

PROPOSED RULEMAKING

ENVIRONMENTAL QUALITY BOARD

[25 PA. CODE CH. 123]

Standards for Contaminants; Mercury

The Environmental Quality Board (Board) proposes to amend Chapter 123 (relating to standards for contaminants) to read as set forth in Annex A.

This notice is given under Board order at its meeting of May 17, 2006.

A. *Effective Date*

This proposed rulemaking will be effective upon final-form publication in the *Pennsylvania Bulletin*.

B. *Contact Persons*

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Information regarding submitting comments on this proposed rulemaking appears in Section J of this preamble. Persons with a disability may use the AT&T Relay Service, (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). This proposed rulemaking is available on the Department of Environmental Protection's (Department) website at www.depweb.state.pa.us.

C. *Statutory Authority*

This rulemaking is proposed under the authority of section 5(a)(1) of the Air Pollution Control Act (APCA) (35 P. S. § 4005(a)(1)), which grants to the Board the authority to adopt regulations for the prevention, control, reduction, and abatement of air pollution.

D. *Background and Summary*

1. *Introduction*

Mercury is a highly toxic pollutant—one specifically targeted by Congress when, in 1990, it amended section 112 of the Clean Air Act (CAA) (42 U.S.C.A. § 7412). The environmental impacts of mercury are significant, widespread and adverse.

Mercury is a dangerous reproductive and neurological toxicant. It can affect the brain, spinal cord, kidneys and liver. High exposure levels to mercury can affect the ability to feel, see and taste and has the potential to limit mobility. A study by the National Academy of Sciences (NAS) concluded that human exposure to methylmercury from eating contaminated fish and seafood is associated with adverse neurological and developmental health effects. Women of childbearing age and pregnant women are of special concern in terms of methylmercury exposure. Methylmercury exposure prior to pregnancy can actually place the developing fetus at risk because methylmercury persists in body tissue and is only slowly excreted from the body. Furthermore, according to the NAS, chronic low-dose prenatal methylmercury exposure has been associated with poor performance on neurobehavioral tests in children, including those tests

that measure attention, visual spatial ability, verbal memory, language ability, fine motor skills and intelligence. Adults can be affected by high mercury exposures as well, with effects on the nervous system and impaired vision and hearing.

A recent study released by the Centers for Disease Control and Prevention (CDC) found that approximately 8% of women of childbearing age in the United States had mercury levels exceeding the level considered safe by the United States Environmental Protection Agency (EPA) for protecting the fetus. In the United States, this translates into approximately 600,000 babies born each year at risk of developmental harm due to mercury exposure in the womb.

Accumulation of mercury in aquatic ecosystems has resulted in 45 states, including this Commonwealth, issuing fish consumption advisories. The Commonwealth has fish consumption advisories for mercury in 80 waterways across this Commonwealth, which includes the Delaware, Ohio, Potomac and Susquehanna River Basins and the Lake Erie Basin.

Mercury cycles throughout the environment as a consequence of both natural and human activities. The annual global cycling of mercury in the earth's atmosphere amounts to about 5,000 tons. It is estimated that 4,000 tons are the consequence of anthropogenic activities. The United States is responsible for 3% of the global anthropogenic emissions. Coal-fired power generation in the United States contributes approximately 40% of this amount.

Pennsylvania has 36 coal-fired power plants with 78 electric generating units (EGUs) that represent 20,000 megawatts of capacity. These units accounted for approximately 77% of the more than 5 tons of mercury emitted into the air from all contamination sources in this Commonwealth, ranking this Commonwealth second only to Texas in terms of total mercury emissions and third behind Texas and Ohio, respectively, for EGU-specific mercury emissions in 2003.

The mercury in the flue gas of EGUs can be characterized as being in two forms: oxidized or elemental. The ability of an air pollution control system to capture the mercury is dependent, in part, on the species of the mercury in the flue gas. When the coal is burned in an electric utility boiler, the resulting high combustion temperatures vaporize the mercury (Hg) in the coal to form gaseous elemental mercury (Hg⁰). Subsequent cooling of the combustion gases and interaction of the gaseous Hg⁰ with other combustion products results in a portion of the Hg being converted to gaseous oxidized forms of mercury (Hg⁺²) and particle bound mercury (Hg_p). The lifetime of elemental mercury (Hg⁰) in the atmosphere is estimated to be up to 1 year, while oxidized forms have a lifetime of only a few days because of particulate settling and solubility. Hg⁰ can be transported over transcontinental distances, whereas oxidized gaseous and particulate forms are deposited near their source. Methylmercury is formed by biological processes after Hg precipitates from air to water.

Coal-fired power plants that burn subbituminous coal emit Hg⁰, which is very difficult to capture with conventional air pollution control devices like wet flue gas desulfurization (WFGD) for sulfur dioxide (SO₂) control and selective catalytic reduction (SCR) for nitrogen oxides (NO_x) control. Moreover, coal-fired power plants that burn

sub-bituminous coal emit Hg⁰, which can be transported over transcontinental distances. Coal-fired power plants that burn bituminous coal emit oxidized forms of mercury, which are easier to capture using WFGD and SCR. Coal-fired power plants that burn bituminous coal emit oxidized forms of mercury, which are deposited near their source. For example, EGUs that burn 100% sub-bituminous coal and control emissions with a WFGD and SCR can expect to capture approximately 16% of mercury emissions. In contrast, EGUs that burn 100% bituminous coal and control emissions with a WFGD and SCR can expect to capture approximately 90% of mercury emissions. In this Commonwealth, 85% of coal burned by coal-fired power plants is bituminous, with the remainder waste coal. This proposed rulemaking, in part, is designed to take advantage of the co-benefit reductions that will occur under the Clean Air Interstate Rule (CAIR), published at 70 FR 72268 (December 2, 2005), designed to reduce SO₂ and NO_x emissions from EGUs.

2. *Legal Requirements Regarding the Control of Hazardous Air Pollutants under the CAA and the APCA*

Under the 1990 amendments to the CAA, Congress altered the principle focus of the hazardous air pollutants (HAP) program under section 112 of the CAA from a health-based to a technology-based regulatory program. As part of this new regulatory focus under section 112(b) of the CAA, Congress listed 189 HAPs. Under section 112(c) of the CAA, the EPA was required to establish a list of all categories and subcategories of major and area sources of air pollution for those pollutants listed in section 112(b) of the CAA. For each listed category of sources, the EPA is required, under section 112(d) of the CAA, to promulgate standards requiring the installation of maximum achievable control technology (MACT), in light of economic, energy, and environmental considerations.

The EPA is required to base the standard on the best technology currently available for the source category in question. These standards must be at least as stringent as the level achieved in practice by the best controlled source in the source category for new sources, or for the best performing group of sources for existing source MACT standards. For existing source MACT standards, the EPA defines the "MACT floor" (the minimum stringency level for existing source MACT) in terms of the central tendency (arithmetic mean or median) of the best 12% of sources in the source category (when there are 30 or more sources in the category) or the best performing five sources (when there are fewer than 30 sources in the category).

As part of this MACT process, the EPA has already finalized mercury emission limits for municipal waste combustors and medical waste incinerators, which resulted in a 90% reduction in mercury emissions within 5 years. However, Congress set forth additional regulatory steps before mercury emissions from EGUs could be controlled.

Under section 112(n)(1)(A) of the CAA, Congress directed the EPA to perform a study of the hazards to public health reasonably anticipated to occur as a result of emissions of HAPs by EGUs. Under this same section, the EPA is further directed to regulate these units if the EPA finds regulation is appropriate and necessary after considering the results of the study.

In addition to this section of the CAA, section 112(n)(1)(B) of the CAA further directs the EPA to conduct a study of mercury emissions from EGUs, municipal

waste combustion units and other sources to consider the rate and mass of these emissions, the health and environmental effects of these emissions, control technologies and the costs of these technologies.

In December 1997, the EPA fulfilled the statutory directive of section 112(n)(1)(B) of the CAA when it issued its *Mercury Study Report to Congress*, EPA-452/R-97-003. This 1,800-page, 8-volume report discusses the National inventory of anthropogenic mercury emissions in the United States, the fate and transport of mercury in the environment, an assessment of exposure to mercury in the United States, health effects of mercury and mercury compounds, an ecological assessment for anthropogenic mercury emissions in the United States, characterization of human health and wildlife risks from mercury in the United States and an evaluation of mercury control technologies and costs.

On February 28, 1998, the EPA fulfilled its statutory obligation under section 112(n)(1)(A) of the CAA when it released its *Study of Hazardous Air Pollutant Emissions from Electric Steam Generating Units—Final Report to Congress*. Most, if not all, of the conclusions regarding mercury are consistent with those found in the 1997 study. While this report identifies EGUs as the largest remaining unregulated source of mercury air emissions, it did not contain a determination as to whether or not regulatory controls were appropriate and necessary, and deferred any regulatory determination until a later date. Because of this regulatory delay, the Natural Resources Defense Fund sued the EPA and the parties entered into a settlement agreement to require the EPA to take final agency action to regulate mercury emissions by March 15, 2005.

At 65 FR 79825 (December 20, 2000), the EPA concluded, based upon the findings of its 1998 report and on information subsequently obtained, that in accordance with section 112(n)(1)(A) of the CAA, the regulation of mercury emissions from electric utilities was "appropriate and necessary." This conclusion was based on the following: EGUs are the largest anthropogenic source of mercury in the United States; mercury is highly toxic, persistent and bioaccumulates in the food chain; mercury emissions are transported through the atmosphere and eventually deposit onto land or water bodies; the deposition can occur locally near the source or at long distances; fish consumption dominates the pathway for human and wildlife exposure to mercury; neurotoxicity is the health effect of greatest concern with methylmercury exposure; the developing fetus is considered most sensitive to the effects from methylmercury; extrapolating from high-dose exposure incidents, the EPA derived a Reference Dose (RfD) for methylmercury of 0.1 ug/kg/day based on developmental neurological effects observed in children born to mothers exposed to methylmercury during their pregnancy; the EPA estimates that about 7% of women of childbearing age are exposed to methylmercury at levels exceeding the RfD and about 1% of women have methylmercury exposures three to four times that level; exposure to methylmercury can have serious toxicological effects on wildlife as well as on humans; there are a number of alternative control strategies that are effective in controlling some of the HAPs emitted from electric utility steam generating units; and recent data indicate that mercury can be effectively removed by using oxidizing agents or sorbents injected into the gas stream, and data also indicate the possibility for multipollutant control with other pollutants, like NO_x, SO₂ and particulate matter, greatly reducing mercury control costs.

As a result of these findings, the EPA added these units to the list of source categories to be regulated under section 112(c) of the CAA. The EPA was then required to establish emission standards for this source category under section 112(d) of the CAA.

At 70 FR 15994 (March 29, 2005), the EPA published a final rule entitled *Revision of December 2000 Regulatory Finding on the Emissions of Hazardous Air Pollutants From Electric Utility Steam Generating Units and the Removal of Coal- and Oil-Fired Electric Utility Steam Generating Units From the Section 112(c) List*. The EPA now believes that it is neither appropriate nor necessary to regulate mercury from these units for the following reasons: the December 2000 finding was overbroad to the extent it hinged on environmental effects; the December 2000 finding lacked foundation because the EPA did not fully consider the mercury reductions that would result from the installation of SCR to comply with new source performance standards (NSPS) for NO_x and the “NO_x SIP Call”; and new information reveals that the level of mercury emissions remaining after the imposition of the requirements of CAIR to further control SO₂ and NO_x through flue gas desulfurization and SCR technology does not cause hazards to public health.

As a result of this conclusion, the EPA removed coal- and oil-fired utility units from the list in section 112(c) of the CAA. This final action means that the EPA does not have to promulgate MACT standards for the control of mercury emissions from utility units. This action also cleared the way for the EPA to regulate these emissions under a Section 111 cap-and-trade approach.

