As a change of pace, here's a post that's not about Trump, Pruitt, or their friends in Congress. Two recent papers highlight the importance of EPA's tightening of the air quality standard for ozone and suggest some ways of doing so that could be more acceptable to industry. (We're talking about ground-level smog here, not the ozone layer high above the earth.) The Obama Administration issued regulations two years ago tightening the air quality standard for ozone. Industry attacked the rule as unnecessary and impractical, but these two papers seems to point in the opposite direction. They emphasize the health benefits of reducing ozone and suggest some ways of doing so at lower cost.

The first paper is by three economists: Olivier Deschenes at UCSB, Michael Greenstone at Chicago, and Joseph Shapiro at Yale, with an assist from Berkeley's Energy Institute at Haas School of Business. It's a very ingenious study of how changes in regulations for NOx (nitrogen oxides) impacted health by reducing ozone levels. (Ground level ozone is formed when volatile organic compounds, nitrogen oxides, and sunlight come together.) The study focuses on a NOx emissions trading program, which ran only in summers and only in some regions from 2003-2008. This provided plenty of comparisons for determining how much the program cut ozone (quite a lot) and the program's health effects. Previous studies had looked at hospitalizations and ER visits, but these researchers were able to access data on individual medication use, which allowed them to track purchases of asthma medications. (This required use of a proprietary database of individual drug purchases, so EPA would probably not be able to rely on this study if the House's latest legislation on the subject were law.) Here are the major conclusions:

- The program reduced ozone by an average of 6% but also eliminated a third of the high ozone days in the summers.
- This reduced medication costs by $800 million per year.
- The program also eliminated 2200 premature deaths each summer.

EPA's analysis of its regulation emphasized the health benefits of cutting particulates (a side-effect of cutting NOx), but it appears that the ozone benefits are also quite substantial.

The second paper is about how to achieve the new ozone standard. It's by Art Fraas (a visiting fellow at my favorite think tank, Resources for the Future), John Graham (who headed OIRA under Bush), and Jeff Holmstead (an energy industry lawyer). They present some ideas for making it easier to open new industrial facilities while complying with the ozone standard. Two of their proposals caught

my attention. The first is to modify air quality monitoring to take into account that all NOx sources probably won't be at peak production at exactly the same time. The other is to change the offset program so that, where offsets aren't available, new sources can pay emissions fees into a fund for reducing ozone emissions. Since ozone precursors also come from vehicles, funding programs to reduce vehicle use or take more polluting vehicles off the road could be effective with additional funding. Obviously, the devil is in the details, but on the face of it, these proposals seem constructive and worth discussion, which is encouraging at a time when political discourse seems so polarized.

A challenge to the new ozone standard is still pending in the D.C. Circuit. Let's hope the court upholds the standard. EPA should be thinking about ways to reduce compliance costs, but the standard itself seems more than worthwhile. Fortunately, the American Lung Association is an intervenor in the case and can defend the Obama standard if even if the Trump Administration decides not to.