Substance Drug Checking

Preliminary Results for September 2023

The Vancouver Island Drug Checking Project delivers drug checking services in Campbell River, the Comox Valley, Duncan, Port Alberni, and Victoria, BC. Our service has been operating in partnership with SOLID Outreach, AVI Health and Community Services, Port Alberni Shelter Society, Vancouver Island Mental Health Society, Duncan Lookout Housing and Health Society, Vancouver Island University, and the Island Health Authority. This free and confidential service provides information on composition of substances and harm reduction information.

Highlighted findings:

- The median fentanyl concentration found across all drug categories was 8.4%

- The median fluorofentanyl concentration nearly tripled from August, going from 5.1% to 14.5%

- Carfentanil was found in 3 *expected* opioid - down samples with a median concentration of 0.2% and maximum concentration of 0.4%

- Benzodiazepines and/or etizolam were found in 60% (223/374) of expected opioid-down samples

- Bromazolam, the most common benzo found within opioid-down, was found in 174 opioid-down samples with a median concentration of 5.8% and maximum concentration of 25.0%

- Xylazine was found in 24 samples (all expected opioid-down) with a median concentration of 6.0% and a maximum concentration of 31.6%

- Isobutyryl fentanyl was found in 23 samples (all expected opioid-down) with a median concentration of 5.2% and a maximum concentration of >80%
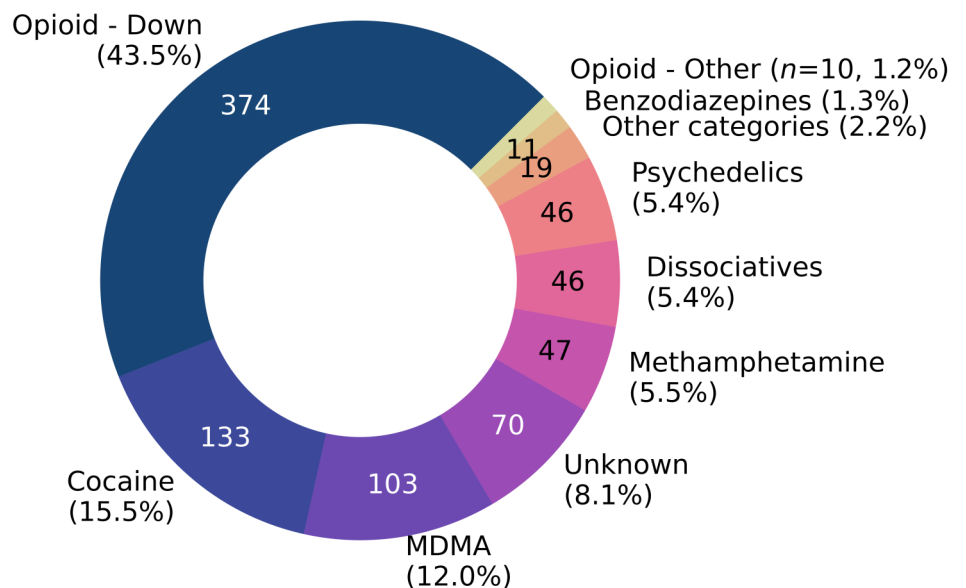
Read our blog for further interpretations of our September data.

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Samples Tested 1 - 30 September 2023

What were people bringing to be checked?

Service users bring us a wide variety of substances that can be grouped into different drug classes. This pie chart aggregates the samples we checked by their "expected" substance (i.e. the drug category reported by the service user). The number of samples checked in each class is included inside each slice and the relative proportion of all samples checked is given in parentheses. These data are separated by collection location/method on the following page.

