

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

AEL emission monitoring reporting requirements required by the licensing authorities to be submitted in compliance with the Act

CITY HEALTH-AIR QUALITY MANGEMENT
Presented by: Ian Gildenhuys

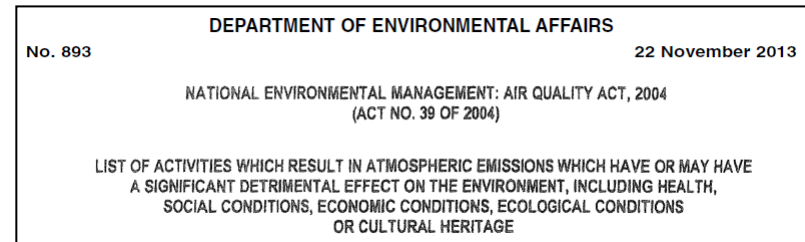
NACA Western Cape 1 Day seminar
Lord Charles Hotel, Somerset West
13 November 2015

Making progress possible. **Together.**

REQUIREMENTS FOR THE REPORTING OF EMISSION MEASUREMENTS TO THE LICENSING AUTHORITY IN TERMS OF SECTION

1. NEMAQA S21 Listed Activities (Government Notice No.893 dated 22 November 2013)

- I. Applicability of the notice
- II. Averaging period
- III. Emissions measurement
- IV. Compliance timeframes
- V. Compliance monitoring
- VI. Reporting requirements
 - I. Annual reporting
 - II. Stack emissions report
- VII. Failure to report



STACK EMISSIONS REPORTING OF MEASUREMENTS – SOME EXPERIENCES TO DATE

Measurement reports required i.t.o AEL :

- Normal working conditions not stipulated
- Averaging period of measurements not as stipulated
- Measurements not in accordance with Schedule A methods
- Use of other methods not approved
- Incorrect pollutants measured for Listed activity being operated
- Reports not dated
- Reports not signed
- Late submissions after compliance deadline due dates
- Incorrect placement of sample ports
- Only a single sample port

NEMAQA S21 LISTED ACTIVITIES (GOVERNMENT NOTICE NO.893 DATED 22 NOVEMBER 2013) EMISSIONS MEASUREMENT AND REPORTING REQUIREMENTS



Part 2: General

APPLICABILITY OF THE NOTICE

- (1) MES are applicable to both **permanently and experimental** (pilot) **plants** with a **design capacity** equivalent to the one of a listed activity.
- (2) MES are applicable under **normal** operating conditions.
- (3) Should normal start-up, maintenance, upset and shut-down conditions exceed a period of 48 hours, Section 30 of the National Environmental Management, 1998 (Act No. 107 of 1998), shall apply unless otherwise specified by the Licensing Authority.

AVERAGING PERIOD

- (4) MES are expressed on a daily average basis, under normal conditions of **273 K, 101.3 kPa, specific oxygen percentage and dry gas.**

Part 2: General.... EMISSION MEASUREMENT

(5) **Measurements shall be** carried out in accordance with the standard sampling and analysis **methods listed in Annexure A of the Notice.**

i.e. ISO or British Standards or US EPA Methods

(6) Methods **other** than those contained in Annexure A may be used with the written **consent** of the National Air Quality Officer (NAQO).

(7) In seeking consent an **applicant** must **provide** the NAQO with any information **that supports** the **equivalence** of the method other than that contained in Annexure A

E.g. NIOSH or Passive survey monitoring cannot be used as a replacement method

Part 2: General.... COMPLIANCE TIME FRAMES AND POSTPONEMENT OF COMPLIANCE TIME FRAMES

COMPLIANCE TIME FRAMES

(8) **New plant** must comply with the **new plant** minimum emission standards as contained in Part 3 from **01 April 2010**.

(9) **Existing plant had to** comply with minimum emission standards for **existing plant** as contained in Part 3 by **01 April 2015**, unless where specified.

(10) **Existing plant** must comply with minimum emission standards for **new plant** as contained in Part 3 by **01 April 2020**, unless where specified.

POSTPONEMENT OF COMPLIANCE TIME FRAMES

(11) The National Framework for Air Quality Management states that an application may be made to the National Air Quality Officer for the postponement from compliance with EXISTING PLANT standards!

