Vancouver Island Drug Checking Project

Year End Report 2020

The Vancouver Island Drug Checking Project delivers drug checking services in Victoria, BC. Our service has been operating in partnership with SOLID Outreach, AVI Health and Community Services, Lantern Services, Dr. Chris Gill and the team at Vancouver Island University and Island Health Authority. This free and confidential service provides information on composition of substances and harm reduction information. We employ several analytical techniques as follows:

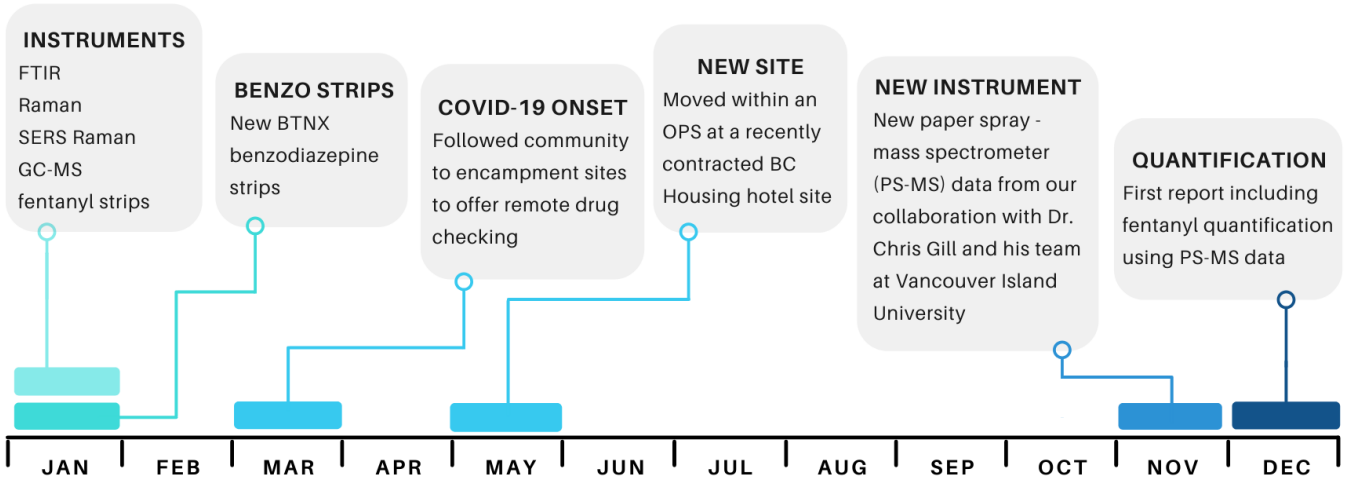
- Fentanyl Immunoassay Strips
- Benzodiazepine Immunoassay Strips
- Fourier Transform Infrared Absorption Spectroscopy (FTIR)
- Raman Spectroscopy
- Surface Enhanced Raman Spectroscopy (SERS)
- Gas Chromatography - Mass Spectrometry (GC-MS)
- Paper Spray - Mass Spectrometry (PS-MS)

1288

Samples Tested
Jan 1-Dec 31 2020

Substance 2020 Timeline

Our project was happy to remain active throughout the entire year and to adapt our service to meet the needs of the community.



What does the addition of paper spray (PS) data mean? PS has increased our ability to detect low concentration actives, like etizolam and carfentanil, and to report on quantification. See the December blog post for our first release of fentanyl quantification. Note that only 16% of the 2020 samples contain PS data, so we cannot directly compare the prevalence of low level actives and quantification to the earlier samples due to the differing data available.

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Highlighted Findings

⇒ **Adulteration** with other notable components was highest for samples expected to be opioid-down (27%), benzodiazepines (25%), psychedelics (20%), or methamphetamine (18%). Within expected opioid-down, five samples contained xylazine[1], which may impact the effectiveness of naloxone.

