



Climate Change  
and Air Quality

# Emission monitoring and reporting of listed activities: Gaps, lessons learned and challenges



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

The 12<sup>th</sup> Air Quality Governance Lekgotla  
Johannesburg, South Africa  
02 - 03 October 2017  
Dr Khunedi V Gololo



# Presentation Overview

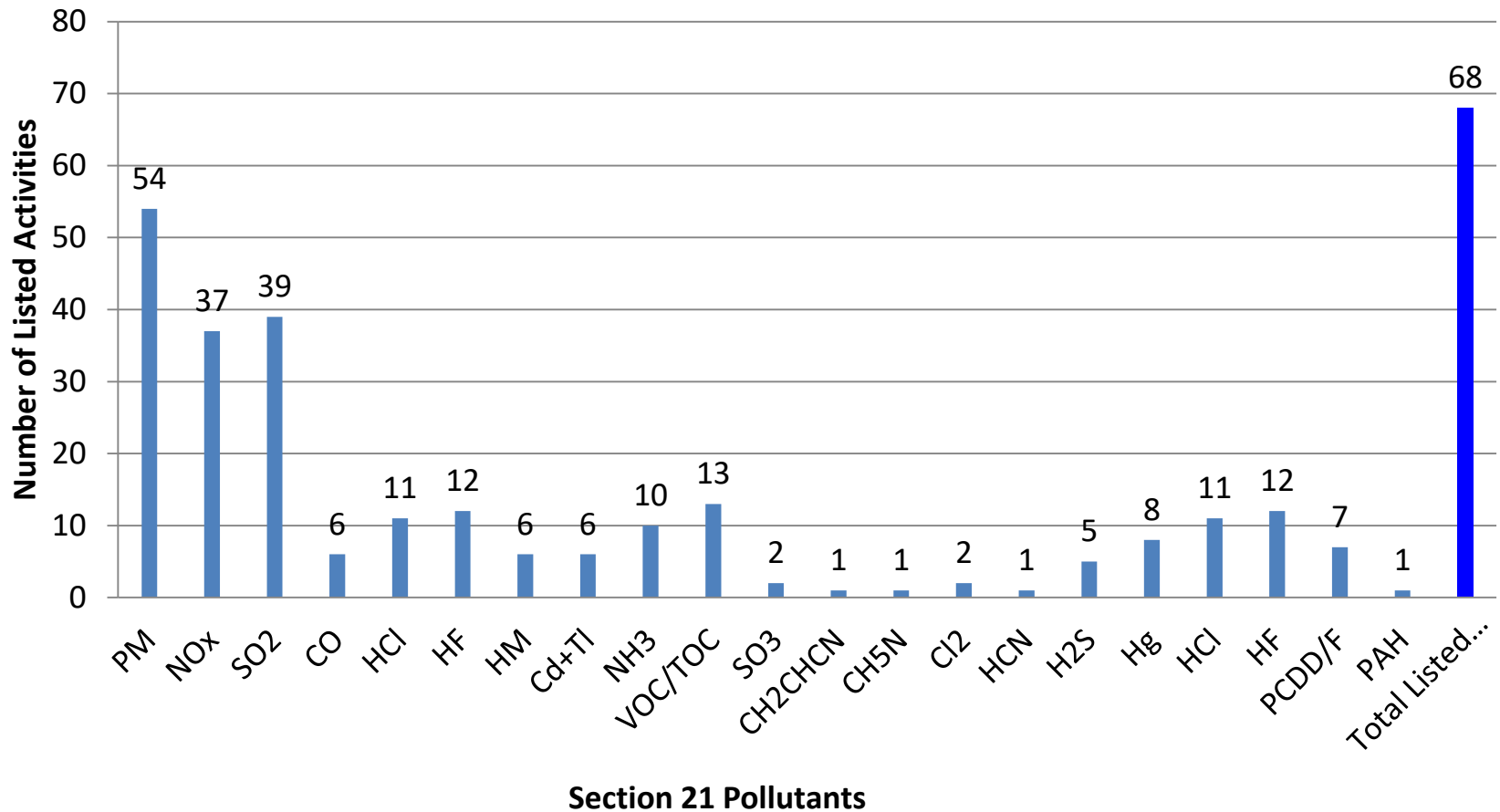
- Introduction
- AEL Management
  - AEL Drafting
  - AEL administration
  - AEL compliance and monitoring
- Discussions
- Conclusions and Recommendations