On March 15, 2005, the EPA finalized its Clean Air Mercury Rule (CAMR). The final rulemaking published at 70 FR 28606 (May 18, 2005), established standards of performance for mercury for new and existing coal-fired EGUs, as defined in section 111 of the CAA (42 U.S.C.A. § 7411). New EGUs are subject to different standards of performance based on five subcategories: subbituminous, bituminous, lignite, waste coal, or integrated gasification combined cycle. This rule established a “cap-and-trade” program by which mercury emissions from new and existing coal-fired EGUs are capped at specified, Nationwide levels. The Phase 1 cap of 38 tons per year (tpy) becomes effective in 2010 and the Phase 2 cap of 15 tpy becomes effective in 2018. Facility owners and operators must demonstrate compliance with the standard by holding one “allowance” for each ounce of mercury emitted in any given year. Allowances will be readily transferable among all regulated facilities under the Section 111 trading scheme.

The EPA believes that an added benefit of the cap-and-trade approach is that it dovetails well with the SO₂ and NO_x emission caps under CAIR. Significant mercury emission reductions can be obtained as a co-benefit of controlling SO₂ and NO_x emissions. Thus, the coordinated regulation of Hg, SO₂ and NO_x emissions allows mercury reductions to be achieved in a cost-effective manner.

Section 111(c) and (d) of the CAA requires each state to develop and submit to the EPA Administrator a procedure for implementing and enforcing the NSPS for new sources and emission guidelines (EG) for existing sources. Specifically, the EPA authorizes states, under the CAMR, to adopt the mercury cap-and-trade program whether by incorporating by reference the CAMR cap-and-trade rule that will be codified in 40 CFR Part 60, Subpart HHHH (relating to emission guidelines and compliance) times for coal-fired electric steam generating units) or by codifying the provisions of the CAMR cap-and-trade rule to partici-

pate in the EPA-administered mercury cap-and-trade program. The final CAMR establishes the Commonwealth’s 2010-2017 mercury emissions budget as 1.78 tons and the 2018 budget as 0.702 ton.

Each state participating in the EPA-administered cap-and-trade programs must develop a method for allocating an amount of allowances authorizing the emissions tonnage of the state’s CAMR budget. Each state has the flexibility to allocate its allowances however they choose, so long as certain timing requirements are met. States may elect to participate in the EPA-managed cap-and-trade program for coal-fired utility units. However, state participation in this program is voluntary. For states that elect not to participate in the EPA-administered mercury cap-and-trade program, a methodology must be established by the states to meet the CAMR mercury emission budgets by reducing mercury emissions.

By November 17, 2006, states must submit a plan to the EPA that meets the requirements of the CAMR. If a state fails to submit a state plan, as required in the final rule, the EPA will prescribe a Federal plan for that state under section 111(d)(2)(A) of the CAA. The EPA would propose the model rule under the CAMR as that Federal plan. However, the EPA has indicated in the preamble to the final rule that states are free to develop a more stringent mercury control program than the one in the final rule. This proposed rulemaking, if adopted, will be submitted to the EPA as the State Plan to fulfill the Commonwealth’s requirements under the CAMR.

The APCA also contains specific provisions applicable to the regulation of HAPs regulated under section 112 of the CAA. Section 6.6 (a) of the APCA (35. PS § 4006.6) provides that “the regulations establishing performance or emission standards promulgated under section 112 of the [CAA] are incorporated by reference into the Department’s permitting program.” Section 6.6(a) of the APCA further provides that the “Environmental Quality Board may not establish a more stringent performance or emission standard for hazardous air pollutant emissions from existing sources, except as provided in subsection (d) [regarding health risk-based emission standards].” This “no more stringent than” provision applies to performance standards (MACT) or requirements adopted under section 112 of the CAA.

As previously noted, on March 29, 2005, the EPA revised its December 2000 “appropriate and necessary” regulatory finding for the regulation of mercury emissions from coal- and oil-fired EGUs as HAPs and delisted EGUs, which were included on a list of source categories under section 112(c) of the CAA. Section 6.6(a) of the APCA provides that the Board may establish emission standards for source categories which are not included on the list of source categories established under section 112(c) of the CAA. Because of the EPA’s March 29, 2005, delisting action, the limitations in section 6.6(a) of the APCA are not applicable to performance standards and other measures that would be adopted to implement the standards in section 111 of the CAA for new and existing sources.

The CAMR established standards of performance for new sources and EGs for existing sources under section 111(b) and (d) of the CAA, respectively. Because these standards were established under section 111 of the CAA, rather than section 112 of the CAA, the “no more stringent than” provision under section 6.6(a) of the APCA is inapplicable. In addition, the Department must develop a State Plan in accordance with section 111(d) of the CAA to implement and enforce the EG requirements.

Although the provisions under the CAMR are incorporated by reference in Chapter 122 (relating to National standards of performance for new stationary sources), the Department may adopt more stringent requirements for inclusion in the State Plan that must be adopted for existing sources and submitted to the EPA for review and approval. In addition, the EPA specifically states in the preamble of the CAMR that states are allowed to adopt more stringent requirements regarding mercury emissions in their state plans.

In response to the EPA's March 29, 2005, revision and the CAMR, petitions for review challenging these final EPA actions were filed with the United States Court of Appeals for the D.C. Circuit. In addition to the Commonwealth, state challengers include California, Connecticut, Delaware, Illinois, Maine, Massachusetts, New Hampshire, New Mexico, New Jersey, New York, Rhode Island, Vermont and Wisconsin.

On May 31, 2005, the Commonwealth, together with California, Connecticut, Delaware, Illinois, Maine, Massachusetts, New Hampshire, New Jersey, New Mexico, New York, Minnesota, Rhode Island, Vermont and Wisconsin, filed a petition for reconsideration under section 307(d)(7)(B) of the CAA (42 U.S.C.A. § 7607(d)(7)(B)) regarding the EPA's March 29, 2005, final action revising its December 2000 regulatory finding. Issues regarding this petition included whether the EPA's action is contrary to the CAA and supported by the record, and whether the procedural requirements under the Administrative Procedures Act and CAA were followed.

On July 18, 2005, the Commonwealth, together with these same states, filed a petition for reconsideration under section 307(d)(7)(B) of the CAA regarding the CAMR. Issues pertaining to this petition included the setting of NSPS based on subcategories of coal, the cost-benefit analysis, air quality modeling and provisions concerning the 2010 cap on mercury emissions.

At 70 FR 62200 and 62213 (October 28, 2005), the EPA granted reconsideration on both petitions and reopened the public comment period regarding certain issues under both final actions.

On December 19, 2005, the Commonwealth and the other states filed comments on these reconsideration actions. Issues regarding these reconsideration notices included the EPA's legal interpretations, the EPA's methodology and conclusions concerning reasonably anticipated hazards to public health resulting from EGU mercury emissions, modeling of mercury deposition, costs, NSPS standards and statistical analysis used for the NSPS standards.

In addition to these state concerns, Federal reports also noted deficiencies in the EPA's CAMR. On February 3, 2005, the EPA Office of Inspector General (OIG) published an evaluation report entitled *Additional Analyses of Mercury Emissions Needed before EPA Finalizes Rules for Coal-Fired Electric Utilities*. The OIG found that the EPA's cap-and-trade proposal failed to adequately address the potential for hot-spots of mercury pollution. The OIG also found evidence that, instead of basing its proposed MACT standard on an unbiased determination under section 112(d) of the CAA of what mercury emission rates the top performing units were achieving, the EPA staff followed orders from the EPA senior management and simply set the MACT standard at a rate that would result in National emissions of 34 tons annually. Finally, the OIG found that the EPA's rule development process did not comply with certain Agency and Executive Order

requirements, including not fully analyzing the costs/benefits of regulatory alternatives and not fully assessing the rule's impact on children's health. The OIG recommended that the EPA conduct additional analyses of mercury emissions data, strengthen its cap-and-trade proposal, assess the costs/benefits of regulatory alternatives to its proposal and fully explore potential impacts to children's health.

In February 2005, the United States Government Accountability Office (GAO) issued a report to Congressional requesters entitled *Clean Air Act: Observations on EPA's Cost-Benefit Analysis of Its Mercury Control Options*. The GAO concluded that the EPA's economic analysis of its proposed mercury control options had four major shortcomings: it failed to document some of its analysis; it failed to follow Office of Management and Budget guidance; it did not estimate the value of health benefits that would result from decreased mercury emissions; and it failed to analyze some of the key uncertainties underlying its cost/benefit estimates. The GAO concluded that, as a result of these shortcomings, the EPA's cost/benefit estimates are not comparable and are of limited use for assessing the economic trade-offs of the different options for controlling mercury.

3. Petition for Rulemaking Process

On August 9, 2004, Citizens for Pennsylvania's Future, PennEnvironment, Pennsylvania Federation of Sportsmen's Clubs, Pennsylvania NOW, Pennsylvania State Building and Construction Trades Council, Pennsylvania Trout, Planned Parenthood Pennsylvania Advocates, Sierra Club Pennsylvania Chapter, Women's Law Project and WomenVote PA (petitioners) filed a petition for rulemaking, under Chapter 23 (relating to Environmental Quality Board Policy for processing petitions—statement of policy), requesting that the Board adopt regulations to reduce mercury emissions from electric utilities located in this Commonwealth. Since the original filing of the petition, an additional 39 organizations declared their intent to be copetitioners. The petitioners seek to protect human health and the environment through the regulation of mercury emissions from coal-fired power plants in this Commonwealth. They requested that the Department exercise its statutory authority under the APCA and develop a regulatory program to reduce the mercury emissions from electric utilities for consideration by the Board.

The petitioners submitted suggested regulatory language adapted from a January 5, 2004, New Jersey Department of Environmental Protection (NJDEP) proposal to reduce mercury emissions from coal-fired boilers. These regulations, promulgated as a final rulemaking on December 6, 2004, provide that on and after December 15, 2007, each owner or operator of a coal-fired boiler of any size shall operate the coal-fired boiler in accordance with either an emission standard not to exceed 3.00 mg-Hg/MW-hr based on an annual weighted average of all valid stack emission tests performed for 4 consecutive quarters, weighted by megawatt hours produced each quarter; or a reduction efficiency for control of mercury emissions of the air pollution control apparatus for control of mercury of any coal-fired boiler shall be at least 90% based on the annual weighted average of all valid stack emissions tests performed for four consecutive quarters, weighted by megawatt hours produced each quarter.

On October 19, 2004, the Board reviewed the petitioners' petition and found it to be complete and appropriate for consideration and approved its acceptance for further study.

At the January 18, 2005, Board meeting, the Department requested a 120-day extension to develop its report on the petition for rulemaking to determine if that petition proposes appropriate standards in view of the EPA's final rule, which was to be finalized on March 15, 2005. The Board granted that request.

On May 18, 2005, the Department finalized its response to the petitioners' petition for rulemaking and set forth its rationale as to why neither the NJDEP regulation nor the EPA's CAMR was in the best interest of this Commonwealth. The New Jersey regulatory language has one emission standard for both new and existing sources. The Department believes there should be separate emission standards for new and existing coal-fired boilers. Moreover, New Jersey has a limited number of coal-fired utility units, which are not representative of the significantly varied boiler types in this Commonwealth.

The Department also does not believe that the EPA's Section 111 approach to mercury control for the electric generating sector is best for this Commonwealth. The Department strongly opposes a cap-and-trade approach under the CAMR for the regulation of mercury emissions from the utility sector for a number of reasons. First, the Department believes that the EPA does not have the legal authority to regulate an HAP like mercury under the less stringent provisions of section 111 of the CAA, as opposed to the more stringent provisions under section 112 of the CAA. Second, the Department believes this approach will significantly delay the control of mercury emissions from the utility sector and will create "hot spots" of mercury exposure that could be very detrimental to humans and wildlife. Third, the Department believes that the CAMR, since it is not a fuel-neutral regulation, requires greater reductions from coal-fired units that burn bituminous coal from states like this Commonwealth. Consequently, the Department recommended that a comprehensive approach to mercury control should be considered and recommended the development of a fuel-neutral regulatory approach to mercury emissions control.

On August 16, 2005, the Board accepted the Department's recommendation to move forward with a Pennsylvania-specific mercury rule with an expanded public involvement process. The list of stakeholders to be included in the public involvement process was expanded to include the Pennsylvania Chamber of Business and Industry, Pennsylvania Chemical Industry Council, Associated Petroleum Industries of Pennsylvania, Pennsylvania Manufacturers Association, Industrial Energy Users of Pennsylvania, Electric Power Generation Association, Pennsylvania Coal Association, United Mine Workers of America, Air Quality Technical Advisory Committee, Citizens Advisory Council, the petitioners and other representatives of the potentially regulated community.