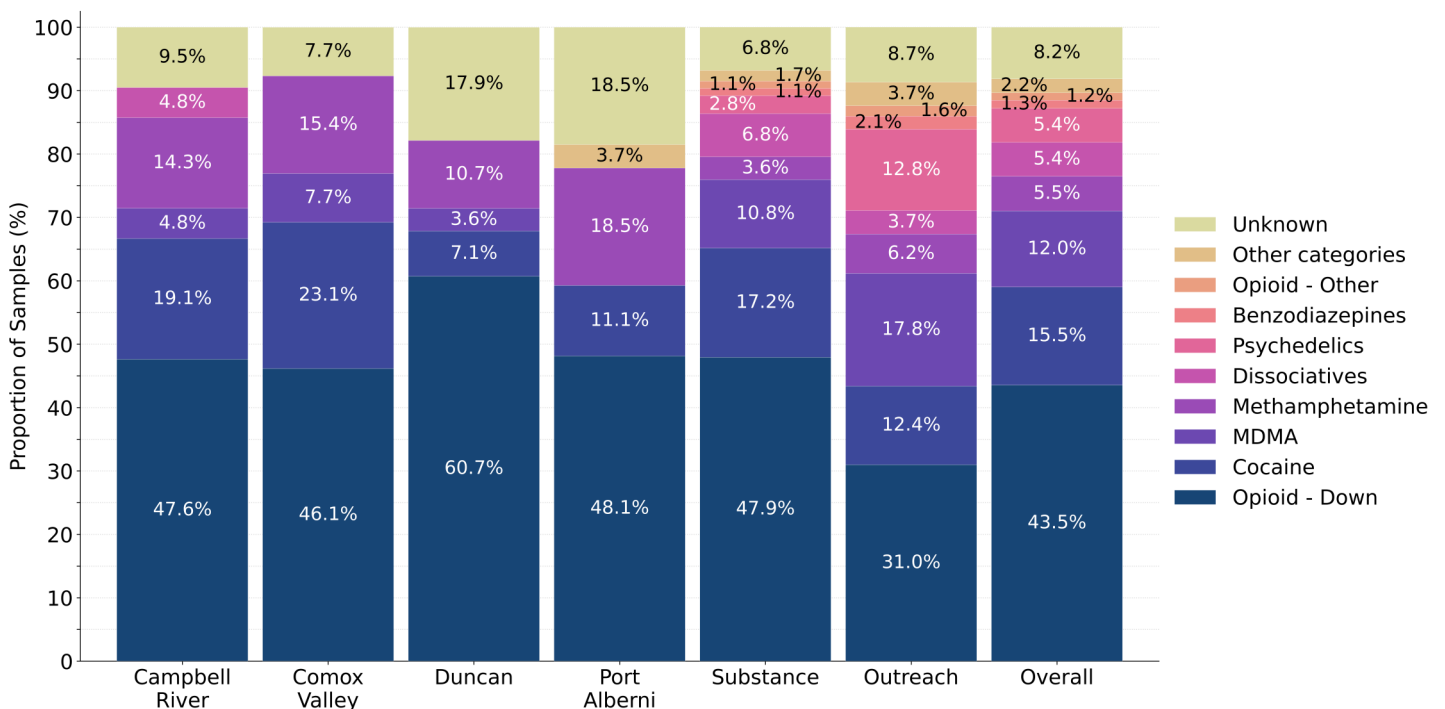Opioid - Down (43.5%) — 374
Opioid - Other (n=10, 1.2%)
Benzodiazepines (1.3%) — 11
Other categories (2.2%) — 19
Psychedelics (5.4%) — 46
Dissociatives (5.4%) — 46
Methamphetamine (5.5%) — 47
Unknown (8.1%) — 70
MDMA (12.0%) — 103
Cocaine (15.5%) — 133

What were people bringing to be checked by service model?

The "expected substance" data presented on the previous page can be separated by sample collection location/method, where "Substance" samples are those brought directly to our Victoria storefront, "Campbell River", "Comox Valley", "Duncan", and "Port Alberni" are samples received through our distributed drug checking model, and "Outreach" samples are those collected at supported housing sites, at overdose prevention and supervised consumption locations, and through drop-off envelopes. September's Outreach data also includes samples checked at Rifflandia Electic Avenue and Rifflandia The Park. The relative proportions of samples checked by expected class and location are shown in the figure below; sample counts are listed in the table at the bottom of this page.