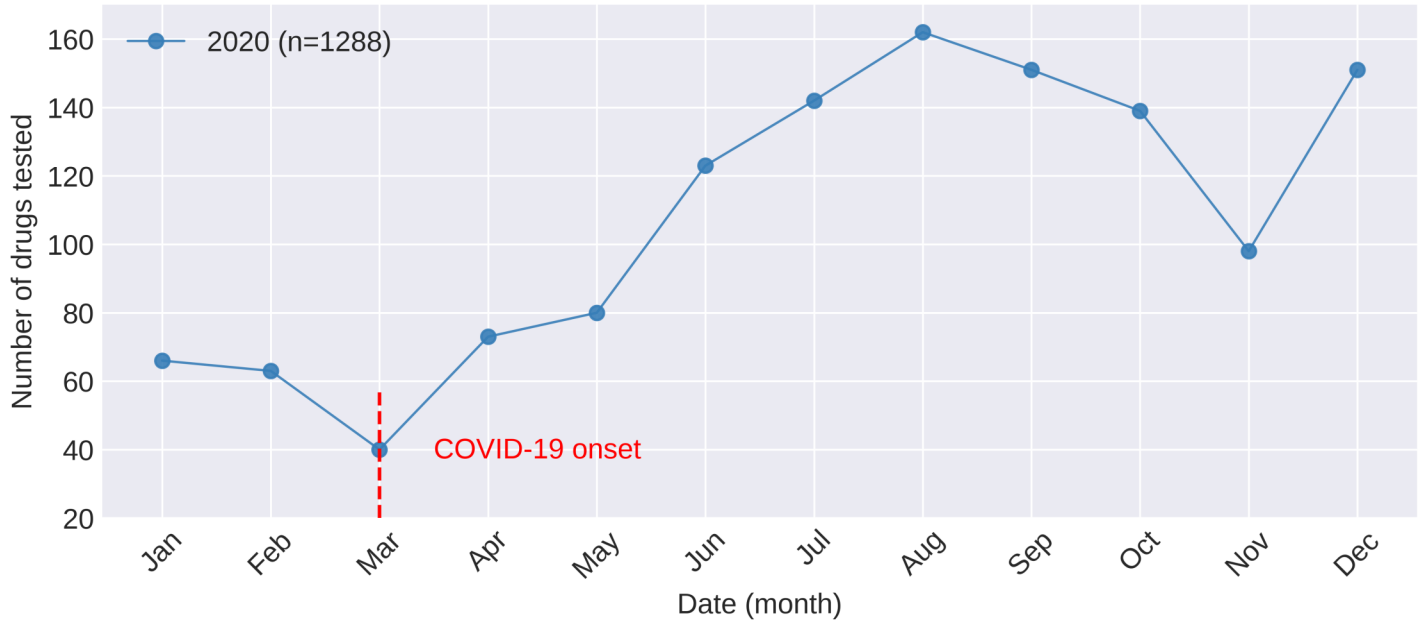
⇒ **Benzodiazepines** and/or etizolam[2] were detected in 18% of expected opioid-down. Specifically, 9% contained only a benzo, 8% contained only etizolam, and 1% contained both a benzo and etizolam. This is noteworthy because benzos do not react with naloxone, which can lead to atypical and more serious overdoses.

⇒ **Fentanyl or fentanyl analogues** were found in 93% of all expected opioid-down samples, 3% of all stimulants, 2% of all benzodiazepines, 3% of all dissociatives, and 0% of all psychedelics.

⇒ **No additional notables** to the expected active[3] was found for the majority of samples expected to be cocaine (83%), methamphetamine (78%), ketamine (90%), DMT (100%), LSD (93%), and MDMA (76%). Contrary to some common assumptions, many samples contain only the expected active.

Service uptake

We saw a consistent uptake of service in 2020, demonstrating an overall demand for drug checking services throughout the entire year. Variations in uptake can be attributed to seasonal variations, cohort effects, and current events. For example, our lowest uptake can be correlated to COVID-19 and the BC public health emergency that was declared in March. Another noticeable dip in uptake is present in November when BC announced new provincial-wide restrictions.



[1]Xylazine is a common veterinary sedative that has not been approved for human consumption. [2]Etizolam has low sensitivity with the benzodiazepine test strips and often does not react, therefore we detect it through other instrumentation and we differentiate it within our reporting. [3]Additional notable components includes unexpected actives or components of note, such as those with the potential for unexpected effects or that impact the effectiveness of naloxone. No additional notables to the expected active may still contain samples with inert components and buffs considered not notable (i.e. sugars), or notables that are our below our limit of detection.

