Designing public outputs from drug checking services

Lessons for Victoria

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13 February 2025

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Acknowledgement of Country

RMIT University acknowledges the people of the Woi wurrung and Boon wurrung language groups of the eastern Kulin Nation on whose unceded lands we conduct the business of the University.

RMIT University respectfully acknowledges their Ancestors and Elders, past and present.

RMIT also acknowledges the Traditional Custodians and their Ancestors of the lands and waters across Australia where we conduct our business.

Artwork ‘Sentient’ by Hollie Johnson
Hollie is a Gunaikurnai and Monero Ngarigo woman from Gippsland who graduated from RMIT with a BA in Photography in 2016.

Acknowledgements + Declarations

- Funder: RMIT's Strategic Impact Fund
- Community partners: Harm Reduction Victoria, Students for Sensible Drug Policy and VAADA
  - Big thanks to: Sione Crawford, Nick Kent, Snowy Primmer, Nadia Gavin, Oisin Stronach, Dave Taylor and James Petty
- Anonymous community members who generously participated in our workshops and/or survey
- Colleagues and drug checking service representatives who reviewed and critiqued our draft report

Declaration: Both authors are also affiliated with The Loop Australia. During the preparation of this report, The Loop Australia was contracted as part of a consortium to provide drug checking services in Victoria by the Victorian Department of Health. This report is an independent RMIT-led publication and does not necessarily represent the views of The Loop Australia.

Introduction

Drug checking services offer the public the opportunity to submit substances for chemical analysis and get results back within a health and harm reduction conversation.

How can Victoria build a world-class drug checking communications process?

Discussions with international researchers and organisations found that some services *do not issue alerts at all*, and/or have other ways of sharing info.

In Australia, alerts are the default. We wanted to know:
What other options are out there?

Project aims

Our report asks:

1. how do drug checking services share their findings, and

2. what should we consider when designing these communications?

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Methods

1. Scoping review
   - Rapid review using Google scholar & websites of all DCS (global)
2. Community consultation
   - Anonymous survey and 2x workshops (N=41) (Victorian)
3. Expert review
   - Email request for review of our scoping review of DCSs (global)
4. Analysis and integration
   - The scoping review findings were supplemented with themes drawn from the consultations and updated in response to our expert reviewers

Part 1: Types of outputs

1. Drug notifications (alerts)*
2. Regular service reports*
3. Individual sample results^
4. Education and harm reduction supplements^
5. Public dashboards (NEW!)

*Currently used in Australia

^Used in Australia but a lot of overseas inspo to learn from

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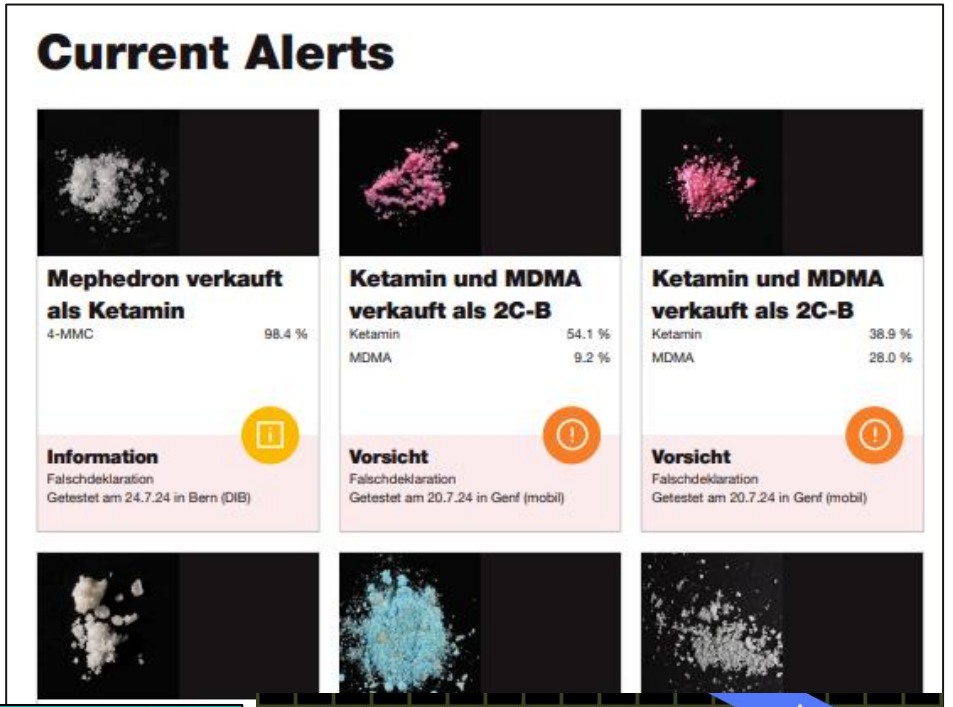
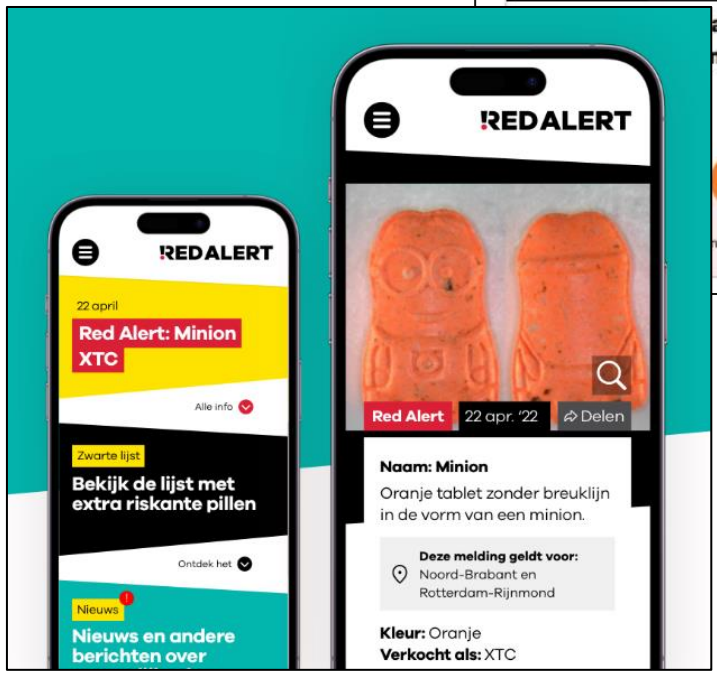
Drug alerts (aka notifications, advisories, notices…)

Variations:

- What they're called
- Tiers, e.g. two-/three-tier system, 'traffic light'
- Risk threshold for release
- May be integrated in multi-service networks and early warning systems
- Ways of sharing (e.g. websites, apps, posters)

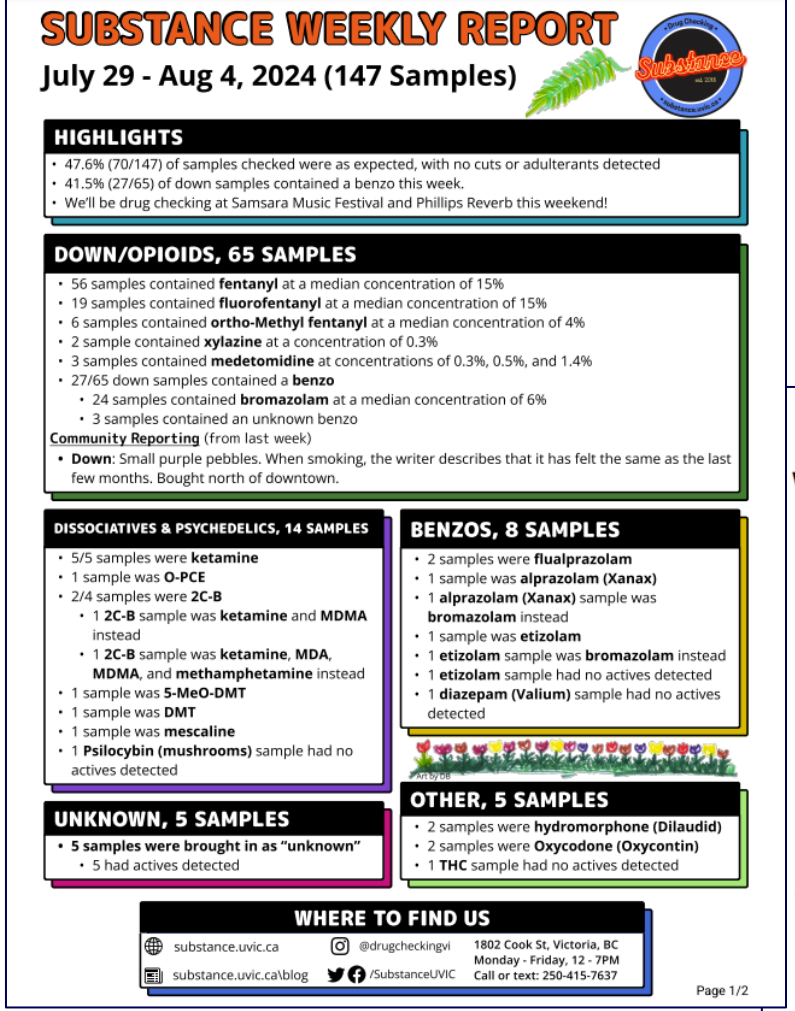




Regular service reports

Summaries of key metrics and trends over a specific period.

