DEVELOPMENT AND IMPLEMENTATION OF STATE ACTION PLANS ON CONTAINMENT OF ANTIMICROBIAL RESISTANCE (SAPCAR)

Anil Agarwal Environment Training Institute (AAETI), Neemli, Rajasthan

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Structuring the environmental dimension of AMR

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Environment...one of the drivers of AMR

- Animal health and food-animal production
- Human health
- Crops
- Waste and Environment

AMR
## Structure of the environmental AMR problem

<table>
<thead>
<tr>
<th>Point Sources</th>
<th>Non-point sources/reservoirs</th>
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<tbody>
<tr>
<td>Farms</td>
<td></td>
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<tr>
<td>Waste from:</td>
<td>Rivers, Reservoirs</td>
</tr>
<tr>
<td>• Animal farms: poultry, dairy, pig, fish etc.</td>
<td>Groundwater</td>
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<td>• Agriculture farms</td>
<td>Agricultural soil</td>
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<td>Factories</td>
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<tr>
<td>Effluents from:</td>
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<tr>
<td>• Pharmaceutical manufacturing or through CETPs</td>
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<tr>
<td>• Feed mills</td>
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<td>• Slaughter houses</td>
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<tr>
<td>• Processing units (meat, dairy)</td>
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<tr>
<td>Households/ Community</td>
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<tr>
<td>Effluents from</td>
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<tr>
<td>• Sewage treatment plants</td>
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<tr>
<td>• Disposal of unused, expired drugs</td>
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<tr>
<td>Healthcare Settings</td>
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<td>• Hospital sewage</td>
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<tr>
<td>• Waste from veterinary care settings, laboratories etc.</td>
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</table>

- Three AMR determinants (antibiotic residues, resistant bacteria, antibiotic resistance genes) travel across multiple sectors
- Nature of waste and AMR determinants varies across sectors and local context
Where does the environmental AMR dimension stand today, globally?

- Environmental dimension typically gets less attention compared to human and animal AMR pathways.
- Scientific community actively engaged and building evidence on different aspects.
- UNEP has recently become part of the quadripartite to address AMR.
- Integration/linkages between AMR with WASH still less discussed and so is the importance of prevention.
- In recent times antibiotic pollution from pharmaceutical waste has received traction in global policy/trade/economic discussions (e.g., G7, Global Leaders Group on AMR).
- Pharma industry through AMR Industry Alliance has developed common antibiotic manufacturing framework which include discharge limits.
- Global technical guidance to help nations manage AMR related waste is largely missing; GLG has recently came out with a call to action for countries and stakeholders.
GLG released a call to action to reduce antimicrobial discharges from food systems, manufacturing facilities and human health systems

- Calling action from countries and stakeholders such as from manufacturing sector, food producers, human health sector, international technical, financing and R&D organisations
- For policy, implementation of regulatory frameworks, guidelines, SOPs, discharge limits, incentives, building capacity, surveillance, data availability, WASH, prevention or R&D as part of four key areas:
  - Strengthening governance and oversight
  - Improved surveillance and data availability
  - Improved discharge management
  - Research and development
At the national level, where do we stand today?

- Environmental AMR is part of the India’s National and State Action Plans
  - Indicates need, desire, stakeholder consensus to address the issue
  - Focuses on multiple aspects - surveillance, waste management, biosecurity (still not as much as required on prevention and WASH)
  - Existing waste management policies/standards are largely not AMR-centric

- However, there is very limited on-the-ground progress so far for reasons such as:
  - Environmental AMR issue is cross-cutting; Limited know-how and capacity and limited technical global guidance
  - Lack of dedicated funding within the overall limited funds for AMR
  - Issue so far is over-dependent on surveillance which is resource-intensive and technically demanding
  - The importance of achievable and cost-effective aspects of prevention (less use, less waste, less resources to clean up) often overlooked
Antibiotic discharge limits in pharmaceutical effluents is an ongoing issue

- First such discharge limits of antibiotics put up for public comments by **MoEFCC in Jan 2020.**
  - Developed by the CPCB, these were applicable to manufacturing bulk/formulation industry as well as CETPs
- These limits **were missing in the final notification** released in August 2021; industry was against such standards
- NGT in its final order of April 2022 in response to a petition - filed w.r.t. contamination of Sirsa river near Baddi, HP – in view of **serious consequences of unregulated discharge of API residue** to the detriment of environment and public health ordered that:
  - Draft discharge limits of antibiotics developed earlier should be followed by all concerned pending finalization by MoEFCC
  - Abide by CPCB guidelines circulated in Jan 2022 (for standards and methodology)
- MoEFCC filed a **review petition** which was dismissed by NGT in May 2022
Agriculture use of animal waste should be promoted but should be made AMR safe

- **Farm waste** (example faecal waste in the dairy sector) is a resource from the point of view of efficiency, circularity.
- It saves costs, helps prevent environmental contamination but most importantly, supports agro-ecological practices based on livestock, crop integration and effective use of manures as fertilizers.
- But this waste can be a huge pathway for AMR spread as faecal waste can be rich in AMR determinants
- The momentum to use such waste as organic inputs is also growing. The government is talking about increasing adoption of organic/natural farming; buying cow-dung etc.
- This waste therefore needs to be made AMR safe and necessary required policies/practices are to be worked upon
At a high level-how to go about addressing the environmental AMR?

• First of all, need to prioritize and invest in the environmental AMR agenda (at the national and state level) as part of a true One-Health action. This includes more research, evidence, documentation, funding, capacity building and action.

• Focus on prevention
  – Prevention at farms (less disease, less use, less pollution, less clean up): biosecurity, clean water, alternatives, good animal husbandry practices, vaccination.
  – Prevention at factories: better process controls, better monitoring
At a high level—how to go about addressing the environmental AMR?

- Focus on better Water, Sanitation and Hygiene (WASH)
- Manage waste well
  - AMR-centric approach (bacteria, genes and antibiotics) in waste streams
  - Low-cost effective waste management technologies/approaches
- Build capacity
- Develop and implement a research agenda based on what we know and what we do not know. Identify hotspots
- Develop policy, set standards/discharge limits for hot-spots, monitor, publish results, engage with industry
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