

CASE STUDY #3: ENERGY SECTOR – COAL PRODUCTION AND USE

Part 4: Solution

The solution to this case study has three parts: the IPP/QAP, and the emissions calculations and documentation.

Solution – Inventory Preparation Plan/Quality Assurance Plan

The contents of the Inventory Preparation Plan/Quality Assurance Plan should be based upon the outline provided in Part 3, above. Time limitations will dictate the level of detail that can be included in the Inventory Preparation Plan/Quality Assurance Plan. An example of the minimum level of detail that should be included in the Inventory Preparation Plan/Quality Assurance Plan for this case study is as follows:

- Background and purpose of the inventory – The basis for this point source inventory is to aid in local air quality planning and to identify key sources in the inventory area.
- Inventory area status – attainment vs. nonattainment status;
- Inventory scope:
 1. Inventory area/facility: Utility plant; surface mining areas;
 2. Pollutants of concern: NO_x, SO_x, CO, PM₁₀, and PM_{2.5};
 3. Sources: Utility boiler, fugitive dust emissions from mining;
 4. Temporal resolution: Annual emissions for the year 2002.
- Data quality objectives:
 1. The inventory should include all the sources listed; and
 2. Emission estimates should be 100% correct.
- Inventory resources:
 1. Team
 2. Overall project manager
 3. Team manager
 4. Data evaluator
- Emissions estimation methodologies – Emission factors and activity data;
- QA/QC procedures – Internal QC steps should be briefly outlined in the IPP, and could include:

1. Checking emission calculations for errors;
2. Checking emission factors to ensure the appropriateness of the factors used; and
3. Documenting all the assumptions made during emission calculations.

Solution - Calculations

See attached spreadsheet for calculations for surface coal mine and utility boiler burning coal.

Part 5: Documentation

Due to time limitations, it is not possible to develop a complete emissions inventory report. However, an outline or annotated outline can be developed which contains the following elements:

- Description of the source category (i.e., surface coal mining and coal utility boilers);
- Explanation of the methods used for data collection, and sources of data collected (e.g., site-specific mine activity data, utility coal combusted);
- Explanation of the assumptions made in data collection and in the data analysis phase (e.g., annualized activity estimates developed from spot estimates);
- Emission estimation methods;
- Emission factors and their sources;
- Emission calculations and assumptions;
- Internal QC checks implemented and results of external QA including findings and corrections made and;
- Results (e.g., tables, pie charts) and analysis (e.g., comparisons/controls) among sub-categories.

Part 6: Quality Assurance

Have students exchange all documentation and conduct external QA audit using the QA checklist.

Part 7: Discussion of Results

Review the following with the students:

- The external QA checklist;
- The content of the inventory report; and
- The emission calculations and results.

ATTACHMENT

**SOLUTION FOR
POINT SOURCE – ENERGY SECTOR CASE STUDY
(SPREADSHEET)**