- Different formats (e.g. as single- or multi-page summaries, web-based reports or blogs, text-only reports or reports integrating graphics).
- Varying frequency (e.g. weekly, monthly, quarterly, yearly).



SUBSTANCE WEEKLY REPORT

July 29 - Aug 4, 2024 (147 Samples)

HIGHLIGHTS

- 47.6% (70/147) of samples checked were as expected, with no cuts or adulterants detected
- 41.5% (27/65) of down samples contained a benzo this week.
- We'll be drug checking at Samsara Music Festival and Phillips Reverb this weekend!

DOWN/OPIOIDS, 65 SAMPLES

- 56 samples contained **fentanyl** at a median concentration of 15%
- 19 samples contained **fluorofentanyl** at a median concentration of 15%
- 6 samples contained **ortho-Methyl fentanyl** at a median concentration of 4%
- 2 sample contained **xylazine** at a concentration of 0.3%
- 3 samples contained **medetomidine** at concentrations of 0.3%, 0.5%, and 1.4%
- 27/65 down samples contained a **benzo**
  - 24 samples contained **bromazolam** at a median concentration of 6%
  - 3 samples contained an unknown benzo

Community Reporting (from last week)

- **Down**: Small purple pebbles. When smoking, the writer describes that it has felt the same as the last few months. Bought north of downtown.

DISSOCIATIVES & PSYCHEDELICS, 14 SAMPLES

- 5/5 samples were **ketamine**
- 1 sample was **O-PCE**
- 2/4 samples were **2C-B**
  - 1 **2C-B** sample was **ketamine** and **MDMA** instead
  - 1 **2C-B** sample was **ketamine**, **MDA**, **MDMA**, and **methamphetamine** instead
- 1 sample was **5-MeO-DMT**
- 1 sample was **DMT**
- 1 sample was **mescaline**
- 1 **Psilocybin (mushrooms)** sample had no actives detected

BENZOS, 8 SAMPLES

- 2 samples were **flualprazolam**
- 1 sample was **alprazolam (Xanax)**
- 1 **alprazolam (Xanax)** sample was **bromazolam** instead
- 1 sample was **etizolam**
- 1 **etizolam** sample was **bromazolam** instead
- 1 **etizolam** sample had no actives detected
- 1 **diazepam (Valium)** sample had no actives detected

UNKNOWN, 5 SAMPLES

- **5 samples were brought in as "unknown"**
  - 5 had actives detected

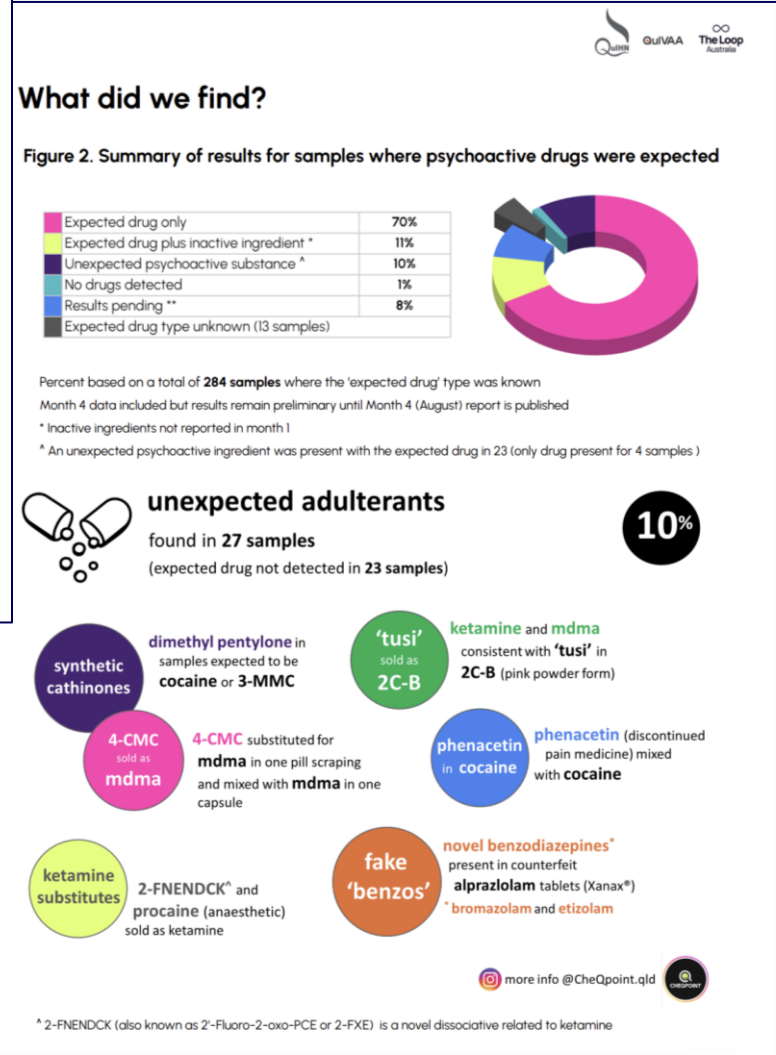
OTHER, 5 SAMPLES

- 2 samples were **hydromorphone (Dilaudid)**
- 2 samples were **Oxycodone (Oxycontin)**
- 1 **THC** sample had no actives detected

WHERE TO FIND US

substance.uvic.ca | @drugcheckingvi | 1802 Cook St, Victoria, BC
Monday - Friday, 12 - 7PM
substance.uvic.ca\blog | /SubstanceUVIC | Call or text: 250-415-7637

Page 1/2



QuIVAA The Loop Australia

What did we find?

Figure 2. Summary of results for samples where psychoactive drugs were expected

Expected drug only	70%
Expected drug plus inactive ingredient *	11%
Unexpected psychoactive substance ^	10%
No drugs detected	1%
Results pending **	8%
Expected drug type unknown (13 samples)	

Percent based on a total of **284 samples** where the 'expected drug' type was known
Month 4 data included but results remain preliminary until Month 4 (August) report is published
* Inactive ingredients not reported in month 1
^ An unexpected psychoactive ingredient was present with the expected drug in 23 (only drug present for 4 samples)

unexpected adulterants
found in **27 samples**
(expected drug not detected in **23 samples**)

10%

synthetic cathinones: **dimethyl pentylone** in samples expected to be **cocaine** or **3-MMC**

'tusi' sold as 2C-B: **ketamine** and **mdma** consistent with **'tusi'** in **2C-B** (pink powder form)

4-CMC sold as mdma: **4-CMC** substituted for **mdma** in one pill scraping and mixed with **mdma** in one capsule

phenacetin in cocaine: **phenacetin** (discontinued pain medicine) mixed with **cocaine**

