



Wastewater Surveillance as a New Tool for Addressing the Opioid Crisis

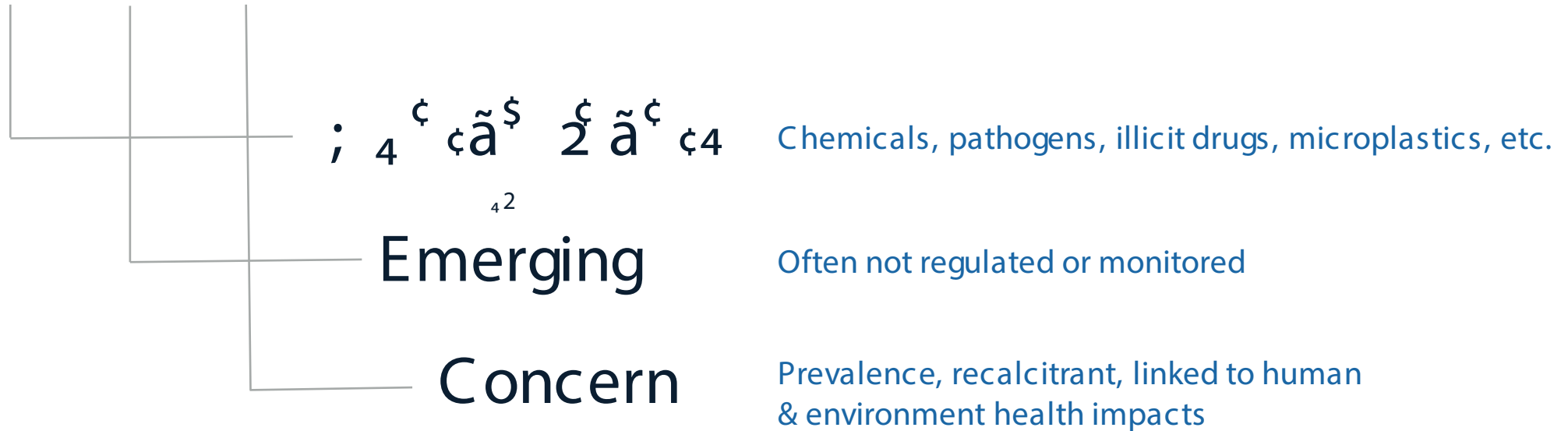


C.E.C. ANALYTICS

Presentation for NWWC November 2024

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ONE HEALTH THROUGH WATER

The Importance of One Health



One Health

Represents the collaboration of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals and our environment

Addressing One Health Through Water

We improve human, animal, and environmental health through enhanced access to water data that enables informed decision making

It Starts with a Sample....

Good data requires a good sample

Patented Sampling Technology

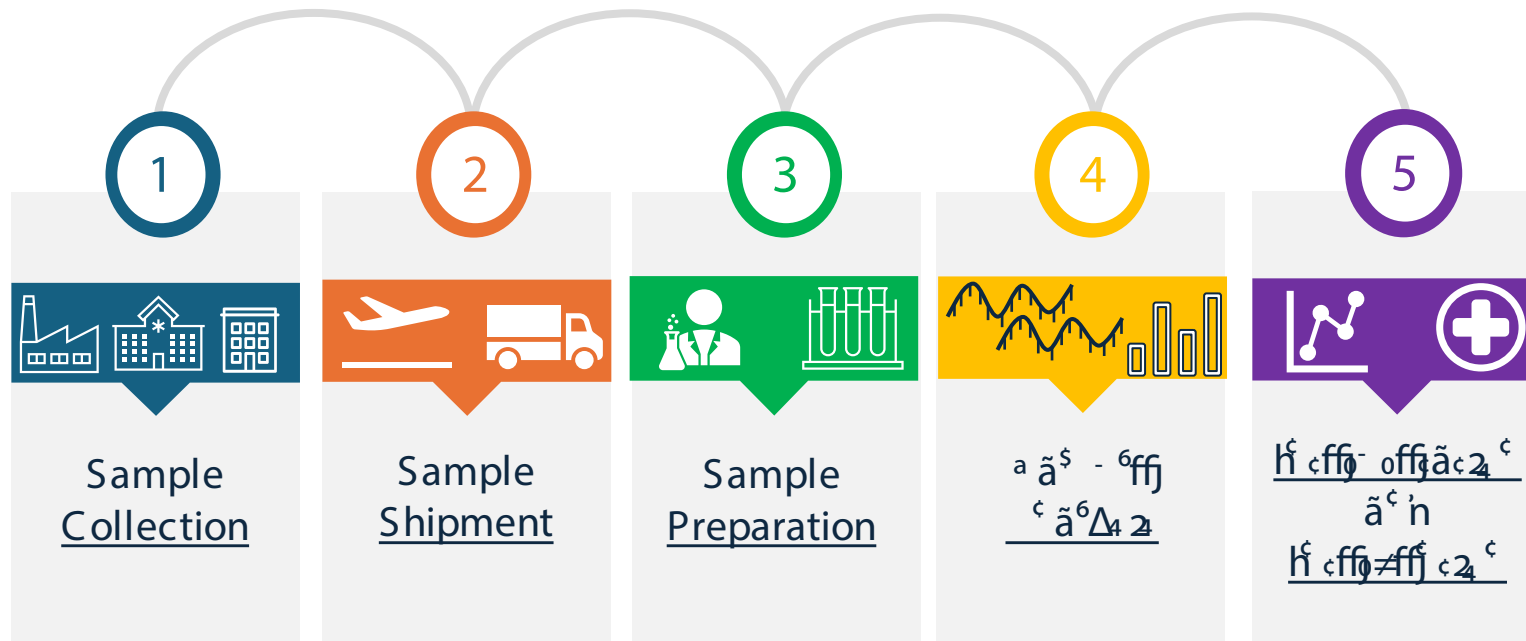
World's most compact, lightweight sampler.

Allows sample collection anywhere.

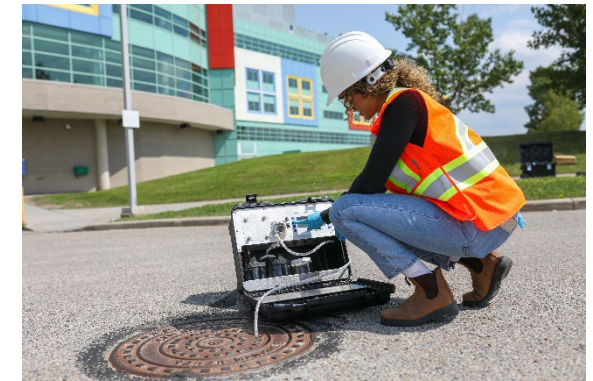
Patented in US, Canada, and EU



Providing Accessible Solutions



Sampling at any point
in sewershed



Onsite rapid detection
(<45 min)



What can be monitored in wastewater?



