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June 25, 2012

The Honorable Lisa Jackson, Administrator
U.S. Environmental Protection Agency
Air and Radiation Docket and Information Center
Mail Code 2822T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Docket ID No. EPA-HQ-OAR-2011-0660

Dear Administrator Jackson:

The American Lung Association writes in support of strong standards to reduce power plant carbon pollution. These proposed standards can play an important role in reducing the risk of adverse health effects associated with ozone ("smog") on our nation's most vulnerable populations, including children, the sick, and the elderly. Strong standards must be made final for the EPA to take an important next step toward ensuring that electricity is produced by the most modern, and least toxic, power plants. However, the American Lung Association urges the EPA to issue a strong proposal to cover existing power plant carbon pollution, the single largest source of greenhouse gas emissions in the United States.

The Clean Air Act requires the EPA to regulate air pollutants from stationary sources. The Supreme Court ruled that greenhouse gases (GHG) met the definition of air pollutants in the Clean Air Act in 2007. In 2009, the EPA found that concentrations of GHG in the atmosphere endanger the public health and welfare of current and future generations by increasing temperatures and ozone pollution. This increase puts some of our nation's most vulnerable communities at greater risk for their health.

To regulate a pollutant such as GHG, the EPA must list categories of stationary sources that cause or contribute to air pollution that could harm public health or welfare. Electric generating units (EGUs) are the largest stationary source of GHG in the United States. Energy accounts for 86 percent of total 2009 GHG emissions,[1] and the electric sector represents 39 percent of all energy-related CO_2 emissions.[2] To regulate emissions from EGUs, the EPA must issue a new source performance standard (NSPS), which includes the Best System of Emission

Reduction (BSER), an achievable standard that considers cost and other factors. The proposed rule offers a new source performance standard for greenhouse gas emissions from electric utility generating units, commonly referred to as power plants.

Carbon pollution can make reducing ozone much harder

As carbon pollution builds up in the atmosphere, scientists believe that it will likely lead to increased temperatures. The increase in temperatures can increase the risk for formation of ground level ozone or smog.

Ozone is a colorless, odorless gas that reacts chemically ("oxidizes") with internal body tissues, such as those in the lung. Ozone acts as a powerful respiratory irritant at the levels frequently found across the nation during the summer months. Breathing ozone may lead to shortness of breath and chest pain,[3] wheezing and coughing; [4] increased risk of asthma attacks;[5] increased susceptibility to respiratory infections,[6] and need for medical treatment and for hospitalization for people with lung diseases, such as asthma or chronic obstructive pulmonary disease (COPD)[7] and premature death.[8]

The most vulnerable individuals, including children, teens, senior citizens, people who exercise or work outdoors, and people with chronic lung diseases like asthma, COPD, and emphysema, are most in danger of being sickened by ozone.[9] So-called "responders," otherwise healthy individuals who experience health effects at lower levels of exposure than the average person, are also susceptible to ozone.[10] Children who grow up in areas of high ozone pollution may never develop their full lung capacity as adults. That could put them at greater risk of lung disease throughout their lives.[11]

Many areas in the United States routinely experience concentrations of ground-level ozone that cause health problems. The United States has worked hard since the 1970 Clean Air Act to cut ozone levels, and reduced them by 13 percent between 2001 and 2010, according the EPA's most recent analysis of trend.[12] However, millions of people live in places that still struggle to meet the 1-hour ozone standard set in 1979, including Los Angeles and Houston. As the evidence clearly shows that the current ozone standards fail to adequately protect public health, the challenge to provide air that is no longer burdened by unhealthful levels of ozone will continue for decades to come.

As EPA noted in their 2009 assessment of the impact of climate change on regional air quality in the United States, many studies "have demonstrated connections between meteorological variability and O_3 concentrations and exceedances, implying the possibility of climate change leading to increasing O_3 levels in some regions."[13]

EPA's own modeling showed "increases in summertime O_3 concentrations over substantial regions of the country as a result of simulated 2050 climate change," using the assumption that none of the precursor emissions decreased from "present day levels." EPA ran multiple models and in each of them

"climate change caused increased in summertime O_3 concentrations" in "nearly every region of the country."[14]

As EPA noted, however, most models have not taken into account the reductions in ozone precursors that have been adopted and are in place. To address that challenge, a 2008 study by Wu, et al. used the model of the Intergovernmental Panel on Climate Change for 2050 (A1B) that incorporated decreasing emissions of ozone precursors in the United States, as current trends show. That study found that the drop in emissions reduces the U.S. summer daily ozone, but that climate change will take much of that back. Nor was the impact uniform: the Northeast and the Midwest were harder hit than the Southeast.[15]

The authors defined this as a "climate change penalty"—additional controls on emissions of ozone precursors that will be needed to reach the same level of ozone in the future than if the climate had not warmed. The penalty is substantial. These Harvard, NASA and Argonne National Laboratory scientists estimated that to reach the same ozone concentrations in 2050 will take as much as a ten percent greater drop in precursors such as nitrogen oxides than if climate change was not a factor. [16]

EPA's own 2009 analysis recognized this penalty and added others to the list. As EPA noted, the models show that the ozone season could be longer. The changes in weather patterns could affect the variability from year to year in the annual levels and extremes of ozone episodes. This will require more challenging assessment and planning, as well as more strategies to look at long-term air quality controls.[17]

The full impact of climate on ozone and other air pollutants is complicated. However, the best understanding shows that carbon pollution-aided climate change will increase the challenge to meeting future national air quality standards for ozone. The "climate change penalty" will add complications going forward.

Strong standards will support the cleanest sources of electricity.