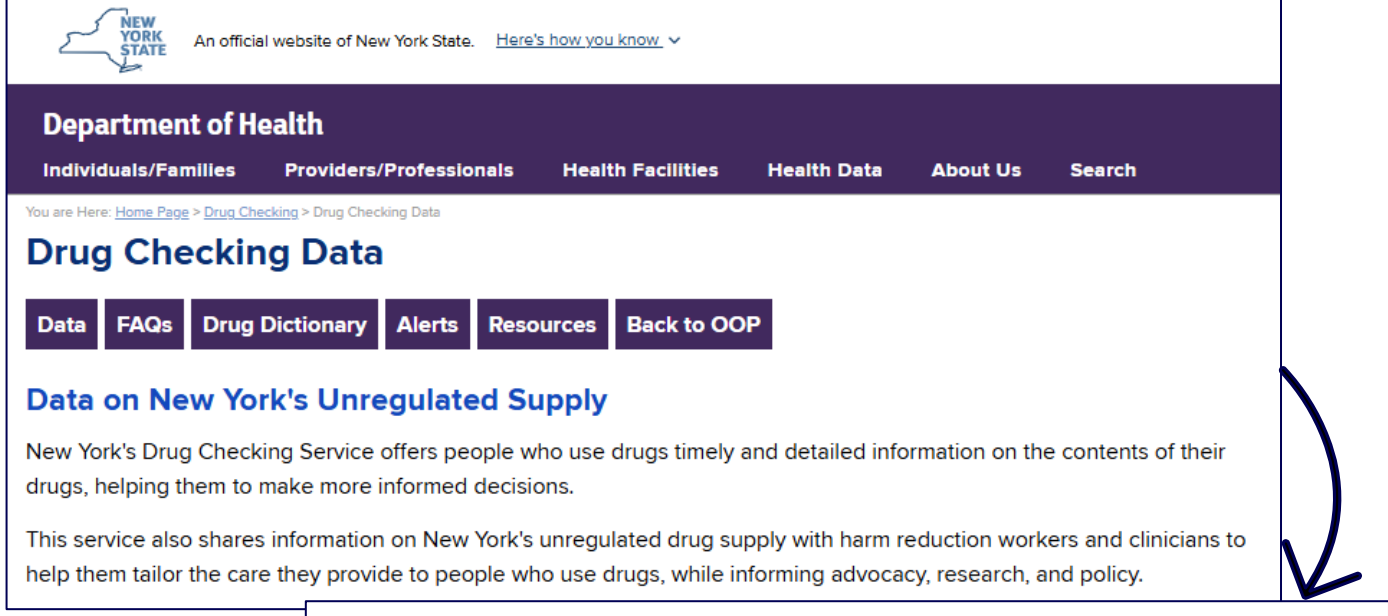
ketamine substitutes: **2-FNENDCK**^ and **procaine** (anaesthetic) sold as ketamine

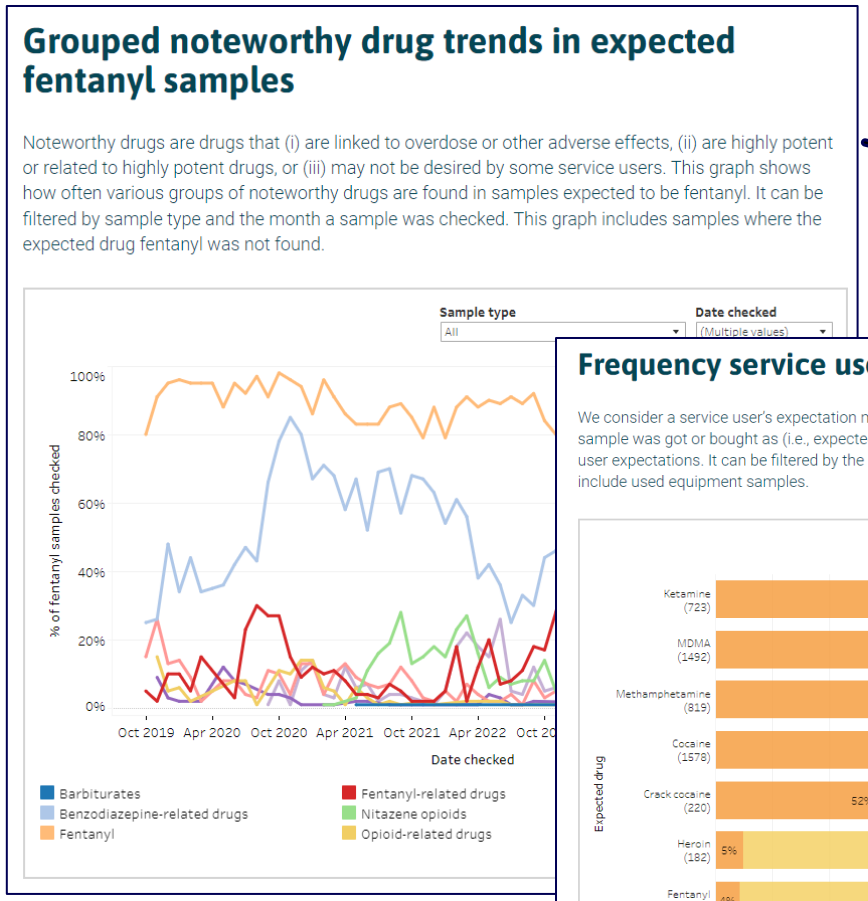
fake 'benzos': **novel benzodiazepines*** present in counterfeit **alprazolam** tablets (Xanax®)
* **bromazolam** and **etizolam**