# Introduction

- The Minister published list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage (GN No. 893, Gazette No.37054 dated 22 November 2013)
- The notice contain Minimum Emissions Standards (MES) that set the conditions for anyone conducting a listed activity
- The MES focuses mainly of management of emissions from point sources

# Introduction

- The notice also identifies pollutants and the associated emission limit values



# Introduction

- To ensure emission measurements uniformity, the MES sets out the reference methods to be used for each pollutant
- Furthermore, the notice also state the averaging period, emission measurement quality systems and reporting requirements
- Other notices applicable to emissions management
  - Dust regulations
  - Section 23 notices
  - NAEIS regulations
- The Atmospheric Emissions Licence (AEL) is currently the best tool to enforce and ensure that the objectives of the published notices are met

# Introduction

- There are several challenges associated with licensing process and management thereof
- The AEL is not fully implementing the requirements of AQA
- Therefore in future it would be difficult to determine whether the **implementation** of Section 21 improved air quality in the South Africa or it was just a wish list

# Introduction

- Through our awareness campaigns AELs are now on public scrutiny
- The public interest is now shifting from “Being in possession of an AEL” to “Complying with the conditions on an AEL”
- The general question asked by the public is whether the facilities are complying. **Do we know?**
- The emissions reports in particular are now more critical
- In my view the court date for licensing authorities to account for the non compliances is set
- ARE WE READY?

# Introduction

- The presentation seeks to:
  - Identify common errors and challenges in the AEL drafting process
  - Identify the AEL management gaps and challenges
  - Detail the lessons learned, and
  - Propose solutions



# AEL Management: Drafting Stage

- All the conditions as stipulated in Section 21 must be in the AEL

## Current mistakes

- Omissions of special conditions
  - Continuous Emissions Monitoring requirement
  - Secondary fume capture requirement
- Emissions report submission dates
- No emission management requirements for non listed activities. This include flare management
- Exemption conditions in the AEL
- Provisional licenses that are valid for five years, some without ELV

# AEL Management

- Requirement for management of exceedances and prevention of recurrence not explicitly stated
- Requirements for other AQA notices not stipulated in the AEL

