

Mobile Sources and Air Quality In Africa

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Presentation Outline

- *Vehicles and air quality: What we already know*
- *How serious is the problem?*
- *Some obstacles to addressing vehicle emissions in Africa*
- *Some Encouraging Initiatives*
- *Future Challenges: The Sulphur Issue and other vexing problems*
- *Obstacles to harmonization of standards*
- *Next steps/recommendations*

What we Know

- *Vehicles are a primary source of harmful pollutants, viz:*
 - *Oxides of nitrogen*
 - *Sulphur*
 - *Particulate matter*
 - *Lead*
 - *Carbon monoxide*
 - *Volatile organic compounds*

These cause a variety of health problems

What we Know

The Cape Town Findings:

*Wood waste burning, **vehicle tailpipe emissions**, boiler operations and the Sappi and Caltex operations represented the most significant sources of nitrogen oxide concentrations.*

How Serious Is The Problem?

- The Durban Example
 - *Vehicle emissions* are estimated to be responsible for 18% of incidence of respiratory diseases in this city (6% due to petrol vehicles; 12% due to diesel vehicles).

Scorgie et al, 2004

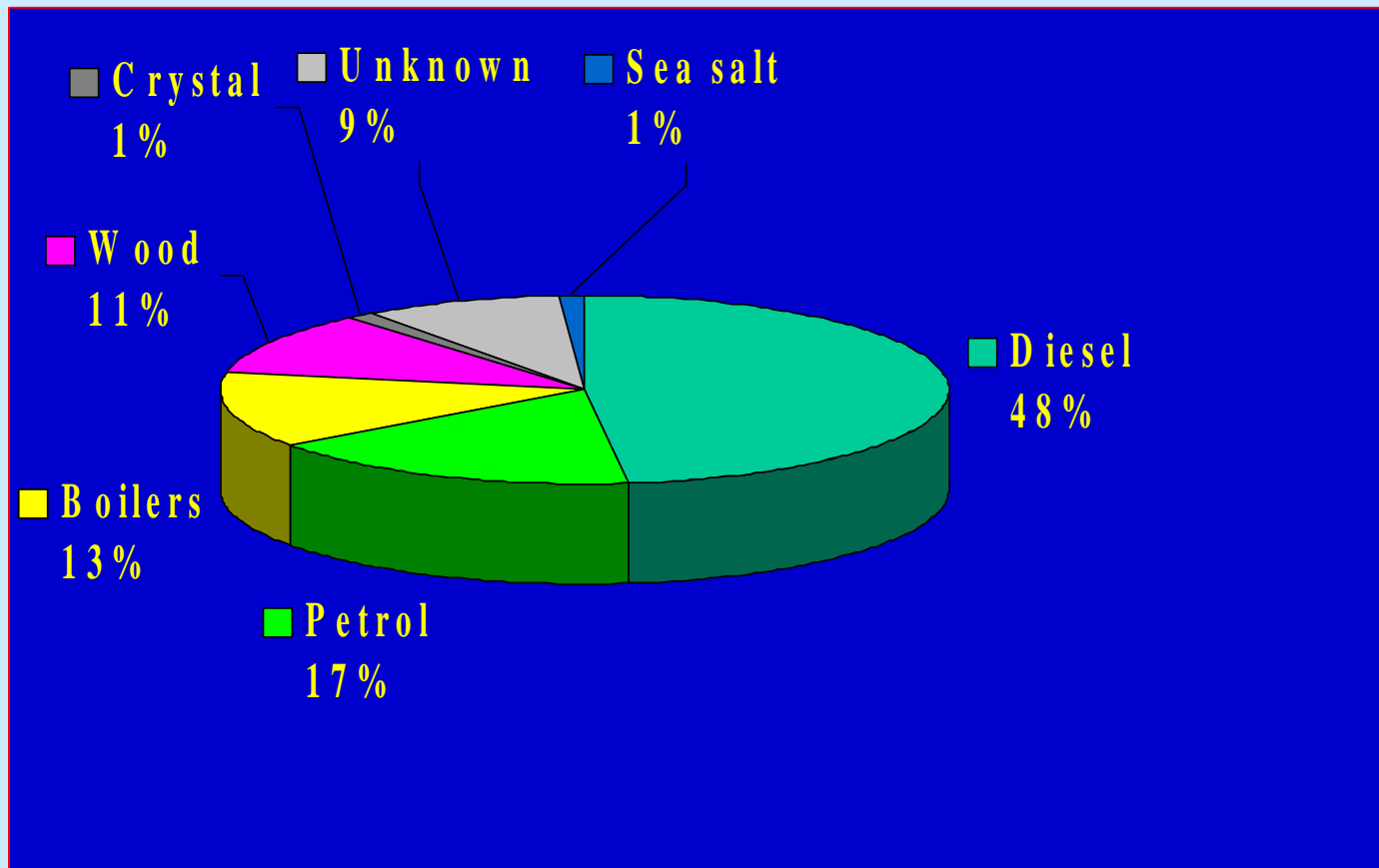


“CHILDREN HAVE A 450% INCREASED RISK OF ...
RESPIRATORY INFECTION”

Source: MRC

How Serious Is The Problem?

