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# BRIDGING ACADEMIA, ENTERPRISE, MUNICIPALITIES

## Part 1: Academia and Municipalities 9:30-10:40

9:30 The Role of Post-Secondary Institution  
Water Centres and Institutes

9:40 Carlos Diaz, Lambton College

9:50 Martha Dagnew, University of Western

10:00 BREAK

10:30 Elsayed Elbeshbishy, TMU





**Toronto  
Metropolitan  
University**

**Urban  
Water**

**ANGELA MURPHY, DIRECTOR**



# URBAN WATER TMU IS A...

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- Research centre conducting transdisciplinary research
  - urban water management
  - natural systems and green technologies
  - freshwater science and governance
  - 40 faculty, 130 students and post docs
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FACULTY/HQP ACROSS

6 FACULTIES & 13 DEPARTMENTS

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NATURAL SCIENCES | ENGINEERING | POLICY | LEGAL LANDSCAPES | SOCIAL SCIENCE ARENAS



## MICROPLASTICS

Dr. Roxana Suehring - Persistent, Mobile and Toxic Substances

Highly polar, low volatility, low organic absorption

Not removed by WWTPs, Up-concentrate over time

Forensic fingerprinting - Mass-spectrometry and LDIR spectroscopy

Chemical polymer with additives (flame retardant, stain resistant)

Rivers flowing north – bioaccumulation, Inuit health impacts, polar bears



## HYDROPONIC GREEN WALL

Green infrastructure, aerosol biofiltration capacity

Air pollution increasing globally, volatile organic compounds are known carcinogens

From industrial combustion and materials prevalent in our homes (furniture, insulation, house cleaning products)

Microbial ecosystem in the hydroponic root system absorbs VOCs

VOC concentrations decreased significantly over time

acetaldehyde, benzene, toluene, m-xylene, tetrachlorethylene, chloroform





## WASTEWATER SURVEILLANCE OF INFECTIOUS DISEASES

Transdisciplinary: Drs. Kimberley Gilbride,  
Claire Oswald (11 other TMU researchers)

Province of Ontario's Wastewater Surveillance  
Initiative

Wastewater monitoring, virus shed in  
wastewater, RNA is signal in advance of  
clinical indicators

Has enabled several public health  
interventions since 2021

1 WWTP, 6 upstream communities, 9 high-risk  
congregate facilities e.g. homeless shelters,  
LTCHs, hospitals

20 HQP trained since July 2020, Funding nearly  
\$4M



JET ICE  
RESEARCH



Jet Ice Research Chair – Stefania Impellizzeri

Sustainable and high performance paint formulas and ice making

JetIce history – Doug Moore, Maple Leaf Gardens Chief Engineer formed the company

Water Analytics Lab development of molecules

Experimental Lab testing of molecules on rink surface





FLUSHABILITY  
LAB

Residential Drain line, Municipal Sewer Drain line

About 15 y ago, manufacturers started labelling items as “flushable”

Result was \$250M repairs at WWTP annually, clogged sewer drain lines, residential blockages

International Water Service Flushability Group formed and created protocol and IWSFG Logo

In a study of 101 single use products, not one wipe fell apart or dispersed safely

Testing with obstructions, variable flow and pressure



# OWC's WATER CENTRES & INSTITUTES COMMITTEE



**GLIER**

GREAT LAKES INSTITUTE FOR  
ENVIRONMENTAL RESEARCH  
at the University of Windsor



Lambton  
Water Centre

**LAURIER**   
*Inspiring Lives.*

Laurier Institute for Water Science



UNIVERSITY OF TORONTO  
FACULTY OF APPLIED SCIENCE & ENGINEERING  
Institute for Water Innovation



**MORWICK**  
**G360**  
GROUNDWATER RESEARCH INSTITUTE



**Toronto  
Metropolitan  
University**

**Urban  
Water**



**Western  
Engineering**  
**WesternWater Centre (WWC)**

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## BENEFITS TO A UTILITY WORKING WITH A UNIVERSITY?

- Concentration of high caliber expertise
- State-of-the-art equipment
- Students as potential future employees
- Cost-effective – no consulting fees
- Unbiased, non-partisan opinion and research



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## WHAT ARE THE CHALLENGES?

### **EXPECTATIONS AND DELIVERY ARE MISMATCHED**

- The research team doesn't act as a consultancy, expect a research paper

### **SOLUTION**

- To reduce the gap between expectations increase communication
- Request a Gantt chart and invest time in regular meetings
- Request preliminary results part way through project

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# WHAT ARE THE CHALLENGES?

## LEGAL AGREEMENTS

- Procurement, cannot sole source
- Legal agreements are labour intensive and time consuming and pose a barrier to projects

## SOLUTION

- Develop a template agreement
- Let the legal departments sort out the standard IP, insurance attestations
- Just attach a simple appendix with high level deliverables and fee schedule for research projects
- For example, in 2020 City of Toronto developed a template with TMU (and 7 other institutions)



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## PATHWAY TO SUCCESS

- Find the expert, test the relationship with a simple project
- Develop relationship, regular meetings, invest time
- Clearly articulate what you want and format of results, ask for a Gantt chart with regular meetings and preliminary results
- Develop a template legal agreement with the academic institution to facilitate future projects





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Research Centre**

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