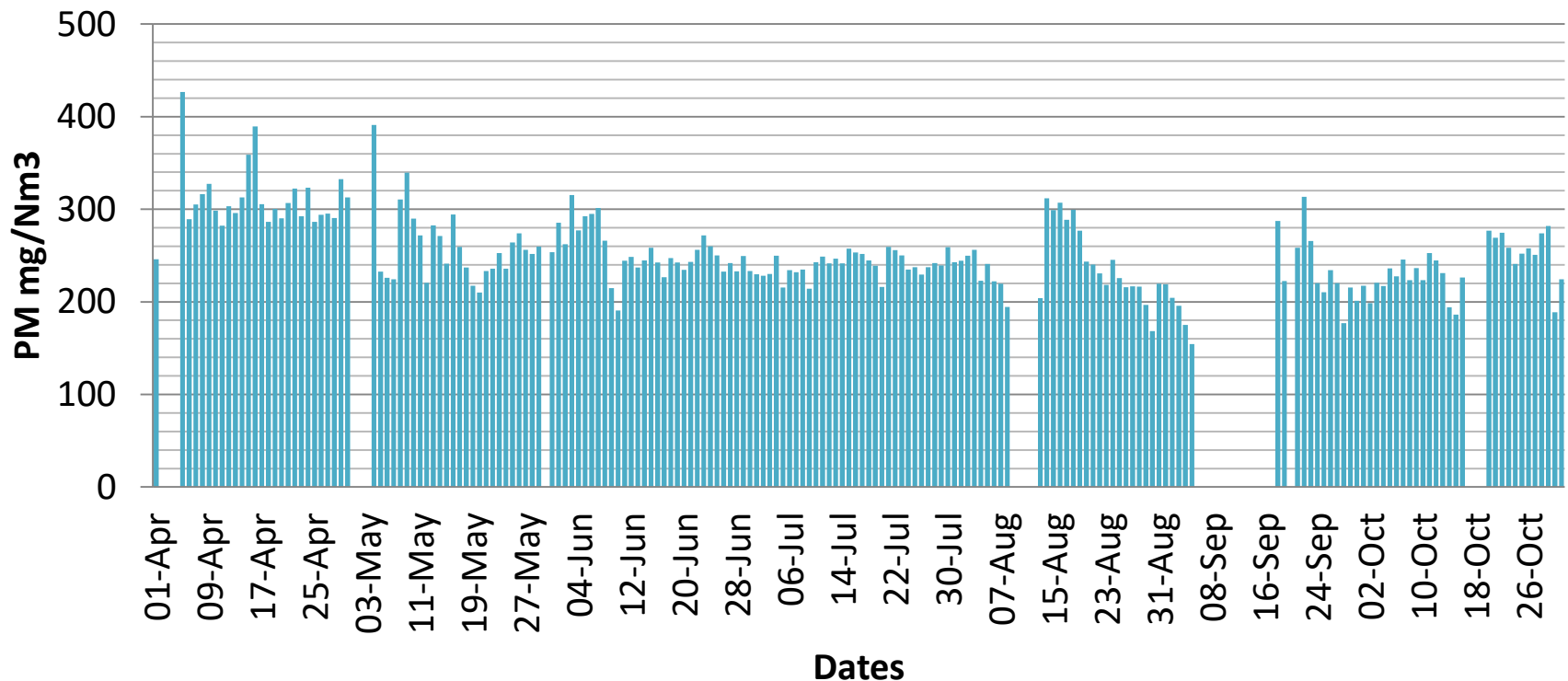
## **Current mistakes**

- Dust regulations conditions
  - Dust management plan and approval thereof

# AEL Management

- Emissions measurement frequency
- MES states minimum isokinetic sampling once a year **not maximum**

PM Unit 4



# AEL Management

## **AEL Management: Administrative component**

- Reports not submitted per AEL conditions
- The content of reports not meeting Section 21 requirements
  - No proof of correlation or spot tests for CEMs
  - CEM availability
- The declaration of accuracy for Isokinetic sampling reports

