IDAHO DEPARTMENT OF HEALTH & WELFARE

DIVISION OF PUBLIC HEALTH

Health-Based Assessment for Air Quality: Docket No. 58-0101-1601- Negotiated Rulemaking May 18, 2016

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Idaho Department of Health and Welfare

Environmental Health Education and Assessment Program

Environmental Health Education and Assessment Program (EHEAP), IDHW

Who We Are

- Within IDHW's Bureau of Community and Environmental Health (BCEH)
- CDC-funded state partner with the federal Agency for Toxic Substances and Disease Registry (ATSDR)/Centers for Disease Control and Prevention (CDC)

What We Do

- Provide expert consultation and health assessments of community exposures to hazardous contaminants
  - When mandated- all National Priorities List sites in accordance with CERCLA (Superfund)
  - Upon request
    - Regulators (EPA, IDEQ)
    - Local Health Departments
    - Governor's Office
  - Upon public petition

EHEAP

We Can Provide

- Independent and objective environmental health evaluations based upon the best available science and data
- Health education to minimize exposure and raise community awareness
- Recommendations to the EPA, IDEQ, and other regulatory and public health agencies for further actions to address issues

We Cannot Provide

- Remediation or “site clean-up”
- Legal advice
- Enforcement of regulatory standards
- Medical attention or health care services

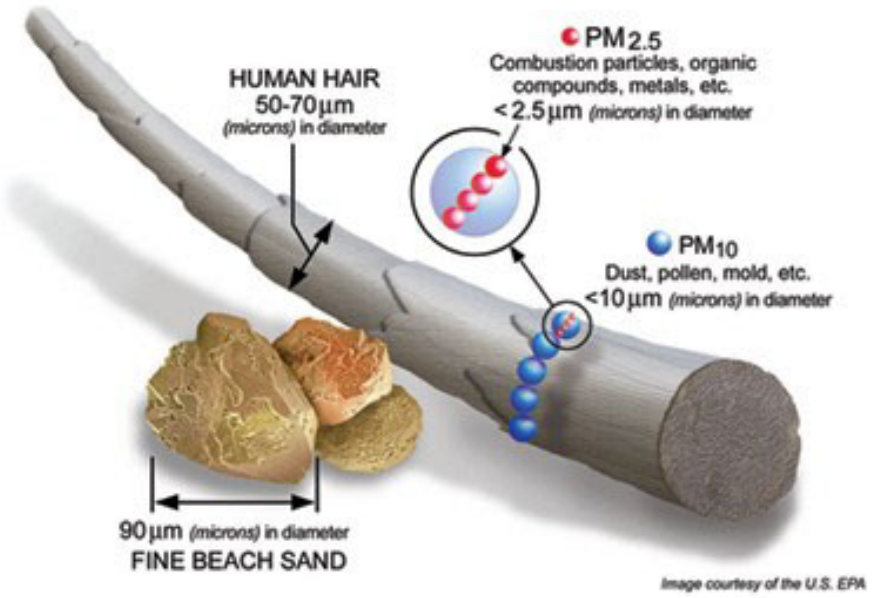
A question posed to EHEAP from IDEQ:

In very simple terms: Do PM 2.5 exposures result in worse human health effects than ozone?

NAAQS values*	
PM 2.5 (24-hr average):	35.0 µg/m^3
O_3 (8-hr average):	0.07 ppm

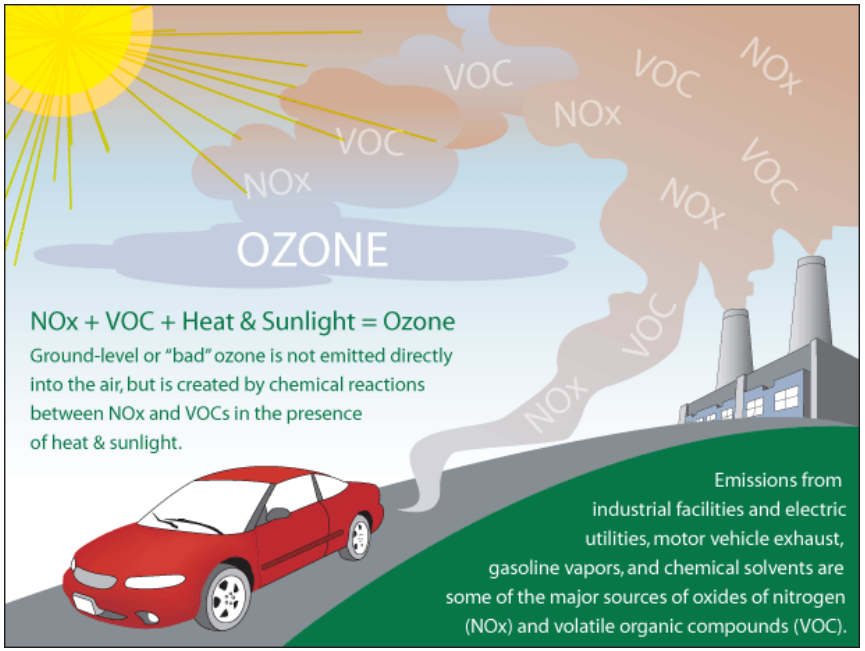
*Above this value, EPA begins cautioning at-risk groups. Values below the NAAQS do not warrant issuing health advisories.