The Department established a Mercury Rule Workgroup (Workgroup) as part of the expanded public involvement process for a Pennsylvania-specific mercury rule. The first Workgroup meeting was held on October 14, 2005. During the first meeting, presentations included Workgroup objectives, an overview of mercury, its fate and transport and other state regulations. The second meeting of the Workgroup was held on October 28, 2005. The second meeting focused on the health impacts of mercury. The third meeting of the Workgroup was held on November 18, 2005. Speakers at this meeting discussed

the health impacts of mercury and methods of controlling mercury emissions from coal-fired power plants. The last Workgroup meeting was held on November 30, 2005. This last meeting focused on additional health impacts regarding mercury, and Workgroup members and others discussed their organizations' proposals for the control of mercury.

4. Overview of the Pennsylvania Proposal

On February 22, 2006, the Department presented concepts of its proposal at a joint meeting of the Citizens Advisory Council/Air Quality Technical Advisory Committee/Mercury Workgroup. The Pennsylvania-specific proposed rulemaking has a number of elements. First, it does not provide for a cap-and-trade approach for mercury, which is a potent neurotoxin. Second, the proposed rulemaking achieves greater reductions than the EPA's CAMR in a shorter period of time. Lastly, the proposed rulemaking has several administrative provisions to assist companies to come into compliance with the proposed rulemaking.

This proposed rulemaking has two phases: January 1, 2010—December 31, 2014, for Phase 1 and January 1, 2015, and each subsequent year thereafter for Phase 2 for existing units. All new units are subject to the more stringent Phase 2 standards upon construction. Under both phases, in addition to meeting an annual mercury emissions limitation, all existing pulverized coal-fired units (PCF) and circulating fluidized bed (CFB) units must meet a certain output-based emission standard or removal efficiency standard. The provisions for all existing units are fuel-neutral since all units are required to comply with the same emission standard or removal efficiency standard regardless of the type of coal combusted. The provisions for all new coal-fired PCF, CFB and integrated gasification combined cycle units (IGCCU) are fuel-neutral since all units are required to comply with the same emission standard or removal efficiency standard regardless of the type of coal combusted. The provisions for new CFBs burning 100% waste coal would be subject to the EPA NSPS for those units, which is fuel-neutral since it does not distinguish among types of waste coal. The provisions for new CFBs burning all other coals will be subject to a single emission standard or removal efficiency standard. The provisions for new CFBs burning a blend of coal and waste coal would comply with a prorated emission standard, which is fuel-neutral since it does not distinguish among the blends of waste coal and coal. Both phases allow units to comply on a unit-by-unit basis or by facility-wide emissions averaging. In addition, under Phase 1 any existing EGU combusting 100% bituminous that is controlled by the air pollution control technologies of an electrostatic precipitator and WFGD will be considered to be in compliance with the first phase emission standard requirement without any additional compliance demonstration. This last compliance feature allows the owners and operators of existing EGUs to take advantage of any co-benefit mercury reductions from the WFGD. Moreover, this compliance feature is based on a strict technical analysis, which shows this coal-type and air pollution control device combination can meet the required control efficiency standard. Currently, the Department does not have an adequate data set to offer this compliance presumption to EGUs that may combust a different coal-type or coal blend. However, the proposal explicitly provides the Department with the authority to provide a compliance presumption for other technology configurations, which can include other coal-types and coal blends, with the emission standard requirements of

§ 123.205(c)(1) (relating to emission standards for coal-fired EGUs) without additional compliance demonstrations when the Department determines there is sufficient data. WFGD installation will be necessary for these units to comply with the EPA's CAIR mandate to control SO₂ emissions. While this technology has been developed to reduce SO₂ emissions, it also realizes significant collateral reductions in mercury. Moreover, the Phase 1 time frames under the Pennsylvania rule coincide with the time frames under CAIR. As a result, the owners and operators of EGUs are not disadvantaged under this time frame and there should not be any reliability concerns for delivery of power over the electric grid.

Under Phase 2, any existing EGU combusting 100% bituminous coal, which is controlled by the air pollution control device technologies of SCR, electrostatic precipitator and WFGD, will be considered to be in compliance with the second phase emission standard requirement without any additional compliance demonstration. Again, this compliance feature does not disadvantage Pennsylvania coal and allows the owners and operators of existing EGUs to take advantage of any co-benefit mercury reductions from the WFGD and SCR. Also, this compliance feature is based on a strict technical analysis, which shows this coal-type and air pollution control device combination can meet the required control efficiency standard. As previously noted, currently the Department does not have an adequate data set to offer this compliance presumption to EGUs that may combust a different coal-type or coal blend. The proposal explicitly provides the Department with the authority to provide a compliance presumption for other technology configurations, which can include coal-types or coal blends, with the emission standard requirements of § 123.205(c)(2) without additional compliance demonstrations when the Department determines there is sufficient data. In addition to WFGD installation, it will be necessary for these units to install SCRs to comply with the EPA's CAIR mandate to control NO_x emissions. While SCR technology has been developed to reduce NO_x emissions, it also realizes significant collateral reductions in mercury. Therefore, this compliance feature will allow electric generating companies to take advantage of any co-benefit mercury reductions from the WFGD and SCR, while at the same time achieving the SO₂ and NO_x reductions required under the EPA's CAIR requirements. As under Phase 1, owners and operators of EGUs are not disadvantaged under this time frame, and there should not be any reliability concerns for delivery of power over the electric grid.

In addition, this proposed rulemaking has an administrative provision, under both phases of the proposed rulemaking, where the Department may grant an alternative emission standard or schedule, or both, if the owner or operator demonstrates to the Department's satisfaction that the mercury reduction requirements are economically or technologically infeasible. The owner or operator of a unit seeking the Department's approval of an alternative emission standard or schedule, or both, shall submit an application to the Department for approval.

This proposed rulemaking also has an annual emission limit provision, which provides regulatory assurance that the Commonwealth meets the EPA CAMR mercury state budget, provides for new source growth and has a supplemental allowance pool, which reserves allowances for future use. This annual emission limitation provision has a nontradable mercury allowance program. Under this program, the Department will allocate nontradable allowances. Each affected unit shall hold a sufficient amount of allowances to be in compliance with annual limitation. As

an additional administrative provision, owners and operators of noncompliant units may petition the Department for additional allowances to assist that unit to come into compliance. This provision is designed, in part, to assist owners and operators who have employed optimum control technology for reducing mercury emission, but are still not in compliance. The Department has established an order of preference for the distribution of additional allowances based on the following rationale. Stand-by units are given first preference because while these units were allocated allowances under the CAMR, it is proposed under this rule not to allocate allowances to these units unless they are reactivated. CFBs are second in the order of preference because while these units were allocated more allowances under Phase 1 of the CAMR than under Phase 2 of the CAMR, it is proposed to allocate the CAMR Phase 2 allowances under Phase 1 of this proposed rulemaking. Units identified under all other preferences are listed in descending order for the optimum control technology that reduces mercury emissions at units that burn 100% bituminous coal. Currently, the Department does not have an adequate data set to identify the optimum control technology for units burning a coal blend or a type of coal other than bituminous to establish a proposed order of preference. However, each petition would be reviewed on a case-by-case basis and all of the information contained in the petition would be examined to determine if an owner or operator has employed optimum control technology to reduce mercury emissions if additional allowances are distributed. Moreover, if sufficient data becomes available to grant a compliance presumption to EGUs burning other than bituminous under § 123.206 (relating to compliance requirements for the emission standards for coal-fired EGUs).

After Phase 1 of the program, the Department anticipates that the Pennsylvania rule will achieve 29% greater reductions than the CAMR. After Phase 2, the Department anticipates that the Pennsylvania rule will achieve 36% greater reductions than the CAMR. In addition, the Department's analysis shows that the vast majority of EGUs in this Commonwealth will be able to comply with both phases of the proposed rulemaking using existing WFGD and SCR technology. While some EGUs may need to install mercury-specific control technology, the Department believes that there are a number of currently available control technologies that coal-fired power plants can use to reduce their emissions of mercury to the atmosphere. Therefore, compliance with a Pennsylvania-specific mercury rule should be achievable for all affected EGUs, and there should not be any reliability concerns for delivery of power over the electric grid.

The Department worked with the Air Quality Technical Advisory Board (AQTAC) in the development of this proposed rulemaking. At its March 30, 2006, meeting, the AQTAC recommended that the Board consider the proposed rulemaking at its May 17, 2006, meeting. However, the AQTAC would like to see public comment taken on the following issues: (1) the advantages and disadvantages regarding the supplement pool under § 123.208 (relating to annual emission limit supplement pool); (2) the advantages and disadvantages related to the new source set-aside provisions under § 123.207 (relating to annual emission limitations for coal-fired EGUs); (3) whether the precleaning of coal should be taken into consideration as part of the percent reduction in meeting the minimum mercury control percentage under § 123.205; (4) whether Phases 1 and 2 should be compressed to encourage early compliance; (5) whether providing longer "start-up" and "break-in" test periods, cost-

sharing by owner-operators and technology vendors, and providing extended permit life for new, improved and more reliable technology should be offered to encourage newer and more reliable demonstrated technology on a voluntary basis; (6) whether daily sampling of coal combusted under § 123.214 (relating to coal sampling and analysis for input mercury levels) should be expanded to include sampling of coal "as received;" (7) how the Department could encourage over compliance and cost sharing between sources; and (8) whether the Department should consider the results of the EPA's *Steubenville Study* on regulatory requirements.

E. Summary of Proposed Rulemaking

Section 123.201 (relating to purpose) is proposed to provide that §§ 123.202—123.215 establish mercury emission standards, annual emission limitations as part of a Statewide mercury allowance program with annual nontradable mercury allowances and other requirements for the purpose of reducing mercury emissions from coal-fired EGUs or cogeneration units.

Section 123.202 (relating to definitions) defines terms used in §§ 123.203—215. The new definitions include: "Btu—British thermal unit," "Bituminous coal," "CFB—circulating fluidized bed unit," "CO₂," "CS-ESP—cold side electrostatic precipitator," "coal refuse," "cogeneration unit," "EGU—electric generating unit," "existing EGU," "FF—fabric filter," "facility," "GWh—gigawatt-hour," "IGCC—integrated gasification combined cycle unit," "MMBtu," "MW—megawatt," "MWe—megawatt electric," "MWh—megawatt-hour," "nameplate capacity," "new EGU," "O₂," "Phase 1," "Phase 2," "PCF—pulverized coal-fired unit," "rolling 12-month basis," "SCR—selective catalytic reduction," "SO₂," "space velocity," "standby unit," "WFGD—wet flue gas desulfurization unit" and "watt-hour."

Section 123.203 (relating to applicability) provides that the requirements of §§ 123.201, 123.202, 123.204—123.215 and this section apply to owners and operators of an EGU in this Commonwealth.

Section 123.204 (relating to exceptions) is proposed to provide that the owner or operator of an EGU that enters into an enforceable agreement with the Department for the shutdown and replacement of the unit with IGCC technology shall be exempted from compliance with the Phase 1 requirements of §§ 123.205 and 123.207. This exemption will only be available if there are sufficient allowances in the supplemental pool under § 123.208.

Section 123.205 establishes emission standards for coal-fired EGUs. New PCF EGUs and IGCC EGUs are required to meet either a certain mercury emission standard or minimum mercury control percentage upon construction and new CFB EGUs are required to meet a certain mercury emission standard upon construction. In addition, existing PCF EGUs and IGCC EGUs are required to meet either an increasingly stringent mercury emission standard or minimum mercury control percentage from Phase 1 (effective from January 1, 2010, to December 31, 2014) to Phase 2 (effective beginning January 1, 2015). Existing CFB EGUs are required to meet a certain mercury emission standard or minimum mercury control percentage, which does not change from Phase 1 to Phase 2.