Expected substance	Campbell River	Comox Valley	Duncan	Port Alberni	Substance	Outreach	Overall
Opioid-Down (fentanyl and/or heroin)	10	6	17	13	253	75	374
Cocaine	4	3	2	3	91	30	133
MDMA	1	1	1	0	57	43	103
Methamphetamine	3	2	3	5	19	15	47
Dissociatives	1	0	0	0	36	9	46
Psychedelics (2C-B, DMT, LSD, etc.)	0	0	0	0	15	31	46
Benzodiazepines	0	0	0	0	6	5	11
Other Opioids (Dilaudid, oxycodone)	0	0	0	0	6	4	10
Other (cannabis, GHB, steroids, etc.)	0	0	0	1	9	9	19
Unknown	2	1	5	5	36	21	70
Total	21	13	28	27	528	242	859

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What did we find?

We checked each sample to determine what active compounds and cutting agents were present. While a majority of samples contained the expected active drug, we also detected a number of other notable compounds that may cause unexpected effects. The figures below illustrate the proportions and numbers of samples checked in each drug category, separated by collection location/method, colour coded by their composition. **Dark Blue** groups samples that were "as expected" with no other notable compounds *detected*, **Purple** groups samples that contained the expected drug *and* other unexpected active(s), **Magenta** groups samples that only contained unexpected active(s) (the expected drug was not found), **Salmon** groups samples where we were unable to determine the composition, and **Lime** displays samples where no active compounds were detected. Proportions strictly less than 5% are left out for readability.

Legend:
- ■ Expected Active Only
- ■ Expected + Unexpected Actives
- ■ Unexpected Active(s) Only
- ■ Unknown composition
- ■ Inactive(s) Only

What did we find?

Expanding on the figures shown on the previous page, for each drug category and collection location/model, we list the number of samples that contained the expected active and/or other notable components. Samples where no detected actives have been excluded for brevity.

Opioid - Down	Campbell River	Comox Valley	Duncan	Port Alberni	Substance	Outreach
Expected Active Only					25	9
Fentanyl					25	9
Expected + Unexpected Active(s)*	5	6	13	9	177	61
Fentanyl*	5	6	13	10	175	55
Heroin*	1				19	9
Acetaminophen					1	2
Acetylcodeine					5	7
Acetylfentanyl					2	2
Acetylmorphine [MAM, 6-MAM]					3	7
Alprazolam [Xanax]						1
Benzodiazepine (Undifferentiated)[1]	1		9	2	19	8
Bromazolam	4	6	4	9	90	29
Carfentanil				1	1	1
Etizolam			1	1	1	2
Flualprazolam			1	1		2
Flubromazepam				1	1	1
Flubromazolam					2	2
Fluorofentanyl	2	2	8	5	131	39
Isobutyryl fentanyl					20	3
Lidocaine						1
Methamphetamine						1
Methylfentanyl					1	
Morphine						4
Phenacetin				1		1
Xylazine		4	1		8	9

*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. *Expected active component. [1]Fentanyl or analogue and Benzodiazepine (undifferentiated) results are based on a positive benzo strip test and are unconfirmed by paper spray.*

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Opioid - Down (continued)	Campbell River	Duncan	Port Alberni	Substance	Outreach
Unexpected Active(s) Only	**5**	**4**	**1**	**48**	**4**
2C-B				1	
Benzodiazepine (Undifferentiated)		3		7	
Bromazolam	5	1		23	2
Cocaine Base [crack, rock, hard]			1		
Cocaine HCl [powder]				1	
Desalkylgidazepam				1	
Fentanyl or analogue[1]		1		1	
Flualprazolam				2	
Flubromazepam				4	
Fluorofentanyl	4	3		42	4
Phenacetin				1	
Xylazine				2	
Unknown Composition				**1**	
Unknown				1	

