
Breathe a Little Easier: Coordinating Response to Major Air Releases



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Outline

- Introduction to CARPA
- Data – How and what data to collect
- Data to Message – what do the data mean
- Message to Audience – getting the word out
- Moving forward – building coordination

What would you do if...

(group exercise)

What is CARPA?

Fed/state/local agencies working together to improve coordination of personnel & resources for responding to large air quality emergencies.



California Air Response Planning Alliance

Member Agencies



CARPA Functions

- Provide local air quality, public and environmental health agencies, and tribes the information/tools to support emergency response during major air releases or emergencies with air quality impacts
- Focus is on downwind community impacts
- Not an operational entity

CARPA History

- The idea for CARPA emerged after the 2003 SoCal wildfires
- Emergency response, air quality, and public health agencies were not well coordinated



CARPA History, *cont*

- Coordination improved in 2007 Trestle Fire: fed/state/RP coordinated sampling
- Coordination improved again in 2007 SoCal wildfires: coordinated fed/state/local PM sampling, air modeling, and data management



**Good start, but more is needed
(better coordination, training, data mang & timeliness)**

CARPA Goals

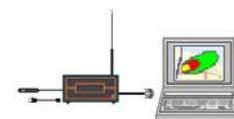
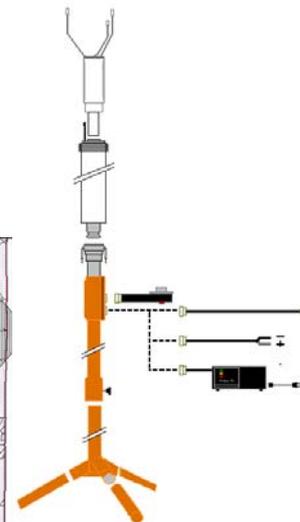
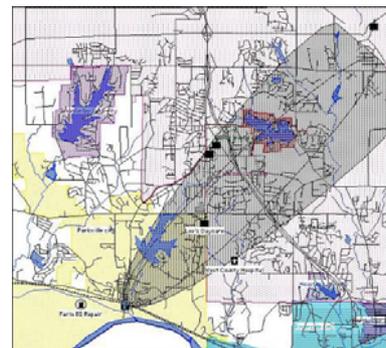
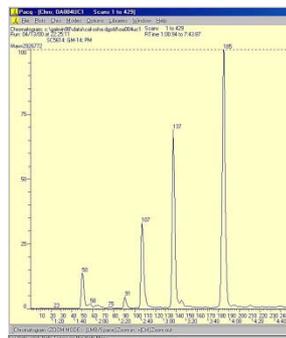
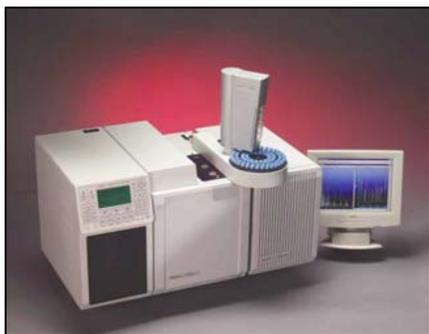
- 1st CARPA Summit held October 15-16, 2008 in Sacramento with over 200 attendees.
- Speakers and exhibitors based on CARPA coordination model
- Next steps: Developing “preferred practices” and coordination with local agencies and tribes.
- Goals: Member agencies to provide expertise, technical assistance and training, plus biannual conferences.

CARPA Model

1. *Data* -monitoring, modeling, lab, data mgmt
2. *Data to Message* -applying acute exposure health indices to data – eg, AEGs, PALs
3. *Message* -health messages, public advisories, evacuation and S.I.P. orders based on good data

Data

Best Technical Stuff



Data: Elements

- **Monitoring**

- Network, Mobile, Portable

- **Sampling/Analysis**

- Bench and mobile lab, various sampling media

- **Modeling**

- Plume and trajectory modeling

- **Chemistry**

- Inputs to models- reactions, rates

- **Meteorology**

- Current and forecast conditions

- **Information**

- Numbers, maps, diagrams, results of above

Data: Monitoring



Regular sensor updates received at Field Info Center, sensors w/GPS units, data graphically displayed on maps, charts, and tables, preset alarm levels.

Synchronizing Area RAE Network IDs



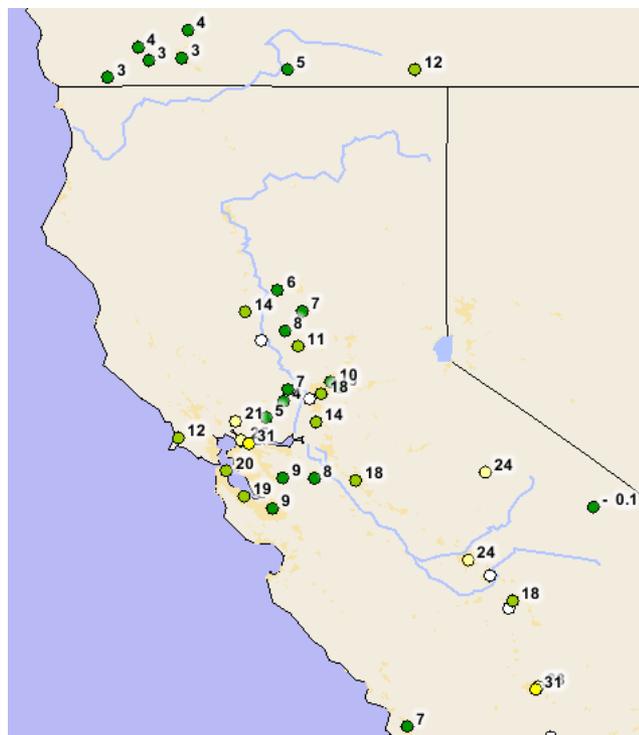
US EPA
ARB
Sac Metro Fire
Sac City Fire
Roseville Fire

