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New Regulation of Fine-Particle Pollution:

How Will Our Area Be Affected?

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Special to the Legal

Actions by the Environmental Protection Agency to regulate fine-particle pollution have increased over the last two years, and will soon have a tangible impact on area industry. Through a series of regulatory actions, EPA has begun to implement regulations aimed at requiring states to meet the fine-particle National Ambient Air Quality Standards (NAAQS) established in 1997.

Particle pollution, also known as particulate matter, is a mixture of microscopic solids and liquid droplets suspended in air. Particulate matter consists of a number of components, including nitrates and sulfates, organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores). According to EPA, airborne particles can cause serious health problems, especially for seniors, children, and people with heart or lung diseases.

Long-term exposure to airborne particulates has been associated with reduced lung function, the development of chronic bronchitis and even premature death. Short-term exposure to airborne particulates may aggravate lung disease, causing asthma attacks and acute bronchitis, and may increase susceptibility to respiratory infections. Short-term exposure may also aggravate people with heart disease, and has been linked to heart attacks and arrhythmias.

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Particulate matter is classified by the size of the particles. Small particles, less than 10 micrometers in diameter, pose the biggest health risks because they can affect the lungs and heart. Small particles include two types of regulated particulate matter: first, "fine particles" or PM2.5 are particles that are 2.5 micrometers in diameter or less; second, "coarse particles" or PM10 are particles that range in size between 2.5 and 10 micrometers in diameter.

Fine particles, or PM2.5, may be emitted directly or formed in the atmosphere from "precursor" emissions such as sulfur dioxide (SO2) or nitrogen oxides (NOx) industrial or mobile sources. Although EPA has long regulated PM10 emissions, EPA's efforts to reduce PM2.5 levels are gaining momentum. And unlike PM10, PM2.5 emission sources in the Philadelphia area will be subject to special permitting requirements pursuant to recent regulatory actions.

In 1997, EPA promulgated the NAAQS for PM2.5. The standard consists of two parts: a 24-hour standard of 65 micrograms per cubic meter; and an annual standard of 15 micrograms per cubic meter. Using these standards, EPA designated various areas of the country as either non-attainment, or attainment or unclassifiable. EPA's designations, which were published in December 2004 and became effective in April 2005, identified Bucks, Chester, Delaware, Montgomery, Philadelphia, Camden, Burlington and Gloucester counties as non-attainment, among others in Pennsylvania and New Jersey.

In response to these non-attainment designations, Pennsylvania and New Jersey must develop and submit state implementation plans (SIPs) by April 2008. Each SIP must demonstrate how attainment of the PM2.5 NAAQS will be achieved by the attainment deadline. (Under EPA's rule, attainment must be achieved as expeditiously as practicable, but no later than April 2010. Limited extensions may be considered.)

The federal Clean Air Act requires that a SIP for a non-attainment area must include the following (among other requirements): an inventory of actual emissions from all

sources of the non-attainment pollutant; provisions providing for the implementation of reasonably available control measures as expeditiously as practicable, including such reductions in emissions from existing sources as may be obtained through the adoption of Reasonably Available Control Technology ("RACT") requirements; a demonstration of reasonable further progress toward attainment; permitting requirements for new or modified major sources of the non-attainment pollutant; and provisions for the implementation of contingency measures to be undertaken if the area fails to make reasonable further progress, or to attain the NAAQS by the applicable attainment deadline.

EPA's detailed SIP requirements are set forth in a proposed implementation rule published on Nov. 1, 2005, titled "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standard" (the "PM2.5 Implementation Rule"). EPA expects to finalize the PM2.5 Implementation Rule in early 2006.

Pursuant to the PM2.5 Implementation Rule, emission sources located in PM2.5 non-attainment areas, such as the Philadelphia region, may be affected in two primary ways. First, states will likely propose in their SIPs measures for applying RACT to existing sources of PM2.5. In developing such RACT requirements, states must consider the size and types of sources that emit PM2.5 and its precursors.

In its preamble to the proposed PM2.5 Implementation Rule, EPA suggests that there is a broad mix of source categories responsible for PM2.5 and precursor emissions, such as electricity generating units, industrial boilers, oil refineries, other types of combustion activities and solvent usage. Further, the level of emissions of various pollutants and their effect on PM2.5 attainment is a complex inquiry. Therefore, although EPA provides various alternative methodologies for states to consider in evaluating RACT, it is likely that existing sources with significant emissions of PM2.5, SO2 or NOx may be required to install or enhance pollution controls in order to help the state demonstrate reasonable further progress toward attainment of the PM2.5 NAAQS.

The second way in which area emission sources will be affected is through the implementation of non-attainment new source review requirements for PM2.5. In Pennsylvania and New Jersey, the existing non-attainment new source review permitting programs have been focused on emissions of NOx and volatile organic compounds, which are precursors to ground-level ozone or smog. Now, with EPA's designation of PM2.5 non-attainment areas, new source review program rules must also be applied to emissions of PM2.5.

As a general matter, non-attainment new source review requires that new major sources, or modifications of existing major sources causing a significant increase in a non-attainment pollutant, must achieve the lowest achievable emission rate (LAER) and obtain emission credits at a prescribed ratio to offset the newly proposed emissions. Under EPA's proposed PM2.5 implementation rule, a source will be characterized as "major" for new source review purposes if it has the potential to emit 100 tons per year of PM2.5.

For modifications to existing major sources, the proposed PM2.5 implementation rule establishes a significant net emission increase threshold of 10 tons per year of PM2.5, and 40 tons per year for the PM2.5 precursors SO2 and NOx. (However, states may attempt to demonstrate that it is not necessary to regulate NOx emissions in this manner.) Sources with project emissions exceeding these levels would therefore be required to meet LAER and obtain emissions offsets for PM2.5.

EPA's new source review requirements will also have implications for minor sources of PM2.5. Specifically, consistent with the Clear Air Act, Pennsylvania's existing new source review program requires a minor source applying for a plan approval to demonstrate that the source meets the best available control technology. In practice, as major sources are driven to achieve new levels of PM2.5 control using LAER, RACT or other control requirements, that BAT standard for minor sources will also become more stringent.

Although the implementation procedures currently being developed relate to the PM2.5 NAAQS set in 1997, EPA has recently proposed to further tighten the PM2.5 NAAQS. On Dec. 20, 2005, EPA announced its proposed revision to the 24-hour PM2.5 standard from the current level of 65 micrograms per cubic meter to 35 micrograms per cubic meter. This proposal is in response to recent scientific findings about the risks of short-term particle exposure.

For example, according to a recent EPA estimate, approximately 450 people in Philadelphia would die prematurely each year due to fine particle pollution, even if the current PM2.5 standard was being met. EPA anticipates that the more stringent PM2.5 standard will be finalized by September. Upon finalization, EPA will begin the process of designating attainment and non-attainment areas, and states will be required to revise their SIPs to demonstrate how they will meet the more stringent standard. These actions will cause Pennsylvania and New Jersey to impose even tighter controls on existing and new sources of PM2.5 emissions in the region. •