

Particulate Matter < 2.5 μm In Greater Cincinnati

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(HCDOES)**

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Introduction and Outline

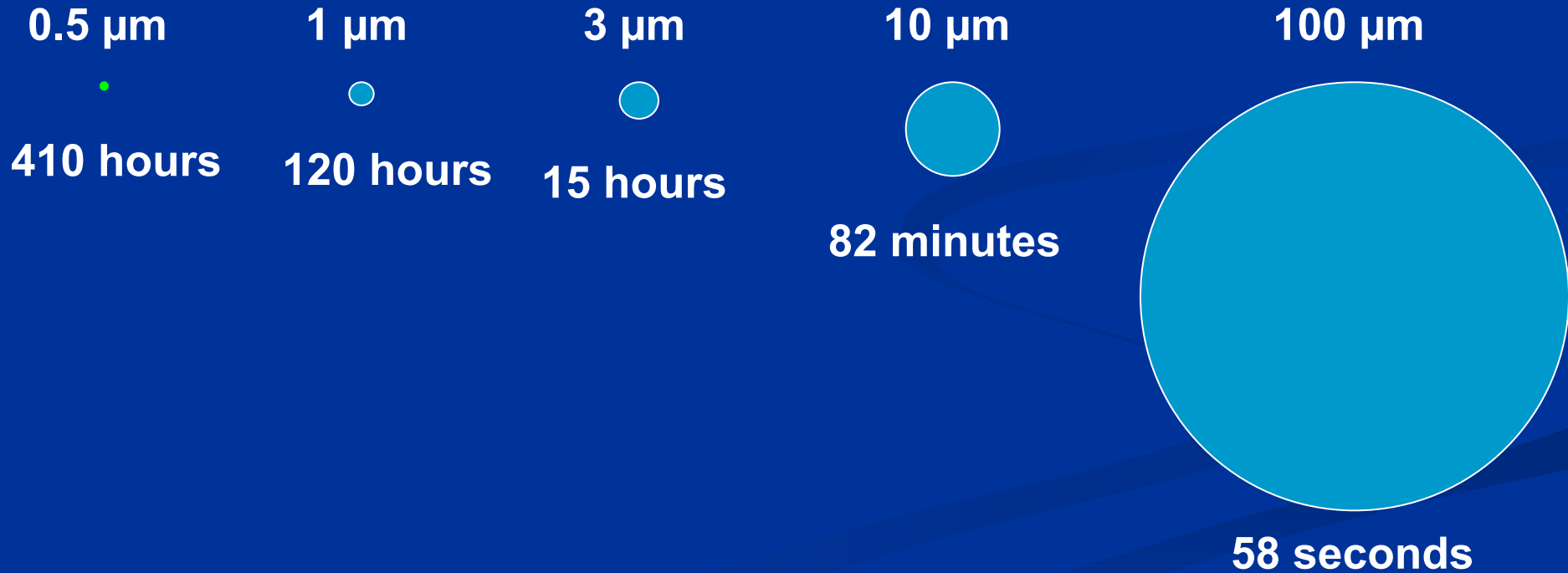
- **Particle Size/Descriptors**
- **Measurement and Analytical Techniques**
- **Speciation of SW Ohio PM_{2.5}**
- **Measurement Stations Operated by HCDOES**
- **Air Pollution Sources in the Greater Cincinnati Area**
- **What's Being Done?**