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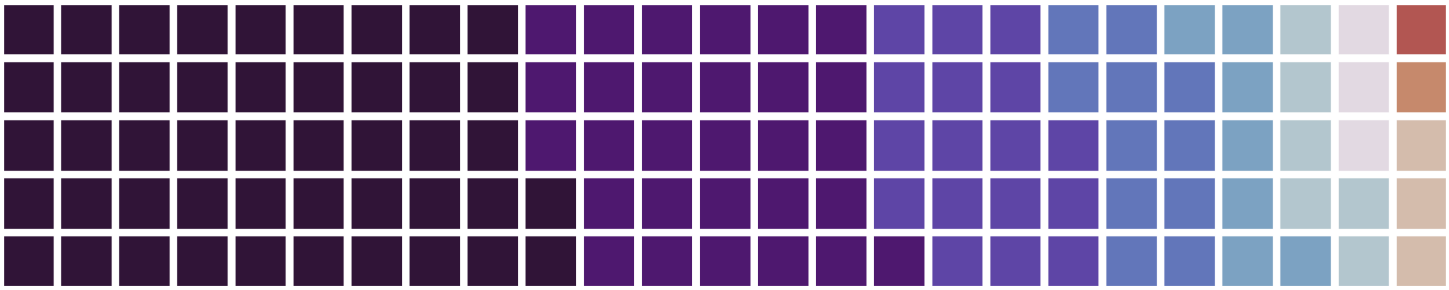
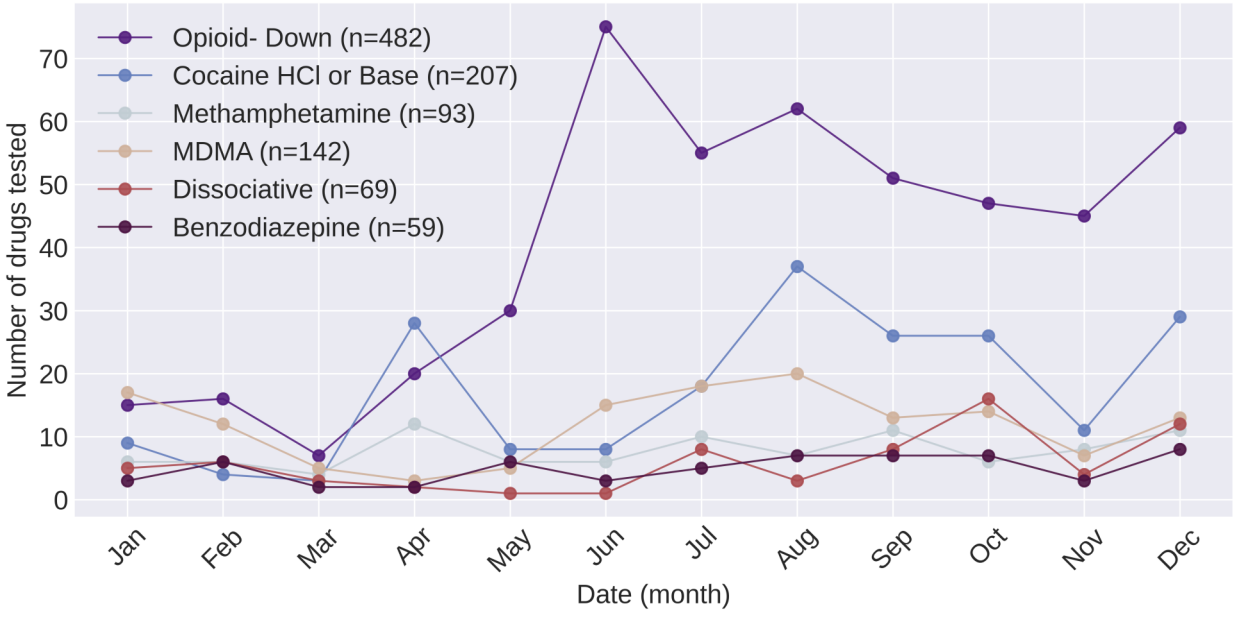
What were people bringing to be tested?

