



Office of
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& Heritage

Coal Mine Particulate Matter Control Best Practice Site-specific determination guideline

November 2011

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Purpose of this guideline

This guideline provides detail of the process to follow when conducting a site-specific determination of best practice measures to reduce emissions of particulate matter from coal mining activities.

It also provides the required content and format of the report required for the pollution-reduction program *Coal mine particulate matter best practice*.

The site-specific determination process

In preparing the report, as a minimum, the following steps must be followed:

1. Identify, quantify and justify existing measures that are being used to minimise particle emissions

1.1. Estimate baseline emissions of TSP, PM₁₀ and PM_{2.5} (tonne per year) from each mining activity. This estimate must:

- utilise USEPA AP42 emission estimation techniques (or other method as approved in writing by the EPA)
- calculate uncontrolled emissions (with no particulate matter controls in place), and
- calculate controlled emissions (with current particulate matter controls in place).

Note: These particulate matter controls must be clearly identified, quantified and justified with supporting information).

1.2. Using the results of the controlled emissions estimates generated from step 1.1, rank the mining activities according to the mass of TSP, PM₁₀ and PM_{2.5} emitted by each mining activity per year from highest to lowest.

1.3. Identify the top four mining activities from step 1.2 that contribute the highest emissions of TSP, PM₁₀ and PM_{2.5}.

2. Identify, quantify and justify the measures that could be used to minimise particle emissions

2.1. For each of the top four activities identified in step 1.3, identify the measures that could be implemented to reduce emissions, taking into consideration:

- the findings of Katestone (June 2011) *NSW coal mining benchmarking study – international best practice measures to prevent and/or minimise emissions of particulate matter from coal mining* (see www.environment.nsw.gov.au/resources/air/KE1006953volumel.pdf)
- any other relevant published information, and
- any relevant industry experience from either Australia or overseas.

2.2. For each of the top four activities identified in step 1.3, estimate the emissions of TSP, PM₁₀ and PM_{2.5} from each mining activity after applying the measures identified in step 2.1.

3. Evaluate the practicability of implementing these best practice measures

3.1. For each of the best practice measures identified in step 2.1, assess how practicable each one is to implement by taking into consideration:

- implementation costs
- regulatory requirements
- environmental impacts
- safety implications, and
- compatibility with current processes and proposed future developments.

3.2. Identify those best practice measures that will be implemented at the premises to reduce particle emissions.

4. Propose a timeframe for implementing all practicable best practice measures

4.1. For each of the practicable best practice measures identified in step 3.2, provide a timeframe for their implementation.

Report content

The report must clearly identify the methodologies utilised and all assumptions made. It must contain detailed information justifying and supporting all the information used in each step of the process. For example, in calculating the controlled emissions in step 1, current particulate matter controls being used at the mine must be clearly identified, quantified and justified. This means adding supporting information and evidence, including monitoring data, record keeping, management plans and/or operator training.

In evaluating practicability in step 3, the licensee must document the following specific information:

- estimated capital, labour, materials and other costs for each best practice measure on an annual basis for a 10-year period – this information must be set out in the format provided in Appendix A and included as an attachment to the report
- details of any restrictions on implementing each best practice measure due to an existing approval or licence
- quantify any new or additional environmental impacts that may arise from applying a particular best practice measure, such as increased noise or fresh-water use
- details of safety impacts that may result from applying a particular best practice measure
- details of any incompatibility with current operational practices on the premises, and
- details of any incompatibility with future development proposals on the premises.

Report format

The report must be structured according to the process outlined. It must be submitted as a pdf *and* hard copy in triplicate. All emission estimates, costs and supporting calculations must be in electronic format as an Excel spreadsheet.

Abbreviations and definitions

USEPA AP42 emission estimation techniques – all of the following:

- USEPA (1995), *AP 42, fifth edition, Compilation of air pollutant emission factors, volume 1: stationary point and area sources*, Technology Transfer Network – Clearinghouse for Inventories & Emissions Factors, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, USA. www.epa.gov/ttn/chief/ap42/index.html
- USEPA (1998), *AP 42, chapter 11.9, Western surface coal mining*, Technology Transfer Network - Clearinghouse for Inventories & Emissions Factors, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, USA. www.epa.gov/ttn/chief/ap42/ch11/final/c11s09.pdf
- USEPA (2006), *AP 42, chapter 13.2.2, Unpaved roads*, Technology Transfer Network – Clearinghouse for Inventories & Emissions Factors, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, USA. www.epa.gov/ttn/chief/ap42/ch13/final/c13s0202.pdf
- USEPA (2006), *AP 42, Chapter 13.2.4, Aggregate handling and storage piles*, Technology Transfer Network - Clearinghouse for Inventories & Emissions Factors, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, USA. www.epa.gov/ttn/chief/ap42/ch13/final/c13s0204.pdf
- USEPA (2006), *AP 42, Chapter 13.2.5, Industrial wind erosion*, Technology Transfer Network – Clearinghouse for Inventories & Emissions Factors, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, USA. www.epa.gov/ttn/chief/ap42/ch13/final/c13s0205.pdf

PM₁₀ Particulate matter of 10 micrometres or less in diameter

PM_{2.5} Particulate matter of 2.5 micrometres or less in diameter

Mining activities any of these:

- wheel generated particulates on unpaved roads
- wind erosion of overburden
- loading and dumping overburden
- blasting
- bulldozing coal
- trucks unloading overburden
- bulldozing overburden
- front-end loaders on overburden
- wind erosion of exposed areas
- wind erosion of coal stockpiles
- unloading from coal stockpiles
- dragline
- front-end loaders on overburden
- trucks unloading coal
- loading coal stockpiles
- graders
- drilling
- coal crushing
- material transfer of coal
- scrapers on overburden
- train loading
- screening, or
- material transfer of overburden

TSP Total suspended particulate matter

Appendix A Presentation of information on cost of implementation

The report should provide spreadsheets including estimates of the annual capital, labour and materials costs for each year over a ten year period for implementing each best practice measure identified in step 2.

The template below is for one best practice measure.

Mining activity	Example: Wheel-generated particulates on unpaved roads										
Specific best practice measure	Example: Truck replacement – larger vehicles										
Year	1	2	3	4	5	6	7	8	9	10	Total
Cost of specific capital items (e.g. new vehicle)*											
Total capital costs											
Labour costs including directly related on-costs											
Cost of specific materials and other items (e.g. fuel)*											
Total material and other costs											
Estimated additional cost per tonne of particulate matter suppressed for TSP, PM ₁₀ and PM _{2.5} *											
Cost savings from implementing each best practice measure*											
Estimated net cost per tonne of particulate matter suppressed for TSP, PM₁₀ and PM_{2.5}*											

* Each item must be specified – one item per row in spreadsheet