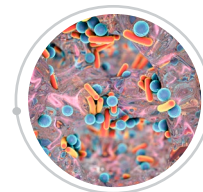
Infectious Diseases

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Illicit Drugs

KNOW COMMUNITY-LEVEL CONSUMPTION



Trace Chemicals

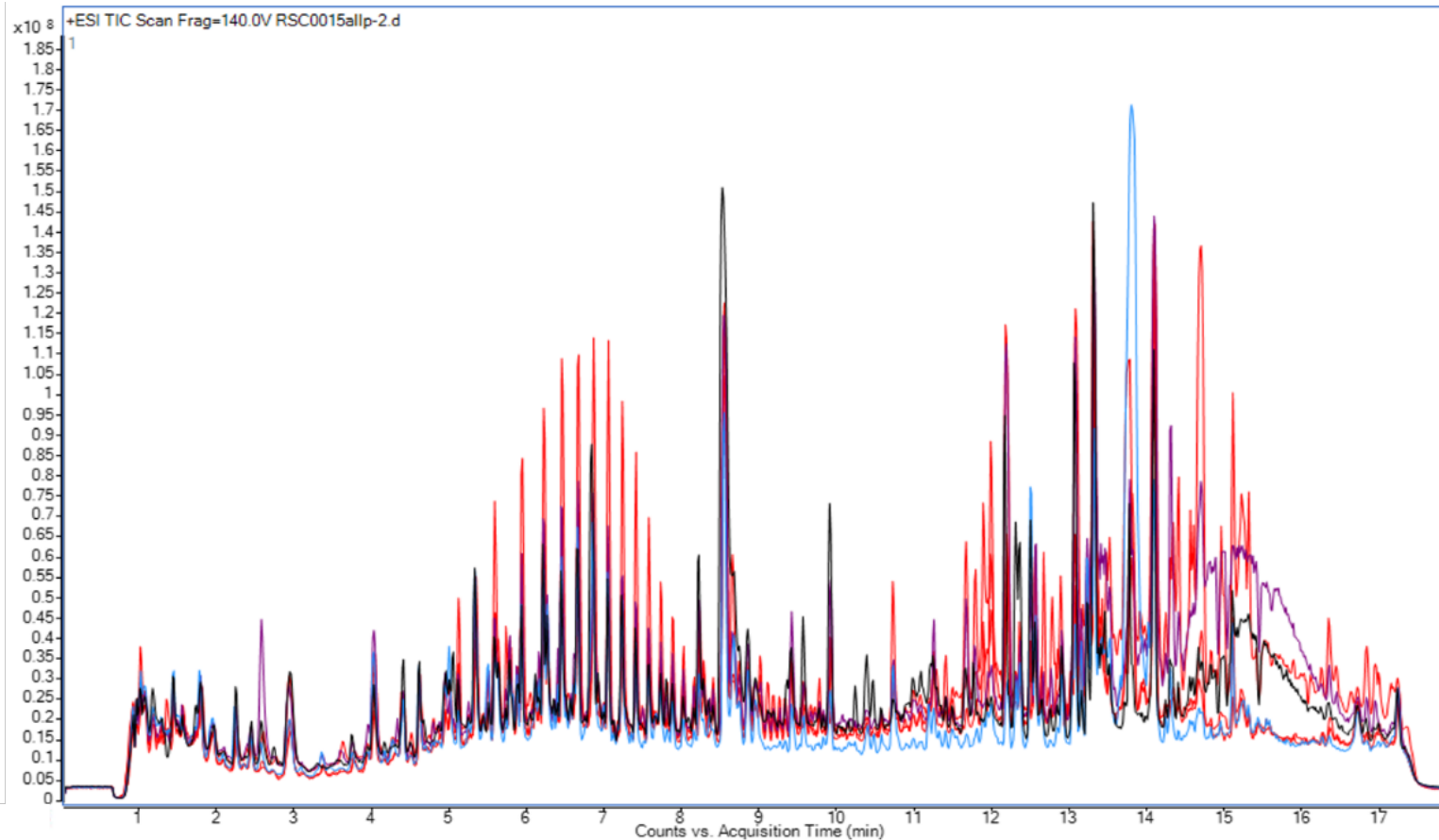
FROM MICROPLASTICS TO PFAS



Environmental Contaminants

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Water Data – Non-Targeted



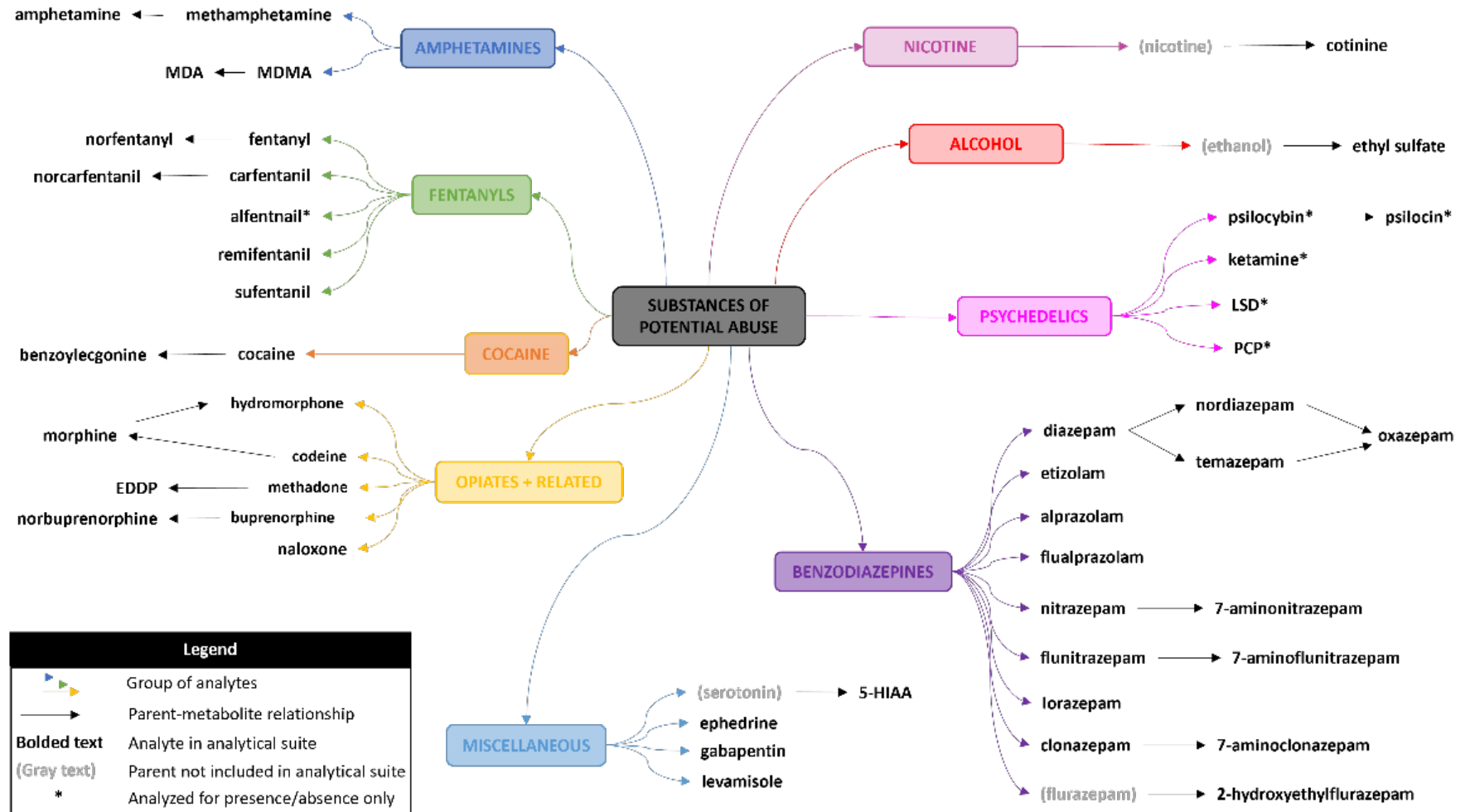
6 Samples
Over a 2 Week
Period

>50,000 Peaks
Identified

Massive opportunity
for understanding
community health

