Mercury Emission Estimates with the iPOG

Mercury Emission from Coal / Minamata Online / Season 2
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Outline

• Existing plants challenge
• Mercury emission on plant-by-plant basis
• Introduction to UNEP tools
• Overview of iPOG approach
• Example of iPOG analysis
An Example of Country-wide Analysis

- Plants nearing the end of life, but likely to upgrade soon
- Plants with SWFGD, to investigate means to reduce potential for increased Hg deposition
- Inefficient plants due for imminent refurbishment
UNEP Tools for Plant-by-plant Analysis

Process Optimization Guidance for Reducing Mercury Emissions from Coal Combustion in Power Plants

Division of Technology, Industry and Economics (DTIE)
Chemicals Branch
Geneva, Switzerland
November 2010
POG Overview

• Addressed Hg control options from coal-fired boilers
• Produced for UNEP with technological status quo in 2010
• Utilized global Hg control experience
• Significant utilization of results from USDOE Hg research program
• Has emphasized co-benefit approaches
• Was used as a platform for UNEP BAT/BEP development
iPOG Overview

- Developed by in cooperation with the Coal Partnership
- Has been coded according to POG
- Utilizes proprietary calculations (Niksa Associates)
- Intuitive interface over complex set of equilibrium calculations
- Free download from UNEP’s website at:

  https://www.unep.org/resources/report/interactive-process-optimization-guidance-ipogtm?__cf_chl_managed_tk__=pmd_7AOq4pJhAAkd7aNOf2LatYiP1OivbpqGaNHKNd7feU-1631718181-0-gqNtZGzNAzujcnBszQiR
Example of iPOG Input - Configuration

• Example configuration: ESP only, no SO$_2$ control, no post-combustion NOx control systems
Example of iPOG Input - Coal

- Coal blends may be used and may be user-defined
- Data may be entered for coal S and Cl content; these can significantly affect Hg behavior
- Data may be entered for Hg content in coal; affects Hg release from plant
Example of iPOG Calculations - Results

- Estimates of elemental and oxidized stack emissions
- Estimates of Hg outflows from furnace (bottom ash) and ESP (flyash)
Summary

• Hg emissions from coal-fired units may be estimated with iPOG on a plant-by-plant basis
• iPOG analyses may be helpful to determine upgrade priorities for plants
• iPOG analyses were used during numerous projects funded by UNEP and USDOS
• The iPOG tool is available as a free download from the UNEP website
Thank you for listening