The period for application for postponement from compliance with the existing plant standards has now lapsed.

It is my understanding that no postponements will be considered from compliance with the NEW PLANT standards



Part 2: General.... COMPLIANCE MONITORING

COMPLIANCE MONITORING

Continuous emission monitoring:

Where required for a listed activity -

(a) the **averaging period** for compliance monitoring shall be expressed on a **daily average basis** or as prescribed in the Atmospheric Emission License.

(b) the system must **yield a minimum of 80% valid hourly average** values during the reporting period.

(c) the **system must be maintained and calibrated** as per the original equipment manufacturers' specifications.

(d) The **systems must be audited by a SANAS** accredited laboratory at least once **every two (2) years**.

COMPLIANCE MONITORING continued

Periodic emission monitoring for a listed activity -

(a) the **averaging period** for the purposes of compliance monitoring shall be expressed on a **hourly average basis** or as prescribed in the Atmospheric Emission Licence.

(b) emission measurement will be conducted in accordance with the prescribed methods in Annexure A of the Notice

(c) **measurements shall take place on**, at least, an **annual basis** unless otherwise prescribed in the Atmospheric Emission Licence.

(d) **sampling** will take place under **normal operating conditions** using the permitted feed-stock or raw material.

(e) **all tests** will be conducted by **SANAS accredited laboratories** or laboratories accredited by similar foreign authorities.

Valid Accreditation Certificates must be submitted with Monitoring report to Licensing authority



PART 2: GENERAL.... REPORTING REQUIREMENTS

Reporting Requirements

Legal Requirement:

(17) The Atmospheric Emission Licence holder shall submit an **emission report** in the form specified by the National Air Quality Officer to the Licensing Authority -

(a) within one (1) year of the date of publication of this Notice **i.e. by 1 April 2011 if your activity was operational at the time!**

and

(b) annually thereafter unless otherwise more frequently prescribed in the Atmospheric Emission Licence.

(18) The report contemplated in paragraph (17) shall include-

(a) The name, description and license reference number of the plant as reflected in the Atmospheric Emission Licence.

PART 2: GENERAL.... REPORTING REQUIREMENTS continued

The Report must contain:

- The **name and address** of the **accredited measurement service-provider** that carried out or verified the emission test, including the test report produced by the accredited measurement service-provider;
- the **date and time (duration of sample runs)** on which the emission test was carried out; **i.e. the start and finish time of each sample run**
- a (signed) **declaration** by the Atmospheric Emission **Licence holder** to the effect that **normal operating** conditions were maintained during the emission tests;

REPORTING REQUIREMENTS continued

- the **total volumetric flow of gas**, expressed in normal cubic meters (**Nm³**) per **unit time and mass flow** (kg per unit time) being emitted during the emission test, **as the average of at least three (3) measurements per point source**;
- the **concentration or mass of pollutant** specified in the MES **as the average of at least three (3) measurements**; each measured over a **minimum** sample period of **60 minutes** and a **maximum** of **8 hours** to obtain a representative sample, and
- The report to specify and preferably give a short description of the method or combination of methods used for determining the flow rate and concentration.
- Specify the inherent uncertainty in the method and instrumentation

PART 2: GENERAL... CEM REPORTING REQUIREMENTS

Reports for CEMS shall further include -

- (i) **results of the spot measurements or correlation tests** carried out **to verify** the **accuracy** of the continuous emission measurements;
- (ii) the most recent correlation tests; and
- (iii) the **availability of the system** - i.e. the **number of full hours per annum** that valid results were obtained.

The Report must:

- explain all instances **where minimum emission standards were exceeded**
- **remediation measures to address non-compliances** and
- associated **implementation plans** aimed at ensuring that the **exceedances do not re-occur**.

A good working relationship is thus required between the testing house and the Licence holder.

Any other relevant information as required by the National Air Quality Officer from time to time.