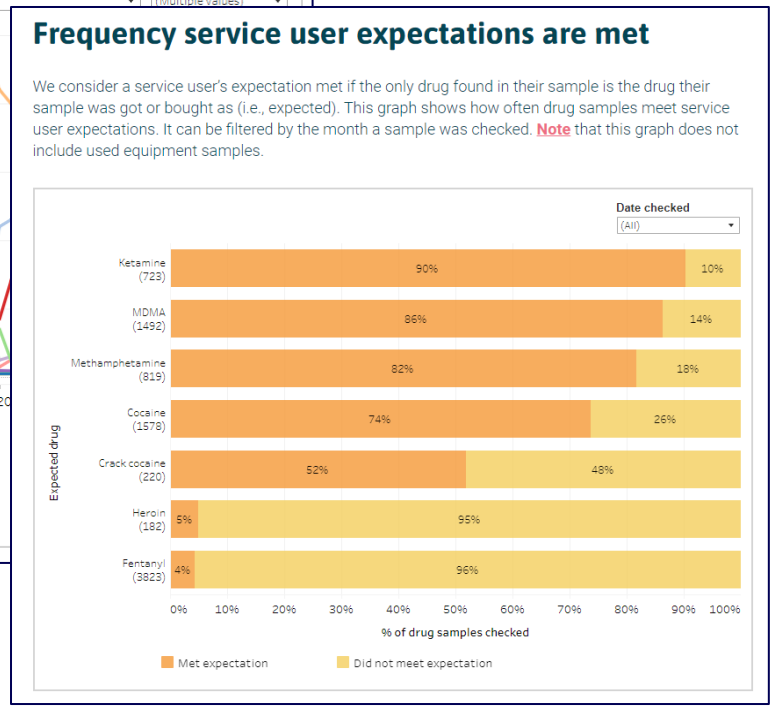
more info @CheQpoint.qld

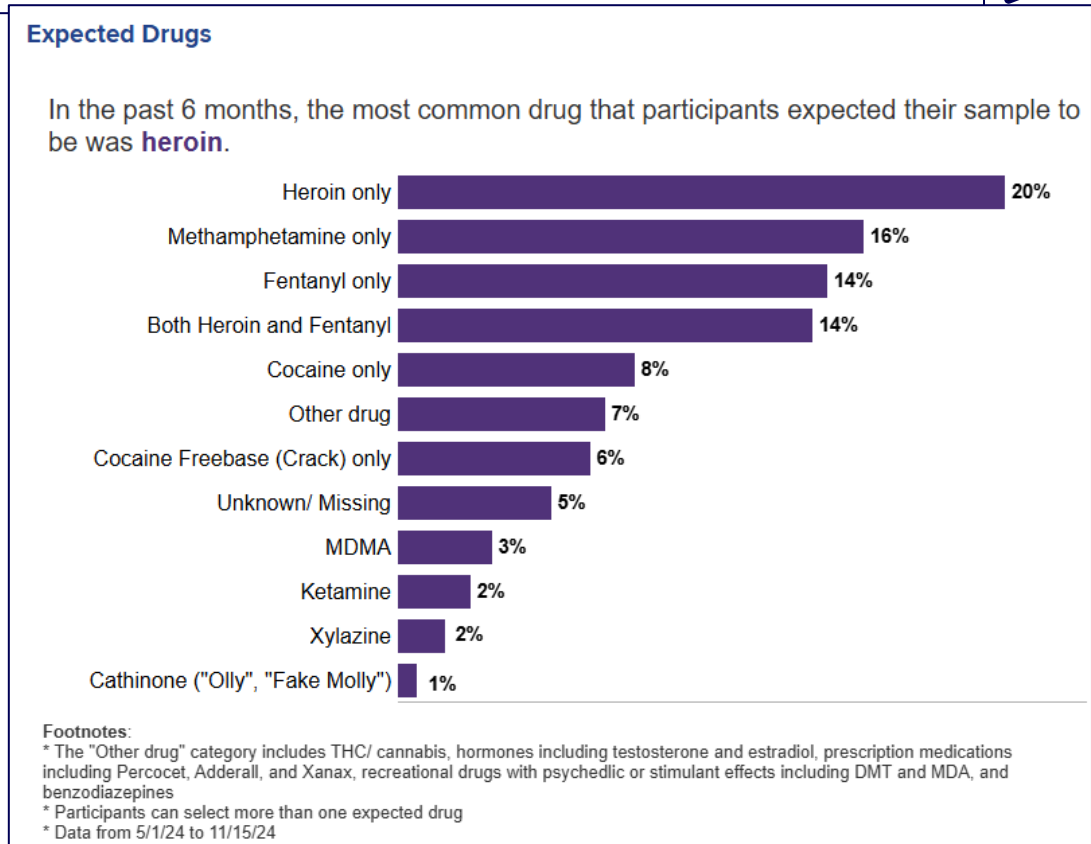
^ 2-FNENDCK (also known as 2'-Fluoro-2-oxo-PCE or 2-FXE) is a novel dissociative related to ketamine

Interactive web reports



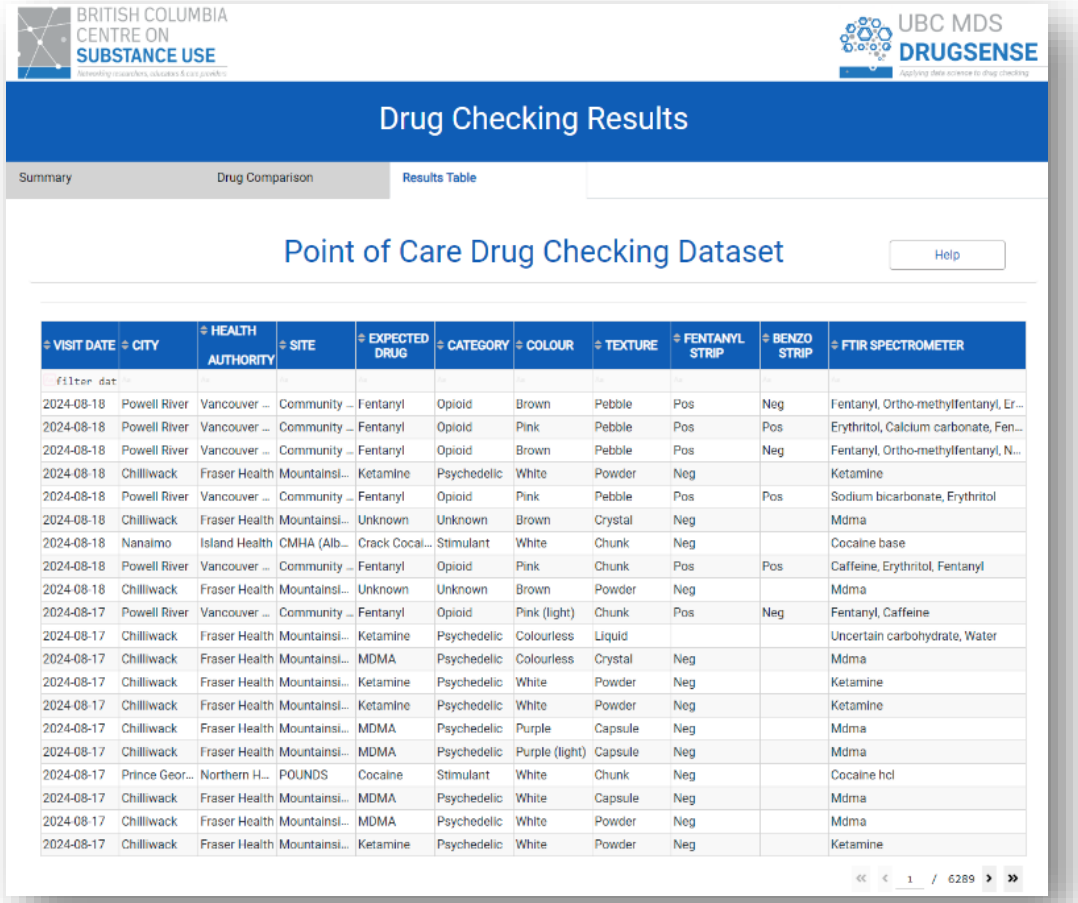






Individual sample results

Results of every individual analysis, often in a list or table on a website.


BRITISH COLUMBIA CENTRE ON SUBSTANCE USE

UBC MDS DRUGSENSE

Drug Checking Results

Summary | Drug Comparison | Results Table

Point of Care Drug Checking Dataset

Help

VISIT DATE	CITY	HEALTH AUTHORITY	SITE	EXPECTED DRUG	CATEGORY	COLOUR	TEXTURE	FENTANYL STRIP	BENZO STRIP	FTIR SPECTROMETER
filter dat										
2024-08-18	Powell River	Vancouver ...	Community ...	Fentanyl	Opioid	Brown	Pebble	Pos	Neg	Fentanyl, Ortho-methylfentanyl, Er...
2024-08-18	Powell River	Vancouver ...	Community ...	Fentanyl	Opioid	Pink	Pebble	Pos	Pos	Erythritol, Calcium carbonate, Fen...
2024-08-18	Powell River	Vancouver ...	Community ...	Fentanyl	Opioid	Brown	Pebble	Pos	Neg	Fentanyl, Ortho-methylfentanyl, N...
2024-08-18	Chilliwack	Fraser Health	Mountainsi...	Ketamine	Psychedelic	White	Powder	Neg		Ketamine
2024-08-18	Powell River	Vancouver ...	Community ...	Fentanyl	Opioid	Pink	Pebble	Pos	Pos	Sodium bicarbonate, Erythritol
2024-08-18	Chilliwack	Fraser Health	Mountainsi...	Unknown	Unknown	Brown	Crystal	Neg		Mdma
2024-08-18	Nanaimo	Island Health	CMHA (Alb...	Crack Cocai...	Stimulant	White	Chunk	Neg		Cocaine base
2024-08-18	Powell River	Vancouver ...	Community ...	Fentanyl	Opioid	Pink	Chunk	Pos	Pos	Caffeine, Erythritol, Fentanyl
2024-08-18	Chilliwack	Fraser Health	Mountainsi...	Unknown	Unknown	Brown	Powder	Neg		Mdma
2024-08-17	Powell River	Vancouver ...	Community ...	Fentanyl	Opioid	Pink (light)	Chunk	Pos	Neg	Fentanyl, Caffeine
2024-08-17	Chilliwack	Fraser Health	Mountainsi...	Ketamine	Psychedelic	Colourless	Liquid			Uncertain carbohydrate, Water
2024-08-17	Chilliwack	Fraser Health	Mountainsi...	MDMA	Psychedelic	Colourless	Crystal	Neg		Mdma
2024-08-17	Chilliwack	Fraser Health	Mountainsi...	Ketamine	Psychedelic	White	Powder	Neg		Ketamine
2024-08-17	Chilliwack	Fraser Health	Mountainsi...	Ketamine	Psychedelic	White	Powder	Neg		Ketamine
2024-08-17	Chilliwack	Fraser Health	Mountainsi...	MDMA	Psychedelic	Purple	Capsule	Neg		Mdma
2024-08-17	Chilliwack	Fraser Health	Mountainsi...	MDMA	Psychedelic	Purple (light)	Capsule	Neg		Mdma
2024-08-17	Prince Geor...	Northern H...	POUNDS	Cocaine	Stimulant	White	Chunk	Neg		Cocaine hcl
2024-08-17	Chilliwack	Fraser Health	Mountainsi...	MDMA	Psychedelic	White	Capsule	Neg		Mdma
2024-08-17	Chilliwack	Fraser Health	Mountainsi...	MDMA	Psychedelic	White	Powder	Neg		Mdma
2024-08-17	Chilliwack	Fraser Health	Mountainsi...	Ketamine	Psychedelic	White	Powder	Neg		Ketamine