Data: Monitoring

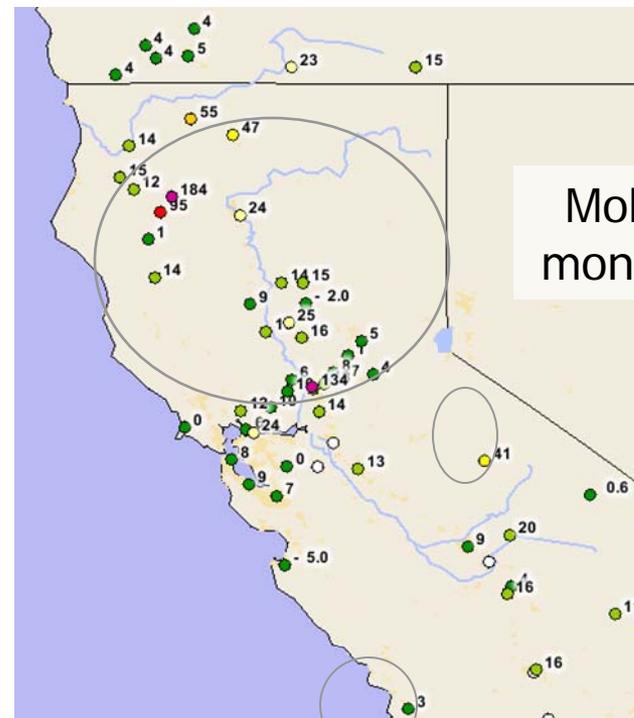


Data: **Monitoring** (Temporary Deployment)

