

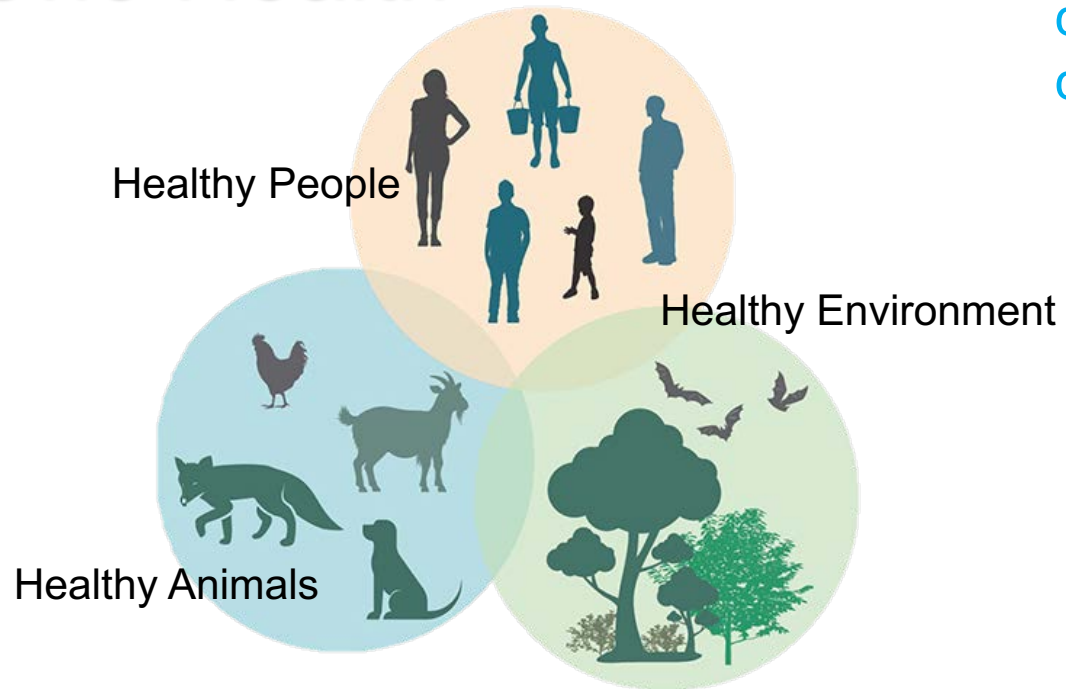
What are priority areas for management of Antimicrobial Resistance (AMR) in the Environment?

Advancing the One Health Response to Antimicrobial Resistance

Priority Areas for Management of AMR in the Environment

Advancing the One Health Response to Antimicrobial Resistance

One Health



One Health is the idea that the health of people is connected to the health of animals and our shared environment. When We protect **one**, we help protect **all**.

