

Prof E.K. Cairncross
Working Group 5: Minimum Emission Standards: Cross-
Cutting Issues
SABS SC 146 A: Quality Standard: Source Emissions

Date:
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Enquiries:
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Ref: GEM08_L227

Dear Prof Cairncross

**ESKOM SUBMISSION TO WORKING GROUP 5 ON CROSS-CUTTING ISSUES RELATING TO
MINIMUM EMISSION STANDARDS SETTING**

In response to the issues that were raised at the meeting for Working Group 5 of the SABS Sub-Committee 146A on the setting of Minimum Emission Standards, held on Tuesday 9 December 2008, we would like to submit the following proposal. The recommendations are in most cases specific to the power generation industry, and it may well be more appropriate for the proposed conditions to only pertain to the power generation sector, rather than all listed activities, or in fact to only be reflected in the emission licences.

Much of this proposal has been derived from the European Union's *Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants* and adapted for the South African situation.

Emission monitoring

We suggest that the conditions for emission monitoring be similar to those stipulated in the EU Directive, but allow sufficient time for appropriate instrumentation to be installed in South Africa.

- For coal-fired combustion plants with a rated thermal input per unit of 300 MW or more, the concentrations of dust in waste gases shall be measured continuously for each flue.
- The concentrations of SO₂ and NO_x in waste gases from coal-fired combustion plants with a rated thermal input of more than 300 MW should be measured continuously for at least one unit of each plant. Average monthly NO_x and SO₂ concentrations should be calculated for the other units using the results of the coal analysis. It is the intention that continuous emission monitoring systems will be installed on all units of existing coal-fired power stations by 2014.

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- Continuous emission monitoring systems (measuring dust, SO₂ and NO_x) will be installed on all units of new coal-fired power plants with units with a rated thermal input per unit of 300 MW or more, constructed from 2010 onwards.
- For gas- and liquid-fired combustion plants with a rated thermal input per unit of 300 MW or more, the concentrations of NO_x and CO in the waste gases should be measured continuously for each flue. Either continuous measurement of SO₂ emissions or monitoring of the sulphur content of the fuel is only required for liquid-fired combustion plants if there is a risk that SO₂ emissions could exceed the prescribed emission limit values and if the sulphur content of the fuel is unknown or if waste gas desulphurisation equipment has been installed. PM emissions should only be monitored when there is a risk that PM emissions could exceed the prescribed emission limit values, or if particulate abatement technology has been installed.
- Continuous measurements will not be required for combustion plants with a life span of less than 100 000 operational hours, and combustion plants which are only used in emergency conditions and operate for less than 525 hours per year.
- Continuous measurements will include the measurement of the oxygen content, temperature, pressure and velocity of the waste gases from 2014.
- Sampling and analysis, of relevant polluting substances and measurements of process parameters as well as the quality assurance of automated measuring systems and the reference measurement methods to calibrate those automated measurement systems shall be carried out in accordance with national or international methods for sample collection and analysis, such as those published by the International Organisation for Standardisation, the European Committee for Standardisation or the European Committee for Standardisation. Eskom recommends EN 14181, EN 15259 and EN 15267.
- The automated measuring systems shall be subject to correlation tests or control by means of parallel measurements with the reference methods at least once every four years. Spot measurements to verify the correlation are to be conducted two years after the correlation tests.
- At the emission limit value level, the values of the 95 % confidence intervals of a single measured result shall not exceed the following percentages of the emission limit values:

Carbon monoxide	10%
Sulphur dioxide	20%
Nitrogen oxides	20%
Dust	30%
- The validated hourly and daily average values shall be determined from the measured valid hourly average values after having subtracted the value of the confidence interval specified above.
- Results of the continuous emission monitoring measurements should be available for at least 80% of the total hours in a month. If more than 20% of the hourly average measurements are invalidated, the competent authority shall require the operator to take adequate measures to improve the reliability of the automated measuring system.
- All monitoring results shall be recorded, processed and presented in a way to enable the competent authority to verify compliance with the specified operating conditions and emission limit values which are included in the emission licence. Quality Assurance/Quality Control plans should be applied and documented to ensure that the data quality is adequate for the intended use. There will be no requirements to supply information to the competent authority regarding parameters which are not specifically included in the emission licence.

Emission reporting

In cases where continuous emission monitoring is conducted or emissions are calculated monthly, emissions are to be reported to the relevant authority every 3 months.