Cocaine (HCl or Base)	Campbell River	Comox Valley	Duncan	Port Alberni	Substance	Outreach
Expected Active Only	**4**	**3**	**1**	**3**	**77**	**29**
Cocaine Base (crack, rock, hard)	2	2			15	7
Cocaine HCl (powder)	2	1	1	3	62	22
Expected* + Unexpected Active(s)					**10**	**1**
Cocaine Base* + Phenacetin					1	1
Cocaine Base* + Fentanyl or analogue					3	
Cocaine HCl* + Levamisole					6	
Unexpected Active(s) Only					**1**	
MDMA					1	

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Dissociatives	Campbell River	Substance	Outreach
Expected Active Only		**35**	**8**
Ketamine		35	8
Expected* + Unexpected Active(s)	**1**		
Ketamine* + Phenacetin	1		
Unexpected Active(s) Only			*1*
Fluorexetamine (Methoxetamine Expected)			1

Methamphetamine	Campbell River	Comox Valley	Duncan	Port Alberni	Substance	Outreach
Expected Active Only	2	2	2	4	17	15
Methamphetamine	2	2	2	4	17	15
Expected* + Unexpected Active(s)						
Methamphetamine* + Fentanyl or analogue[1]			1		1	
Unexpected Active(s) Only						
Cocaine Base	1				1	

MDA / MDMA	Campbell River	Comox Valley	Duncan	Substance	Outreach
Expected Active Only		**1**	**1**	**54**	**35**
MDA				2	1
MDMA		1	1	52	34
Expected* + Unexpected Active(s)					**4**
MDMA* + Ketamine					1
MDMA* + Cocaine Base					2
MDMA* + MDA					2
Unexpected Active(s) Only	**1**			**3**	**4**
Ketamine (MDMA Expected)					1
MDA (MDMA Expected)				1	2
MDMA (MDA Expected)	1			2	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. *Expected active component. [1]Fentanyl or analogue and Benzodiazepine (undifferentiated) results are based on a positive benzo strip test and are unconfirmed by paper spray.

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Opioid - Other	Substance	Outreach
Expected Active Only	**5**	**1**
Hydromorphone [Dilaudid, Dillies]	1	
Oxycodone [Oxycontin]	2	1
Tramadol	2	
Unexpected Active(s) Only	**1**	**2**
Isotonitazene		2
Metonitazene [Metonitazine]	1	0

Benzodiazepines	Substance	Outreach
Expected Active Only	**1**	**2**
Alprazolam [Xanax]		1
Bromazolam	1	
Flualprazolam		1
Unexpected Active(s) Only	**5**	**2**
Alprazolam [Xanax]	1	
Bromazolam	2	2
Fentanyl	1	2
Flubromazepam		1
Fluorofentanyl	2	1
Xylazine	1	
Unknown Composition		**1**
Unknown		1

Psychedelics	Substance	Outreach
Expected Active Only	**11**	**22**
2C-B	1	2
2C-T-2		1
4-AcO-DMT		8
4-HO-MET		1
5-MeO-DMT		1
ALD-52		7
Bufotenine		4
DMT	2	
DOM	1	
LSD	7	2
Expected + Unexpected Active(s)*	**2**	**2**
2C-B* + 2C-H	1	
4-AcO-DMT* + DMT		1
ALD-52* + DMT	1	
Ketamine + MDMA + Phenacetin (Tucibi		1
Unexpected Active(s) Only		**1**
Bromazolam		1
Fentanyl		1
Unknown Composition		**2**
Unknown		2

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Other Categories	Port Alberni	Substance	Outreach
Expected Active Only		4	3
4-MEC			1
4-MMC [Mephedrone]			1
5-MAPB			1
Amphetamine		1	
GHB		2	
Zopiclone		1	
Expected* + Unexpected Active(s)		1	1
GHB* + GBL		1	
Methaqualone* + Methaqualone Base			1
Unexpected Active(s) Only	1	1	3
Methamphetamine	1		1
Methaqualone Base		1	
Nitromethaqualone			2
Unknown Composition			2
Unknown			2

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. *Expected active component.

