1ST REVIEW OF THE STATUS OF NATIONAL AIR QUALITY (1994-2004)

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CSIR

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Background

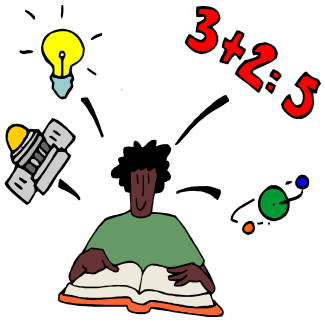
- Need for informed decision making
- History of fragmented and un-coordinated monitoring
- Framework for NAQIS-SAAQIS (output of NAQMPII)
- Metadata collection (output of NAQMPII)

Pollutants analysed

- Criteria pollutants (AQA – Schedule 2): SO_2, NO_x (NO_2 and NO), O_3, PM10, TSP and Pb
- Proposed standards: CO and benzene
- Others: PM2.5, Benzene, Toluene, Xylene, Hydrogen sulphide (H_2S), Total reduced sulphur (TRS), hazing index, Chrome (Cr6+), Manganese (Mn), Mercury (Hg)
- Greenhouse gases (CO_2, CH_4 and N_2O)
- Old smoke& SO_2 and passive SO_2

Processing of data

1. **Data preparation**
   - ***Convert data to monthly and annual averages in same units***
   - ***Link station location to municipal and provincial boundaries***
   - ***Classify stations in terms of potential impacts***
2. **Summarise and compare to standards (compliance analysis)**
3. **Long term analysis (at least 5 years of data, statistically significant)**