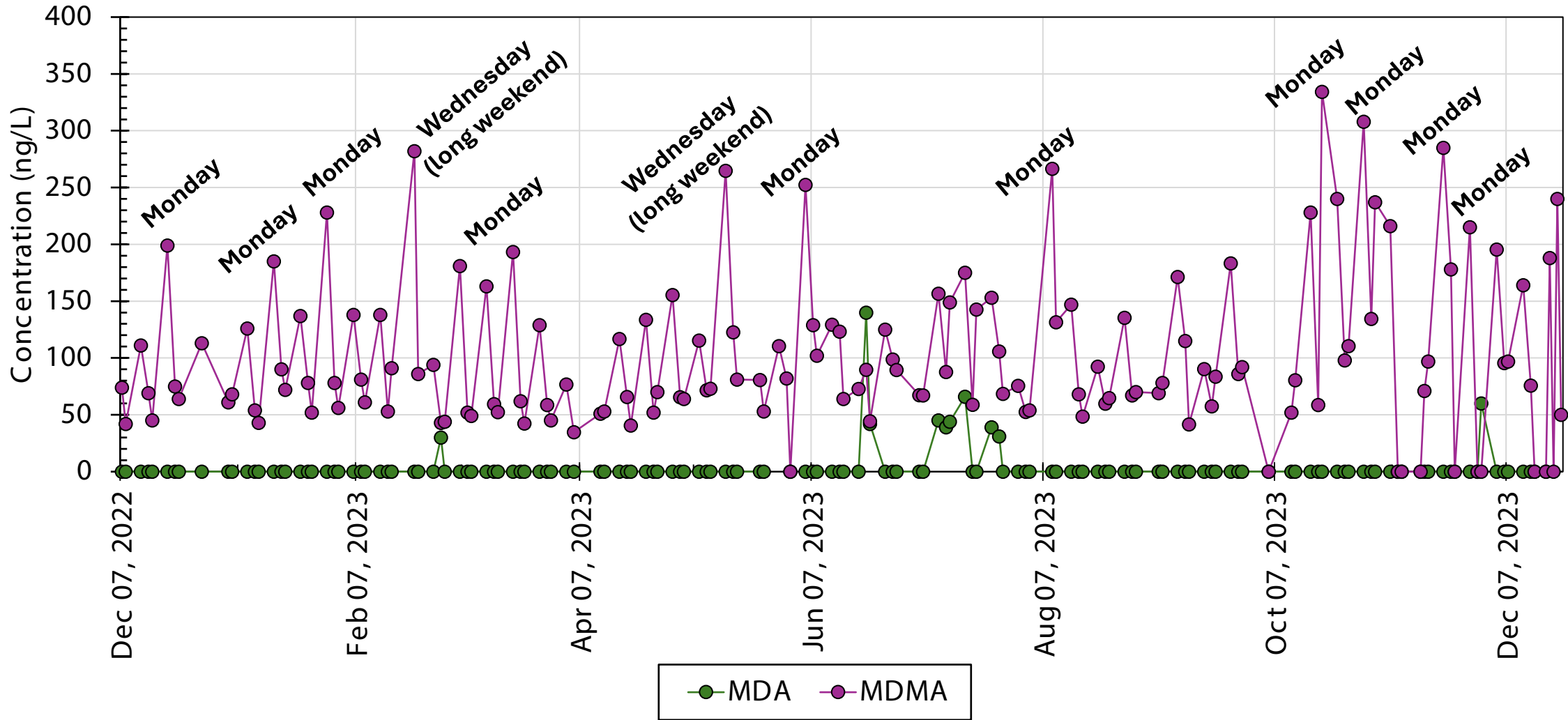
Water Data – Targeted

SoPA =
Substances of
Potential
Abuse

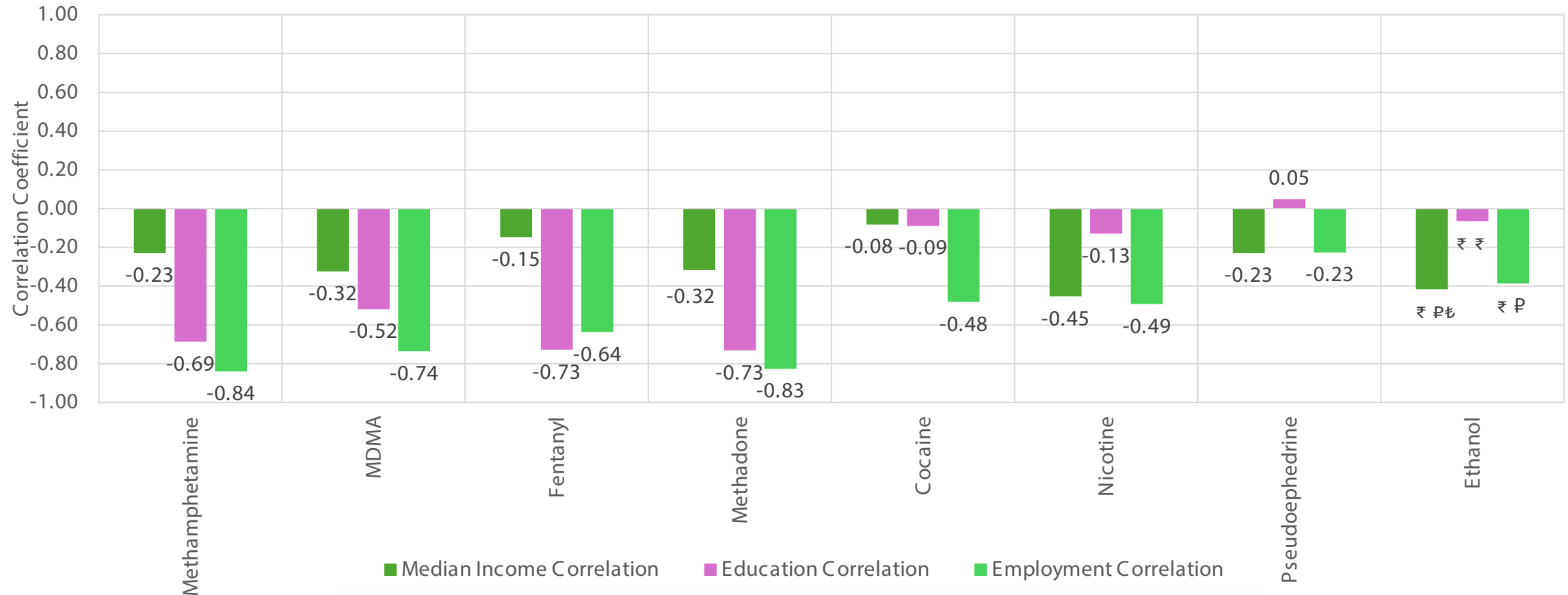


*Figure courtesy of Advancing Canadian Water Assets (ACWA)

Weekend Effect



Neighbourhood Demographics and Wastewater



Lower the percent employment, the higher the consumption of methamphetamine

SoPA at Remote Camps



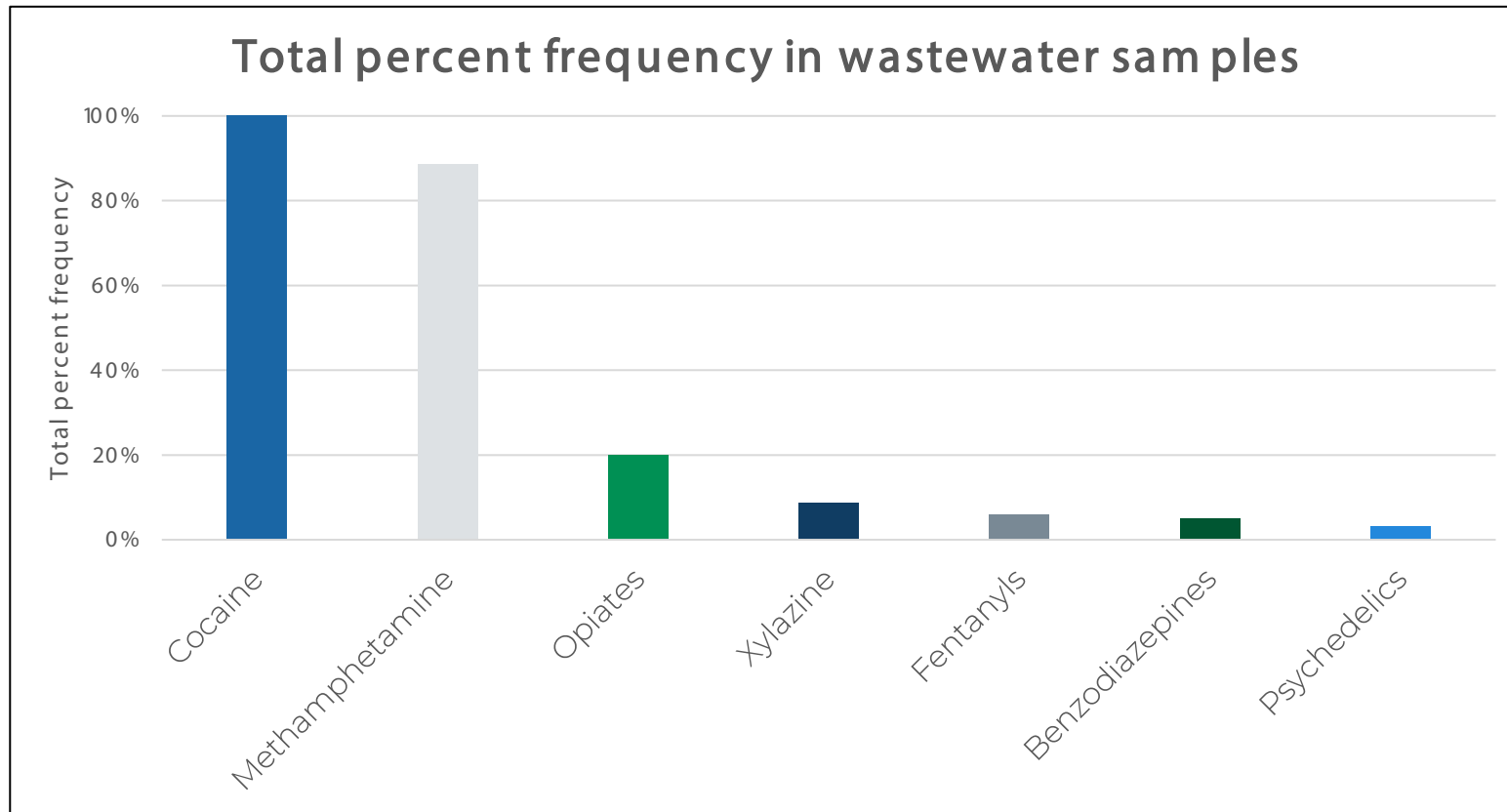
- C.E.C. Analytics is a leading provider of wastewater surveillance solutions for remote camps, offering a cost-effective and non-intrusive monitoring system.
- The system is designed to be installed in a variety of environments, including high-altitude and low-temperature locations, ensuring reliable performance in all conditions.
- The system provides real-time monitoring and data analysis, allowing for early detection of leaks and other issues, reducing downtime and maintenance costs.
- The system is easy to install and maintain, with a long lifespan and low operating costs, making it an ideal solution for remote camps.