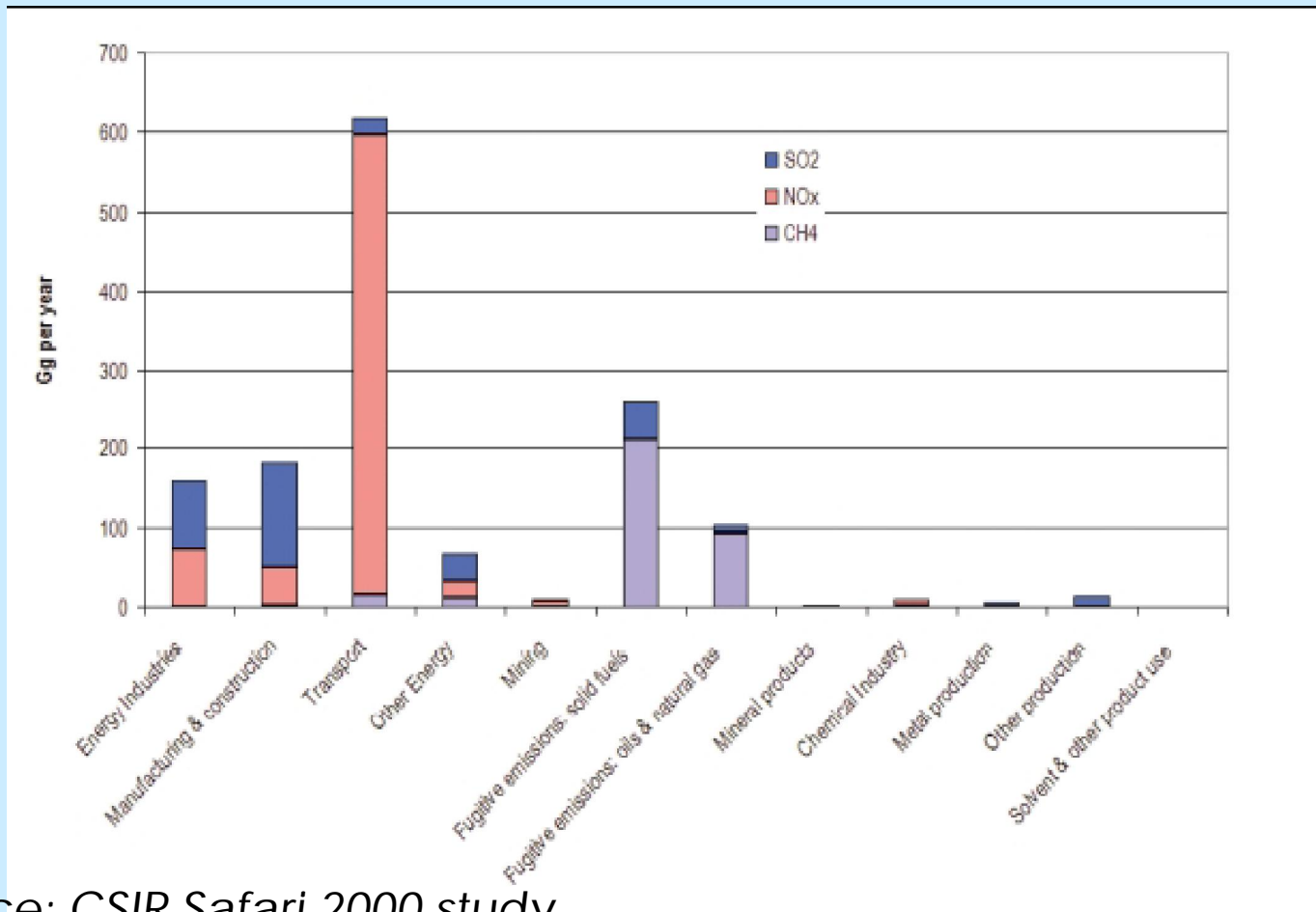
The Cape Town Findings



**BROWN HAZE VISIBLE APPORTIONMENT
1997 REPORT**

How Serious Is The Problem?

Findings from Gauteng



Source: CSIR Safari 2000 study

Sectoral sources of greenhouse and criteria trace gas emissions in Gauteng

Example: Johannesburg