Section 123.206 establishes compliance requirements for the emission standards for coal-fired EGUs. Compliance can be demonstrated on a unit-by-unit basis or by facility-wide emissions averaging. Moreover, the owner or operator of an existing EGU combusting 100% bituminous

coal which is controlled by certain air pollution control device configurations is presumed to be in compliance with the emission standard requirements of § 123.205(c)(1) or (2) without any additional compliance demonstrations. The proposed rulemaking also provides the Department with the authority to provide a compliance presumption for other technology configurations, which can include other coal-types and coal blends, with the emission standard requirements of § 123.205(c)(1) or (2) without additional compliance demonstrations when the Department determines there is sufficient data. The Department may approve in a plan approval or operating permit or both an alternative mercury emission standard or schedule, or both, if the owner or operator of an EGU subject to the emission standards of § 123.205 demonstrates in writing to the Department's satisfaction that the mercury reduction requirements are economically or technologically infeasible. Lastly, the Department has established certain calculation requirements to ensure that a facility does not exceed the applicable emission standard or control percentage requirement.

Section 123.207 establishes an annual emission limitation for coal-fired EGUs. In addition to the mercury emission standard requirements of § 123.205, the owner or operator of a new or existing affected EGU subject to § 123.203 shall comply with the annual emission limitations established through a Statewide mercury nontradable allowance program under this section. The total ounces of mercury emissions available for emission limitation set-asides as annual nontradable mercury allowances in the Statewide mercury allowance program are 56,960 ounces (3,560 pounds) of mercury emissions for Phase 1, effective from January 1, 2010, through December 31, 2014, and 22,464 ounces (1,404 pounds) of mercury emissions for Phase 2, effective beginning January 1, 2015, and each subsequent year. Of this overall total, 5% of the Phase 1 annual allowances will be set aside for new units and 3% of the Phase 2 annual allowances will be set aside for new units for the calendar year beginning January 1, 2015, and subsequent years. However, annual allowances will not be set aside for the owner or operator of an existing affected EGU, which is already shut down, scheduled for shutdown or is on standby as of the effective date of each set-aside phase.

The maximum number of annual nontradable mercury allowances set aside for the owner or operator of each existing affected CFB or PCF will be determined by multiplying the affected unit's baseline heat input fraction of the State's total baseline annual heat input for all EGUs. The Department will publish in the *Pennsylvania Bulletin* the maximum number of annual allowances set aside for the owner or operator of each existing affected CFB and PCF. If the actual emissions of mercury reported to the Department are less than the maximum number of annual allowances set aside in the allowance program for the owner or operator of an EGU, the Department will place the unused portion of annual allowances in the annual emission limit supplement pool established under § 123.208.

Section 123.208 establishes annual emission limitation supplement pool. Annual allowances that have either been created as part of the new EGU set-aside or are unused annual allowances as part of the annual emission limitation for coal-fired EGUs will be set aside in the supplement pool for future use.

Section 123.209 (relating to petition process) establishes a petition process for the owner or operator of an EGU to request additional annual allowances from the annual

emission limit supplement pool. Each calendar year beginning January 1, 2010, the Department may set aside, at its discretion, supplemental annual nontradable mercury allowances from the annual emission limit supplement pool for the owners or operators of existing affected EGUs that successfully petition the Department in accordance with the requirements of this section. If the petition for supplemental annual nontradable mercury allowances is approved by the Department, the supplemental annual nontradable mercury allowances set aside for the owner or operator of the existing affected EGU will be added to the maximum number of annual nontradable mercury allowances set aside for the owner or operator of the EGU under § 123.207 only for the calendar year of the request.

Section 123.210 (relating to general monitoring and reporting requirements) creates general monitoring and reporting requirements for the owner or operator of a new or existing EGU subject to §§ 123.201–215. The owner or operator of a new EGU shall demonstrate compliance with §§ 123.205 and 207 by installing and operating a continuous emissions monitoring system to measure, record and report the concentration of mercury in the exhaust gases from each stack. The owner or operator of an existing affected EGU shall comply with the monitoring, recordkeeping and reporting requirements in this section and in §§ 123.211–123.215 and § 139.101 (relating to general requirements) and the applicable provisions of the *Continuous Source Monitoring Manual* (DEP 274-0300-001). However, the owner or operator of an affected EGU that emits 464 ounces (29 pounds) or less of mercury per year must meet the general operating requirements in 40 CFR Part 75 (relating to continuous emission monitoring) for the continuous emission monitors and shall perform mercury emissions testing for the initial certification and ongoing quality-assurance as described in 40 CFR Part 75.

Section 123.211 (relating to initial certification and recertification procedures for emissions monitoring) creates initial certification and recertification procedures for emissions monitoring. By the applicable deadline in § 123.210, the owner or operator of an affected EGU shall comply with certain initial certification and recertification procedures for a continuous monitoring system or continuous emission monitoring system and an excepted monitoring system (sorber trap monitoring system) as required under 40 CFR 75.15 (relating to special provisions for measuring Hg mass emissions using the excepted sorber trap monitoring methodology) and Chapter 139, Subchapter C (relating to requirements for source monitoring for stationary sources).

Section 123.212 (relating to out-of-control periods for emissions monitors) creates out-of-control periods for emissions monitors if an emissions monitoring system fails to meet the quality-assurance and quality-control requirements or data validation requirements.

Section 123.213 (relating to monitoring of gross electrical output) creates monitoring requirements regarding gross electrical output of an affected EGU.

Section 123.214 creates sampling and coal analysis for input mercury levels of affected EGUs. The Department may revise the frequency of the sampling of the coal combusted in the EGU for the mercury content based on historical data provided by the owner or operator of the EGU.

Section 123.215 (relating to recordkeeping and reporting) creates recordkeeping and reporting requirements.

Among other things, the owner or operator of an affected EGU shall comply with all recordkeeping and reporting requirements in this section and the applicable recordkeeping and reporting requirements in 40 CFR Part 75 and Chapter 139, Subchapter C.

F. *Benefits, Costs and Compliance*

Benefits

Overall, the citizens of this Commonwealth will benefit from these recommended changes because they will result in improved air quality by reducing mercury emissions. In addition, it is anticipated that local mercury deposition will be reduced since coal-fired power plants that burn bituminous coal emit oxidized forms of mercury, which are deposited near their source. Moreover, the Board believes that there are a number of reliable cost/benefit studies which indicate cost savings and public health benefits from controlling mercury emissions from EGUs.

The Commonwealth is concerned that the CAMR's cap and trade approach will result in hot spots to which this Commonwealth is particularly susceptible given that all 36 coal-fired utilities in this Commonwealth burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine and sulfur contents and low calcium content, resulting in a high percentage of organic mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, it is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

Impacts regarding mercury deposition were studied at the Bruce Mansfield coal-fired power plant in Shippingport, PA. Sullivan, T.M., *et al.*, *Assessing the Mercury Health Risks Associated with Coal-Fired Power Plants: Impacts of Local Depositions*, Brookhaven National Laboratory, Upton, NY. This plant is characterized by high total mercury emissions. From the deposition modeling, the average increase in deposition as compared to a background deposition rate of 20 ug/m²/yr over a 2,500 km² around the plant was 15% at Bruce Mansfield. Over an area that is 50–100 km², immediately adjacent to the plant, deposition doubled at the Bruce Mansfield plant. The report concluded that if the plant emissions double local deposition, the fish concentration would be similarly doubled. As a result, the United States mean fish mercury content is 0.21 ppm and near the Bruce Mansfield plant the mean fish mercury content is 0.41 ppm.

The 2003 results of the EPA Office of Water study *Draft Mercury REMSAD Deposition Modeling Results* reinforce the Commonwealth's concern. This Regulatory Modeling System for Aerosols and Deposition modeling shows that, at mercury hot spots, local emission sources within a state can be the dominant source of deposition. At hot spots, local sources within a state commonly account for 50% to 80% of the mercury deposition. In-state sources contribute more than 50% of the pollution to sites in the top eight worst hot spot states, which are Michigan, Maryland, Florida, Illinois, South Carolina, North Carolina, Pennsylvania and Texas, respectively.

In addition to these studies, on April 27, 2005, preliminary results from the EPA Steubenville Mercury Deposition Source Apportionment Study were released. This study found that nearly 70% of the mercury in rain collected at an Ohio River Valley monitoring site originated from nearby coal-burning industrial plants. It is anticipated that this peer-reviewed study will be published in the scientific literature within the next couple of months.

The Northeast States for Coordinated Air Use Management (NESCAUM) sponsored a report analyzing the cost savings and public health benefits of controlling mercury emissions from power plants. NESCAUM, *Economic Valuation of Human Health Benefits of Controlling Mercury Emissions from U.S. Coal-fired Power Plants*, (Feb. 2005) (Harvard Study). The Harvard Study was prepared by the Harvard Center for Risk Analysis, funded by the EPA, co-authored by an EPA scientist and peer-reviewed by two other EPA scientists. The Harvard Study reveals that the EPA miscalculated the "nature of the risk involved" by underestimating the public health benefits of reducing mercury. Specifically, the Harvard Study indicates that the public benefit of reducing power plant mercury emissions to 15 tpy ranges from \$119 million annually (if only persistent IQ deficits from fetal exposures to methylmercury are counted) to as much as \$5.2 billion annually (if IQ deficits, cardiovascular effects and premature mortality are all counted).

The May 2005 edition of *Environmental Health Perspectives* indicates that the EPA underestimated the health benefits to be gained from reducing mercury. In one study, scientists from the Mount Sinai School of Medicine examined National blood mercury prevalence data from the CDC and found that between 316,588 and 637,233 children each year have cord blood mercury levels greater than 5.8 micrograms per liter—the level associated with loss of IQ. See Leonardo Trasande, et al., *Public Health and Economic Consequences of Methylmercury Toxicity to the Developing Brain*, 113 ENVIRONMENTAL HEALTH PERSPECTIVES, No. 5 (May 2005). They estimated that the resulting loss of intelligence and diminished economic activity amounted to \$8.7 billion annually, with \$1.3 billion each year being directly attributable to mercury emissions from power plants. The scientists further caution that these costs will recur each year with each new birth cohort as long as mercury emissions are not controlled.

On April 28, 2005, an unpublished report that was funded and completed by the EPA's Office of Wetlands, Oceans and Watersheds became available to the public. See Douglas Rae & Laura Graham, *Benefits of Reducing Mercury in Saltwater Ecosystems*. This study found that a 30–100% reduction of mercury emissions would translate into a \$600 million to \$2 billion cost savings. The cost savings were largely attributable to reduced health risks, including cardiovascular risks.

As a result of these and other studies, the Board believes that there are substantial benefits regarding the proposed rulemaking. Moreover, the proposed rulemaking is designed to maximize the co-benefit of mercury emission reduction achieved through the installation of pollution controls, which are required for compliance with the CAIR program. Owners and operators of EGUs are not disadvantaged under this time frame, and there should not be any reliability concerns for delivery of power over the electric grid.

The Department's analysis assumes the continued use of the existing coal feedstocks. Because we anticipate the majority of the mercury reductions in this Commonwealth to be achieved through the installation of CAIR controls for NO_x and SO_x, there will not exist the same incentive to utilize fuel switching to lower mercury content coal as there is under the CAMR. A control strategy combining fuel switching and the purchase of mercury allowances is a viable option that many companies are expected to use to meet the CAMR requirements. The Department's proposed rulemaking disallows the purchase and trading

of allowances. Based on the data submitted in response to the Department's data request, fuel switching is not necessary to comply with its proposed emission standards. Therefore, fuel switching is not necessary to comply with the proposed rulemaking and the continued use of the existing coal feedstocks should not be affected. However, owners and operators of affected EGUs are free to employ any compliance strategy necessary to comply with this proposed rulemaking.

Compliance Costs

It is anticipated that the majority of EGUs in this Commonwealth will be able to comply with both phases of the proposed rule using existing WFGD and SCR technology, which will be necessary to comply with CAIR. While some EGUs may need to install mercury specific control technology, the Department believes that there are a number of currently available control technologies that coal-fired power plants can use to reduce their emissions of mercury to the atmosphere, which will result in a minor cost increase on a cents per kW-hr. basis.

The proposed rulemaking will, to some extent impact all EGUs in this Commonwealth. There will be compliance costs regarding the construction and operation of air pollution control devices to control mercury, NO_x and SO_x. For Phase 1 the total annualized cost (capital and operating) of mercury-specific control technology that EGUs must install beyond CAIR to comply with the Pennsylvania-specific mercury rule would be \$15.4 million per year. The total cost of purchasing mercury allowances (at \$953 per ounce, according to a United States Department of Energy estimate) if EGUs did not do anything beyond the CAIR to comply with the CAMR would be \$15.7 million per year. As a result, the total cost of complying with the Pennsylvania-specific mercury rule for Phase 1 would be no more than the cost of complying with CAMR.

