BRITISH COLUMBIA
CENTRE ON
SUBSTANCE USE

Networking researchers, educators & care providers

Drug Checking Implementation Guide

Lessons learned from a British Columbia drug checking project

2022

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Document Purpose

This implementation guide brings operational knowledge generated through a multi-site British Columbia drug checking evaluation together in one place to provide comprehensive information support for those interested in implementing or expanding drug checking services in their community, region, or province.

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Target Audience

Community groups, organizations that deliver health services, policy makers and people with lived and living experience across Canada

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Land Acknowledgement

The British Columbia Centre on Substance Use would like to respectfully acknowledge that the land on which we work is the unceded territory of the Coast Salish Peoples, including the territories of the xʷməθkwəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and səlílp lwətaɬ (Tsleil-Waututh) Nations.

We recognize that the ongoing criminalization, institutionalization, and discrimination experienced by people who use drugs disproportionately harm Indigenous peoples and that continuous efforts are needed to dismantle colonial systems of oppression. We are committed to the process of reconciliation with Indigenous peoples and recognize that it requires significant and ongoing changes to the health care system.

We hope that this guide contributes to developing systems of care that provide safe, respectful, evidence-based support for people at risk of harms from the toxic unregulated drug supply.

About the British Columbia Centre on Substance Use

The BC Centre on Substance Use (BCCSU) is a provincially networked organization with a mandate to develop, help implement, and evaluate evidence-based approaches to substance use and addiction. The BCCSU seeks to improve the integration of best practices and care across the continuum of substance use through the collaborative development of evidence-based policies, guidelines, and standards. With the support of the Province of BC, the BCCSU aims to transform substance use policies and care by translating research into education and care guidance, thereby serving all British Columbians.

The BCCSU seeks to achieve these goals through integrated activities of its three core functions: research and evaluation, education and training, and clinical care guidance.

Research and Evaluation—Leading an innovative multidisciplinary program of research, monitoring, evaluation, and quality improvement activities to guide health system improvements in the area of substance use.

Education and Training—Strengthening addiction medicine education activities across disciplines, academic institutions, and health authorities, and training the next generation of interdisciplinary leaders in addiction medicine.

Clinical Care Guidance—Developing and helping implement evidence-based clinical practice guidelines, treatment pathways, and other practice support documents.

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Partner organizations delivering drug checking services

HIV/AIDS Network, Outreach and Support Society (ANKORS)
ASK Wellness Society
Canadian Mental Health Association—Mid-Island Branch
Get Your Drugs Tested
Portland Hotel Society
Vancouver Coastal Health Authority—Insite and Overdose Prevention Society
SafePoint—Lookout Society
Purpose Society
University of British Columbia Okanagan—Harm Reduction Team (UBCO HaRT)

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- Alliance for Collaborative Drug Checking
- ANKORS
- BC Centre for Disease Control
- ASK Wellness
- City of Vancouver
- CRISM
- Fraser Health
- Get Your Drugs Tested
- Health Canada's Drug Analysis Service
- Health Canada's Substance Use and Addictions Program
- Interior Health
- Portland Hotel Society
- Providence Health Care
- Providence Health Care Research Institute
- Provincial Toxicology Centre
- St. Paul's Foundation
- Toronto's Drug Checking Service
- University of British Columbia
- Vancouver Coastal Health
- Vancouver Foundation
- Vancouver Island Drug Checking Project
- Vancouver Island Health Authority

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Executive Summary

The drug poisoning crisis in Canada continues to grow and is fueling an epidemic of fatal overdoses. Despite the declaration of a public health emergency in British Columbia (BC) 2016, the illicit drug supply in the province has become increasingly toxic, variable, and unreliable. Among several harm reduction initiatives intended to address the drug poisoning crisis, drug checking is a tool that helps us better understand what is in the drug supply and identify potentially harmful substances in real-time.

Drug checking is not new. As early as in the 1990s, raves and music festivals offered drug checking as small grassroots efforts. Since then, drug checking technologies have become more widely available in community settings at legally designated sites for anyone who wants to know more about the contents of their drugs.

The BC Centre on Substance Use (BCCSU) Drug Checking Project was initiated in 2017 with funding from Health Canada and Vancouver Foundation to support the implementation and evaluation of drug checking in community settings in BC. The BCCSU partnered with several community organizations across the province interested in or already offering drug checking services. These services used a combination of a Fourier transform infrared spectrometer with fentanyl and benzodiazepine immunoassay strips, technologies that are relatively easy to use, portable, and robust enough to detect a wide variety of substances. Drug checking was offered in overdose prevention sites, supervised consumption sites, music festivals, and other community settings specifically designated for drug checking. To date, drug checking services that are part of this project have tested over 40,000 samples. The data from these samples have illuminated trends in the drug supply, identified novel substances, and contributed to the recognition of the current public health emergency in BC as a crisis resulting from a toxic drug supply.

Over the past five years, drug checking services in this project have grown from a few locations offering drug checking during limited hours to ten organizations offering service in all five regional health authorities in BC. Mail-in services are further expanding this reach to more rural and remote areas and to people who may not access drug checking in person. Beyond this project, networks of researchers, policy makers, technicians, and community advocates are working to build and expand the knowledge around methods and best practices in the design and implementation of drug checking services, as well as innovations in testing technologies that are appropriate to community settings.

This guide builds on the operational knowledge developed over the course of this project and is intended to help groups that are looking to implement a drug checking service in their community.

With the toxic drug supply showing no signs of stabilizing, there is a growing demand for drug checking services in communities. Drug checking, as part of a broader harm reduction strategy, is one way to help address the current drug poisoning crisis. It is a tool that can be used to shed light into the black box of the unregulated drug supply and help empower people with information to make decisions about their drug use.

Common Acronyms

ANKORS	HIV/AIDS Network, Outreach and Support Society
BCCDC	British Columbia Centre for Disease Control
BCCSU	British Columbia Centre on Substance Use
DAS	Drug Analysis Service (Health Canada)
FNHA	First Nations Health Authority
FTIR	Fourier transform infrared spectroscopy
GCMS	Gas chromatography-mass spectrometry
GYDT	Get Your Drugs Tested
LCMS	Liquid chromatography-mass spectrometry
OPS	Overdose prevention services/sites
qNMR	Quantitative nuclear magnetic resonance spectrometry
PWLLE	People with lived and living experience
SCS	Supervised consumption services/sites
SUAP	Health Canada's Substance Use and Addictions Program
UPHNS	Urgent Public Health Needs Services

1.0 Introduction

Canada is in the grip of a public health crisis from a toxic drug supply. From January 2016 to June 2021, there were 24,626 apparent opioid-related deaths and 27,604 opioid-related and 12,338 stimulant-related hospitalizations due to toxic drug poisoning in Canada (excluding Quebec).[1] In British Columbia (BC), death rates in 2021 that were attributed to toxicity of the unregulated drug supply exceeded 43 deaths per 100,000 individuals,[2] and for the first time in generations life expectancy at birth in the province is declining.[3]

As a result of the toxic drug supply and overdose-related deaths, for the first time in generations, British Columbia's life expectancy at birth is declining.

The toxic drug crisis has spurred a wide range of overdose prevention responses across public systems, including health, housing, public safety, and other sectors. Drug checking programs and services are one such response.

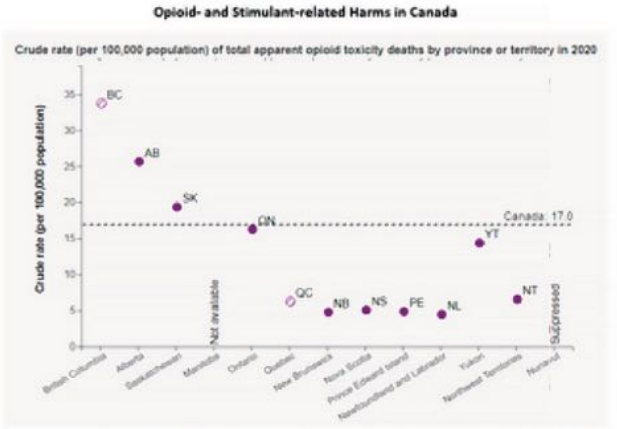
Drug checking is an evidence-informed harm reduction tool that allows people to check the contents of their drugs. Point-of-care drug checking services can test for a range of substances, including opioids,

1 Special Advisory Committee on the Epidemic of Opioid Overdoses. Opioid- and Stimulant-related Harms in Canada. Ottawa: Public Health Agency of Canada; March 2022. Available at https://health-infobase.canada.ca/substance-related-harms/opioids-stimulants/

2 See BC Coroners Service. Illicit Drug Toxicity Deaths in BC. January 1, 2012-February 28, 2022. Victoria, BC: Government of British Columbia; 12 April 2022. Available at https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/illicit-drug.pdf

3 See Statistics Canada. Changes in life expectancy by selected cause of death, 2017. Government of Canada; 30 May 2019. Available at https://www150.statcan.gc.ca/n1/daily-quotidien/190530/dq190530d-eng.htm

stimulants, and other psychoactive drugs such as MDMA (3,4-methylenedioxymethamphetamine), ketamine, and benzodiazepines. Available in overdose prevention sites (OPS), supervised consumption sites (SCS), music festivals, and other community settings, these services give people results in less than 10 minutes.



Source: Special Advisory Committee on the Epidemic of Opioid Overdoses. Opioid- and Stimulant-related Harms in Canada. Ottawa: Public Health Agency of Canada; June 2021. https://health-infobase.canada.ca/substance-related-harms/opioids-stimulants

https://health-infobase.canada.ca/substance-related-harms/opioids-stimulants/graphs

In Canada, drug checking started nearly two decades ago in the electronic music festival scene when the Vancouver chapter of DanceSafe began pill testing in 1999 at raves. Shortly after, a community group in BC's West Kootenay began offering drug checking services at the Shambhala Music Festival in Salmo. What started as a small grassroots effort in the early 2000s became a full-on drug checking service by 2019, where 70 trained community volunteers worked 16 hours a day to provide thousands of checks during the festival.[4] The compelling nature of the Shambhala experience sparked an interest in drug checking at other festivals in Canada, and drug checking is increasingly offered as a part of a larger harm reduction service at these events.

4 See Sage C, Michelow W. Drug checking at music festivals: A how-to guide. Nelson, BC: ANKORS; 2016. Available at https://www.ankorsvolunteer.com/drug-checking-information.html

As the toxic drug crisis intensified in 2015 and 2016, there was a growing interest in exploring the feasibility of drug checking services beyond the festival crowd at harm reduction programs designed to reach other populations of people who use drugs. With increasing unpredictability in the illicit opioid market in particular, community-based drug checking services offered a way to see into the "black box" of the unregulated drug supply. Concurrently, there was more interest among researchers to develop accurate, inexpensive drug checking technologies suitable for use in field situations.

In 2017, Health Canada's Substance Use and Addictions Program (SUAP) funded the BC Centre on Substance Use (BCCSU) to collaborate with health system and community partners in BC to implement and evaluate a drug checking pilot project over five years, with additional support from the Vancouver Foundation. As of June 2021, the BCCSU Drug Checking Project was working with nine partners in 14 settings located in four of BC's regional health authorities to deliver community-based drug checking services.

In collaboration with Vancouver Coastal Health Authority, the BCCSU Drug Checking Project checked its first drug sample on October 31, 2017 at Insite, a SCS in Vancouver, using a Fourier transform infrared (FTIR) spectrometer with fentanyl test strips. The project expanded to other SCS and OPS,[5] to community events elsewhere in Vancouver, and then to more sites in other parts of BC. In 2017, the BCCSU released an evidence review of available drug checking technology, analyzing their speed, ease of use, affordability, rigour, and accuracy.[6]

5 Supervised consumption services provide hygienic environments where people can consume illegal drugs under the supervision of a health care professional, a trained allied service provider, or a PWLLE without the risk of arrest for drug possession. Established in BC under a December 2016 Ministerial Order, OPS are managed by the province's health authorities in co-operation with community partners. These designated spaces—offered in existing service settings or stand-alone dedicated locations—provide on-site monitoring for people at risk of overdose and rapid response when an overdose occurs. Supervised consumption services require municipalities to seek a *Controlled Drugs and Substances Act* exemption from the federal Minister of Health. An exemption is not required to establish an OPS in BC.

Comprehensive operational guidance for supervised consumption services was released by the BC Centre on Substance Use and the BC Ministry of Health in 2017, and is available at https://www.bccsu.ca/wp-content/uploads/2017/07/BC-SCS-Operational-Guidance.pdf Comprehensive operational guidance for OPS was developed by BC's Interior Health Authority, revised in 2020, and is available at https://www.interiorhealth.ca/sites/Partners/HarmReduction/Documents/Overdose%20Prevention%20Sites%20Manual.pdf

6 See Kerr T, Tupper K. *Drug Checking as a Harm Reduction Intervention—Evidence Review.* Vancouver BC: BC Centre on Substance Use; December 2017. Available at https://www.bccsu.ca/wp-content/uploads/2017/12/Drug-Checking-Evidence-Review-Report.pdf

The evaluation component of the SUAP-funded pilot project had the following objectives:

- to evaluate the point-of-care drug checking intervention at select SCS, OPS, and other health authority-sanctioned sites in BC through a mixed-methods approach
- to assess the performance of two point-of-care drug checking technologies—FTIR spectroscopy and test strips—in the context of the toxic drug crisis
- to generate knowledge on the feasibility, uptake, and behavioural modifications that result from drug checking for the purposes of refining and informing future interventions

This report brings together in one place the operational knowledge generated through this project—a resource for those interested in implementing or expanding drug checking services in their community, region, or province. **The report includes information for policy makers, funders, program leaders, staff, volunteers, and people who use drugs about:**

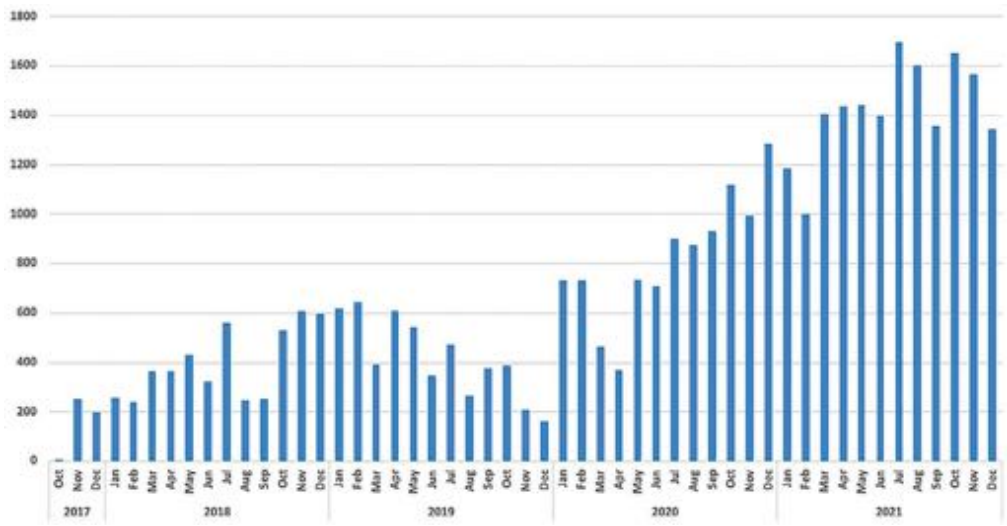
- regulatory developments that continue to shape how services are delivered
- program planning and implementation, including practical program descriptions, site management, program protocols, and training information
- cross-sector partnership-building and strategies to support the uptake of programs for people who use drugs across multiple setting types
- technologies, with an analysis of the available systems and their costs
- recent evidence produced about drug checking implementation

1.1 Overview of the BCCSU Drug Checking Project

The BCCSU Drug Checking Project was initiated in 2017 to implement and evaluate drug checking services in BC communities. As of 2021, drug checking services with FTIR spectroscopy and test strips are offered in four of five regional health authorities in BC—Interior Health, Vancouver Coastal Health, Fraser Health, and Island Health. Currently, there are nine organizations operating 11 FTIR drug checking spectrometers through 17 access points, including one mail-in service. Northern Health Authority anticipates delivering FTIR drug checking services in two communities by 2022, and First Nations Health Authority is also exploring the implementation of drug checking services with FTIR technology. The BCCSU Drug Checking Project has collaborated with harm reduction organizations ANKORS and ASK Wellness to support FTIR drug checking at several large electronic music festivals in BC, as well as working with the Vancouver Coastal Health Authority to provide drug checking at events such as Pride Week in Vancouver.

Data on drug checking are collected at each partner site and recorded in a provincial data repository. As of January 2022, over 35,000 drug samples have been analyzed. With the scale-up of services over the past year, there has been a large increase in samples being checked compared to previous years, indicating a growth in service demand (see Figure 1 below). From these data, several reports and research products have been produced and distributed widely. Each month, a public health report is disseminated to over 100 public health partners and community organizations. These reports provide information on the frequency of drugs checked by drug category and health region, fentanyl and benzodiazepine positivity trends, and alerts issued in the past month from samples identified at drug checking services.

Figure 1. Number of Drug Samples Checked Per Month Across Partner Sites in BC Since the Start of the BCCSU Drug Checking Project



Research from this project has generated some important evidence to guide standardized and consistent testing methodologies. In partnership with the Drug Analysis Services (DAS) at Health Canada, the BCCSU Drug Checking project validated FTIR spectroscopy and test strip technologies[7] and has shared evidence-based reports and tools to improve the quality of drug checking results and methods.[8] Research with DAS and BC's Provincial Toxicology Centre has been used to create knowledge products that aid in more accurate and evidence-based methods in drug checking.

A concurrent evaluation of drug checking is underway to investigate ways that drug checking reduces harms associated with substance use.[9] A quantitative survey of service participants is being conducted to investigate how people engage with drug checking services and how using these services can impact their drug use. A qualitative study with key stakeholders is investigating the key factors supporting the implementation of drug checking services and identifying challenges and barriers. Several research projects investigating drug checking methodologies and technologies have provided a significant evidence base to support the use of FTIR spectroscopy and test strips in community settings. As results from these studies are released, they will continue to contribute to the growing field of drug checking research.

1.2 Regulatory Context

As drug checking involves interaction with controlled substances, it is important to understand the regulatory context under which drug checking operates. Internationally, some drug checking services operate under site-specific agreements and some within regulatory frameworks that support a broader suite of harm reduction services. Most, however, operate in a legal grey zone.[10] In Canada, the federal Controlled Drugs and Substances Act governs the regulatory environments across the provinces. As a result of the surging epidemic of deaths resulting from toxic drug poisoning since 2015, the regulatory environment surrounding drug checking services continues to evolve.

7 See Yau B, Arredondo J, Tobias S, et al. *Drug Checking: A field assessment of Fourier Transform Infrared (FTIR) Spectroscopy and fentanyl immunoassay strips as point-of-care drug checking technologies.* Vancouver BC: BCCSU, Vancouver Coastal Health; September 2019. Available at https://drugcheckingbc.ca/wp-content/uploads/sites/2/2020/05/FTIR_TestStrip_Field_Assessment-Sept2019.pdf

8 See a list of reports on technologies available at https://drugcheckingbc.ca/reports/

9 For more information on the research evaluation, visit https://www.bccsu.ca/drug-checking/

10 Jessaman R, Payer D. *Decriminalization: Options and Evidence. Policy Brief.* Canadian Centre on Substance Use and Addiction; 2018. Available at https://www.ccsa.ca/sites/default/files/2019-04/CCSA-Decriminalization-Controlled-Substances-Policy-Brief-2018-en.pdf

Canada

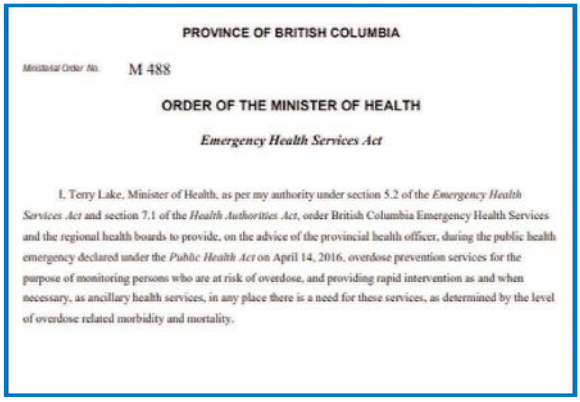
Apply for an exemption to the *Controlled Drugs & Substances Act*.

According to the Canadian Centre on Substance Use and Addiction, drug checking services in Canada exist in a legal context similar to SCS: staff may provide equipment or handle small amounts of controlled substances as part of testing procedures.[11] To operate a SCS legally, an organization must apply under federal Controlled Drugs and Substances Act for a Section 56 exemption.

In June 2021, in response to the amplifying impact of the COVID-19 pandemic on the toxic drug crisis, Health Canada issued an amended class exemption through Section 56 of the federal *Controlled Drugs and Substances Act*, allowing provinces and territories to establish urgent public health need sites (UPHNS). This class exemption has made it easier for provinces to legally designate drug checking, without having to apply for a more involved SCS designation. Drug checking services that are offered in SCSs are covered under the SCS designation.

British Columbia

In BC, where death rates resulting from toxic drug poisoning led to a public health emergency declaration in 2016, the provincial Minister of Health signed a ministerial order issued under the provincial *Health Emergency Services Act* and *Health Authorities Act* to support the development of OPS in the province.[12,13] The order gives BC



PROVINCE OF BRITISH COLUMBIA

Ministerial Order No. M 488

ORDER OF THE MINISTER OF HEALTH

Emergency Health Services Act

I, Terry Lake, Minister of Health, as per my authority under section 5.2 of the *Emergency Health Services Act* and section 7.1 of the *Health Authorities Act*, order British Columbia Emergency Health Services and the regional health boards to provide, on the advice of the provincial health officer, during the public health emergency declared under the *Public Health Act* on April 14, 2016, overdose prevention services for the purpose of monitoring persons who are at risk of overdose, and providing rapid intervention as and when necessary, as ancillary health services, in any place there is a need for these services, as determined by the level of overdose related morbidity and mortality.