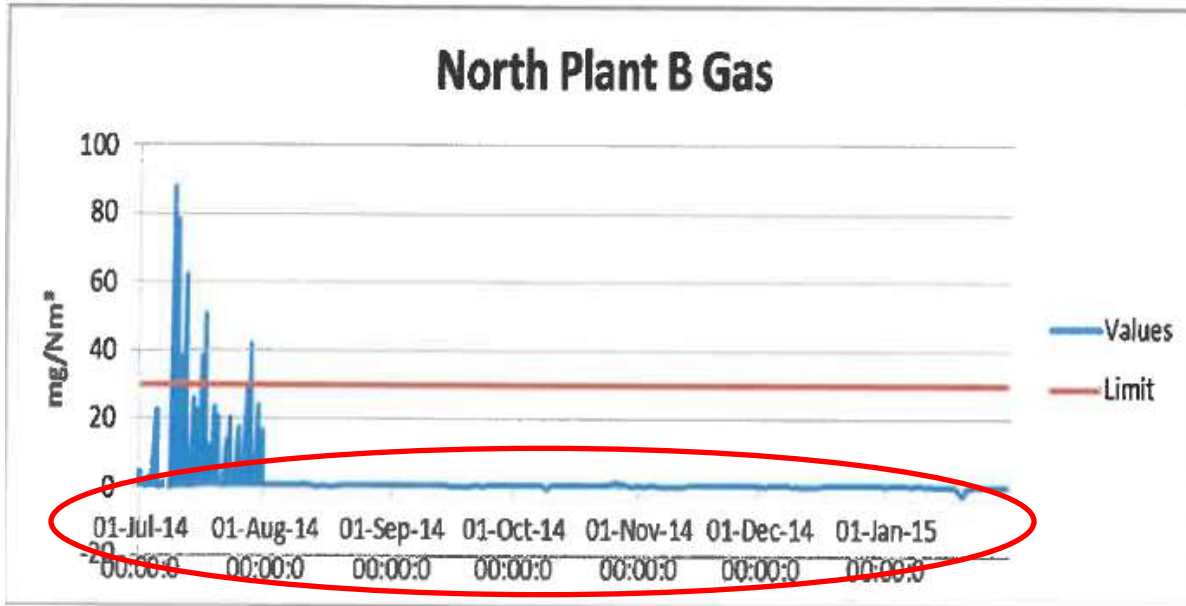
# AEL Management

## AEL Management: Emission reports quality

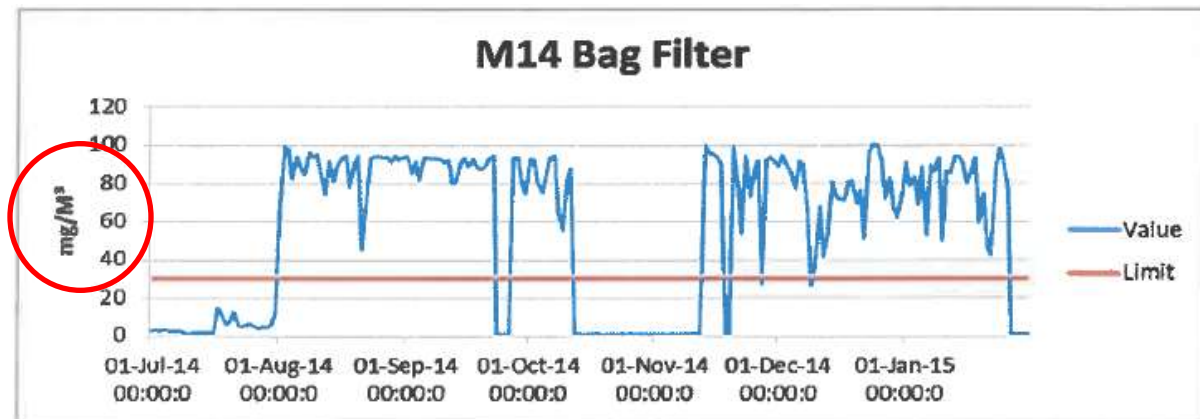
- Regulated pollutants not measured as per AEL conditions
- Incorrect averaging period
  - Monthly average reporting
  - Measurement number of runs
- Data reported in units other than  $\text{mg}/\text{Nm}^3$  (dry)
- Data not Normalized
  - Normalization does not increase or decrease emissions

