# Joint Meeting of the Air Quality Technical Advisory Committee, Citizens Advisory Council, and Mercury Rule Workgroup

August 31, 2006
Pennsylvania Department of Environmental Protection RCSOB, Room 105
Harrisburg, PA



#### **Topics Covered**

- Overview of Proposed Rulemaking
   Process and State Plan Robert Reiley
- Preliminary Summary of Public Comments – Craig Evans
- Draft Concepts for Final Rulemaking –
   John Slade and Krishnan Ramamurthy
- Next Steps Joyce Epps



#### Overview of Proposed Mercury Rulemaking Process

- Mercury Rule Workgroup Meetings
- Meetings with the Citizens Advisory Council and the Air Quality Technical Advisory Committee
- Environmental Quality Board Action on Proposed Mercury Rulemaking
- Public Participation Process
- Proposed Section 111(d) State Plan



#### Mercury Rule Workgroup Process

- October 2005, convened a Workgroup of diverse public and private sector individuals including representatives of petitioners, industry and trade association.
- Discussed key information relevant to a "statespecific" mercury regulation.
- Obtained recommendations on the technical aspects of the proposed rulemaking, including control levels, testing, monitoring, recordkeeping and reporting, and compliance schedules.
- Discussed the available background information on mercury emissions, deposition and control technology as well as the costs and benefits of the regulation.



#### Mercury Rule Workgroup Process

- Four meetings were held Oct. 14, 2005; Oct. 28, 2005;
   Nov. 18, 2005; and Nov. 30, 2005.
- The primary objectives of the public involvement process were to discuss key information relevant to a state-specific mercury regulation and obtain recommendations on the technical aspects of the proposed rulemaking, including control levels, testing, monitoring, record keeping and reporting, and compliance schedules.
- Each meeting provided an opportunity for technical presentations and open discussion for the Workgroup members.
- All material posted on web at: http://www.dep.state.pa.us/dep/deputate/airwaste/aq/regs/Mercury\_Rule.htm



### Consultations with Advisory Committees

- March 6, 2006, consulted with the Air Quality Technical Advisory Committee (AQTAC) on concepts for the proposed Mercury Rule
- March 13, 2006, consulted with the AQTAC and the Citizens Advisory Council (CAC) concerning the proposed rulemaking.
- March 21, 2006, consulted with the CAC's Air Subcommittee concerning the proposed rulemaking
- March 30, 2006, AQTAC deliberations on the proposed mercury rulemaking
  - Committee voted to recommend that draft rule be presented to the Environmental Quality Board for consideration.



### Environmental Quality Board Action

- May 17, 2006
  - The Board heard presentation concerning the proposed Mercury Rule.
  - During discussions on the proposal, the Citizens Advisory Council requested that a "Decision Document" be prepared by the Department.
  - Following discussion, the Board approved the proposed rulemaking for public comment.
  - The Board also requested a Decision Document to complement other documentation prepared for the final mercury rulemaking. This document should set forth the Department's justification, rationale, and supporting information for the final rule.



#### "Decision Document"

- The requested Decision Document will be available for the ACTAC and CAC meetings on September 11 and 19, respectively.
- The document will address the following:
  - The legal and regulatory history and rationale for the proposal;
  - A compilation and summary of the data, models, studies, evidence considered and used to support the decisionmaking;
  - An evaluation of arguments and information presented by those opposed to the rulemaking and an explanation of the decision "trail" and intent; and
  - Validation that the approach was well considered and not arbitrary.



# Environmental Quality Board Public Hearings

- July 25, 2006
  - DEP SW Regional Office, Pittsburgh
- July 26, 2006
  - RCSOB, Harrisburg
- July 27, 2006
  - DEP SE Regional Office, Norristown



#### State Plan Requirements

- Pursuant to Section 111 of the Clean Air Act (CAA), EPA promulgated emission standards for new Coalfired electric generating units (EGUs) and emission guidelines for "existing" EGUs to control the emissions of mercury.
- As required under 40 CFR 60.23(a), States must submit a State Plan to EPA to implement and enforce the requirements of the emission guidelines for existing EGUs by no later than November 17, 2006.
- As required under 40 CFR 60.23(c), one or more public hearings must be held prior to the adoption of the plan.



