

# EWQA NEWSLETTER

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ISSUE 6

WELCOME TO THE ENHANCED WATER QUALITY ASSURANCE (EWQA) NEWSLETTER, AN E-UPDATE TO KEEP PROVINCIAL HEALTH OFFICER (PHO) APPROVED DRINKING WATER TESTING LABORATORIES AND PARTNERS INFORMED ABOUT EWQA ACTIVITIES.

TO BE A RECOGNIZED QUALITY PARTNER IN DRINKING WATER MICROBIOLOGY LABORATORY BEST PRACTICES FOR THE PROTECTION OF THE PUBLIC HEALTH OF ALL BRITISH COLUMBIANS.

NEWSLETTER WORKING GROUP: JENMEI HE, VEENITA SINGH, AMAN GALYMOV

## MEET TIM CROWTHER

A PASSION FOR WATER QUALITY AND COMMUNITY

If you've spent any time around the Enhanced Water Quality Assurance (EWQA) community, chances are you've crossed paths with Tim Crowther. A dedicated member of EWQA for more than 20 years, and a professional in the environmental testing field for over three decades, Tim brings a wealth of expertise, energy, and global perspective to everything he does.

Currently serving as Client Integration Manager at ALS Environmental, Tim leads the implementation of global digital systems designed to streamline processes and enhance client experiences. A Chartered Chemist and proud member of the Royal Society of Chemistry, he holds degrees from King's College London and the University of British Columbia.



## WHAT'S NEW

### Meet Tim Crowther

A Passion for Water Quality and Community

### Expect the Unexpected

Safety Risks in Drinking Water Laboratories

His technical knowledge is matched only by his commitment to ensuring safe, reliable drinking water for communities across British Columbia. Tim is grateful to work alongside such a professional and dedicated EWQA team in pursuit of that shared mission.

Tim's journey has been anything but ordinary. After immigrating to Canada from England in 1992, he soon embarked on an extraordinary chapter in Indonesia. There, he spent nearly two years designing and operating an environmental laboratory while leading a capacity-development project to help achieve accreditation for the Indonesian government's drinking water testing laboratory. The experience sparked a lifelong appreciation for international travel and cultural exchange (Sulawesi, Indonesia, remains his favorite destination).

Outside of his professional work and volunteer role on the EWQA Steering Committee, Tim can most often be found enjoying the outdoors. He loves traveling and hiking, but nothing brings him greater joy than supporting his children's pursuits. His son Ben (23) and daughter Sophie (21) are both pursuing their dreams of professional soccer careers. Tim and his wife, Linda, have been married for 27 years and are their biggest supporters. For Tim, family time is what matters most.

Please join us in celebrating Tim's remarkable contributions to EWQA and the broader water quality community.



**Tim Crowther**

#### **EWQA Assessor Team Formation**

##### **How are EWQA assessor teams formed for onsite assessments?**

- A minimum of two assessors are assigned by the Provincial Coordinator.
- Assessors are paired based on experience, complementary skill sets, and the avoidance of conflicts of interest.
- Assessors are selected from different laboratories to ensure balanced perspectives and minimize perceived bias.
- The Provincial Coordinator designates a Lead Assessor to coordinate the onsite assessment.

**PHEWQA\_907\_0002PR1 - Overview of the EWQA Certification Renewal Process**

# EXPECT THE UNEXPECTED

## SAFETY RISKS OF WORKING WITH SAMPLES IN ENVIRONMENTAL DRINKING WATER LABORATORIES

### DANIEL PIVA

Environmental drinking water laboratories routinely receive samples from diverse and sometimes uncontrolled sources, including distribution systems, wells, surface water, treatment plants, and field investigations. While these samples may appear harmless, they often arrive without complete information about source conditions, contamination events, or chemical additions used during field sampling. Because the composition of the sample is not always fully known at intake, analysts must treat every sample with caution.

### HAZARDS IN THE LAB

#### Chemical Hazards

Even potable water can contain unexpected or harmful chemicals due to:

- Accidental industrial discharge.
- Pipe corrosion byproducts.
- Disinfection byproducts.
- Field preservation chemicals (e.g., HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, NaOH).