For Phase 2, the total annualized cost (capital and operating) of mercury-specific control technology that EGUs must install beyond CAIR to comply with the Pennsylvania-specific mercury rule would be \$16.7 million per year. The total cost of purchasing mercury allowances (at \$2,619 per ounce, according to a United States Department of Energy estimate) if EGUs did not do anything beyond the CAIR to comply with the CAMR would be \$14.5 million per year. The difference between \$16.7 million and \$14.5 million is \$2.2 million, which would be the total cost of complying with the Pennsylvania-specific mercury rule for Phase 2. This would be an increase of \$0.000016 per kW-hr.

Compliance Assistance

The Department plans to educate and assist the public and regulated community with understanding any newly revised requirements and how to comply with them. This will be accomplished through the Department's ongoing Regional Compliance Assistance Program.

Paperwork Requirements

This proposed rulemaking will not increase the paperwork that is already generated during the normal course of business.

G. Pollution Prevention

The Pollution Prevention Act of 1990 (42 U.S.C.A. §§ 13101–13109) established a National policy that promotes pollution prevention as the preferred means for achieving state environmental protection goals. The Department encourages pollution prevention, which is the reduction or elimination of pollution at its source, through

the substitution of environmentally friendly materials, more efficient use of raw materials and the incorporation of energy efficiency strategies. Pollution prevention practices can provide greater environmental protection with greater efficiency because they can result in significant cost savings to facilities that permanently achieve or move beyond compliance. This proposed rulemaking will reduce mercury emissions from EGUs. Coal-fired power plants that burn sub-bituminous coal emit Hg⁰, which can be transported over transcontinental distances. Coal-fired power plants that burn bituminous coal emit oxidized forms of mercury, which are deposited near their source. In this Commonwealth, 85% of the coal burned by coal-fired power plants is bituminous, with the remainder as waste coal. Reducing mercury emissions will reduce mercury deposition and will therefore reduce mercury related water pollution.

H. Sunset Review

This proposed rulemaking will be reviewed in accordance with the sunset review schedule published by the Department to determine if the regulations effectively fulfill the goals for which they were intended.

I. Regulatory Review

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on June 16, 2006, the Department submitted a copy of this proposed rulemaking and a copy of a Regulatory Analysis Form to the Independent Regulatory Review Commission (IRRC) and to the Chairpersons of the House and Senate Environmental Resources and Energy Committees. A copy of this material is available to the public upon request.

Under section 5(g) of the Regulatory Review Act, IRRC may convey any comments, recommendations or objections to the proposed rulemaking within 30 days of the close of the public comment period. The comments, recommendations or objections must specify the regulatory review criteria which have not been met. The Regulatory Review Act specifies detailed procedures for review, prior to final publication of the rulemaking, by the Department, the General Assembly and the Governor of comments, recommendations or objections raised.

J. Public Comments

Written Comments—Interested persons are invited to submit comments, suggestions or objections regarding the proposed rulemaking to the Environmental Quality Board, P. O. Box 8477, Harrisburg, PA 17105-8477 (express mail: Rachel Carson State Office Building, 15th Floor, 400 Market Street, Harrisburg, PA 17101-2301). Comments submitted by facsimile will not be accepted. Comments, suggestions or objections must be received by the Board by August 26, 2006. Interested persons may also submit a summary of their comments to the Board. The summary may not exceed one page in length and must also be received by August 26, 2006. The one-page summary will be provided to each member of the Board in the agenda packet distributed prior to the meeting at which the final rulemaking will be considered.

Electronic Comments—Comments may be submitted electronically to the Board by completing the online form at www.depweb.state.pa.us/RegComments or by email RegComments@state.pa.us and must be received by the Board by August 26, 2006. A subject heading of the proposal and a return name and address must be included in each transmission.

K. Public Hearings

The Environmental Quality Board will hold three public hearings for the purpose of accepting comments on this proposal. The hearings will be held as follows:

July 25, 2006 1 p.m. Department of Environmental Protection
Southwest Regional Office
Waterfront A & B Conference Room
400 Waterfront Drive
Pittsburgh, PA 15222

July 27, 2006 1 p.m. Department of Environmental Protection
Southeast Regional Office
Delaware Room
2 East Main Street
Norristown, PA 19401

July 26, 2006 1 p.m. Department of Environmental Protection
Rachel Carson State Office Building
Room 105
400 Market Street
Harrisburg, PA 17105

Persons wishing to present testimony at a hearing are requested to contact the Environmental Quality Board, P. O. Box 8477, Harrisburg, PA 17105-8477, (717) 787-4526 at least 1 week in advance of the hearing to reserve a time to present testimony. Oral testimony is limited to 10 minutes for each witness. Witnesses are requested to submit three written copies of their oral testimony to the hearing chairperson at the hearing. Organizations are limited to designating one witness to present testimony on their behalf at each hearing.

Persons in need of accommodations as provided for in the Americans With Disabilities Act of 1990 should contact the Board at (717) 787-4526 or through the Pennsylvania AT&T Relay Service, (800) 654-5984 (TDD) to discuss how the Department may accommodate their needs.

KATHLEEN A. MCGINTY,
Chairperson

Fiscal Note: 7-405. No fiscal impact; (8) recommends adoption.

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE III. AIR RESOURCES

CHAPTER 123. STANDARDS FOR CONTAMINANTS

(*Editor's Note:* The following text is new and is printed in regular type to enhance readability.)

MERCURY EMISSIONS

Sec.	Purpose.
123.201.	Purpose.
123.202.	Definitions.
123.203.	Applicability.
123.204.	Exceptions.
123.205.	Emission standards for coal-fired EGUs.
123.206.	Compliance requirements for the emission standards for coal-fired EGUs.
123.207.	Annual emission limitations for coal-fired EGUs.
123.208.	Annual emission limit supplement pool.
123.209.	Petition process.
123.210.	General monitoring and reporting requirements.

- 123.211. Initial certification and recertification procedures for emissions monitoring.
 123.212. Out-of-control periods for emissions monitors.
 123.213. Monitoring of gross electrical output.
 123.214. Coal sampling and analysis for input mercury levels.
 123.215. Recordkeeping and reporting.

MERCURY EMISSIONS

§ 123.201. Purpose.

Sections 123.202—123.215 establish mercury emission standards, annual emission limitations as part of a Statewide mercury allowance program with annual nontradable mercury allowances and other requirements for the purpose of reducing mercury emissions from coal-fired EGUs or cogeneration units.

§ 123.202. Definitions.

The following words and terms, when used in this section and §§ 123.201 and 123.203—123.215, have the following meanings, unless the context clearly indicates otherwise:

Btu—*British thermal unit*—The amount of thermal energy necessary to raise the temperature of 1 pound of pure liquid water by 1° Fahrenheit at the temperature at which water has its greatest density (39°F).

Bituminous coal—

(i) Coal that is classified as bituminous according to the ASTM International Standard D388-90, Standard Classification of Coals by Rank.

(ii) For the purposes of this section and §§ 123.201 and 123.203—123.215, the term shall also include anthracite coal according to the ASTM International Standard D388-77, Standard Classification of Coals by Rank.

CFB—*Circulating fluidized bed unit*—Combustion of fuel in a bed or series of beds (including bubbling bed units and circulating bed units) of limestone aggregate (or other sorbent materials) in which these materials are forced upward by the flow of combustion air and the gaseous products of combustion.

CO₂—Carbon dioxide.

CS-ESP—*Cold side electrostatic precipitator*—A particulate control device installed downstream of a boiler air preheater that does the following:

(i) Charges particles with an electric field and causes them to migrate from the gas to a collection surface.

(ii) Treats flue gas after heat extraction from the gas has been completed.

(iii) Operates within a temperature range of no greater than 400°F.

Coal refuse—Waste products of coal mining, physical coal cleaning, and coal preparation operations (for example—culm, gob, and the like) containing coal, matrix material, clay, and other organic and inorganic material.

Cogeneration unit—A stationary, coal-fired boiler or stationary, coal-fired combustion turbine which:

(i) Has equipment used to produce electricity and useful thermal energy for industrial, commercial, heating or cooling purposes through the sequential use of energy.

(ii) Produces, for a topping-cycle cogeneration unit, during the 12-month period starting on the date the unit first produces electricity and during any calendar year after the 12-month period in which the unit first produces electricity:

(A) Useful thermal energy not less than 5% of total energy output.

(B) Useful power that when added to one-half of useful thermal energy produced:

(I) Is not less than 42.5% of total energy input, if useful thermal energy produced is 15% or more of total energy output.

(II) Is not less than 45% of total energy input, if useful thermal energy produced is less than 15% of total energy output.

(III) Produces, for a bottoming-cycle cogeneration unit, during the 12-month period starting on the date the unit first produces electricity and during any calendar year after the 12-month period in which the unit first produces electricity, useful power not less than 45% of total energy input.

EGU—*Electric generating unit*—

(i) Except as provided in subparagraph (ii), a stationary coal-fired boiler or stationary, coal-fired combustion turbine that serves or has served at any time since the start-up of the unit's combustion chamber, a generator:

(A) With a nameplate capacity of more than 25 MWe.

(B) That produces electricity for sale.

(ii) For a unit that qualifies as a cogeneration unit during the 12-month period starting on the date the unit first produces electricity and continues to qualify as a cogeneration unit, a unit that both:

(A) Serves a generator with a nameplate capacity of more than 25 MWe.

(B) Supplies, in a calendar year, more than one third of its potential electric output capacity or 219,000 MWh, whichever is greater, to a utility power distribution system for sale.

(iii) If a unit qualifies as a cogeneration unit during the 12-month period starting on the date the unit first produces electricity but subsequently no longer qualifies as a cogeneration unit, it shall become subject to subparagraph (i) starting on the day it first no longer qualifies as a cogeneration unit.

Existing EGU—An EGU which commenced construction, modification or reconstruction before January 30, 2004.

FF—*Fabric filter*—An add-on air pollution control system that removes particulate matter (PM) and emissions of nonvaporous metals by passing flue gas through filter bags.

Facility—All units located on one or more contiguous or adjacent properties and which are owned or operated by the same person under common control.

GWh—*Gigawatt-hour*—One billion watt-hours.

IGCC—*Integrated gasification combined cycle unit*—A coal-fired electric utility steam generating unit that burns a synthetic gas derived from coal in a combined-cycle gas turbine. No coal is directly burned in the unit during operation.

MMBtu—One million British thermal units.

MW—*Megawatt*—A unit for measuring power equal to one million watts.

MWe—*Megawatt electric*—One million watts of electric capacity.

MWh—*Megawatt-hour*—One million watt-hours.

Nameplate capacity—The maximum electrical generating output (in MWe) that the generator is capable of

producing on a steady-state basis during continuous operation (when not restricted by seasonal or other deratings):

(i) As specified by the manufacturer, starting from the initial installation of the generator.

(ii) As specified by the person conducting the physical change, starting from the completion of a subsequent physical change in the generator resulting in an increase in the maximum electrical generating output in MWe.

New EGU—An EGU which commenced construction, modification or reconstruction, as defined under 40 CFR Part 60 (relating to standards of performance for new stationary sources), on or after January 30, 2004.

O₂—Oxygen.

PCF—Pulverized coal-fired unit—

(i) A steam generating unit in which pulverized coal is introduced into an air stream that carries the coal to the combustion chamber of the steam generating unit where it is fired in suspension.

(ii) The term includes both conventional pulverized coal-fired and micropulverized coal-fired steam generating units.

Phase 1—The period from January 1, 2010, through December 31, 2014.

Phase 2—The period beginning January 1, 2015, and each subsequent year thereafter.

Rolling 12-month basis—A determination made on a monthly basis from the relevant data for a particular calendar month and the preceding 11 calendar months (total of 12 months of data).

SCR—Selective catalytic reduction—A process where a gaseous or liquid reductant (most commonly ammonia or urea) is added to the flue gas stream in the presence of a catalyst. The reductant reacts with nitrogen oxides in the flue gas to form nitrogen.