- *“Vehicle emissions are increasing especially in areas with high traffic densities e.g. the CBD, Sandton and Midrand”.*
- *“Private vehicles, on average, constitute 42,2% of all commuter trips”.*

How Serious Is The Problem?



A Typical Winter Morning in
Tshwane (Pretoria)

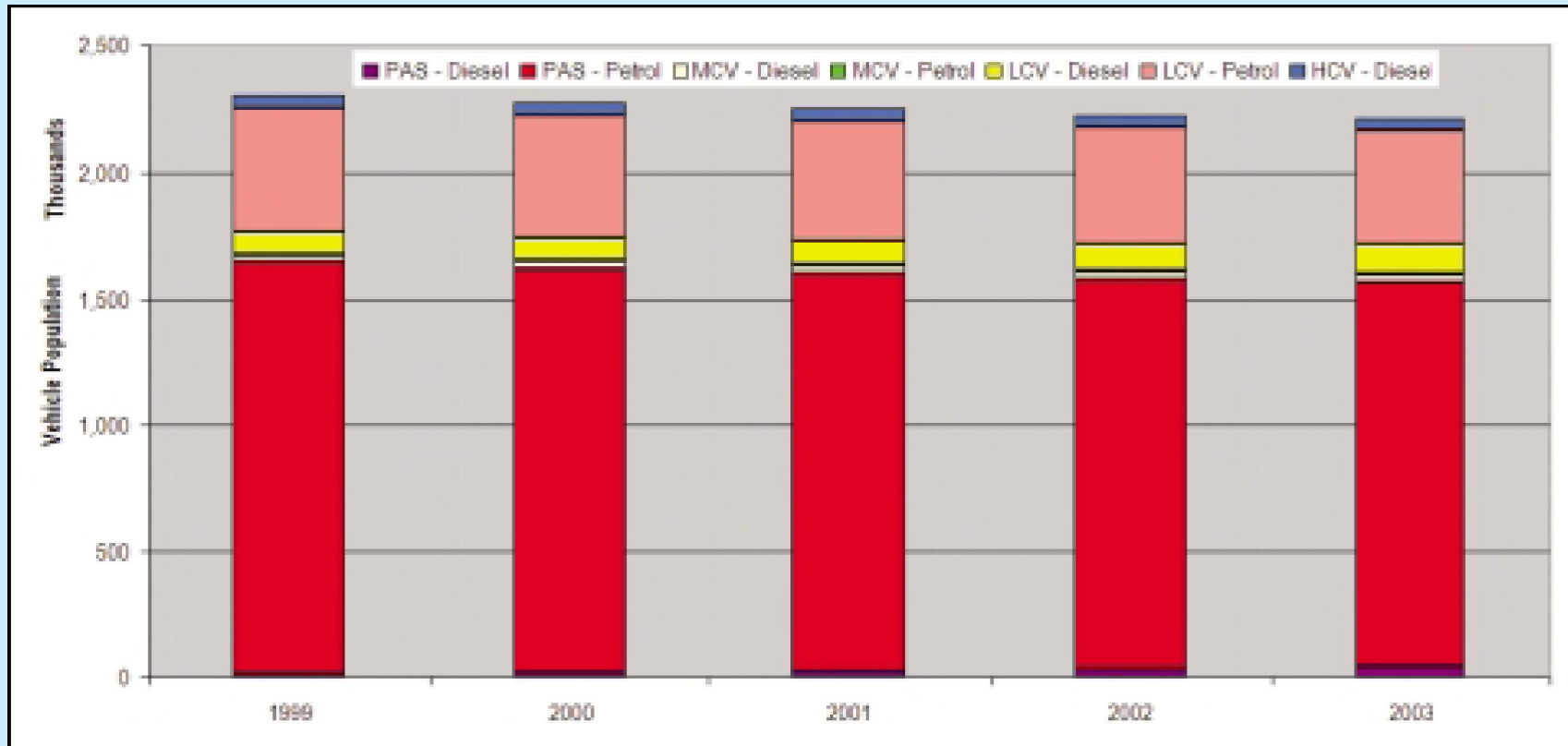
Some Obstacles to Addressing Vehicle Emissions in Africa