11 Ibid.

12 Ministerial order supports urgent overdose response action. Government of British Columbia news release. Victoria, BC: Government of British Columbia; 12 December 2016. Available at https://news.gov.bc.ca/releases/2016HLTH0094-002737

13 In BC, OPS are managed by health authorities in co-operation with community partners to provide on-site monitoring for people at risk of overdose and rapid response when an overdose occurs. Supervised consumption services require municipalities to seek an exemption from federal drug laws. This process is not required to establish an OPS in BC.

Emergency Health Services and regional health authorities the ability to provide OPS as necessary on an emergency basis. Since then, OPS have been established in communities across the province, and in many cases these services have incorporated drug checking programs into their model.[14] Issuing a provincial ministerial order under existing provincial legislation has proven to be an effective regulatory approach for offering drug checking services in BC, an experience that may prove useful for other Canadian jurisdictions.

When Health Canada issued the amended class exemption through Section 56 of the federal *Controlled Drugs and Substances Act* in June 2021, BC implemented a specific designation for drug checking services to allow for a distributed model of drug checking.[15] The BC Distributed Drug Checking Services designation permits trained staff and volunteers to collect, store, and transport small samples of unregulated drugs, previously allowed only with a Section 56 exemption. Organizations in BC can apply for a designation through their regional health authority. Since the class exemption permits transportation and storage of drug samples, it is anticipated that most drug checking services will move to this new designation.

In summary, drug checking services in BC generally operate under one of the following designations:

- **Supervised Consumption Services (SCS)**—a federal designation for a site that allows drugs to be on site for the purposes of promoting safer use, including supervised consumption of drugs, and other harm reduction strategies. If drug checking services are included within the site designation, the exemption will include permission to handle, store, and transport samples with appropriate measures to log and track samples from point of receiving to point of destruction. For information on how to obtain a Section 56 exemption for SCS designation, see: https://www.canada.ca/en/health-canada/services/substance-use/supervised-consumption-sites/apply.html
- **Overdose Prevention Services (OPS)**—a provincial designation that permits drug use on site to minimize harms and prevent, or reduce, the risk of death. This designation does not permit storage or transportation of drug samples. A site may receive an OPS designation for drug checking only, which means drug checking services can handle and process samples for drug checking but use of drugs on site may not be permitted. Sites apply for provincial designation through local Medical Health Officers.

14 Overdose Prevention. Government of British Columbia; 2020. Available at https://www2.gov.bc.ca/gov/content/overdose/what-you-need-to-know/overdose-prevention

15 *Questions and Answers—Provincial/Territorial Class Exemptions: For Supervised Consumption Site Operators*. Health Canada. Available at https://uphns-hub.ca/wp-content/uploads/2020/06/Qs-and-As-Class-Exemption-April-20-2020-SCS-FINAL.pdf

- **BC Distributed Drug Checking Designation** (also known as UPHNS Designation)—a provincial designation in BC for drug checking services, allowed under the federal class exemption from Health Canada under Section 56 of the Controlled Drugs and Substances Act. This designation allows for the storage and transportation of samples, previously permitted only under SCS designation. Services that collect samples from one site and send to another site to be analyzed are required to apply for a BC Distributed Drug Checking Services designation from the local Medical Health Officer in the relevant health region and meet the requirements outlined in the application. For more information about the BC Distributed Drug Checking Services designation, see Appendix A.

What is important to remember is that all designations described above apply only to specific locations and transportation between those locations. This means it is still not legal for people to carry drugs on them, even for the purposes of drug checking, unless they are at a designated drug checking site or have permission to carry drugs between designated sites, leaving people vulnerable to prosecution under existing laws (for example, as they walk to a drug checking service). Services should ensure that they have designations in place to protect staff and people who use the service, and work with law enforcement as needed to be clear about what is permitted under these designations.

1.3 Partnerships and Stakeholder Engagement

The BCCSU Drug Checking Project started with developing partnerships with key stakeholders. Meetings with leaders in health organizations, provincial and federal government officials, groups led by people with lived and living experience (PWLLE) of drug use, and community-based harm reduction organizations helped to cultivate a strong understanding of how drug checking could be used alongside other harm reduction services as an innovative tool for overdose prevention and response.

From the outset, meaningful involvement from people who use substances has proved key for the development and implementation of drug checking services in BC. Feedback from community groups and organizations led by people who use drugs was critical for the direction that this project initially took.

- **People with lived and living experience (PWLLE):** People with lived and living experience of substance use participated in planning sessions during project development to help shape service delivery. This also led to PWLLE working in drug checking services as peer workers who are paid staff hired specifically for their lived experience and their unique ability to connect with others with shared experiences related to substance use. At some sites, peer workers partnered with technicians, testing drugs with test strips and helping to deliver drug checking results to service participants. At other sites, peer staff received training on the FTIR spectrometer and operated the drug checking service. At other engagement sessions, PWLLE identified key metrics for reporting on drug checking results and shaped how results were visualized and shared with the public. People who use drugs are often best suited to identify what works and does not work in drug checking services.
- **Health authorities and regional public health systems:** Forging partnerships with regional public health teams and key stakeholders in provincial ministries built the foundation for legitimizing drug checking as part of a larger harm reduction strategy. Medical Health Officers at each of BC's five regional health authorities were engaged to determine how drug checking would fit under existing regulatory requirements, as well as outlining the role of the health authority to support implementation of community drug checking. Harm reduction coordinators at health authorities supported the operationalization of the services in community sites. These key contacts are an important part of future sustainability planning. In some health authorities, the services are contracted out to service organizations and in other cases the health authority provides the drug checking service.
- **First Nations Health Authority (FNHA):** The FNHA, a province-wide health authority, is the health and wellness partner to more than 200 First Nations communities. The FNHA works with health system partners to advance harm reduction services, such as drug checking, through integration of cultural knowledge, traditional practices, and First Nations values in service of First Nation individuals, families, and communities. Recognizing that Indigenous people in BC are disproportionately affected by toxic drug poisoning, the FNHA has identified a range of innovative solutions to reduce drug-related harms and death.[16]

16 First Nations Health Authority (FNHA). *Policy Statement on Indigenous Harm Reduction*. First Nations Health Authority. Available at https://www.fnha.ca/Documents/FNHA-harm-reduction-policy-statement.pdf

Urgent action by all relevant stakeholders is required to address drug-related harms in Indigenous communities, and drug checking is one important strategy identified in the FNHA's *Framework for Action: Responding to the toxic drug crisis for First Nations*.[17] Currently, Indigenous communities in BC are expanding services to include drug checking and building capacity in communities to support these harm reduction efforts.

- **Provincial, national, and international drug checking networks:** The National and the Provincial Drug Checking working groups, in addition to the drug checking working group that is supported by the Canadian Research Initiative in Substance Misuse (CRISM), have brought together health officials, researchers, service providers, and technicians to stay informed about the latest drug checking methodologies, service innovations, and trends in the drug supply. The Drug Overdose and Alert Partnership (DOAP), hosted by the BC Centre for Disease Control (BCCDC), shares drug supply data collected from the drug checking projects (including the BCCSU Drug Checking Project, the Vancouver Island Drug Checking Project, and DAS). The DOAP shares these data, alongside data released from the BC Coroner's report on deaths related to toxic drug poisoning and administrative data on harm reduction supplies, to a wide representation of community partners, providing a provincial picture of the toxic drug crisis. Internationally, a network of researchers, service providers, and harm reduction advocates from North, Central, and South Americas have come together informally through a listserv to share knowledge and expertise as the field of drug checking grows. Locally, the BCCSU Drug Checking Project has established a community of practice that includes monthly technician working group meetings as a place to share best practices and for technicians operating services in BC to learn from each other.

- **Research networks:** Research helps foster ongoing innovation in drug checking. For example, Health Canada supported the incubation of new technologies through the Impact Canada Challenge. Competitors in the drug checking challenge sought to find ways to improve cost effectiveness and access to more accurate and comprehensive drug analyses with technologies that could be used in community settings. In another example, projects funded by SUAP frequently share findings and publications with one another, as well as working collaboratively on implementation objectives. Toronto's Drug Checking Service, coordinated by the Centre on Drug Policy Evaluation, and the Vancouver Island Drug Checking Project at the University of Victoria, along with the BCCSU Drug Checking Project, have been producing peer reviewed studies on drug checking and sharing progress

17 See FNHA. *A Framework for Action: Responding to the Toxic Drug Crisis for First Nations*. Available at https://www.fnha.ca/Documents/FNHA-Overdose-Action-Plan-Framework.pdf

across teams. These networks serve to strengthen the work of each project and the larger field of research in drug checking.

- **Laboratories:** Partnerships with the BC Provincial Toxicology Centre and the Health Canada's DAS have enriched the development of community drug checking with the capacity to provide deeper analyses of drug samples. Confirmatory testing with the Provincial Toxicology Centre and DAS helped validate the FTIR spectroscopy and test strip technologies by comparing results from community testing against those conducted in the laboratories. The partnership with DAS produced a drug reference library based on street-obtained samples sent for confirmatory testing. This open-source tool is available through the BCCSU Drug Checking Project[18] for free and used by drug checking services across Canada and the United States, augmenting the proprietary libraries. A quantification model for fentanyl developed with data from confirmatory testing has helped the project better assess differences in fentanyl concentrations across different locations and over time. Further research is planned to develop tools that are accessible to all drug checking programs and support more evidence-based methods and technologies for community settings. Partnerships with the Provincial Toxicology Centre and university labs are also opportunities to support confirmatory testing for community drug checking.

1.4 Technologies

The analytical capacity of various drug checking technologies is well documented in pharmaceutical and law enforcement fields. However, drug checking presents a somewhat distinct set of concerns with respect to portability, cost, ease of sample preparation, training requirements, speed, and capacity for detecting new compounds. In 2017, the BC Ministry of Health funded the BCCSU to complete an evidence review on drug checking, including an analysis of available drug checking technologies and an assessment of their suitability for drug checking service.[19]

This evidence review found each technology presented a different mix of strengths and challenges. Technical features are summarized in Table 1 to help assess their suitability for use in drug checking services.

18 Please see https://drugcheckingbc.ca/resources/drug-checking-library/ to access.

19 See *Drug Checking as a Harm Reduction Intervention—Evidence Review*, available at https://www.bccsu.ca/wp-content/uploads/2017/12/Drug-Checking-Evidence-Review-Report.pdf

Based on this review, the BCCSU Drug Checking Project determined that the use of two technologies in combination, FTIR and immunoassay strips, met several requirements that could support drug checking in community settings. Fourier transform infrared spectrometers produce results on a broad array of substances very quickly and therefore work well in high volume settings but may miss some adulterants at low concentrations. Immunoassay test strips are proven to be highly sensitive in detecting a variety of specific substances including fentanyl and benzodiazepines. This report primarily draws on the experience of programs that use these two technologies in combination, given that their respective strengths and weaknesses are complementary, their tandem use has proven feasible in a variety of stationary and mobile settings, and their costs are lower than other alternatives.

There is ongoing research and development efforts focused on technologies that cost less to build and operate and offer other advantages. The Vancouver Island Drug Checking Project is investigating the feasibility of different technologies (such as gas chromatography-mass spectrometry, Raman

Table 1. Comparative summary of device specifications

Technology	Detect a wide variety of compounds	Ability to detect fentanyl and other opioids	Ability to detect multiple compounds at once	Specificity	Sensitivity	Quantitative analysis	Can identify unknown compounds	Speed per sample	Cost	Suitable drug checking settings
Colorimetric Reagent Testing[4,17,20-23]	Moderate	Low	Low	Low	Low	No	No	<6 min	$	Stationary, Mobile
Fourier-transform Infrared Spectroscopy (FTIR)[24-27]	High	Moderate	High	High	High	Low	No	<2 min	$$	Stationary, Mobile
Thin Layer Chromatography (TLC) with UV detection[4,20,23-25]	Moderate	Weak	Moderate	Moderate	Moderate	Low	No	30 min, multiple at once	$$	Stationary
Capillary Electrophoresis (CE) with UV detection[20,28,29,28]	High	Moderate	Moderate	Moderate	Moderate	Moderate	No	<2min*	$$	Stationary
High Performance Liquid Chromatography (HPLC) with UV detection[4,17,20,24,28-31]	High	High	High	High	High	High	No	15 min	$$	Stationary, Mobile
High Performance Liquid Chromatography (HPLC) with MS detection[4,17,24,32-34]	Highest	Very high	Very high	Very high	Highest	Highest	Yes	7.5 min*	$$$$	Stationary**
Gas Chromatography (GC) with MS detection[4,17,24,32,35,36]	Very high	Very high	Very high	Very high	Very high	Very high	Yes	14.5 min*	$$$$	Stationary
Ion Mobility Spectrometry[37-42]	Moderate	Moderate	Moderate	Low	High	Moderate	No	<1 min*	$$	Stationary, Mobile
Ion Mobility with MS detection37-41	High	High	Very high	High	Very high	High	Yes	20-30min*	$$$$	Stationary

*These durations are estimates based on machine-specific run times alone, and do not include collection, preparation, report generation, or consultation.

** While this technology has also been used in mobile lab-in-a-van settings, but the equipment is not considered portable.

spectroscopy, infrared spectroscopy) for community-based drug checking.[20] One new technology developed to detect substances at very low concentrations—paper spray mass spectrometry[21]—holds promise for community-based drug checking and is currently being assessed by the Vancouver Island Drug Checking Project. Likewise, a federally funded Impact Canada drug checking technology challenge[22] saw new developments in potential technologies for drug checking to improve functionality in such areas as limits of detection, efficacy, portability, affordability, and quantification capacity. However, currently available technologies are limited to those analyzed in the BCCSU 2017 evidence review.[23]

Innovations in drug checking technology are exciting and promising. However, until a device is developed to overcome the existing limitations to drug checking technology, it is recommended to pair technologies to complement the strengths of different devices.[24] Some technologies excel at sensitivity but are limited to a specific drug (such as test strips), while others are limited in sensitivity but can identify a wide range of substances (such as FTIR spectrometers).

Access to laboratory technologies, such as those at the Health Canada's DAS and Provincial Toxicology Centre, can bolster the capacity of community services to identify novel substances and provide deeper insight into local drug supplies through confirmatory testing (see 3.5 Confirmatory Testing). Future advances in drug checking technologies will help make drug checking more accurate, affordable, and accessible.

20 Wallace B, Hills R, Kumar D, et al. Implementing an integrated multi-technology platform for drug checking: Social, scientific, and technological considerations. *Drug Testing and Analysis*. 2021 April;13(4):734-746. doi: 10.1002/dta.3022

21 Borden SA, Saatchi A, Vandergrift GW, et al. A new quantitative drug checking technology for harm reduction: Pilot study in Vancouver, Canada using paper spray mass spectrometry. *Drug Alcohol Rev*. 2021 August 4;31(2):410-418. doi:10.1111/dar.13370

22 See https://impact.canada.ca/en/challenges/drug-checking-challenge

23 See Kerr T, Tupper K. *Drug Checking as a Harm Reduction Intervention—Evidence Review*. Vancouver, BC: BC Centre on Substance Use; December 2017. Available at https://www.bccsu.ca/wp-content/uploads/2017/12/Drug-Checking-Evidence-Review-Report.pdf

24 Tobias S, Lysyshyn M, Buxton J, et al. A reply to "Drug checking for novel insights into the unregulated drug supply." *American Journal of Epidemiology*. February 2021;191(2): 253-254 . doi:10.1093/aje/kwab234

1.5 Settings

Community settings in OPS/SCS

While available at the large BC electronic music festivals for years, drug checking has recently been offered in OPS and SCS. These sites provide harm reduction services to people who use drugs regularly, are at high risk of overdose, who struggle with addiction, and who may be marginalized because of substance use, mental health, and/or poverty. Drug checking is usually offered as part of other harm reduction services such as injection booths and needle distribution.

These settings are often located in areas easily accessible to people who use drugs, especially for residents of marginalized neighbourhoods who may not be able to travel far to access services. Offering drug checking alongside other harm reduction services means service participants can check their drugs before using at the site. Information about harmful substances can be shared immediately with others using the same services, providing real-time interventions when a toxic supply hits the local drug market.

Working within these settings can pose some challenges for drug checking technicians. These settings can be stressful at times. Since technicians may be providing face-to-face service to participants as well as analyzing samples, technicians can sometimes experience stress when trying to meet service needs and concentrate on analyzing complex samples. Since funding may only cover one technician, there may not be additional staff or volunteers available to support sample collection or to provide harm reduction messaging and education when delivering results. Considerations for adequate staffing and supervisory support for technicians can go a long way in helping to keep staff safe and well (see 7.10 Prevent technician burnout).

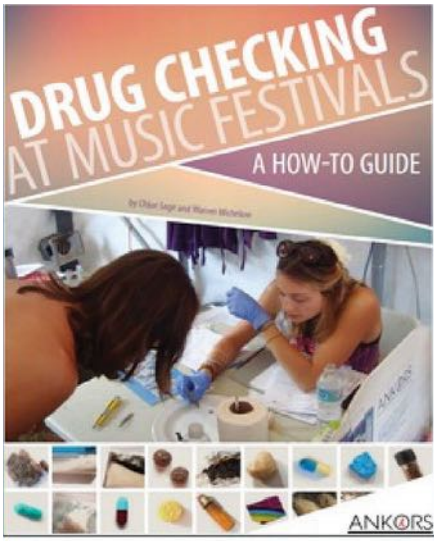
Overdose prevention sites and supervised consumption sites may not be comfortable spaces for everyone who uses drugs. As a result, drug checking may not be accessible to everyone. To improve access, some things to consider are the needs of other target populations. Is it a place where young people would feel comfortable? Is it open at times when people can access as they return home from work? Is there a way for someone to use the service without others knowing they are checking drugs? Depending on the target population, adjustments in setting may need to be considered.

Pop-up sites—sites set up temporarily—can be a good way to try out a location to see how it could work over long-term to be accessible to the local community of people who use drugs (see 2.1.iii Pop-up service model).

Festival settings

Until recently, drug checking has commonly been located within electronic music festival settings where drug use tends to be for recreational purposes rather than survival-based. Drugs commonly tested within these settings are MDMA, MDA, ketamine, cocaine, and lysergic acid diethylamide (LSD).

Festivals are usually multi-day events in loud, busy environments. Harm reduction services are offered almost around the clock, late into the night. These events may require a large team of trained staff and volunteers to run the service during long hours. Full transparency with all festival partners—about the approach used to deliver the service and other related health and legal considerations—helps support the level of trust required to run services with protections in place for people to bring substances for testing. Working with festival organizers can help determine the best course of action when approaching security and law enforcement about the establishment of drug checking at festivals.



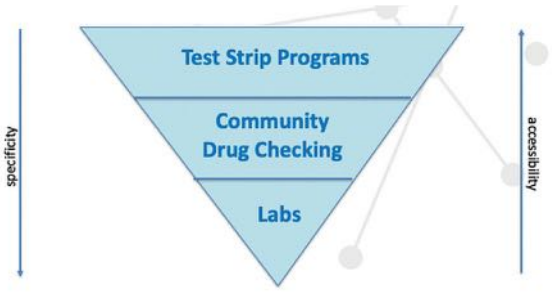
ANKORS, a community organization serving BC's Kootenay area, pioneered drug checking services at Canadian festivals. For many years, ANKORS has offered harm reduction, and pill and powder testing services at Salmo, BC's Shambhala Music Festival.

Drug checking in festival settings has been well established and there are resources that can help guide considerations for these settings.[25]

25 See Sage C, Michelow W. *Drug checking at music festivals: A how-to guide*. Nelson, BC: ANKORS; 2016. Available at https://www.ankorsvolunteer.com/drug-checking-information.html

2.0 Drug Checking Service Models

There are different levels of drug checking analysis available in BC, which vary in degrees of accessibility and specificity of analysis.



- The most accessible drug checking services are **test strip programs**, which are offered widely across BC by the health authorities, but they are limited to testing only the presence or absence of fentanyl or benzodiazepines.
- Drug checking services that offer the most detailed analyses are **laboratories** such as Health Canada's DAS and the BC Toxicology Centre, but they are not accessible to the public.

Community drug checking services that use FTIR spectrometers in combination with test strips give more robust analyses than test strips alone but not as robust as technologies used in laboratories. Fourier transform infrared spectrometers are also less widely accessible than test strip programs. This guide focuses on these community-based drug checking services.

2.1 Service Models in the BCCSU Drug Checking Project

The BCCSU Drug Checking Project partnered with several community organizations that were either already providing or interested in providing drug checking services. Most of these community organizations also offered other harm reduction services in addition to drug checking. Over the course of this project, a variety of service models have evolved at these sites, most notably in terms of how and when the collection, analysis, and the delivery of results take place. The following describes some of the different service models used across the partner sites in this project. These models are not mutually exclusive, and sites have used different service models at different times.

Table 2 summarizes the benefits and challenges of each model.

Staffing models have also varied over time, depending on resourcing and needs of each setting. See 2.2. Staffing Models and Competencies.

2.1.i Point-of-care

Point-of-care drug checking is delivered in-person to service participants who bring samples for analysis. Results are then delivered immediately (about 5–10 minutes) after the drug is analyzed. The service is located at a fixed site and has regular hours of operation. This model of drug checking services is usually embedded in a site that provides other harm reduction services such as safe consumption booths, nursing care, and harm reduction outreach.

