Information Sheet

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Microbial Contaminants of Emerging Concern (CECs) in South African Water Resources

THE KNOWLEDGE HUB

What are microbial CECs?

Microbial contaminants of concern in environmental water bodies range from pathogenic viruses, bacteria and protozoa to cyanobacteria and helminths. Emerging microbial contaminants that are gaining rapid attention due to their ability to thrive within water distribution systems include opportunistic pathogens, antibiotic resistant bacteria, antibiotic resistance genes and metal resistance genes, as well as free-living amoebae.

Where do microbial CECs originate from?

Microbial CECs are introduced into waterways from several sources, including veterinary, domestic, agricultural and industrial sources. Antimicrobial resistant organisms in the soil, and eventually in waterways, may be introduced from wastewater treatment plants, soil amendments, concentrated animal feeding operations and septic systems. Landfills and landfill leachate also harbour elevated levels of antibiotic resistant organisms and antibiotic resistance genes due to the environment being rich in heavy metals and antimicrobial biocides.

What are the dangers associated with microbial CECs?

Once present, microbial CECs have the potential to infect humans and animals, and may induce waterborne disease outbreaks. Short-term illnesses and gastrointestinal disorders such as cholera, typhoid, gastro-enteritis, giardiasis and hepatitis have been associated with the consumption of contaminated water. The ability of waterborne microbial CECs to cause significant health risks warrants their careful monitoring and control.

How to prevent contamination of water resources with microbial CECs

- Regularly inspect wells, boreholes and septic tanks for damage and repair if necessary.
- Avoid irresponsible use of antibiotics.
- Avoid illegal dumping of waste.
- Report any illegal dumping or suspected microbial contamination to local authorities.

How to remove microbial CECs from water

- Clean and disinfect all devices that use water e.g. taps and showerheads.
- Boiling water is effective as a method of disinfection.
- Exposure to ultraviolet light is effective against certain bacterial CECs.
- Ozonation, chlorination and filtration may be used as methods of disinfection.

NB. Microbial CECs cannot be seen, smelled or tasted and laboratory tests may be required if you have concerns about microbial contamination of your water.

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WATER RESEARCH COMMISSION

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