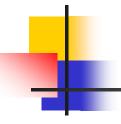
#### State Plan Elements

- Background/Introduction
- Public Participation §60.23.
- Implementation of the State Plan §60.23.
- Annual Emission Limitations and Mercury Allowances
   §60.24.
- Inventory of Designated Units §60.25.
- Compliance Schedule §60.24.
- Recordkeeping, Reporting and Monitoring Requirements - §60.24.
- Legal Authority to Implement the State Plan -§60.26.



#### Proposed State Plan

- The Department will hold three public hearings on the proposed State Plan for designated EGU facilities.
- On September 6, 2006, public hearings will be held at three DEP Offices:
  - Harrisburg, RCSOB;
  - Norristown; and
  - Pittsburgh.



#### The Final State Plan Process

- After receipt of State Plan, EPA will propose the plan for approval or disapproval.
- Within four months after submission of State Plan, EPA will approve or disapprove the plan or portions thereof.
- A revision of a State Plan won't be considered part of the plan unless approved by EPA.



- DEP considers comments and drafts finalform regulation.
- Consultations with the AQTAC and the CAC.
- Environmental Quality Board makes decision on final-form regulation.
- The final-form regulation is submitted for action by the Independent Regulatory Review Commission, Committees and the Attorney General.



Both Committees
Approve Regulation

IRRC Approves and Notifies LRB, Committes, and DEP

With Attorney General Approval, Agency May Proceed with Final Publication

# Preliminary Summary of Public Comments



- Overwhelming public interest in the Pennsylvania-specific mercury reduction rule
- Approximately 10,934 commentators on the proposed rule
- Diverse commentators
  - Public
  - Sportsmen
  - Industry
  - Trade associations
  - EPA



#### Summary of Public Comments: General

- Letters of support for Pennsylvania rule.
- Health and welfare effects concerns for public health and the environment.
- Opposition to trading.
- Pennsylvania as environmental leader.

- Nontradable program will cause older plants to shut down.
- Electric reliability concerns.
- No compelling reason for state-specific rule.
- Trading provides for early incentives to reduce emissions



- EPA requests that Pennsylvania revise the definition of EGU in the State's rule to reflect EPA's revised definition in Reconsideration Notice.
- EPA requests that additional terms be defined including:
  - "boiler",
  - "bottoming-cycle cogeneration unit",
  - "combustion turbine",
  - "gross thermal energy",
  - "potential electrical output capacity",
  - "total energy output".



- EPA requests that Pennsylvania include a provision notifying all owners and operators of new sources that they must also comply with the mercury control requirements in EPA's New Source Performance Standards as specified in Subpart Da as adopted by reference by Pennsylvania.
- EPA would not consider Pennsylvania's proposed rule to be approvable, if it submits IGCC exemption for annual emission limitation.



- EPA recommends that Pennsylvania consider specifying how sources would calculate their facility-wide average in cases where they are complying with §123.205.
- Pennsylvania must change the Phase 1 budget in its proposed rule to reflect EPA's modification in the annual allowable mercury emissions from the State's EGUs.
- EPA requests that Pennsylvania consider whether there might be any EGUs now or in the future that may not be CFBs or PCFs and that should be allocated allowances.
- EPA believes that Pennsylvania does not intend to allow banking of the non-tradable mercury allowances under its proposal..."An express prohibition against banking is necessary in order to ensure that the annual cap is not exceeded in any year..."



- EPA believes that Pennsylvania intends that the requirement to have nontradable allowances covering mercury emissions will apply to new, as well as existing units, and that the failure to meet this requirement will be a violation of the Clean Air Act.
- Pennsylvania must modify §123.207(k) to state that allowances will not be set aside for an EGU scheduled for shutdown in cases where the EGU is subject to a legally enforceable requirement that the EGU be shutdown.