Emission reports are to contain:

- Average monthly emissions of monitored pollutants for each unit
- An evaluation of compliance with the conditions of the emission licence
- Details about correlation tests, calibrations or spot measurements conducted during the reporting period
- Number of hours recorded during start up, shut down, emergency generation and exemption from the conditions of the emissions licence.

Assessment of compliance with the emission limit values

In the event of continuous measurements, the emission limit values shall be regarded as being complied with if the evaluation of the results indicates, for the operating hours within a calendar year, that all of the following conditions have been met:

- a) No validated monthly average value exceeds the relevant emission limit values, and
- b) 90% of all the validated hourly average values over the year do not exceed 200% of the relevant emission limit values.
OR the limit value is exceeded for not more than 30 hours per unit per month, managed on a per stack basis (e.g. 90 hours per stack if 3 units are discharged through the stack).
Validated average values are determined as set out above.

For the purpose of the calculation of the average emission values, the values measured during periods of start-up, shut down, emergency generation, on-load rebags and periods during which exemption from the conditions of the emission licence has been granted by the relevant authority shall be disregarded.

In the case where only periodic measurements or other appropriate procedures for determination are required, the emission limit values are to be regarded as having been complied with if the results of each of the series of measurements or of the other procedures defined and determined according to the rules laid down by the competent authorities do not exceed the emission values.

Fugitive emissions

Since the nature and cause of fugitive emissions varies greatly for different processes, it is recommended that fugitive emissions be appropriately dealt with for each scheduled process separately.

Abnormal emissions during plant start-ups, shut-downs and upset conditions

Start-up and shut down periods and upset conditions are not to be considered in the evaluation of compliance with emission limit values.

It is recommended that the procedures to be followed in the event of start-up, shut down and malfunction or breakdown of the abatement equipment be stipulated in the emissions licence.

For start-up of coal-fired combustion plants, emissions levels should be less than the limit value within 72 hours from the time that the unit has synchronised. If this is not achieved, further steps must be taken by the power station to determine and correct the cause of the high emissions immediately. The power station is to record the number of hours of light-up and shutdown and include a summary in the monthly emission report.

Procedures to be followed in the event of malfunction or breakdown of the abatement equipment are to be stipulated in the emissions licence.

Comments on definitions and reporting requirements in the draft Regulations Relating to Listed Activities and Minimum Emission Standards

In the definition of oxides of nitrogen (NO_x), NO is the chemical symbol for nitric oxide, not nitrogen oxide.

The reporting requirements should clearly indicate what is required when periodic measurements are conducted, and what is required when continuous measurements are conducted. Points b) to g) pertain to periodic measurements.

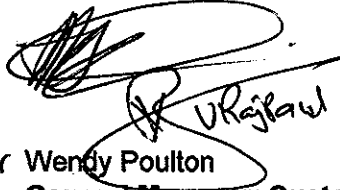
Point h): Correlation tests should be carried out every four years. If it is deemed to be necessary, a spot measurement confirming the correlation should be carried out every two years.

The conditions listed under point i) relate to monitoring requirements and the evaluation of compliance with emission standards, and should not be discussed under reporting requirements. The point should rather read: 'Remediation measures with an implementation schedule where there is non-compliance with emission limit values.'

The definition of existing plant in section 2.2.1 should be extended to include plant which receives environmental authorisation for construction prior to the final publication of the emission standards.

We appreciate your consideration of this proposal, and would like to assure you of our continued commitment to improvement of environmental performance.

Yours sincerely,



for Wendy Poulton
General Manager: Sustainability & Innovation



Deidre Herbst
Generation Environmental Manager

From: Kristy Ross
To: Lucinda Rottcher
Date: 2009/01/26 09:14 AM
Subject: Document for Vikesh's signature
Attachments: 20090126150842606.pdf

Dear Lucinda

Gina Downs chatted to you a few minutes ago about a signature we urgently need from Vikesh (standing in for Wendy). It is for a submission to Working Group 5 of the Minimum (Atmospheric) Emission Standards setting process. It was compiled by Ebrahim Patel, Clive Turner and me, and deals with monitoring of emissions, reporting, fugitive emissions, what compliance with the minimum emission standards entails, and abnormal emissions during start-up and shut-down.

I would appreciate it if you could get Vikesh to sign the document, scan it, and then email back to me. Sorry about the urgency, but the document is due today.

Thanks very much for your help with this.

Regards,
Kristy

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