Cheap Air Quality Sensors: Implications for Citizen and Community-based Air Monitoring

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Current Situation

- Air Quality Monitoring by "others" is <u>not</u> new
  - Community Groups
  - Individuals
  - Consultants
  - Researchers
  - A combination of the above
- Air quality agencies have had to respond to this data for many years
- Given the cost and sophistication of the equipment, the number of cases is relatively limited
- Preferred approach for air agencies, on a case by case basis:

Engage, Educate, Communicate

Examples

- Bucket Brigades/Canisters for toxic VOCs
- Individuals with low quality sensors on the market today (PM/ozone/CO)
- Community/Academic partnerships (P-Traks and Dust-Traks)
- "Pro Bono" work by high quality instrument developers
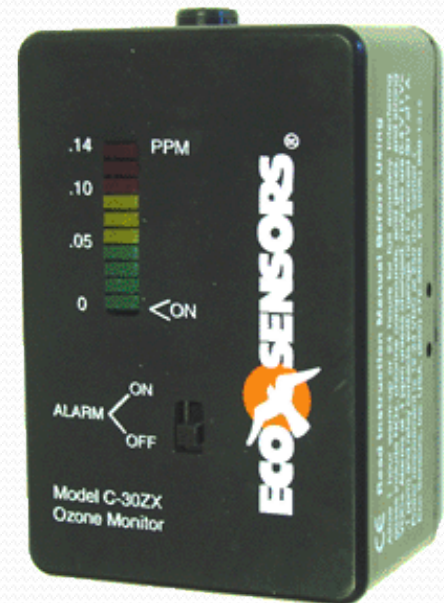
Cheap Sensors

- A potential explosion in the amount of non-agency air monitoring data
- Technical Issues
  - Accuracy, calibration, longevity, precision, interferences, representativeness, time-averaging
  - Data interpretation
  - Which pollutant?
  - What levels are of concern?
    - Comparison to standards, averaging time, acute or chronic effects
  - False positives: unwarranted alarm
  - False negatives: false sense of security

Potential Resource Impacts

- Air agencies
  - need to be responsive to the public and community groups
  - are charged with solving actual air quality problems
  - can't monitor everywhere, and additional, good quality information is useful
  - need lower cost monitors to fulfill monitoring obligations and needs with limited resources
- However, air agencies do not have the resources to
  - chase every new, potentially low-quality data point
  - "compete" with "alternative" air quality networks

Potential Paths Forward

- Engagement, Education and Communication are still key
  - Risk
    - Exposure levels, acute vs. chronic risk, standards,….
  - Science
    - Which pollutant, where, when, why……
  - Technology
    - Does it work? For what purpose? Is it useful?
  - Trust
    - Avoid perception that agencies are threatened by this new technology
    - Embrace it…if it works
- Should be handled with a consistent national strategy and message
  - Avoid duplication of work among U.S. EPA states and locals
  - Access to a common set of information on sensor performance, applications, communications tools, experiences.