SO₂—Sulfur dioxide.

Space velocity—The exhaust gas volume per hour of the SCR corrected to standard temperature and pressure divided by the volume of the catalyst.

Standby unit—A unit that is out of operation but under a Department-approved maintenance plan as provided under § 127.11a (relating to reactivation of sources), which will enable the source to be reactivated in accordance with the terms of the permit issued to the source.

WFGD—Wet flue gas desulfurization unit—A sulfur dioxide control system located downstream of the steam generating unit that removes sulfur oxides from the combustion gases of the steam generating unit by contacting the combustion gases with an alkaline slurry or solution including lime and limestone.

Watt-hour—A unit of energy equivalent to 1 watt of power expended for 1 hour of time.

§ 123.203. Applicability.

The requirements of this section and §§ 123.201, 123.202 and 123.204—123.215 apply to owners and operators of an EGU located in this Commonwealth.

§ 123.204. Exceptions.

Consistent with § 123.207(b)(1) (relating to annual emission limitations for coal-fired EGUs), the owner or operator of an EGU that enters into an enforceable agreement with the Department not later than December 31, 2007, for the shutdown and replacement of the unit

with IGCC technology no later than December 31, 2012, shall be exempted from compliance with the following Phase 1 requirements for the converted unit:

(1) Section 123.205 (relating to emission standards for coal-fired EGUs).

(2) Section 123.207.

§ 123.205. Emission standards for coal-fired EGUs.

(a) *New EGUs*. In addition to the mercury emission limitation requirements of § 123.207 (relating to annual emission limitations for coal-fired EGUs), the owner or operator of a new EGU subject to § 123.203 (relating to applicability) shall comply at the commencement of operation on a rolling 12-month basis with one of the following standards:

(1) *PCF EGU*. The owner or operator of a PCF EGU shall comply with one of the following:

(i) A mercury emission standard of 0.011 pounds of mercury per GWh.

(ii) A minimum 90% control of total mercury as measured from the mercury content in the coal as fired.

(2) *CFB EGU*. The owner or operator of a CFB EGU shall comply with the following applicable provisions:

(i) CFB EGUs burning 100% waste coal shall comply with the mercury emission standard for new units as established under 40 CFR Part 60, Subpart D (relating to standards of performance for fossil-fuel-fired steam generators for which construction is commenced after August 17, 1971), which is adopted and incorporated by reference in § 122.3 (relating to adoption of standards).

(ii) CFB EGUs burning 100% bituminous coal shall comply with either:

(A) A mercury emission standard of 0.011 pounds of mercury per GWh.

(B) A minimum 90% control of total mercury as measured from the mercury content in the coal as fired.

(iii) CFB EGUs burning multiple fuels shall comply with a prorated emission standard based on the percentage of heat input from the coal and the percentage of heat input from the waste coal.

(3) *IGCC EGU*. The owner or operator of an IGCC EGU shall comply with one of the following:

(i) A mercury emission standard of 0.0048 pounds of mercury per GWh.

(ii) A minimum 95% control of total mercury as measured from the mercury content in the coal as processed.

(b) *Baseline for review*. The emission standards in this subsection will serve as a baseline for review and approval of case-by-case best available technology determinations for a new EGU in accordance with the requirements of Chapter 127 (relating to construction, modification, reactivation and operation of sources).

(c) *Existing EGUs*. In addition to the mercury emission limitation requirements of § 123.207, the owner or operator of an existing EGU subject to § 123.203 shall comply on a rolling 12-month basis with one of the following standards:

(1) *Phase 1*. Effective from January 1, 2010, through December 31, 2014:

(i) *PCF EGU*. The owner or operator of a PCF shall comply with one of the following:

(A) A mercury emission standard of 0.024 pounds of mercury per GWh.

(B) A minimum 80% control of total mercury as measured from the mercury content in the coal as fired.

(ii) *CFB EGU*. The owner or operator of a CFB shall comply with one of the following:

(A) A mercury emission standard of 0.0058 pounds of mercury per GWh.

(B) A minimum 95% control of total mercury as measured from the mercury content in the coal as fired.

(2) *Phase 2*. Effective beginning January 1, 2015, and each subsequent year:

(i) *PCF EGU*. The owner or operator of a PCF shall comply with one of the following:

(A) A mercury emission standard of 0.012 pounds of mercury per GWh.

(B) A minimum 90% control of total mercury as measured from the mercury content in the coal as fired.

(ii) *CFB EGU*. The owner or operator of a CFB shall comply with one of the following:

(A) A mercury emission standard of 0.0058 pounds of mercury per GWh.

(B) A minimum 95% control of total mercury as measured from the mercury content in the coal as fired.

§ 123.206. Compliance requirements for the emission standards for coal-fired EGUs.

(a) The owner or operator of one or more EGUs subject to the emission standards of § 123.205 (relating to emission standards for coal-fired EGUs) shall demonstrate compliance with the standards using one of the following methods:

(1) Compliance on a unit-by-unit basis.

(2) Facility-wide emissions averaging.

(b) The owner or operator of an existing EGU combusting 100% bituminous coal which is controlled by an air pollution control device configuration of:

(1) A CS-ESP or FF and a WFGD will be presumed to be in compliance with the emission standard requirements of § 123.205(c)(1) without any additional compliance demonstrations.

(2) SCR, CS-ESP or FF and WFGD will be presumed to be in compliance with the emission standard requirements of § 123.205(c)(2) without additional compliance demonstrations if the design space velocity of the SCR catalyst is no more than 3000 hr⁻¹.

(3) Other technologies when the Department determines that there is sufficient data to provide a compliance presumption with the emission standard requirements of § 123.205(c)(1) or (2) without additional compliance demonstrations. The Department will publish these determinations in the *Pennsylvania Bulletin*.

(c) The Department may approve in a plan approval or operating permit, or both, an alternative mercury emission standard or schedule, or both, if the owner or operator of an EGU subject to the emission standards of § 123.205 demonstrates in writing to the Department's satisfaction that the mercury reduction requirements are economically or technologically infeasible. The owner or operator shall:

(1) Submit a plan approval application or operating permit application requesting an alternative emission

standard or schedule, or both, to the Department for approval no later than 120 days before the applicable compliance deadline.

(2) Include the following in the application:

(i) A brief description, including make, model and location of each EGU.

(ii) A list of all air pollution control technologies and measures that have been installed on each EGU and are operating to control emissions of air contaminants including mercury.

(iii) The dates of installation and commencement of operation for each of the technologies and measures required under subparagraph (ii).

(iv) An explanation of how the technology or measure was installed and if it is being operated according to the manufacturer's instructions for each of the technologies and measures required under subparagraph (ii).

(v) The results of each mercury stack test and other emissions measurements for the EGU following installation and commencement of operation of the air pollution control technologies and measures listed in accordance with subparagraph (ii).

(vi) A list of other air pollution control technologies or measures that the owner or operator proposes to install and operate on each EGU to control emissions of air contaminants including mercury.

(vii) A summary of how the owner or operator of the EGU intends to operate and maintain the unit during the term of the approved plan approval or operating permit, or both, including the associated air pollution control equipment and measures that are designed to maintain compliance with all other applicable plan approval or operating permit requirements and that are designed and operated to minimize the emissions of mercury to the extent practicable.

(viii) A proposed schedule that lists the increments of progress and the date for final compliance if an alternative compliance schedule is requested.

(ix) An emission reduction proposal and information on the technological feasibility of meeting the requirements of this section and §§ 123.205, 123.207—123.215 if an alternative emission standard is requested.

(x) Other information which the Department requests that is necessary for the approval of the application.

(d) For an EGU complying with the energy output-based mercury emission standards of § 123.205 (expressed in pounds of mercury per GWh), the actual mercury emission rate of the EGU for each 12-month rolling period, monitored in accordance with §§ 123.210—123.215 and calculated as follows, may not exceed the applicable emission standard:

$$ER = \frac{\sum_{i=1}^{12} E_i}{\sum_{i=1}^{12} O_i}$$

Where:

ER = Actual mercury emissions rate of the EGU for the particular 12-month rolling period, expressed in pounds per GWh.

E_i = Actual mercury emissions of the EGU, in pounds, in an individual month in the 12-month rolling period, as determined in accordance with the monitoring provisions.

O_i = Gross electrical output of the EGU, in GWhs, in an individual month in the 12-month rolling period.

(e) For an EGU complying with the percent control requirements of § 123.205, the actual control efficiency for mercury emissions achieved by the EGU for each 12-month rolling period, monitored in accordance with §§ 123.210—123.215 and calculated as follows, shall meet or exceed the applicable efficiency requirement:

$$CE = 100 * \{1 - (i = 1^{\sum 12} E_i \div i = 1^{\sum 12} I_i)\}$$

Where:

CE = Actual control efficiency for mercury emissions of the EGU for the particular 12-month rolling period, expressed as a percent.

E_i = Actual mercury emissions of the EGU, in pounds, in an individual month in the 12-month rolling period, as determined in accordance with the monitoring provisions of §§ 123.210—123.215.

I_i = Amount of mercury in the fuel fired in the EGU, in pounds, in an individual month in the 12-month rolling period, as determined in accordance with § 123.214 (relating to coal sampling and analysis for input mercury levels).

§ 123.207. Annual emission limitations for coal-fired EGUs.

(a) *Statewide mercury nontradable allowance program.* In addition to the mercury emission standard requirements of § 123.205 (relating to emission standards for coal-fired EGUs), the owner or operator of a new or existing affected EGU subject to § 123.203 (relating to applicability) shall comply with the annual emission limitations established through a Statewide mercury nontradable allowance program under this section.

(b) *Emission limitation set-asides.* The total ounces of mercury emissions available for emission limitation set-asides as annual nontradable mercury allowances in the Statewide mercury allowance program are:

(1) 56,960 ounces (3,560 pounds) of mercury emissions for Phase 1, effective from January 1, 2010, through December 31, 2014.

(2) 22,464 ounces (1,404 pounds) of mercury emissions for Phase 2, effective beginning January 1, 2015, and each subsequent year.

(c) *New affected EGUs.* For each calendar year beginning January 1, 2010, the Department will set aside a total number of annual nontradable mercury allowances for the owners and operators of new affected EGUs in this Commonwealth that do not yet have a baseline heat input determined in accordance with the requirements of an approved plan approval application or operating permit.

(1) The total number of annual nontradable mercury allowances set aside for the owners and operators of new affected EGUs will be equal to a percentage of the amount of ounces of mercury emissions in the Statewide mercury allowance program established in subsection (a). The percentage of set-aside is:

(i) 5% of the Phase 1 annual nontradable mercury allowances established in subsection (b)(1) for the years beginning January 1, 2010, through December 31, 2014.

(ii) 3% of the Phase 2 annual nontradable mercury allowances established in subsection (b)(2) for the calendar year beginning January 1, 2015, and subsequent years.

(2) The annual nontradable mercury allowances set aside for the owners and operators of new affected EGUs

shall be placed in the annual emission limit supplement pool established under § 123.208 (relating to annual emission limit supplement pool).

(d) *Existing affected CFBs.* For each calendar year beginning January 1, 2010, the Department will set aside for the owners and operators of existing affected CFBs a total number of annual nontradable mercury allowances from the total ounces of mercury emissions available for annual emission limit set-asides in Phase 2 of the Statewide mercury allowance program established in subsection (b)(2).

(e) *Maximum allowances set aside for CFBs.* The maximum number of annual nontradable mercury allowances set aside for the owner or operator of each existing affected CFB in accordance with subsection (d) shall be determined by multiplying the affected CFB's baseline heat input fraction of the State's total baseline annual heat input for all EGUs by the Department's Phase 2 annual mercury allowance set-aside for existing EGUs, as follows:

(1) The baseline heat input in MMBtu for each existing affected mercury allowance program CFB will be the average of the three highest amounts of annual heat input using the heat input data for the CFB from the Department's acid rain database for the calendar years 2000 through 2004.

(2) The State's annual mercury emission allowance set-aside for existing EGUs for Phase 2 is 21,790 ounces.

(f) *Existing affected PCFs.* For each calendar year beginning January 1, 2010, the Department will set aside for the owners and operators of existing affected PCFs a total number of annual nontradable mercury allowances from the total ounces of mercury emissions available for annual emission limit set-asides in Phase 1 and Phase 2 of the Statewide mercury allowance program established in subsection (b).