Coal-based Electricity

The American Lung Association opposes the construction of new conventional coal-fired power plants. The American Lung Association believes that the U.S. should not continue to expand its coal-fired generating capacity because of the extensive scope of health risks associated with the use of coal and the disproportionate impact on local communities.

No other source of electricity has a greater impact on health and air quality. From the resource intensity of mining, to the air pollution associated with combustion, coal use generates a dominant share of the sector's impact.

Coal mining is one of the United States' most dangerous professions. The yearly fatality rate in the industry is 0.23 per thousand workers, making the industry about five times as hazardous as the average private workplace [18] The CDC has estimated that over 6,000 former miners died of coal workers' pneumoconiosis, also known as black lung disease since 2000. [19] The inhalation and accumulation of coal dust into the lungs also increases the risk of developing emphysema, chronic bronchitis, and chronic obstructive pulmonary disease. According to a study published in the *American Journal of Public Health*, people in coal mining communities have a 70 percent increased risk for developing kidney disease, 64 percent have an increased risk of developing chronic obstructive pulmonary disease such as emphysema, and 30 percent are more likely to report high blood pressure (hypertension).[20]

Coal-fired power plants produce over 386,000 tons of 84 separate hazardous air pollutants from plants in 46 states, according to the most current data in the National Emissions Inventory[21]. These plants produce 40 percent of all hazardous air pollutants released from industrial sources into the atmosphere, more than any other industrial pollution source. In addition, the combustion of coal to generate electricity also produces 76 percent of the total volume of acid gases, 60 percent of arsenic, and 46 percent of mercury released into the atmosphere[22].

Coal-fired power plants also produce nitrogen oxides (NOx) and sulfur dioxide that are harmful themselves, but also are precursors to ozone itself and particulate matter, especially in the eastern United States. [23] [24] Evidence shows that $PM_{2.5}$ causes cardiovascular harm and premature mortality and is likely to cause respiratory harm. The evidence suggests that long-term exposure to $PM_{2.5}$ causes reproductive and developmental effects as well as cancer, mutagenicity and genotoxicity.[25].

Even the transportation of coal increases health risks. The majority of coal is shipped by rail, with 72 percent of all shipments in 2008 occurring by that mode of transportation. [26] Diesel locomotives are a source of NOx and PM emissions. Dust from coal stored in piles before transport or before it is combusted can become airborne particulate matter that adds to the burden on local air quality, especially on nearby communities.

Because of these concerns, the American Lung Association supports the phase-out of conventional coal-fired power plants as the nation transitions to a clean energy future. This includes support for policies that: (1) require the installation and operation of state-of-the-art air pollution control technologies and (2) encourage conversion to cleaner energy resources and/or permanent retirement of coal-fired power plants.

As part of the transition to a clean energy future, the American Lung Association supports providing assistance to retrain coal industry workers and to help impacted communities transition to other economic opportunities. The American Lung Association additionally supports measures to improve the health and safety of coal mine workers, and the communities where they live, including protection from

harmful air pollutants. The American Lung Association firmly believes it is time to move away from using coal to produce electricity.

Advanced Coal-based Electricity Technologies

The American Lung Association does not support the construction of new advanced coal-based generating facilities, including carbon capture and sequestration and integrated gasification combined cycle plants. The Department of Energy has directed significant resources to the research and development of advanced coal technologies such as integrated gasification combined cycle (IGCC) power plants and carbon capture and storage (CCS).

While each part of the CCS chain has been demonstrated, the technologies have not been integrated and demonstrated on a commercial-scale (greater than 300 MW) coal-fired power plant. Beyond the greenhouse gas benefits, CCS could also potentially drive SO_2 reductions. The current technologies for removing CO_2 from a power plant exhaust gas are very sensitive to SO_2 levels. As a result, conventional plants would have to install state-of-the-art scrubbers to remove SO_2 from the flue gas prior to installing equipment to capture CO_2.

Furthermore, neither IGCC nor CCS addresses the upstream impacts of coal use or the solid waste byproducts of the gasification or combustion. Additionally, the use of carbon capture technologies with IGCC or with conventional coal technologies can reduce the power generating capability of that plant by 20 to 30 percent. This penalty *increases* the amount of coal that must be used to generate a unit of electricity at the plant. However, at a macroeconomic scale, it is not clear if the energy penalty would increase coal use. As the technologies increase the cost of coal-based electricity, they may dampen the demand for coal-based electricity.

Since these advanced coal technologies have not demonstrated a reliable degree of technological certainty, operational capacity or cost feasibility, the American Lung Association does not support the construction of new advanced coal-based power plants. It also does not support the use of CCS or IGCC in existing coal-fired power plants.

Biomass Combustion for Electricity

The American Lung Association does not support biomass combustion for electricity production, a category that includes wood, wood products, agricultural residues or forest wastes, and potentially highly toxic feedstocks, such as construction and demolition waste. If biomass is combusted, state-of-the-art pollution controls must be required.

Biomass electricity generation involves extracting the energy from organic materials that part of the active carbon cycle (i.e. not fossil fuels). Most biomass facilities in the United States combust fuel to boil water and drive a steam turbine, similar to conventional fossil fuel operations. A variety of sources,

known as feedstocks, can potentially be used for biomass power production, including wood or wood pellets, forest wastes, and agricultural residues. Paper mill residue and lumber mill scraps may also be considered biomass.

The environmental and health impact of biomass power is directly related to the feedstock from which the energy is derived. The choice of biomass feedstocks often presents a trade-off between cost, fuel-quality, and environmental and health impacts. For example, urban waste, such as construction or demolition debris, is usually inexpensive relative to other biomass feedstocks, and combusting this debris at a biomass plant diverts it away from landfills. However, such waste may be of low-quality, meaning that more feedstock is required to produce a given amount of electricity, or contain high-levels of impurities, resulting in greater air emissions.