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Station classification

B - Background station

I - Industrial area

P- impacted by Power generation

R - Residential

RI - Residential affected by Industrial pollution

T - Township

U - Urban

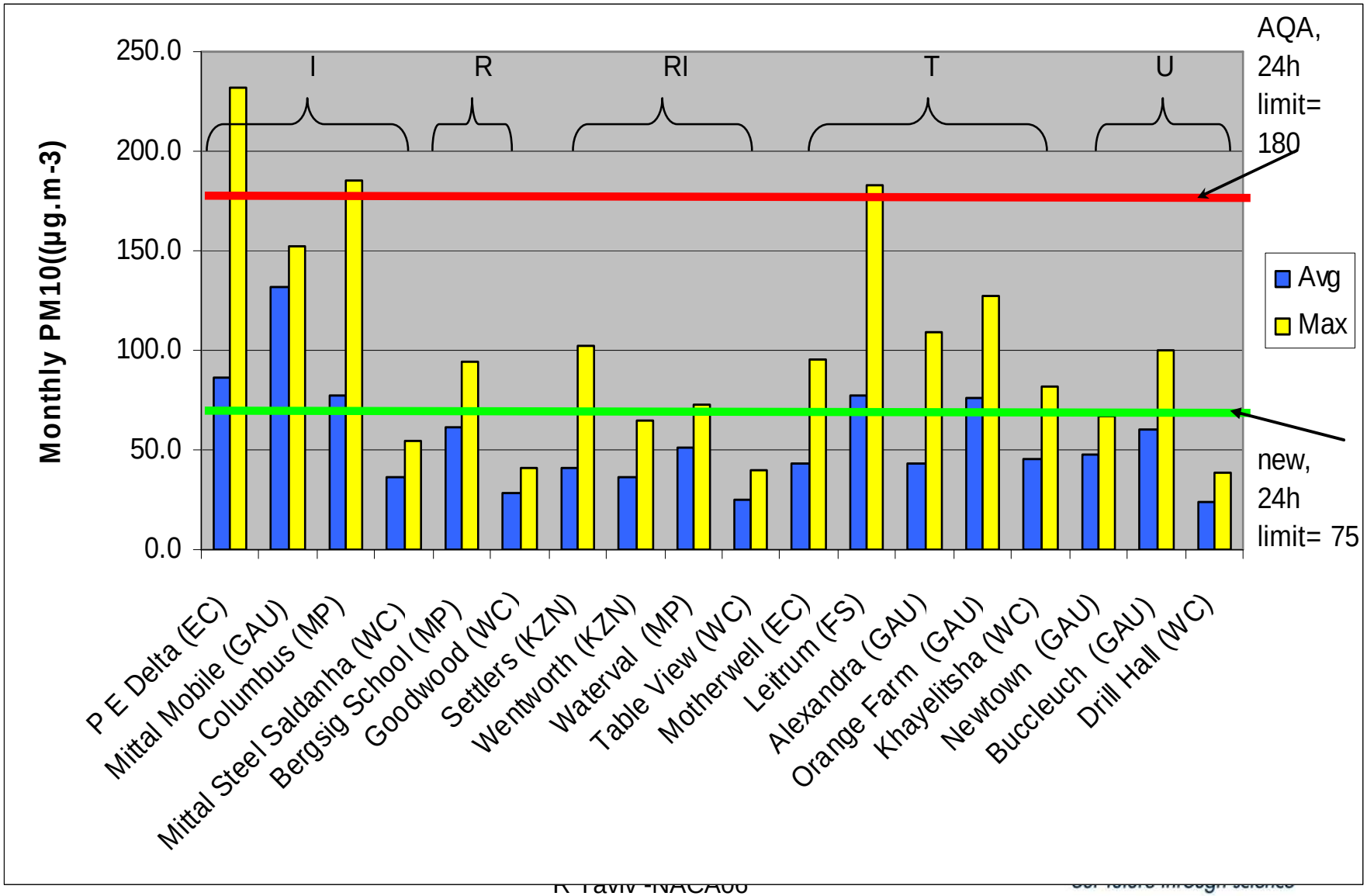
W - Waste site

Limits for compliance analysis

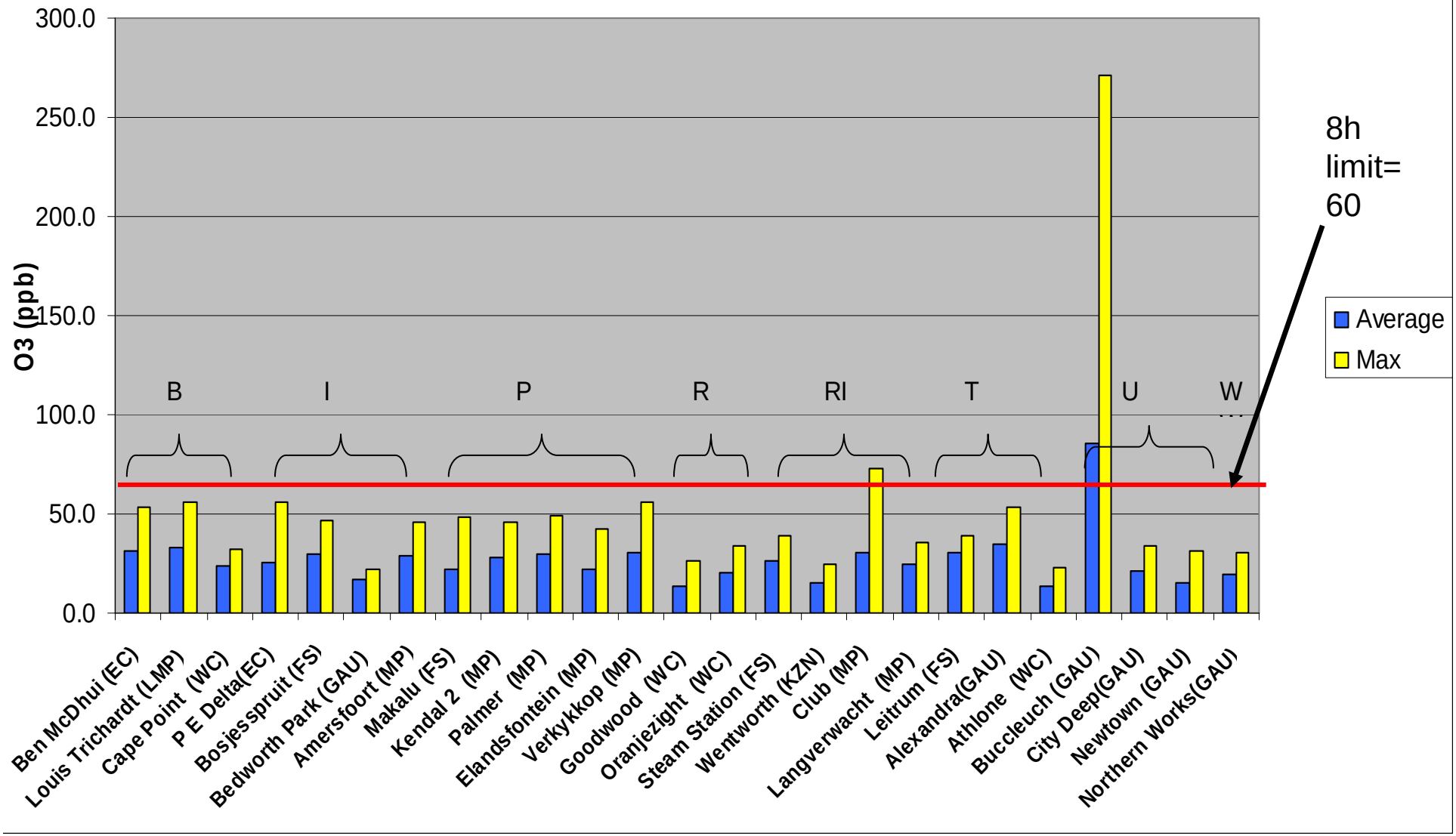
Pollutant	Period	Unit	Standard	Period	Unit	Standard
SO_2	Annual	ppb	30[1]	Monthly	ppb	50[2]
NO_2	Annual	$\mu g.m^{-3}$	100	Monthly	$\mu g.m^{-3}$	160
NO_x	Annual	ppm	0.2	Monthly	ppm	0.3
NO	Annual	ppm	0.15[4]	Monthly	ppm	0.2[4]
PM10	Annual	$\mu g.m^{-3}$	60	24-hour[3]	$\mu g.m^{-3}$	180
O_3	NA			8-hour[3]	ppb	60
Pb	Annual	$\mu g.m^{-3}$	0.5	Monthly	$\mu g.m^{-3}$	2.5

