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Global Innovation Chair and
Founding Director Global Centre for Environmental Research,
University of Newcastle

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OVERVIEW

• Introduction
• Nature of Pollution
• The scale of Pollution problem
• Human health Impacts
• The Challenge
• globalCARE Alliance
• Global Connections
• Building capacity
Environmental contamination is a global problem

Long-term exposure to contaminants can have devastating effects on human health and the environment
THE SCALE OF THE PROBLEM

- > 100,000 synthetic chemicals produced
- > 10 million potentially contaminated sites worldwide

> 2.5 million in Europe; 3 million in China and India

<table>
<thead>
<tr>
<th>ESTIMATED REGISTERED SYNTHETIC CHEMICALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>80,000</td>
</tr>
</tbody>
</table>

PERCENTAGE OF CHEMICALS FOR WHICH EPA HAS REQUIRED SAFETY TESTING

0.25%

> 144,000 – most recent
## GLOBAL ESTIMATE OF POTENTIALLY CONTAMINATED SITES

<table>
<thead>
<tr>
<th>Country</th>
<th>Potentially contaminated sites</th>
<th>Value of current market</th>
<th>Future potentials</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>450,000 to 500,000</td>
<td>US $10+ billion per year (1/3 of global demand)</td>
<td>Estimated at US $650 billion over 30-35 years</td>
</tr>
<tr>
<td>Western Europe</td>
<td>600,000+</td>
<td>An estimated € 50 billion, timeframe unspecified</td>
<td>0.5-1.5% of GDP is likely to be spent per annum</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>2,500,000</td>
<td>€6.5 billion</td>
<td>0.041% of GDP</td>
</tr>
<tr>
<td>Japan</td>
<td>500,000+</td>
<td>$1.2 billion+, timeframe unspecified</td>
<td>N/A</td>
</tr>
<tr>
<td>Australia</td>
<td>200,000</td>
<td>&gt;$3 billion per annum</td>
<td>N/A</td>
</tr>
<tr>
<td>Asia region</td>
<td>&gt;3,000,000</td>
<td>Unassessed</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Modified from CEI,(2005) and European Environment Agency, 2021
AIR POLLUTION

World Health Organisation, March 2014

• In 2012, 7 million premature deaths annually linked to air pollution
  – one in eight of total global deaths
• More than doubles previous estimates
• Air pollution is now the world’s largest single environmental health risk
• Reducing air pollution could save millions of lives.
POLLUTION: HOW BIG IS THE IMPACT?

4.9 million deaths were attributable to environmental exposure and management of selected chemicals in 2004.³
CLEAN-UP IS NON EXISTENT IN MANY DEVELOPING COUNTRIES (LACK OF RESOURCES)

To remediate all contaminated sites is humanity’s next great challenge.
globalCARE ALLIANCE: VISION

Minimise the exposure of humans and the Earth’s biosphere to anthropogenic chemical contamination from all sources

Capacity building
globalCARE ALLIANCE: MISSION

To define, quantify, set limits to, help clean up, and devise new ways to curb the growing chemical assault on human health and the biosphere.

globalCARE™ is a worldwide knowledge network

globalCARE™ connects the world under a single umbrella that encompasses:
- New scientific research
- A database of existing knowledge
- Novel assessment and clean-up technologies
- Evidence-based policies
- Training and capacity building
KNOWLEDGE UPTAKE: globalCARE MEETINGS

• Provides forum and networking for researchers, environmental managers, regulators

• High-level training

• Information exchange of new knowledge generated by stakeholders including:
  o Industry
  o researchers (private and public)
  o academics
  o policy makers
  o regulators
  o communities affected by contamination issues

• Host meetings

• Collaborative research and technology diffusion

globalCARE™ is a well-coordinated cluster with global connections
GLOBAL CONNECTIONS ARE CRUCIAL
BUILDING CAPACITY

GLOBAL CONTAMINATION RESEARCH INITIATIVE

Collection and dissemination of industry intelligence
Development of specialist expertise
Innovation and technology policy
Attraction of investment
Enhance Cleanup
Export promotion
Regulatory and market reform
Focused research and development

globalCARE
**CRC CARE & globalCARE’S CAPACITY-BUILDING PROGRAM: 2005 TO PRESENT**

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short courses/workshops</td>
<td>200+</td>
</tr>
<tr>
<td>Postgraduate completions</td>
<td>160</td>
</tr>
<tr>
<td>International conferences</td>
<td>15</td>
</tr>
<tr>
<td>Global congresses</td>
<td>3</td>
</tr>
</tbody>
</table>

Trained > 9,000 practitioners from Australia and 30 other countries
Thank you.

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