Potential risks include:

- Chemical burns from highly acidic or caustic preserved metals samples.
- Toxic inhalation from volatile organics.
- Hazardous reactions when samples containing oxidizers, reducers, or unknown organics are mixed with reagents.

#### Physical Hazards

Submissions of samples may include:

- Broken glass inside sample coolers.
- Pressurized containers from temperature changes.
- Sediment or debris that can puncture gloves.
- Frozen samples that can crack unexpectedly when thawing.

#### Biological Hazards

Drinking water is usually low risk, but environmental submissions—especially during contamination events or boil water advisories—may contain:

- Pathogenic bacteria (e.g., *E. coli*, *Campylobacter*).
- Protozoa (e.g., *Giardia*, *Cryptosporidium*).
- Viral particles in sewage impacted sources (“Thetis Lake swimmers fell ill from norovirus, lab tests find - Victoria Times Colonist”)
- Biofilm fragments containing opportunistic pathogens (e.g., *Legionella*).

Exposure can occur from:

- Aerosols produced during filtration or shaking.
- Splashing during sample transfers.
- Improper handling of membrane filtration waste.

#### Cross Contamination Risks

Unknown or poorly documented samples can:

- Spread microbial contamination to clean benches
- Compromise microbiological media.
- Transfer chemical contaminants to other samples or instruments.

This not only creates safety concerns but may also produce false positives or invalid results.

## HOW TO PROTECT YOURSELF IN A DRINKING WATER LAB

#### Use Proper PPE

Minimum recommended PPE for handling unknown water samples includes:

- Lab coat of appropriate size.
- Safety glasses or splash goggles.
- Nitrile gloves.
- Closed-toe, nonabsorbent footwear.

#### Maintain Clear Labeling and Isolation

- Immediately tag any unlabeled or questionable sample as “unknown hazard—handle with caution.”
- Store unknown or suspicious samples in secondary containment.
- Do not place them in areas designated for sterile or low risk samples.

### **Open Samples Carefully and in the Right Location**

- Open potentially hazardous or strongly preserved samples in a fume hood.
- Ideally, perform microbiological processing (filtration, media transfers) in a biosafety cabinet when sample quality is questionable or during contamination events.
- Unpack coolers on sturdy floors or counters, not lab benches, to prevent cross contamination.

### **Follow Safe Handling Techniques**

- Never sniff samples—even for “odor checks.”
- After vigorous shaking, open bottles slowly to prevent aerosol release.
- Use splash shields during subsampling.
- Keep preservatives in mind: metals bottles with nitric acid are extremely acidic (often pH < 2).

### **Proper Decontamination & Disposal**

After handling samples:

- Disinfect surfaces with approved laboratory disinfectants.
- Dispose of preserved samples as hazardous waste.
- Treat microbiologically contaminated waste per biosafety procedures.
- Autoclave filtration waste before disposal.

### **Example 1: Acid Preserved Sample Causes Chemical Burns**

A drinking water lab received an incorrectly collected metals sample preserved with concentrated nitric acid in a microbiology bottle. The bottle was overfilled, and when opened, acid splashed onto the analyst’s wrist, causing a chemical burn.

Prevention: Inspect fill levels before opening; wear splash goggles and nitrile gloves that extend past the cuff.

### **Example 2: Sewage Intrusion in Distribution System Sample**

A routine distribution system sample was submitted without any indication of potential contamination. Upon filtration, the analyst noticed strong odor and turbidity. Subsequent testing revealed fecal contamination and high levels of *E. coli*.

Prevention: Always treat uncharacterized samples as potentially contaminated; avoid sniff tests; ideally, conduct filtration in a biosafety cabinet during unusual events or when sample integrity is uncertain.

### **Conclusion**

Environmental drinking water laboratories must approach all samples with a high level of caution. Even though drinking water is typically low risk, samples can contain unexpected chemical, biological, or physical hazards—especially during contamination events or when field conditions are unclear. By using proper PPE, engineering controls, safe handling practices, and strong sample intake procedures, laboratory staff can protect themselves and maintain a safe workspace.