Wastewater Surveillance Opportunity:

- non-identifiable, but can monitor on a dormitory-level
- cost reduction relative to spot-testing and random search



SoPA at Remote Camps

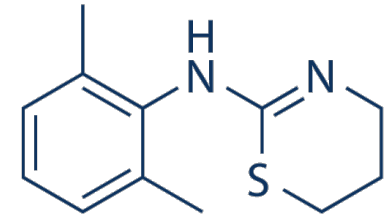
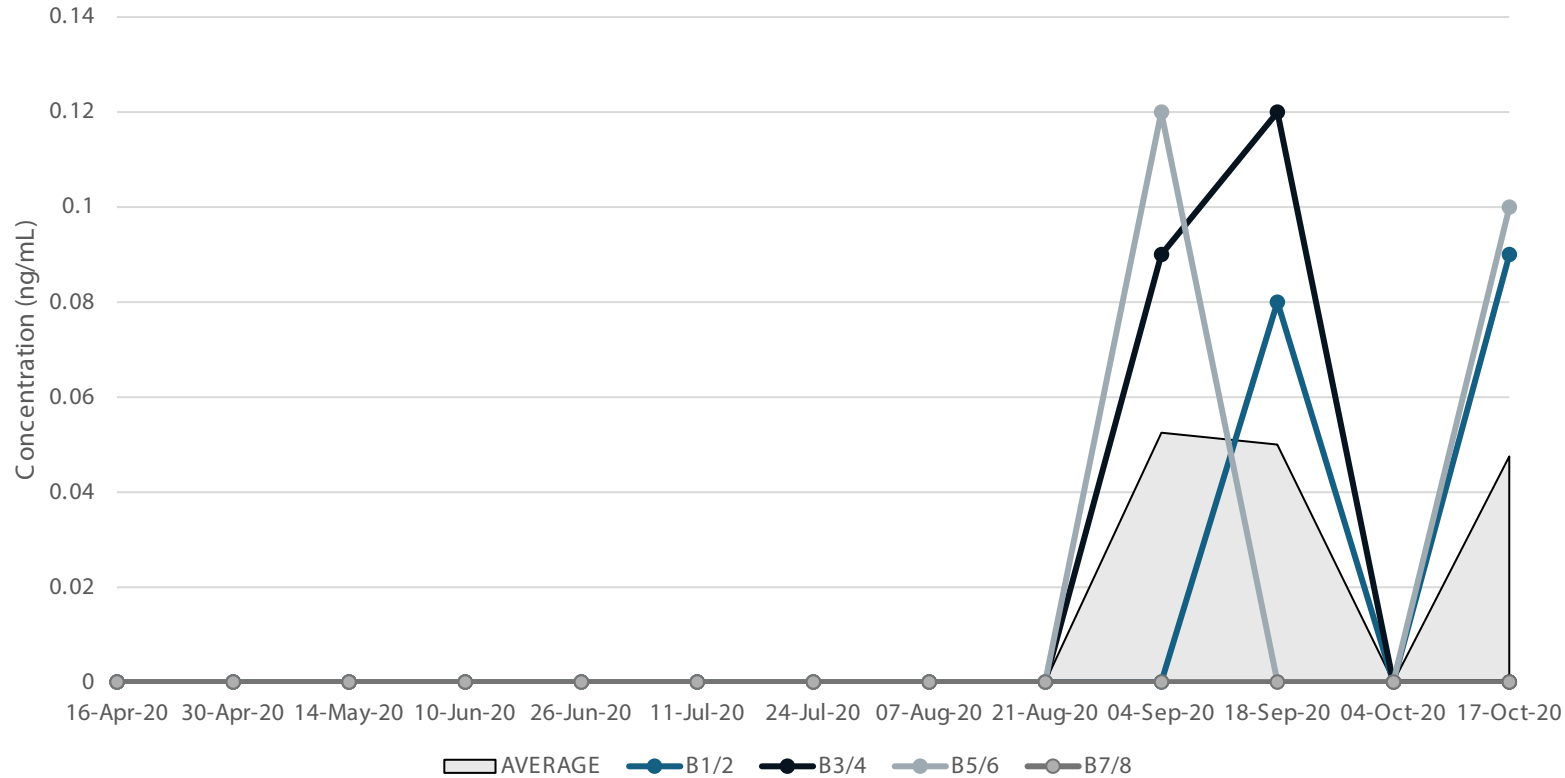


Substances identified went well beyond the “priority substances”.....

42 SoPA identified at this location during case study

SoPA at Remote Camps

Site B Xylazine Concentration



Resistant to naloxone

Increasingly found in fentanyl

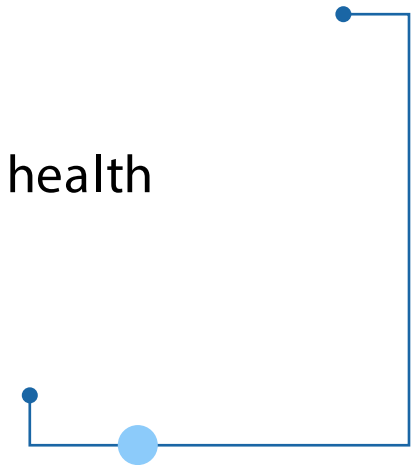
Increasingly found in fentanyl

Xylazine started showing up in the drug supply....

