

# EMERGING ISSUES SUBCOMMITTEE

Presented to USDA NRCS  
Agricultural Air Quality Task Force  
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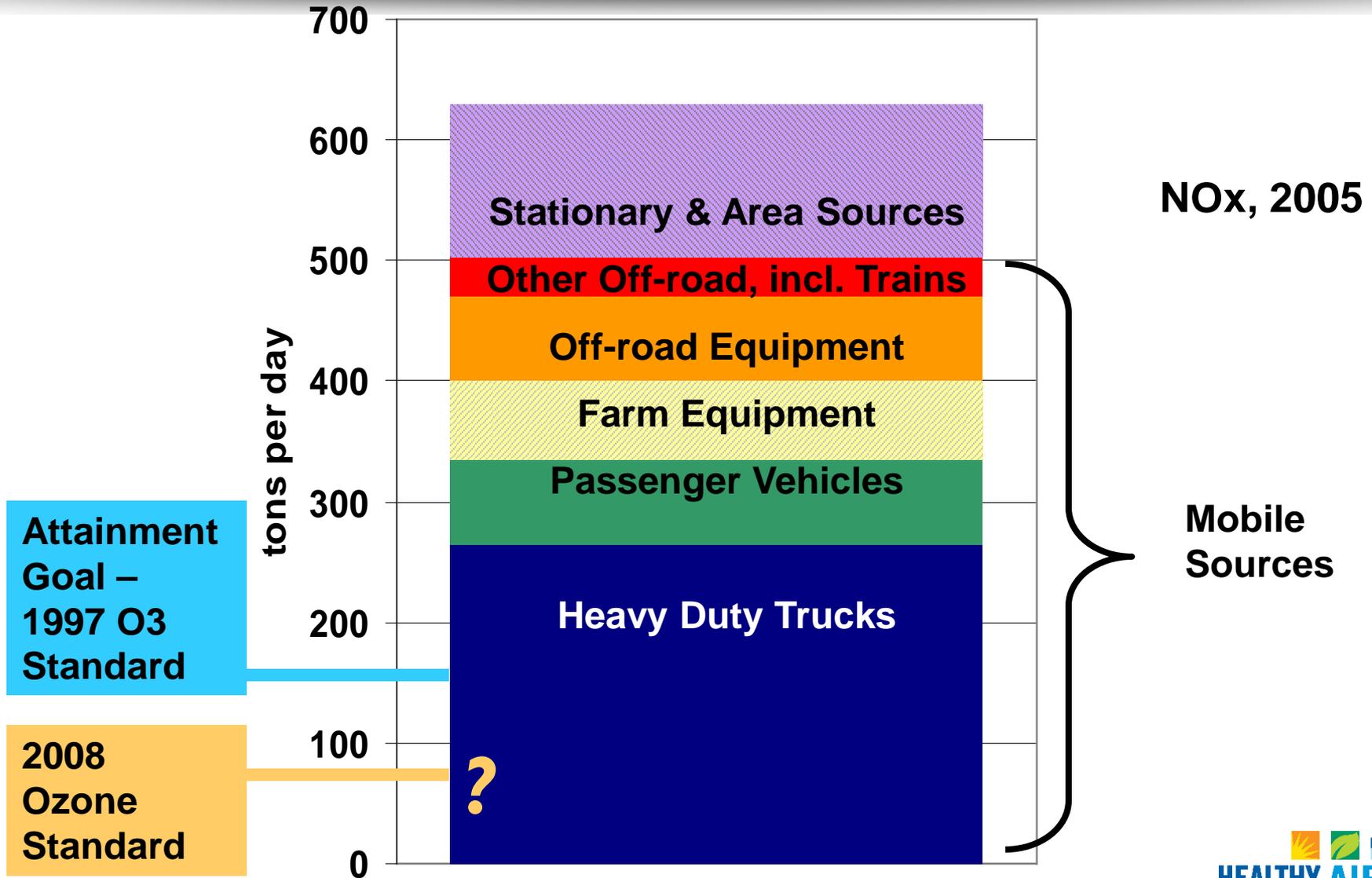
# Current Approach to Air Quality Planning for Ozone and PM standards

- U.S. EPA implements CAA Sections 108 & 109 by setting set health-based National Ambient Air Quality Standards for criteria pollutants including Ozone and PM 2.5,
- EPA designates areas throughout the nation as attainment or nonattainment based on the most recent three years of air quality data.
- EPA must approve state and local air districts state implementation plans to bring areas into attainment with the standards which are reviewed every 5 yrs.
- Over the next few years, states and local air agencies with nonattainment areas will be developing new plans to attain the most recent 24-hour PM 2.5 standard established in 2012, and the most recent 8-hour ozone standard established in 2008 (which is expected to reviewed in 2014).

# Current Approach to Air Quality Planning for Ozone and PM standards

- For some regions of the country, attaining these standards will be extremely challenging.
- In California's San Joaquin Valley (SJV), where geography and weather exacerbate the formation and retention of ozone, it has been estimated that achieving the 2008 standard may require that emissions be reduced by as much as 80%, above and beyond the 60% to 80% reduction in emissions that has been achieved over the past two decades.
- Failure to meet the milestones and attainment targets established in EPA implementation rules will result in sanctions that will impact every economic sector, including agriculture.

# Additional Reductions Needed to Meet New Standards in San Joaquin Valley



# Current Approach to Air Quality Planning for Ozone and PM standards

- Meeting extremely tough new standards in areas like the SJV takes years, cost billions of public and private funds, and requires yet discovered lower and zero emissions technologies.
- While ultimate goal of a SIP is to improve public health, the individual measures have not always been prioritized based on public health considerations.
- EPA has generally required that a certain tonnage of emissions be reduced to achieve attainment across the board.
- Nationwide rules are in place that achieve the biggest reductions without taking into consideration how and where the pollutants are released, toxicity, potency, how much exposure results or how much if any ozone will be created.