Particle Size/Descriptors

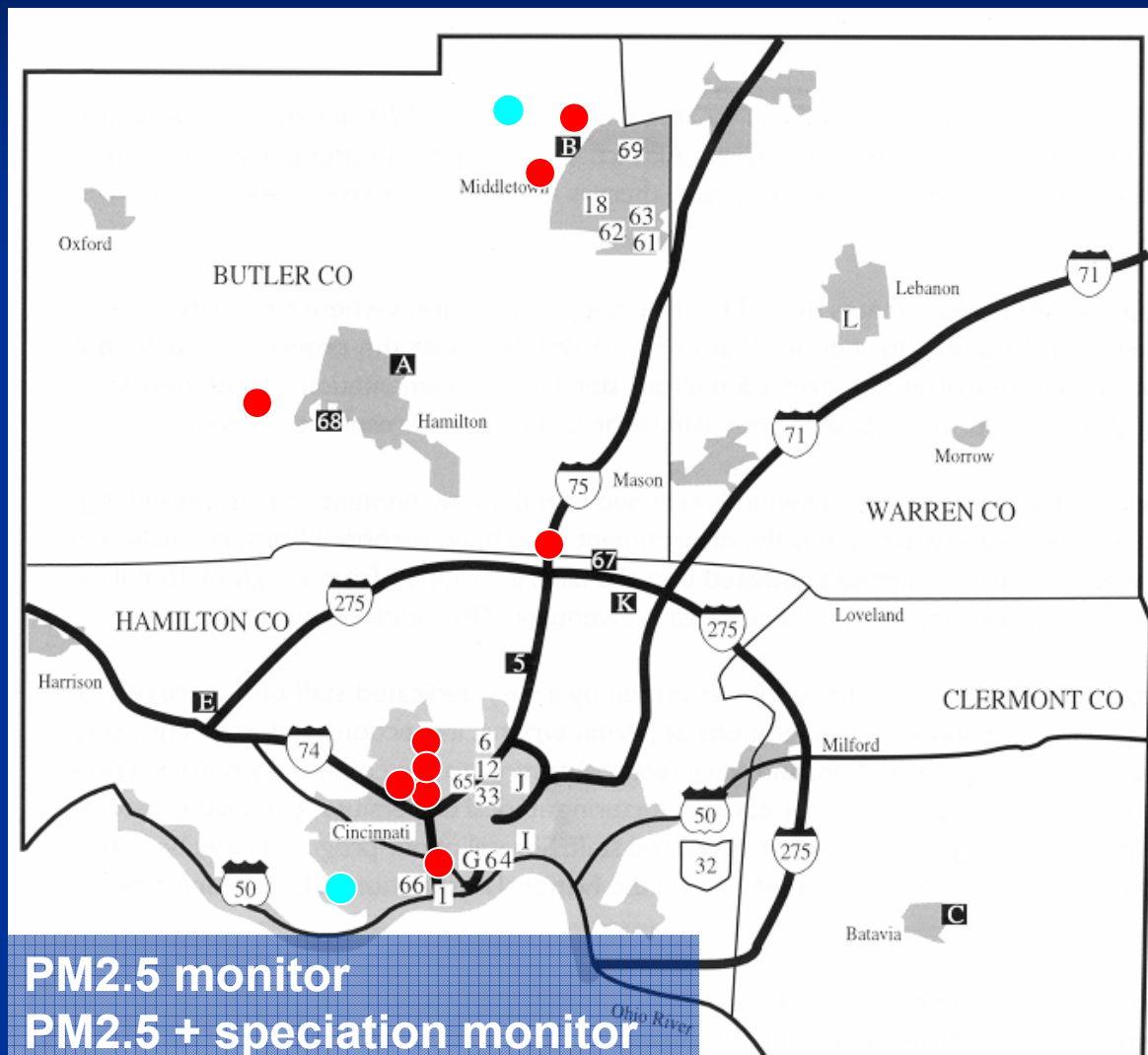
- Particles in the ambient air according to their penetration into a human respiratory system:
 - TSP (Total Suspended Particles): $d_a < 40 \mu\text{m}$
 - PM10: $d_a < 10 \mu\text{m}$
 - PM2.5: $d_a < 2.5 \mu\text{m}$

Particle Size/Descriptors

Time to settle 50 feet (density = 1 g/m³)



PM2.5 Measurement Stations Operated by HCDOES



Measurement and Analytical Techniques

- Particles are collected on filters
- Three types of filters
 - Teflon
 - Quartz
 - Nylon
- Teflon filters are analyzed for metals
- Quartz filters are analyzed for organic matter and elemental carbon
- Nylon filters are analyzed for ions (sulfate, nitrate, ammonia)