Since point-of-care drug checking provides immediate results to service participants, the person can make informed decisions about using their drug right away. Service participants can speak directly to technicians and other drug checking support staff who can help clarify results that may be confusing or assist in finding more detailed information about unexpected results. At point-of-care sites, technicians and harm reduction workers can connect with service participants on a more personal level and refer them to other harm reduction services if needed. These person-to-person interactions are a valuable part of point-of-care drug checking and an important way to build rapport and connection with service participants that can pave the way for them to access other supports as well.

Location of services within a site can make a difference on the willingness and comfort level of community members to access the service. It is important to consider traffic flow and safety concerns. Service participants benefit from having some privacy when receiving results from the technician. Having a dedicated workspace that is slightly removed from busy parts of the site can allow the technician to better focus on analyzing samples when not offering results or harm reduction messaging to service participants. However, service participants should be able to observe their drug sample being processed, to avoid concerns about misplacing or tampering with a sample.

2.1.ii Distributed

With the implementation of the Distributed Drug Checking Services designation in BC, drug checking service models can incorporate a hub-and-spoke model that separates the collection, analysis, and results delivery of a drug checking visit. Samples may be collected at several sites and delivered to a centrally located drug checking service to be analyzed. This distributed model allows for more locations to participate in drug checking and for greater efficiencies in staffing and equipment. With the ability to collect samples off-site, services will be able to expand geographic reach and improve access to drug checking for those who may not be close to a point-of-care site. Distributed drug checking models stand to greatly improve accessibility of drug checking services.[26]

There are a few considerations when setting up a distributed drug checking model of service. It requires extra steps and extra time to deliver results. Since sample collection takes place at a different place and time from the analysis, a system must be devised for linking results back to the person. Some sites collect service participants' phone numbers or email addresses and use a handle or code name to link samples with the corresponding contact information. This way, technicians can reach out to a service participant as soon as results are available. In other cases, results may be written down and sealed in an envelope to be picked up by the service participant or delivered to them. In either instance, technician schedules shape turnaround times and getting results back may take up to a week. Another challenge is reaching the person with results if a phone number is recorded incorrectly or the person is unable to be contacted. Finally, while harm reduction information may be included in an email or a pamphlet enclosed with results, the loss of direct communication with the service participant means missed opportunities to engage in a discussion about harm reduction or to learn more about the sample through informal conversation.

To maintain anonymity, services must ensure that no personal information is retained that could connect a person to their drug checking results. Organizations involved should clearly and transparently outline policies and procedures around how they will manage personal identifying information, limit information collected, store information securely, and destroy contact information after delivering results.

26 The Vancouver Island Drug Checking Project is implementing and evaluating a distributed drug checking model that aims to improve access to drug checking services across Vancouver Island. See https://substance.uvic.ca/ for more information.

2.1.iii Pop-up

Pop-up services offer temporary point-of-care drug checking service, during an event or to explore the feasibility of the service at a site before investing long-term in that location. Drug checking at a community event such as the Pride festival and Overdose Awareness Day may also provide an opportunity to educate people about the benefits of drug checking and harm reduction as well as promoting other established drug checking locations.

Pop-up services also offer opportunities to explore how the service might be received in a community before investing in a full drug checking program. Offering temporary services at a community centre or health clinic for a month can help assess service uptake and generate interest within the community.

There are some challenges to offering temporary services. It takes time to establish any program and build trust with community members to assure them that drug checking is safe and accessible. Promoting the service ahead of time with clear information about location and time is important for a successful pop-up service.

It is critical to engage law enforcement prior to the service being offered. Temporary sites must be designated for drug checking and if local police are not made aware ahead of time or are not supportive of harm reduction efforts, it may put people at risk for police interactions or possession charges when trying to access the service.

2.1.iv Mobile

Mobile drug checking services move from location to location. A technician may operate out of a van that travels from location to location or may transport the equipment to sites that do not engage in drug checking directly, such as a supportive housing program or a youth health clinic.

A mobile service may be useful in a rural setting where communities are spread out over a large region. For people who are not able to travel to a larger city centre, a mobile service may encourage people who would otherwise not check their drugs by bringing the service to them. Setting up services in sites such as a community health centre or a youth centre can also have the advantage of reaching different drug using communities that may not normally access harm reduction services at OPS or SCS.

Mobile services that partner with other organizations to host a drug checking service benefit from developing partnerships and engaging in regular communication with service participants and community members. Planning for the possible increase in people coming to the site to get drugs checked and preparing staff to answer questions about drug checking can help the

service run smoothly and avoid confusion for service participants.

All drug checking sites in BC, fixed or mobile, must be designated by the regional health authority. For mobile services, community locations in which drug checking occurs must be listed on the designation application. Services must be provided in an indoor location, which can include a vehicle such as a van or a harm reduction tent at a festival. If drug checking occurs in a van, locations at which the van provides service must be specified as part of the application for designation. Locations may include parking lots or a tented common area where people may access the service outside a building.

Mobile drug checking services must also consider sample destruction methods. Without a fixed site, samples will either need to be destroyed at the mobile site or brought back to the central site for destruction and disposal. More information about BC requirements for mobile services is available through regional health authorities.

2.1.v Drop-off

In response to COVID-19, several sites in the BCCSU Drug Checking Project transitioned to a drop-off model to meet safety requirements. Typically, a service participant drops off the sample to a staff person trained to receive and record the sample. Contact information or an identifier is collected with the sample so that a staff person can return the results at a later time. The sample is labelled and locked

A note on festival drug checking

Festival drug checking needs to manage long line-ups in busy, noisy environments. Typically, a large tent houses drug checking services as part of a larger assortment of harm reduction services offered. Line-ups are managed by volunteers who help prepare people to see the technician by answering questions, collecting pre-test information, and directing foot traffic through the tent. Technicians are set up at stations with FTIRs, with usually about 3–4 stations at larger events. After people have completed their visit at the tent, they are directed outside to a space with more harm reduction information and volunteers who can answer questions or provide support if needed. Much of what has been learned on site at festivals can be applied to community models of drug checking. By pairing technicians with a staff who helps facilitate the flow of people and spends more time discussing harm reduction the service can operate more efficiently when there is a large demand.

See Sage C, Michelow W. Drug checking at music festivals: A how-to guide. Nelson, BC: ANKORS; 2016. Available at https://www.ankorsvolunteer.com/drug-checking-information.html

in a safe until the technician can conduct the analysis. Results are delivered by phone or email or picked up in person; alternatively, results can be retrieved with a code given to the service participant that references their sample on a public website.

Drop-off drug checking services offer two key benefits. First, there is greater access to drug checking because service participants can drop off samples even when a technician is not working, or they can provide samples to mobile outreach staff. Second, because technicians are not interacting directly with service participants waiting in front of them, technicians can focus on the drug checking analysis itself: a technician who encounters a more complicated sample can conduct a deeper analysis or confer with other technicians. A drop-off approach may also support a speedier workflow than an in-person approach.

The two most obvious disadvantages of a drop-off approach are similar to the distributed model: the extra steps and extra time it takes to deliver results. Since a person drops off a sample, a system for linking results back to that person must be devised. Some sites collect service participants' phone numbers or email addresses and use a handle or code name to link the samples with the contact information. This way, technicians can reach out to a service participant as soon as results are available. In other cases, results may be written down and sealed in an envelope for service participants to pick up at a later time. In either instance, technician schedules shape turnaround times, and it may take up to a week for participants to get their results. Also, the loss of direct communication with the person using the service means missing out on the opportunity to engage around harm reduction or to learn more about the sample through informal conversation.

To maintain anonymity, services must ensure that no personal information is retained that could connect a person to drug checking results. Organizations involved should clearly and transparently outline policies and procedures around how they will manage personal identifying information, limit information collected, store information securely, and destroy contact information after delivering results.

When technicians deliver results by email, phone message, or in writing, resource materials and information about testing limitations should accompany the results. It is always helpful to include a phone number for service participants to call if they have questions for the technician about their results.

2.1.vi Mail-in

A mail-in service model is of interest to sites looking to expand the geographical reach of their services and to individuals and groups that may not feel comfortable accessing a location in person due to privacy concerns and other access barriers. Communities in rural and remote regions, which are often isolated and have limited access to harm reduction services, are particularly interested in mail-in services.

The challenge of mail-in services, like other distributed models of drug checking, is the delay between sending a sample and getting results back. Similar to the drop-off service, the drug checking organization needs to plan for how to return results to service participants in a way that can protect privacy.

Get Your Drugs Tested (GYDT) based in Vancouver, BC has operated a mail-in service since 2019. The sample is mailed to GYDT where a technician analyzes the sample. Instructions for how to access and use the mail-in service are available on the GYDT website.[27] The website contains directions for packaging and labelling samples, and service participants can download, print, and complete a short form that allows GYDT to collect information about each sample. The technician emails the results, calls the person if they left a contact number, or uses a code name provided by the service participant to flag the results published on the GYDT website. The Vancouver Island Drug Checking Project—Substance—has also started a mail in service and more information can be found on their website at https://www.substance.uvic.ca/#services.

When considering a mail-in service, organizers should work closely with the regulatory body responsible for designating drug checking at the site. In BC, mail-in services require approval under the BC Distributed Drug Checking Services designation. People should connect with the Medical Health Officer at their regional health authority to find out more about the application process.

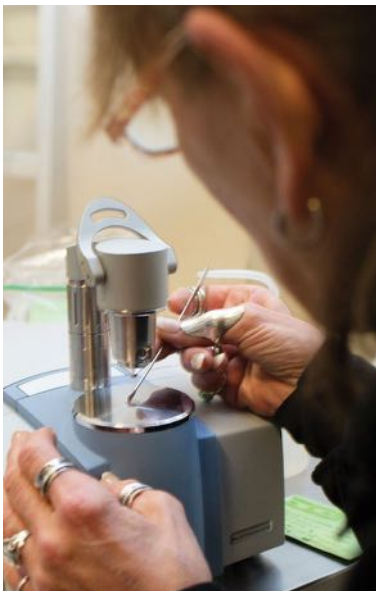
27 See https://getyourdrugstested.com/canada-wide-drug-checking-by-mail/

Table 2. Summary of Benefits and Challenges of Service Delivery Models in the BCCSU Drug Checking Project

Model	Benefits	Considerations
Point-of-care	Results in 5–10 mins. Opportunity for service participants to ask questions and engage in other services. Opportunity to explain limitations of testing and uncertain results in person.	Ensure the space is set up with enough room for technicians to work and allow for privacy for service participants to get results. Consider who may not be accessing the service because of location or setting and what might be done to improve access to these groups. Decide if sample collection will only occur during service hours or if other staff might collect samples at times when technician is not available. Expand access to point-of-care service by adding mobile service, collection sites, or pop-up events.
Distributed	Ability to collect samples across several pick-up sites. Increased access to drug checking. Potentially more efficient, cost-effective use of staffing resources and equipment.	Develop a procedure for delivering results to service participants. Ensure this procedure protects the anonymity of service participants. Consider who will be collecting samples and what training they may need. Plan for sample storage at collection sites if samples are collected throughout the week and picked up once a week.
Mobile	Can reach rural and remote areas not otherwise served. Can provide in-person service.	Plan and advertise a well-established schedule of times and locations so that local communities know when to expect the service. Ensure all drug checking sites are designated to legally operate drug checking in each location, even if it is located on the street or an alley. Carry a designation letter indicating permission to transport samples for the purpose of drug checking. Plan for sample destruction and disposal, and write a protocol that describes whether the samples will be destroyed at the site or brought back to a central location to be destroyed.
Pop-up	Can reach new service participants that may not normally come into other drug checking sites. Opportunity to see how drug checking might be received in a community.	Work closely with host organization, health services, and law enforcement to make sure everyone understands what to expect from the drug checking service and its role as an additional harm reduction service. Work with host organization to promote the service so people are aware of when and where this temporary opportunity is available. Follow up after event to learn how drug checking was received and what could be improved.

Model	*Benefits*	*Considerations*
Drop-off	Can drop off samples at any time. Drug checking can occur outside of service hours without service participants present. Can be a calmer environment for technician to concentrate on analysis.	Have a process for how to get results back to service participants in a timely way. If collecting any contact information, have a procedure for managing personal information that links to drug checking results in a way that protects participant confidentiality. Develop a way for service participants to contact technician or staff with questions about their results. Ensure information about limitations of testing are clearly indicated to people who are dropping off samples and when they will receive results. Be explicit that the sample cannot be returned to service participant. Ensure appropriate designation is in place to transport samples from drop off site to testing site.
Mail-in	Available to anyone with access to mail services. Can be available to rural and remote areas. Can reach other drug using populations that may not want to come into a drug checking service.	Plan how to return results to people mailing in samples. Consider what personal information will need to be collected and how to protect privacy. Be clear with service participants about what information needs to be provided when they mail in a sample and what is done to protect privacy. Provide clear packaging instructions and a printable form accessible on a website to explain how to send in samples safely. Be explicit that sample cannot be returned to service participant. Clarify legal status and designation requirements for mail-in drug checking services in the local region.

2.2 Staffing Models and Competencies



Staffing models for drug checking may vary depending on resources and needs, but there are three key roles to consider.

1. **Technician** is a person trained to conduct drug checks using available drug checking technologies and to share results with service participants. They require training to operate drug checking equipment and they provide the service using a harm reduction approach.
2. **Support staff** is a person who supports the work of the technician by guiding people into the service, helping with sample intake, and, in some cases, providing test results. They may collect samples off-site or at a main reception area outside operating hours. In some sites, these staff are called "drug checking experts" and the role is filled by PWLLE who are hired as peer staff. Some support staff may become technicians with more experience and training. People with lived and living experience are well suited to these roles because of their unique ability to connect on a personal level with service participants. These roles also provide the person an opportunity to get involved with service delivery, with additional benefits of mentorship, training, and personal growth.
3. **Management** includes program coordinators and other organizational leadership who provide programmatic and administrative support to drug checking. They help integrate drug checking into the organization's broader mandate and services, ensure fiscal rigour, and provide support for drug checking staff in their role as frontline workers.

Technicians in the BCCSU Drug Checking Project were either: (1) individuals hired to be dedicated technicians or (2) existing staff trained to be technicians as part of their current role. There are benefits to both approaches. A dedicated technician can specialize in drug checking, gaining skill and experience more quickly through the opportunity to conduct more drug checks and becoming familiar with the trends in local drug supply. On the other hand, training existing staff has the benefit of working with staff who already have strong harm reduction skills and experience, as well as existing relationships with service participants that help build trust in the service. Training existing staff to be technicians may also be a more economical approach in some settings to spread staffing resources across several harm reduction services.

When recruiting for the role of technician, the key is finding a balance between technical skills and harm reduction expertise (see 2.2.ii Key competencies for technicians). In the BCCSU Drug Checking

Project, the most dedicated technicians had strong backgrounds in the sciences, specifically chemistry, or hands-on laboratory experience. Technicians with science backgrounds have previous experience and training in operating lab equipment, using a scientific approach to chemical analyses and results interpretation, and handling sensitive materials. However, a person with technical skills may not have any experience working with people who use drugs or in a harm reduction setting. When hiring someone without harm reduction experience, it is important to assess their comfort working in a harm reduction environment before engaging them in a technician role.[28]

People who may not have a background in the sciences or lab experience, but who have strong harm reduction skills, can learn to operate the FTIR spectrometer and test strips with training. While technical training may take a bit longer to master for someone without a background in lab science, these staff members can learn the FTIR spectroscopy and test strip technology with practice and support from experienced technicians. Importantly, people with harm reduction expertise working as technicians have been key to developing best practices in how to deliver drug checking results that are non-judgmental and meaningful to people who use drugs.

One successful staffing model pairs a technician and a support staff. This partnership model can complement strengths of individuals, and where there is a high demand for services a team approach can help shorten wait times. For more information on staffing roles, please see Appendix B. A sample job description for the technician role can be found in Appendix C.

2.2.i Peer-based staff models

Peer staff, in the context of the BCCSU Drug Checking Project, are PWLLE of drug use. Peer workers are invaluable for informing how drug checking services can best meet the needs of people who use drugs. While it has been common practice to train volunteers with substance use experience in festival settings, it is a relatively new approach to train PWLLE who work at OPS and SCS to conduct drug checks using technologies such as FTIR spectroscopy.

Partnering strengths

Services that have paired a peer with a staff with technical drug checking skills have been successful. This approach supports training for both team members and creates efficiencies in the drug checking workflow. Each team member can focus on different aspects of the work and teach the other person about their areas of expertise.

28 For more information on creating safer spaces for drug checking, the Drug Checking Education Project has resources for supporting new drug checking staff (www.dredproject.ca).

Peer workers at one drug checking site created the position "drug checking expert", a role that supports the technician by taking in samples, conducting test strips, and helping to deliver results to service participants. At other sites, peer staff have helped to promote drug checking through their networks, build trust in the service, and drive foot traffic to sites. Peer staff hired to help promote and support drug checking have been especially successful in connecting hard-to-reach populations with the service.

One of these sites piloted an initiative to train peer staff as technicians. An experienced technician trained peer staff, giving the team time to learn the technology and gain confidence in operating a FTIR spectrometer. Once training was complete, new peer staff required a steady work schedule that ensured many opportunities to consolidate learning, while assimilating new knowledge through ongoing work on multiple samples. This organization has also developed a flexible approach to work-readiness to accommodate times when stressors may impact a person's ability to meet work demands. Sites in the BCCSU Drug Checking Project that engage PWLLE in drug checking have strong peer employment and volunteer programs in place and value the role that peers bring to harm reduction work. For an excellent resource on peer engagement, see *Peer Engagement Principles and Best Practices.*[29]

Many PWLLE have the interest and aptitude needed to learn how to use the technologies and apply them in a harm reduction setting. Hiring PWLLE in drug checking provides an entry point into employment that offers mentorship, acquisition of new life skills, and training that can lead to more employment opportunities. Investing in peer staff to operate drug checking services can bring long lasting benefits that extend over time to the community at large.

2.2.ii Key competencies for technicians

The technician role requires a balance of technical and harm reduction skills. It is clear from the experiences in this project that there is a set of competencies required for working as a technician in drug checking. A team staff model may be the best way to meet the balance of skills and experience needed.

- Computer skills
    - Operate a laptop and other technical equipment
    - Navigate between different programs and folders
    - Check and write emails, use the internet, operate word processor

29 Available on Towards the Heart website at https://towardtheheart.com/assets/uploads/1516141269o4KkCMkq2ytmhxVyGjcQ9DSWtUoI1d8FLnzYdIv.pdf

- Analytical skills
  - Understand limitations of technologies and instruments and how they affect findings
  - Assess information from different technologies and synthesize information to form results
  - Detect patterns and understand how they translate into results
- Communication skills
  - Explain the basics of drug checking technologies and limitations to service participants
  - Explain drug checking results and answer questions about different substances
  - Be able to work in chaotic or noisy environments
  - Build rapport and trust with people who use drugs
- Harm reduction skills
  - Have knowledge of harm reduction practices, approach, and culture
  - Be open, have a non-judgmental approach to working with people who use drugs
  - Know (or be able to learn) different drugs and their effects.
- Self-care skills
  - Have self-knowledge around substance use and comfort level working with substances
  - Know when to take breaks
  - Know when work is affecting their well-being and be able to ask for time away and/or help

See Appendix C for a sample job description for the technician role.

2.2.iii Technician training

Drug checking is a multi-faceted role that requires technical skills to use drug checking technologies, such as FTIR spectroscopy equipment, and harm reduction skills to build connection with people who use drugs. Moreover, because drug checking analysis relies on technician assessment, it requires a consistent approach to prevent too much variation in analysis and inconsistent results.

To help establish consistency and standardization of drug checking across the BCCSU Drug Checking Project, all technicians operating an FTIR spectrometer in combination with test strips at partner

sites are required to complete training. In BC, technician training consists of a two-day intensive workshop, which was originally developed in 2018 to train volunteers to work at summer music festivals. From this foundation, an online webinar series was developed by the BCCSU Drug Checking Project to cover the technical aspects of drug checking with an FTIR spectrometer and test strips. The seven-part webinar series includes the following topics:

1. Introduction to Drug Checking
    - History of drug checking
    - Drug checking as harm reduction
2. Fentanyl Test Strips and Testing Limitations
    - How to test a sample using a fentanyl test strip
    - What the limitations of test strips are and how to explain them
3. FTIR Spectroscopy: Introduction and limitations
    - What an FTIR spectrometer is and how it works
    - What the limitations of FTIRs are and how to explain them
4. FTIR Operational Procedures
    - How to set up the FTIR
    - How to load a sample
    - How to take care of the FTIR
5. Opus Software and Basic Spectrum Analysis
6. Data Recording: Electronic Data Capture with DrugCheckingBC (DCBC)
7. Drug Checking Process in OPS/SCS Settings

The online series is available to anyone interested in becoming a technician or learning more about how the service works—see https://drugcheckingbc.ca/training/. This component of the training takes about three hours to complete, at which point the trainee receives a certificate of completion of the online series.

For technicians wanting to specialize in operating FTIR spectroscopy and test strips in combination,

additional practical training is required. See 3.6 Operating FTIR Spectroscopy and Test Strips in Combination for more details.

3.0 Drug Checking Service Delivery

3.1 Drug Checking Workflow

The drug checking workflow can be broken down into four basic steps: receiving a sample, analyzing a sample, recording results, and offering results with harm reduction information.

3.1.i Receiving sample

A service participant provides a small sample of a drug, approximately the size of half a match head. The person receiving the sample, either a technician or support staff, puts the sample in a small container such as a paper cup and asks the service participant some questions about the sample for the purposes of data recording. The staff person records information such as sample colour and texture, whether the drug is being tested before or after being used, and any other information that may be relevant to note.