- EPA recommends that Pennsylvania specifically address in §123.209 what priority the State will give to allocating allowances to owners and operators who propose to construct new units and also the State's process for making the allocations.
- EPA requests that Pennsylvania include in §123.209 provisions stating that new units cannot carry over allowances for a given year from the annual emission limit supplement pool to a future year and that the Department will not carry over unused allowances from the annual emission limit pool from one year to the next.



- EPA indicated that Pennsylvania's rule must require EGUs to use emissions data reported in accordance with 40 CFR part 75 to show compliance with §123.207.
- EPA stipulates that Pennsylvania include in its regulation that the Part 75 requirements will take precedence if a case should arise where there is a conflict between the requirements of Part 75 and Pennsylvania's State requirements.
- EPA requires that Pennsylvania clarify in the regulation that EPA will not approve alternative requirements unless they are consistent with the Part 75 requirements.



### Summary of Public Comments: Public

- As a Pennsylvania resident, I strongly support the DEP's proposed mercury emission rule to reduce mercury emissions from coal fired power plants 90% by 2015. PA is the second largest source of mercury pollution in the U.S.
- In over 200 sampling locations in the state, fish have such high amounts of mercury that people are advised to eat no more than two meals of those fish per month.
- A recent opinion poll conducted by Terry Madonna Research Opinion found that 4 out of 5 Pennsylvanians support a mercury rule that is stronger and implemented faster than the federal rule.



### Summary of Public Comments: Public

- Because of the trading system set up in CAMR, Pennsylvania plants are more likely to pay for pollution credits than to clean up and modernize old plants.
- Coal-fired power plants are the largest unregulated source of mercury pollution, which contaminates our waterways and eventually the fish that end up on our dinner plates.
- More than 60 health-affected, health, women's, children's, sporting, faith-based, environmental and conservation organizations around the state support the Pennsylvania rule. Over 100 hunting and angling clubs around the state support the rule. Over 100 medical experts and faith leaders around the state have co-signed letters in support of the state-specific rule.



### Summary of Public Comments: Public

- The U.S. Centers for Disease Control verify that over 600,000 women of childbearing age in the U.S. have levels of mercury in their blood higher than that considered safe for their developing babies.
- Mercury pollution is also causing developmental problems for a wide variety of wildlife, including songbirds, mammals, and amphibians.
- Recent EPA-funded studies show that up to 70 percent of mercury contamination comes from local and regional sources.



#### Summary of Public Comments: Industry

- DEP has demonstrated no compelling reason to implement a state specific mercury rule. Since executive orders stand until formally withdrawn and such an action has not occurred with Executive Order 1 of 1996, DEP's mercury rule should not be promulgated.
- There is a lack of evidence that the proposed rule will provide an environmental benefit to Pennsylvania beyond the EPA Clean Air Mercury Rule.
- There is no demonstration that the additional costs of the state rule will provide public health benefits beyond the federal rule.



#### Summary of Public Comments: Industry

- DEP's proposal to increase the reduction standard to 90% and advance the 2018 compliance date for CAMR poses real problems for energy producers.
- There is a lack of true cost-benefit analysis by DEP taking into account technology availability, reliability of electricity generation, and consumer costs.
- There is a lack of mercury-specific control technology for full-scale commercial use with Pennsylvania's high-sulfur-content bituminous coal to meet the regulation's stringent limits and accelerated compliance deadline.



#### Summary of Public Comments: Industry

- Proponents of a statewide rule have failed to provide any documentation that CDC has stated anyone has an unsafe level of mercury in their blood from eating fish.
- Here in PA, power plants have already reduced mercury emissions 33% between the period 1999 and 2004, according to Toxics Release Inventory reports.
- Proposed subsections 123.206(b)(1) and (2) raise constitutional questions under the Commerce Clause because they promote the continued use of Pennsylvania coal in complying with the mercury standards.



- An Evaluation of Deposition in Pennsylvania for Potential Mercury Emission Reduction Strategies Prepared for PPL Generation, LLC prepared by ENVIRON.
  - Less than 1% of the elemental mercury released from Pennsylvania's EGUs is deposited in Pennsylvania, whereas approximately one-quarter of the oxidized mercury released from Pennsylvania's EGUs is deposited in Pennsylvania.