PM2.5 Sampler & Speciation

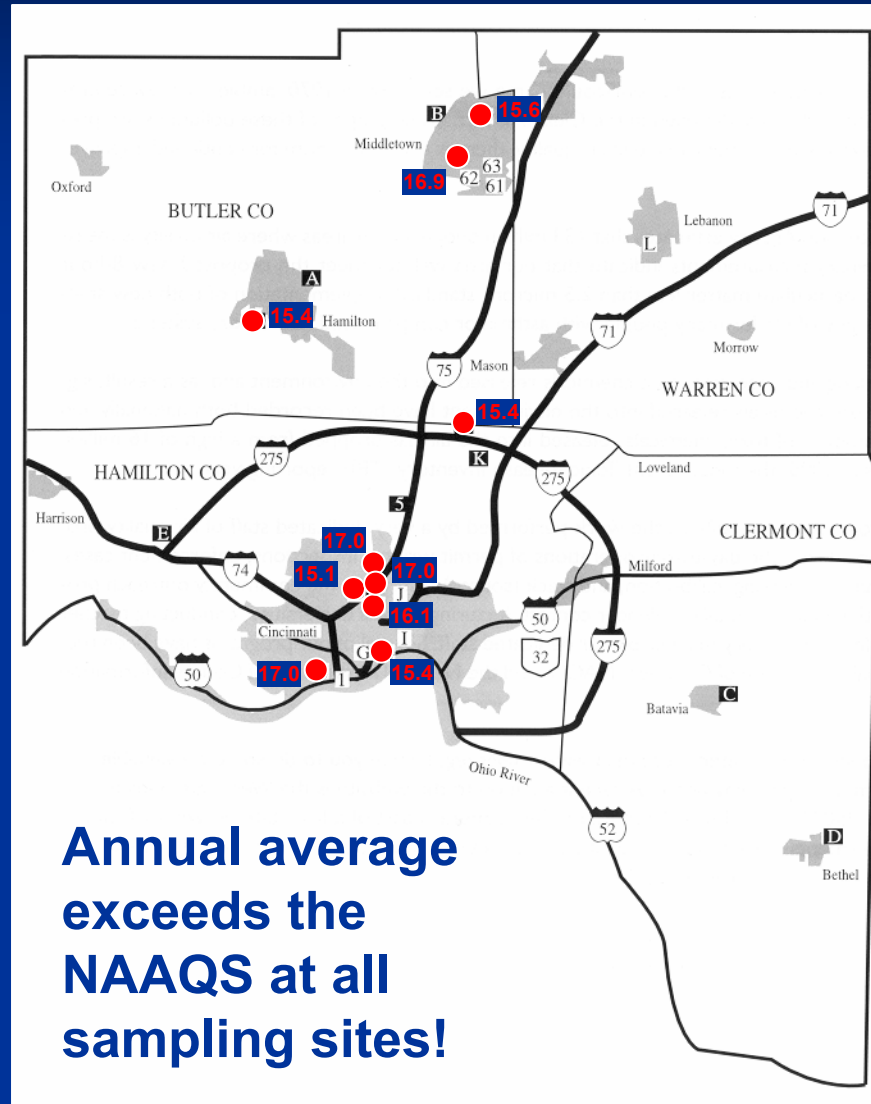


PM2.5 Attainment Status

Greater Cincinnati Area

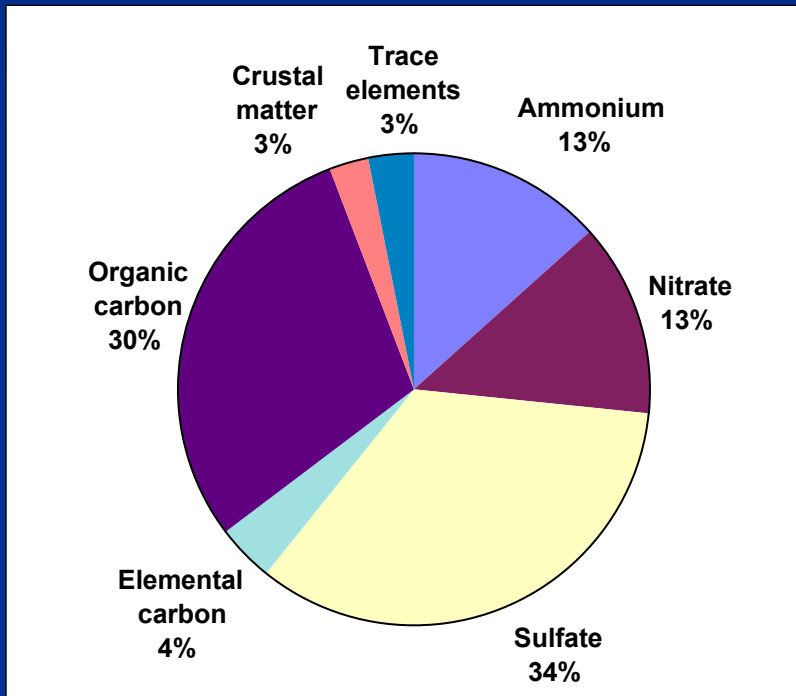
	Current Standard ($\mu\text{g}/\text{m}^3$)	New Standard ($\mu\text{g}/\text{m}^3$)	Attainment Status (Current Standard)	Attainment Status (New Standard)
Annual PM2.5	15	15 (no changes)	No	No
24-Hour PM2.5	65	35	Yes	No

Concentrations Across the Greater Cincinnati Area

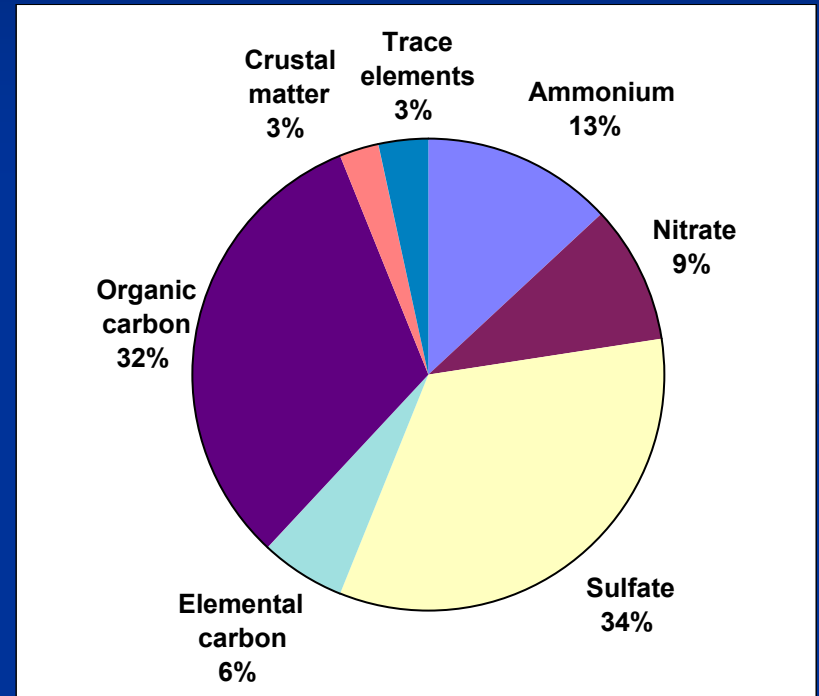


PM2.5 Mass Balance




















Middletown



Lower Price Hill



Major Sources

	Sources of Pollution				
	Power Plants	Local Industry	Gasoline Vehicles	Diesel Vehicles	Agricultural Activities
Sulfate					
Organic Carbon					
Ammonium and Nitrate					
Elemental Carbon					
Trace Elements					
Crustal Matter					

What's Being Done?

- **NO_x SIP Call - 2004**
- **Sulfur in gasoline - 2005**
- **Sulfur in diesel fuel - 2006**
- **On-road HD diesel engine rule - 2007**
 - **NO_x & PM**
- **Off-road HD diesel engine rule - 2008**
 - **NO_x & PM**