# AEL Management

## North Plant B Gas



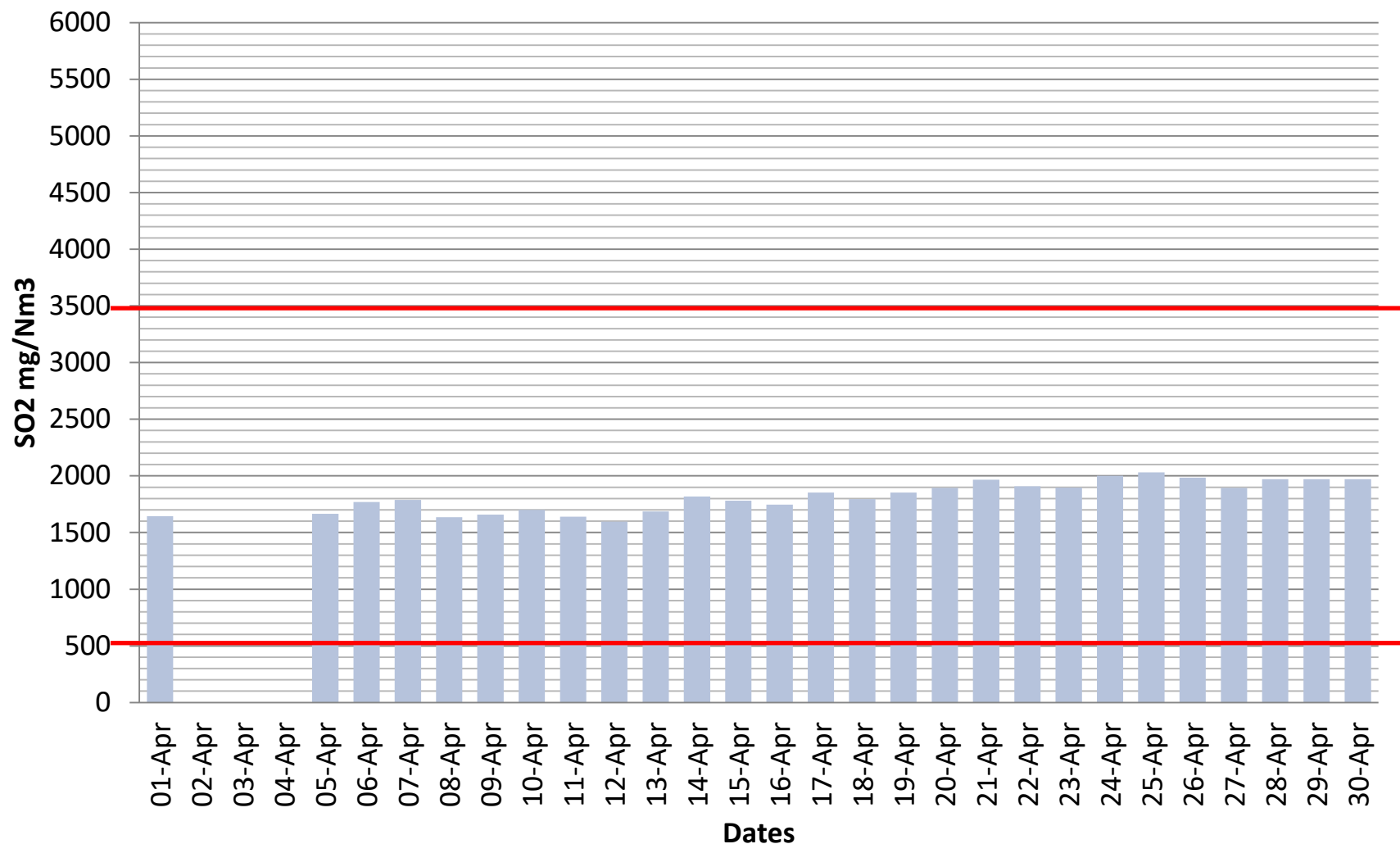
## M14 Bag Filter



\* No account for non compliances as required by the act.

