Vulnerability in the South African context

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Our focus

Air pollution

External factors

Exposure

External factors

Impacts/
Health effects on humans
Vulnerability: an introduction

• What is vulnerability?
  'characteristics of a person or group in terms of their capacity to anticipate, cope with, resist and recover from the impact of natural or man made hazards’

• The important question: Vulnerable to what?

• Why is vulnerability significant in the air pollution context?
What is the focus of the presentation?

- Risk vs vulnerability
- Categories of vulnerability
- Some Vulnerability factors affecting SA communities in relation to air pollution.
- A conceptual framework for integrating health risk assessment and vulnerability
- Challenges associated with integrating these concepts
Risk vs vulnerability

- **Risk**: likelihood of an event following exposure
- **Determination of health impacts of air pollution through**
  - Epidemiology and toxicological studies
  - Health risk assessments
  - Environmental health impacts studies
- **Data on risk factors lacking** ↔ **risk management**
- **Realisation that risks cannot be considered within the boundaries of traditional risk assessment framework**
- **Risk** = f{Hazard, Vulnerability}
Categories associated with vulnerability

- Susceptibility/sensitivity
- Differential exposure
- Differential preparedness
- Differential ability to recover
Categories and factors associated with vulnerability

<table>
<thead>
<tr>
<th>Susceptibility</th>
<th>Differential exposure</th>
<th>Differential ability to recover/cope</th>
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</thead>
<tbody>
<tr>
<td><strong>Intrinsic</strong></td>
<td><strong>Acquired</strong></td>
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<tr>
<td>Life/developmental stage</td>
<td>Nutrition</td>
<td>Occupation</td>
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<tr>
<td>Genetics</td>
<td>Drug/alcohol use</td>
<td>Cultural/behavioural practices</td>
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<td>Race</td>
<td>Fitness</td>
<td>Background exposure</td>
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<tr>
<td>Gender</td>
<td>Obesity</td>
<td>Body burden</td>
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<tr>
<td>Disease state</td>
<td>Disease</td>
<td>Fuel use</td>
</tr>
</tbody>
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Vulnerability: The South African context
Susceptibility factors

- Life/developmental stage (age)
- Genetics
- Race
- Gender
- Disease state
  - Respiratory diseases
  - HIV/AIDS and opportunistic infections
  - Nutritional status
Gender

The Prevalence of Chronic Conditions by Sex, South Africa (1998)

Source: DoH, MRC & MacroInt, 2001
Differential exposure factors

- Fuel use
- Occupation
- Cultural and behavioural practices
- Background exposure
- Body burden
The Prevalence of Smoking by Population Group and Sex, South Africa (1998)

Source: DoH, MRC & MacroInt, 2001
Differential ability to recover/cope

- Education
- Access to health care
- Socio-economic status
- Cultural practices
- Employment
Education


Source: DoH, MRC & MacroInt, 2001
Integration of vulnerability and risk: a methodological framework
Challenges

• Aim: to provide a true reflection of the health risks of community to environmental stressors
• Methodological challenges
• Pilot test challenges
• Standardisation challenges