- Old vehicles without emissions control*
- Increased vehicle population*
- Poor or absence of proper vehicle maintenance*
- Rapid urbanization and population growth*
- Lack of clean fuels*
- Absence or poor regulatory framework specific to vehicle emissions*
- Poor enforcement of law where this exists*



Roadside Vehicle Testing in Cape Town

Vehicle population in Gauteng (2003)



PAS = passenger; HVC = heavy commercial vehicles; MCV = medium sized commercial vehicles;

LCV = light commercial vehicles

Source: NAAMSA, 2003 - www.autoparc.co.za, Vehicle Population for Gauteng 2003

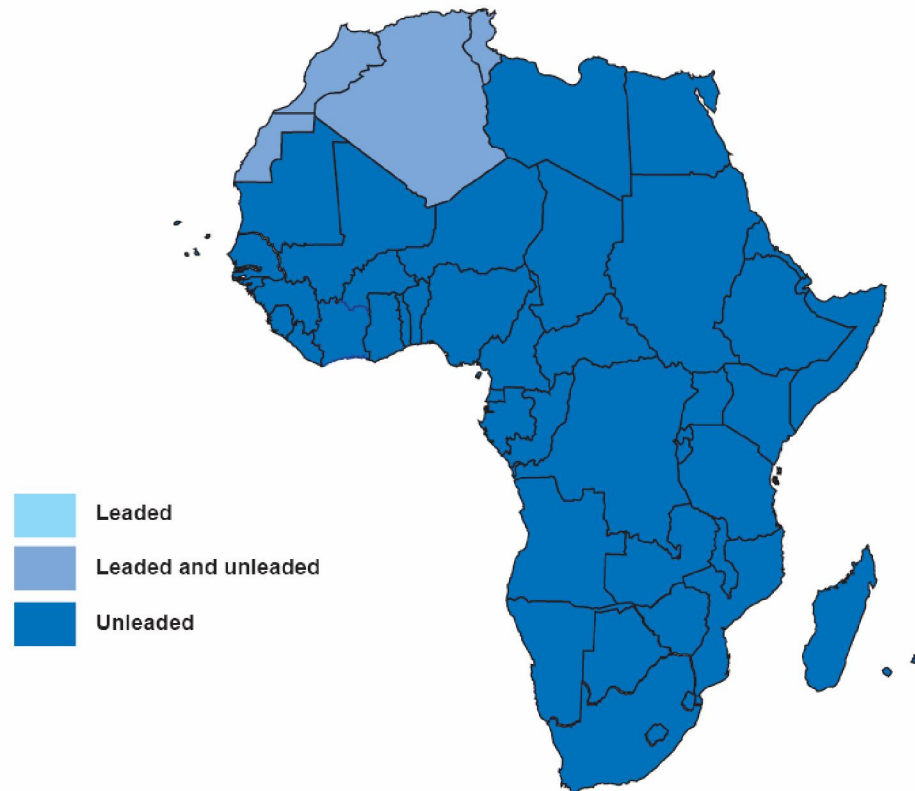
Some Encouraging Initiatives

- *Dakar conference of 2001 focusing primarily on lead phase-out.*
- *Main outcome: Dakar declaration, which set the target for complete lead-phase out in sub-Saharan Africa by 2005.*

This was achieved!!



Status of leaded gasoline phase-out in Sub-Saharan Africa



June 2006

Some Encouraging Initiatives

- *In addition the Declaration set the scene for debate on broader issues such as:*
 - *Sulphur content*
 - *Establishment of a network of African experts*
 - *Establishment of complete set of fuel specifications for Sub Saharan Africa*

A.R.A. WAS FORMED IN MARCH 2006 AND HAS TAKEN A STEP IN PROPOSING REGIONAL FUEL SPECS

Some Encouraging Initiatives

- *The WSSD, Johannesburg (2002), saw the formation of the UN partnership for clean fuels and vehicles (UNEP PCFV)*
- *Ministerial meeting on lead phase-out progress – Nairobi, 2004 agreed on a regional octane of 91RON*
- *Vehicle Emission Strategy (SA)*
- *Large-scale importation of “good quality” used vehicles, particularly from the East*
Progress or 2 steps backwards???

Future Challenges: The Sulphur Issue

In order to make meaningful progress towards clean air, it is critical as a first step to address sulphur content in fuels because:

- *Sulphur is an important component of diesel particulate emissions*

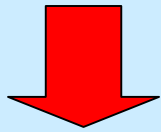
The Sulphur Issue

- *Sulphur in petrol reduces the efficiency of emissions controls in petrol engines*
