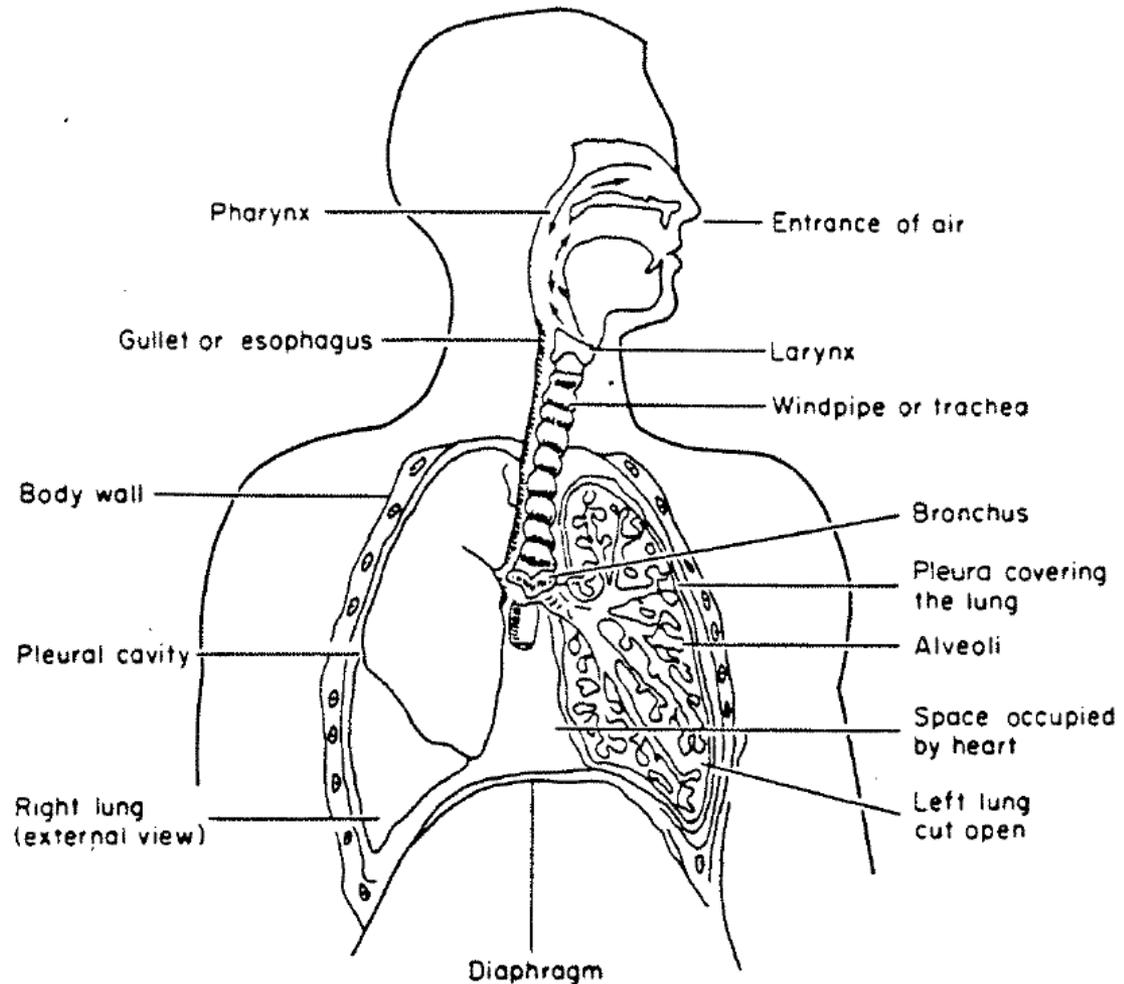
Inhalation Pathways

- Important question is how far does it go into the lung?