Real-time data stream to EPA AIRNow and AIRNow-Tech



Early June 2008



Late July 2008

Hourly PM_{2.5} concentrations in ug/m³

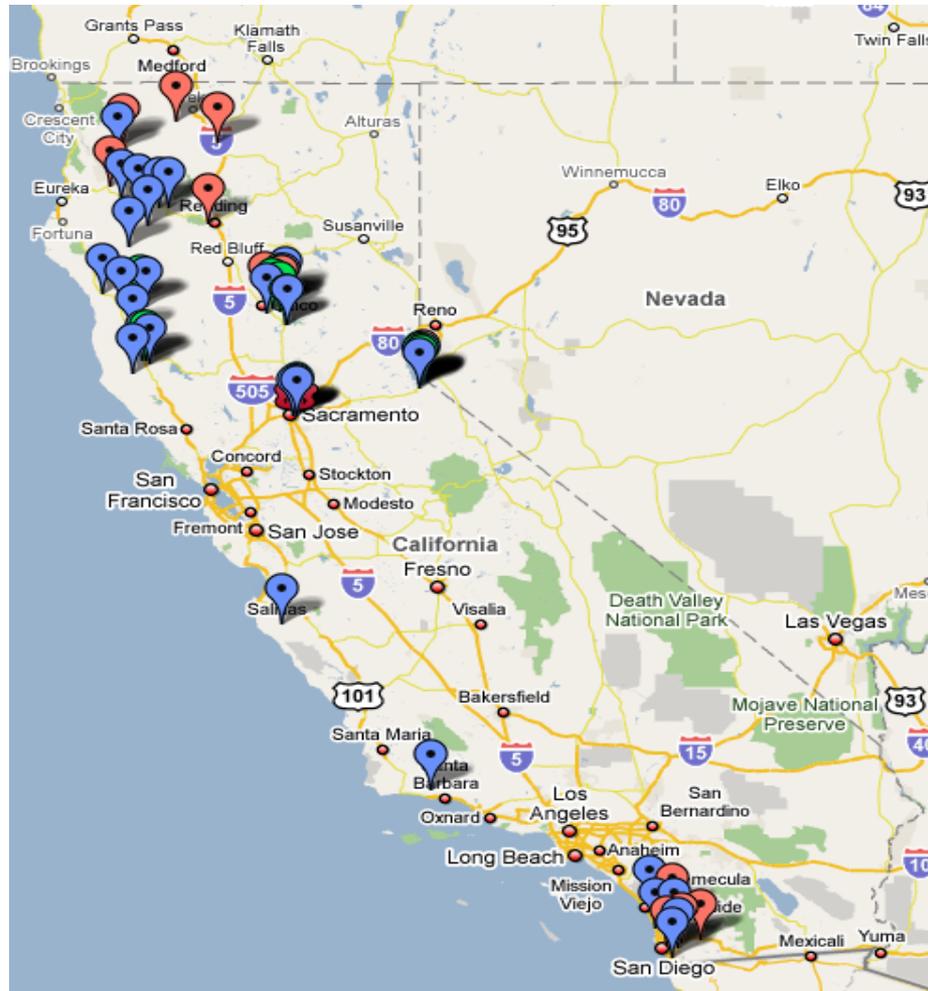
Data: Monitoring



Incident



2007-2008 Deployments



Data: Sampling/Laboratory

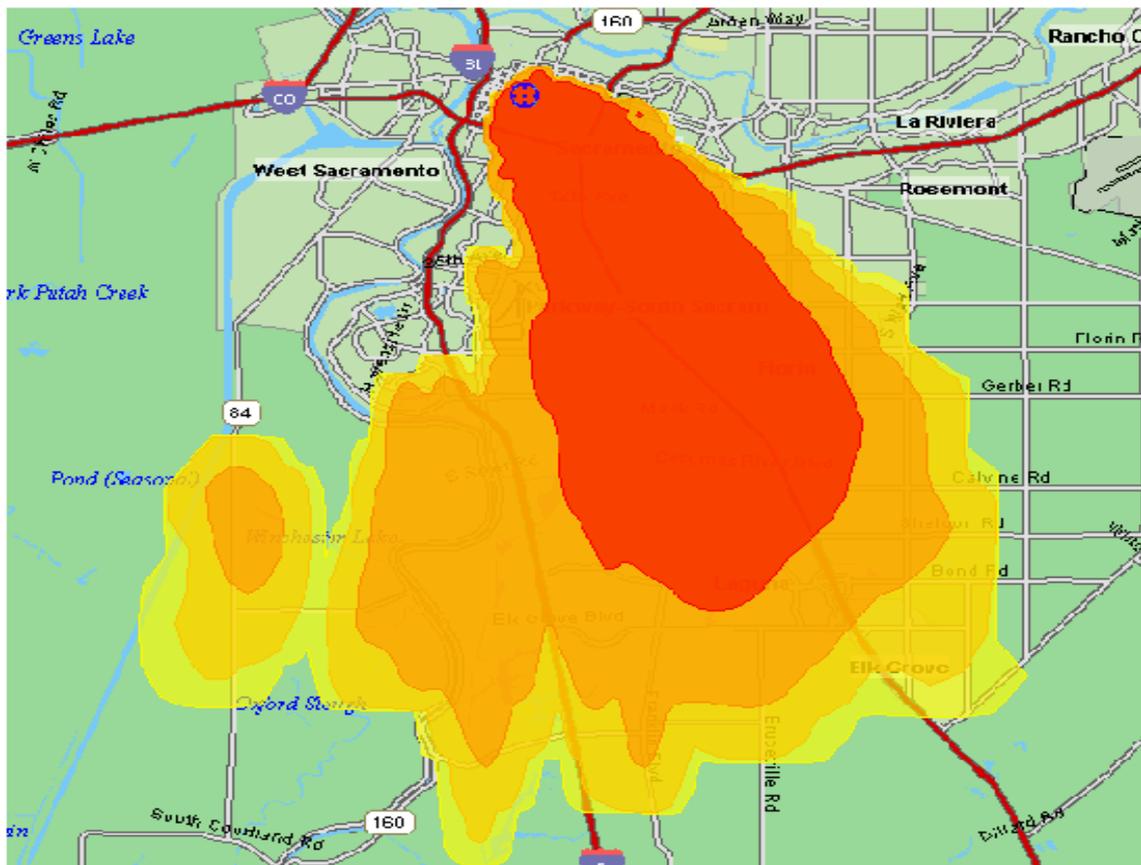


Data: Modeling



Integrated Air Concentration

4hr/45kg Anthrax SAC



Level (CFU/m ³)	Area (km ²)	Pop	Desc
>1.60E7	113	233,803	85% of the exposed; receive a lethal dose
>530,000	247	300,269	50% of the exposed; receive a lethal dose
>17,000	334	329,645	15% of the exposed; receive a lethal dose
>630	374	335,813	2% of the exposed; receive a lethal dose.

Event/Model Information

Integrated Air Concentration at ground level
 From: 04 Feb 2003 12:20:00 UTC
 To: 04 Feb 2003 16:20:00 UTC

Material released: ANTHRAX DRY
 Source located at: 38.576036N, 121.491597W
 Generated: 05 Feb 2003 04:37:26 UTC
 Id: Production.rcE5180.rcC5145

Originator: cook1
 Model: ADAPT/LODI
 Site Id: unknown

Remarks

Release starting at
 02/04/2003 12:20:00 UTC for 4 hr
 met obs at 02/04/2003 12:00:00 UTC
 met obs at 02/04/2003 13:00:00 UTC
 met obs at 02/04/2003 14:00:00 UTC