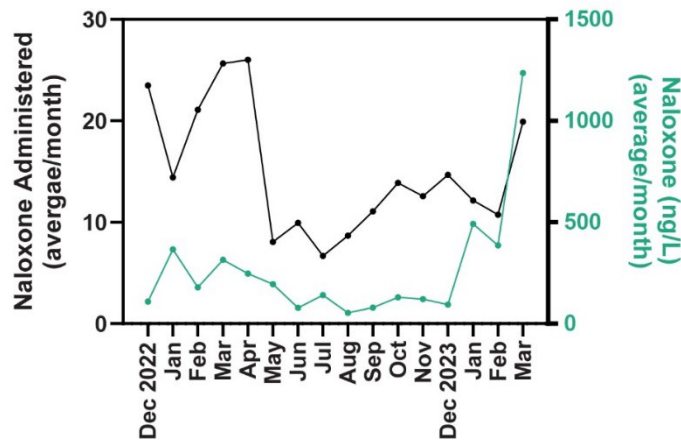
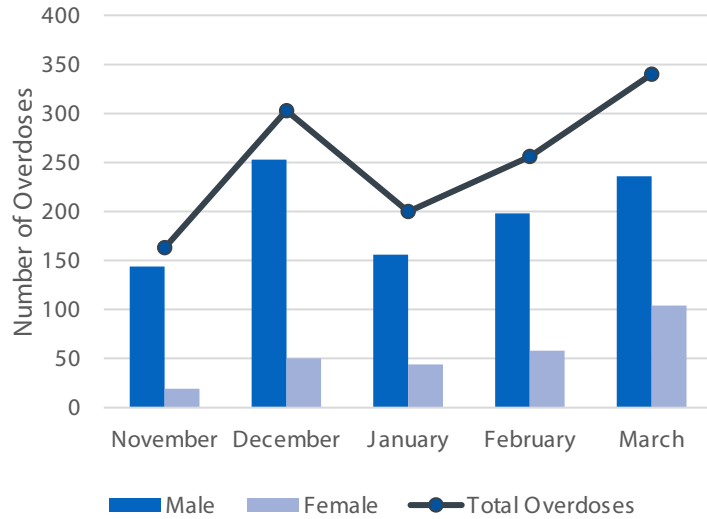
Flagged to OHS team

SoPA at Remote Camps

- Informs stronger harm reduction strategies onsite
- Addresses the full spectrum of substances, not just a select few
- Targeted drug prevention and response programs
- Provides insights into the well-being of the workforce, optimizing resources such as counseling services, education programs, and health initiatives



SoPA at High-Risk Facilities

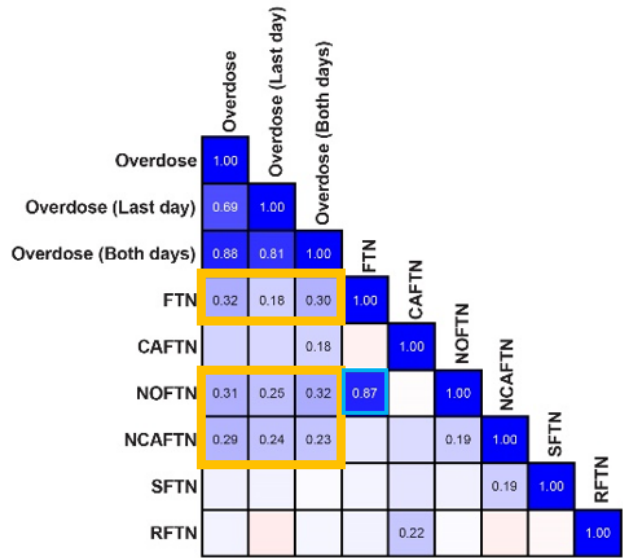
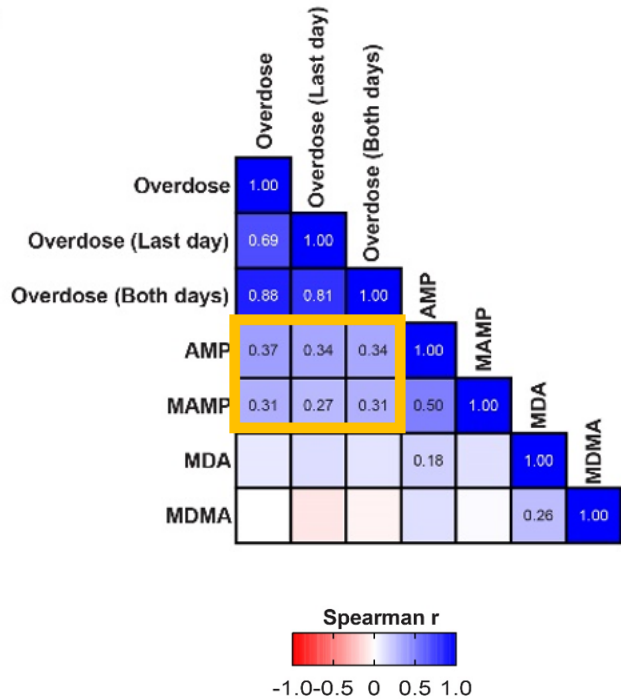


Wastewater monitoring at high-risk facilities:

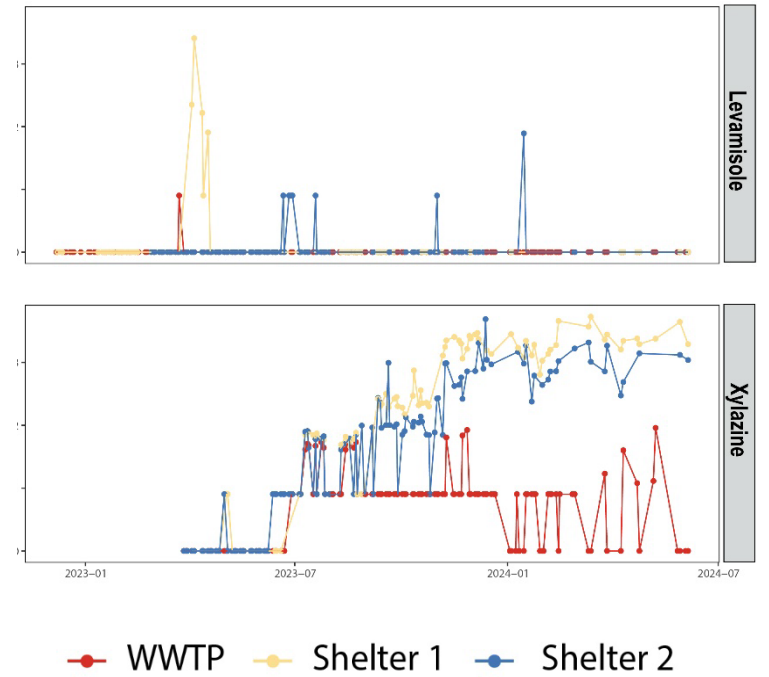
- Identify consumption trends
- Substance consumption based on gender
- Concentration of substance use at an in-building level
- Correlate overdoses and naloxone use at facilities
- Detect drug poisoning agents
- Compare substance concentration data with municipal water treatment facilities