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Unknown/Missing	Campbell River	Comox Valley	Duncan	Port Alberni	Substance	Outreach
Unexpected Active(s) Only	**2**	**1**	**4**	**3**	**25**	**19**
Acetaminophen		1			1	
Benzodiazepine (Undifferentiated)	2		1		1	1
Bromazolam			1		2	2
Cephalexin					1	
Clindamycin					1	
Cocaine Base					1	
Cocaine HCl					3	9
Diazepam					1	
Etizolam					1	
Fentanyl	1		2		8	3
Fentanyl or analogue	1				1	
Fluorofentanyl	2				4	2
Ketamine					1	3
MDA					2	1
MDMA					3	3
Methamphetamine			2	2	1	
Morphine					1	
Naproxen				1		
Oxazepam					1	
Oxycodone					1	
Tramadol		1				
Unknown Composition				**1**		
Unknown				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. *Expected active component. [1]Benzodiazepine (undifferentiated) results are based on a positive benzo strip test and are unconfirmed by paper spray.
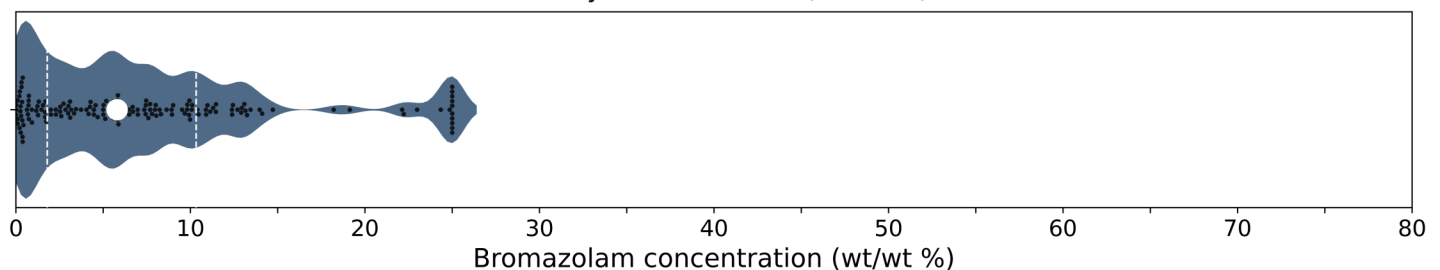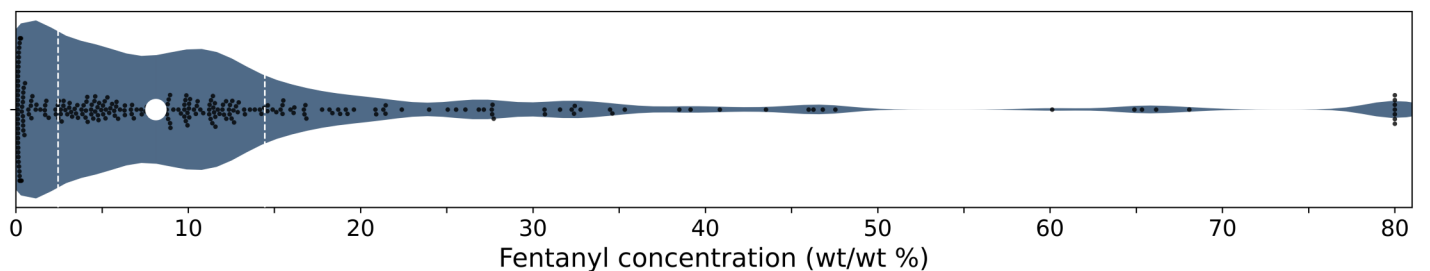
Quantification

Using paper spray mass spectrometry (PS-MS) data, we were able to quantify low concentration compounds. These aggregate values are *inclusive to all expected drug categories* in which the active drugs are found. Weight percentage is reported below. "IQR" is the interquartile range: the concentration range that contains half of the quantified samples.