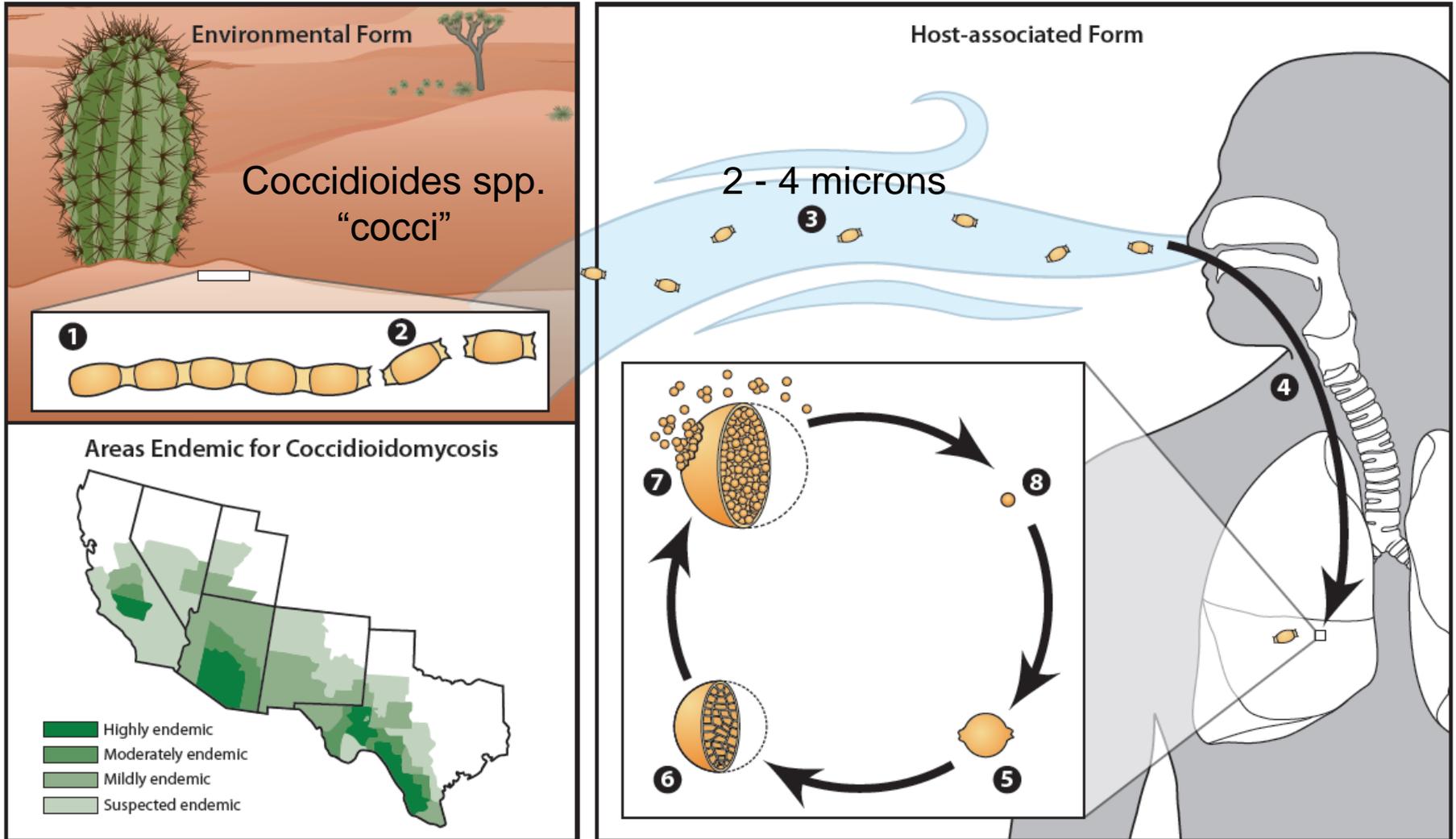
EPA has two health indicators for particulates.

PM10 – particles less than 10 microns in diameter

PM2.5 – particles less than 2.5 microns in diameter



Coccidioidomycosis "Valley Fever"



Cocci in New Mexico

- Expected that Coccidioidomycosis (Valley Fever) is underreported in New Mexico
 - Misdiagnosed (pneumonia, COPD, bronchitis, asthma, TB, lung cancer)
 - Ineffective treatments (often antibiotics)
- Education and awareness campaign for clinical providers in New Mexico and public
 - Increase testing and diagnosis
 - Increase reporting

Coccidioides endemic zone



Fisher et al.
2007

New Mexico Department of Health Cocci Initiative

- Education and awareness campaign for clinical providers in New Mexico
 - Statewide KAP survey of NM licensed clinicians
 - CME training in Las Cruces, May 2010, 65 attendees
 - Distribution of educational material from Valley Fever Center of Excellence
- Public education and awareness campaign
 - Billboards (in conjunction with TB)
 - Documentary
 - Educational material in provider offices
- Increase testing and diagnosis
- Increase reporting

Mitigation Options for Local Dust

- Tested dust control options in Las Cruces
- Tried 5 types over 1 year (\$ to \$\$\$\$)
- Pecan mulch (\$) works well
- Polymer solution works well but \$\$\$\$



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