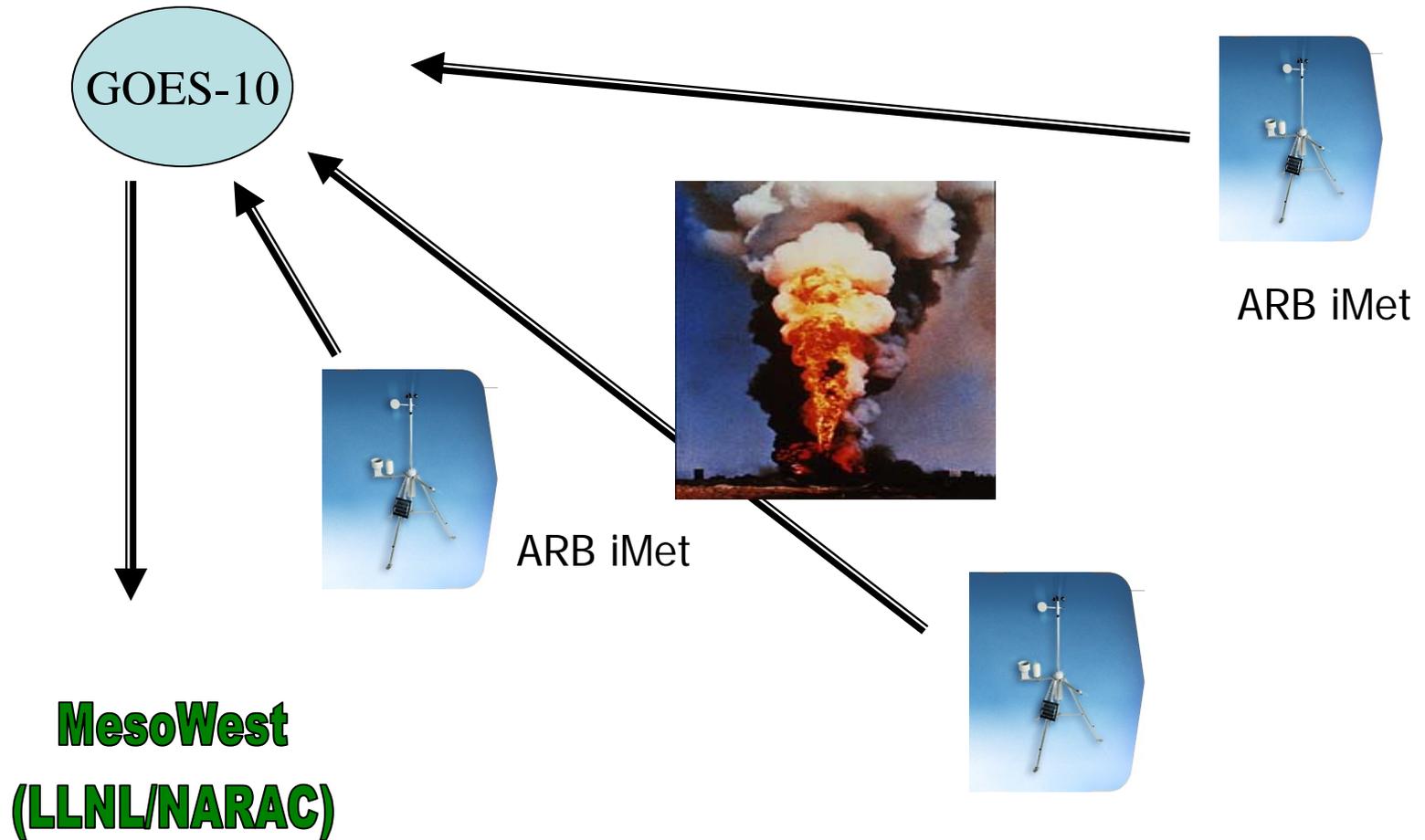
Map Size:

32.02 km by 32.02 km

Contact Information

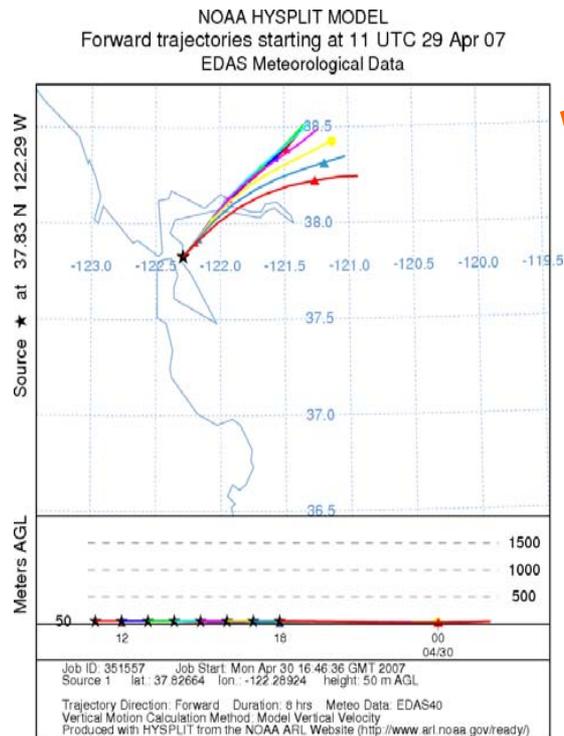
email: cook1@ethz.ch or phone: 916.322.3726

Data: Meteorology



Data: Meteorology (Wind Trajectories)