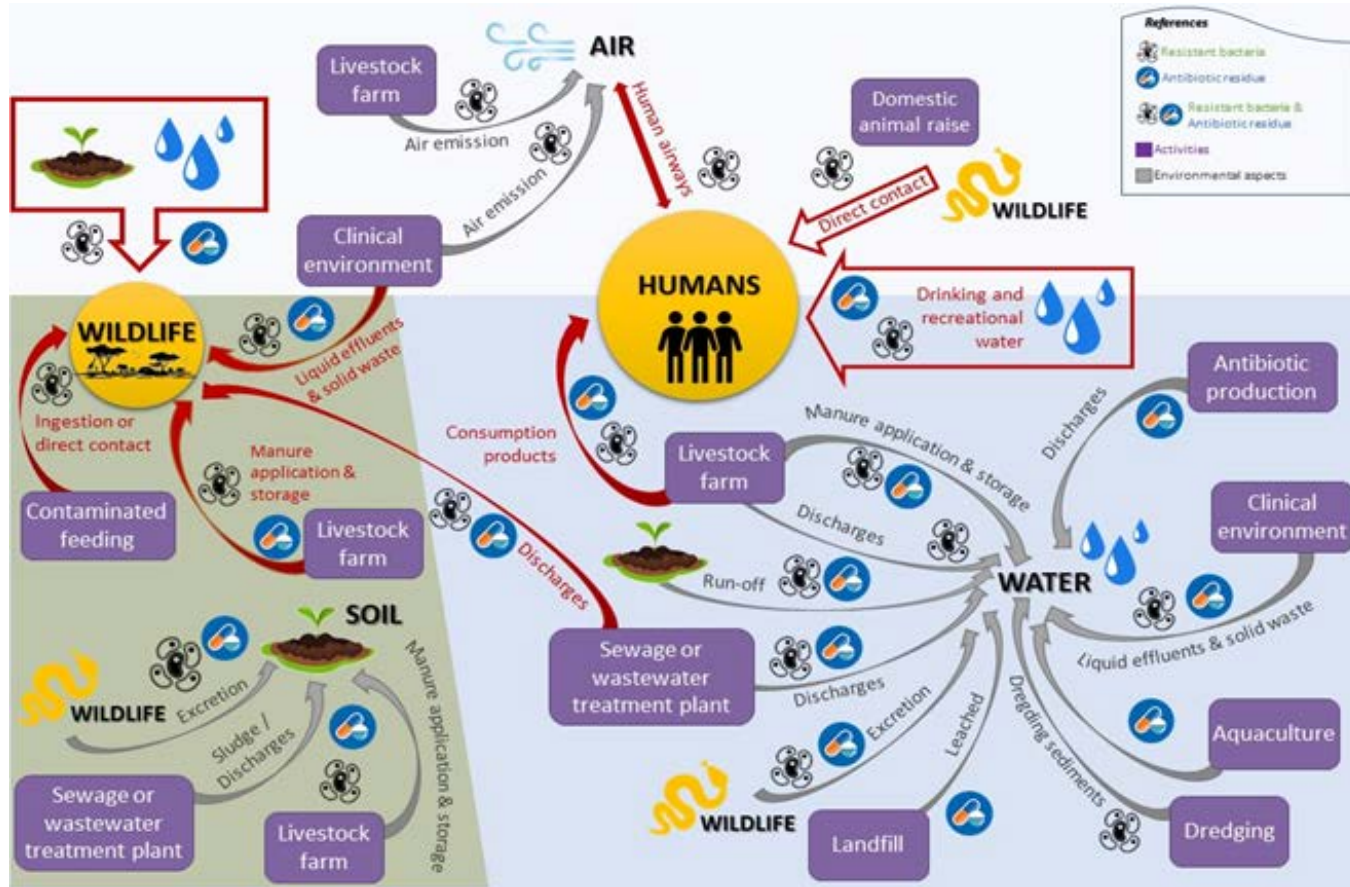
Environmental considerations are critical to the One Health approach to control antimicrobial resistance.

The environment serves as a reservoir of resistant microorganisms (and antimicrobial resistance genes), and a prominent route of transmission among humans, animals, and plants.

Chemicals and drug residues including antimicrobials (antibiotics, antivirals, antifungals, and antiparasitic agents), biocides, and heavy metals in the environment can accelerate the emergence and spread of resistant microorganisms.

Priority Areas for Management of AMR in the Environment

Entry of residues, resistant microorganisms and antimicrobial resistant genes into the environment



- Antimicrobial Resistance in the Environment is a complex problem, and it will require coordinated solutions.
- The source of AMR in soil and water are numerous and extend from production of antimicrobials, through usage and waste management.
- Every identified pathway (arrows) of contamination also present a target for intervention and measures for mitigation.
- UNEP is increasing coordination and cooperation efforts.

Image source:
<https://www.unenvironment.org>

Priority Areas for Management of AMR in the Environment



Resolution 3/4 Environment and health, IV Antimicrobial Resistance, 29 – 32

United Nations Environment Assembly (UNEA):

- Recognizes that AMR is a current and increasing **threat** and challenge **to global health, food security and sustainable development** of all countries.
- Underlines the need to further **understand the role of environmental pollution in the development of antimicrobial resistance**, the **limited availability**, tools for and use of **environmental surveillance** of anthropogenic antimicrobials, and the **limited understanding of the long-term effects of antimicrobials** in the environment **to the health of** humans, animals, plants and **ecosystems**.
- Notes that **human, animal, and plant health and the environment are interconnected** and that addressing the development and spread of antimicrobial resistance effectively requires a **holistic and multisectoral approach**.