The staff person explains to the service participant how the testing works and clarifies what drug checking can and cannot reveal about the drug sample (see Appendix D: BCCSU Drug Checking Spectrometer Disclaimer). Explaining the limitations of the technologies is important to help service participants understand that drug checking does not confirm whether a drug is safe to take and that there are still risks associated with drug use. After the analysis, the technician or staff person can refer to these limitations to help explain the results.

3.1.ii Analyzing sample

The technician takes the sample and runs it through the steps of the analysis. First, the technician analyses the sample with the FTIR spectrometer. Next, a smaller portion of the sample is separated out and mixed with water. The liquid is tested using the fentanyl test strip and then the benzodiazepine test test strip. More detailed information about analyzing a sample is available in the technician's manual.[30]

Drug checking requires some qualitative interpretation. There is an art to the analysis, and the more experience a technician has, the more information they have to apply to their analysis. Learning about the local drug supply is also helpful for technicians as they will be able to eliminate unlikely options from their analysis and focus on signals that are consistent with what is to be expected in the community at a given time.

3.1.iii Recording results

After the sample has been analyzed, the technician records the results. In BC, technicians record results in a provincial data repository that collects data from all sites operating a FTIR drug checking service. Some sites record their results on paper before entering them into the database or have their own data collection systems in addition to the BCCSU drug checking data repository. Tracking results allows for an analysis of trends in substances and service use over time.

3.1.iv Offering results and harm reduction messaging

After the sample has been fully analyzed, the technician or support staff offers the results to the service participant. If results are given in-person, the technician or other staff may take the time to explain any unexpected results or clarify any information that is confusing. Sometimes results are not definitive and technicians need to explain how the limitations of the tests cannot confirm all substances in a sample.

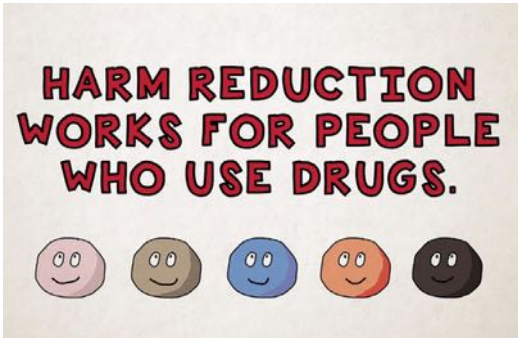
When offering results, technicians also pair this information with harm reduction messaging. This is a key time to recommend ways to use substances more safely and to provide information about resources that the person may need, such as housing options, location of harm reduction supplies, or information about other community services.

30 See https://drugcheckingbc.ca/resources/manuals-and-guidelines/ for Drug Checking Technician Manual.

3.1.v Disposal of samples

Some service participants may request their sample to be destroyed or will not collect the remainder of their sample. All drug samples that are not reclaimed by service participants need to be destroyed safely. A standard of procedure for sample destruction has been created to outline steps for making a sample unconsumable.[31] If a drug checking service is mobile or temporary, samples may be stored temporarily to bring back to the testing site to be destroyed or destroyed at the mobile location.

3.2 Harm Reduction Messaging



Drug checking services provide personalized, timely, and educational harm and risk reduction services to people at a moment when they are receptive and keenly interested in learning more about the substance they are contemplating using. Even better, these services are usually accessed before any consumption occurs.[32]

From the advent of drug checking services, organizations delivering the service have resisted offering drug checking as a standalone service. Drug checking is best integrated into a more comprehensive set of services that address a wider range of support needs.[33]

Conversations about harm reduction and risk evaluation can take place during the few minutes while samples are being checked or while providing drug checking results to service participants. For this reason, it is important that harm reduction values are embedded in technician and volunteer training. Drug checking staff must be non-judgemental about personal choices surrounding substance use and use language that does not shame or stigmatize people. Formal training in anti-racism and Indigenous cultural safety and humility may help ensure that services are accessible and safe to Indigenous people and others who face additional barriers to service.

General harm reduction messaging and resources are often available from a combination of public

31 See https://drugcheckingbc.ca/resources/manuals-and-guidelines/ for Sample Disposal procedure.

32 Sage C, Michelow W. Drug checking at music festivals: A how-to guide. Nelson, BC: ANKORS; 2016, p. 7. Available at http://michelow.ca/doc/drug-checking-guide-online-v1.pdf

33 Sage C, Michelow W.

health units and community organizations. Health Canada's website offers a national perspective.[34] In BC, a good place to start when gathering practical resources is the BCCDC's harm reduction service known as Toward the Heart.[35] Interior Health Authority also offers useful resources,[36] as does the Ontario Harm Reduction Distribution Program.[37] Irrespective of province or community, the most valuable resources for harm reduction messaging is your local public health unit and existing community organizations that already engage in harm reduction work.

In addition to general harm reduction messaging, drug checking also requires some more specific messaging.

Harm reduction messaging

- Have a buddy or use at an OPS.
- Use an overdose prevention app, such as Lifeguard in BC.
- Start low, go slow.
- Have an overdose plan. Carry naloxone.
- Use one drug at a time. If you do mix, use less and go slowly.
- Be aware of your health and tolerance.
- If services are available, get your drugs checked before you use.

From Toward the Heart

Limitations of technologies: Technicians need to be able to clearly explain the limitations of the testing technologies they are using and how they may impact the results. Prior to any testing, the technician, supportive staff, or volunteer should explain what the tests can and cannot tell a person about their drug sample. When delivering the results, the technician can refer to this earlier conversation if needed to explain why a substance may be present even if it is not detected by the technology. A sample list of limitations is provided in Appendix D.

Specific drugs and drug interactions: While technicians are not expected to have the knowledge of a pharmacist, it is helpful for technicians to be knowledgeable about the most common drugs being tested, as well as common "cuts", and the potential impact on human health. For example, if the drug results show benzodiazepines in a sample of expected

34 See Harm Reduction: Canadian Drugs and Substances Strategy. Government of Canada; 2018. Available at https://www.canada.ca/en/health-canada/services/substance-use/canadian-drugs-substances-strategy/harm-reduction.html#a1

35 See Toward the Heart website at https://towardtheheart.com/

36 See Interior Health Authority's Harm Reduction Partner Information available at https://www.interiorhealth.ca/sites/Partners/HarmReduction/Pages/CoursesEducation.aspx

37 See the Ontario Harm Reduction Distribution Program website at http://www.ohrdp.ca/

fentanyl, the technician can explain the overdose risks for combining two depressants and that naloxone will not work on an overdose from benzodiazepines, though it will counteract the effects of the opioids.

Quantification of results: Service participants are usually interested in the potency of their drugs and the percentage of the desired drug in their sample to determine dosage. Because the FTIR technology is not designed to give precise quantification, there is some debate about the value of providing estimates of quantified results to service participants using this technology. If technicians are providing quantified results, it is important to give a range of percentages and clearly explain that it is an estimate based on proportions of only the detectable substances. It is also helpful to include that the range provided is above, below, or the same as what is typically found in similar samples for that local region. For more information about quantification with FTIR spectroscopy, refer to the two standard operation procedures, *Fentanyl Quantification Procedures* and *Fentanyl Quantification and Messaging*.[38]

Uncertainty of results: It is just as important for technicians to know when they cannot provide confident results as it is to offer participants details about what is present in a sample. Sometimes a result is inconclusive or the technician cannot rule out other potent undetectable substances. The technician needs to explain that there are still unknown components in the sample and, if the person intends to use it, to proceed with caution.

What is most important is that there is consistency in messaging regarding drug checking to make sure that people using the service understand the limits of the testing technologies, what the results mean, how to use more safely to minimize harms, and that this type of information is similar across sites. With time and good training, technicians can become trusted sources of harm reduction information for the community and can customize results for the service participant as needed.

For more information about messaging around drug checking results, see the Drug Checking Education Project at www.dredproject.ca.

3.3 Site and Staff Safety

Safety is a key consideration when setting up a drug checking service. Developing a staff and work site safety plan can ensure effective management of issues such as accidental exposure to a harmful substance, overdoses, or conflict involving service participants. Basic safety training for staff and volunteers is essential.

38 Available on the BCCSU website at https://drugcheckingbc.ca/resources/manuals-and-guidelines/

3.3.i Exposure to harmful substances

Technicians and other staff who may be handling samples can protect themselves from unintentional exposure to harmful substances by knowing how to use personal protective equipment (PPE) correctly. Technician training includes instruction on the importance of wearing gloves when handling substances and recommendation to use goggles wherever possible. While incidents of exposure are very rare, and potential exposure to a substance on the skin is of minimal risk, wearing PPE correctly can prevent cross-contamination with other samples, contamination of food, or contamination via physical contact with other individuals.[39] Safety protocols should also include regularly wiping down equipment and furniture that are used for the drug checking service. The BCCSU Drug Checking Technician Manual has more detailed information on safe handling of substances.[40]

3.3.ii Overdose response

All drug checking staff should be trained to recognize the signs of an overdose and use naloxone kits if needed. Naloxone training in BC teaches people how to respond to an overdose and administer naloxone to reverse the effects of an opioid overdose. Toward the Heart website has information and resources on overdose prevention training and naloxone supplies.[41] CPR training is also recommended for technicians and is available in BC through the Red Cross[42] or St. John's Ambulance.[43]

3.3.iii Conflict resolution

While problems of agitated behaviour at harm reduction sites are not unique to drug checking, there are some situations that come up specifically around drug checking that can lead to conflict. Some sites have had problems when a service participant gets a result that does not meet their expectations or when they do not agree with the technician's report. Other conflicts may arise when

39 Fentanyl is not toxic through skin contact. Contrary to some alarmist reporting, there is no evidence that a person can overdose from skin contact. However, wearing gloves and practicing safe handling can help prevent unintentional ingestion which could lead to overdose.

40 Available at https://drugcheckingbc.ca/resources/manuals-and-guidelines/

41 See https://towardtheheart.com/

42 See First Aid and CPR on the Canadian Red Cross website at https://www.redcross.ca/in-your-community/british-columbia-and-yukon/first-aid-and-cpr

43 See https://www.sja.ca/English/Pages/default.aspx

a service participant thinks they may have been cheated by a dealer and wants to confront them on site. Situations that threaten a person's drug or money supply are likely to cause distress and, in some cases, may lead to escalating tensions and possibly threatening behaviours.

Training in violence prevention can give drug checking staff tools to help de-escalate potential conflict and feel prepared if a situation becomes threatening. Many organizations offer violence prevention training or orientation upon hiring to help staff be prepared for potential critical incidents.[44] Training should familiarize drug checking staff, including technicians, with site safety protocols and critical incident reporting requirements.

Some recommended training topics

- CPR and First Aid
- Naloxone and overdose prevention
- Suicide prevention (BC Crisis Centre)
- Indigenous Cultural Safety Training
- Trauma-informed practice
- Violence prevention and de-escalation training

Safety planning to help prevent conflict should include the following:

- A physical location and site layout that allows technician to remove themselves from a potentially violent situation. A plan for keeping the equipment safe should be included as technicians may feel obligated to protect the expensive equipment at the risk of their own safety.
- A set up that gives service participants some privacy when talking with the technician to avoid others overhearing their results. This helps service participants feel safer and calmer.
- Training for drug checking staff that provides common scenarios and concrete strategies for handling potentially difficult situations with service participants.
- A safety plan that identifies the responsible person in charge when drug checking services are operating and ensures that all drug checking staff know who and when to call if there is a potential problem.
- A plan for how to support staff after a critical incident, including access to debriefing services or checking in with a supervisor.

44 For example, see violence prevention training offered by Providence Health Care at https://www.providencehealthcare.org/violenceprevention. Community organizations may want to explore access to training opportunities offered through larger organizations.

Scenario: When someone does not like the result

A technician is conducting drug checking at an OPS when a service participant presents a sample of methamphetamine that they report has caused a buddy to overdose, requiring naloxone to be administered. The technician determines that the sample contains methamphetamine only, and the fentanyl test strip is negative. When the service participant receives the results, they question the technician angrily and accuse them of being wrong. The technician explains that samples are not always representative of the whole bag since they might be unevenly mixed. The service participant says loudly in the technician's face, "Then what good is this if it doesn't even get the answer right?" Then they yell loudly in the waiting area of the site, "Don't bother getting your stuff tested. They can't even get it right!"

Some options for the technician staff:

- Make sure to clarify limitations of drug checking before giving results.
- Have a plan for another staff person to step in if needed.
- Talk with the service participant before the testing about this situation and other factors that may have contributed to the friend's overdose such as cross-contamination or use of other drugs prior to taking the sample. Express concern for their friend.
- Review incident afterward with another staff person and/or technician to better understand what happened and get support.

Most importantly, a technician should not be working alone in a site and should have another person available to watch the equipment when they need to take a break or to step in with support when required.

3.3.iv Safe access to sites

For any harm reduction service to feel safe, people need to know they can access the site without fear of interference from law enforcement. For many people who use drugs, the fear of negative interactions with police can prevent them from accessing harm reduction services. It is recommended that organizations work with local law enforcement to respect access to the services, such as agreeing not to park police cars outside harm reduction sites. Helping law enforcement understand that these services are being conducted lawfully under the appropriate designations

can alleviate their concerns around legality. Likewise, educating people who use the service that they can test their drugs under the same rules that apply to accessing SCS and OPS can help build trust in accessing the services.

3.4 Drug Alerts and Notifications

Drug checking is useful for providing information to the community about dangerous levels of toxicity circulating in the local drug supply. When a technician identifies a sample that poses increased risk of overdose or other harmful effects, they will want to notify other people who may be at risk of using that drug.


Drug Checking Alerts Form

Date:	Location/Site:
Expected Substance	
FTIR Spectrometer Result	
Test Strip Result	Fentanyl: Benzodiazepine:
Colour & Texture	
Area Purchased	
Sent for Confirmatory Testing	☐ Yes Lab: ☐ No
Reason for Alerting	

Notes (including picture if available):

*Please submit this form to all parties on the drug checking alerts contact list via email.

An alerting system is helpful to establish a standardized approach to communicate in a timely way about harmful substances in the drug supply. In BC, formal drug alerts are sent out by health authorities when there are concerns about risk of overdose or other harms. Drug alerts may stem from emergency services responding to clusters of overdoses, from toxicology or other drug laboratory findings, or from drug checking services.

In BC, Real-time Drug Alert and Response (RADAR) is another way that drug checking programs can notify the public about drugs of concern. Developed by the Vancouver Coastal Health Authority, RADAR is a system that people can sign up for to be notified of any drug alerts put out by the health authority.[45] In BC, each health authority has its own policies and procedures that guide how alerts are sent out to the public.

Drug checking programs have a responsibility to notify local health authorities in a timely manner when a technician identifies a potentially harmful or unknown substance. Having a plan for what and how to communicate about drug samples of concern can help organizations share information locally and to notify health officials to support additional action when warranted.

45 See http://www.vch.ca/public-health/harm-reduction/overdose-prevention-response

An alert is recommended if any of the following occurs:

- Identification of a potentially harmful substance
- Reports of unusual or unexpected symptoms associated with use
- Substance associated with cluster of overdoses
- Unknown or novel substance detected in sample

The BCCSU has developed a standard operating procedure for technicians to follow when they are concerned about a drug checking result and want to notify the health authority.[46] When the technician has a sample they are concerned about, they fill out a form with a standardized list of details about the sample and send it to the health authority contact, as well as the BCCSU, to review and confirm the findings. For example, if a stimulant is found to contain fentanyl, a review of the sample analysis and discussion with the technician may help rule out the likelihood of cross-contamination by the individual after the substance has been purchased, which may occur if the person uses both types of substances. In this instance, an alert from health officials would not be warranted because the stimulant sample was most likely sold without any fentanyl in it.

Once the information has been sent to the health authority and results have been confirmed by the BCCSU, the health authority designate determines if a public alert is warranted, what the alert should say, and to whom the alert should be circulated. Alerts may then be picked up by other networks, social media channels, and local media outlets.

Some drug checking services may choose to put out drug notifications on their own networks and social media channels. Posters or other non-electronic methods are also popular ways to share information at local sites for people who do not access social media. If an organization is sending out its own notifications, it is important to develop some guidelines for alerting, which may include the following:

- Notify local public health officials about the sample of concern, even if public health authorities do not plan to issue a formal alert.
- Outline a decision-making tree to determine who should be involved in the decision to send out a notification and who will review the alert prior to broadcasting.

46 See https://drugcheckingbc.ca/resources/manuals-and-guidelines/ for alerting standard of procedure.

- Identify key people to review the notification before it is circulated in the community. Have another technician on staff or within the technician community confirm the findings. A senior technician may be available through another organization to review for quality assurance.
- Consider the wording of any notification. Provide harm reduction information and connection to services. Avoid terms such as "potent" or "strong." Use terms such as "lethal" or "toxic" to help emphasize the harm related to the substance of concern.[47]
- Choose the channels to send out notifications. Social media platforms will broadcast information quickly and to a wide audience. These notifications may be picked up by the media and so it may be important to be prepared to be approached by media outlets. If the notification is being posted as hard copies on notice boards and posters circulated to local organizations, consider adding a "date to remove by" on the poster to ensure information is timely and relevant.[48]
- Clearly print a date on all publicly posted notifications and set up a procedure for removing posters after a set amount of time.

It is important to consider some of the limitations of drug alerts. For one, it is not always clear when a substance detected in a sample requires an alert and when a substance of concern no longer requires an alert. Over time, as an unexpected substance becomes more prevalent in the unregulated drug supply, it is uncertain whether continued alert on this drug is useful. For example, fentanyl typically no longer warrants an alert because it is expected to be present in most opioid samples, unless it is detected in unusually high concentration or causes a cluster of overdoses in a community. Similarly, benzodiazepines are now commonly found in opioid samples in most BC communities. Alerting thresholds should be regularly reviewed in the local context—having too many alerts on the same combination of substances may lose their sense of urgency in the eyes of the public.

3.5 Confirmatory Testing

Confirmatory testing with laboratory-based, gold standard technologies allow for more refined analyses of samples collected at point-of-care drug checking and more insights into the local drug

47 See Communicating Drug Alerts developed by Toward the Heart, Canadian Centre on Substance Use and Addiction, and the BC Centre for Disease Control available at https://towardtheheart.com/assets/uploads/1618260859ZDb9UEzspQkTDtK4YgXYhOe0l24irYogFuj407w.pdf

48 Ibid.

supply. The highly sensitive technologies in confirmatory laboratories can detect trace amounts of substances and identify new substances, as well as providing precise quantification information that is not possible with FTIR spectroscopy and test strip technologies.

The BCCSU Drug Checking Project partnered with the BC's Provincial Toxicology Centre and Health Canada's DAS to provide confirmatory testing. Through these partnerships, hundreds of samples received additional analysis. The partnership with the Provincial Toxicology Centre was instrumental in supporting confirmatory testing using gas chromatography-mass spectrometry (GCMS) and helped validate the use of benzodiazepine strips with FTIR spectroscopy in community drug checking services. The partnership with Health Canada's DAS in 2018 similarly provided confirmatory analyses on samples of concern that came from community sites.

How it works: Each month, a select number of samples are sent to the DAS labs and are analyzed using quantitative nuclear magnetic resonance (qNMR) and gas and liquid chromatography-mass spectrometry (GCMS and LCMS) technologies. These results are then shared with the BCCSU, which then passes on the results to individuals or organizations that brought the sample.

Benefits of confirmatory testing: Data collected from this subset of samples have been used to identify substances that were undetectable by FTIR spectroscopy and test strips, identify novel psychoactive substances, and quantify substances accurately by weight. These results have been used to validate methods in community settings, develop predictive modelling for quantification of fentanyl, and to confirm and expand the BCCSU drug library used with FTIR spectroscopy. Additional research has been undertaken with DAS to help develop models for quantifying fentanyl and identifying better ways to quantify etizolam from samples obtained from the unregulated drug supply.

Challenges of confirmatory testing: The laboratories have limited capacity and no direct mandate to provide drug checking services beyond temporary research purposes. Previously, prior to changes in legislation, sites faced an additional challenge of transporting samples to the labs. With the BC Distributed Drug Checking designation, samples in BC may now be legally transported to laboratories for the purposes of testing, allowing more drug checking sites to submit samples for confirmatory testing. As new technologies emerge and become accessible to community settings, there will be opportunity for sites to invest in technologies that provide more information about drugs submitted for testing.

3.6 Operating FTIR Spectroscopy and Test Strips in Combination

Technicians who are planning to operate an FTIR spectrometer in combination with test strips at a drug checking service in BC must complete an additional practical portion of the training—30 hours of shadowing under the supervision of an experienced technician, which must be provided by the training technician's "home" organization, is required before a trainee is eligible to write a final certifying exam. Guidelines for shadowing hours are provided to supervising technicians to help ensure all key aspects of hands-on learning are covered (see Appendix E). The approach offers flexibility for organizations to ensure that training helps orient trainees to the local and organizational contexts.

Augmenting the training is the *BCCSU Drug Checking Technician Manual*, developed to cover most of the technical aspects of the role in depth and for quick reference.[49]

Upon successfully passing the final certifying exam, administered by BCCSU on-line, the trainee receives a certificate that acknowledges they have fully completed BCCSU's Drug Checking Technician Training. Only technicians that have this certificate can receive a user account to input data into DrugCheckingBC, a provincial data repository.