[1] This standard came into effect in January 2002 but will, for consistency purposes, be used for the whole period.
[2] The APPA guideline was relevant up to December 2001 but is used for this exercise as applicable guidelines are not currently available.
[3] These guidelines will be applied where comparative time-averaging periods are available as no monthly benchmarks are available.
[4] APPA guidelines

Major findings (PM10)



Major findings (ozone)



Long term trend (monthly O_3)

Prov	Type	Name	Period	Num	Avg	RSq	growth%
EC	I	P E Delta	1998-10-01 to 2005-06-01	52	25.7	0.52	-1.32
MPU	P	Elandsfontein	1994-01-01 to 2003-12-01	116	22.5	0.19	-0.36
WC	P	Athlone	1996-05-01 to 2005-07-01	86	13.4	0.14	0.28
WC	R	Goodwood	1994-01-01 to 2005-06-01	102	13.6	0.14	0.26

Recommendations(1)

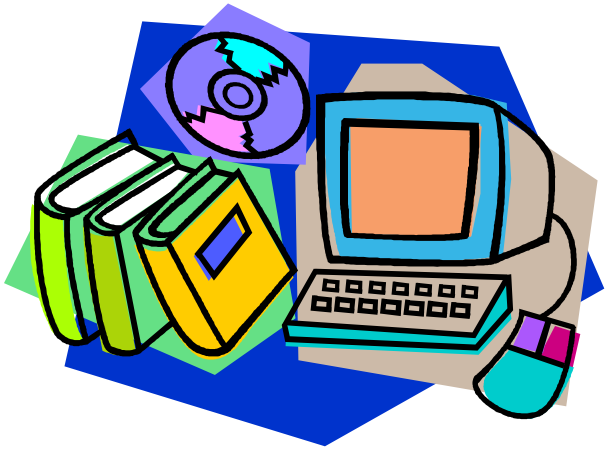
- **Establish basic NAQIS**
  - ***Use collected data as a basis for NAQIS***
  - ***Include in NAQIS links to scientific campaigns***
  - ***Add Air Quality Research database to support data interpretation***
- **Extend monitoring**
  - ***Extend stations to enable regional characterisation (including environmentally sensitive areas)***
  - ***Add monitoring of pollutants for health impact quantification (e.g. PM2.5)***
  - ***Extend Greenhouse gases (GHG) monitoring***

Recommendations(2)

- Extend monitoring for specific types of pollution (such as waste sites + link NAQIS to National Waste Information System)

Recommendations(3)

- **Data quality**
  - ***Q/C and Q/A by data generators***
  - ***Standards for data validation***
  - ***Providing uniform data to central repository***
  - ***Guidelines on data interpretation/reporting***
- **Development of AQ indices and contribution to SoE reports**



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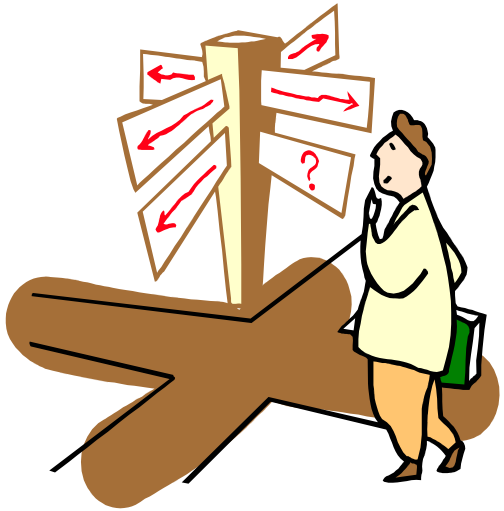
Way forward

- **Feedback from data generators and users is critical for finalising Assessment report**
- **Use Assessment Report for Air Quality Management planning and for decision making**



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