Priority Areas for Management of AMR in the Environment



Resolution 3/4 Environment and health, IV Antimicrobial Resistance, 33

United Nations Environment Assembly (UNEA):

- Requests the Executive Director to work in **close collaboration** with the World Health Organization, the Food and Agriculture Organization of the United Nations, the World Organization for Animal Health and all other relevant organizations, academia, the private sector and civil society **to support efforts by member States to identify and characterize the human and animal health risk**, based on the “**One Health**” **approach** and in line with the World Health Organization’s **Global Action Plan on Antimicrobial Resistance**, as well as **the risk to biodiversity and ecosystems** arising from anthropogenic antimicrobial resistance in the environment.

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Resolution 3/4 Environment and health, IV Antimicrobial Resistance, 34

United Nations Environment Assembly (UNEA):

- Also requests the Executive Director, **in collaboration** with the World Health Organization, the Food and Agriculture Organization of the United Nations, the World Organization for Animal Health, the Inter-Organization Programme for the Sound Management of Chemicals, the Strategic Approach to International Chemicals Management and the Interagency Coordination Group on Antimicrobial Resistance, and subject to the availability of resources, to prepare by the fifth session of the United Nations Environment Assembly **a report** on the **environmental impacts of antimicrobial resistance and the causes for the development and spread of resistance in the environment**, including the gaps in understanding of those impacts and causes.

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Resolution 3/4 Environment and health, IV Antimicrobial Resistance, 35



United Nations Environment Assembly (UNEA) continues:

- **Encourages member States** to consider, as part of **evidence-based environmental policymaking**, putting in place measures, as nationally appropriate, to **effectively manage waste and wastewater to minimize their contribution to antimicrobial resistance** through environmental contamination, including that applicable to municipalities, the agricultural industry, health-care facilities, manufacturers of antibiotics, household detergent waste and heavy metals.

Priority Areas for Management of AMR in the Environment

Seven examples on how to act now, adapted from the **Global Chemicals Outlook II**:

1. Collaborate. Agree. Prioritize.
2. Act. Implement existing plans and guidelines
3. Strengthen waste management regulations
4. Incentivize sustainable pharmaceutical development
5. Act across entire value chain
6. Improve education of antimicrobial prescribers
7. Fill knowledge gaps



Priority Areas for Management of AMR in the Environment



1) Collaborate. Agree. Prioritize.

Collaboration means addressing AMR from a One Health approach;
Agreeing on the actions that should be taken within that collaboration;
Prioritizing those approaches based on scientific evidence.

As an example, this means that internationally, it is important to establish clear definitions and identification criteria for Environmentally Persistent Pharmaceutical Pollutants (EPPPs) – antimicrobials, biocides – to include prioritization approaches, and relevance of pseudo-persistent pharmaceutical pollutants.

Priority Areas for Management of AMR in the Environment

2) Act. Implement current plans and recommendations

Implement the global, regional, and national action plans and recommendations for the containment of Antimicrobial Resistance.



Priority Areas for Management of AMR in the Environment

3) Waste management regulations and practices

Strengthen regulatory requirements and capacities
For example, the GCOII suggests steps for addressing pharmaceutical pollutants:

- waste treatment and management,
- effluent standards,
- implementation of disposal and take-back programmes,
- adherence to best available techniques and best environmental practices.

