Risk-based" Approach to Air Quality Planning for Ozone and PM standards
USDA AAQTF Emerging Issues Subcommittee
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Background

Clean Air Act Sections 108 and 109 require U.S. EPA to set health-based National Ambient Air Quality Standards for criteria pollutants including Ozone and PM 2.5, and to periodically review those standards in consideration of the most recent health studies. Once standards are set, EPA designates areas throughout the nation as attainment or nonattainment based on the most recent three years of air quality data. EPA also adopts implementation rules that provide essential guidance to states and local air districts as they prepare state implementation plans to bring areas into attainment with the standards.

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 2006, and the most recent 8-hour ozone standard established in 2008. For some regions of the country, attaining these standards will be extremely challenging. In California's agricultural San Joaquin Valley (SJV) for example, where the geography and meteorology severely 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. In 2012 and 2013, as these plans are being developed, EPA will also be considering the adoption of even more stringent standards for PM2.5 and Ozone.

Meeting these extremely tough new standards in areas like the SJV will take many years, cost billions of dollars in public and private funds, and require the development and deployment of new lower and zero emissions technologies. In creating implementation strategies to address these standards, it is imperative that limited resources be focused on approaches that will result in the most public health benefit and achieve compliance with health-based air quality standards as expeditiously as possible.

Although the ultimate goal of a plan is to achieve a standard which will improve public health, the individual measures have not always been prioritized based on public health considerations. In implementing a plan, EPA has generally required that a certain tonnage of emissions be reduced to achieve attainment. EPA has also required that the reductions be generally linear over time. Thus a number of rules have guided states and local districts to prioritize the rules that achieve the biggest reductions without taking into consideration parameters such as how and where the pollutants are released, toxicity, potency, how much exposure results or how much if any ozone will be created.

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. As the SJV progresses toward attaining the 1997 Ozone standard, VOC reductions become less and less effective but must still be pursued regardless of their contribution to public health improvement. NOx reductions will be much 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). Particles are complex and the size and surface area must also be considered and further researched. While more research will be needed, there are ways to use existing quantitative information regarding exposure from the extensive air quality modeling that has been done to allow prioritization. There is also quantitative information regarding ozone formation (i.e. $32M Central California Ozone study) and qualitative (and limited quantitative) information regarding potency and health risk to prioritize control measures in meeting RFP.

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.