In practise we want to see:

- ✓ Report title page
- ✓ Client name and address
- ✓ Testing house name, credentials and contact details
- ✓ Dated
- ✓ Table of Contents
- ✓ Executive Summary
- ✓ Compliance with MES or otherwise
- ✓ Listed Activity being operated
- ✓ Applicable MES
- ✓ Pollutants measured
- ✓ Sampling methods used as per Annexure A of Notice
- ✓ A description of the sampling equipment train; sample point location and compliance with prescribed methods
- ✓ Percentage Isokinetic achieved where PM & Heavy metals are concerned

In practise we want to see:

- ✓ Deviations and reasons for such deviations
- ✓ Any process upsets during the sample runs
- ✓ Averaging period
- ✓ Signed statement by licence holder regarding Normal operating conditions raw materials and feedstock – **This report is a legal document!**
- ✓ Use unique Stack ID as quoted in AEL
- ✓ Emissions Testing results in tabular form
- ✓ Quote start and end time for each sample run for each point source
- ✓ Duct Parameters –
 - ✓ STP
 - ✓ Oxygen %
 - ✓ Gas Velocity (m/s)
 - ✓ Gas flow (m³/hr)
 - ✓ Gas Temperature
 - ✓ Moisture Content

In practise we want to see:

- ✓ Detailed findings
- ✓ Recommendations
- ✓ Plan of action and timeframes for rectifying non-compliances and re-sampling – **signed off by the licence holder – this could be an annexure to the report. If not submitted it will be called for!**
- ✓ Conclusions
- ✓ Annexures
- ✓ Calibration certificates of equipment
- ✓ SANAS Accreditation CC of Lab used

- ✓ Test Data – Average actual;
 - ✓ Average Dry STP,
 - ✓ Average Dry, STP, corrected O₂ %
- ✓ Volumetric flow (Nm³) & mass flow (Kg/unit of time)

CEMS Reporting

- Reporting requirements spelt out generally in S21 but also for the specific listed activity.
- AEL's will usually specify the reporting requirements and frequency for submission of CEMS reports – usually quarterly
- The spot measurements report would need to comply with the basic principles spelt out for periodic emissions monitoring
- CEMS data should ideally be presented in graphical format – in line graphs showing individual daily average data point compliance
- Calibration test results plotted graphically
- Reports should confirm residence times and temperatures – haz. waste industry
- Supporting raw data should be made available on request

What can you expect from the Licensing Authority upon submission of a monitoring report

- An acknowledgement of receipt
- A commitment to assess, review and provide feedback

- Upon receipt we will:
 - As bureaucrats charged with assessing compliance, we will firstly assess for compliance with the S21 reporting requirements
 - Assess all the methods used for correctness
 - Assess activities specified are as per the Listed activities spelt out in the AEL
 - Assess compliance with MES
 - Review against method uncertainties
 - Check to see that the results are normalised and corrected as required
 - Assess isokinetic % - as this influences sample results for PM / Heavy metals

What can you expect from the Licensing Authority upon submission of a monitoring report cont....

- Where your plant is not in compliance:
- You are in contravention of the S21 Notice and are thus legally compromised
- This would need to be urgently addressed
- If you have a Provisional AEL: this has big implications for the status of your licence which is only valid for a period of 1 year from the date of issue/commissioning.
- For PAEL's the Act prescribes that your plant must be in compliance for a minimum of 6 months
- If in compliance with MES and general compliance with your AEL conditions – your PAEL will be converted to a final AEL
- If not in compliance you have some challenges that will cost you financially
- A Licensing authority cannot issue your AEL
- You will need to apply to renew your PAEL in terms of S47 of NEMAQA

What can you expect from the Licensing Authority upon submission of a monitoring report cont....

- Where your plant is not in compliance:
- You may well then be subject to a EMI compliance inspection and subject to Administrative or criminal enforcement
- Its thus important to present a remediation plan and programme that is time bound.
- Spell out proposed plant changes / mitigation measures you wish to implement
- Make every effort to engage with Licensing Authority and get their buy-in on the plan
- Some aspects may trigger the need for a Variation of your AEL ! And require a BAR
- Once approved, stick to this plan.