Biomass combustion increases the risk of the emission of noncarbon air pollutants. Electricity production from biomass releases many of the same air pollutants as fossil-fuel generation, although the quantities may differ substantially on per MWh basis. Particulate matter (PM) emissions are the most significant health threat from biomass power plants. Without controls, combustion of wood and wood wastes for power production can result in PM emissions that are more than 20 percent higher than emissions from an uncontrolled coal plant. Emissions of carbon monoxide and volatile organic compounds (VOCs) can be more than 400 percent and 2,000 percent higher than emissions from a coal plant, respectively. In contrast, NOx emissions may be nearly 60 percent lower and SO_2 emissions are virtually eliminated[27]

Wood wastes, such as construction and demolition debris, may also contain toxic air pollutants.[28] The potential for toxic emissions from construction and demolition debris varies, depending on state fuel standards[29]). Like fossil fuels, biomass combustion also emits other hazardous air pollutants. The impact of these emissions on human health is generally similar to the impact of emissions from fossil fuel combustion. Limited data are available on how various feedstocks affect overall emissions from biomass power.

Producing electricity from biomass also releases CO_2 into the atmosphere, as well as small amounts of methane and nitrous oxide. Biomass energy has the potential to reduce carbon dioxide emissions because the CO_2 released can be balanced by the CO_2 captured in growing the feedstock. However, the overall CO_2 benefit depends on how much energy was used to grow, harvest, and process the fuel.

The American Lung Association acknowledges that pollution from the combustion of wood and other biomass sources poses a significant threat to human health, and supports measures to transition away from using these products for heat production.

Natural Gas-based Electricity

The American Lung Association supports the increased use of natural gas as a transitional fuel for the production of electricity as a cleaner alternative to biomass, coal and other fossil fuels. Natural gas exploration, extraction, production and transmission can create air pollution, including emissions from the use of diesel engines. While the American Lung Association has recommended that EPA strengthen proposed rules for natural gas extraction,, the emissions from natural gas combustion for electricity generation are much lower than that of coal. As the National Research Council report stated the comparison: "[O]n average, nonclimate-change-related damages associated with electricity generation from natural gas are an order of magnitude lower than damages from coal-fired electricity generation."[30] The report also concluded that natural gas powered electricity plants emitted approximated half the CO_2.[31]

The American Lung Association supports public policies requiring the installation and operation of state-of-the-art pollution control systems at new and existing natural gas-fired power plants. The American Lung Association also supports programs and policies to protect air, water, and other environmental resources during the exploration, extraction, production, and transmission of natural gas, including hydraulic fracturing.

The proposed rule will not limit power plant development.

Department of Energy projections indicate that the proposed rule would have little to no impact on the development of future power plants, because it is estimated that almost all future power plants will employ a natural gas combined cycle (NGCC). This is due to low natural gas prices, renewable portfolio standards, and new technology. The NGCC model can easily meet the proposed standard, because, on average natural gas combustion results in half the CO_2 emissions of coal per MWh of energy generated.[32] In fact, 95% of the NGCC facilities that started between 2006 and 2010 already meet the proposed standard.[33] The proposed rule supports the increasing industry standard of natural gas combined cycle technology.

If coal-fired power plants are built in the future, these power plants must install sufficient carbon capture and storage (CCS) technology and other controls to reduce CO_2 and other air emissions. As noted earlier, however, this will not address the upstream impacts of coal extraction nor the downstream impacts of the byproducts of coal combustion.

The American Lung Association does not support coal-fired power plants or CCS technology. The Lung Association does support the increased use of natural gas as a transitional fuel for the production of electricity, as a cleaner alternative to biomass, coal and other fossil fuels.

EPA should strengthen the proposed rule.

The American Lung Association supports the proposed rule because it will reduce harm-inducing CO_2 from the atmosphere by reinforcing incentives for cleaner electric generation, without imposing hardship on the electric power industry. However, the Lung Association urges EPA to take several steps to strengthen the rule and reduce the potential for unintended consequences.

Carbon pollution limits should be tighter.

The EPA is proposing a carbon pollution limit of 1,000 lbs of CO_2 per MW hr. The American Lung Association urges EPA to set a lower carbon pollution standard. The EPA has noted the overwhelming trend towards natural gas combined cycles, which easily meet the proposed standard. The proposed rule notes that "[a]lmost all the stationary combined cycle gas turbines built in the U.S. in the last five years can meet the proposed standard."[34] It would appear that a higher standard for NGCC would be easily met. In fact, New York State is proposing a carbon pollution limit of 925 lbs of CO_2. New York State's proposed limit includes an conservative emission allowance to accommodate uncertainties in technical issues about technical issues, and allows oil-based power production for up to 45 days a year.

Reporting and Enforcement mechanisms should be strong

The American Lung Association supports power plant pollution reporting on a 12-month rolling average basis. This arrangement benefits power plants, the EPA, and the public. A 12-month reporting requirement allows power plants to account for variable pollution levels throughout a month, and allows the EPA to intervene quickly if pollution levels are too high. A 12-month rolling period would also allow the public to view emission levels every six months. This transparency and accountability is vital as the EPA moves forward with regulating carbon pollution.

The EPA should not exempt modified and reconstructed power plants.

The American Lung Association does not support exempting carbon pollution from existing power plants that are modified or reconstructed in future years. EPA states that it does not have an "adequate basis...to develop standards of performance for modifications,"[35] but does not consider other alternatives to the outright exemption of carbon pollution controls. The exemptions in the proposed rule may lead to unintended consequences. For example, inefficient, aging power plants could avoid decommission by expanding capacity under the guise of a modification or reconstruction. Such an increase in capacity would lead to an increase in unchecked carbon pollution.