SoPA at High-Risk Facilities

Understanding Polysubstance Use

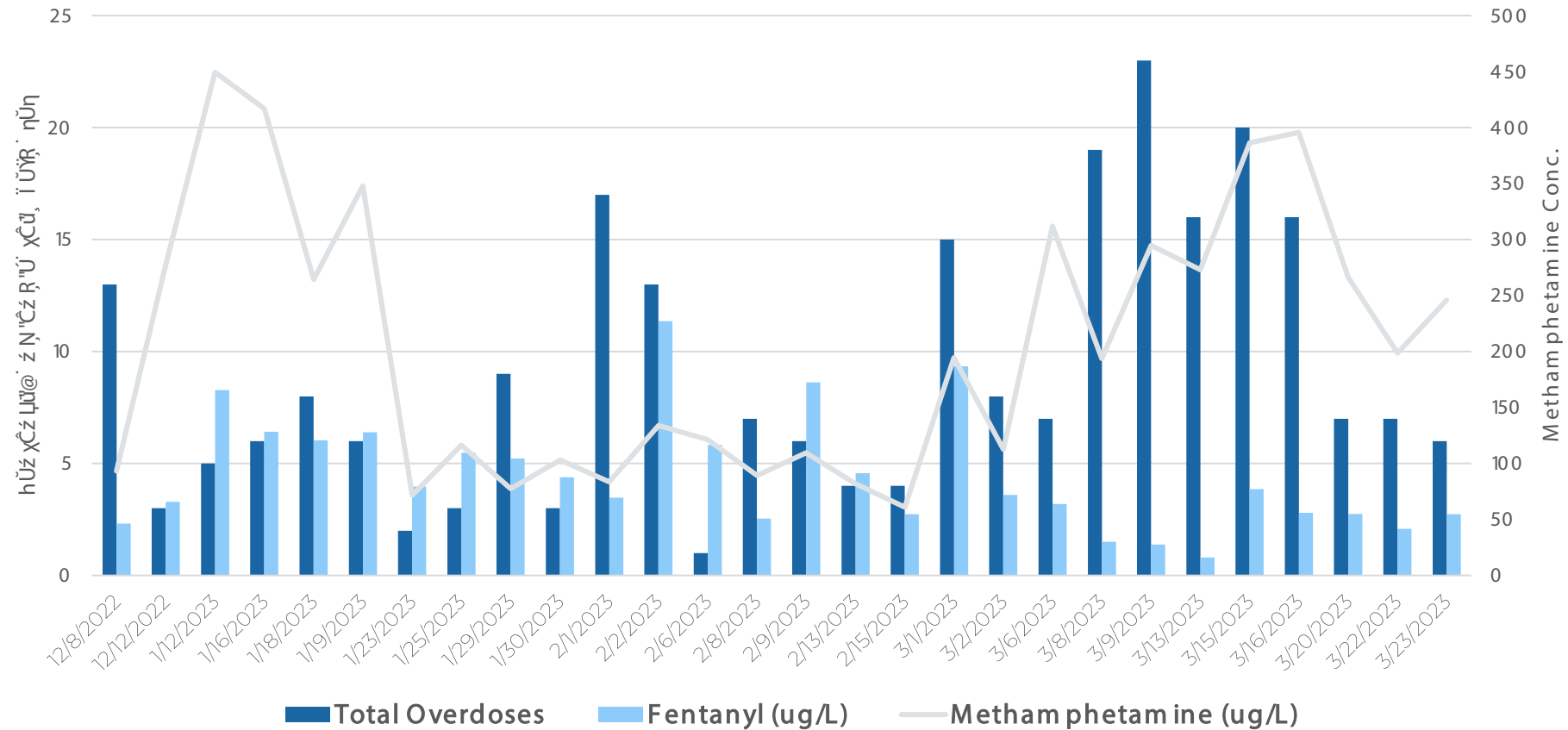


Amphetamines and fentanyls had the strongest association.