- An Evaluation of Mercury Emissions Reductions in Pennsylvania prepared for PPL Generation, LLC, by URS.
  - Mercury reduction technologies are not yet at the point that PPL can be confident they can achieve the levels of reduction required without trading for the proposed Pennsylvania rules.



- An Evaluation of Alternative Approaches to Reducing Pennsylvania Mercury Emissions, Prepared for PPL Generation, LLC by NERA Economic Consulting.
  - Under a cap-and-trade program, total emissions are capped and sources are given the flexibility to trade emissions allowances, resulting in incentives to find and apply the lowest-cost methods for reducing emissions.



## Summary of Public Comments: PCA, *et al.*

- Evaluation of the Compliance Implications to Pennsylvania Electric Generators of Meeting Governor Rendell's Proposed Mercury Rule by Marchetti, Cichanowicz, and Hein.
  - The PA rule could put 28 percent of the state's coal-fired capacity "at-risk" of retirement; and,
  - Compliance with the PA Rule could displace almost 85.1 million tons of PA coal between 2010 and 2018.
  - Under the PA rule, the state will be over (in violation) their CAMR State Budget beginning in 2018.



#### Summary of Public Comments: League of Women Voters

- Medical research shows that even very low levels of mercury can impair intelligence and brain function. James M. Roberts, M.D., Director of the Magee-Women's Research Institute in Obstetrics and Gynecology says, "there is no evidence of a threshold below which mercury causes no damage to the fetus."
- A study in Cresson, Cambria County, shows that mercury levels near the power plant were 45% higher than in Tioga County where there is no coalburning power plant.



- Revise the proposed mercury emission standard for existing waste coal-fired EGUs from 0.0058 lbs Hg/GWh to 0.0096 lbs Hg/GWh and that this standard would apply under both Phase I and II.
- Modify proposal to provide that compliance with the percent reduction standards for new and existing EGUs require the use of the ASTM method for determining fuel mercury content.
- Clarify proposal to ensure that the low emitter provisions of CAMR can be used to satisfy the general monitoring, reporting and recordkeeping requirements of the proposed mercury rule.



## Summary of Public Comments: TXII

- TXU is committed to environmental excellence, and applauds the measures Pennsylvania is taking to reduce mercury emissions into the environment.
- TXU supports the provision in the Proposed Mercury Rule (§ 123.207(1)) that provides the Department with the flexibility to revise the percentage of set-aside for new units.
- This flexibility provides an important opportunity to ensure that adequate allowances are available for new EGUs.

# Draft Concepts for Final Rulemaking





## Overview: Conceptual Approach

- Applicability Any coal-fired EGU with a nameplate capacity of 25 MW or more.
- Each EGU would be required to meet:
  - a numerical emission standard or minimum control efficiency and
  - an annual emission limit in ounces of Hg emitted.



# Overview: Exception

The owner or operator of an existing EGU that enters into an enforceable agreement for the shutdown and replacement with Integrated Gasification Combined Cycle (IGCC) would be exempted from compliance with the Phase 1 Hg emission standards only.



## Overview: Compliance Deadlines

- Phase 1 (January 1, 2010)
  - Initial level for numerical emission standard
  - or control efficiency, and
  - an annual emission limit by unit.
- Phase 2 (January 1, 2015)
  - More stringent emission standard or
- control efficiency, and
  - annual emission limit by unit.



## Overview: Phase 1 and 2 Emission Standards

- Existing EGU units
  - Pulverized Coal (PC)-Fired
  - Circulating Fluidized Bed (CFB)
- New EGU standards apply at construction for:
  - IGCC
  - PC-Fired
  - CFB



#### Overview:

#### **Emission Standards for New EGUs**

- PC-Fired output based emission standard of
  - 0.011 lb/GWh or 90% capture efficiency.
- CFB burning coal output based emission standard of
  - 0.011 lb/GWh or 90% capture efficiency.
- CFB burning waste coal output based emission standard of
  - 0.0096 lb/GWh or 95% capture efficiency.
- IGCC output based emission standard of
  - 0.0048 lb/GWh or 95% capture efficiency.