Rather than exempt all reconstructions and modifications, the American Lung Association urges the EPA to set a threshold for this exemption. The State of New York is finalizing carbon pollution regulations that require an existing power plant, which is otherwise exempt, to be treated as a new power plant once it expands capacity by 25MW or more. In its analysis, New York found that this requirement would not affect changes made to increase efficiency.[36] The American Lung Association supports a similar

threshold for modified or reconstructed power plants. Otherwise, the EPA risks creating a loophole for power plants to expand capacity without being accountable for additional carbon pollution.

The Lung Association is particularly concerned that this broad exemption could circumvent or undermine the application of the "new source review" authority under Section 111 of the Clean Air Act. The U.S. Supreme Court ruled unanimously in 2007 that new source review requirements applied to any physical or operational change that increases a plant's actual annual air pollution emissions.[37] New sources include sources that modify or reconstruct their facilities and increase emissions must not be exempted from review in the future.

The EPA should not exempt biomass-fueled power plants.

As stated previously, the American Lung Association does not support biomass combustion for electricity production. The proposed rule exempts biomass-fired boilers that co-fire with less than 250 MMBtu/h of fossil fuel. The American Lung Association opposes exempting any level of biomass-fired electricity.

The environmental and health impacts of biomass power are directly related to the feedstock from which the energy is derived. The choice of biomass feedstocks often presents a trade-off between cost, fuel-quality, and environmental and health impacts. Biomass-fueled electricity increases the risk of additional amounts of carbon monoxide, VOCs, and particulate matter. Any overall CO_2 benefit depends on how much energy was used to grow, harvest, and process the fuel. In 2011, the EPA itself noted it must "*conduct a detailed examination of the science associated with biogenic CO_2 emissions from stationary sources, . . . and resolve technical issues in order to account for biogenic CO_2 emissions in ways that are scientifically sound and also manageable in practice*"[38] while determining biogenic CO_2 pollution from PSD and Title V applicability under the Clean Air Act.

The American Lung Association urges the EPA to strike the biomass exemption, given the complexity of determining biomass feedstocks, overall CO2 pollution, and impacts of biomass-fired electricity on air quality.

The EPA should not exempt simple cycle turbines.

The American Lung Association does not support the exemption of simple cycle turbines. Though simple cycle turbines are not often used for baseload generation, the high carbon pollution associated them and the potential for perverse incentives require the EPA to devise a standard for with simple cycle turbines.

Because they do not recapture waste heat, simple cycle turbines are generally less efficient and pollute more carbon than combined cycle turbines, but they are less expensive than a combined cycle unit. Simple cycle turbines are often used to provide electricity during peak times or to offset the startup

delays of a combined cycle, and the proposed standard notes that few simple cycle turbines generate more than one-third of their output for sale. However, this is not an insignificant amount of output, or an insignificant amount of associated pollution. The outright exclusion of simple cycle units from the proposed rule creates an incentive for power plants to use these less expensive, less efficient and more polluting units. Under the proposed rule, if a future power plant needs to generate more electricity, it could be less expensive, albeit less efficient, to add pollution-exempt simple cycle turbines than a more-efficient combined cycle unit that is subject to carbon pollution standards.

The EPA should note that the State of New York is poised to regulate carbon pollution for simple cycle turbines. New York's proposed standard limits simple cycle carbon pollution to 1,400 lbs CO_2 per MWh. This standard was developed with considerations for the necessity for peak usage and allows simple cycle turbines to operate on oil 85 percent to 100 percent of the time.

The EPA should not exempt power plants that combust solid waste.

The American Lung Association does not support the proposed rule exemption of power plants subject to Clean Air Act §129 (solid waste combustion). Solid waste combustion, i.e., the direct combustion of municipal solid waste or the use of gas captured at landfills, raises environmental and air quality issues. Municipal solid waste contains a diverse mix of waste materials, some benign and some very toxic. Toxic materials include trace metals such as lead, cadmium and mercury, and trace organics, such as dioxins and furans. These toxics pose public health and environmental problems if they are released into the air with power plant pollutants. Additionally, landfill gas consists primarily of carbon dioxide, methane, and non-methane organic compounds. Without strict controls on toxics and carbon pollution, the proposed rule could increase the dangerous emissions from the use of solid waste-fueled electricity.

The EPA should not exempt combined heat and power units.

The American Lung Association does not support the exemption of combined heat and power (CHP) units. Combined heat and power (CHP) systems, also known as cogeneration, generate electricity and useful thermal energy in a single, integrated system.

CHP is more method than technology. Heat that is normally wasted in conventional power generation is recovered as useful energy, which avoids the losses that would otherwise be incurred from separate generation of heat and power. Though the American Lung Association supports federal policies that will drive the deployment of the cleanest and most fuel-efficient energy technologies, the Lung Association does not condone exempting CHP units from the proposed standard. The source of the heat and power to be combined does matter.

The proposed standard states that most CHP units generate on-site power, and that such units would not generate enough electricity to fall under the proposed rule. The EPA further notes that there is a "small amount of projected coal-fired CHP."[39] Though large-scale CHP power plants are not currently the

norm, this exemption would create a perverse incentive to build new power plants (or modify old ones) using CHP. The proposed standard additionally notes that the EPA could subject CHP to the 1,000 lbs of CO2/MW hour standard—but chooses not to.[40] This sends a strong message to power plants that installing less efficient CHP units is easier than complying with pollution limits. The EPA should set a standard for CHP units instead of exempting them entirely.

The alternative compliance mechanism is unnecessary and ineffective.