The expected drugs within expected groups are as follows[1]: Opioid- Down includes fentanyl and/or heroin (479), carfentanil (3). Stimulant includes cocaine (207), methamphetamine (93). Psychedelic includes MDMA (142), LSD (14), DMT (9), 2C-B (5). Dissociative includes ketamine (68), DXM (1). Benzodiazepine includes Xanax (42), clonazepam (2). Opioid-Other includes oxycodone (6), Dilaudid (5), morphine (3). Polysubstance includes down + benzo (5), down + meth (1), cocaine + ketamine (1). Depressant- Other includes GHB (5). Stimulant- Other includes 3-MMC (1), amphetamine (2).



Opioid- Down (n=482)
Stimulant (n=300)
Psychedelic (n=174)
Unknown (n=113)
Dissociative (n=69)
Benzodiazepine (n=59)
Missing (n=34)
Opioid- Other (n=26)
Other (n=15)
Polysubstance (n=7)
Depressant- Other (n=5)[2]
Stimulant- Other (n=4)[2]

A subset of expected drug categories and their prevalence checked in 2020 are presented below. The consistent access of multiple drug categories through the entire year demonstrates the need for both universal and population-targeted approaches to drug checking services and the accessibility of services.



[1]*This list includes the majority of expected drugs, but is not comprehensive to every expected drug within each sub-category.*

[2]*Not included in the figure.*

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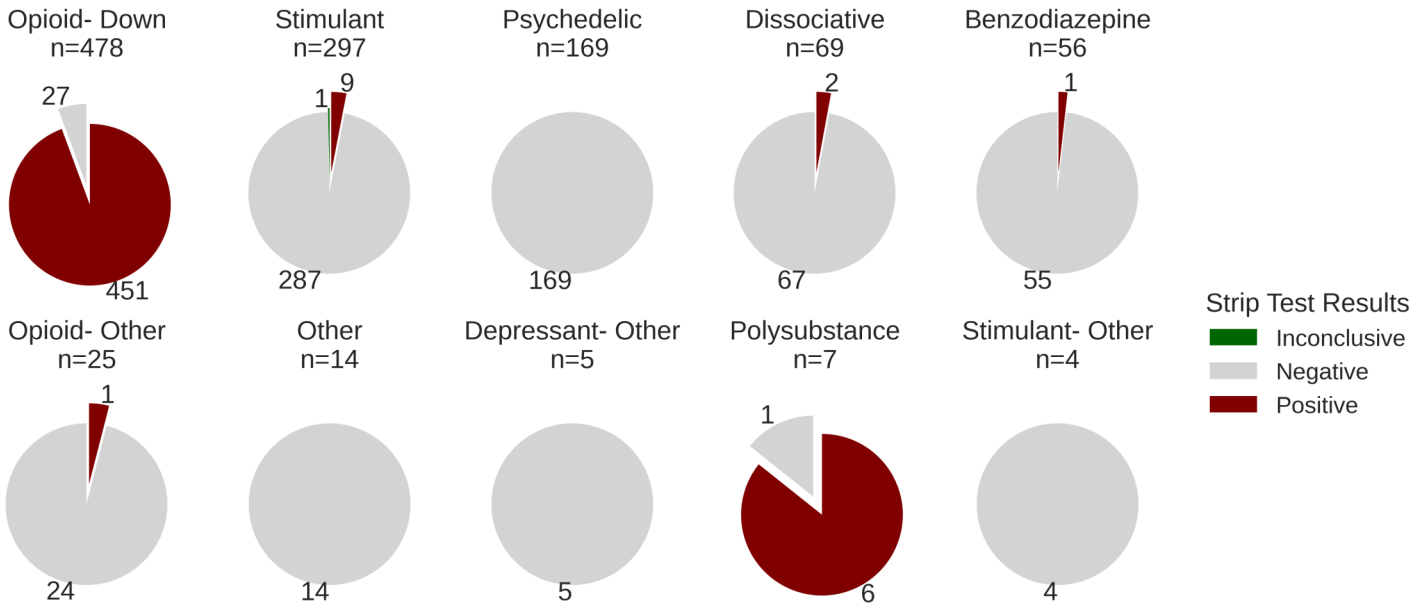
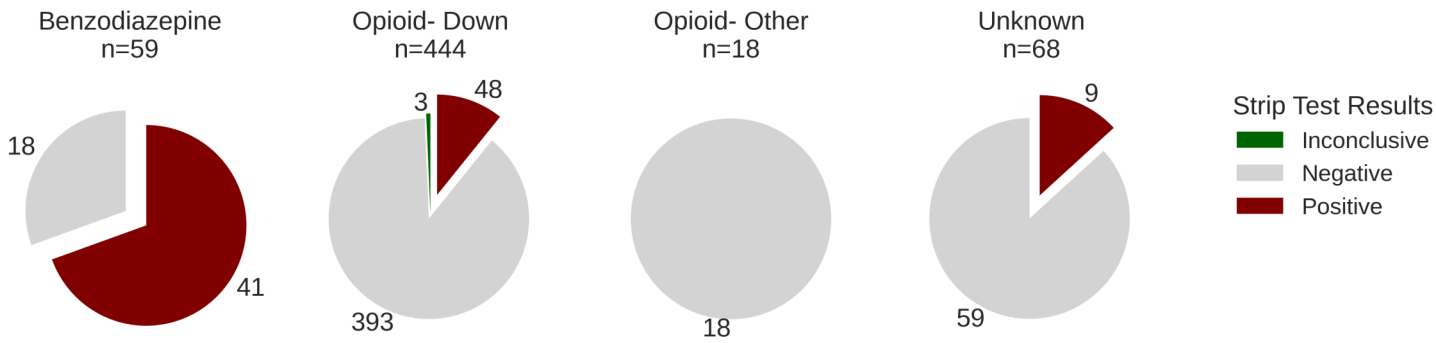
Fentanyl Immunoassay Test Strips