# AEL Management

## SO2 Unit 4

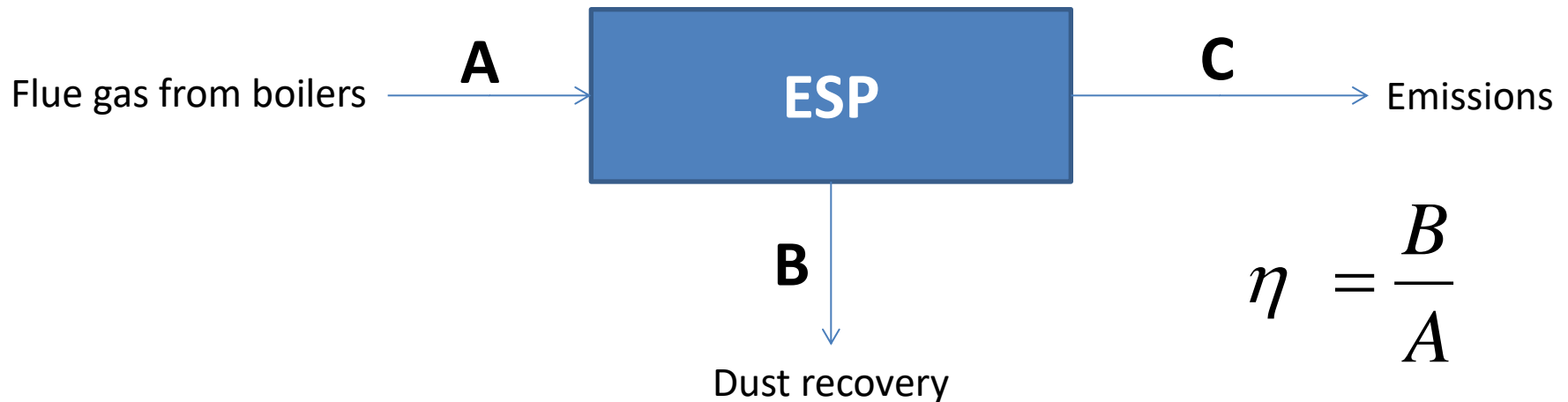


\* Plant was down from 02 April to 04 April

# AEL Management

- Abatement equipment efficiency vs emission limit value

$$\eta_{recovery} = \frac{\text{Pollutant Emissions(mass/time)}}{\text{Pollutant flow to control device (mass/time)}}$$



$$\eta = \frac{B}{A}$$

- Pure streams

$$\eta = \frac{(A - C)}{A}$$



# AEL Management

## AEL Management: Annual reports quality

- Annual emissions trends not submitted
  - Clarify if trends should be in tons or concentrations
  - Ideally trends should be in concentrations (mg/Nm<sup>3</sup>)
- **Annual emissions inventory should be included**

# AEL Management

## NAEIS reporting

- All emission units and associated stacks must be accounted for
  - Stacks are not emission units
- Reporting should be done per emission unit not per stack
- Grouping should only be done for same emissions units not units using the same stack
- Material throughput should be accurate (verify units used)
- All pollutants must be reported
- Improving data collection through iterative process

# Discussions

- There has been an improvement in AEL drafting process since the first generation
- The administration of AEL could be improved
  - Develop a routine to manage AEL
  - Ensure that reports are submitted
  - Filling of reports
  - Scrutinise the environmental management plans before approving. The plans must have clear dates
  - SNAEL
- In cases of staff shortages DEA and the province should be aware

# Discussions

## Capacity Challenges

- The biggest threat in government is implementation. It is fair to acknowledge the impact of AQA on the skills required to manage AELs
- Without capacity Section 21 will be relegated into a wish list
- Honest discussions and resolutions are necessary to resolve this issue
- The province can assist in identifying whether the LA requires warm bodies or skilling of current staff. Consider sharing of staff at the provincial level

# Discussions

## Emissions Monitoring

- “One can only control what they can measure”. It is impossible to control emissions with a **three hours** data points from **8760** data points per year
- Most facilities have been measuring PM long before AQA. The country has developed expertise in PM measurement and management. The country can afford continues monitoring of PM