The American Lung Association does not support the alternative compliance mechanism (ACM). The ACM ignores a forty-year history of the Clean Air Act driving standards through enforcement. Furthermore, giving power plants a decade of higher carbon pollution standards will not spur the pollution reduction or technological advances that are needed for a new generation of cleaner power plants.

The proposed ACM offers new, coal-fired power plants a 30-year period to comply with emissions standards. Instead of meeting the permanent limit of 1,000 lbs of CO_2 per gross Megawatt hr (MWh), the ACM allows a coal-fired power plant to emit 1,800 lbs of CO_2/MWh on a 12-month average during its first ten years of operation. After that first decade, carbon pollution is limited to 600 lbs of CO_2/MWh per 12-month average for the following 20 years. The proposed rule offers no end date for this alternative compliance mechanism.

The American Lung Association does not support the ACM because the timeline creates a loophole that would encourage the continued expansion of coal-powered units without carbon controls under the guise of future adoption of the CCS. However, should the EPA finalize this provision of the rule, the American Lung Association believes that the ACM must be temporary. Without a sunset provision for this mechanism, the carbon capture and sequestration (CCS) industry has less support to improve CCS technology, and power plants have less incentive to use the best CCS system. EPA must end the ACM at a date certain to meet its goals of reducing life-threatening carbon pollution and improving CCS technology.

The EPA notes that the proposed rule is "an important component"[41] to promoting CCS, and that the Agency "expect[s CCS costs] to decrease as CCS becomes more mature and less expensive."[42] It further notes that "ten years...provides early adopters sufficient time to address any startup challenges."[43] This language indicates that the EPA views the first decade of this rule as be a "startup" period, followed by clarity and greater certainty about CCS. It is counter-productive at best, and confusing at worst, for EPA to claim that CCS technology will become more certain and simultaneously support a never-ending alternative compliance mechanism.

The alternative compliance mechanism should only serve as a startup period that will allow CCS technology to improve. Without an end date for the alternative compliance mechanism, coal-fired power plants for the next hundred years—or more—will have an incentive to opt for the lowest cost, highest emitting CCS technology, spend a decade spewing higher levels of carbon, and avoid the additional cost of better CCS technology until as late as possible. This will not create a market demand for the most efficient CCS technology. If the EPA believes that the proposed standard can support the development of CCS technology, then it should include a date certain at which power plants—and CCS manufacturers—can expect power plants to emit no more than 1,000 pounds of CO_2 per gross Megawatt hour (MWh).

If the EPA Administrator determines to allow the use of an alternative compliance mechanism, she must set an end date for the compliance not later than 2020, a date which coincides with the obligation to review and revise each NSPS every eight years under CAA section 111(b)(1)(B). However, ALA strongly opposes waiting eight years for an end date to be determined. An eight-year period of uncertainty does not encourage the market to develop the most efficient CCS technology. The American Lung Association urges the EPA to terminate the ACM in 2020. A 2020 termination date would create incentives for more efficient CCS technology. If CCS technology has not sufficiently improved by 2020, the Administrator would have the authority to extend the ACM termination date if it appears realistic that feasible CCS technology can be adapted for system-wide emissions reductions, though that extension should be limited to one additional defined short-term period. The American Lung Association supports striking the ACM provisions in the proposed rule, and finalizing strong reporting and enforcement mechanisms.

EPA must regulate carbon pollution from existing power plants.

The American Lung Association believes that limits for power plant carbon pollution must include existing power plants, not just new ones. There are more than 500 existing coal-fired power plants spewing carbon and other pollutants on a daily basis.[44] As the National Research Council states: "The emissions of CO_2 from coal-fired power are the largest single source of GHG emissions in the United States."[45] We cannot ignore the impact of carbon pollution from these existing power plants.

The proposed standard not only exempts existing power plants, it ignores the fact that they can—and will likely—continue to pollute the air for future generations. In Sunbury, Pennsylvania, the Shamokin Dam power plant has been operating since 1949 and will finally switch to natural gas in 2015.[46] Existing power plants aren't disappearing, and they should be included in carbon pollution limits.

The public wants EPA to cut pollution levels.

We also write inform you of the views of the public as it relates to more protective standards for power plant carbon pollution. According to a March 2012 bipartisan survey conducted by Democratic polling

firm Greenberg Quinlan Rosner Research and Republican firm Perception Insight, nearly three-quarters of likely voters (73 percent) nationwide support the view that it is possible to protect public health through stronger air quality standards while achieving a healthy economy, over the notion that we must choose between public health or a strong economy. This overwhelming support includes 78 percent of independents, 60 percent of Republicans and 62 percent of conservatives, as well as significant support in Maine, Pennsylvania and Ohio. Additionally, a substantial majority of voters support the EPA implementing these standards, even after hearing opposing arguments that stricter standards will damage the economic recovery. A substantial majority of voters also support the EPA implementing standards for power plant carbon pollution. Initially, 72 percent of voters nationwide support the new protections on carbon pollution from power plants, including overwhelming majorities of both Democrats and independents and a majority of Republicans. After listening to a balanced debate with messages both for and against setting new carbon standards, support still remained robust with a near 2-to-1 margin (63 percent in favor and 33 percent opposed).

In summary, the American Lung Association urges EPA to strike proposed exclusions for modified or reconstructed plants, biomass-fired power plants, simple cycle turbines, solid waste-fueled power plants and CHP units. Furthermore, the American Lung Association supports removing the ACM provision. However, if the ACM loophole is allowed, then EPA should terminate that option in 2020. As the EPA finalizes the proposed standard, the American Lung Association urges the EPA to develop carbon pollution limits on existing power plants as well.