Gasoline Tanker Fire, I 880/80 Interchange April 28, 2007

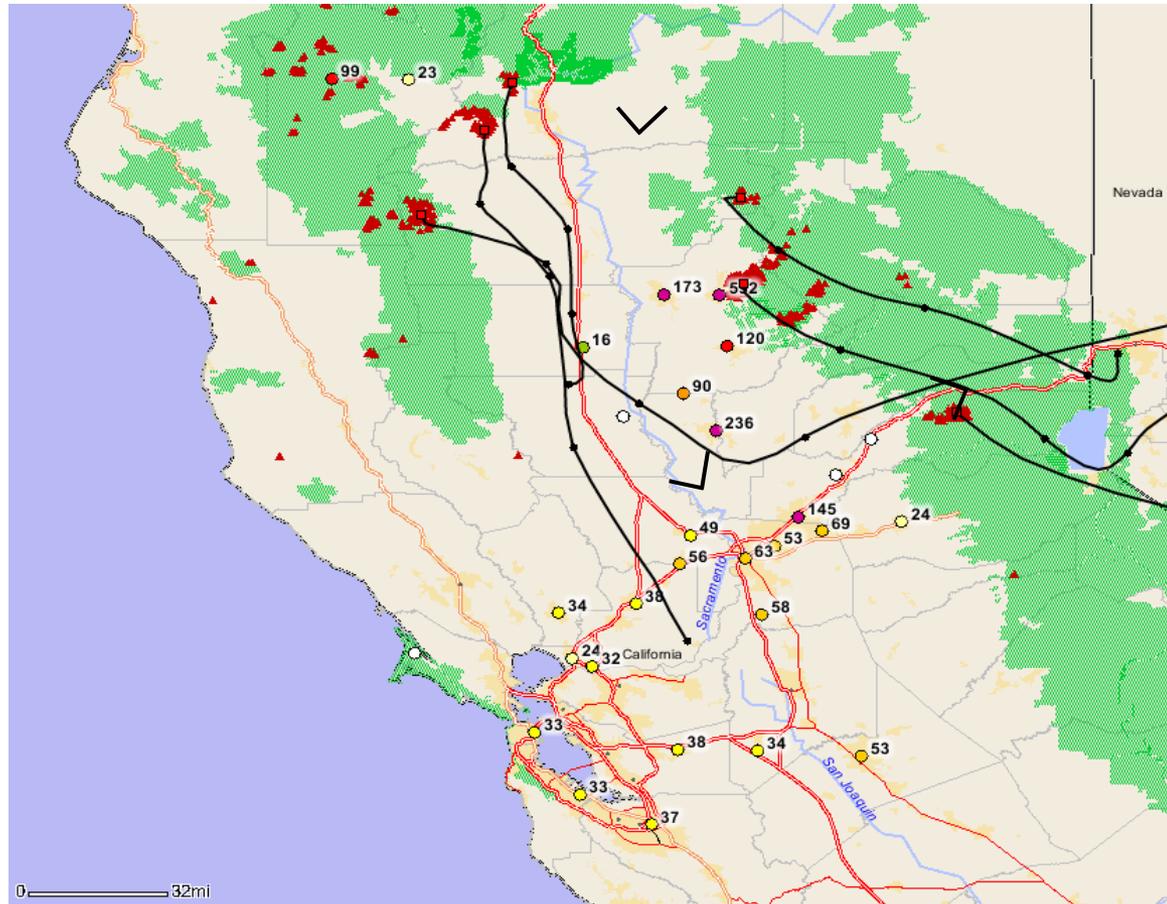


Data: Training

ARB, US EPA, & Placer County APCD, Env Health, Fire, & OES



Data: Measurements and Meteorology

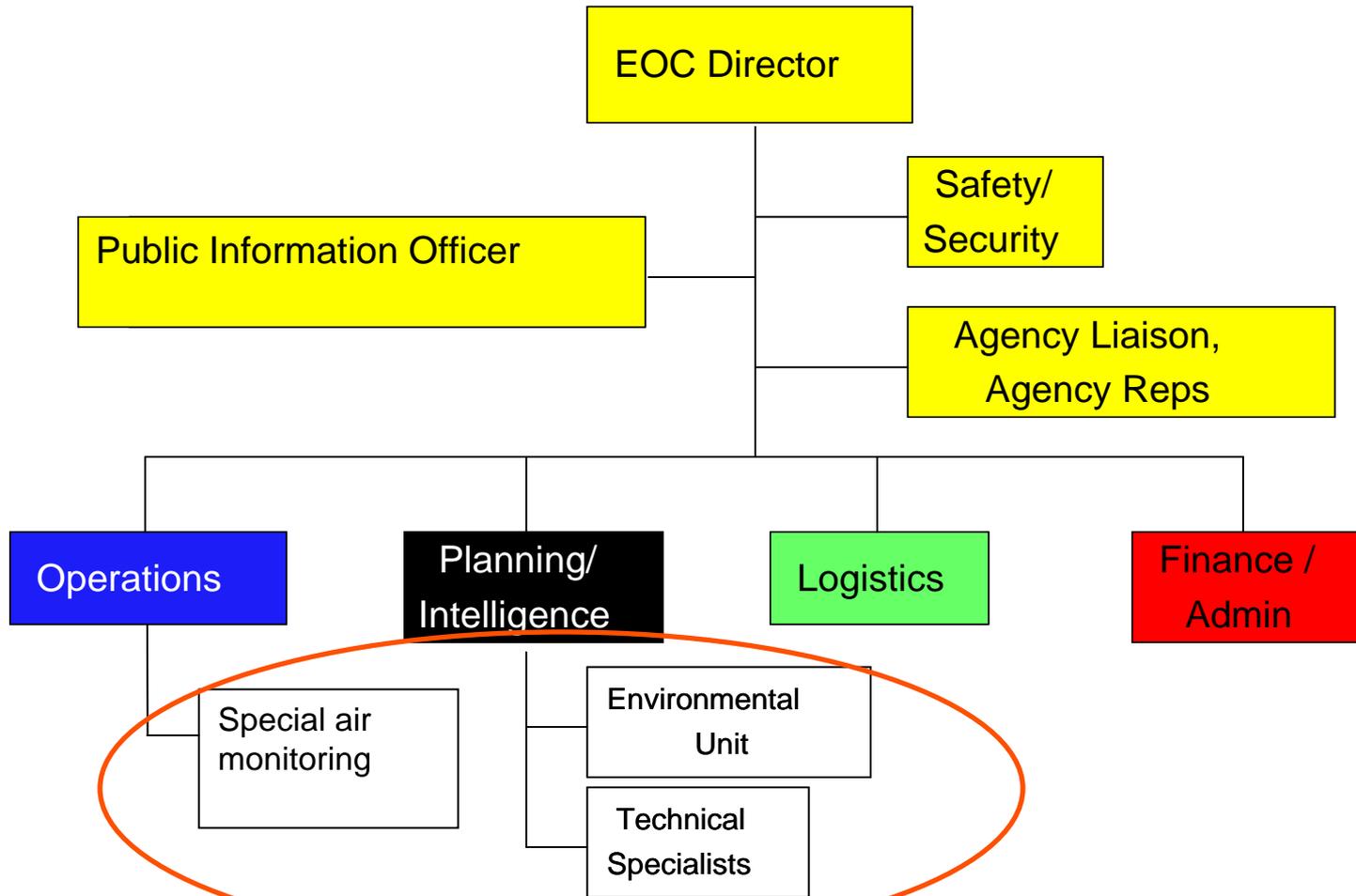


24-hour forward trajectories at 300 m

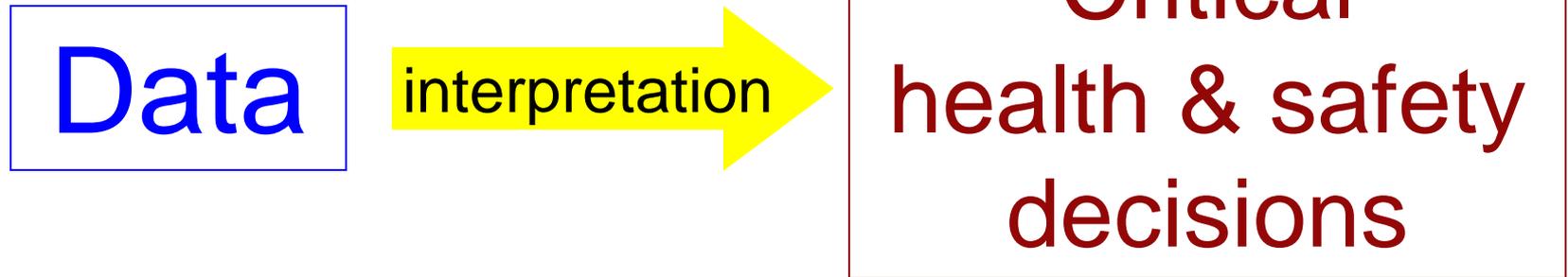