FACTORS INFLUENCING SAMPLING ERRORS

- **Some Errors that could Influence Sampling Accuracy**
 - Moisture
 - Gas Composition
 - Nozzle, Probe direction
 - Leakages on test equipment
 - Test equipment not calibrated
 - Non-compliance to minimum requirements of relevant standard/ method
 - Not collecting enough particulate matter
 - Unstable Process conditions
- These could influence compliance or otherwise
- **NB to not necessarily go for the cheapest quote – but go with a well respected, reputable testing house**



CURRENT CHALLENGES FACING THE SOURCE MONITORING INDUSTRY


- Shortage of human resources
- Shortage of technical expertise
- Lack of training and certification facilities in the country
- Lack of infrastructure, e.g.. SANAS accredited laboratories (air samples), calibration facilities, etc.
- Lack of knowledge by industry with regards to source sampling requirements e.g.. proper sampling locations, necessity of process info /control parameters.
- Cost of equipment

AEL Holders must Plan sampling programme carefully

- Effectively there are a limited number of testing houses operating Nationally
 - There are over a 1000 listed activities operating in the Country
 - There are a limited number of SANAS accredited Labs
 - **Secure an appointment and commission a testing house well before your AEL reporting dates are due – as it's a time consuming process**
 - This is essential if you need to have a PAEL converted to an AEL
- Or
- If you are to maintain in compliance

DRAFT Emissions Reporting Template

Sampling Details

Sampling location	<i>at least eight stack or duct diameters downstream and two diameters upstream from any flow disturbance such as a bend, expansion, or contraction in the stack, or from a visible flame</i>
Gas flow pattern	
Number of sample runs	
Total sample run time (min)	
Total sample volume (m ³ _n)	
Deviation from procedure	
 Comments CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD	<i>Measurement conducted under normal operating conditions</i>

Emissions Reporting Template


Point Source Parameters

Point source designation	
Point source code	
Point source location	
Release height (above ground)	
Height above nearby building	
Diameter at stack exit	
Stack exit velocity	
Stack exit temperature	



Emissions Reporting Template

Emission Results

Unique Stack ID	Listed Activity No.	Pollutant Measured	Actual Concentration	Normalised Concentration <i>(mg/m³, at 273 K, 101,3 kPa, dry gas), at specified reference conditions</i>	AEL Emission Limit
	Subcategory 2.1: Combustion Installations				
	Subcategory 2.2: Catalytic Cracking Units				
	Subcategory 2.3: Sulphur Recovery Units				
 <p data-bbox="331 1382 568 1449">CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD</p>	Subcategory 2.1: Combustion Installations				

OFFENCES

Offences (Section 51 of NEMAQA):

- (1) A person is guilty of an offence if that person—
 - (e) contravenes or fails to comply with a condition or requirement of an atmospheric emission licence;
 - (f) supplies false or misleading information in any application for an atmospheric emission licence, or for the transfer, variation or renewal of such a licence;
 - (g) supplies false or misleading information to an air quality officer;

NB This applies to a stack emission testing house as well!!

- (3) A person performing a listed activity is guilty of an offence if air pollutants at concentrations above the emission limits, specified in an atmospheric emission licence, are emitted as a result of that activity.

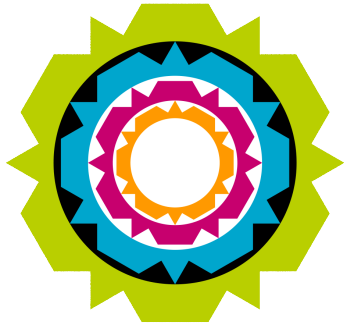
PENALTIES

Penalties(Section 52 of NEMAQA):

(1) A person convicted of an offence referred to in section 51 is liable to a fine not exceeding **five million rand**, or to imprisonment for a period not exceeding **five years** and in the case of a **second or subsequent conviction**, to a fine not exceeding **R10 million** rand or imprisonment for a period not exceeding **10 years** or in both instances to **both** a fine and such imprisonment.

Conclusions

- Its early days with lots of learnings for AEL holders – Please do not take your AEL and stick it in a file and forget about it!!
- Non-compliance can have severe consequences
- Stack Testing house reports have come a long way since 2010
- AEL Licence holders must take ownership of these Stack emissions reports –
- You have paid good money for them and your ongoing operation as a listed activity depends on demonstrating compliance.
- Our Local/ Provincial Authority staff have developed their knowledge and skill sets and errors that slipped through in the past are being picked now.
- Parliament has its eye on compliance monitoring of Industry and are directly holding authorities accountable for implementation of this function
- Ultimately our main task is to protect the receiving environment and ensure everyone's Constitutional rights are protected



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Thank You

For queries contact (Ian.Gildenhuys@capetown.gov.za)

Making progress possible. Together.