In conclusion, the risks of carbon pollution on ozone levels and public health and the obligations under current law require the EPA to develop carbon pollution limits for power plants. The American Lung Association supports EPA setting protective standards for power plant carbon pollution. The proposed standard will continue EPA's critical steps to protect Americans from the documented harm from emissions from power plants. However, the American Lung Association believes the Best System of Emission Reduction is stronger than the proposed pollution limits. By setting strong power plant pollution limits, EPA can favor our children's future over future power plants.

Sincerely,

Paul G. Billings
Vice President, National Policy and Advocacy

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[2] U.S. EPA, 2011. Table ES-2.

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Testimony of
Daniel M. Dolan-Laughlin,
Volunteer for the American Lung Association in Illinois
Before the U.S. Environmental Protection Agency
Regarding the Proposed Power Plant Carbon Pollution Standard
May 24, 2012
Chicago, Illinois

Good morning. My name is Daniel M. Dolan-Laughlin. I am appearing here today to testify how pollution controls, like the carbon pollution limits the EPA is proposing today, impact millions of people who suffer from respiratory illnesses. Although, I am not a scientist, nor a doctor, I am someone who suffered, suffered nearly fatally from COPD. I am someone who received a double-lung transplant; and someone for whom pollution controls still, and will mean the difference between life and death.

I suffered from Chronic Obstructive Pulmonary Disease, or COPD, for decades. As the disease progressed, I could no longer work. My quality of life declined. Slowly at first, then more rapidly as I approached end-stage. I required round-the-clock oxygen therapy to perform even basic functions. Eventually, I wound up in the hospital with end-stage COPD. My doctor told me words no one is ever prepared to hear—that I had only several days left to live without mechanical support. And yet, a miracle occurred. Through organ donation, I was given the gift of life and hope… a healthy pair of lungs.

Even with this life-changing gift, I must be vigilant about pollution levels. Poor air quality during high ozone days forces me to stay indoors. Pollution, literally, makes me sick. I depend on healthy air to breathe and live. And there are many, many others who depend on it too!

I'm not here simply to talk about my own battle for healthy air. I'm here as an advocate for everyone with lung diseases. Asthma sufferers, COPD patients, and others rely on pollution controls to simply get through another day. Lung disease impacts people young and old, rich and poor, all over the country. Every single one of them deserves the right to breathe healthy air. On behalf of these people, I support EPA's limits on carbon pollution from new power plants. By having the courage to implement this rule, you will reduce the carbon pollution and smog that

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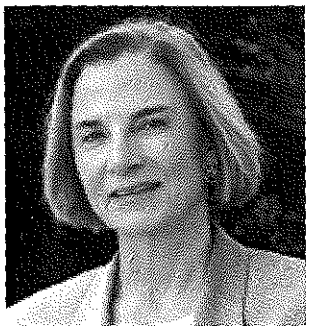
Addressing Green Matters at the White House: A Climate Change Discussion



Patricia W. Finn, MD

Beyond the threats to human life posed by extreme weather, the health effects of a planet that is getting relentlessly hotter are already taking their toll on vulnerable populations every day. This is the message I tried to convey during a White House meeting in June that was coincidentally scheduled for the day President Obama announced his plan to address global warming.

Valerie Jarrett, the president's lead advisor on environmental issues, convened the meeting with a half dozen medical and health groups, including the ATS, the National Association of County and City Health Officials, the American Lung Association, the Children's National Medical Center, the Asthma and Allergy Foundation of America, and the March of Dimes, and with climate change experts on her staff.

In welcoming us, Ms. Jarrett said that she looked to the ATS and the other organizations to identify and support the development of the best science to inform the discussion about the public health policy needed to meet a complex global problem.

The meeting was originally scheduled for 30 minutes but went a full hour as representatives of the invited organizations spoke urgently about the challenges we face from our different perspective of the health problems posed by an overheated planet.

When it was my turn to speak, I focused on three issues and tried to emphasize that, like me, many of the clinicians in the Society are already seeing the effects of climate change in their patients:

Climate and pollen. Climate change is creating earlier, longer, and more intense pollen seasons. Research has shown that pollen season is beginning about a day earlier at the equator and about 23 days earlier in northern climates. Increased carbon dioxide concentrations are also yielding more intense allergenic pollen blooms.

Climate and heat spikes and premature mortality. Recent heat spikes in cities around the world have resulted in premature deaths. While heat-spike related deaths are infrequent, it is important to note that these deaths were not among those expected to die soon under normal conditions. They were among people whose primary risk factor was the extreme heat they experienced.

An Official American Thoracic Society Workshop Report: Climate Change and Human Health

Kent E. Pinkerton, William N. Rom, Muge Akpinar-Elci, John R. Balmes, Hasan Bayram, Otto Brandli, John W. Hollingsworth, Patrick L. Kinney, Helene G. Margolis, William J. Martin, Erika N. Sasser, Kirk R. Smith, and Tim K. Takaro; on behalf of the American Thoracic Society Environmental Health Policy Committee

This Official Workshop Report Was Approved by the American Thoracic Society Board of Directors, January 2012

CONTENTS

This document presents the proceedings from the American Thoracic Society Climate Change and Respiratory Health Workshop that was held on May 15, 2010, in New Orleans, Louisiana. The purpose of the one-day meeting was to address the threat to global respiratory health posed by climate change. Domestic and international experts as well as representatives of international respiratory societies and key U.S. federal agencies convened to identify necessary research questions concerning climate change and respiratory health and appropriate mechanisms and infrastructure needs for answering these questions. After much discussion, a breakout group compiled 27 recommendations for physicians, researchers, and policy makers. These recommendations are listed under main issues that the workshop participants deemed of key importance to respiratory health. Issues include the following: (*1*) the health impacts of climate change, with specific focus on the effect of heat waves, air pollution, and natural cycles; (*2*) mitigation and adaptation measures to be taken, with special emphasis on recommendations for the clinical and research community; (*3*) recognition of challenges specific to low-resource countries when coping with respiratory health and climate change; and (*4*) priority research infrastructure needs, with special discussion of international needs for cooperating with present and future environmental monitoring and alert systems.