# “Health Based” Approach to Air Quality Planning for Ozone and PM standards

- A health based risk assessment would be prioritized by exposure and chemical composition not mass emissions.
- New control measures would be aimed specifically at high risk emissions. VOC reductions become less and less effective but must still be pursued regardless of their contribution to public health improvement. NO<sub>x</sub> reductions are more effective in the SJV and should be allowed to be prioritized.
- Some compounds are more toxic (i.e. metals) and likely to cause irritation, inflammation while some are less toxic (i.e ammonium nitrate/sulfate).
- While more research needed, existing quantitative info re: exposure from extensive air quality modeling; ozone formation (i.e. \$32M Central California Ozone study) and qualitative (and limited quantitative) information regarding potency and health risk to allow prioritization.

## Recommendation

The Task Force recommends that U.S. EPA work with states and local air districts to craft innovative implementation strategies that enable regions with mature air quality programs to focus efforts on meeting new standards expeditiously through deployment of scarce resources in a manner that provides the most benefit to public health.

The task force is providing the following specific recommendations for incorporation in a “risk-based” attainment strategy:

1. Allow a risk-based attainment strategy be utilized to address public health, and that public health be considered the key factor in prioritizing control measures.
2. In meeting Clean Air Act requirements for Reasonable Further Progress (RFP) during implementation of an attainment plan, EPA should give greater weight to reductions that provide the most benefit in reducing ozone concentrations.
3. In meeting RFP demonstration requirements, EPA should provide for alternatives that consider reductions in population exposure to more potent air contaminants, instead of a mass-based approach.
4. In meeting Clean Air Act requirements for Reasonably Available Control Technology, measures that reduce precursors with more impact on ozone formation should be given higher scores than measures that may reduce greater amounts of less potent ozone precursors.
5. The calendar year selected as a base year for demonstrating RFP should not be selected from non-representative years during the current economic recession.
6. EPA should recognize more up-to-date information regarding the background ozone concentrations (biogenic emissions, transport, federal sources).
7. In establishing the minimum requirements for contingency measure reductions, EPA should assign greater weight to emissions reductions of more potent precursors. In extreme nonattainment areas that have implemented all feasible measures, EPA should provide credit for those measures in meeting contingency requirements.
8. EPA should fund research and technology advancement efforts that support and guide risk-based attainment strategies and work with the Center for Disease Control to establish a national rural community health program which requires reporting so that we can evaluate the true health benefits of remediation technologies.

# Health Based Approach to Implementation

- Efforts to implement the health based approach is moving forward.
- SJV adopted their PM 2.5 plan in 12/12 which included analysis and prioritization control measures to provide most public health benefit . Further controls on residential burning and commercial charbroilers.
- EPA recognized that a better understanding of ozone formation has emerged from latest science “allows for more strategic approaches in which public health can serve as the key factor in prioritizing control measures” in their proposed implementation of the 2008 hour ozone standard.
- EPA is soliciting comments on whether RACT determinations could take into consideration the lack of air quality benefit of further VOC controls and offered alternatives for reasonable further progress determinations.
- 3 AAQTF task members were on the planning committee for an air quality conference at UCD in summer 2013 that high lighted the health based approach with speakers from across the nation.

# Agriculture and Air Quality

- **Air emissions associated with agricultural operations**
  - **PM<sub>10</sub> and PM<sub>2.5</sub>**
  - **O<sub>3</sub> precursors (NO<sub>x</sub> and VOCs)**
  - **NH<sub>3</sub> and reactive Nitrogen compounds**
  - **Greenhouse gases (CO<sub>2</sub>, N<sub>2</sub>, and CH<sub>4</sub>)**
  - **H<sub>2</sub>S**
  - **Biologically active agents**
    - **bacteria, mold spores, allergens, toxins**
  - **Chemical drift – pesticides, herbicides**
  - **Odors - related to the over 200 volatile organic compounds**

# Public Health Implications of Agriculture

- Environmental Impacts
- Respiratory health
- GI health
- Quality of life
  - Odors
  - Nuisance
  - Psychological impacts

# NIOSH Agriculture Information

- Agriculture ranks high in the most hazardous industries
- High risk for farmers
  - fatal and nonfatal injuries
  - work-related lung diseases (asthma, COPD, bronchitis, airway hyper-responsiveness, pulmonary inflammation and reduced lung function)
  - noise-induced hearing loss
  - sensitization and allergic diseases
  - skin diseases
  - acute toxicity from high-dose gas or chemical exposures
  - cancers associated with chemical use and with prolonged sun exposure
- Farming is one of the few industries in which the families are also at risk (NIOSH)

# Agriculture Health Study

- Agricultural workers on average have better health than the general population
- But may have increased rates for some diseases and specific injury
  - Cancers such as: leukemia, lymphoma and soft tissue sarcoma, cancers of the brain, lip, prostate, skin and stomach
  - Parkinson's disease
  - Other non-cancerous diseases of the lung
- Pesticide exposures have been associated with negative health effects for pesticide applicators and their spouses

# More Information Please

- Long-term studies of agricultural exposures and chronic diseases, injury and other lifestyle factors are needed
- Little research in the US on communities impacted by agricultural operations which look specifically at community exposures to airborne agricultural contaminants and health outcomes
- Studies are needed which evaluate the benefits of research demonstration projects and to evaluate the benefits of proposed technologies
- There are no national rural air monitoring programs or national reporting programs for agricultural community illnesses which lead to knowledge gaps