(g) *Maximum allowances set aside for PCFs.* The maximum number of annual nontradable mercury allowances set aside for the owner or operator of each existing affected PCF in accordance with subsection (f) shall be determined by multiplying the existing affected PCF's baseline heat input fraction of the State's total baseline annual heat input for all EGUs by the Department's annual mercury allowance set-aside for existing affected EGUs in each phase, as follows:

(1) The baseline heat input in MMBtu for each existing affected mercury allowance program PCF will be the average of the three highest amounts of annual heat input using the heat input data for the PCF from the Department's acid rain database for calendar years 2000 through 2004.

(2) The State's annual mercury emission allowance set-aside for existing EGUs is:

(i) 54,112 ounces for Phase 1.

(ii) 21,790 ounces for Phase 2.

(h) *Publication of maximum number of allowances set aside for Phase 1.* By July 1, 2009, the Department will publish in the *Pennsylvania Bulletin* the maximum number of annual nontradable mercury allowances set aside for the owner or operator of each existing affected CFB and PCF for Phase 1 of the Statewide mercury allowance program. The nontradable allowances shall only be used to demonstrate compliance with the annual emission limitation requirements.

(i) *Publication of maximum number of allowances set aside for Phase 2.* By July 1, 2014, the Department will publish in the *Pennsylvania Bulletin* the maximum number of annual nontradable mercury allowances set aside for the owner or operator of each existing affected CFB and PCF for Phase 2 of the Statewide mercury allowance program. The nontradable allowances shall only be used to demonstrate compliance with the annual emission limitation requirements.

(j) *Maximum number of allowances awarded.* By March 31 of the year following each reporting year, the Department will notify the owner or operator of each existing affected CFB and PCF, in writing, of the actual number of annual nontradable mercury allowances awarded to the owner or operator of the EGU for the reporting year.

(1) The actual number of annual nontradable mercury allowances awarded to the owner or operator of the EGU shall be based on the actual emissions reported to the Department in accordance with §§ 123.210—123.215.

(2) If the actual emissions of mercury reported to the Department in accordance with §§ 123.210—123.215 are less than the maximum number of annual nontradable mercury allowances set aside in the Statewide mercury allowance program for the owner or operator of an EGU in accordance with the requirements of either subsection (d) or (f), the Department will place the unused portion of annual nontradable mercury allowances in the annual emission limit supplement pool established under § 123.208 (relating to annual emission limit supplement pool).

(3) The unused portion of annual nontradable mercury allowances set aside under subsection (d) or (f) may not be added to the maximum number of annual nontradable mercury allowances set aside for the owner or operator of the existing affected EGU for subsequent years.

(4) The actual number of annual nontradable mercury allowances awarded to the owner or operator of the EGU may not exceed the maximum number of annual nontradable mercury allowances set aside for the owner or operator of the EGU in the Statewide mercury allowance program in accordance with subsection (d) or (f) except as provided in § 123.209 (relating to petition process).

(5) Each ounce of mercury emitted in excess of the maximum number of annual nontradable mercury allowances set aside for the owner or operator of the affected EGU in accordance with subsection (d) or (f) shall constitute a violation of this section and the act, except as provided under § 123.209.

(k) *Standby units.* Annual nontradable mercury allowances will not be set aside for the owner or operator of an existing affected EGU that is already shut down, scheduled for shutdown, or is on standby as of the effective date of each set-aside phase under subsection (d) or (f). When a standby unit is ready for normal operation, the owner and operator may petition the Department for a number of annual nontradable mercury allowances as provided under § 123.209.

(l) *Future emission limitations.* The Department may revise the percentage of set-aside used to determine the number of ounces of mercury set aside for future annual mercury emission limitations to accommodate the emissions from new EGUs so that the total number of ounces of mercury emissions in the Statewide mercury allowance program is not exceeded.

(m) *Changes in calculation of baseline heat input.* The Department may revise the percentage of set-aside used

to determine the number of ounces of mercury set aside for future annual mercury emission limitations to accommodate changes in the calculation of baseline heat input in accordance with the subsection (e) or (g) so that the total number of ounces of mercury emissions in the Statewide mercury allowance program is not exceeded.

(n) *Maintained by Department.* The Statewide mercury allowance program established under subsection (a) and the annual nontradable mercury allowances set aside for emission limitations under subsections (b)—(m) will be maintained by the Department.

(o) *Demonstration of compliance.* The owner or operator of one or more existing affected mercury allowance program EGUs subject to this section shall demonstrate compliance with the applicable requirements using one of the following methods:

- (1) Compliance on a unit-by-unit basis.
- (2) Facility-wide emissions averaging.

§ 123.208. Annual emission limit supplement pool.

(a) Effective January 1, 2010, the Department will establish an annual emission limit supplement pool to monitor annual nontradable mercury allowances that:

(1) Have been created as part of the new affected EGU set-aside under § 123.207(c) (relating to annual emission limitations for coal-fired EGUs).

(2) Are unused annual nontradable mercury allowances set aside as emission limit supplements under § 123.207(j)(2).

(b) The emission limit supplement pool of annual nontradable mercury allowances established under subsection (a) will be administered in accordance with § 123.209 (relating to petition process) by the Department.

§ 123.209. Petition process.

(a) Each calendar year beginning January 1, 2010, the owner or operator of either an existing affected EGU that emits amounts of mercury in excess of the maximum number of annual nontradable mercury allowances set aside in accordance with § 123.207 (relating to annual emission limitations for coal-fired EGUs) or a standby affected EGU that is ready for normal operation may petition the Department, in writing, for supplemental annual nontradable mercury allowances to be set aside for the owner or operator from the annual emission limit supplement pool established under § 123.208(a) (relating to annual emission limit supplement pool).

(b) The owner or operator shall submit a separate petition for each calendar year for which the owner or operator requests supplemental annual nontradable mercury allowances to be set aside from the annual emission limit supplement pool.

(c) The owner or operator with more than one affected EGU shall submit a separate petition for each EGU for which the owner or operator requests supplemental annual nontradable mercury allowances to be set aside from the annual emission limit supplement pool.

(d) The owner or operator of the existing affected EGU shall submit the petition to the Department by January 31 of the year following the calendar year for which the supplemental annual nontradable mercury allowances are requested to be set aside.

(e) The owner or operator of the standby affected EGU shall submit the petition to the Department no later than 120 days before the date of anticipated start-up of the EGU.

(f) The petition must include the following:

(1) A brief description, including make, model and location of each affected EGU.

(2) A list of all air pollution control technologies and measures that have been installed on each affected EGU and are operating to control emissions of air contaminants, including mercury.

(3) For each of the technologies and measures listed in accordance with paragraph (2), the date of installation and original commencement of operation.

(4) For each of the technologies and measures listed in accordance with paragraph (2), an explanation of how the mercury control technology or measure as installed has been optimized for the maximum mercury emission reduction.

(5) The results of each mercury stack test and other emissions measurements for the affected EGU following installation and commencement of operation of the air pollution control technologies and measures listed in accordance with paragraph (2).

(6) A list of other air pollution control technologies or measures that the owner or operator proposes to install and operate on each affected EGU to control emissions of air contaminants, including mercury.

(7) A summary of how the owner or operator of the affected EGU intends to operate and maintain the EGU during the term of the approved plan approval or operating permit, or both, including the associated air pollution control equipment and measures that are designed to maintain compliance with all other applicable plan approval or operating permit requirements and that are designed and operated to minimize the emissions of mercury to the extent practicable.

(g) Each calendar year beginning January 1, 2010, the Department may set aside at its discretion supplemental annual nontradable mercury allowances from the annual emission limit supplement pool established under § 123.208(a) for the owners or operators of existing affected EGUs that successfully petition the Department in accordance with this section, to be distributed in the following order of preference:

(1) Each owner or operator of a standby unit as defined under § 123.202 (relating to definitions).

(2) Each owner or operator of an existing affected EGU that is a CFB combusting 100% waste coal or bituminous coal along with any approved noncoal fuels.

(3) Each owner or operator of an existing affected EGU combusting 100% bituminous coal that is controlled by an air pollution control device configuration of SCR, CS-ESP or FF, WFGD and mercury-specific control technology.

(4) Each owner or operator of an existing affected EGU combusting 100% bituminous coal that is controlled by an air pollution control device configuration of SCR, CS-ESP or FF and WFGD.

(5) Each owner or operator of an existing affected EGU combusting 100% bituminous coal that is controlled by an air pollution control device configuration of WFGD and mercury-specific control technology.

(6) Each owner or operator of an existing affected EGU combusting 100% bituminous coal that is controlled by an air pollution control device configuration of CS-ESP or FF and WFGD.

(7) Each owner or operator of an existing affected EGU based on the air pollution control technologies and mea-

asures that have been installed and are operating to control emissions of air contaminants, including mercury.

(h) If the petition for supplemental annual nontradable mercury allowances is approved by the Department, the supplemental annual nontradable mercury allowances set aside for the owner or operator of the existing affected EGU will be added to the maximum number of annual nontradable mercury allowances set aside for the owner or operator of the EGU in accordance with § 123.207 only for the calendar year of the request.

(i) The supplemental annual nontradable mercury allowances set aside under subsection (h) may not be added to the maximum number of annual nontradable mercury allowances set aside for the owner or operator of the EGU for subsequent years.

§ 123.210. General monitoring and reporting requirements.

(a) The owner or operator of a new EGU subject to the requirements of this section and §§ 123.201—123.209 and 123.211—123.215 shall demonstrate compliance with §§ 123.205 and 123.207 (relating to emission standards for coal-fired EGUs; and annual emission limitations for coal-fired EGUs) by installing and operating a continuous emissions monitoring system to measure, record and report the concentration of mercury in the exhaust gases from each stack.

(b) Except as provided in subsection (c), the owner or operator of an existing affected EGU shall comply with the monitoring, recordkeeping and reporting requirements as provided in this section and, §§ 123.211—123.215 and § 139.101 (relating to general requirements) and the applicable provisions of the *Continuous Source Monitoring Manual* (DEP 274-0300-001). For purposes of complying with these requirements, the definitions in § 123.202 (relating to definitions) and in 40 CFR 72.2 (relating to definitions) apply.

(c) For an affected EGU that emits 464 ounces (29 lbs) or less of mercury per year, the owner or operator of the affected EGU:

(1) Shall meet the general operating requirements in 40 CFR 75.10 (relating to general operating requirements) for the continuous emission monitors described in 40 CFR 75.81(a)(2) and (4) (relating to monitoring of Hg mass emissions and heat input at the unit level).

(2) Shall perform mercury emissions testing for the initial certification and ongoing quality assurance as described in 40 CFR 75.81(c)—(e).

(3) May demonstrate compliance with the percent control requirements by averaging the coal mercury content and stack emission data collected during the rolling 12-month period.

(d) The owner or operator of each EGU shall:

(1) Install all monitoring systems required under this section and §§ 123.211—123.215 and the applicable provisions of Chapter 139, Subchapter C (relating to requirements for continuous in-stack source monitoring for stationary sources), for monitoring mercury mass emissions (including all systems required to monitor mercury concentration, stack gas moisture content, stack gas flow rate and CO₂ or O₂ concentration, as applicable, in accordance with 40 CFR 75.81 and 75.82 (relating to monitoring of Hg mass emissions and heat input at common and multiple stacks).

(2) Successfully complete the certification tests required under § 123.211 (relating to initial certification

and recertification procedures for emissions monitoring) and meet the other requirements of this section and §§ 123.211—123.215 that are applicable to the monitoring systems required under paragraph (1).

(e) The owner or operator shall comply with the monitoring system certification and other requirements of subsection (d) on or before the later of:

(1) March 1, 2009.

(2) Ninety EGU operating days or 180 calendar days, whichever occurs first, after the date on which the EGU commences commercial operation.

(f) The owner or operator shall record, report and quality-assure the data from the monitoring systems required under subsection (d)(1) on and after the later of:

(1) March 1, 2009.

(2) Ninety EGU operating days or 180 calendar days, whichever occurs first, after the date on which the EGU commences commercial operation.