Keywords: climate change; respiratory; pollen; greenhouse gases; cobenefits

EXECUTIVE SUMMARY

Climate change is due to average global surface temperature increase over the past several decades from greenhouse gases in the troposphere reflecting infrared radiation back to the earth's surface. Greenhouse gases are dominated by CO_2, but important contributions come from methane, nitrous oxide, carbon black, ozone, and small amounts of chemicals, including hydrofluorocarbons, hydrochlorofluorocarbons, and others. Importantly, the recent increased greenhouse gases chronicled by reports of the Intergovernmental Panel on Climate Change are anthropomorphic in origin. The year 2010 tied 2005 as the warmest year since records began in 1880 and was the 34th consecutive year with average temperatures above the twentieth-century average. The National Oceanic and Atmospheric Administration chronicled seven rising indicators of climate change: (*1*) air temperature over land, (*2*) sea-surface temperature, (*3*) air temperature over oceans, (*4*) sea level, (*5*) ocean heat, (*6*) humidity, and (*7*) tropospheric temperature in the active weather layer of the atmosphere closest to the Earth's surface. Three indicators were declining: (*1*) Arctic sea ice, (*2*) glaciers, and (*3*) spring snow cover in the Northern hemisphere. How will a warming world affect pulmonary, critical care, and sleep physicians? Before the 2010 American Thoracic Society International Conference, the Workshop organizers invited national and international experts to consider these questions and make the following recommendations for research and investigation:

- Epidemiology: Explore how climate changes in heat, humidity, precipitation, and extreme weather events impact the distribution of respiratory disease.
- Heat Stress and Adaptation: Understand how extreme heat affects the individual and the community.
- Vulnerable populations: Increase knowledge of how climate-forced heat increases impact the young, impoverished, and those with chronic cardiorespiratory conditions.
- Human Exposure Studies: Conduct chamber studies to understand how the human body responds to airborne exposures in conjunction with heat.
- Climate-Forced Air Pollution: Examine how climate change influences the production, distribution, and interaction with air pollutants, especially heat and ozone.
- Biomass Fuel Cooking: Charcoal, animal matter, and plant matter in indoor cooking and heating increase mortality from children's respiratory infections and chronic obstructive pulmonary disease; explore the impact and control on the release of black carbon into the atmosphere.

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TABLE 1. METHODOLOGY

Methods Checklist	Yes	No
Panel assembly		
Included experts from relevant clinical and nonclinical fields	x	
Included individuals who represented patients and society at large	x	
Included methodologist with appropriate expertise (documented expertise in development of conducting systematic reviews to identify the evidence base and development of evidence-based recommendations)		x
Literature review		
Performed in collaboration with a librarian		x
Searched multiple electronic databases	x	
Reviewed reference list of retrieved article	x	
Evidence synthesis		
Applied preselected inclusion and exclusion criteria		x
Evaluated included articles for sources bias		x
Explicitly summarized benefits and harms	x	
Used PRISMA1 to report systematic review		x
Used GRADE to describe quality of evidence		x
Generation of recommendations		
Used GRADE to rate the strength of recommendations		x

Definition of abbreviations: GRADE = Grades of Recommendation Assessment, Development and Evaluation; PRISMA1 = Preferred Reporting Items for Systematic Reviews and Meta-Analyses 1.

ozone (4, 21), and ozone exposure has been linked to exacerbations of chronic obstructive pulmonary disease, asthma, idiopathic pulmonary fibrosis, lung cancer, and acute lower respiratory infection. During heat waves, health effects can be due to combined exposures to excessive heat and air pollution. A recent analysis of European heat waves (1990–2004) measured higher respiratory than cardiovascular mortality, although specific causes could not be determined (22). The impacts of climate change on surface ozone, SO_2, and NO_x concentrations in the United States and elsewhere have been examined in numerous recent studies (23–28), with potentially important morbidity and mortality implications for human health (29–32). In addition, as the demand for air conditioning increases during heat waves, power consumption and the production of fine PM increases, which is a contributor to cardiopulmonary disease.

Workshop participants identified key climate change factors—heat, air pollution, and airborne allergens—that they believed present significant challenges to respiratory health worldwide. Corresponding research needs and questions for each climate change factor were discussed. The results of the discussion are presented below.

Heat Research Needs

- Epidemiology: Explore how climate changes in heat, humidity, precipitation, and extreme weather events impact the distribution of respiratory disease.
- Heat Stress and Adaptation: Understand how increased heat, particularly extreme heat, affects a community's ability to adapt.
- Vulnerable Populations: Increase knowledge of how climate-forced heat increases impact vulnerable populations (e.g., old, young, impoverished, those with chronic cardiorespiratory conditions, or chronic disease overall).

Air Pollution Research Needs

- Human Exposure Studies: Conduct chamber studies to understand how the human body responds to airborne exposures in conjunction with heat.
- Climate-Forced Air Pollution: Examine how climate change influences the production and distribution of air pollutants (e.g., how increased ambient temperatures will amplify known hazardous exposures or modify the effect of known exposure–outcome relationships).
- Co-benefits and Trade-offs: Elucidate the interactions between air quality control measures, sustainable development, and climate change mitigation and adaptation measures. Topics include cobenefits research (biomass fuel cooking/heating alternatives), PM reduction and its impact on the atmospheric energy balance, air pollution and cloud formation, urban planning, renewable energy, and energy consumption.