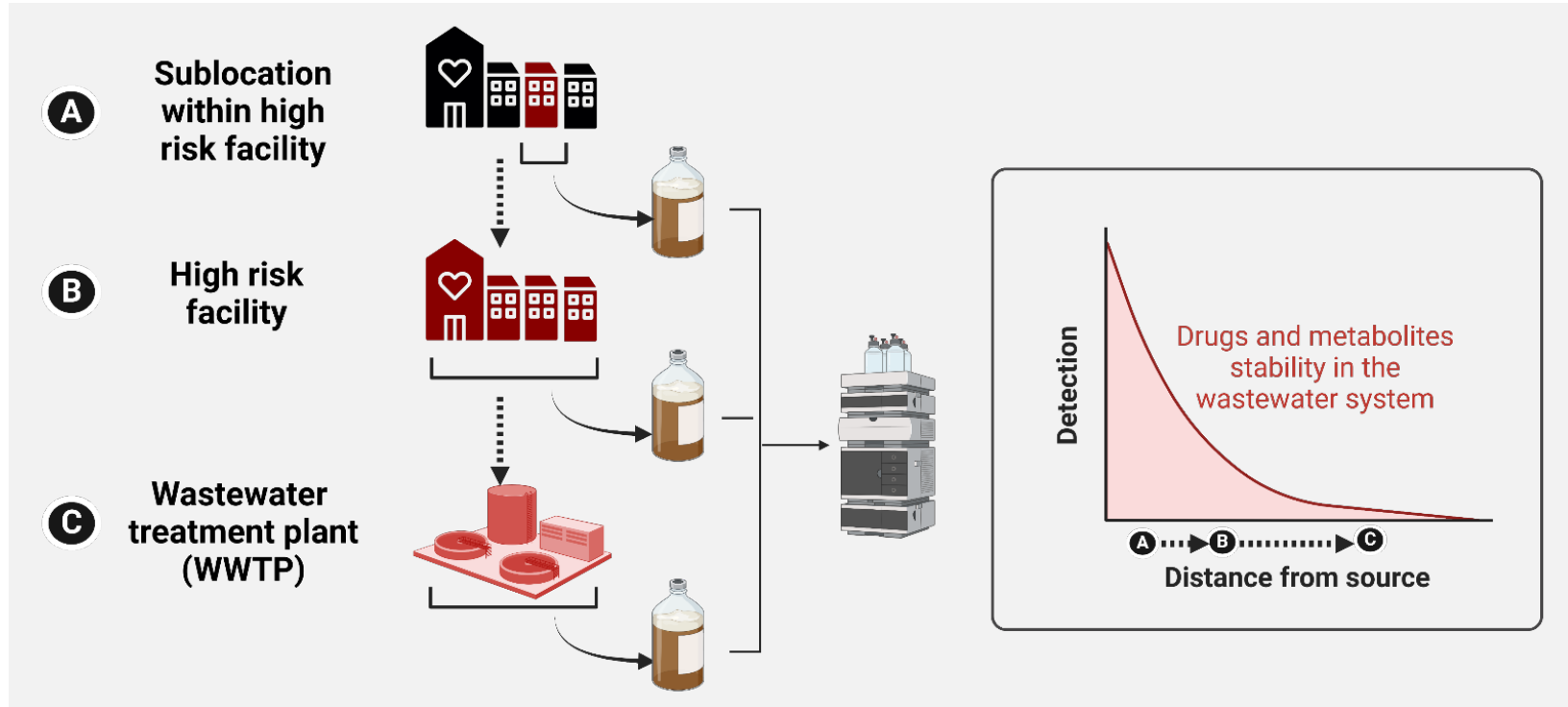


SoPA at High-Risk Facilities

Opioid Toxicity in Methamphetamine Drug Supply



The Case for Upstream Surveillance

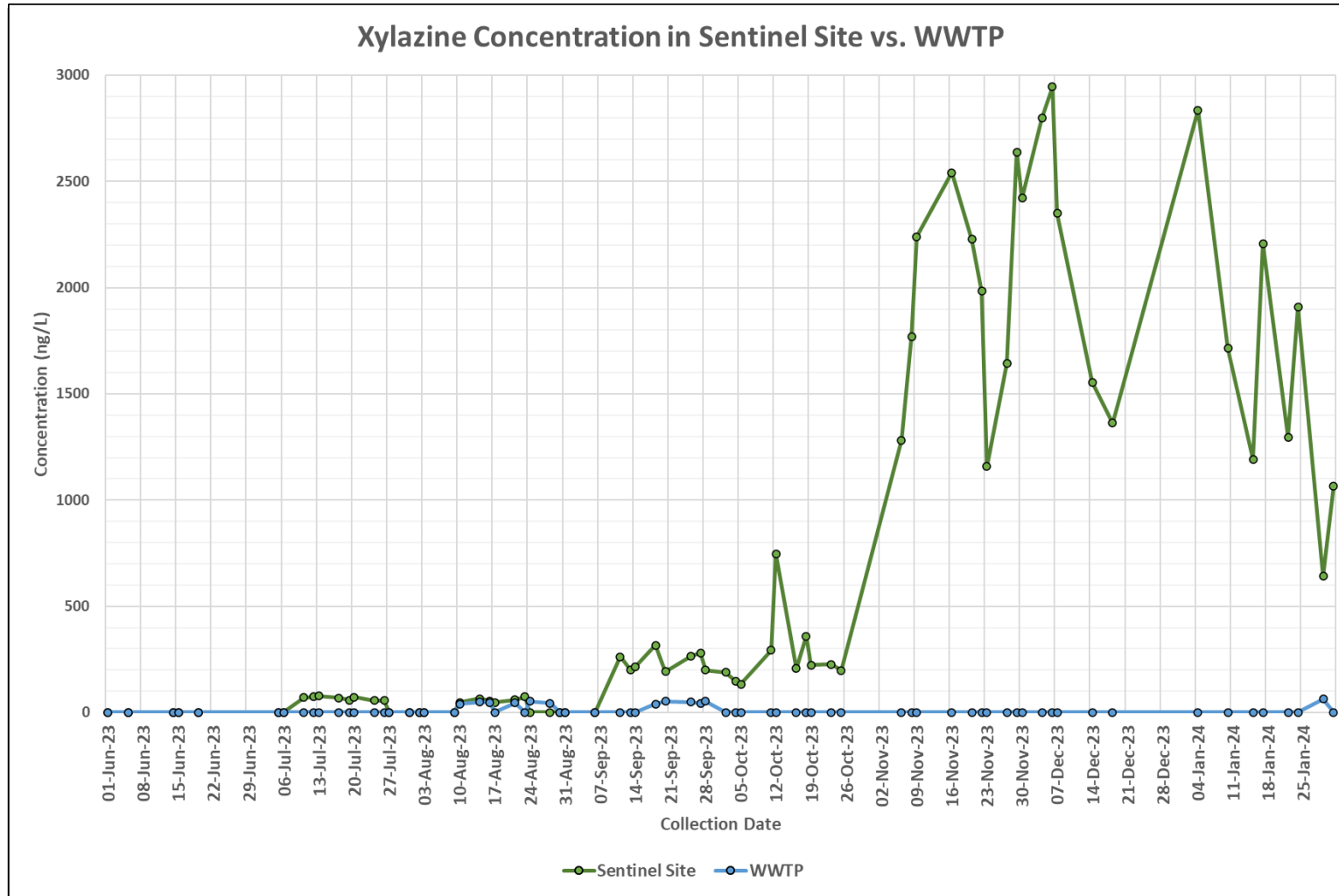


WBS across a range of scales can answer different questions



Granular data has not been accessible in the past

The Case for Upstream Surveillance



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 $- 4_2 4_4^c \tilde{c} 3 \tilde{a} 3ff_j \tilde{c} \tilde{a} 02ff_j \tilde{c} 0ff_j$
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 $\tilde{A} \tilde{A} \emptyset^o \tilde{a} \tilde{c} \tilde{a} 0ff_j \Delta_4 -$
 $\tilde{s} 2_4 \tilde{c} 3$



Takeaway.....

Wastewater surveillance makes possible proactive, data-based community and environmental health.

Upstream data can improve health outcomes through targeted response.



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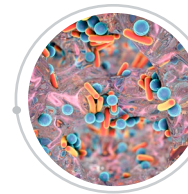
Summary



Wastewater Monitoring has tremendous value for One Health Initiatives



Continue to maximize the value of wastewater



Translating data to action



Combination of city-wide locations AND granular/nodal-based locations