## Overview: Phase 1 Existing EGU Standards

- PC-Fired output based emission standard of
  - 0.024 lb/GWh or 80% capture efficiency.
- CFB output based emission standard of
  - 0.0096 lb/GWh or 95% capture efficiency.



## Overview: Phase 2 Existing EGU Standards

- PC-Fired output based emission standard of
  - 0.012 lb/GWh or
  - 90% capture efficiency.
- CFB output based emission standard of
  - 0.0096 lb/GWh or
  - 95% capture efficiency.



## Overview: Annual Emission Limits

- Established for each EGU on ounces per year basis.
- Based on CAMR allocation distribution methodology using three highest years within years 2000-2004 EGUs heat-input.
- Establishes the same emission limit for CFB units during Phase 1 and Phase 2.
- Provides regulatory assurance for Pennsylvania to meet the EPA CAMR Hg budgets.





- Unit-by-unit basis.
- Emissions averaging among the units at a specific facility.
- Alternative emission standard/compliance schedule.





- Unit-by-unit basis.
- Emissions averaging among the units on a facility.
- Alternative emission standard/compliance schedule.

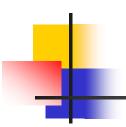
# Overview: Annual Emission Limit Compliance Components

- Allocate to each EGU an available amount of nontradable allowances based on CAMR caps.
- Set aside for New Source EGUs:
  - Phase 1 5%.
  - Phase 2 3%.
- Same allocation for CFBs during Phases 1 and 2.
- Each affected unit can draw up to the available amount of allowances based on their actual emissions for compliance with the annual emission limit.
- Owners/operators of EGUs may petition Department for additional allowances.



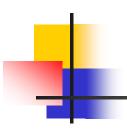
#### Overview: Other Requirements

- Monitoring Requirements
  - Similar to CAMR
- Testing Requirements
  - Similar to CAMR
- Recordkeeping and Reporting Requirements
  - Similar to CAMR



## Major Regulatory Changes: Definitions

- The definitions under the Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources promulgated in 40 CFR Part 60 subpart Da and HHHH are adopted in their entirety.
- These definitions will be used in the mercury rulemaking.



# Major Regulatory Changes: Applicability

The requirements of §§ 123.201 – 123.215 will apply to owners and operators of an EGU located in this Commonwealth and except as otherwise noted supercedes those requirements that are adopted and incorporated by reference under 25 Pa. Code Chapter 122.



#### Major Regulatory Changes: Emission Standards

- Credit for fuel pretreatment
  - The mercury removal efficiency due to pretreatment of coal or waste coal may be credited towards the minimum % control efficiency of total mercury. This credit shall be approved consistent with the process outlined in 40 CFR Part 60 for pretreatment for sulfur removal.



- The Existing EGUs combusting 100% bituminous coal preference is deleted.
  - This addresses concerns raised by industry regarding the constitutionality of the provision.
- The Department's approval of an alternate standard or a compliance schedule will not relieve the owner or operator of an EGU from complying with the other requirements of § 123.207 - §123.215.



- Phase 1 budget reduced from 3,560 lbs. to 3,558 lbs (56,928 oz.).
- Phase 2 budget of 1,404 lbs. (22,464 oz.) is unchanged.
- Phase 1 set aside for existing EGU reduced from 54,112 oz. to 54,080 oz.
- Phase 2 set aside of 22,790 oz. for existing EGU is unchanged.



- After a new EGU has commenced operation and completed three control periods, the EGU will be treated as an existing EGU after completion of the three control period years.
- The new EGU will continue to receive non-tradable allowances from the new unit set-aside until the new EGU is eligible to use allowances allocated from existing EGU set-aside.
- Once a new EGU is eligible to receive non-tradable allowances from the existing EGU set-aside, new maximum allowance levels for all existing EGUs will be established and published in the Pa. Bulletin by May 31 of the year that is two years prior to the control period.



- Annual non-tradable mercury allowances will be setaside for the owner or operator of the replacement coal fired EGU up to the amount of allowances allocated for the shut down EGU.
- The provisions of Section 123.202-123.215 are not applicable to an EGU that will be permanently shut down no later than December 31, 2009 provided the owner or operator of that unit shall have notified the Department and executed a legally enforceable document that requires the EGU to be permanently shut down.