What is PM 2.5, What is Ozone?



Physical Particle
(carbon*, nitrates, sulfates, crustal)
*major component in the U.S. NW

EPA, 2003 Understanding PM



Water-Soluble Gas

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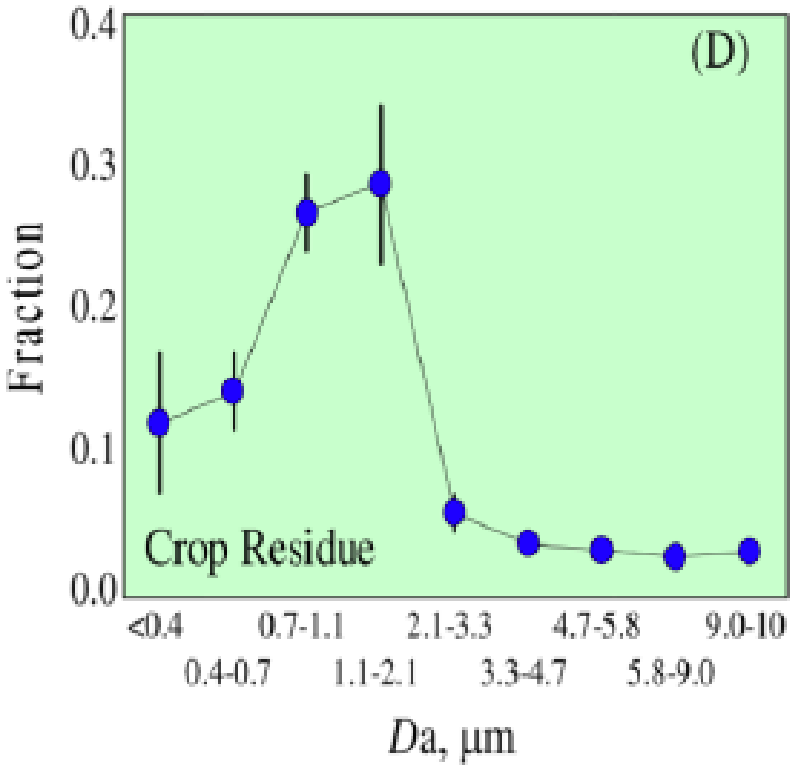
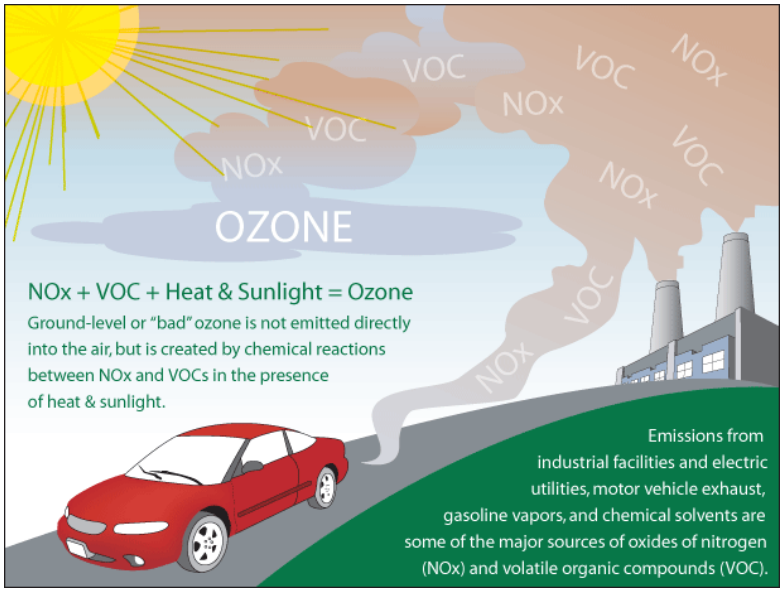


Shen et al. 2012
Environ. Sci. Technol.



