



Combined Heat & Air Quality Emergency Event Guidance for California

A Needs Assessment & Step-Wise Guide for Public Health and
Environmental Health Officials*

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*This project is still in progress-the contents of this presentation reflect where the project stands as of 06/27/2012

Overview

- A Little Bit About Me
- Some Definitions
- The Questions
- Introduction to the issue and relevant background
- Methodology
- Themes/Trends
- Q&A

A little About Me

Current UC Davis Master of Public Health student

Previous Master of Social Welfare from UC Berkeley

Interested in the interaction between people and the environment

Reduce negative impacts of human health

Reduce negative impacts on the environment

Interested in air quality

Bring a comprehensive systems perspective to this project

http://mph.ucdavis.edu/mph_source/stud_bio.php?profile=87



Photo from UC Davis Picnic Day MPH Tabling Event, April 2012

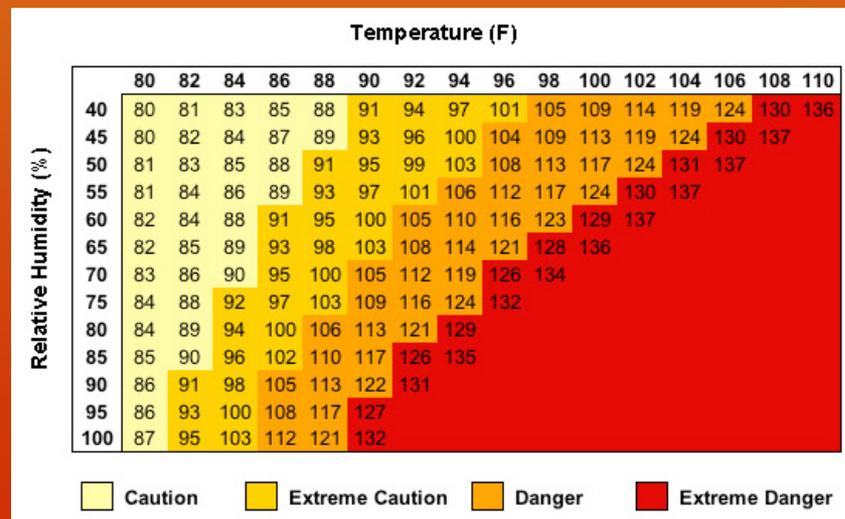
Definitions & Abbreviations

- PM_{2.5}-Fine particulate matter
- Ozone-At ground level=bad for human health
- Heat Index (HI)-Real temperature w/ humidity accounted for to give “real feel” heat reading
- Air Quality Index (AQI)-A reading of PM_{2.5} and/or Ozone concentrations to assess current or projected air quality
- **Needs Assessment-determining gaps and needs of the people a plan is intended to impact**
- NWS-National Weather Service
- ARB-Air Resources Board
- CalE.M.A.-California Emergency Management Agency
- CARPA-California Air Resource Planning Alliance

The Questions

1. When heat, PM_{2.5} and ozone are present at elevated levels at the same time, is there a synergistic effect that occurs (on the human body)?
2. Does one of the three act as the driver?
3. If there is a synergistic effect, are the current standards conservative enough to protect public health?
4. Ultimately, how to combined the AQI & Heat Index?

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
<i>When the AQI is in this range:</i>	<i>...air quality conditions are:</i>	<i>...as symbolized by this color:</i>
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon



Introduction

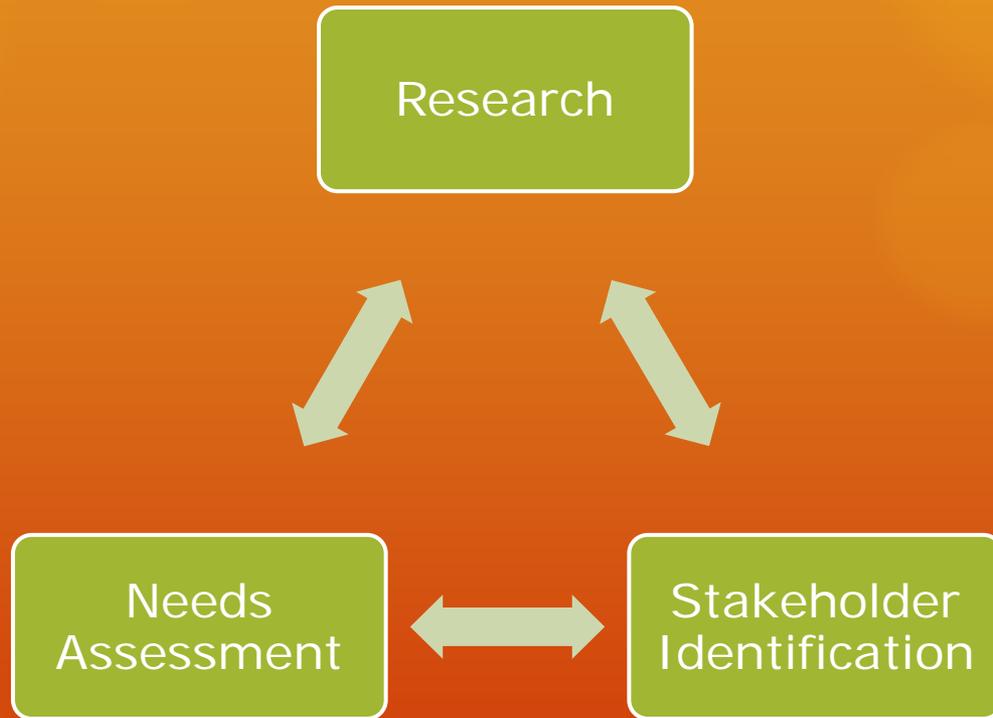


- Why this project?
 - Wildfires and heat waves of 2008
- Who asked for the new standards?
 - Placer County Department Of Public Health
- About Placer County
 - Includes suburban and rural communities
 - From Roseville up through Tahoe
 - Multiple NWS oversight; Placer Air Pollution Control District
 - Diverse topography (valleys, foothills, wide-range of elevation)
 - Likely wildfire location; heavy diesel truck traffic up I-80; ozone travels from the valley to the foothills and then settles
- Why do we need new standards?
 - Because heat waves and air quality have a strong relationship with climate change and we need to be prepared
 - The research suggests negative health impacts at lower temps

Background

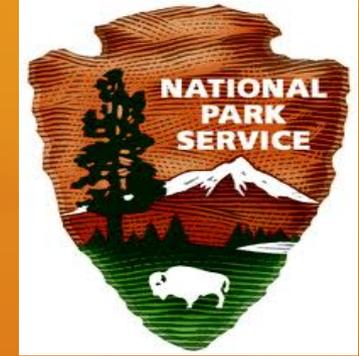
- Heat emergencies kill more Californians than all other natural disasters combined (140 deaths in 13 days from July 2006 heat wave)
- Poor air quality, especially from wildfire smoke, is most common during times of extreme heat
- Ozone more of a problem during summer
- Although it is hotter later in summer, most ED visits and fatalities occur during first hot days (acclimation?)
- Those most sensitive to heat are also most sensitive to poor air quality
 - Young children
 - The Elderly
 - Athletes
 - Those with chronic respiratory and cardiac conditions; diabetes; obesity; renal disease
- We know that heat, PM_{2.5} and ozone effect the body in different ways
- 1999-2003 over 3,400 deaths attributable to heat In the U.S.
- Cardiovascular disease underlying cause in 57% of heat-related deaths
- 40% of deaths occurred in those over age 65
- Concerned with mortality and morbidity from emergency events
- Disparities between socioeconomic class exist due to lack of air-conditioning, etc
 - Hospitalizations for poorest communities 2-2.5 times more common

Methods-Phase One



The Stakeholders-“Expert Panel”

Meteorologists
Climatologists
Toxicologists
Air Pollution Control Districts
Health Educators
National Park Service
State park Service
Epidemiologists
Risk Communication Experts
Public Health Campaign Experts
Cal EPA & ARB Staff
CARPA Committee Members
Healthcare Professionals
Other Public Health Professionals



The Stakeholders- "Community Panel"

Faith-based communities

United Auburn Indian Community (UAIC)

Placer County Department of Education

Sports facilities/Coach groups

Summer Camps

Parks & Recreation

Child care

Senior Care



Methods-Phase Two

Recommendations for Schools and Others on Poor Air Quality Days* Air Quality Index (AQI) Chart for Ozone (8-hr standard)					
ACTIVITY	0 to 50 GOOD	51 to 100 MODERATE	101 to 150 UNHEALTHY FOR SENSITIVE GROUPS	151 to 200 UNHEALTHY	201 to 300 VERY UNHEALTHY
Recess (15 min)	No Restrictions	No Restrictions	Make indoor space available for children with asthma or other respiratory problems.	Any child who complains of difficulty breathing, or who has asthma or other respiratory problems, should be allowed to play indoors.	Restrict outdoor activities to light to moderate exercise.
P.E. (1 hr)	No Restrictions	No Restrictions	Make indoor space available for children with asthma or other respiratory problems.	Any child who complains of difficulty breathing, or who has asthma or other respiratory problems, should be allowed to play indoors.	Restrict outdoor activities to light to moderate exercise not to exceed one hour.
Scheduled Sporting Events	No Restrictions	Exceptionally sensitive individuals should limit intense activities.	Individuals with asthma or other respiratory/ cardiovascular illness should be medically managing their condition. Increase rest periods and substitutions to lower breathing rates.	Consideration should be given to rescheduling or relocating event.	Event should be rescheduled or relocated.
Athletic Practice and Training (2 to 4 hrs)	No Restrictions	Exceptionally sensitive individuals should limit intense activities.	Individuals with asthma or other respiratory/ cardiovascular illness should be medically managing their condition. Increase rest periods and substitutions to lower breathing rates.	Activities over 2 hours should decrease intensity and duration. Add rest breaks or substitutions to lower breathing rates.	Sustained rigorous exercise for more than one hour must be rescheduled, moved indoors or discontinued.

Account for: heat, air quality, activity, sensitive groups

*This matrix is an example of what I aim to model my guidance after

Themes/Trends

- The importance of providing clear, simple instructions
- Somewhat difficult to get community participation
- Some schools are already thinking about these issues, but not in combination
- Web-based survey tools work well
- Seems to be a disconnect between alerts from NWS & public health depts* (no feedback loop)
- More of a focus on mortality than morbidity in the literature
- How to pool all the resources together?

*In terms of collecting data about whether or not the alerts were effective in preventing illness or death; this is likely due to the lack of resources to collect such data

Questions/Feedback

- Any questions?
- If you would like to provide me with any feedback please feel free to contact me:

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References & Resources

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*This is an abbreviated list of resources. If you wish to see my entire reference section please email me and I will be happy to provide it to you