Beyond the technical training, technicians require harm reduction training. Drug checking is more than learning how to use the technology. Harm reduction training allows technicians to learn how to interact with service participants, how to build rapport, learn what kind of information people are looking for from drug checking and, most importantly, how to provide useful harm reduction messaging. The Drug Resource and Education Project has developed a comprehensive manual for drug checking and harm reduction, which is available online and is a recommended resource for drug checking training. (www.dredproject.ca)

Training for non-technician support roles, such as volunteers, site staff, or drug checking experts, emphasizes the skills needed to engage with services participants. In addition to some technical training, drug checking training for support roles will include:

49 Available at https://drugcheckingbc.ca/resources/manuals-and-guidelines/

- Understanding the basics of drug checking as harm reduction
- How to prepare samples for drug checking
- How to use fentanyl and/or benzodiazepine test strips
- Ways to engage people in the service and build rapport and trust
- How to describe drug checking and technology limitations
- How to give harm reduction information and to connect someone to services when needed

Training will also have to evolve with innovations in drug checking technologies and methods, growth in service, and ongoing learning in harm reduction. Drug checking networks are a good source of information about new resources, training opportunities, and most up-to-date research. Technicians and drug checking services are encouraged to stay connected with other technicians and drug checking services and share learning to better expand the knowledge base.

4.0 Monitoring and Reporting

4.1 The Provincial Drug Checking Data Repository

One of the benefits of a drug checking program is the ability to monitor the local drug supply for trends and identify novel adulterants. In addition to the benefits for individual participants, drug checking has population-level benefits for a wide range of stakeholders.

- Health authorities use the drug checking results data to track trends over time that can link key indicators such as fentanyl positivity to overdose data or other potential outcomes. Public health also uses drug checking data to craft localized alerts for communities based on what is circulating in the regional unregulated drug supply.
- The BCCDC links available drug checking data to other sources of data, such as toxicology results or police drug seizure data, to find associations. These drug checking data contribute to a provincial dashboard for epidemiological surveillance and are shared with public health and other communities. For example, the Drug Overdose and Alert Partnership (DOAP) Committee brings together diverse stakeholders who use drug checking data to better understand the drug supply in their communities.

- Groups led by PWLLE share and communicate drug checking results with their networks and in the local community through word of mouth, poster campaigns, and social media messaging.

The BCCSU Drug Checking Project created a provincial drug checking data repository, DrugCheckingBC (DCBC), to log and store results from drug checking. Partner organizations in BC that provide drug checking with FTIR spectroscopy and test strips upload drug checking results to DCBC in real-time which allows for rapid data sharing with stakeholders. Data agreements have been set up with each organization that inputs data into the repository to outline data responsibilities and ownership. Each partner organization controls their own data and can access drug checking results from their organization. A section in each service agreement with partnered sites outlines data responsibilities and ownership to serve as a guide for data access and sharing. It is recommended that data sharing agreements be coordinated between organizations to articulate data ownership, management, and privacy.

The BCCSU Drug Checking Project, as the operators of the drug checking data repository, manages all data reported to provincial public health partners and community partners as well as maintaining responsibility for quality assurance of the data.

4.2 Data Monitoring and Reporting

The BCCSU Drug Checking Project identified key indicators at the start of the project when it began reporting drug checking sample results to the community and public health partners:

1. Number of samples checked
2. Fentanyl positivity within drug categories
3. Proportion of samples checked matching their expectation

These indicators were released monthly to the community and public health partners in drafted reports. Over time, the indicators have expanded to include:

1. Identified adulterants
2. Alerts
3. Trends of interest such as benzodiazepine-positivity of expected opioid samples

Monitoring collected drug checking data can help determine what is normal or characteristic for a local unregulated supply. Drug checking with FTIR spectroscopy is inherently subjective, and so it helps to rely on trained technicians to make educated inferences from the measured sample, based on what has previously appeared in the supply. When novel, alarming, or hazardous components are detected in the drug supply, knowing baseline typical components can help determine if an alert is warranted and how the technician may best discuss results with the service participant. Beyond benefits at the individual level, knowing what is typical in a community or a region helps public health identify changes in the drug supply and anticipate population level responses.

Engagement with community partners has yielded valuable feedback to the project about reporting priorities for people who use substances and suggestions for sharing data with affected communities. Recognizing that knowledge is power, community partners have emphasized the importance of sharing all data widely.[50] Consulting with local groups of individuals who use drug and other community partners can help identify issues of most concern at the local level.

Three priority data products were identified through community partner engagement:

- Trends in the unregulated drug supply over time
- Data visualizations that show common co-occurring substances
- Reports on novel adulterants that may cause harm

In the BCCSU Drug Checking Project, some novel adulterants identified include xylazine, synthetic cannabinoids, new benzodiazepines in opioids, and methylamine, which is a contaminant of methamphetamine. Alerts were issued for these substances after substances were confirmed by laboratory testing.

50 Note that no personal information on services participants is recorded in the database.

The BCCSU Drug Checking website (www.drugcheckingbc.ca) is available to the public with individual drug checking results published each week by date, expected drug, results, and city. These row level data are searchable and can be sorted by date, location, and expected drug. A data dashboard allows site visitors to see the data in a visual format and interact with the data to learn more about what is represented in the drug sample database.

Data reports of aggregate data are sent out monthly to partners and other stakeholders with a brief overview of frequency of drug checks by type of drug, fentanyl and benzodiazepine positivity rates, and frequency of concordance of results to expected drug type.[51] A short summary of key findings is included at the top of the report to help interpret some of the most notable data for the month.

4.3 Anonymity of Drug Checking Data

Anonymity of the service is important for people who access it. People with lived and living experience who were consulted in the early stages of this project were clear that asking for identifying information at point-of-care that were linked to drug samples was a significant deterrent to using the service. There were concerns that personal information recorded in a database may be accessed by law enforcement or health care providers and used against service participants. In fact, even if data were secure from third parties, asking for personal information felt intrusive. Maintaining the anonymity of drug checking helps build trust between service participants and technicians and increases the chance of someone returning to use the service. However, anonymity creates some gaps in the data, such as the characteristics of service participants and how often unique participants access drug checking.

Since the service is anonymous, service participants are more likely to share detailed information about a sample than if personal information is linked to the sample data. When a sample is recommended for a public alert, technicians are trained to ask questions such as “what neighbourhood was this purchased in?” and “what did you buy this as?” If this information is linked to personal information, service participants may be reluctant to share this information as an invasion of privacy or risk of being targeted by law enforcement. Trust is a vital component in the implementation of a drug checking service and it is developed over time with each service interaction. See 7.4 Build trust in the service for more.

51 See https://drugcheckingbc.ca/monthly-reports/

5.0 Evaluation

BCCSU Drug Checking Evaluation of Drug Checking Services, funded by Health Canada, is a mixed-methods study that utilizes 1) data obtained from quantitative surveys completed by people who use drug checking services, 2) qualitative interviews with key drug checking stakeholders, and 3) drug sample results data collected at drug checking services. The study has received ethics approval from the Providence Health Care/University of British Columbia Research Ethics Board. This study provides an opportunity to implement and evaluate an innovative approach to harm reduction, supported by evidence and strong underlying theory, during a public health emergency.

- **Quantitative surveys** gather cross-sectional data on the characteristics of people who use drug checking services, such as socio-demographics, drug use patterns, experiences with the drug checking service, and behavioural modifications following the use of the drug checking service. The objectives are to: 1) determine the acceptance by people who use drugs of FTIR spectroscopy and immunoassay strips as drug checking technologies; 2) generate knowledge about the viability of drug checking as a harm reduction/overdose prevention intervention in BC; and 3) generate knowledge on the feasibility, uptake, and behavioural modifications that result from drug checking for the purposes of refining and informing future interventions, as well as learning about the accuracy of point-of-care methodologies.
- **Qualitative interviews** help to understand the opportunities and challenges of scaling up drug checking services. This involves a series of semi-structured interviews with key stakeholders (such as service providers, policy makers, drug checking technicians and other service staff, community organization representatives, health authority representatives) who were involved in the process of designing, implementing, and utilizing drug checking services in BC. This work will provide evidence for future interventions, scale-up, and sustainability of drug checking services in the province.
- **Drug checking sample results data**, as described above in 4.0 Monitoring and Reporting, are collected at drug checking services and include basic information on the samples people are bringing to drug checking services, such as what they expected the sample to be, the colour and texture of the sample, and the FTIR and immunoassay strip results. These data are used alongside confirmatory testing data to validate the accuracy of FTIR and immunoassay strip technologies within the context of the toxic drug poisoning epidemic. These data are also being used to understand trends and the emergence of novel psychoactive substances in the unregulated drug supply. As new drug checking technologies are being rolled out in different settings, it will be important to continue to evaluate and validate these technologies within the context of the toxic drug poisoning epidemic.

5.1 Knowledge Products

To ensure the evidence generated from the BCCSU Drug Checking Project is shared with others in the drug checking field, including policy makers and the public, this project has generated several peer reviewed articles and summary reports. These knowledge products, which may be useful for new services being proposed, have been distributed widely across harm reduction networks and posted publicly on the project website. For a list of peer reviewed articles generated from this project, please see Appendix F.

6.0 Financial Considerations

There are two categories of cost considerations for drug checking services: direct service costs and indirect program costs. Direct costs are associated with equipment, materials, supplies, and labour needed to operate the service. Indirect costs are associated with data and reporting systems, knowledge translation and evaluation activities, and technical training programs. More detailed information about some of the costs of equipment and supplies, as well as some of the annual costs of maintenance and upkeep of hardware and software is outlined in Appendix G.

6.1 Direct Service Costs

Direct service costs outlined in Appendix G are based on a service model using FTIR spectrometer and benzodiazepine and fentanyl test strips and assume a point-of-care fixed site service model. Costs associated with staff and equipment (such as laptops, cell phones) for staff are not included, nor are costs associated with providing a physical location for drug checking, such as rent for a fixed location or purchase of a van for mobile services. These costs may vary based on organizational funding, existing infrastructure, and model of service delivery.

6.1.i Equipment

Costs to set up a drug checking service are based on the purchase of one FTIR Bruker Alpha-II spectrometer as priced in 2021. The initial package purchased from Bruker includes the spectrometer, laptop, rolling carrying case, drug reference libraries, and software. Annual costs associated with the FTIR spectrometers include updating relevant libraries and software. For-cost libraries may not release a new edition each year, and it is up to the discretion of the organization to update when

the new versions are released. However, it is recommended to update the TICTAC library whenever possible due to the number of samples it contains and its inclusion of novel substances with each new addition.

WiFi hotspots are a recommended item if drug checking requires a connection to internet to upload results into a data capture system. Not all sites have reliable or secure internet networks, and for the purposes of the BCCSU Drug Checking Project, WiFi hotspots allowed technicians to input results data into the provincial database in real-time from their laptops. Cost of the hardware is a one-time expense, but there will be ongoing service charges. Different service packages are available, with varying costs.

6.1.ii Supplies

Drug checking staff who may be handling samples require PPE, such as gloves and masks. Other PPE may include eye protection, which is recommended. In conjunction with a FTIR spectrometer, a supply of fentanyl, benzodiazepine, and LSD test strips will be required. As best practice, benzodiazepine strip testing is conducted using microcentrifuge tubes (which are small plastic tubes with snap lids) in which the substance is agitated with water. Test strips are available to order directly from BTNX, a commercial vendor, or may be available for free or at discounted prices from governmental health organizations.

6.1.iii Staffing

Costs associated with operating the service include personnel costs for one full-time technician and technician support role, with a part-time coordinator. Note that costs will vary based on the drug checking model that is adopted, which may impact operating costs including staffing. Costs will also vary based on the number of days/week and hours/day the service is offered, locations of services, etc. An estimated 5–10% of total service costs has been estimated to cover administrative costs related to human resources, payroll, and other general costs.

6.1.iv Confirmatory testing

Assuming that confirmatory testing is being conducted by a partnered laboratory at no charge, the costs for confirmatory testing are associated with transport of samples by courier and packaging required. Expenses associated with confirmatory testing are based on courier costs sent to Health Canada's DAS Lab. At present, samples are limited to 50 per month sent twice a month. For this project, DAS provides the confirmatory service for free, and the expenses outlined are equipment for processing and packaging for transport.

6.1.v Other costs

If the drug checking service is operating out of more than one location, mileage will be an additional cost. If the service includes attending summer festivals, travel costs such as meals and camping supplies, mileage, festival entrance fee, and staff time should be considered. Printing and dissemination costs for brochures, promotional materials, training guides, and data/knowledge products should also be considered.

6.2 Indirect Program Costs

Indirect program cost considerations apply to a larger provincial or regional program of drug checking that may encompass several drug checking services, and the following categories outline some of the high-level cost considerations. Each category requires staffing for delivery, coordination, and management of various aspects of drug checking programming.

6.2.i Data monitoring and reporting

If establishing a data monitoring system, development costs for a database accessed by multiple site partners will include programming, testing, and ongoing maintenance and data management. Database costs will vary depending on database design and digital support services available. The BCCSU database is hosted within data services at a large health service delivery organization (in this case, Providence Health Care[52]) and may not account for all the costs of establishing an independent database. In other jurisdictions, it is recommended that organizations approach their public health organizations to see if there are existing databases that may collect drug checking data or provide support for collecting these data.

Data management and analysis are required for ongoing quality assurance of data, particularly for systems with multiple service partners, and for meaningful reporting of data. Staffing to ensure oversight capacity for data quality, analysis, and reporting is key. Reports and other knowledge products produced from the data may require some design and printing costs and administrative support for online distribution.

52 Please note that data systems services are provided by the Heart and Lung Innovation Centre (HLI) at Providence Health Care, which is based out of the St. Paul's Hospital site. The HLI group provides development, hosting, and maintenance services for several Providence Health Care research institutes and organizations.

6.2.ii Training

While technician training programs are still in development, some training is available online at low or no cost. However, hands-on training may require hiring an experienced technician as a contracted trainer. Costs may include hourly rate and travel, depending on the location of the service. Training may be required for technicians as well as other drug checking support staff such as peers or other harm reduction workers.

If an organization is considering developing a training program, funding will be required to support the development of training resources as well as the design and delivery of the program. Educational materials, such as webinars and documents, will require budget for design and production, as well as consultant costs for curriculum design. Additional administrative support may be required to support scheduling and trainee support. If a training curriculum is to be designed and developed, careful consideration should be given to costs, including the costs of curriculum design and the ongoing development of new educational resources as the field evolves, including graphic design and printing costs.

6.2.iii Stakeholder engagement

Stakeholder engagement includes meeting with community partners, networks of people who use drugs, researchers, public health, law enforcement, and governmental officials. People with lived and living experience are offered a stipend for time given. Stipend rates vary depending on community standards. The BCCDC has a guide that outlines standards for payment of PWLLE.[53] Some travel costs may be required, especially for those organizations providing services over a large geographic region. Personnel may include a stakeholder engagement coordinator role.

6.2.iv Knowledge mobilization

Development of knowledge products and dissemination of information over networks, online media, and in community are the basis of costs. A website and a coordinator can provide basic support for information collation and distribution. For a larger scope, it is recommended to consider costs to develop a knowledge mobilization plan, including social media strategy and knowledge product development and production. Personnel costs may include staffing for coordination of knowledge mobilization planning and ongoing activities.

Other one-time start-up costs could include establishing a website from which to share drug checking test results and to promote the service. Basic costs include a WordPress site with a

53 See BCCDC Peer Payment Standards for Short-term Engagements. BCCDC; 2018. Available at http://www.bccdc.ca/resource-gallery/Documents/Educational%20Materials/Epid/Other/peer_payment-guide_2018.pdf

database capable of displaying individual results. Adding elements such as photos of samples or an interactive data visualization dashboard are also options, at additional cost.

6.2.v Evaluation

A small-scale in-house evaluation of a service may include the development of a survey instrument with key stakeholders, an online data collection tool such as Redcap or Survey Monkey, and data analysis software. Cost considerations would include any reimbursements for stakeholder time, software, and data analysis. Reports and presentations of results may be another area of costs. Partnerships with larger research institutions or contracting a program evaluation group are also options when considering an independent evaluation.

7.0 Lessons Learned

Drug checking is an evolving harm reduction intervention. From the early days of reagent testing at music festivals, FTIR drug checking in community sites, to the development of new and improved technologies, more and more knowledge is being created about the ways that drug checking can be delivered to help improve the wellbeing of communities and individuals. The following list is a summary of some of the significant lessons learned during the implementation of the BCCSU Drug Checking Project. Our hope is that these lessons can support the ongoing growth of the drug checking field and help other communities successfully initiate their own drug checking services.

Lesson 1: Drug Checking is an art and a science, but it's not magic.

Drug checking relies on technologies to tell us what is contained in a drug sample, but technologies alone cannot tell us everything. Knowing how to use the equipment, understanding the limitations of technology, being aware of common substances in the local drug supply, and having some basic knowledge of drugs and chemistry can help when conducting a drug check. However, it takes trained staff to not only have the technical know-how to interpret and synthesize drug checking information

but also to have the culturally appropriate relational skills to support service participants' decision-making about substance use.

We know that drug checking alone is not going to end the toxic drug crisis. However, drug checking is another powerful tool in the harm reduction toolkit because it can help people make informed choices about their drug use. It draws in people who would not normally access harm reduction and opens conversations about safer use. Communities can better respond to the effects of a toxic drug supply because they have a better understanding, in real time, of the adulterants that are circulating, typical, or emerging in the local drug supply by linking drug checking results with anecdotal reports from service participants. What we learned over the course of this project is that drug checking is most effective when its limitations are understood and the emphasis is placed on its value as part of a larger harm reduction strategy.

Lesson 2: Build a foundation with partnerships.

Early conversations with different stakeholders helped to identify champions for drug checking who continued to support the services over time as they evolved and expanded. In the early phases of this project, conversations were initiated with government officials and health system partners including public health, law enforcement, community harm reduction organizations, advocacy groups led by PWLLE, and Indigenous health services. These initial conversations focused on how drug checking could contribute to overall harm reduction efforts and address the ongoing toxic drug crisis in local communities.

Health sector representatives wanted to understand the regulatory implications and how drug checking could shed light on the dynamics of a toxic drug supply to bolster and complement existing harm reduction services. Law enforcement wanted clarity around the regulatory context. Community organizations wanted to understand how drug checking could fit into existing services and how drug checking could benefit their community. Indigenous organizations wanted to ensure access to the data in a way that a distinctions-based Indigenous perspective could empower their communities and reduce the harms of an unregulated drug supply. Advocacy groups led by PWLLE wanted to ensure services were informed by people directly affected by the toxic drug supply. Ongoing and sustained communication with these partners helped the project respond to evolving challenges and ensure decisions about services were accountable to different stakeholders.

Sharing evidence demonstrating the impact of drug checking (such as peer reviewed articles on the value of drug checking as a harm reduction strategy[54]) and descriptions of how the service

54 For a summary of the literature on drug checking, see Maghsoudi N, Tanguay J, Scarfone K, et al. Drug Checking Services for People Who Use Drugs: A Systematic Review. *Addiction*, November 2021;117(3):1-13. doi: https://doi.org/10.1111/add.15734

operates also helped to reassure decision-makers that drug checking is an established field of harm reduction practice and build support for drug checking in communities.

University chemistry laboratories and other provincial laboratories can open possibilities for supporting confirmatory testing, developing research projects, and providing training. Students in these laboratories can also be recruited as drug checking technicians if they have an interest in both harm reduction and spectrometry.

Lesson 3: Engage with people who use drugs at all stages of the project.

The most important partnership to develop when implementing drug checking services is with people who use drugs. Early and sustained engagement with PWLLE-led groups and people who use drugs is a fundamental part of establishing a successful drug checking service.

This project had meetings with representatives from several PWLLE-led advocacy groups early in the implement phases of and continuously throughout the project to seek input and suggestions for changes. Engagement meetings and feedback sessions with PWLLE in the community emphasized not only the importance of sharing drug checking results with the service participant but also making these data easily accessible within the wider community.

Groups led by PWLLE are also key networks for communicating and disseminating findings to the public, gaining trust among community members in the information offered, and informing health services about trends in the local drug market. People with lived and living experience hired into drug checking roles as peer workers bring an experiential understanding about substances and the ability and skills to adapt harm reduction messaging to community contexts in ways that cannot be matched by people who are not part of the drug using community.

One of the biggest lessons learned through this project is that engaging people who use drugs must be authentic and meaningful. Throughout this project, input from PWLLE was often critical for keeping the team focused on who, ultimately, drug checking is for. Feedback from PWLLE must not only be listened to but acted on. Engagement of PWLLE in the design and implementation of a drug checking program requires funding to support PWLLE input, such as administrative time to coordinate and document meetings and financial compensation for the time and expertise of PWLLE.[55]

55 Learn more about meaningful peer engagement on the Toward the Heart website https://towardtheheart.com/peer-engagement or access the report *Peer Engagement Principles and Best Practices* available at https://towardtheheart.com/assets/uploads/1516142790LYExvfD7CpewOyBX8LTXrlW2ARNinXoTpgvr2In.pdf

Lesson 4: Build trust in the service.

The success of a drug checking program depends on having the trust of service participants that the service provides accurate and valid results and that the people giving the information are trustworthy sources. We have learned in this project that technicians can do much to help build trust in the service over time, particularly when they develop relationships with people. When people feel more comfortable asking questions, the technician can offer tailored harm reduction information, which further builds trust. Other drug checking staff and peer workers with existing relationships in the community also promote trust in the service by making introductions to technicians and helping to interpret results with harm reduction messaging and information about drug checking in the community.

Having a consistent schedule that is clearly advertised helps the community to know where and when the services will be offered. Over the period of our project, many sites were short-staffed or had to make last minute changes to scheduling. It took time to regain the trust of the community if the schedule fluctuated too much. Having a consistent schedule increased service uptake and allowed the staff to build long-term relationships with service participants.

When a drug checking program has the confidence and trust of the community to conduct accurate and reliable drug checks, the resulting data provide a more complete picture of the drug supply. Health officials are more likely to access this information to help inform public health response to novel substances and emerging trends and to notify the public when a drug alert is warranted. In this project, the teams maintained standards of testing by training technicians, establishing procedural protocols, and implementing quality assurance processes (such as having an experienced technician reviewing complex analyses) across the project.