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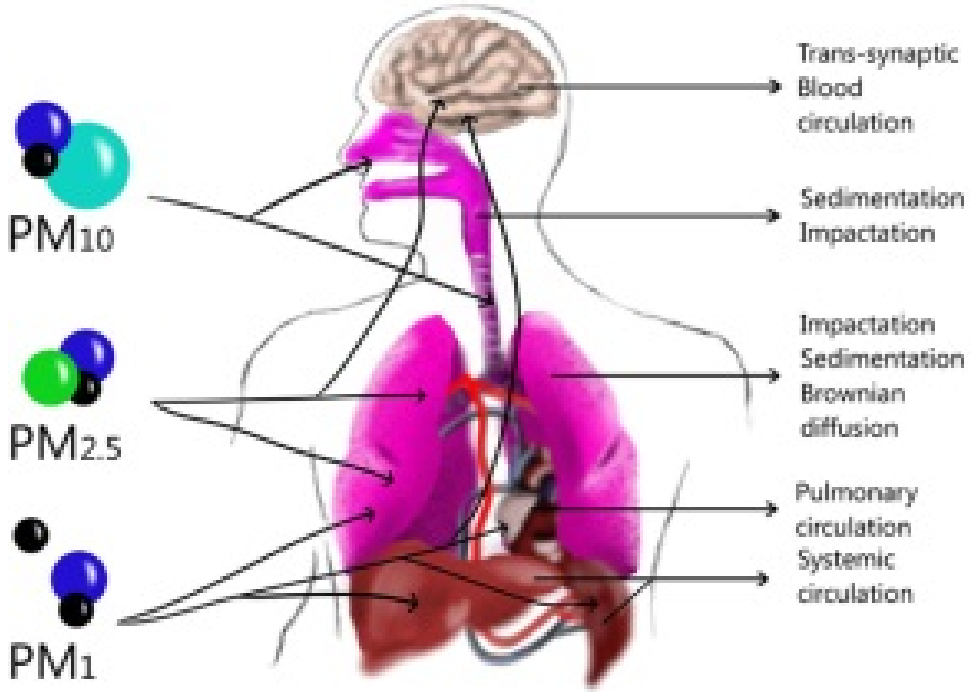

Water Solubility/resp. target	Compound
High/ nose, mouth, pharynx, larynx	Aldehydes Nitrates Sulfates Chlorine SO_2
Medium/ trachea, bronchi	OZONE (O_3)
Low/ bronchioles, alveoli	CO O_2

PM 2.5: Physical Particle
(carbon*, nitrates, sulfates, crustal)
*major component in the U.S. NW
EPA, 2003 Understanding PM

Health Impacts

PM 2.5

- Heart Failure
- Coronary Artery Disease
- Stroke
- Irregular Heartbeat
- Asthma
- Chest Pain
- Fatigue
- Premature Death

Ozone

- Chronic Obstructive Pulmonary Disorder (COPD)
- Asthma
- Coughing
- Congestion
- Sore Throat
- Premature Death

How do PM 2.5 and O_3 compare?

Nationwide U.S. Study of pollution-related asthma ER visits (2005; all year):

PM 2.5-related ER asthma visits:	110,000
O_3-related ER asthma visits:	19,000

Air Data + CMAQ (EPA); ER data + NMMAQS (EPA)

Fann et al. Risk Anal. 2012 (EPA)

How do PM 2.5 and O_3 compare?

NYC DOH study of pollution-related health impacts (2005-2007; all year):

Health Effects	# of Events/year
Premature Death	3,200
Hospital Admissions (Respiratory)	1,200
ER Visits Asthma (under 18)	2,400
ER Visits Asthma (18 and older)	3,600
Hospital Admissions (Cardiovascular)	920

Health Effects	# of Events/year
Premature Death	400
Hospital Admissions (Respiratory)	870
ER Visits Asthma (under 18)	1,800
ER Visits Asthma (18 and older)	2,900

(Air Data+model; Med Data+NMMQS)
NYC Health, 2011

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How do PM 2.5 and O_3 compare?

Nationwide U.S. Study (2005, all year):

PM 2.5-related premature deaths: 130,000

O_3-related premature deaths: 4,700

Fann et al. Risk Anal. 2012

(EPA)

Air data + CMAQ; Med Data + NMMAQS

Study of seven eastern U.S. metropolitan areas NYC, CHI, DC, Phili, ATL, Boston, Detroit (2007; June, July August only):

PM 2.5-related premature deaths: 2000 (700-3,854)

O_3-related premature deaths: 900 (470-1,353)

Hou et al. Environ. Res.

2015 Air Data + CMAQ; Med Data+ WONDER (CDC)

Conclusions

1. Both PM 2.5 and ozone are air pollutants that can harm your health.
2. Mechanistic Toxicology- Exposures to ambient levels of PM 2.5 have the potential to result in health effects that are of greater serious threat to immediate health than ozone.
3. Morbidity Epidemiology- PM 2.5-related exposures aggravate chronic respiratory conditions, such as asthma, more frequently than ozone-related exposures.
4. Mortality Epidemiology- PM 2.5-related premature deaths outnumber ozone-related deaths.

Contact Me

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