Data: Information



ICS Structure



Data to Message

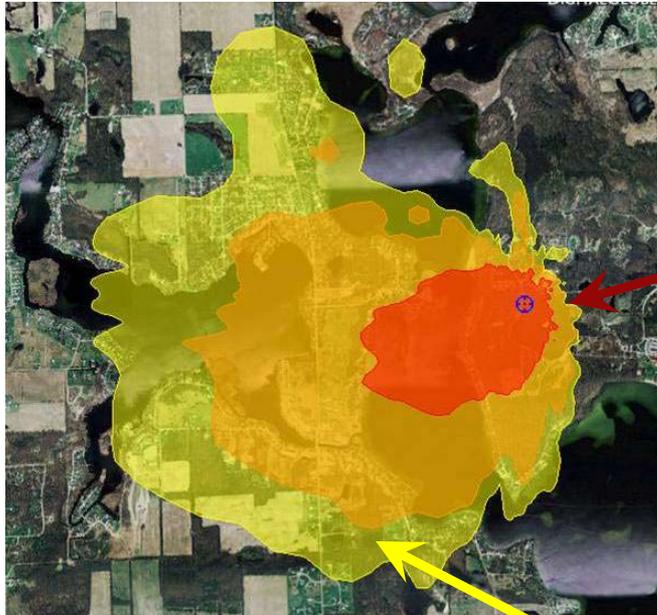




Bryan TX fertilizer plant fire (07/30/09):

“At 2040 hrs, IC scaled back evacuation from 17,000 to 1000 residents; Evac zone bordered by Sandy Pt Rd (west), Harvey Mitchell Prky (east), S to Hwy 47.”