Lesson 5: Pair technologies and find the right fit.

No single technology can tell us everything we want to know about a drug sample (see 1.4 Technologies for more information). For this reason, drug checking technologies are often paired together to help address each of their limitations. Some technologies excel at identifying a wide range of components but only at higher concentrations. Other technologies are highly sensitive to low concentrations but may be costly or require more specialized knowledge to operate. Understanding what strengths and limitations technologies offer can help determine what is the best investment for a drug checking service.

Confirmatory testing is another way to pair technologies that operate in community settings. Government laboratories and university chemistry departments have state-of-the-art equipment

that can do analyses that most community drug checking services cannot. Partnering with a more sophisticated laboratory allows the community drug checking services to learn more about the samples that they are testing. Data from these labs can help technicians learn to look for new substances and know the contents of a typical sample, particularly since the FTIR spectrometer cannot detect lower concentrations. Confirmatory testing results from a subset of samples can still help technicians gain this information and to detect new psychoactive substances that only sophisticated technologies can detect.

Ideally, community drug checking will always have access to confirmatory testing. Data gathered from samples tested at community drug checking sites is a window into the current unregulated drug supply and helps public health services better respond to the harms that result from new adulterants.

New technologies are being developed to overcome current limitations. However, before jumping to invest in new technologies, it is important to take the time to consider the particular needs of a given site and program. Investing in a technology is expensive. Taking time to assess what technology fits best for the service proposed can help justify the costs proposed.

To help with decision-making, talk to people who use those technologies and ask about the benefits and limitations of different devices, including ease of operation. Every community will need to adapt to their local needs and available resources.

Lesson 6: It takes time and practice to learn how to use the FTIR spectrometer.

People who train to be technicians come with a variety of skillsets and backgrounds. While people without a science background can learn to use the FTIR spectrometer, there is a learning curve to understand how it works and it takes time and practice to learn to use it with confidence. Early in this project, most of the technicians had science backgrounds, usually chemistry. They were able to adapt their science knowledge to harm reduction settings and help train people without science backgrounds to use what at first can seem like an intimidating piece of technology. Now, the pool of trained technicians includes peer workers, harm reduction staff, and others without technical backgrounds in science. While the training may have taken a bit more time, everyone has gained proficiency with their technical skills after hours of experience on the FTIR spectrometer.

To train people without chemistry knowledge or lab experience to use a device like the FTIR spectrometer, it helps to break down the analysis steps and provide some simple orientation to chemistry. Shadowing an experienced technician for up to 30 hours allows new technicians to

recognize some spectra patterns and analyze more complex mixtures. Resources were also created to support training, such as a guide to identify common psychoactive substances and adulterants, which can be found on the BCCSU Drug Checking website (www.drugcheckingbc.ca/resources/).

With time and experience, technicians, regardless of scientific background, can develop confidence in their skills and learn how to synthesize information from the drug check to give accurate and meaningful results to people.

Lesson 7: Make drug checking accessible to everyone.

Currently, drug checking is offered in festivals and community settings such as OPS and SCS. These settings pose some limitations. Festivals are temporary events and people may not be able to test drugs at other times. Overdose prevention sites and supervised consumption sites are designed to meet the needs of people who are usually injecting drugs. Not everyone who use drugs feels comfortable accessing drug checking in these settings. Furthermore, people in rural and remote communities often travel long distances to access services because they fear being recognized and stigmatized in their small community.

Several services sites in the BCCSU Drug Checking Project worked to make drug checking more available to more people. Lessons learned included: 1) creating a welcoming, non-stigmatizing service environment, 2) being in a location that can be accessed by the primary target population, and 3) having convenient hours of operation. Useful questions to ask are: Does the service need to be within walking distance? Does it need to be paired with other harm reduction services such as harm reduction supplies or safe consumption rooms? How can the space be more welcoming? Does it feel safe for people to come in to get drugs checked? In particular, does it feel safe for women, younger people, parents, or people with disabilities? Should it be open during the day or at night? Does it need different hours during the weekend? Does a mail-in or a mobile service make drug checking more accessible to people living outside an urban area?

There is no one solution to these issues, but in this project, it was agreed that the location of drug

checking needs to consider the needs of different groups of people who use drugs. Making the drug checking space part of the neighbourhood helps lower the stigma of using the service. It may also help to have the service located in more than one site, either a mobile service that rotates to different locations (see 2.1.iv Mobile Drug Checking) or a pop-up site to introduce the service to different groups of people (see 2.1.iii Pop-up Service). Hours of operation change between community organizations and are constrained by staff and budget limitations. In general, many organizations agreed on the need to provide services in the evenings, and if possible, on the weekends.

Regardless of where the service is located and the hours of operation, the service needs to be open and non-judgemental for all people who want to have their drugs checked. Creating a safe space and building a trusting relationship with service participants can go a long way in drawing in people who may not otherwise use a drug checking service.

Lesson 8: Hiring people with lived and living experience to work in drug checking services supports success.

People who use drugs have experience and knowledge to make drug checking programs successful. Some sites in this project hired peer staff to promote services in the community, to engage hard-to-reach populations, to conduct drug checking with test strips, and to share drug checking results in ways that are accessible to people who use drugs. Sites that have hired peer staff have seen increases in people accessing the service and report that service participants feel safer accessing the service when peer workers facilitate the connection.

Organizations with established peer programs were well positioned to support peer staff in drug checking roles. Peer staff gained skills and confidence to work in drug checking services in ways that built on their experiential knowledge. Peer staff were also instrumental in training technicians with little or no experience in harm reduction so that they can learn to tailor their harm reduction messaging and to be more approachable to people in the community. The effort to train people who use drugs also contributes to the workforce in communities where meaningful job opportunities may be lacking.

Training peer staff to operate the FTIR spectrometer as technicians has been a priority for PWLLE-led organizations since the beginning of this project. As drug checking services expand, more PWLLE-led services are on the horizon, and curriculum development and the expansion of training opportunities will be important for supporting PWLLE-led initiatives.

Lesson 9: Build technician workforce and drug checking capacity.

The role of drug checking technician as frontline workers is relatively new. As a result, there is a limited number of trained people who can drug check using FTIR spectroscopy and similar technologies and an even more limited number of people with advanced technical skills. Scaling up the workforce is key to scaling up drug checking services. Most importantly, increasing the number of technicians helps protect against technician burnout and staffing turnover (see 7.10 Prevent technical burn out).

By increasing the number of trained technicians, service can be expanded to cover more hours and help continue services when a technician needs to take a break. Some services have opted to train two to three existing harm reduction staff and added drug checking service as part of their regular job activities, thereby increasing capacity at the site to operate drug checking for more hours and to build expertise and capacity. Relying on one person to hold all the expertise means that if the technician leaves, the service is compromised and there is no one to train new staff.

Along with increasing the number of technicians, it is also important to build capacity within and across drug checking services. Communities of practice offer a way for drug checking services to support learning and skill development across organizations. The BCCSU Drug Checking Project started a monthly meeting online—a technicians' working group—for technicians to share updates about trends and substances in their communities and to explore ways to better deliver service. These conversations are an important venue for offering and receiving support and guidance from colleagues, sharing innovations in drug checking, and building consensus for best practices. Technicians who are new to the field can learn from those who have more experience. With some administrative support, communities of practice can be an efficient and cost-effective way of building capacity among those offering drug checking services.

Lesson 10: Prevent technician burnout.

In the early stages of this project, technicians were working full-time hours in busy SCS. The pressure to conduct drug checking while people were waiting in a noisy setting that was at times chaotic, with little support, all contributed to these technicians needing to take a break from their work. Moreover, the technicians that started with this project had little or no experience working in harm reduction sites. It took some time for technicians to acclimatize to these environments and apply their technical knowledge using a harm reduction approach. Likewise, there was a learning curve for those coordinating and supporting these services.

There were several lessons learned about preventing burn-out and promoting staff retention:

- When training technicians, prepare them for all aspects of the job, including how to work in a public facing service and in busy environments and how to handle conflict and overdose response.
- Break up the hours of drug checking direct service with some "back of house" tasks, which can include doing drug checking for drop-off samples.
- Make drug checking hours part-time or limit the number of hours per day. In most sites in this project, full-time frontline drug checking was too much for just one technician.
- Ensure the technician is a part of the larger team. Technicians who worked in isolation or were parachuted into a site with no previous connection tended to face more challenges.
- Build in plans for staffing succession and opt to train more than one person to do drug checking. Do not rely on one person to provide all drug checking services.
- Support ongoing training for technicians to keep up with their skills and encourage them to be part of a technician community of practice if it is available.
- Build in regular check-ins with technicians and other drug checking staff. Technicians often feel a lot of responsibility for the service they provide. They will often forgo their own needs and wellbeing to make sure the service is still running.
- Support positive work habits and build in regular check-ins to ask about stress levels. Working with drugs all day can sometimes be triggering for people who have had struggles with substances. Self-care is important for anyone working in the field of harm reduction.

Lesson 11: Develop best practices and standards for technical testing methods.

Since drug checking with FTIR spectroscopy and test strips relies on some qualitative interpretation by technicians, it is important that there are standards to guide drug analysis. Creating documents outlining standards of procedures helps ensure that methods are consistent over time and can be changed as needed. However, there needs to be a mechanism to validate new methods and share guidelines to support sites across regions to perform the same testing methods.

The methods of quantifying results from the FTIR spectrometer are open to much interpretation. The FTIR spectrometer is not designed to provide a percentage of any component in a drug sample. However, service participants want to know this information to inform their decisions around use. To best meet the needs of service participant and to ensure technicians are providing the most

accurate information, a standard operating procedure was created to outline how to estimate a percentage range of components in a drug sample found with an FTIR spectrometer. A second standard operating procedure was developed to guide how technicians can best explain quantified results to service participants. These standards were based on evidence generated from drug checking data and input from technicians on best practices.[56]

All sites conducting drug checking need to agree on a set of best practices and be willing to support them for an operating procedure to be standardized. In the BCCUS Drug Checking Project, developing standard operating procedure has been a collaborative process between technicians, community organizations with previous drug checking experience, and the project staff. Examining scientific literature on drug checking can also help to establish the evidence for standards of practice.

Drug checking in harm reduction community services is relatively new. As technicians develop novel solutions to problems encountered in drug checking, there needs to be a forum to share these ideas, test new methods, and create a body of evidence. We learned that establishing a technician working group to discuss methods can be a part of the standard setting process, and partnerships with researchers can also help establish an evidence base on best practices and new standards.

Lesson 12: Share drug checking results and data openly.

Feedback from community groups was clear that results that from drug checking needs to be shared widely and promptly. Careful thought needs to be given on how information is presented. We were guided by evidence from the BCCDC showing that it is better to frame results in terms of "toxicity" rather than "purity" or "strength" to emphasize the dangers and risks associated with specific samples rather than the quality rating of the product.

During feedback sessions, there was much discussion regarding the value of sharing colour and texture of samples publicly, with some concerns about people in the community perceiving that a particular colour or texture was safer or less safe than others available in the local drug supply. However, after feedback from community about the importance of transparency, we included this information publicly with supporting information that colours and textures are not reliable ways to judge the safety of samples and that trends in colour can change quickly and often.

Messaging about what data is collected and where it is shared is also important to dispel concerns

56 For a list of Standard Operating Procedures generated from this project, please see https://drugcheckingbc.ca/resources/manuals-and-guidelines/

that any personal information would be shared with law enforcement. We heard that some people were discouraged from using the service because they heard the results linked to personal information that were shared with the police. In this project, no personal information was collected; only information about the drug samples were collected, and there was no way to trace a sample back to an individual. Data was aggregated into reports to share with the public. No information was or will be sent directly to law enforcement, and if it is requested by law enforcement, only data that is already publicly available will be shared.

Whenever sharing drug checking data publicly, it is important to always acknowledge the limitations of the data and interpret what they mean. It is helpful here to ask for input from PWLLE-led groups to determine the most important data points and the best way to communicate them. We learned that communities want the data in visuals that are easy to understand, such as bar graphs and pie charts.

We also learned that while it is easy to circulate data to health officials and other professional networks, other measures need to be taken to disseminate drug checking findings to the community, especially among those groups without internet access. Networks of people who use drugs and posters were preferred methods. A PWLLE/peer advisory committee can ensure that data and results are meaningful and disseminated in ways that will reach people who use drugs.

Lesson 13: Drug checking is more than technology. It's people.

One of the most important learnings from this project has been that, at its heart, drug checking is about the interaction between the people using the service and the staff operating the service. Although technology plays a fundamental role in drug checking service, having trained, knowledgeable, caring staff who engage with people who use drugs can lead to potentially life-saving conversations about substances and safer use. Situating drug checking in community settings where people feel safe entering and feel confident that they will not be judged or harassed for using the service helps foster these human connections. Even services that do not include face-to-face interactions can help create connections with service participants by providing opportunities over the phone or email. Regardless of how drug checking is delivered, respectful and meaningful human connections help people who use the service make informed decisions about substances supplied by the toxic, unregulated drug market.

8.0 Helpful Resources

8.1 Websites

BCCSU Drug Checking Project
Substance, Vancouver Island Drug Checking Project
Community of Substance, Vancouver Island Drug Checking Project
BCCDC Atypical Overdose Toxicology Project
Toronto's Drug Checking Project

VCH Drug Checking
Fraser Health Drug Checking
Interior Health Drug Checking
Island Health Drug Checking
Northern Health Drug Checking
FNHA Drug Checking
FNHA Overdose Prevention and Harm Reduction

ASK Wellness Drug Checking
ANKORS Drug Checking
Get Your Drugs Tested
Mountainside Harm Reduction Society
Portland Community Services – Molson OPS
POUNDS Project
Purpose Society Drug Checking
UBC Okanagan Harm Reduction

Toward the Heart
The Canadian Community Epidemiology Network on Drug Use (CCENDU)
Canadian Research Initiative in Substance Misuse (CRISM) – Drug Checking

8.2 Some Key Publications

Borden SA, Saatchi A, Vandergrift GW, et al. A new quantitative drug checking technology for harm reduction: Pilot study in Vancouver, Canada using paper spray mass spectrometry. *Drug and Alcohol Review*. 2022;41:410–418. doi.org/10.1111/dar.13370

Carroll J, Mackin S, Schmidt C, et al. The Bronze Age of drug checking: barriers and facilitators to implementing advanced drug checking amidst police violence and COVID-19. *Harm Reduction Journal*. 2022;19:9. doi.org/10.1186/s12954-022-00590-z

Jesseman R, Payer, D. *Decriminalization: options and evidence (Policy Brief). Canadian Centre on Substance Use and Addiction. 2018. Available at* https://www.ccsa.ca/sites/default/files/2019-04/CCSA-Decriminalization-Controlled-Substances-Policy-Brief-2018-en.pdf

Kerr T, Tupper K. *Drug Checking as a Harm Reduction Intervention—Evidence Review. BC Centre on Substance Use. 2017. Available at* https://www.bccsu.ca/wp-content/uploads/2017/12/Drug-Checking-Evidence-Review-Report.pdf

First Nations Health Authority. *A framework for action: Responding to the toxic drug crisis for First Nations. First Nations Health Authority. 2018. Available at:* https://www.fnha.ca/Documents/FNHA-Overdose-Action-Plan-Framework.pdf

Maghsoud N, Tanguay J, Scarfone K, et al. Drug Checking Services for People Who Use Drugs: A Systematic Review. *Addiction.* 2022;117:532–544. doi.org/10.1111/add.15734

McCrae K, Tobias S, Grant C, at al. Assessing the limit of detection of Fourier-transform infrared spectroscopy and immunoassay test strips for fentanyl in a real-world setting. *Drug and Alcohol Review.* 2020;39(1):98–102. doi.org/10.1111/dar.13004

Ramsay M, Gozdzialski L, Larnder A, et al. Fentanyl quantification using portable infrared absorption spectroscopy. A framework for community drug checking. *Vibrational Spectroscopy*. 2021;114:103243. doi.org/10.1016/j.vibspec.2021.103243

Scarfone KM, Maghsoudi N, McDonald K, et al. (2022). Diverse psychotropic substances detected in drug and drug administration equipment samples submitted to drug checking services in Toronto, Ontario, Canada, October 2019–April 2020. *Harm Reduction Journal.* 2022;19(3):online. doi.org/10.1186/s12954-021-00585-2

Tobias S, Lysyshyn M, Buxton J, et al. (2022). Tobias et al. respond to "Novel substance of the unregulated drug supply". *American Journal of Epidemiology. 2022;191(2):253*–254. doi.org/10.1093/aje/kwab234

Wallace B, Hills R, Rothwell J, et al. Implementing an integrated multi-technology platform for drug checking: Social, scientific, and technological considerations. *Drug Testing and Analysis, 2021;13(4):734*–746. doi.org/10.1002/dta.3022

8.3 Guides and Manuals

The Drug Resource and Education Project

Drug Checking at Music Festivals: A How-to Guide

Distributed Drug Checking Designation Application Package - Interior Health

BCCSU Operational Technician Manual—version 2

BC Supervised Consumption Services Operational Guidance

Interior Health Overdose Prevention Services

BCCDC Peer Payment Standards for Short-term Engagements

Questions and Answers—Provincial/Territorial Class Exemptions: For Supervised Consumption Site Operators

Interior Health Harm Reduction Partner Information–Drug checking resources

Peer Engagement Principles and Best Practices: A guide for BC Health Authorities and other providers – BCCDC

Trans European Drug Information (TEDI)

Appendices

Appendix A. BC Distributed Drug Checking Provincial Standards

DISTRIBUTED DRUG CHECKING INTRO PAGE

Interior Health

WELCOME TO THE DISTRIBUTED DRUG CHECKING GUIDE

Distributed Drug Checking?

The supply of unregulated drugs is constantly changing and unpredictable. Everyone that uses illicit drugs faces risks. This situation often results in a toxic drug supply, presenting health complications that range from discomfort to death. There is no reliable way to know what is in the substance without using drug checking services.

Drug checking technologies are expensive and it is unfortunately currently not feasible to offer them everywhere they are currently needed. With Distributed Drug Checking, we aim to expand services across the region without the need to implement a lab and dedicated staff at each site.

Who is this guide for?

This guide is intended to facilitate agencies and organizations within the Interior Health Region to offer drug checking services at their locations in a context of harm reduction.

Why would one want to participate?

Drug checking helps people who use drugs to be able to make a conscious and informed choice on how to use the substances they have on hand. With this service, you are potentially preventing drug poisonings (overdoses) and empowering people to have control over their personal decisions.

This program is funded by Interior Health and approved by the Provincial government. We can provide advice, training, resources and networking to help you set up a Distributed Drug checking site as part of your current service offerings.

GLOSSARY

UPHNS
Urgent Public Health Needs Site

DDC
Distributed Drug Checking

MHO
Medical Health Officer

Drug Checking
Determining what is the composition of unregulated substances to empower people who use drugs.

Drugs
In the scope of this document, the words drug and substance are using interchangeably.

Sample
A sample refers to a small amount of a drug collected for the purpose of drug checking.

Thank you to our partners

ANKORS · The University of British Columbia Okanagan Campus · ASK Wellness Society · Interior Health

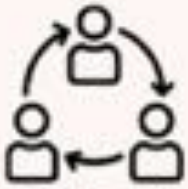
Developed by Interior Health - Harm Reduction Program

DISTRIBUTED DRUG CHECKING REGISTRATION INFORMATION

WHY REGISTER FOR BC DISTRIBUTED DRUG CHECKING?

With the new UPHNS designation comes Distributed Drug Checking (DDC). This program enables you to collect, store and transport controlled drugs for the purpose of drug checking.

The DDC helps you and organizations like yours to provide drug checking to service users, by pairing you with a testing site that has access to trained technicians and spectrometry equipment.



WAIT, BUT I WAS DOING THIS ALREADY!?

That is awesome! Now you can actually do it **legally**, without having to fear repercussions from law enforcement and the ministry.

What's more, you get support from Interior Health, in the form of training, advice and supplies.

Interior Health will supply a starting kit that includes all of the supplies needed to collect, store and transport drugs legally!

Ok, Sounds Great, where's the catch?

BC Provincial guidelines require that you keep a chain of custody log to track where drugs are going. In addition, you are expected to follow the guidelines regarding safe-storage, packaging and transportation of drugs. This part is easy with our pre-made kit and some training.

HOW DO I GET STARTED?

Reach out to **harmreduction.coordinator@interiorhealth.ca** with the following information:

- Name and contact of the planned person to be responsible for the program.
- Name and address of the organization
- Planned start date or if already running
- Name of affiliated testing site. If no site is paired, don't worry, we can help to pair you up!

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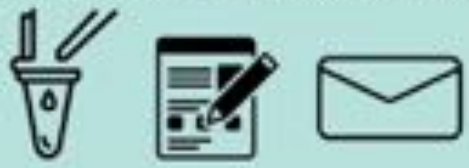
DISTRIBUTED DRUG CHECKING PROCESS FLOW CHART

Interior Health

For steps 1 to 3, Follow Instructions from infographic: STEP 1 to 3 - SAMPLE COLLECTION for more details

1 SAMPLE COLLECTION

Samples are dropped off by service users at designated locations. They fill out the Sample Collection Form and place the sample in a small vial. Both the form and vial are then placed in a letter-sized envelope and sealed.



2 CHAIN OF CUSTODY - PART I

This is an important part of this service. All collected samples must be noted on the chain of custody form using a unique 16 digit number. Write this number on the sealed envelope.

CHAIN OF CUSTODY NUMBER
HAI-SITEID-YYYY-MM-DD-SAMPLE#
1-XXX-XXXX-XX-XX-XXX

3 SAFE STORAGE

Every sample that is collected must be stored in a locked safe or lock-box. The MHO letter and Chain of Custody forms are also stored here!

