Climate Change, Health and Sustainable Development

by
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Caribbean National Epidemiologists and Laboratory Directors
Hyatt Regency Trinidad
Port of Spain, Trinidad and Tobago
Areas of focus for environmental health and environmental management

• Water resources management
• Solid waste management
• Chemicals and hazardous substances management
• Air quality management
• Cross-cutting:
  • Climate change – impacts across many areas; for example:
    • Water security threatened – changing rainfall patterns means changing water availability
    • Accelerated spread of disease – influenced by temperature and moisture regimes
    • Ambient air quality changes – influenced by changes in regional and global rainfall/temperature regimes (eg sub-Saharan dust pulses)
Human and ecosystem health hazards

• **Human health**
  • Contact with contaminated waters (drinking, recreation)
    • Ear infections
    • Dysentery – Severe diarrhea
    • Typhoid Fever
    • Viral and Bacterial Gastroenteritis
  • Vector proliferation
    • Mosquito breeding
      • Dengue and Chikungunya virus
    • Rodent proliferation
      • Leptospirosis

• **Ecosystem health**
  • Terrestrial eco-toxicity – chemicals and hazardous substance accumulation in soils
  • Compromised reef systems
  • Hypoxic ‘dead’ zones in marine environments
Water resources management (water and sanitation)

- **Freshwater**
  - Drinking water supply/water scarcity (surface and ground water)
  - Food security – irrigated agriculture (typically surface sources)
  - Contact recreation (rivers, lakes)

- **Coastal waters**
  - Contact recreation (beaches)
  - Food security – fish stock health

- **Water safety** - Reduce hazards in water supply systems, from the water supply sources, through the distribution network and within the household.
  - Critical in disaster response; both drought and flood related
  - Close collaboration with ministry of health as the regulator and water utilities as the service providers

- **Recreational/coastal water quality** – reduce hazards from land-based sources of pollution.
  - Risks from unimproved sanitation, untreated effluent discharges, other pollutants
Water resources management (water and sanitation)

- **Primary country support needs - Pollution assessment and control**
  - Contribute to the development and adoption of best practices
  - Build capacity for water resources management
  - Deepen engagement of high level policy makers
  - Contribute to the development of national Integrated Water Resources Management (IWRM) Plans
  - Support the strengthening of policies and legislation
Solid waste management

- Pest and disease control
  - Rodent, insect (mosquitos) proliferation
- **Primary country support needs – waste minimization and diversion**
  - Innovation in waste diversion, reduction and re-use; recycling, waste-to-energy
    - Divert green/organic waste; safe disposals – reduce rodent populations
  - Reducing risk associated with indiscriminate plastics disposal and flood exacerbation (in watercourses) – invest in recycling
  - Reduce stockpiling of types, white waste – accumulation of water and breeding sites for mosquitoes – invest in recycling
  - Minimize leachate discharge and toxic impacts
    - Concern over hazardous chemicals and other substances in the wastestream
  - Support waste management policy design
  - Support to sustained advocacy and awareness-raising
Chemicals and hazardous substances management

• Chronic and acute exposure
  • Environment – ecotoxicity: accumulation of harmful substances within soils, water with indirect (longer-term) impacts
  • Human – direct impacts

• Primary country support needs – safe handling practices and chemicals life cycle management
  • Policy development and strengthening regulatory environment
  • Provide guidance to the establishment of poison centres
  • Support knowledge management for decision making
  • Strengthen management capacities amongst practitioners
  • Promote and support advocacy
  • Provide technical guidance for assessments and strengthen diagnostic capacities at national level
  • Support applied research
Air quality management

• Indoor environment
  • Respiratory, eye irritants - mould, dust, VOCs

• Outdoor/ambient
  • Sub-Saharan dust, other dust/particulates, smoke, exhaust emissions, odour nuisances

• **Primary country support needs – various**
  • Build capacity in air quality assessment amongst health professionals
  • Support the strengthening of local diagnostic capabilities
  • Assist in the formulation of policies, legislation and regulations
  • Support and participate in applied research
Linking epidemiological and environmental assessments

• Explain trends in disease occurrence
• Assist in directing and targeting interventions and investments based on health-based evidence – priority setting
• Serve to strengthen stakeholder engagement and buy-in to remediation
• Proposed:
  • Develop/harmonized data reporting protocol between epi data and environmental assessment
  • Share common database management system; attempt to build in the option of adding environmental parameters
• Typical examples where such linkages are needed:
  • Drinking water quality within water supply systems and occurrence/reports of diarrhea
  • Recreational water quality and occurrence/reports of infection amongst bathers (ear, eye, skin)
  • Community sanitation and prevalence of mosquito-borne disease
To illustrate - Typical environmental assessment

- Upstream-downstream pollutant loading of environmental hotspots (pollutant sources)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Upstream sample</th>
<th>Downstream sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterrocoeci</td>
<td>CFU/100 ml</td>
<td>960</td>
<td>6,700</td>
</tr>
<tr>
<td>Faecal Coliform</td>
<td>CFU/100 ml</td>
<td>22,000</td>
<td>380,000</td>
</tr>
<tr>
<td>Nitrates</td>
<td>mg/L</td>
<td>0.35</td>
<td>0.13</td>
</tr>
<tr>
<td>Phosphate</td>
<td>mg/L</td>
<td>0.65</td>
<td>1.7</td>
</tr>
<tr>
<td>Total suspended solids</td>
<td>mg/L</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Turbidity</td>
<td>NTU</td>
<td>18</td>
<td>27</td>
</tr>
<tr>
<td>Oils and greases</td>
<td>mg/L</td>
<td>12.9</td>
<td>14.3</td>
</tr>
</tbody>
</table>

- Needed: an approach to link this data to human and ecosystem health in a structured manner. The two areas tend to remain isolated
Thank you, questions