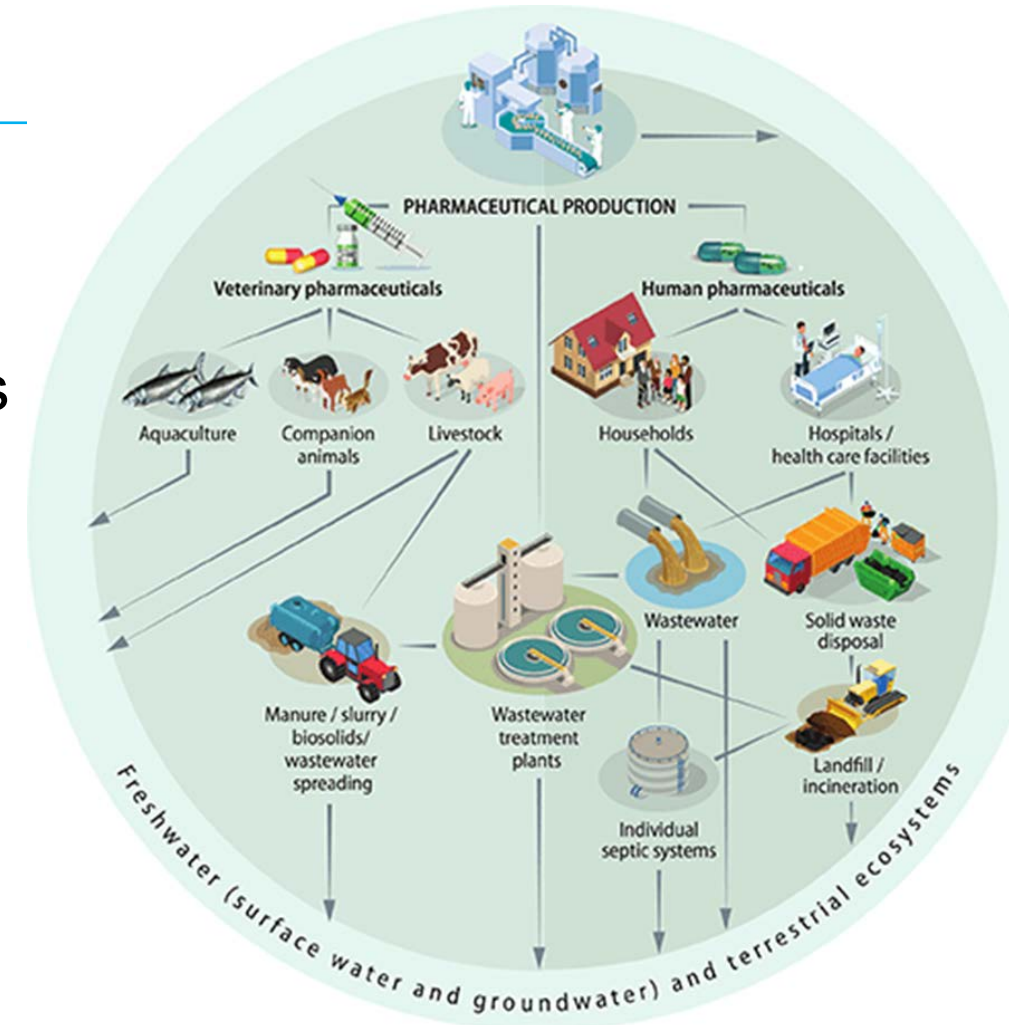


Image source:

[OECD \(2019\) Pharmaceutical Residues in Freshwater: Hazards and Policy Responses](#)

Priority Areas for Management of AMR in the Environment



4) Incentivize sustainable pharmaceutical development

Provide incentive structures for development of green and sustainable pharmaceutical drugs for human and veterinary uses, including through procurement and innovation.

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5) Act across the entire value chain

Ensure that relevant interventions address the whole value chain, including research and development, production, prescription and use, treatment and disposal.

Image source:
["Chain Linkage" by Max Klingensmith](#)

Priority Areas for Management of AMR in the Environment



6) Improve Education of Antimicrobial Prescribers

Enhance training of healthcare professionals, medical and veterinary, to aid in informed prescription choices, and to improve hygienic standards for infection prevention, particularly in hospitals, farms, and communities.

Image source:

["U of M Veterinary Student" by Minnesota FFA](#)

Priority Areas for Management of AMR in the Environment

7) Discovery, Knowledge Sharing

Address knowledge gaps and improve monitoring and surveillance to identify and quantify primary sources of environmental pollution that contribute to the spread and emergence of antimicrobial resistance and share findings globally.

- Good quality data collection and management
- Best practices for laboratories to detect AMR threats
- Coordinated data sharing and harmonized analysis
- Expert consultations

Priority Areas for Management of AMR in the Environment

A **One Health approach** is essential to addressing Antimicrobial Resistance in the environment. UNEP is committed to this vision and is engaged in many multi-sector, multi-stakeholder collaborations and partnerships.

UNEP is working in a One Health capacity. Examples of these collaborations include:

- The Antimicrobial Resistance Environment Project funded by the Multi-Partner Trust Fund
- Awareness Raising (ex. World Antimicrobial Awareness Week (WAAW))
- Capacity building
- Regional and Country level initiatives
- 'One Health High-Level Expert Council', and 'One Health Global Leaders Group on Antimicrobial Resistance'

Antimicrobial Resistance is a Global
Human, Animal and Environment Health
Crisis.

There is no time to waste.

Thank you



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