

Module 2: Development of Air Monitoring and Control Programs

Objectives:

- Review factors influencing need for air monitoring and control
- Define the difference between laws and regulations
- U.S and South Africa Environmental laws
- Specific South Africa Environmental Laws

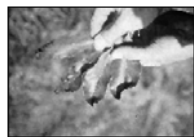
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Factors Influencing the Need for Environmental Monitoring Regulations and Air Pollution Control

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Environmental Issues

- Ecosystem
- Property Damage
- Quality of Life



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Improvements in Science

- Better understanding of air pollutant effects on human and surroundings
- Analytical chemistry improvements
- Risk Assessment science

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Chemistry Improvements

- Continuous methods replaced wet chemistry
- Laboratory instrumentation improvements in detectability
- Separation of components of complex mixtures

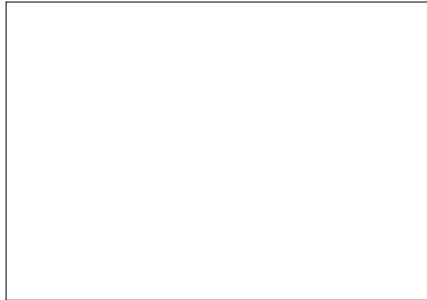
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Health Effects of Toxic Air Pollutants

- Health Risks
- Risk Assessment

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**Establishing Links Between
Pollution and Health Through Risk
Assessment Process**



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Changes in Society and Economy

- Urbanization
- Population growth
- Energy and transportation demands

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Urbanization

- Movement of population is causing the city's metropolitan area to increase dramatically
- Air pollutant concentrations now centered in and downwind of urban areas
- Business and industry advances have resulted in an increase in urbanization

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Population Growth

- Dramatic movement of population from countrysides and farm lands to cities
- Improvement in health and food supply have led to longer life spans

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Energy and Transportation Demands

- Greater demand for mass transit
- High demand of energy fuels caused by technological improvement in transportation
- Greater consumption of fossil fuels such as coal, oil, and natural gases
- Emission of higher levels of air pollution

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Environmental Activism and Public Awareness

- Establishment of Environmental Action groups
- Environmental Protection Agencies

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Laws and Regulations

- Laws:
 - Established by a governing legislative authority
 - Enforced by the courts
 - Contain broad program goals and objectives
 - Define roles and responsibilities for achieving national air quality protection
- Regulations:
 - Developed by a regulatory agency
 - Provide more specific information on how the broad legislative objectives will be met

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Environmental Laws, Acts, and Directives

- U.S.: Clean Air Act (CAA)
 - First passed in 1963
 - 1990 Amendments
- European Union: 1996 Air Quality Framework Directive
- South Africa National Environmental Management Air Quality Act (2004)

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U.S. EPA's Methods of Implementation

- National Ambient Air Quality Standards (NAAQS)
- Air Monitoring
- Source Inventories
- Air Pollution Modeling
- Enforcement

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**Government Roles and Responsibilities:
United States**

- Federal EPA
- Regional EPA
- States
 - In the U.S., states do much of the work to carry out the Clean Air Act.
 - States have to develop state implementation plans (SIPs) that explain how each state will do its job under the CAA.
 - Federal EPA must approve each SIP.
- County

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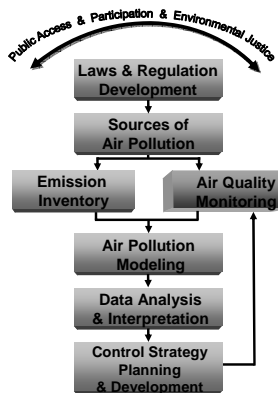
**Government Roles and Responsibilities:
South Africa**

- Republic
- Province
- Municipality
- Other

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Role of Air Quality Monitoring in an Air Quality Management Program.

As with other components of the AQM process, stakeholder participation is important.



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**South Africa Air Quality
Review of Regulatory Framework and
Environmental Acts**

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**South Africa's Government Involvement
in Ambient Air Quality**

- Introduction to Laws and Regulations
- Statutory Law Development and Content
- South Africa's Regulatory Framework for Air Pollution Control
- Review of South Africa's Air Quality Act (AQA)

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South Africa Specifics

- Atmospheric Pollution Prevention Act of 1965
- Health Act of 1977
- New Bill of Rights
- National Environmental Management Act of 1998
- National Environmental Management Air Quality Act of 2004 (Air Quality Act)

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Atmospheric Pollution and Prevention Act (APPA)

- Non-Binding Guidelines for National Environmental Management
- Scheduled Process Registration Certificates
- No National or Regional Standards for Air Quality

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National Environmental Management Act

- Addresses air, water, biodiversity, energy and other environmental issues
- Establishes the public's right to access of information
- Emphasizes openness and transparency in decision making
- Protects whistle blowers

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National Environmental Management Air Quality Act (AQA) Overview

- Parts effective September 11, 2005
- Will supersede the 1965 APPA
- Staged Implementation:
 - National framework for air quality management;
 - National, provincial and local air quality and emission standards;
 - **Air quality and emission monitoring;**
 - Appointment of air quality officers; and,
 - Identify national priority areas

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AQA Overview: Regulatory Approach

- Establishes DEAT as the “lead agency”
- Air Quality Management Plans to be developed as part of the National Air Management Act (NEMA) plans
- National, provincial and local authorities to set standards and develop plans.

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AQA Overview: Setting Standards and Listing Activities

- National ambient air quality standards must be set.
- Provincial and local standards may be set.
- Standard will specify means for ambient air quality measurement (i.e., monitoring)
- Emission standards may be set for point, non-point or mobile sources.
- National Government must list activities which result in atmospheric emissions which have or may have a significant or detrimental effect.
- Provinces may also list activities

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AQA Overview: Licensing

- Emission license will be issued for all listed activities and will include emission standards.
- Mechanism for transition from current APPA regime to the new AQM program. Certificates issued validated only for two (2) years

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AQA Overview: Compliance

- Regulatory authority may require independent environmental audit
- License holders may be required to appoint an “Emission Control Officer” with the required skills and the responsibility for ensuring compliance
- The Minister may use pollution charges as part of the regulatory system to encourage compliance
- Public awareness programs are envisioned to promote and secure compliance

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Module Review

- Reviewed factors influencing need for air monitoring and pollution control
- Reviewed background on needs for legislation and monitoring
- Defined the difference between laws and regulations
- Discussed air pollutants with respect to U.S and South Africa environmental laws

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