Public vs. Occupational



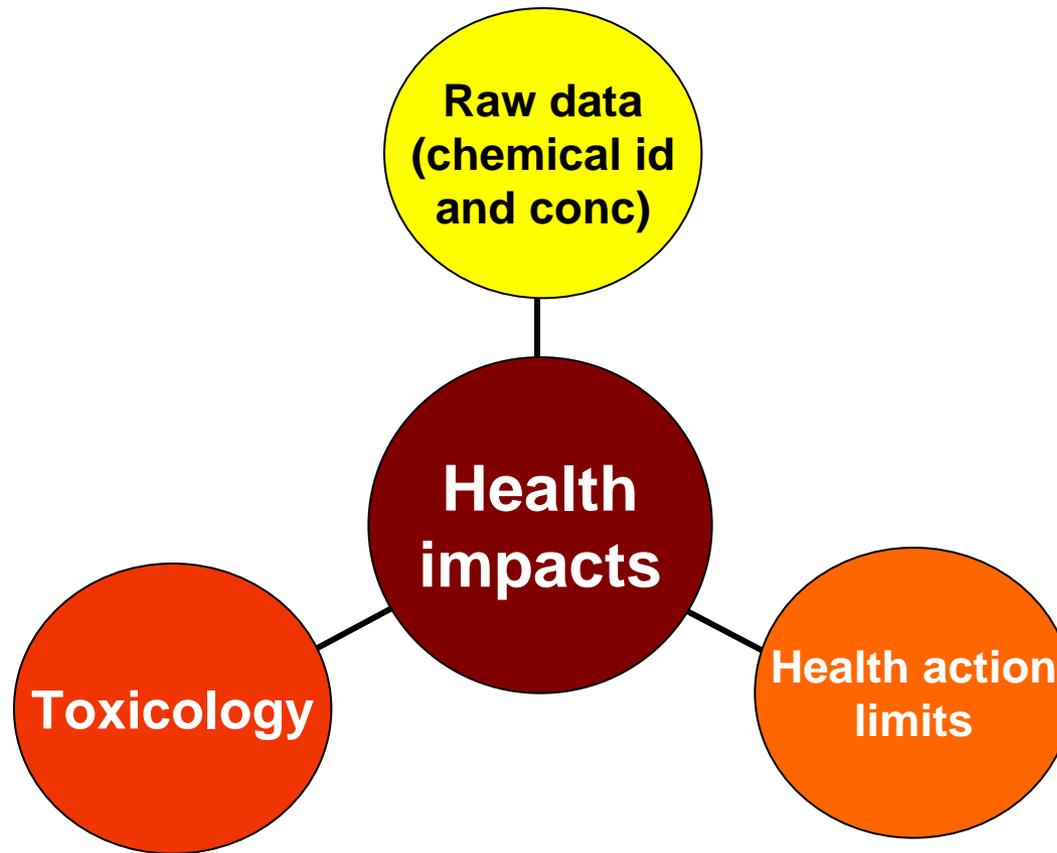
Exclusion/ Hot zone:

Monitoring used for hazcat, id release, source term, personnel protection

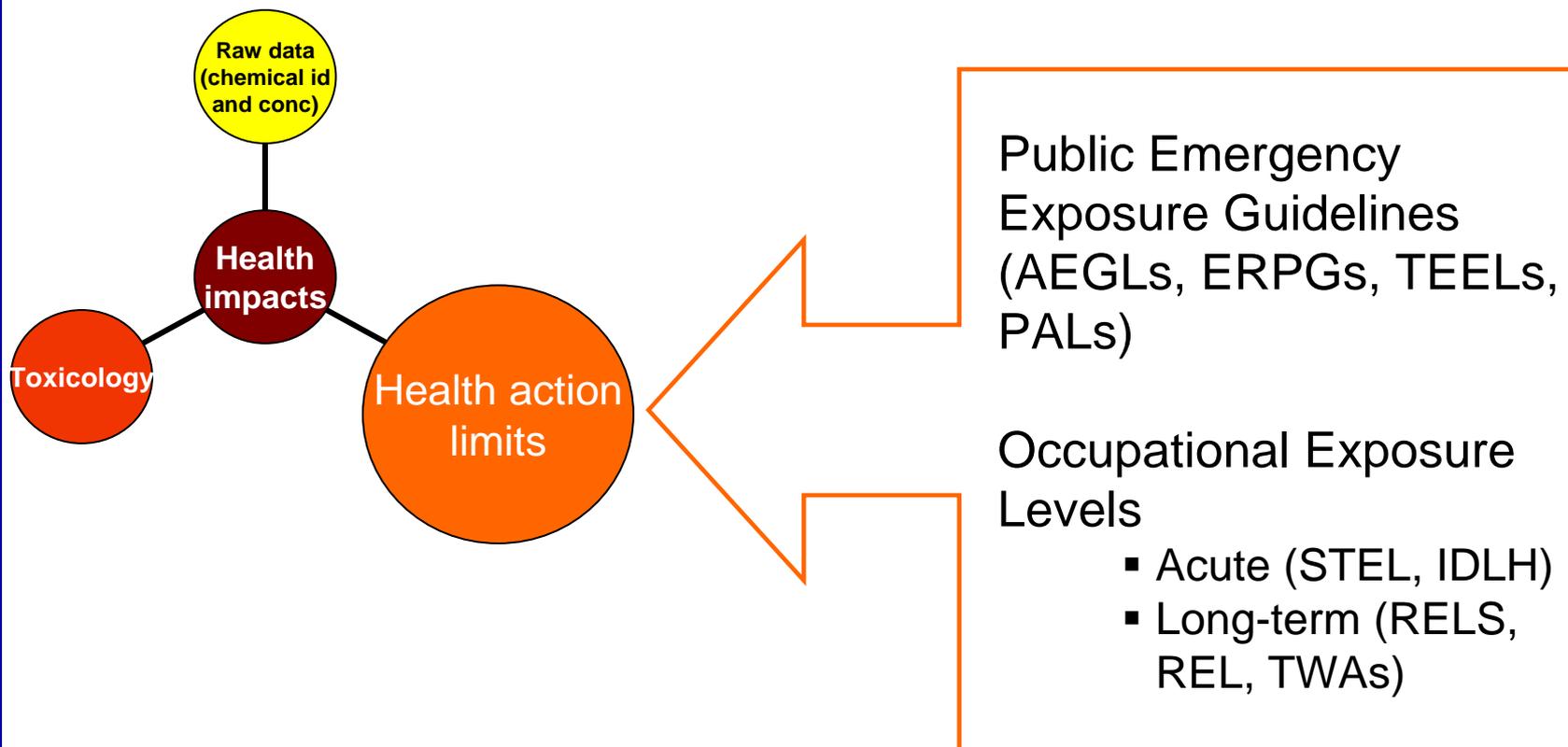
Downwind zone:

Monitoring used to characterizing potential exposure of downwind receptors; evacuation, shelter-in-place, re-entry decisions

Tools we use



Health Action Limits



Other Decision making criteria

- Site-specific factors
- Consider community impacts
- Long-term recovery & chronic health implications

Example:

Hydrogen Sulfide Scenario

Message to Audience



Overall Goal

Relay crucial information to:

the public

the media

your agency

First 30 seconds of
message is crucial

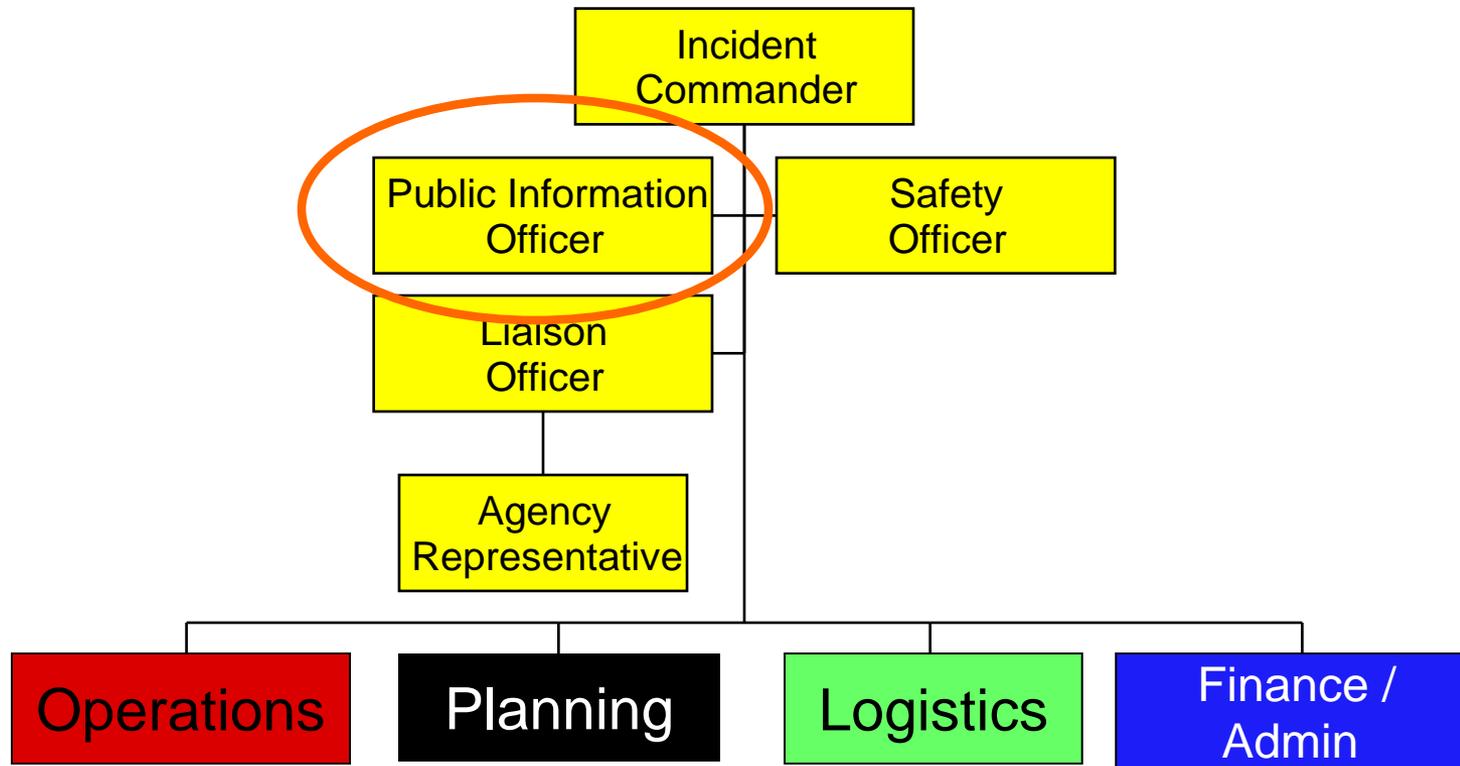
Audience will
evaluate credibility
empathy,
competence,
honesty

Highest credibility:
health professionals
first responders
teachers

Challenges with Air Emergency Messages:

- Rapidly changing conditions
- Timeliness of warnings
- Difficulty in translating complex science to simple messages
- Language & cultural barriers

ICS Structure



Joint Information Center (JIC)

- ✓ When multiple agencies are involved
(reps from all responding agencies)
- ✓ Coordinate interagency messaging
- ✓ Coordinate release of information



Other tools

- Internet
 - www.arb.ca.gov/carpa/carpa.htm
- Social media
 - Mariposa & Sac County use You Tube
 - Facebook, Twitter
- Low tech
 - Door-to-door visits, neighborhood fliers

Moving forward

- ***Bottom line? **IRS!!*****
- ***Build response coordination at the local level***
- ***Plan and build capability before incident***
- ***Take advantage of CARPA resources!***

Emergency Contacts Handout

CARPA Contacts

Jeff Cook, CA Air Resources Board (Co-chair)

(916) 322-3726

jcook@arb.ca.gov

John Kennedy, USEPA Region 9 (Co-chair)

(415) 947-4129

kennedy.john@epa.gov

www.arb.ca.gov/carpa/carpa.htm