- The owner or operator of one or more affected mercury allowance program EGUs subject to the requirements of this section shall demonstrate compliance with the applicable requirements using one of the following methods by no later than March 1 for the preceding control period:
  - Compliance on a unit-by-unit basis.
  - Facility-wide emissions averaging.
  - System-wide emissions averaging.

#### Major Regulatory Changes: Compliance Requirements Emission Limits

- Facility-wide or a System-wide averaging: The owner or operator of an EGU may comply with the emission limits by means of facility-wide or System-wide averaging that shows that the actual emissions of mercury from the EGUs covered by the averaging are less than the allowable emissions of mercury from all EGUs covered by the demonstration on a 12-month basis.
- The owners or operators of more than one existing facility with EGUs can only participate in system-wide averaging that include other facilities that they own or operate.
- No EGU is allowed to be included in more than one system-wide averaging.

#### Major Regulatory Changes: Compliance Requirements Emission Limits

- System-wide emissions averaging
  - owners or operators of two or more affected facilities under common ownership or operator control within this Commonwealth may achieve compliance with the annual emission limitation by ensuring that the aggregate of actual mass emissions from all units, under the averaging demonstration, must be less than the aggregate of allowable mass emissions from all such units.



Except as otherwise provided, the owner or operator of an existing affected EGU shall comply with the requirements of 40 CFR Part 75 (relating to continuous emission monitoring), with regard to mercury mass emissions, monitoring, recordkeeping, and reporting requirements as provided in the proposed rulemaking, section139.101 (relating to general requirements) and the applicable provisions of the Continuous Source Monitoring Manual (DEP 274-0300-001).



## Major Regulatory Changes: Petition Process

- Order of preference for supplemental allowances for existing EGUs combusting 100% bituminous coal is deleted.
  - This addresses concerns raised by industry regarding the constitutionality of the provision.



- No owner or operator of an affected EGU shall use any alternative monitoring system, alternative reference method, or any other alternative to the requirements of the regulation unless such alternative is approved in writing by the Department.
- No owner or operator of an affected EGU shall use any alternative monitoring system, alternative reference method, or any other alternative to any requirement of 40 CFR Part 75 unless such alternative is approved in writing by the EPA in accordance with 40 CFR Part 75 Subpart E.

#### Major Regulatory Changes: Out-of-control Periods for Emissions



#### **Monitors**

• If the emissions monitoring system that fails to meet such a quality-assurance or quality-control requirement is a mass emissions monitoring system, mass emissions data must be substituted using the applicable missing data procedures in 40 CFR Part 75.

### Major Regulatory Changes: Coal Sampling and Analysis for Input Mercury Levels

The Department may approve an alternate coal sampling and analysis program to demonstrate compliance with §§ 123.201- 123.215 on a case-bycase basis.



## Next Steps



#### Next Steps

- Continue processing and considering comments submitted on the proposed rulemaking.
- Complete comment and response document.
- Draft "decision document" requested by the EQB.
- Complete final-form regulation for consideration by AQTAC and CAC in September 2006.
- Finalize additional documents in support of the final rulemaking package.

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#### Next Steps (Cont'd)

- On September 6, 2006, the Department will hold three public hearings on the proposed Section 111(d) State Plan to reduce mercury emissions from designated EGU facilities.
- The hearings will be held in these DEP Offices:
  - SE Regional Office, Norristown
  - Room 105, RCSOB, Harrisburg
  - SW Regional Office, Pittsburgh
- The State Plan will be submitted to EPA prior to the November 17, 2006 due date.



#### Next Steps (Cont'd)

- AQTAC Meeting
  - September 11, 2006, 9:00 am
  - Susquehanna Room, SWRO, Harrisburg
- CAC Meeting
  - September 19, 2006, 1:00 pm
  - Room 105, RCSOB, Harrisburg
- EQB Meeting
  - October 17, 2006, 9:00 am
  - Room 105, RCSOB, Harrisburg



#### Questions?