Compound	# Quant.	Median	Min	Max	IQR
Fentanyl	301	8.4%	0.1%	>80%*	2.3% - 15.5%
Fluorofentanyl	236	14.2%	0.2%	40%	4.3% - 24.3%
Bromazolam	170	5.9%	<0.1%	25%	2.0% - 11.3%
Heroin	28	3.9%	0.1%	>80%*	2.3% - 24.6%
Xylazine	26	3.4%	0.1%	31.2%	0.4% - 15.7%
Isobutyryl fentanyl	23	5.12%	0.2%	40%	3.4% - 6.7%
Acetylcodeine	12	2.3%	0.5%	11.1%	0.9% - 6.0%
Acetylmorphine	10	2.5%	1.0%	12.4%	1.6% - 9.7%
Flubromazepam	9	25.0%	1.9%	25.0%	2.7% - 25.0%
Flualprazolam	7	0.63%	0.2%	1.1%	0.24% - 0.78%
Etizolam	4	2.0%	<0.1%	25.0%	0.2% - 9.0%

There is a maximum concentration limit that the PS-MS can quantify for each compound of interest. If a sample contains a higher percentage of a compound than the PS-MS's limits, then only the upper limit will be reported. For example, the upper limit of reporting for fentanyl on the PS-MS is 80% - any sample containing more than 80% fentanyl will be flagged as ">80%".

Distribution of Fentanyl and Bromazolam Concentrations

The concentrations of fentanyl and bromazolam for every sample quantified across *all expected drug categories and service models* are illustrated below to highlight the variability in the unregulated drug market. **Black Dots** are individual samples, the large **White Dot** marks the median concentration, the **Dashed White Lines** bound half of the quantified

Fentanyl concentration (wt/wt %)

Bromazolam concentration (wt/wt %)

Opioid - Down Quantification by Service Model

Here we examine the regional variability in the unregulated market. The table below expands on the data presented on the previous page (*inclusive to all expected drug categories*) and focuses only on fentanyl, fluorofentanyl, carfentanil,bromazolam, and xylazine within *expected opioid-down samples*, separated by collection location/model. Weight percentage is reported; "IQR" is the interquartile range: the range that contains half of the quantified samples.

Service Model	Compound	# Quant.	Median	Min	Max	IQR
Campbell River *10 total down samples* *100% benzo-positive*	Fentanyl	3	16.9%	16.2%	21.6%	16.6% - 19.3%
	Fluorofentanyl	3	15.7%	3.9%	16.5%	9.8% - 16.1%
	Bromazolam	4	18.5%	6.3%	>80.0%	12.9% - 36.4%
Comox Valley *6 total down samples* *100% benzo-positive*	Fentanyl	5	12.2%	4.1%	68.1%	8.5% - 30.7%
	Fluorofentanyl	2	4.9%	0.8%	9.0%	2.8% - 7.0%
	Bromazolam	4	9.5%	0.4%	24.9%	5.1% - 15.5%
	Xylazine	4	12.2%	0.3%	15.9%	6.6% - 15.8%
Duncan *17 total down samples* *71% benzo-positive*	Fentanyl	14	24.4	0.1	40.8	1.5% - 32.3%
	Fluorofentanyl	10	23.6	5.3	32.7	16.4% - 28.6%
	Bromazolam	5	5.4	0.6	7.4	3.2% - 7.0%
	Xylazine	1	-	-	31.6	-
Port Alberni *13 total down samples* *69% benzo-positive*	Fentanyl	6	6.5%	2.6%	39.1%	3.1% - 22.7%
	Fluorofentanyl	3	5.9%	4.3%	15.8%	5.1% - 10.8%
	Carfentanil	1	-	-	0.1%	-
	Bromazolam	7	10.1%	0.7%	57.2%	2.4% - 23.3%
Substance *253 total down samples* *57% benzo-positive*	Fentanyl	195	8.1%	0.1%	>80.0%	1.5% - 13.1%
	Fluorofentanyl	169	15.3%	0.2%	>80.0%	7.0% - 24.7%
	Carfentanil	1	-	-	0.2%	-
	Bromazolam	109	5.8%	0.0%	52.6%	2.7% - 9.9%
	Xylazine	10	6.9%	0.1%	22.9%	0.4% - 18.1%
Outreach *74 total down samples* *56% benzo-positive*	Fentanyl	62	8.2%	0.1%	>80.0%	4.2% - 15.9%
	Fluorofentanyl	41	6.7%	0.2%	>80.0%	1.3% - 16.2%
	Carfentanil	1	-	-	0.4%	-
	Bromazolam	29	3.0%	0.0%	35.7%	1.5% - 11.0%
	Xylazine	9	2.7%	0.1%	22.0%	0.5% - 7.5%