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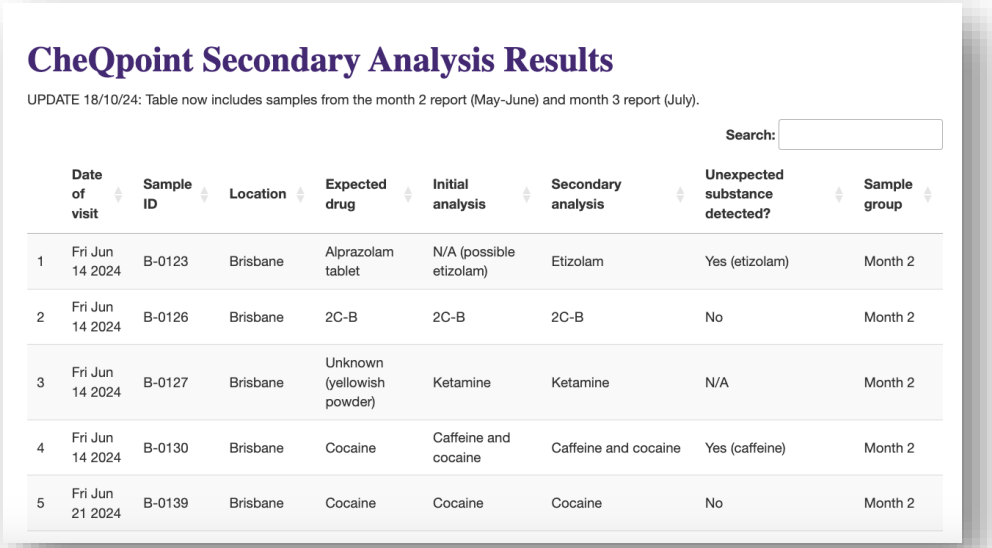
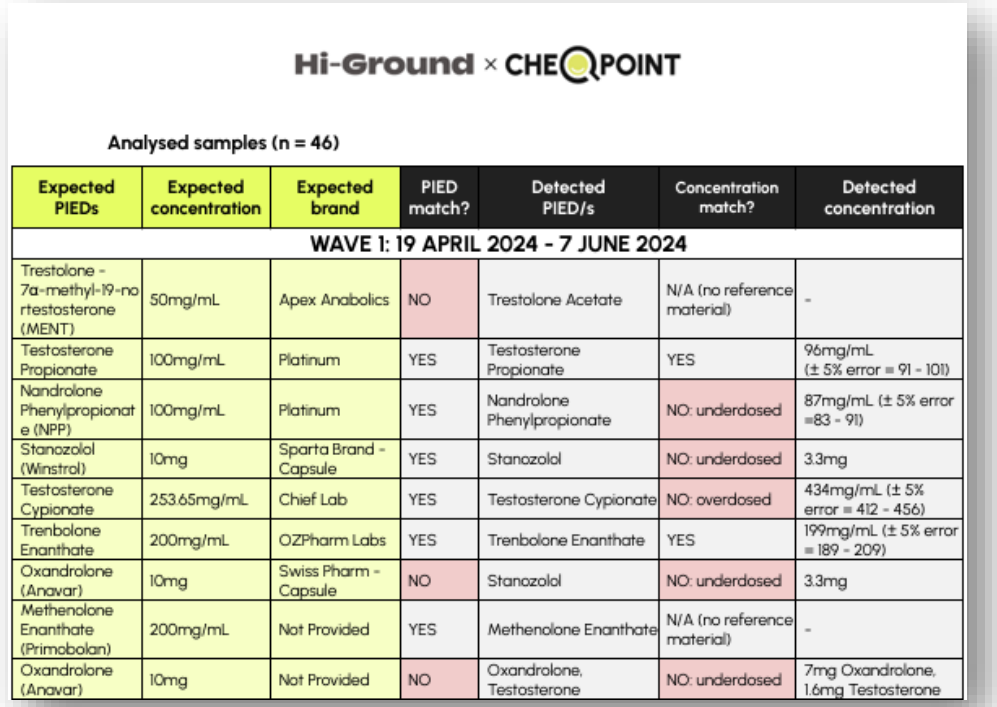

CheQpoint Secondary Analysis Results

UPDATE 18/10/24: Table now includes samples from the month 2 report (May-June) and month 3 report (July).

Search:

	Date of visit	Sample ID	Location	Expected drug	Initial analysis	Secondary analysis	Unexpected substance detected?	Sample group
1	Fri Jun 14 2024	B-0123	Brisbane	Alprazolam tablet	N/A (possible etizolam)	Etizolam	Yes (etizolam)	Month 2
2	Fri Jun 14 2024	B-0126	Brisbane	2C-B	2C-B	2C-B	No	Month 2
3	Fri Jun 14 2024	B-0127	Brisbane	Unknown (yellowish powder)	Ketamine	Ketamine	N/A	Month 2
4	Fri Jun 14 2024	B-0130	Brisbane	Cocaine	Caffeine and cocaine	Caffeine and cocaine	Yes (caffeine)	Month 2
5	Fri Jun 21 2024	B-0139	Brisbane	Cocaine	Cocaine	Cocaine	No	Month 2