Natural (Seasonal) Research Needs

- Disease Cycles: Understand how changing climate will impact the pattern of infectious disease (i.e., flu, colds).
- Human Migration: Study how climate-forced changes in water/food security, risk of extreme weather events, and heat will potentially impact established and novel human migration patterns as well as how communities and regions will likely adjust to these migration patterns in terms of health care and respiratory disease, such as tuberculosis.
- Allergy: Explore how climate change (increased atmospheric CO_2 concentrations and temperatures) will impact human exposures to pollen and mold spores in terms of intensity, allergenicity, duration, and timing of growing and pollen-production seasons and changed flora and pollen range.
- Vector- and Zoonotic-Borne Disease: Investigate how respiratory health will be impacted by climate change-induced vector-borne diseases and their shifting ranges.
- Humidity, Precipitation, and Mold: Study how climate changes in humidity, precipitation, and extreme weather events will impact respiratory exposures to mold, especially those brought on by flooding of dwellings or high humidity.
- Desertification: Understand how climate-forced desertification and the long-term transport of mineral dusts will impact respiratory health.
- Forest Fires: Recognize how climate change will impact the frequency and intensity of forest fires and its likely impact on human exposures to respiratory irritants along with effective adaptations to lessen or avoid such effects.

- Personal Technology Alert and Reporting Systems: Explore the potential of personal technologies as a way to both alert individuals and communities of climate-forced health threats as well as using such personal technologies to collect human health data.

SUMMARY OF KEY FINDINGS

The purpose of the ATS Climate Change and Respiratory Health Workshop was to identify necessary research questions as well appropriate mechanisms and infrastructure needs for limiting the respiratory health impact of climate change. A crucial step to be taken is improving public health and clinical educational programs to raise awareness of climate change and the potential health consequences and attract more of the work force to this area of study. There needs to be an emphasis on public recognition and early warning response to severe climate-related events with the awareness that these effects are likely to have the most impact on susceptible populations: the elderly, infants and children, those with existing respiratory/cardiovascular disease or autonomic dysfunction in temperature control, and those living in low-resource countries. In addition, multidisciplinary research efforts involving research scientists, clinicians, public health specialists, sociologists, local–state partners, climatologists, toxicologists, epidemiologists, and population scientists are required to address unanswered health-related consequences of climate change. Funding agencies should encourage multidisciplinary approaches and introduce newer funding mechanisms, collaborative program project grants, new investigator awards, and training awards to enhance research interest of newer investigators in this field. For example, research on climate and respiratory health can be enhanced by greater access to and coordination among existing Earth system science, technology, and data collection efforts underway at organizations such as the World Health Organization (WHO), National Aeronautics and Space Administration (NASA), U.S. Centers for Disease Control and Prevention (CDC), U.S. Environmental Protection Agency (USEPA), U.S. National Institute of Environmental Health Sciences (NIEHS), World Meteorological Organization (WMO), the United Nations (UN), and many others. Critical use of existing resources is likely to enhance cobenefits to several agencies partnering. Last, defined public health cohorts, disease surveillance programs, review of existing climate surveillance systems, and environmental tracking and registry systems need to be improved or developed globally. Domestic and international participants in the ATS workshop came together to collectively discuss the respiratory health challenges brought about by climate change. These proceedings present their concerns and recommendations to other members of the health, research, and policy sectors, so that they can be informed and act on a challenge that faces us all.

This official ATS Workshop Report was prepared by a writing committee of the American Thoracic Society Environmental Health Policy Committee.

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American Lung Association • American Public Health Association • Asthma and Allergy Foundation of America • Healthcare Without Harm • National Association of County and City Health Officials • Physicians for Social Responsibility

June 25, 2012

The Honorable Lisa Jackson, Administrator
U.S. Environmental Protection Agency
Air and Radiation Docket and Information Center
Mail Code 2822T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Docket ID No. EPA-HQ-OAR-2011-0660

Dear Administrator Jackson:

We write in support of strong standards to reduce power plant carbon pollution. These proposed standards can play an important role in reducing the risk of adverse health effects associated with ozone ("smog") on our nation's most vulnerable populations, including children, sick, and the elderly. These standards must be finalized for the U.S. Environmental Protection Agency (EPA) to take an important first step toward ensuring that electricity is produced by the most modern, and least toxic, power plants. Furthermore, we ask that EPA begin work on a carbon pollution standard for existing power plants.

The Clean Air Act requires the EPA to regulate air pollutants if they are found to endanger the public's health. The Supreme Court ruled that greenhouse gases (GHG) met the definition of air pollutants in the Clean Air Act in 2007 and directed EPA to assess whether or not GHGs do endanger health. In 2009, the EPA found that concentrations of GHG in the atmosphere endanger the health and welfare of current and future generations by increasing temperatures and ozone pollution. This increase puts some of our nation's most vulnerable communities at greater risk for their health.

To regulate a pollutant such as GHG, the EPA must list categories of stationary sources that cause or contribute to air pollution, which may adversely impact the public's health or welfare. Electricity generating units (EGUs) are the largest stationary source of GHG in the United States. Energy accounts for 86 percent of total 2009 GHG emissions,[i] and the electric sector represents 39 percent of all energy-related CO_2 emissions.[ii] To regulate emissions from EGUs, the EPA must issue a new source performance standard (NSPS), which includes the achievable, best system to reduce emissions (BESR) considering cost and other factors. The proposed rule offers a NSPS for greenhouse gas emissions from electric utility generating units, commonly referred to as power plants.

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Citations

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