(g) The owner or operator of an EGU that does not meet the applicable monitoring date in subsections (e) and (f) for any monitoring system required under subsection (d)(1) shall, for each monitoring system, determine, record and report maximum potential (or, as appropriate, minimum potential) values for:

(1) Mercury concentration.

(2) Stack gas flow rate.

(3) Stack gas moisture content.

(4) Other parameters required to determine mercury mass emissions in accordance with 40 CFR 75.80(g) (relating to general provisions).

(h) The owner or operator of an EGU that does not meet the applicable monitoring date in subsections (e) and (f) for a monitoring system required under subsection (d)(1) shall, for each monitoring system, determine, record and report substitute data using the applicable missing data procedures in 40 CFR 75.80(f) instead of the maximum potential (or, as appropriate, minimum potential) values for a parameter if the owner or operator demonstrates that there is continuity between the data streams for that parameter before and after the construction or installation of the monitoring systems required under subsection (d)(1).

(i) An owner or operator of an affected EGU may not use any alternative monitoring system, alternative reference method or any other alternative to the requirements of this section and §§ 123.211—123.215 unless the alternative is approved in writing by the Department.

(j) An owner or operator of an affected EGU may not operate the EGU so as to discharge or allow to be discharged mercury emissions to the atmosphere without accounting for all of the emissions in accordance with the applicable provisions of this section, §§ 123.211—123.215 and Chapter 139, Subchapter C.

(k) An owner or operator of an affected EGU may not disrupt the continuous emission monitoring system or portion of it or other approved emission monitoring method to avoid monitoring and recording mercury mass emissions discharged into the atmosphere, except for periods of recertification or periods when calibration, quality assurance testing or maintenance is performed in accordance with the applicable provisions of this section, §§ 123.211—123.215 and Chapter 139, Subchapter C.

(l) An owner or operator of an affected EGU may not retire or permanently discontinue use of the continuous emission monitoring system or component of it or other approved monitoring system required under this section and §§ 123.211—123.215, except under either of the following circumstances:

(1) The owner or operator is monitoring emissions from the affected EGU with another certified monitoring system that has been approved by the Department, in writing, for use at that EGU and that provides emission data for the same pollutant or parameter as the retired or discontinued monitoring system, in accordance with the applicable provisions of this section, §§ 123.211—123.215 and Chapter 139, Subchapter C.

(2) The owner or operator submits notification of the date of certification testing of a replacement monitoring system for the retired or discontinued monitoring system in accordance with § 123.211(a)(5)(i) (relating to initial certification and recertification procedures for emissions monitoring) and a complete certification application in accordance with § 123.211(a)(5)(ii).

§ 123.211. Initial certification and recertification procedures for emissions monitoring.

(a) By the applicable deadline specified in § 123.210(e) and (f) (relating to general monitoring and reporting requirements), the owner or operator of an affected EGU shall comply with the following initial certification and recertification procedures for a continuous monitoring system (continuous emission monitoring system) and an excepted monitoring system (sorbet trap monitoring system) as required under 40 CFR 75.15 (relating to special provisions for measuring Hg mass emissions using the excepted sorbet trap monitoring methodology) and Chapter 139, Subchapter C (relating to requirements for source monitoring for stationary sources):

(1) The owner or operator of the EGU shall ensure that each continuous monitoring system required by the applicable provisions of § 123.210 successfully completes all of the initial certification testing required under 40 CFR 75.80(d) (relating to general provisions) and Chapter 139, Subchapter C.

(2) If the owner or operator of the EGU installs a monitoring system to meet the requirements of this section and §§ 123.210 and 123.212—123.215 in a location where no monitoring system was previously installed, initial certification testing is required in accordance with the applicable provisions of 40 CFR 75.80(d) and Chapter 139, Subchapter C.

(3) If the owner or operator of the EGU makes a replacement, modification or change to a certified continuous emission monitoring system or excepted monitoring system (sorbet trap monitoring system) required by § 123.210 that may significantly affect the ability of the system to accurately measure or record mercury mass emissions or heat input rate or to meet the quality-assurance and quality-control requirements of 40 CFR 75.81 (relating to monitoring of Hg mass emissions and heat input at the unit level) or 40 CFR Part 75, Appendix B (relating to quality assurance and quality control procedures), the monitoring system for the EGU shall be recertified in accordance with 40 CFR 75.20(b) (relating to initial certification and recertification procedures) and Chapter 139, Subchapter C.

(4) If the owner or operator of the EGU makes a replacement, modification or change to the flue gas handling system or the operation of the EGU that may significantly change the stack gas flow or concentration

profile, the owner or operator shall recertify each continuous emission monitoring system and each excepted monitoring system (sorbent trap monitoring system) whose accuracy is potentially affected by the change in accordance with 40 CFR 75.20(b) and Chapter 139, Subchapter C.

(5) This subsection applies to both the initial certification and recertification procedures of a continuous monitoring system required by § 123.210. For recertifications, replace the words “certification” and “initial certification” with the word “recertification,” replace the word “certified” with the word “recertified,” and follow the procedures required under 40 CFR 75.20(b)(5) or Chapter 139, Subchapter C as directed by the Department instead of the following procedures:

(i) The owner or operator shall submit to the Department written notice of the dates of certification testing.

(ii) The owner or operator shall submit to the Department a certification application for each monitoring system. A complete certification application shall include the information specified in Chapter 139, Subchapter C.

(iii) If the Department issues a notice of disapproval of a certification application or a notice of disapproval of certification status, the owner or operator shall:

(A) Substitute, for each disapproved monitoring system, for each hour of EGU operation during the period of invalid data specified under 40 CFR 75.20(a)(4)(iii) or 75.21(e) (relating to quality assurance and quality control procedures) and continuing until the applicable date and hour specified under 40 CFR 75.20(a)(5)(i), either the following values or, if approved by the Department in writing, an alternative emission value that is more representative of actual emissions that occurred during the period:

(I) For a disapproved mercury pollutant concentration monitor and disapproved flow monitor, respectively, the maximum potential concentration of mercury and the maximum potential flow rate, as defined in Sections 2.1.4.1 and 2.1.7.1 of 40 CFR Part 75, Appendix A (relating to specifications and test procedures).

(II) For a disapproved moisture monitoring system and disapproved diluent gas monitoring system, respectively, the minimum potential moisture percentage and either the maximum potential CO₂ concentration or the minimum potential O₂ concentration (as applicable), as defined in Sections 2.1.3.1, 2.1.3.2 and 2.1.5 of 40 CFR Part 75, Appendix A.

(III) For a disapproved excepted monitoring system (sorbent trap monitoring system) under 40 CFR 75.15 and disapproved flow monitor, respectively, the maximum potential concentration of mercury and maximum potential flow rate, as defined in Sections 2.1.4.1 and 2.1.7.1 of 40 CFR Part 75, Appendix A.

(B) Submit a notification of certification retest dates and a new certification application in accordance with subparagraphs (i) and (ii).

(C) Repeat all certification tests or other requirements that were failed by the monitoring system, as indicated in the Department’s notice of disapproval, within the time period specified by the Department in the notice of disapproval.

(b) The owner or operator shall submit a certification application to the Department within 45 calendar days after completing all initial certification or recertification tests required under this section.

§ 123.212. Out-of-control periods for emissions monitors.

(a) If an emissions monitoring system fails to meet the quality-assurance and quality-control requirements or data-validation requirements of Chapter 139, Subchapter C (relating to requirements for source monitoring for stationary sources), data for the demonstration of compliance with § 123.207 (relating to annual emission limitations for coal-fired EGUs) shall be substituted using the applicable missing data procedures in the *Continuous Source Monitoring Manual* (DEP 274-0300-001).

(b) If both an audit of a monitoring system and a review of the initial certification or recertification application reveal that a monitoring system should not have been certified or recertified because it did not meet a particular performance specification or other requirement under § 123.210 (relating to general monitoring and reporting requirements) or the applicable provisions of 40 CFR Part 75 (relating to continuous emission monitoring), both at the time of the initial certification or recertification application submission and at the time of the audit, the Department will issue a notice of disapproval of the certification status of the monitoring system.

(1) For the purposes of this subsection, an audit must be either a field audit or an audit of information submitted to the Department.

(2) By issuing the notice of disapproval, the Department revokes prospectively the certification status of the monitoring system. The data measured and recorded by the monitoring system will not be considered valid quality-assured data from the date of issuance of the notification of the revoked certification status until the date and time that the owner or operator completes subsequently approved initial certification or recertification tests for the monitoring system.

(3) The owner or operator shall follow the applicable initial certification or recertification procedures in § 123.210 for each disapproved monitoring system.

§ 123.213. Monitoring of gross electrical output.

The owner or operator of an EGU complying with the requirements of either § 123.206(d) (relating to compliance requirements for the emission standards for coal-fired EGUs) using electrical output (O_i) or § 123.206(e) using percent control efficiency shall monitor gross electrical output of the associated generators and report in watt-hours per hour.

§ 123.214. Coal sampling and analysis for input mercury levels.

(a) Except as provided in § 123.210(c) (relating to general monitoring and reporting requirements), the owner or operator of an EGU complying with this section and §§ 123.201—123.213 and 123.215 shall:

(1) Perform daily sampling of the coal combusted in the EGU for mercury content, in pounds per trillion Btu, as follows:

(i) Collect coal samples from the feeders or other representative location in accordance with 40 CFR 63.7521(c) (relating to what fuel analyses and procedures must I use?).

(ii) Composite coal samples in accordance with the requirements of 40 CFR 63.7521(d).

(2) Analyze each of the composited coal samples for mercury content in accordance with the procedures of ASTM D 6414-01 or the current revision of this method, or other alternative as approved by the Department.

(b) The owner or operator of an EGU shall use the data collected from the sampling and analysis required under subsection (a) to determine the input mercury content of the coal combusted in the EGU in terms of pounds of mercury per trillion Btu.

(c) The Department may change the frequency of the sampling and analysis of the coal combusted in the EGU for the input mercury level based on historical data provided by the owner or operator of the EGU. The change in the frequency will be approved by the Department as a minor modification to the Title V operating permit.

§ 123.215. Recordkeeping and reporting.

(a) The owner or operator of an affected EGU shall comply with the recordkeeping and reporting requirements in this section and the applicable recordkeeping and reporting requirements of 40 CFR 75.84 (relating to recordkeeping and reporting) and Chapter 139, Subchapter C (relating to requirements for source monitoring for stationary sources).

(b) The owner or operator of an affected EGU complying with this section and §§ 123.201—123.214 through the requirements of § 123.206(d) (relating to compliance requirements for the emission standards for coal-fired EGUs) by using electrical output to determine the allowable emissions of the EGU shall maintain the daily gross electrical output in GWhs in the file required under 40 CFR 75.84(a).

(c) The owner or operator of an affected EGU complying with this section and §§ 123.201—123.214 through the requirements of § 123.206(e) by using input mercury levels to determine the allowable emissions of the EGU shall maintain the daily mercury content of coal used in pounds of mercury per trillion Btu and the daily input mercury content in pounds in the file required under 40 CFR 75.84(a).

(d) Except as provided in § 123.210(c) (relating to general monitoring and reporting requirements), the owner or operator of an affected EGU shall maintain records as follows:

(1) Record the daily outlet mercury or output mercury data using the time period appropriate to the excepted methodology (sorvent trap monitoring system).

(2) If using an averaging methodology, record all other information collected on a daily basis necessary to calculate the average.

(3) Record for each 12-month compliance demonstration period the method through which each EGU demonstrated compliance.

(4) For an owner or operator who uses the averaging option of § 123.206(a)(2), calculate and record:

(i) The monthly actual mercury emissions within 30 days of the end of each month.

(ii) The 12-month rolling actual emissions each month.

(5) Maintain the following records onsite:

(i) The results of quarterly assessments conducted under Section 2.2 of 40 CFR Part 75, Appendix B (relating to quality assurance and quality control procedures).

(ii) Daily/weekly system integrity checks under Section 2.6 of 40 CFR Part 75, Appendix B.

(iii) Quality assurance records as required by the *Continuous Source Monitoring Manual* (DEP 274-0300-001).

(6) Make available to the Department upon request the records required under paragraph (5).

(e) The owner or operator shall submit quarterly reports to the Department in accordance with the *Continuous Source Monitoring Manual* (DEP 274-0300-001).

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