
A John Locke Foundation Policy Report

Where the Bodies are Buried

*How experts for N.C.'s Attorney
General mislead the public about
TVA air pollution risks*

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Executive Summary

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The Tennessee Valley Authority (TVA) operates 11 coal-fired power plants in the southeastern United States. These plants emit nitrogen oxides (NO_x) and sulfur dioxide (SO₂), which contribute to particulate matter (PM) and ozone in the eastern U.S., including North Carolina.

In an effort to force the TVA to reduce its contribution to air pollution in North Carolina, state Attorney General Roy Cooper filed suit against the TVA in January 2006, arguing that the TVA plants constitute a public nuisance.¹ To bolster his case, Cooper commissioned reports from experts in air pollution modeling (Lyle R. Chinkin and Neil J.M. Wheeler), control methods (James E. Staudt), health effects (John D. Spengler and Jonathan I. Levy), and cost-benefit analysis (Leland B. Deck).²

These experts estimated that reducing NO_x and SO₂ emissions from TVA sources by about 370,000 tons per year³ (a 65 percent reduction) would have substantial health benefits, preventing more than 1,400 cases per year of premature mortality, more than a 1,000 hospital visits, and hundreds of thousands of asthma exacerbations each year.⁴ By placing dollar values on these health benefits using standard cost-benefit analysis techniques, Leland Deck's expert report concluded that the health benefits would total \$10.9 billion per year, or about 18 times greater than the annual cost of the emission reductions.⁵

In reality, the actual benefits of the TVA power plant emission reductions will at best be only a tiny fraction of the amount claimed by the Attorney General's experts. Nearly all the claimed health benefits of the emissions reductions come from reductions in fine particulate matter (PM_{2.5}). Particulate matter from power plants is mostly ammonium sulfate, formed from SO₂ emissions, with some ammonium nitrate, formed from NO_x emissions.⁶ But neither of these substances

is harmful, even at levels tens of times greater than are ever found in the air Americans breathe. In fact, ammonium sulfate is used as an "inert control"—that is, a substance that is not harmful—in studies of other substances that *are* expected to be toxic. According to the Attorney General's experts, 98.5 percent of the predicted health benefits of power plant emissions reductions are due to reductions in sulfate and nitrate particulates. In other words, 98.5 percent of the benefits claimed for power plant emissions reductions depend on the assumption that ammonium sulfate and nitrate are toxic. Since this assumption is false, 98.5 percent of the claimed benefits are not real.

The remaining 1.5 percent of predicted benefits comes from reductions in ozone pollution that are expected to result from reductions in NO_x emissions from the TVA power plants. Although ozone can be dangerous at high levels, the expert reports also exaggerate the benefits of ozone reductions. The key source of the exaggeration of benefits for ozone reductions is the experts' assumption that ozone causes premature death, even at the relatively low levels encountered in the air today. Based on decades of studies with several different species of animals, ozone is not deadly, even with long-term exposure to levels more than 13 times greater than the current federal ozone standard for daily peak levels. Reductions in premature mortality account for 96 percent of the total ozone benefits. Since ozone does not cause premature mortality, these benefits are likewise not real.

After calculating that the benefits of TVA emissions reductions would be 18 times the costs, Deck's expert report concludes "Such a large benefit/cost ratio is evidence that substantially different assumptions could be made in either the benefit or the cost analyses without changing my conclusion that the requested emission reductions do provide a substantial net benefit to society."⁷

This assertion is backwards. The high benefit/cost ratio is not evidence of net benefits. Rather, because sulfates and nitrates are harmless and because

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ozone at today's low ambient levels is not deadly, the large benefit/cost ratio is evidence that false assumptions were used to generate it. Using the more realistic assumption that sulfates and nitrates are harmless eliminates 98.5 percent of the benefits. The more realistic assumption that low-level ozone is not deadly eliminates another 1.4 percent of the benefits. As a result, the costs of the TVA emission reductions will at best be more than 50 times greater than the benefits.

The Spengler and Levy expert report provided the air pollution health effects estimates that went into Deck's cost-benefit analysis. It is their selective omission and mischaracterization of evidence that ultimately resulted in the vast exaggeration of the health benefits of TVA power plant emissions reductions. The remainder of this report provides the detailed evidence refuting Spengler and Levy's incorrect claims about the health effects of TVA power plant emissions.