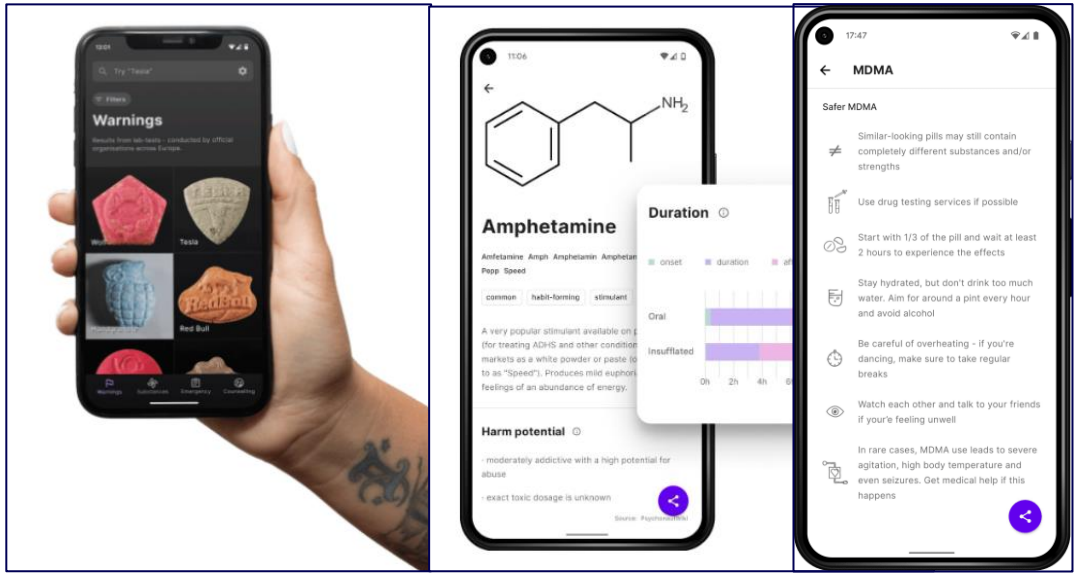

Hi-Ground × CHEQPOINT

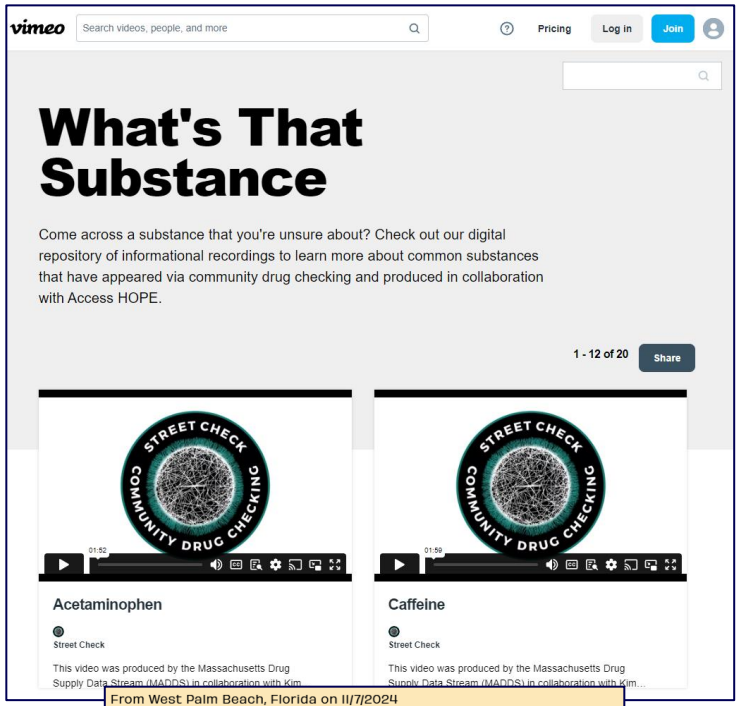
Analysed samples (n = 46)

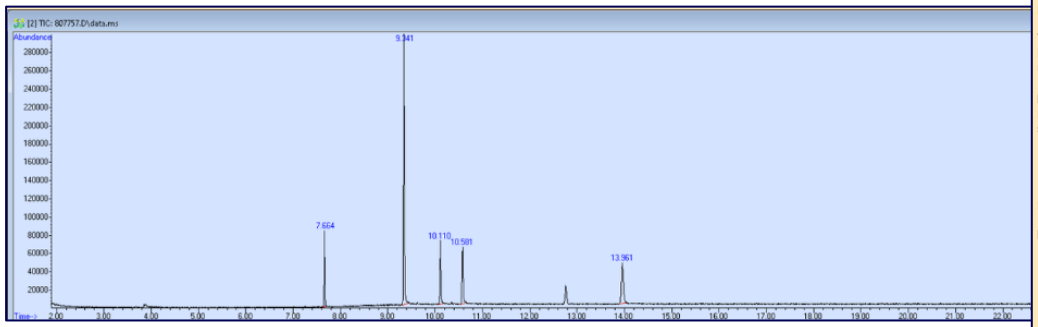
Expected PIEDs	Expected concentration	Expected brand	PIED match?	Detected PIED/s	Concentration match?	Detected concentration
WAVE 1: 19 APRIL 2024 - 7 JUNE 2024						
Trestolone - 7a-methyl-19-nortestosterone (MENT)	50mg/mL	Apex Anabolics	NO	Trestolone Acetate	N/A (no reference material)	-
Testosterone Propionate	100mg/mL	Platinum	YES	Testosterone Propionate	YES	96mg/mL (± 5% error = 91 - 101)
Nandrolone Phenylpropionate (NPP)	100mg/mL	Platinum	YES	Nandrolone Phenylpropionate	NO: underdosed	87mg/mL (± 5% error =83 - 91)
Stanozolol (Winstrol)	10mg	Sparta Brand - Capsule	YES	Stanozolol	NO: underdosed	3.3mg
Testosterone Cypionate	253.65mg/mL	Chief Lab	YES	Testosterone Cypionate	NO: overdosed	434mg/mL (± 5% error = 412 - 456)
Trenbolone Enanthate	200mg/mL	OZPharm Labs	YES	Trenbolone Enanthate	YES	199mg/mL (± 5% error = 189 - 209)
Oxandrolone (Anavar)	10mg	Swiss Pharm - Capsule	NO	Stanozolol	NO: underdosed	3.3mg
Methenolone Enanthate (Primobolan)	200mg/mL	Not Provided	YES	Methenolone Enanthate	N/A (no reference material)	-
Oxandrolone (Anavar)	10mg	Not Provided	NO	Oxandrolone, Testosterone	NO: underdosed	7mg Oxandrolone, 1.6mg Testosterone

Education and harm reduction supplements

Additional information relevant to common substances and unusual findings to empower audiences with education and harm reduction strategies.







From West Palm Beach, Florida on 11/7/2024
Assumed to be fentanyl

This is a messy brew of 6 major substances:

- **p-fluoro phenethyl 4-ANPP**
- **despropionyl p-fluorofentanyl**
- **fentanyl**
- **xylazine**
- **p-fluorofentanyl**
- **bis(2,2,6,6-tetramethyl-4-piperidyl) sebacate**

Fentanyl is potent and the amount changes by batch. If you weren't expecting it, consider getting test strips online or from a harm reduction program. **Carry naloxone (Narcan)** to reverse overdoses. **Don't use alone** so someone can help if you go out.

Xylazine causes serious skin problems. These can happen anywhere on the body and don't heal quickly. And, **xylazine** can come on stronger than traditional dope and knock you out, so **be mindful of your surroundings**. It's best to avoid dope with xylazine. You might need medical attention to prevent long-term damage.

There are a lot of different substances in this sample. We don't know the harms that some of these can cause. Be careful and be prepared for unexpected reactions.

Fluorofentanyl is showing up recently. It's the result of different raw materials being used to make fentanyl. We don't know yet if it causes any specific problems.

Looks = pink crystals, chunky

Need free supplies and advice to keep you safe? Find your nearest harm reduction program at harmreduction.org

Major substances in graph:

- Peak 10.11 = p-fluorofentanyl
- Peak 10.58 = fentanyl
- Peak 12.76 = bis(2,2,6,6-tetramethyl-4-piperidyl) sebacate
- Peak 13.96 = p-fluoro phenethyl 4-ANPP
- Peak 7.66 = xylazine
- Peak 9.34 = despropionyl p-fluorofentanyl

Method(s): GCMS

Public dashboards

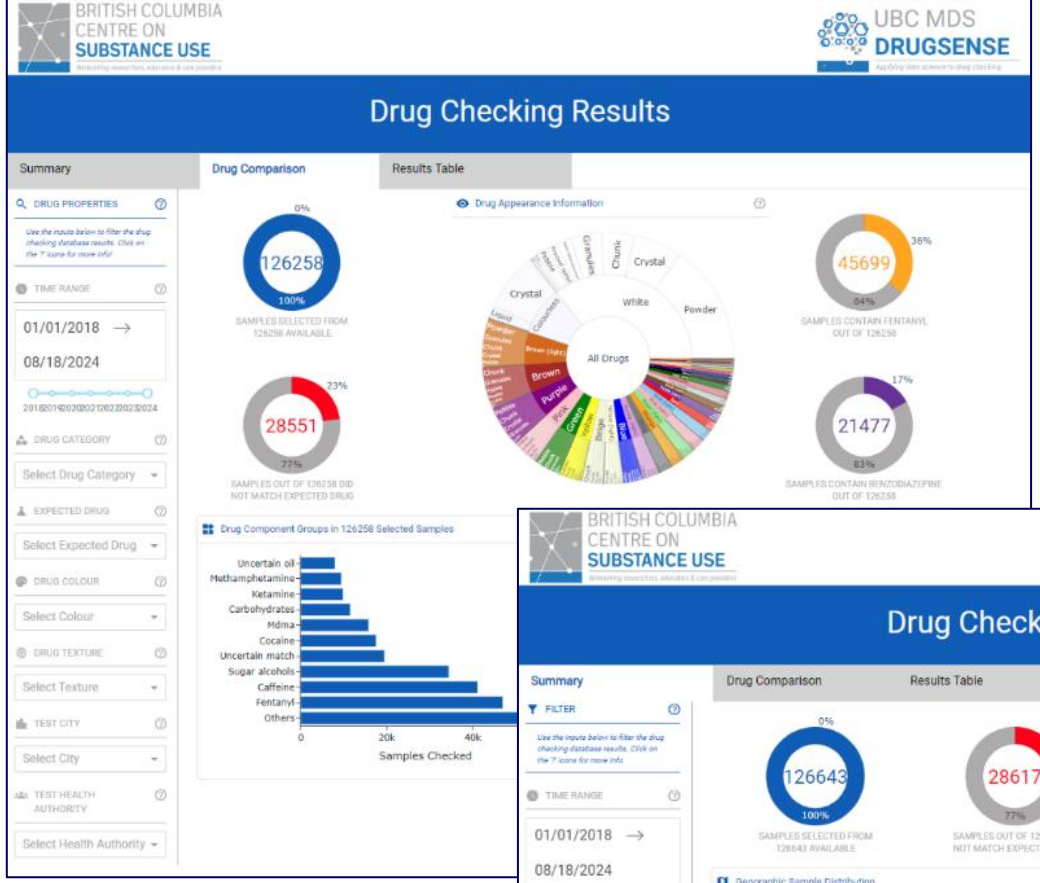
Visual tools that present key metrics and trends related to drug samples.