- *Sulphur has been shown to contribute to failure rate in diesel engine emissions*
- *Despite arguments to the contrary, there is overwhelming evidence that the cost of removing sulphur from fuels is far much less than the health and economic benefits than the cost associated with its removal*

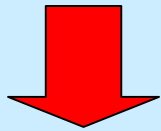
The Sulphur Issue

failure rate

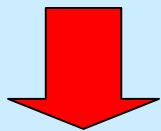
17% - 2000



7,2% - 2003



1.8% - 2005



1.07% - 2006



Another Vexing Issue: Lead Replacement Additives

- There doesn't seem to be any consensus within countries as well as between countries when it comes to the use of additives – especially metallic additives.

What Is The Implication of These Developments?

- *The time is probably right to seriously consider regional harmonization of standards:*
 - *For fuel quality*
 - *For vehicle emissions*

Some Obstacles to Harmonization

- *Differing national priorities, such as poverty eradication, clean water, HIV.*
- *Lack of sufficient funding and other assistance from government.*
- *Inadequate technical and financial assistance from developed countries.*

Some Obstacles to Harmonization

- *Poor Urban Planning and Lack of Public Transport Infrastructure*
- *Non-uniform or non-comparable emission standards and fuel specs in the region*
 - *E.g South Africa has opted for Euro Emission Standards + new fuel specs. And SACCU member States are likely to follow suit.*
 - *Other countries, outside the SACU???*

Next Steps/ Recommendations

- *As a start countries at sub-regional level must agree that tackling further reductions in vehicle emissions can best be achieved by simultaneously improving fuel quality and vehicle technology:*

The so-called "Systems Approach"

Next Steps/ Recommendations

- *Creation of a proper legislative and regulatory framework at national level*
- *Governments must be encouraged to create a conducive climate for regional harmonization (both fuel specs and emission standards) as these will go a long way in addressing issues of smuggling and misfueling.*
- *A uniform minimum octane has economic benefits for the region.*

Thank You For Your Attention!!!