Fentanyl test strips were run on 98 % (1268/1288) of samples checked at our service in 2020[1]. Of the 1268 tests run, 41% resulted fentanyl positive. Within these positive results, 86% were found within expected Opioid- Down and 10% were found within expected Unknown/Missing. This challenges the assumption that fentanyl is found in everything. For the 4% of positives where fentanyl was unexpected, it is important to note the potential for cross-contamination when handling multiple substances or possible miscommunications through third-party testers.



Benzodiazepine Immunoassay Test Strips

Benzodiazepine strips were first introduced in our service in January 2020. We aim to run benzo strips on expected Benzodiazepines, Opioid– Down, Opioid– Other, Unknown as well as any suspect samples.[2] Note, our service has been unable to find a positive result using the strips when testing for the benzo-related compound etizolam. Read our Benzodiazepine blog post to read more about these strips and their limitations.



[1]Unknown and missing categories are not shown in the figure. [2]Benzo strips were not consistently run across these categories, especially in the early months of 2020, therefore the sample n does not represent all samples within each category.

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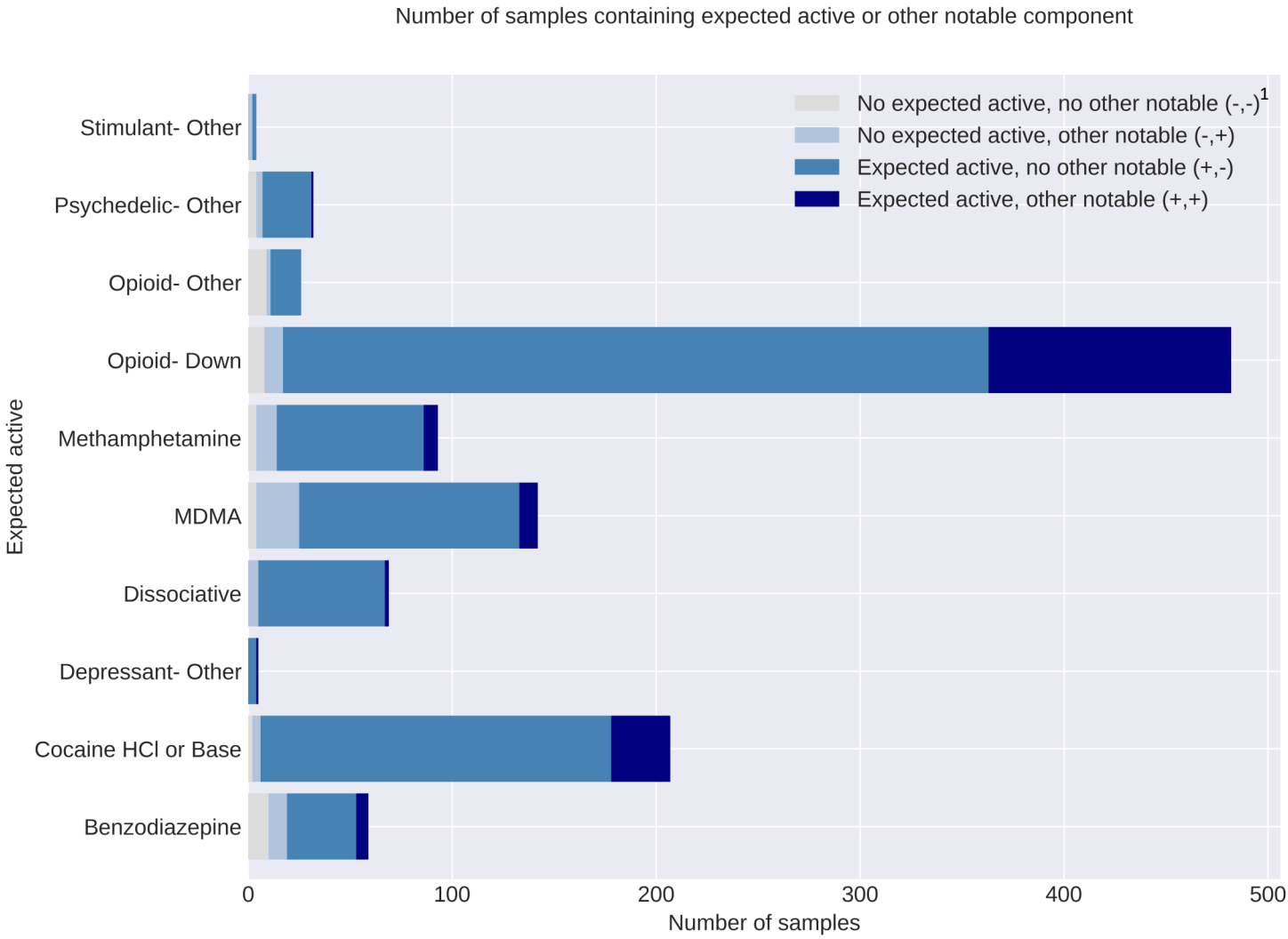
What did we find?

We tested each sample to determine what active ingredients, adulterants, and cutting agents were present. The majority of samples contained an active that fit into each expected category. However, we also detected a number of other notable components that may cause unexpected effects or impact the effectiveness of naloxone.