4 PACKAGE IT UP!

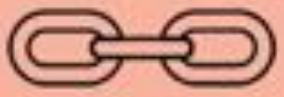
When ready, put up to 10 packaged samples into a larger Manila envelope (9"x12") for transportation. Make sure you keep a copy of the Chain of Custody Log for yourself and send the original paper copy in the larger envelope along with a copy of the Medical Health Officer letter.

5 PICK UP OR COURIER

All collected samples are either delivered by a staff person from the collection site, picked up by a staff person from the receiving testing service, or couriered from the collection site to testing site/service. Some samples might be tested on site depending on your local service model.

6 CHAIN OF CUSTODY - PART II

The testing site completes the second portion of the Chain of Custody Log. All completed logs are sent to: harmreduction.coordinator@interiorhealth.ca



7 SHARING THE RESULTS

The testing site will send results to the service user as requested on the Sample Collection Form (e.g. phone, text, email, or summary to agency).

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DISTRIBUTED DRUG CHECKING SUPPLY LIST

SUPPLIES

Gloves*

Communicable Diseases related PPE*

Stainless Steel Lab Spatula

Isopropyl Alcohol Wipes

Kimtech Wipes

Permanent small point marker*

Centrifuge Tubes (Snap Cap 1.5-2ml)

Small zipper-seal type 2"x2" bags and Zip-Lock snack size bags

Sample Collection Forms

Letter Size Envelopes - Pre-labeled - Peel to Seal type

Manila Envelopes (9"x12") with copy of MHO Designation Approval Letter

Chain of Custody Tracking Sheet

Safe Storage**

Desiccant Pouch

DOCUMENT LIST

Distributed Drug Checking Information Poster

Distributed Drug Checking Process Flow Chart

Step 1- Sampling Process Infographic

Chain of Custody Form

MHO Letter Of Agreement

Signed UPHNS site application

* = To be Supplied by agency
** = To be supplied by agency or Interior Health, depending on situation
All the rest is part of the Distributed Drug Checking Kit supplied by Interior Health

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DISTRIBUTED DRUG CHECKING
STEP 1 TO 3 - SAMPLE COLLECTION

Interior Health

GETTING READY

Make sure you understand all the steps outlined below, as well as the accompanying instruction package. After confirming that you have all the supplies necessary, put on a pair of gloves and let's get sampling.

1 SAMPLING

Only a small amount of substance is necessary. The size of a grain of rice is enough. More will not hurt but please remember that it will not be sent back!

If the sample is already in a small plastic bag, then you may simply insert this bag inside of a new slightly larger bag. This will ensure that the contents do not spill during transportation and minimizes handling of the drugs.

If the sample needs to be taken out of the original container, use a lab spatula to take out a small amount of the drug and place it in a new centrifuge vial. If vials are not available, a new zipper plastic bag will do!

Used cookers and pipes can be sent if they are dry and have obvious, visible residue (enough to be analyzed). These can be placed directly into a new zipper-sealed plastic bag.

2 CLEANING

Clean the tools used for collecting the sample with an alcohol wipe, followed by a second alcohol wipe. Finally, use a Kimtech Wipe to dry off the tool while it is still wet. This will ensure that no contamination occurs between uses.

3 IDENTIFYING

Write the sample number (the three numbers at the end of the *Chain of Custody Number*; eg. 001) on the vial or zip bag using a permanent marker.

Write the full *Chain of Custody Number* on the letter size envelope and on the *Sample Collection Form*.

CHAIN OF CUSTODY NUMBER
NAA-SITED-YYYY-MM-DD-SAMPLE#
1-XXX-XXXX-XX-XX-XXX

4 LOGGING

Fill the *Sample Collection Form*.

Take note of the *Chain of Custody Number*, keeping it for further reference until results are returned.

5 PACKAGING

Verify that you have completed steps 3-4.

Place the sample container in the letter size envelope along with the completed *Sample Collection Form*. Seal the envelope.

6 STORING

Store envelope in safe until further steps are taken for its transportation or testing.

Make sure the sample collection form is filled completely before the service user leaves, as there is information necessary from them to fill out on there. This will help the technician do their testing and give back relevant results.

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DISTRIBUTED DRUG CHECKING SAMPLE COLLECTION

CHAIN OF CUSTODY NUMBER
HA#-SiteID-YYYY-MM-DD-Sample #

EXPECTED SUBSTANCE
(Cocaine, Meth, MDMA, Ketamine, Xanax etc.)

STAFF MEMBER RECEIVING SAMPLE

ALTERNATIVE SAMPLE TRACKING #
(Optional - for in agency tracking)

SAMPLE COLLECTED IS FROM PARAPHERNALIA

☐ **YES** (Please Specify) ☐ **NO**

HAS THE PERSON TRIED THIS SUBSTANCE

☐ **POST USE (YES)** ☐ **NOT APPLICABLE**

☐ **PRE- USE (NO)**

HOW WOULD THE PERSON LIKE TO BE NOTIFIED OF RESULTS? (FILL ONLY APPLICABLE CONTACTS)

EMAIL

PHONE (PLEASE SPECIFY TEXT, CALL, SIGNAL ETC.)

THROUGH STAFF MEMBER

If through staff, please consider alternative contacts so not to be delayed by holidays/sick time

NOTES/COMMENTS (Write on back if more space needed)

Accessing for routine testing or due to concerning effects or overdose presentation? Please state context.

If post use describe any unusual effects.

Is there specific information or questions on the substance?

Ensure fully informed consent before collecting any contact info, including that the person is okay to receive written results via the selected method if requested. Contact info should only be sent in paper if possible—the paper copy will be destroyed after results are sent, but electronic records of calls and sent texts will likely persist. These records are confidential & protected, and will not be shared with drug checking results, except as necessary (i.e. for email & SMS messaging).

Interior Health

DISTRIBUTED DRUG CHECKING SAMPLE COLLECTION

CHAIN OF CUSTODY NUMBER
HA#-SiteID-YYYY-MM-DD-Sample #

EXPECTED SUBSTANCE
(Cocaine, Meth, MDMA, Ketamine, Xanax etc.)

STAFF MEMBER RECEIVING SAMPLE

ALTERNATIVE SAMPLE TRACKING #
(Optional - for in agency tracking)

SAMPLE COLLECTED IS FROM PARAPHERNALIA

☐ **YES** (Please Specify) ☐ **NO**

HAS THE PERSON TRIED THIS SUBSTANCE

☐ **POST USE (YES)** ☐ **NOT APPLICABLE**

☐ **PRE- USE (NO)**

HOW WOULD THE PERSON LIKE TO BE NOTIFIED OF RESULTS? (FILL ONLY APPLICABLE CONTACTS)

EMAIL

PHONE (PLEASE SPECIFY TEXT, CALL, SIGNAL ETC.)

THROUGH STAFF MEMBER

If through staff, please consider alternative contacts so not to be delayed by holidays/sick time

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Appendix B. Staffing Models and Roles

Technician role

The technician's role is to conduct the drug checking analysis using the FTIR and explain results to service users. The technician may conduct the entire drug checking workflow from sample intake, to analysis, to delivering results to service users or they may work in partnership with support staff that takes on some of the tasks outside of the analysis with the FTIR.

Drug checking can be intensive, service-oriented work. When determining if a position should be full time, part time or casual, or will be an added responsibility of an existing role, it is important to consider the number of hours the technician will be engaged doing direct service work. Experience from those operating drug checking sites indicates that full time hours for one staff conducting drug checking is not feasible. Most technicians who worked solely in drug checking in this project worked approximately 5 hours a day doing direct service and 2-3 hours a week doing more administrative tasks. Planning for breaks during a shift is also important as the equipment cannot be left unattended and it is not always easy to pack up and set up again after a break.

Beyond conducting analysis on the FTIR, the technician plays a key role in sharing harm reduction information and explaining results of a drug check to service users. Technicians can spend time clarifying more complex results and ensure that service users understand the limitations of what a drug check can tell them about their drugs. The technician can encourage safer use practices and connect someone to other services on site. Having a technician that understands harm reduction and is comfortable working in the community of people who use drugs is essential to building trust with service users.

Technician Support role

Some services have added a support role that works in partnership with the technician to facilitate the drug checking workflow. In festival settings, volunteers collect pre-drug check information, orient service users through the harm reduction tents and answer questions.

A partner staffing model

Services that have paired a person with lived and living experience and harm reduction training with a person with more technical and lab-based experience has proven to be a successful approach. Teaming people together supports training for both partners and creates efficiencies in the drug checking workflow, when each partner can focus on different aspects of the work.

In community settings, a similar role has been developed. At sites that have existing peer programs, a position called “drug checking expert” was created to work in partnership with technicians. The drug checking expert is trained to process the intake of the sample and gather pre-drug check information, to test the sample with the fentanyl and benzodiazepine test strips, and to deliver results and harm reduction messaging.

Because drug checking experts are embedded within the harm reduction sites, they often know the service users well and can help build trust in the service. Drug checking experts may also be better positioned to translate drug checking results to service users and provide relevant harm reduction messaging. Drug checking experts can help train and educate technicians who may be less familiar with the community and help them find ways to better connect to service users. In its most ideal form, this staffing model works as a partnership and drug checking experts may build the skills over time to become technicians themselves.

Management of Drug Checking Services

Managing drug checking services does not require formal technician training, but it is helpful to understand the basics of how drug checking works and how drug checking fits into broader harm reduction services. A supervisor or manager who understands the basics of drug checking can oversee quality of the service and support the technician to operate the service. If technicians are providing service off-site at partnered organizations, a manager is key to maintaining communication and troubleshooting any issues that may arise. Managers and supervisors play a key role with external stakeholders. Drug checking champions who encourage community partnerships are key for ensuring broad community support and program sustainability.

Most importantly, managers and supervisors must support technicians to do their job safely and effectively. Burn out is a concern. It helps if a supervisor is able to recognize when a technician is under stress and able to help mitigate some of the challenges that contribute to burn out. Keeping drug checking staff engaged with the larger team and supporting their work in the community can help prevent some of the isolation that can contribute to technician burnout.

Appendix C. Drug Checking Operational Technician Job Description

Drug Checking Operational Technician Job Description

The drug checking operational technician is responsible for performing point-of-care drug checking in designated areas within British Columbia using Fourier-transform infrared (FTIR) spectroscopy and immunoassay strips. The technician communicates back the results of point-of-care drug checks to service users in a meaningful and respectful way and positively interacts with service users and site staff and shares harm reduction information as needed. The technician meticulously tracks data in an electronic data capture system and facilitates the proper storage and transportation of samples to laboratories for additional analysis.

JOB RESPONSIBILITIES

1. Operate point-of-care drug checking technologies including fentanyl test strips and Fourier-transform infrared (FTIR) spectrometers at multiple specified locations in the Lower Mainland and aim to enhance client awareness of harm reduction practices.
2. Communicate drug checking analysis results to clients at point-of-care and answer any questions related to drug checking methods and outcomes.
3. Facilitate the proper onsite storage and transportation of samples for laboratory testing.
4. Support clients by highlighting relevant harm reduction information and liaising with site staff, including informing clients of relevant community services, programs, and organizations as applicable.
5. Follow proper evaluation, data collection, and device storage/transportation protocols, including meticulously tracking data and information and sending out public health alerts as needed.
6. Assists in the education and training of drug checking technicians and harm reduction service providers.
7. Contributes to the development of training materials such as orientation manuals and reference documents.
8. Perform other related duties as assigned.

QUALIFICATIONS

Education, Training and Experience

- Grade 12, one (1) to three (3) years' recent, related experience in harm reduction working with people who use drugs and/or other marginalized populations or an equivalent combination of education, training and experience.
- Successful completion of BCCSU Drug Checking Technician Training within two months of appointment.
- Valid BC Driver's license required. Access to a vehicle is preferred. Willing to travel around the [region] with occasional travel within British Columbia.

Skills and Abilities

- Knowledge and awareness of harm reduction issues and practices.
- Demonstrated ability to remain neutral, non-judgmental and professional when interacting with and supporting marginalized client populations.
- Demonstrated understanding of the confidentiality and sensitivity of the role.
- Demonstrated ability to operate related equipment and the ability to learn new technologies.
- Computer literacy including experience in Microsoft Office suite and database applications.
- Demonstrated ability to communicate effectively both verbally and in writing.
- Excellent ability to work and learn independently with minimal supervision and collaborate in a larger team.
- Ability to manage multiple competing priorities in a fast-paced environment.
- Demonstrated ability to establish and maintain rapport with clients and stakeholders, including strong interpersonal skills and demonstrated professionalism and diplomacy.
- Demonstrated ability to analyze and resolve problems.

Appendix D. BCCSU Drug Checking Spectrometer Disclaimer

DRUG CHECKING
FTIR SPECTROMETER + FENTANYL TEST STRIPS

Drugs may not be what you think!

Even if you know your source, your drugs may contain unexpected and dangerous substances

Drug checking can help **reduce risk** by providing information about what is actually in a substance, allowing you to make **better-informed decisions**

What we can tell you about your sample:

With the FTIR:

- Up to 3-4 different components in a mixture and approximate proportions
- Other drugs and cutting agents that may be mixed in or used as filler

With the strips:

- Whether your sample contains fentanyl and some fentanyl analogues
- **Note**: strips only test for fentanyl within the sample provided. Fentanyl may still be present in the remainder of the drug batch. Strips may occasionally report a negative result when fentanyl or an analogue is present

What we cannot tell you about your sample:

- The FTIR cannot detect substances present in small amounts (less than about 5%)
- Specific quantities or the exact percentage in a mixture
- New or rare substances we don't have in our reference database
- We cannot reliably distinguish between specific substances with similar chemical make-up (e.g., 2C-family, fentanyl analogues)

Checking your drugs cannot guarantee that a drug is safe to use
The FTIR and the strips may occasionally miss fentanyl, fentanyl analogues, or other dangerous substances

Even after checking your drugs, we recommend you:

Never use alone

- Know the signs of overdose and call medical aid if you think someone needs help
- Start with a small amount
- Carry and know how to use naloxone
- Avoid mixing substances (especially alcohol with depressants) which increases your risk of overdose
- Use where help is available whenever possible, like at an overdose prevention site

Appendix E. BCCSU Drug Checking Shadowing Guide for Supervising Technicians

BCCSU Drug Checking Shadowing Guide for Supervising Technicians

Shadowing, or the act of learning drug checking through on-the-job training, is the best way to quickly and effectively build the skills needed to successfully provide drug checking services. The classroom or online webinar training components provide information on the technological limitations and the basics of drug checking with FTIR and test strips, while shadowing allows trainees to see what drug checking is like on-site, learn how to operate the technologies, and how to interact with people accessing the service.

We have created a framework for how the shadowing component of technician training might be approached by supervising technicians when overseeing new trainees. The framework is broken out into 4 phases, each progressively more hands-on for the trainee. Everyone learns at their own pace and with their own style, so each trainee's shadowing (practicum period) will look slightly different. We have included a recommended number of hours for each phase to provide rough guide of how long it usually takes for trainees to move through that stage of learning. After a trainee has completed the recommended 30 hours of shadowing, they should have all the skills and knowledge they need to pass the practical test.

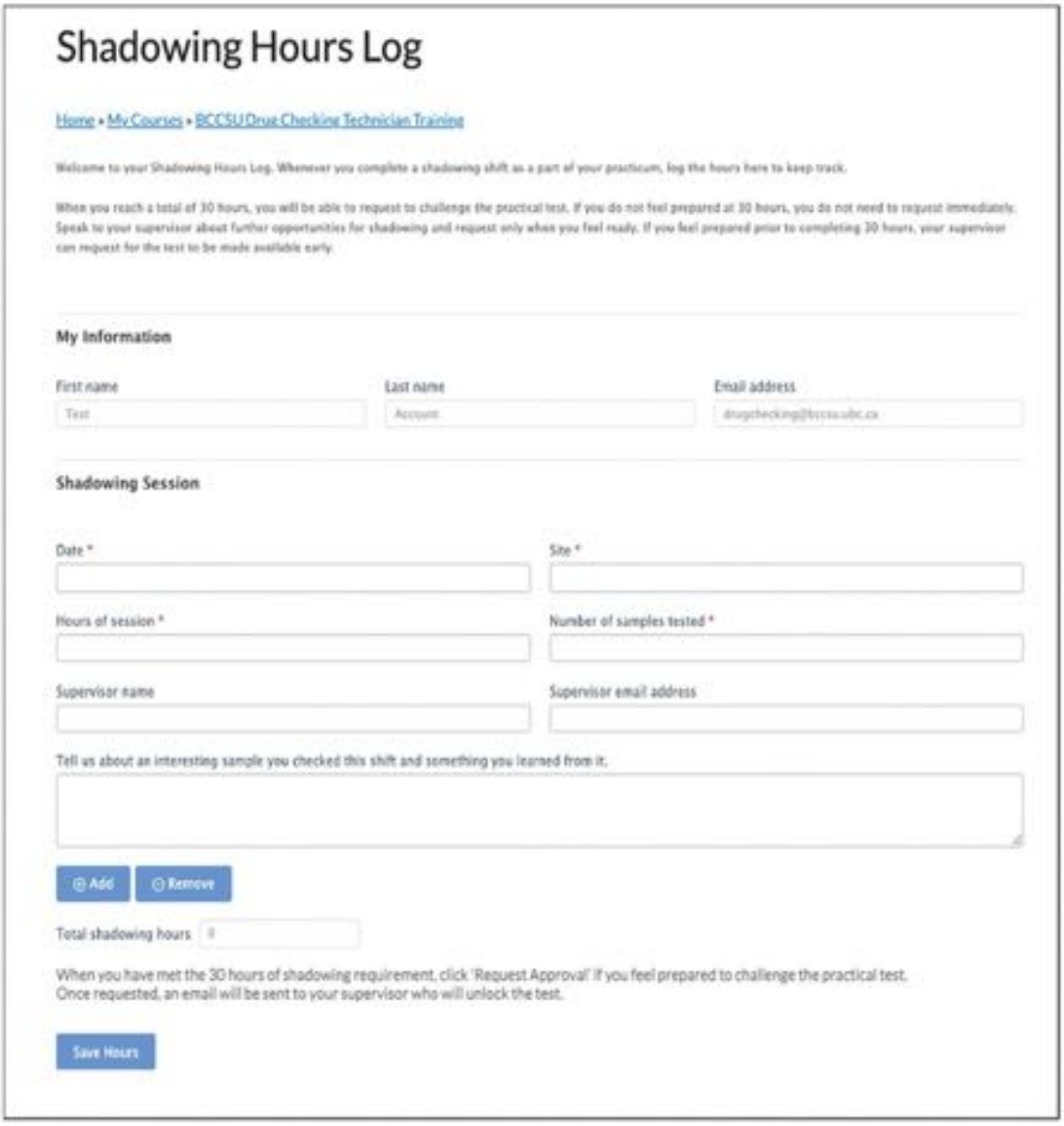
It is important to remember that we are always learning more about drug checking. Staying up to date with the BC Drug Checking Technician Working Group is an important part of ongoing technical skill development. The technician working group usually meets once a month. The group provides a forum for information sharing and problem-solving related to FTIR drug checking and expanding and improving the quality and integrity of FTIR drug checking across sites in BC. All technicians across the province are encouraged to attend and network with other working technicians.

Logging shadowing hours

As a trainee supervisor, please ensure that the trainees are registered with the BCCSU Online Learning Platform and logging their shadowing hours there. Trainees can track their training progress using this link: https://communityofsubstance.org.

How to log shadowing hours

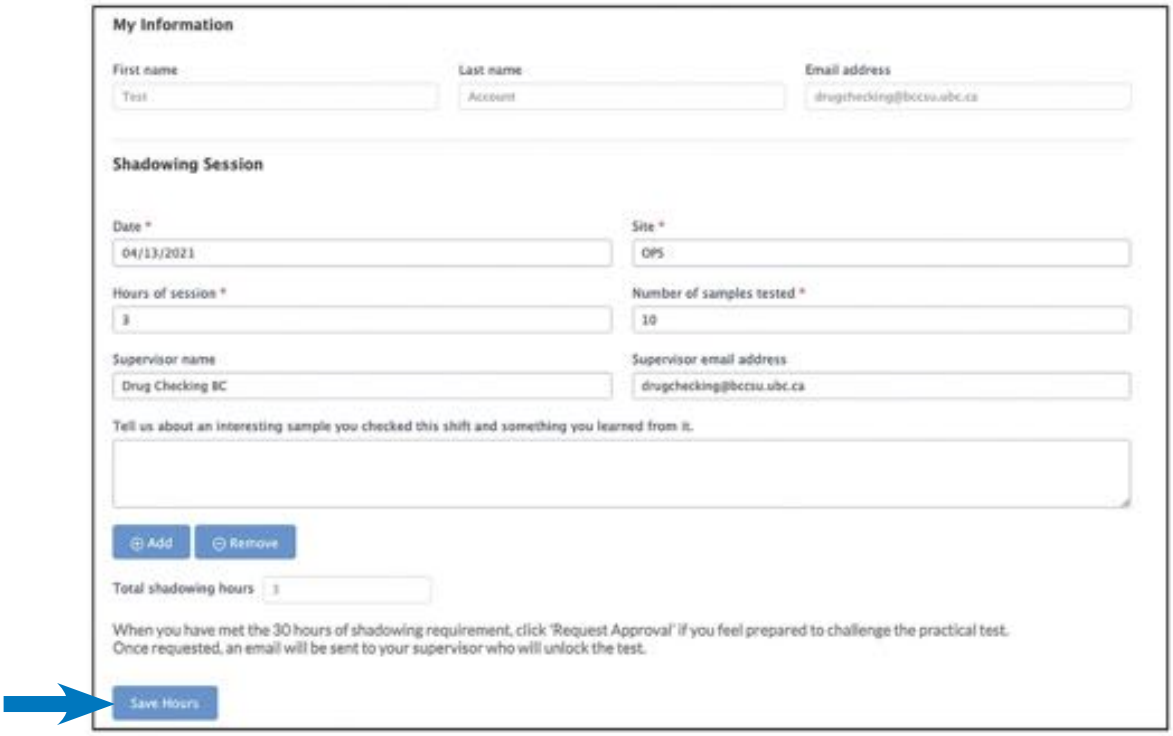
1. This is what the trainee can expect to see when they are ready to start logging their shadowing hours.