# Discussions

## Emissions Monitoring

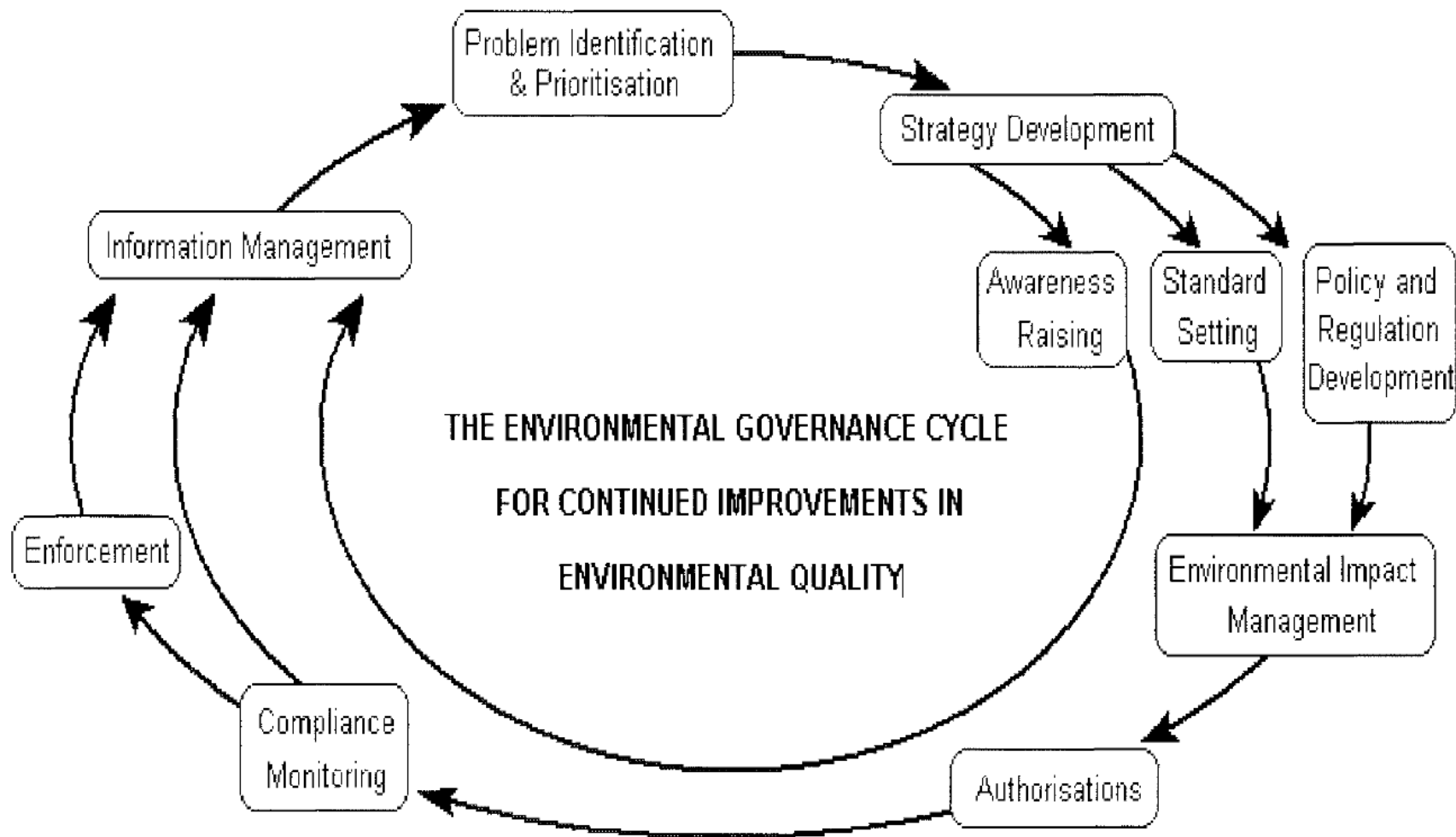
- The emissions reports are used to determine compliance with ELV and verify the inventory, therefore they should be accurate and meet all the legal requirement
- The reports should be able to pass the test of law in the court
- Facilities can deny their own reports therefore a declaration of accuracy must be a compulsory requirement

# Discussions

## Managing non compliances

- A clear protocol/SOP between the EMIs and LA should be established
  - Who should identify non compliances
  - How to handle non compliances and feedback from monitoring activities
- Irrespective of the protocol, DEA, Provinces and LA are responsible for air quality
- Therefore EMI cannot be blamed for non complying facilities

# Discussions





# Conclusions and Recommendations

- There has been an improvement in AEL drafting process since the first generation. Number of AQOs have increased drastically in some areas
- AEL management could be improved
- Scrutiny of emissions report should be improved
  - LA could observe isokinetic sampling
- **Rejects reports that do not meet the legal requirements**
- DEA is working on emission management course to assist LA in managing AELs

# Conclusions and Recommendations

- Continuous monitoring of PM from all facilities in all priority areas
- NAEIS reporting requirements should be included in the AEL
- AEL holders should sponsor government ambient air quality monitoring in the nearby communities
- Be ready for your day in court



**Thank You**

**“Legislation without an enforcement degenerates  
into a wish list”**



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