There were missing data for some samples. Instruments may not be able to detect all ingredients and certainty of interpretations may vary. Multiple substances may be present in one sample and substances may be present in trace concentrations. Notable components: Includes all expected actives as well as unexpected components of note, such as those with the potential for unexpected effects or that impact the effectiveness of naloxone. [1]May be due to limitations of technology to detect certain substances.

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What did we find?

For each expected category we list the number of samples that contained the expected active or other notable components according to the following categorizations:

(-,-) no expected active, no other notable component	(-,+) no expected active, other notable component
(+,-) expected active, no other notable component	(+,+) expected active, other notable component

	Opioid Down	482
(+,-)	***Expected active, no other notable***	***346***
	Fentanyl or analogue	330
	Heroin	48
(-,-)	***No expected active, no other notable[1]***	***8***
(-,+)	***No expected active, other notable***	***9***
	Fentanyl[2]	3
	Cocaine HCl	2
	Methamphetamine	2
	Heroin[2]	1
	Phenacetin	1
(+,+)	***Expected active*, other notable***	***119***
	Fentanyl or analogue*	114
	Benzodiazepine (undifferentiated)	49
	Etizolam	45
	Heroin*	17
	Methorphan	9
	Methamphetamine	9
	Cocaine	7
	Xylazine	5
	6-Monoacetylmorphine	3
	Carfentanil	2
	Hydromorphone	2
	Acetylcodeine	1
	Procaine	1