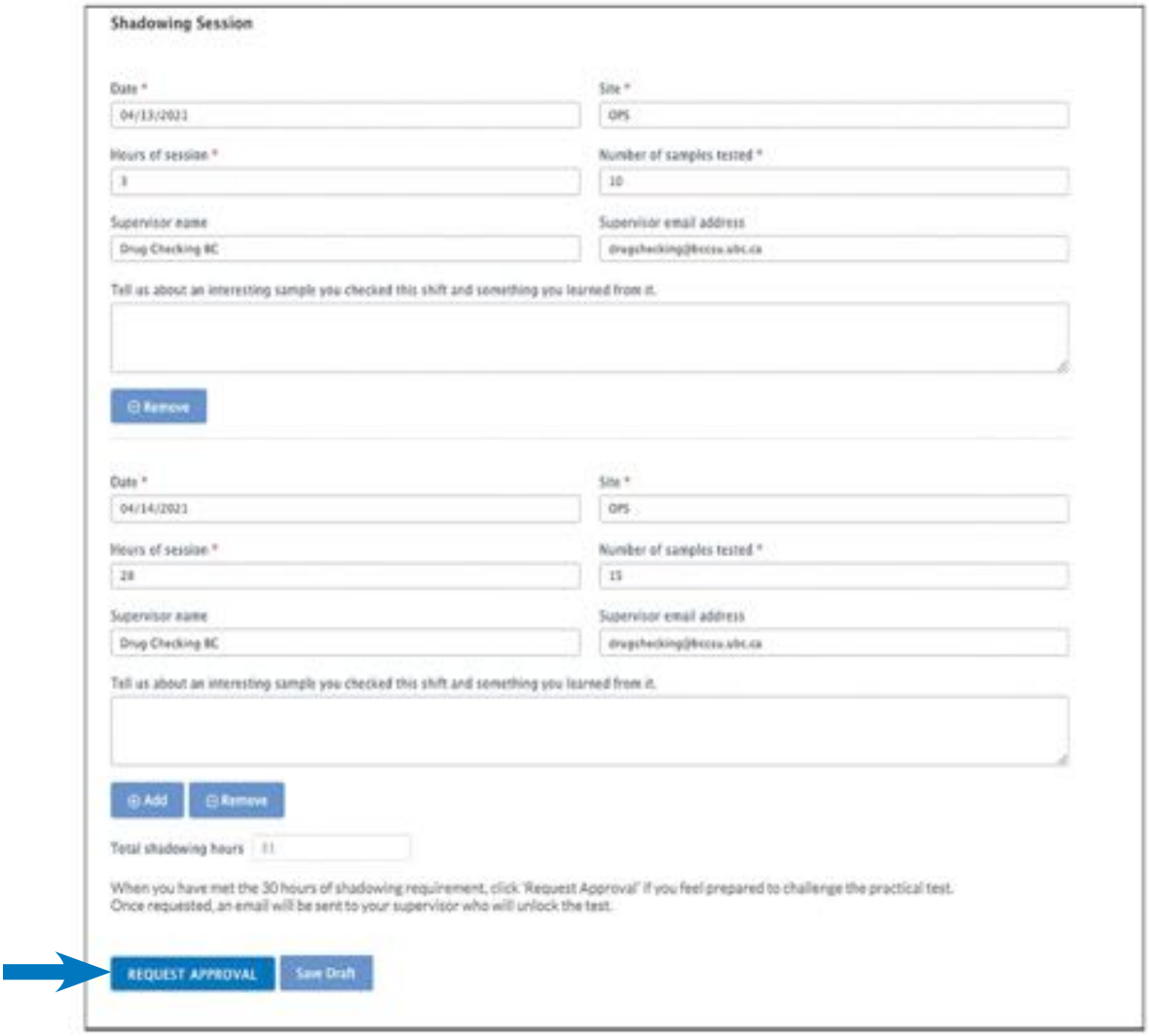
2. There are a number of items that the trainees are expected to complete for each shadowing shift.

   - Shift date
   - Where the shadowing shift took place
   - The number of hours for that shift
   - The supervisor's name and contact
   - A comments box for the trainee to provide details of their shift (optional but recommended)

Once all of these components are entered, clicking "Save Hours" will complete the entry.



3. The trainee will need to complete a minimum of 30 hours of hands-on shadowing to be eligible for the practical test. The practical test is the final stage to become a drug checking technician. Once someone reaches a total of 30 hours of shadowing, a "request for approval" button will appear on the shadowing log screen, as shown in the picture below. When clicked, an email will get sent to their supervisor for approval. To approve a trainee to write the practical, contact the BCCSU Drug Checking Team to unlock the practical test from the backend of the platform. When unlocked, the trainee can access the practical test on the Community of Substance platform. Trainees and supervisors can communicate with each other to schedule a time for write the test (30 minutes to one hour).



Over the Shoulder: (approximately 3 hours)

The first phase of shadowing is about giving the trainee an opportunity to observe how drug checking works at your site. When the trainee is first starting, it is helpful to let them watch 'over your shoulder' to see how you do the work. Some things you will want to ask the trainee to watch for during shadowing include:

- how the samples are received
- how you interact with service users
- how to use the equipment
- how to handle samples
- how to communicate results back to service users

At this stage, trainees may ask questions about your experience of being a technician at your site, as well as communicating results back to service users. Each technician will have different experiences in operating the machines at various locations. It is important for the supervising technician to give the trainee insight into their prospective site and what the trainee can expect from working there, including the regular service users at the site, the service traffic at various hours, and the support available at the site.

Conveying harm reduction messaging/results back to service users is an important part of being a technician, so it is essential for the trainee to learn this skill set from an experienced technician. As a supervising technician, you will want to ask the trainee to observe how you communicate the limitations of drug checking and the results back to the service users, what information is important to provide, and how to respond to questions from service users.

The supervising technician should show the trainee how to unpack the supplies and assemble the FTIR spectrometer correctly. During this training phase, the supervisor can show the trainee how to use the equipment by asking the trainee to observe how to handle samples and the technologies:

- loading a sample onto the FTIR
- cleaning the spectrometer between samples to avoid cross-contamination
- using test strips (fentanyl and benzodiazepine) according to the recommended procedures
- how to pack up, including disassembling the FTIR spectrometer after a drug checking shift

In addition to the technical components to drug checking, it is equally important for the trainee to understand the site-specific culture and site safety and emergency procedures, including the site's COVID safety protocols. The atmosphere at a harm reduction site can be unpredictable so it's important to be prepared. The supervising technician should also share previous experiences on how they interact with service users on a busy day and de-escalate challenging situations if one arises.

By the end of this stage, the trainee should:

- know the site safety and emergency procedures
- know how to handle samples
- know how to unpack the supply kits properly
- know how to interact with service users
- know how to communicate the results back to service users*

*this can look slightly different for each trainee depending on the trainee's learning style/pace.

Further training resources for this stage

a. Drug Use and Harm Reduction 101

b. BC's Unregulated Drug Supply

c. Limitations of technologies/potential information

Co-Pilot: (approximately 3 hours)

Once trainees complete the first stage of shadowing and when they feel ready, they can 'co-pilot' during a drug checking shift with an experienced technician. At this stage, the trainee is an assistant to the technician and is ready to interact with service users. Trainees can complete the first part of the drug checking visit, which would include:

- collecting expected substance information (probing for more details if required)
- collecting the sample and providing to the technician
- explaining some of the limitations of the drug checking technologies

- performing drug checks using test strips (fentanyl and benzodiazepine)
- at the supervising technician's discretion, the trainee can learn how to load samples onto the FTIR and clean the machine once the analysis completed

Point-of-care drug checking results provide valuable information to monitor the local drug supply. It is helpful if the supervising technician can explain why we enter data into the database and why it is important to enter it correctly and accurately. The supervising technician should also demonstrate how to enter the results into the database, as this is an integral part of a drug checking technician role.

By the end of this stage, the trainee should:

- know how to collect sample information from service users
- know how to explain the limitations of drug checking
- know how to perform drug checking using test strips
- know how to load samples onto the FTIR, unload and clean the FTIR
- understand the importance of entering drug checking results into the database

Backseat Driver: (approximately 14 hours)

At this stage, the supervisor will let the trainee operate the FTIR and laptop while providing guidance when needed. While operating the machine, the trainee should be familiarizing themselves with the drug checking workflow with the technician's support. The drug checking workflow starts with interacting with service users to inquire information on the expected substances and explaining the limitation of the drug checking technologies. The trainee will then ask service users to provide a small sample of their drugs for testing using both the FTIR and the test strips. The trainee will load the sample onto the FTIR and perform analyses using the OPUS software. Once completed, the trainee will enter the data into the DCBC database under their own account. If it is the practice at that site, the trainee will write the results down on a result slip (provided by the BCCSU) to give to service users. During this stage, an experienced technician will always be present to support and answer any questions along the way, as well as step in if there are any potential challenging situations, until the trainee is comfortable managing on their own.

Some people rely on the results to help them make informed decisions on how they choose to use their substances, so it is imperative as a technician to correctly communicate the results back

to service users. The supervising technician should teach the trainee on how to identify the key findings from the FTIR results, decide what to communicate back, and how best to communicate the findings to service users. Below is the standard harm reduction messaging that we recommend for the supervising technician to show the trainee:

- Never use alone
- Start with a small amount
- Carry and know how to use naloxone
- Avoid mixing substances which increases your risk of overdose
- Use where help is available whenever possible, like at an overdose prevention site

By the end of this stage, the trainee should:

- Know how to operate the FTIR machine
- Know the drug checking workflow
- Know how to use analysis samples using the OPUS software
- Know how to enter the point-of-care drug checking results into the database
- Know to communicate findings back to service users

Flying solo: (approximately 10 hours)

At this stage, the trainee will be operating the machine independently with minimum oversight from the supervising technician. The supervising technician and the BCCSU will monitor the quality of drug checking results during this stage of training to help identify any potential problems with a sample analysis or areas to improve. This step aims to ensure data accuracy and progress trainee's learning by giving direct feedback if required. During this training phase, the supervisor should be looking for the trainee's ability to:

- Interact with service users to collect samples for analysis
- Load and unload samples from the FTIR properly
- Perform drug checking using the FTIR spectrometer and the test strips
- Properly clean the FTIR machine after every test
- Conduct samples analyses on the OPUS software

- Enter point-of-care drug checking results into the database
- Communicate findings back to the service users

By the end of this stage, the site supervisor/the senior drug checking technician will determine if the trainee is ready to write the practical test to become a drug checking technician. This final step can only happen when the trainee meets the minimum 30 shadowing hours requirement or if the supervisor feels confident in the trainee's ability to provide drug checking services on their own.

Important Training Points

Sample loading and unloading

Loading sample onto FTIR

- Adequate sample size (matchstick head or less needed)
- Sample is not heated, denatured, or destroyed. Try to return as much sample as possible
- Signal preview – what is sufficient? Good contact vs. bad contact
- Different textures and difficulty obtaining a good signal
- Methods for increasing signal (e.g., tinfoil, centre pile)
- Raising and lowering the anvil gently
- Not using the anvil to crush or chip tablets
- Using the red dot as a guide for pressure
- Adjust pressure control knob only when the anvil is raised
- Don't crank on the pressure control knob when the anvil is lowered

Unloading the sample

- Proper cleaning (at least 2 alcohol pads, then dry with kimwipe) – any other contaminated surfaces (e.g., tool)

Sample analysis, OPUS basics

Functionality

- OPUS browser (loaded files)
- Drug ID function button (measure sample, measure background)
- Spectrum search
- Location of functions (taskbar, side panel)

Basic spectrum analysis (order of operations)

1. **Measuring background**
   - Make sure the sensor (ATR crystal) is clean
   - Rejected scan (what does this look like and how to abort)
   - Frequency of background scans (every sample)
2. **Spectrum search**
   - Last used parameters selected automatically
   - Three tabs of window
   - Spectrum correlation > Vector Normalization > 2nd derivative
3. **Subtractive analysis**
   - Order of hits
   - Multiple libraries turned on, repeated results in list
4. **Evaluate matches**
   - Shift curve > Top
   - Spectrum color change option
   - Zoom functions
   - Demonstrate good and poor matches
   - Identifying false matches (missing peaks)
5. **Auto-subtract and new search**

Advance Spectrum Analysis

1. **Changing spectrum search settings**
   - Restricting search window
   - When to turn on expanded libraries (e.g., Pharma)
2. **Mixture analysis**
   - Selecting number of components
   - Restricting libraries
   - Evaluating the outcome (composite vs. query)
   - Unsuccessful results (components missing)
3. **Quantification**
   - Fentanyl QUANT2 modeling if available
   - Limitations and considerations

Appendix F. BCCSU Drug Checking Publications

Year	*Publication*
2018	Bardwell G, Kerr T. Drug checking: a potential solution to the opioid overdose epidemic? *Subst Abuse Treat Prev and Policy*. 2018;13(1):20. https://doi/org/10.1186/s13011-018-0156-3
2018	Tupper KW, McCrae K, Garber I, Lysyshyn M, Wood E. (2018). Initial results of a drug checking pilot program to detect fentanyl adulteration in a Canadian setting. *Drug Alcohol Depend*. 2018;190:242-245. https://doi.org10.1016/j.drugalcdep.2018.06.020
2019	Bardwell G, Boyd J, Arredondo J, McNeil R, Kerr T. Trusting the source: The potential role of drug dealers in reducing drug-related harms via drug checking. *Drug Alcohol Depend*. 2019;198:1-6. https://doi.org/10.1016/j.drugalcdep.2019.01.035
2019	McCrae K, Tobias S, Tupper K, et al. Drug checking services at music festivals and events in a Canadian setting. *Drug Alcohol Depend*. 2019;205:107589. https://doi.org/10.1016/j.drugalcdep.2019.107589
2019	Bardwell G, Boyd J, Tupper KW, Kerr T. "We don't got that kind of time, man. We're trying to get high!": Exploring potential use of drug checking technologies among structurally vulnerable people who use drugs. *Int J Drug Policy*. 2019;71:125-132. https://doi.org/10.1016/j.drugpo.2019.06.018
2020	Long V, Arredondo J, Ti L, et al. Factors associated with the drug checking service utilization among people use who use drugs in a Canadian setting. *Harm Reduct J*. 2020;17(100):1-8. https://doi.org/10.1086/s12954-020-00454-4
2020	Ti L, Tobias S, Lysyshyn M, et al. Detecting fentanyl using point-of-care drug checking technologies: A validation study. *Drug Alcohol Depend*. 2020;212:108006. https://doi.org/10.1016/j.drugalcdep.2020.108006
2020	McCrae K, Hayashi K, Bardwell G, et al. The effect of injecting alone on the use of drug checking services among people who inject drugs. *Int J Drug Policy*. 2020;79:102756. https://doi.org/10.1016/j.drugpo.2020.102756
2020	Beaulieu T, Hayashi K, Nosova E, et al. Effect of witnessing an overdose on the use of drug checking services among people who use illicit drugs in Vancouver, Canada. *Am J Drug Alcohol Abuse*. 2020;46(4):506-511. https://doi.org/10.1080/00952990.2019.1708087
2020	Shapiro A, Sim D, Wu H, et al. Detection of etizolam, flualprazolam, and flubromazolam by benzodiazepine-specific lateral flow immunoassay test strips. The British Columbia Centre on Substance Use. https://www.bccsu.ca/wp-content/uploads/2020/08/BenzoTestStrip_Report.pdf. 2020.
2020	Yau B, Arredondo J, Tobias S, et al. *A field assessment of Fourier Transform Infrared (FTIR) Spectroscopy and fentanyl immunoassay strips as point-of-care drug checking technologies*. The British Columbia Centre on Substance Use. 2020. https://www.bccsu.ca/wp-content/uploads/2020/08/FTIR_TestStrip_Field_Assessment-Sept2019.pdf

2020	Tobias S, Shapiro A, Wu H, Ti L. Xylazine identified in the unregulated drug supply in British Columbia. *Can J Addict*. 2020;11(3):28-32. https://doi.org/10.1097/CXA.0000000000000089
2020	McCrae K, Tobias S, Grant C, et al. Assessing the limit of detection of Fourier-transform infrared spectroscopy and immunoassay strips for fentanyl in a real-world setting. *Drug Alcohol Rev*. 2020;39(1):98-102. https://doi.org/10.1111/dar.13004
2021	Ti, L., Tobias, S., Maghsoudi, N., et al. Detection of Synthetic Cannabinoid Adulteration in the Unregulated Drug Supply in Three Canadian Settings. *Drug Alcohol Rev*. 2021;40(4):580-585. https://doi.org/10.1111/dar.13237
2021	Tobias S, Shapiro A, Grant C, Patel P, Lysyshyn M, Ti L. Drug checking identifies counterfeit alprazolam tablets. *Drug Alcohol Depend*. 2021;218:108300. https://doi.org/10.1016/j.drugalcdep.2020.108300
2021	McCrae K, Wood E, Lysyshyn M, et al. The utility of visual appearance in predicting the composition of street opioids. *Subst Abus*. 2021;42(4):775-779. https://doi.org/10.1080/08897077.2020.1864569
2021	Laing MK, Ti L, Marmel A, et al. An outbreak of novel psychoactive substance benzodiazepines in the unregulated drug supply: Preliminary results from a community drug checking program using point-of-care and confirmatory methods. *Int J Drug Policy*. 2021;93:103169. https://doi.org/10.1016/j.drugpo/2021.103169
2021	Patel P, Guzman S, Lysyshyn M, et al. Identifying cocaine adulteration in the unregulated drug supply in British Columbia, Canada. *Can J Addict*. 2021;12(2):39-44. Https://doi.org/10.1097/CXA.0000000000000112
2021	Beaulieu T, Wood E, Tobias S, et al. Is expected substance type associated with timing of drug checking service utilization?: A cross-sectional study. *Harm Reduct J*. 2021;18(66):1-4. https://doi.org/10.1186/s12954-021-00514-3
2022	Tobias S, Lysyshyn M, Buxton J, Tupper K, Ti L. Tobias et al. Respond to "Novel surveillance of the unregulated drug supply". *Am J Epidemiol*. 2022;191(2):253-254. https://doi.org/10.1093/aje/kwab234
2022	Beaulac M, Richardson L, Tobias S, Lysyshyn M, Grant C, Ti L. Changes in the unregulated opioid drug supply during income assistance payment weeks in Vancouver, Canada: An exploratory analysis. *Int J Drug Policy*. 2022;105:103707. https://doi.org/10.1016/j.drugpo.2022.103707 [Epub ahead of print]
2022	Tobias S, Grant CJ, Laing R, et al. Time-series analysis of fentanyl concentration in the unregulated opioid drug supply in a Canadian setting. *Am J Epidemiol*. 2022;191(2):241-247. https://doi.org/10.1093/aje/kwab129

Appendix G. 2021 FTIR Equipment and Supply Costs

Equipment and Supplies costs

*all costs do not include taxes and shipping

*Costs are based on purchase of equipment in 2018

*Discounts may be available for purchase of more than one unit

Equipment - FTIR (start-up costs)

Bruker ALPHA II FTIR	$32,060.80	
Extension of the ALPHA Base for Operations in High Humidity	$1,696.00	
OPUS Integrated Software	$0.00	
OPUS Search Software	$2,848.00	
Software Wizard for Drug Identification	$1,238.40	
TICTAC Drug Library	$6,112.00	
ATR-FTIR Drug Library (Bruker Pharmaceutical Library)	$2,928.00	
UDG Drug Library (Georgia State Crime)	$1,760.00	*not recommended
PC Laptop	$2,096.00	
Carrying Case	$628.80	
subtotal	*approximately $51,000*	

Equipment - FTIR (ongoing costs)

TICTAC Drug Library Update	$2,941.00	*per machine per year
ATR-FTIR Drug Library Update (Bruker Pharmaceutical Library)	$3,000.00	*per machine per update (12-18 months)
SWGDRUG	$0.00	*open source
BCCSU Drug Library	$0.00	*open source
Replacement Carrying Case	$509.61	*if needed
Crystal Replacement Repair	$3,307.71	*if needed

Equipment - Internet

Wifi Hotspot (rocketstick)	$250.00	
Data Plan (per month)	$60.00	

Materials & Supplies

Kimwipes	$2.35/box	
Paper Cups	$96.00/carton	
Chemistry Spatulas	$10/item	
Water Dispenser	$2/item	
Alcohol Wipes	$10/box	
Goggles	$20/item	
Gloves	$25/box	
Deterra Pouches	$50/pack	*for sample destruction, can replace with kitty litter.
Extension Cord	$25/item	
Fentanyl Test Strips (100/box, 20ng/mL)	$85.00	https://www.btnx.com/
Benzodiazepine Test Strips (100/box, 300 ng/mL)	$85.00	https://www.btnx.com/
Microcentrifuge Tubes for BTS (case of 10 packs)	$231.70	https://www.fishersci.ca/shop/products/basix-microcentrifuge-tubes-standard-snap-caps/02682004?keyword=true
Printing (Results Notepads, Promo Materials)	$1,000.00	

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www.bccsu.ca

If you would like more information about drug checking services in BC, please visit:

www.drugcheckingbc.ca

or email **drugchecking@bccsu.ubc.ca**