*There is a maximum concentration limit that the PS-MS can quantify for each compound of interest. If a sample contains a higher percentage of a compound than the PS-MS's limits, then only the upper limit will be reported. For example, the upper limit of reporting for fentanyl on the PS-MS is 80% - any sample containing more than 80% fentanyl will be flagged as ">80%". Not all samples can be quantified.

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Substance Drug Checking is based out of the University of Victoria and operates community-wide drug checking services within Campbell River, the Comox Valley, Duncan, Port Alberni, and 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 partnered with Dr. Chris Gill and the team at Vancouver Island University to improve detection and reporting using their methods for the paper spray - mass spectrometer.

See the blog portion of our website to view our more detailed interpretations of our reports.

Our project works on Indigenous land. We provide drug checking, harm reduction education and support across many territories on what is colonially known as 'Vancouver Island.' We also act as a resource for these services across the province colonially known as 'British Columbia.' We honour and offer respect to many nations for their stewardship, care and leadership on these lands.
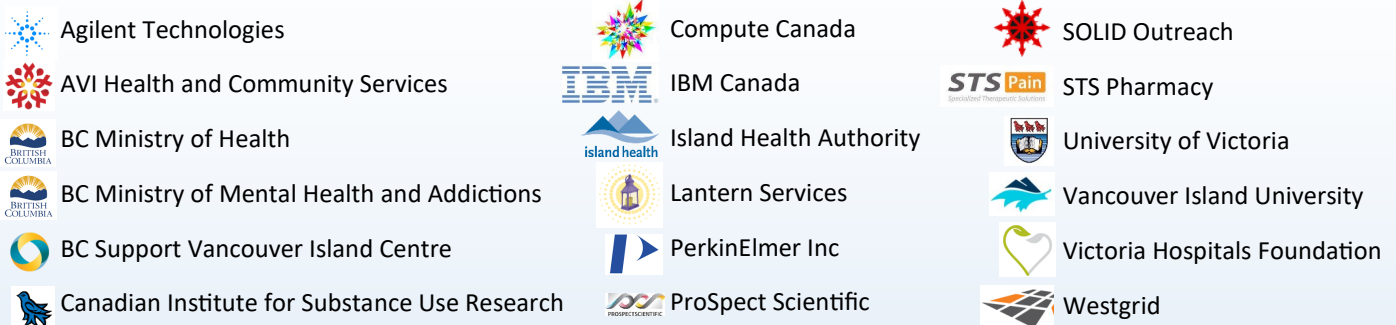
Our project originated on the territories of the ləkʷəŋən speaking peoples, including the Songhees and Xwsepsum (Esquimalt) Nations, and the W̱SÁNEĆ (Saanich) Nations on whose land the University of Victoria is located. Some of the territories we are honoured to work across specifically include: Halalt, Lyackson, Meluxulh (Malahat), Punelux-utth', Quw'utsun, Stz-uminus, and Ts'uubaa-asatx; Hupačasath and Tseshaht; K'ómoks; and Laich-kwil-tach.

We acknowledge the inextricable links between research, colonization and racism against Indigenous peoples, which continue to this date. Ending the violence faced by people who use drugs cannot be achieved without actively working on decolonization.

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
- Victoria Hospitals Foundation
- 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