	Cocaine HCl or Base	207
(+,-)	***Expected active, no other notable***	***172***
	Cocaine HCl	162
	Cocaine Base	10
(-,-)	***No expected active, no other notable[1]***	***2***
(-,+)	***No expected active, other notable***	***4***
	Methamphetamine	2
	Benzocaine	1
	MDA	1
(+,+)	***Expected active*, other notable***	***29***
	Cocaine HCl*	23
	Phenacetin	14
	Cocaine Base*	6
	Methamphetamine	7
	Fentanyl or analogue	3
	Benzocaine	2
	Gabapentin	2
	4-ANPP	1
	Levamisole	1
	Piracetam	1
	Procaine	1

*Data are preliminary. There were missing data for some samples. Instruments may not be able to detect all ingredients and certainty of interpretations may vary. Multiple substances may be present in one sample and substances may be present in trace concentrations. Notable components: Includes all expected actives as well as unexpected components of note, such as those with the potential for unexpected effects or that impact the effectiveness of naloxone. *Expected active component. [1]May be due to limitations of technology to detect certain substances. [2]Expected carfentanil, found fentanyl, heroin.*

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Methamphetamine		93
(+,-)	***Expected active, no other notable***	***72***
	Methamphetamine	72
(-,-)	***No expected active, no other notable[1]***	***4***
(-,+)	***No expected active, other notable***	***10***
	Methylamine HCl	3
	Fentanyl or analogue	2
	MDA	2
	MDMA	2
	Phenylpropylmethylamine	1
(+,+)	***Expected active*, other notable***	***7***
	Methamphetamine*	7
	Fentanyl or analogue	3
	Amphetamine	2
	DMSO	1
	MDMA	1

Dissociative		69
(-,+)	***No expected active, other notable***	***5***
	Methamphetamine	2
	Fluorodeschloroketamine	1
	MDMA	1
	Diphenhydramine	1
(+,-)	***Expected active, no other notable***	***62***
	Ketamine	61
	DXM	1
(+,+)	***Expected active*, other notable***	***2***
	Ketamine*	2
	Fentanyl or analogue	1
	Procaine	1

Psychedelic		174
(+,-)	***Expected active, no other notable***	***131***
	MDMA	108
	LSD	13
	DMT	6
	5-MeO-DMT	2
	2C-B	1
	4-AcO-DMT	1
	5-MeO-MiPT	1
(-,-)	***No expected active, no other notable[1]***	***8***
(-,+)	***No expected active, other notable***	***24***
	MDA	18
	Cocaine	4
	Ketamine	4
	Methamphetamine	3
	2-Fluoromethamphetamine	1
	3,4-MDPBP	1
	Ethylone	1
	MDMA	1
(+,+)	***Expected active*, other notable***	***10***
	MDMA*	9
	MDA	6
	2C-B*	2
	2C-H	1
	Phenacetin	1
	TFMPP	1

Polysubstance		7
	Fentanyl or analogue	6
	Cocaine HCl	1
	Ketamine	1

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Benzodiazepine		59
(+,-)	***Expected active, no other notable***	***34***
	Benzodiazepine (undifferentiated)	18
	Alprazolam	10
	Etizolam	4
	Flualprazolam	3
	Chlorodiazepoxide	1
(-,-)	***No expected active, no other notable[1]***	***10***
(-,+)	***No expected active, other notable[2]***	***9***
	Etizolam	5
	Flualprazolam	3
	Flubromazolam	1
(+,+)	***Expected active*, other notable***	***6***
	Benzodiazepine (undifferentiated)*	5
	Etizolam	4
	Diazepam*	1
	Fentanyl or analogue	1
	Lidocaine	1

Other Opioid		26
(+,-)	***Expected active, no other notable***	***15***
	Hydromorphone	7
	Oxycodone	6
	Morphine	2
(-,-)	***No expected active, no other notable[1]***	***9***
(-,+)	***No expected active, other notable***	***2***
	Fentanyl or analogue	1
	Heroin	1
	U-47109	1

Other Depressant		5
(+,-)	***Expected active, no other notable***	***4***
	GHB	4
(+,+)	***Expected active*, other notable***	***1***
	GHB*	1
	GBL	1

Other Stimulant		4
(+,-)	***Expected active, no other notable***	***2***
	3-MMC	1
	Amphetamine	1
(-,+)	***No expected active, other notable***	***2***
	Methamphetamine	2

Other / Unknown / Missing		162	
Fentanyl or analogue	52	MDA	2
Cocaine HCl	23	THCV	1
Methamphetamine	13	Tadalafil	1
Ketamine	8	Cathinone	1
Heroin	6	3-MMC	1
Etizolam	5	Benzocaine	1
Benzodiazepine	5	Cephalexin	1
Alprazolam	4	Dimenhydrinate	1
Phenacetin	3	Doxycycline	1
Cannabidiol	2	Gabapentin	1
THCA	2	Levamisole	1
Cannabinol	2	MDMA	1
Lidocaine	2	Medazepam	1
Hydromorphone	2	Morphine	1

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COVID-19 Service Adaptations

The arrival of the COVID-19 pandemic caused services to shut down or limit capacity in response to the emerging crisis, significantly impacting the community and those who relied on these services. As service agencies and harm reduction organizations grappled with the impacts of dual health crises, our project committed to the ongoing provision of drug checking services in Victoria, BC. We continued to partner with AVI Health and Community Services and SOLID Outreach to ensure that harm reduction services, including our own, continued to operate throughout the emerging response. As a university-based research project, Island Health's Research Ethics Board recognized our project as essential and was extremely supportive and responsive as we submitted the necessary COVID-19 amendments for approvals.

As a service that provides some quality control in an unregulated market, we recognized the importance of continuing to provide drug checking in the context of an already devastating overdose crisis. We followed overdose prevention services as they set up outdoors in the newly established Topaz Park encampment. We further relied on existing partnerships with harm reduction agencies who supported us in the provision of an outreach model to procure drug samples in the community. While limited capacity and accessibility initially impacted the number of drug samples we were able to analyze in any given week, we soon began to respond to ongoing demands for service.

In the first few months of the COVID-19 pandemic, we saw a significant increase in service demand. As sheltering individuals continued to be displaced by city officials and Public Health scrambled to respond, we followed harm reduction agencies as they moved from the encampments to the newly procured hotels. We established ourselves in BC Housing's Travelodge hotel and operated our drug checking service in partnership with AVI Health and Community Services' Overdose Prevention Site. From the start of the pandemic, we analyzed 1119 samples, a substantial increase from the previous year.

The emergence of the pandemic highlighted the importance of both our community partnerships and the need to provide a consistent and accessible service. Despite the challenges in adapting to public health measures, Substance UVIC continued to operate critical services for people who use drugs and those who support them. With devastating rates of fatal overdoses rising in the province, now, more than ever, we need to scale up existing drug checking services and increase their reach to ensure a useful and relevant response in the midst of ongoing dual health crises.

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The Vancouver Island Drug Checking Project is based out of the University of Victoria and operates community-wide drug checking services within Victoria, BC. We are continuing to offer drug checking services in response to the dual public health emergencies, and exploring new ways to better reach those who may benefit from this service. We have now partnered with Dr. Chris Gill and the team at Vancouver Island University to improve detection and reporting using their paper spray - mass spectrometer. See the blog portion of our website to access our monthly reports and to view more detailed interpretations of our reports.

Our project respectfully acknowledges that we work as visitors on the traditional territory of the Lkwungen (Songhees), Wyomilth (Esquimalt), and WSÁNEĆ (Saanich) peoples of the Coast Salish Nation. We also acknowledge the inextricable links between research, colonization and racism against Indigenous peoples, which continue to this day. Ending the violence faced by people who use substances and the overdose crisis cannot be achieved without facing the legacy through which we have come to be in this territory.

For more information please visit: substance.uvic.ca

We gratefully acknowledge our partners and funders on this project

Our Partners

Agilent Technologies

AVI Health and Community Services

BC Ministry of Health

BC Ministry of Mental Health and Addictions

BC Support Vancouver Island Centre

Canadian Institute for Substance Use Research

Compute Canada

IBM Canada

Island Health Authority

Lantern Services

PerkinElmer Inc

ProSpect Scientific

SOLID Outreach

STS Pharmacy

University of Victoria

Vancouver Island University

Westgrid

Our Funders

Health Canada Substance Use and Addictions Program

Vancouver Foundation

Michael Smith Foundation for Health Research

Natural Sciences and Engineering Research Council

Canadian Institutes of Health Research