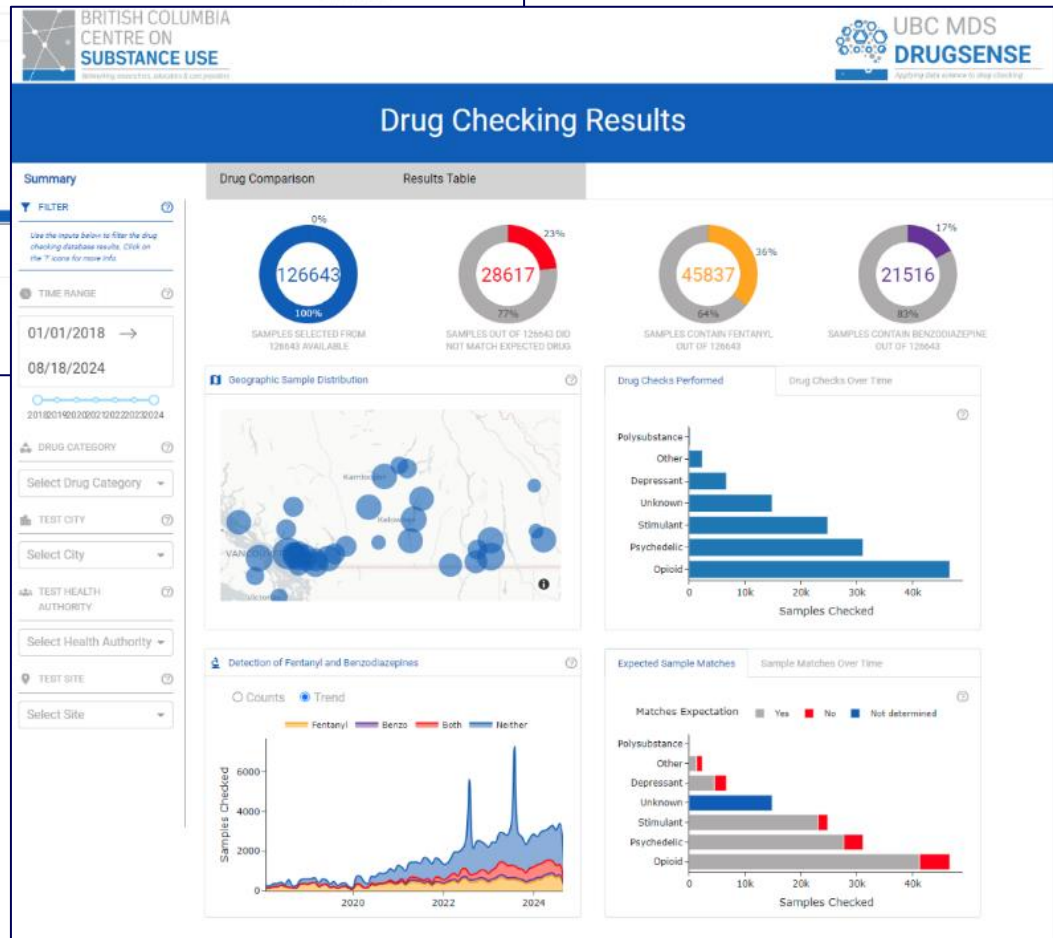
Help users quickly understand and explore data.

Customisable to the kind of info that is most relevant to different people

Variations:

- ‘Real-time’/archival data
- What info is presented/interactive

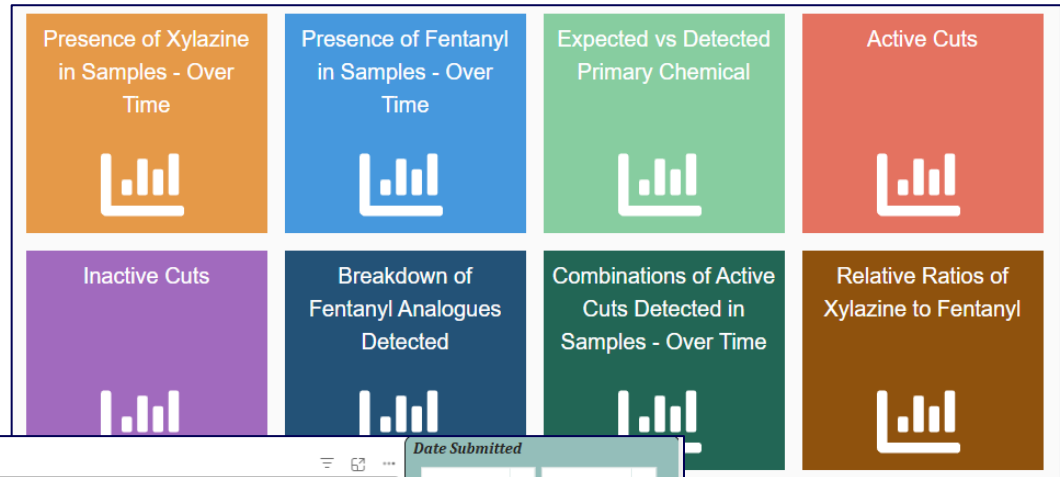


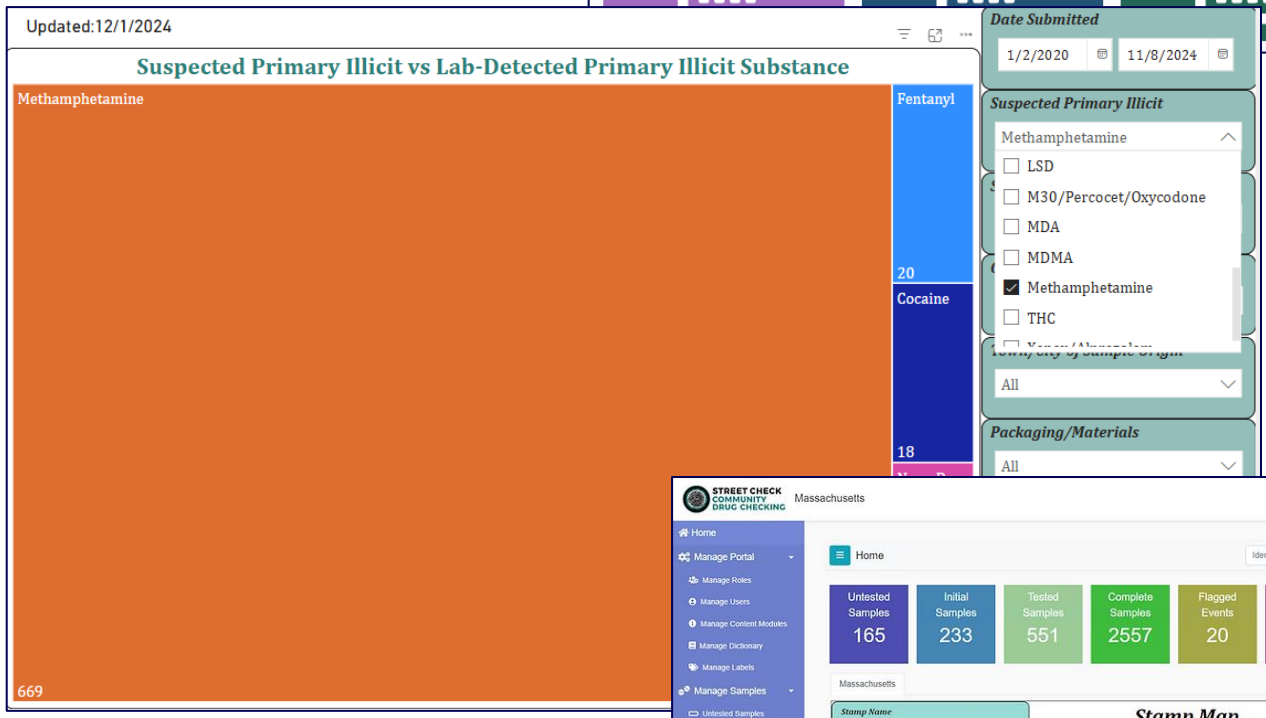


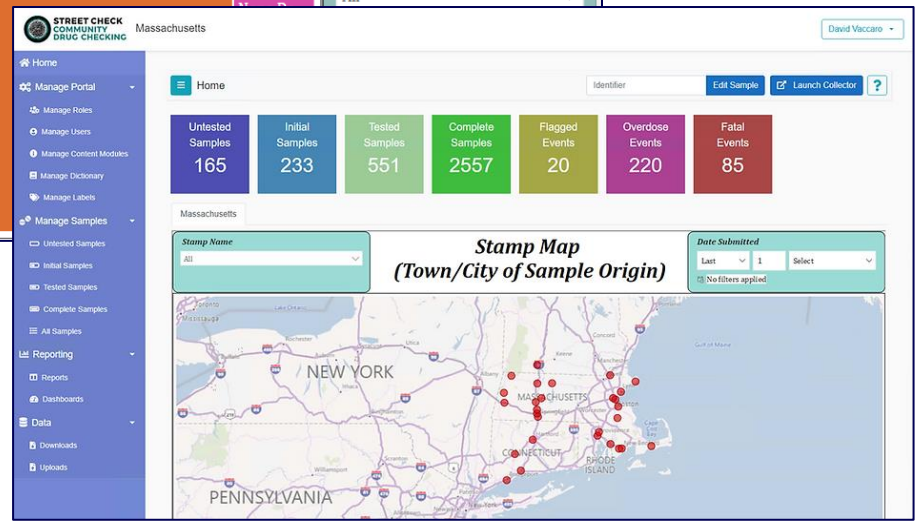
Why do dashboards?

- Different preferences for info presentation
- Easily customise for different info-needs
- Highlight particular trends
- Up-to-date (vs fixed report periods)
- Data sovereignty, transparency
- Accessible to range of stakeholders
- Sustainable systems: future-proofing, integratable, making opportunities visible

STREET CHECK COMMUNITY DRUG CHECKING



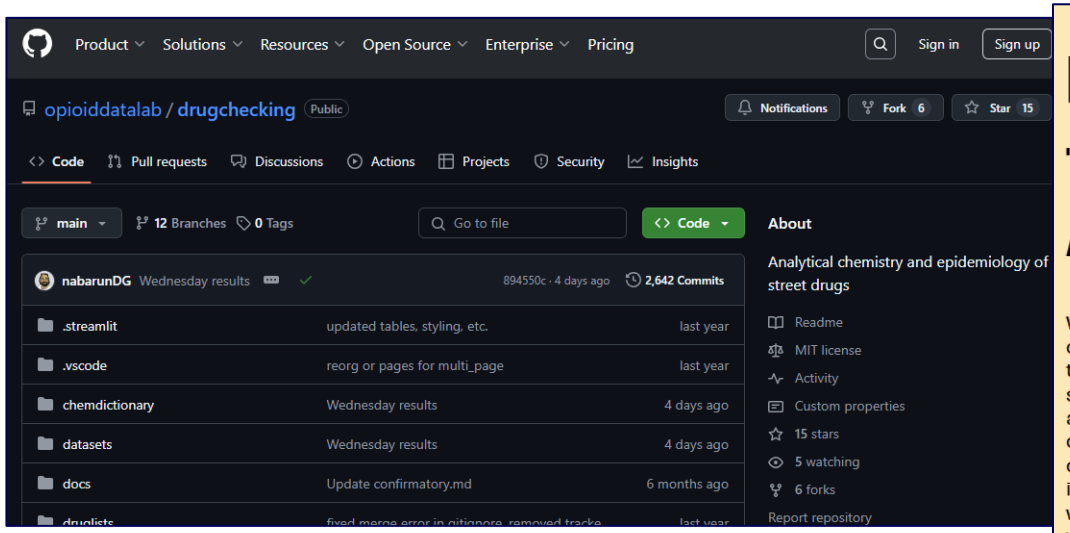




Opioid Data Lab

"We show our work to share our work"

At the Opioid Data Lab we answer the most difficult questions that have the most impact. As state universities, we have a mandate to create open source scientific tools that can be used by others, and to present our findings in a way that is accessible by the public. Our studies encompass



Better Design for Drug Alerts

We don't stop at chemistry. We conduct detailed statistical analyses to identify emerging and deadly substances in the drug supply. We also design more effective health communications. We are building an open source library of hand-drawn illustrations for drug alerts. Working with team members in advertising, we are also conducting randomized message trials to figure out how maximize understanding, and minimize unintended consequences in alerts from drug checking.

Check out our Harm Reduction Chemical Dictionary to help make sense of molecule names.

Suggest Edits to Chemical Dictionary

UNC Watchlist

In no particular order, these are the most prominent drug trends in the United States that we are tracking right now. Feel free to use any of the graphs, data, text, images, or whatever from here. It's all for you!

BTMPS
Xylazine & (dex)medetomidine
Carfentanil
Nitazenes
2-fluoro-2-oxo-PCE + fentanyl
Shift to smoking

```
Updated Wednesday, November 27, 2024
9,203 samples analyzed
From 228 counties in 39 states
Serving 158 harm reduction programs
Including 43 FTIR drug checking services
357 unique substances identified
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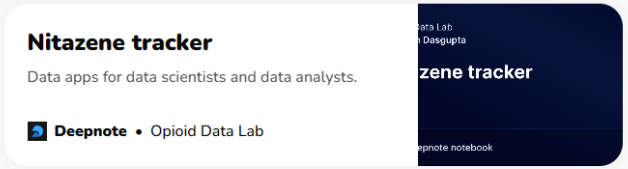
Nitazenes

As a class, relatively little is known about nitazenes in humans. Some are potent opioids (mu receptor agonists), and other nitazenes are weaker than typical synthetic opioids on the street. Naloxone is believed to be effective against most nitazenes studied at the current time, but there are some doubts.

Here is our tracker app for the samples we've seen:



Nitazenes are the synthetic opioid most common in Europe (not fentanyl). Nitazenes have been in the US for years, for example in Wisconsin and Illinois in 2020 and Tennessee in 2019. They were initially developed by the CIBA pharmaceutical company, but aren't on the market anywhere in the world that we know. In the United Kingdom nitazenes have been found in pressed pills, but in the US it's in powder (check the live report to see if that's changed).

Live Report of Samples Received by UNC

This live report lists all samples containing the **nitazene** class of synthetic opioids analyzed by the UNC Street Drug

As a class, relatively little is known about nitazenes in humans. Some are potent opioids (mu receptor agonists), and synthetic opioids on the street. Naloxone is believed to be effective against most nitazenes studied at the current ti

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Data last updated on Wednesday, November 27, 2024.
We have analyzed 113 samples containing nitazenes.
There are 14 states with nitazene-containing samples.
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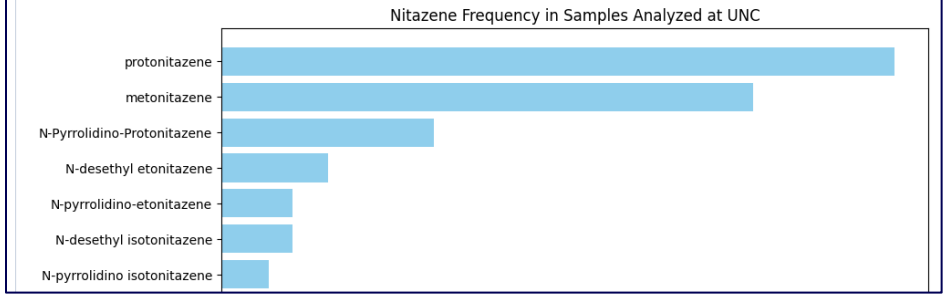
Some of the nitazenes with longer chemical names (starting with N- or a number) may be leftover starting materials from the synthesis process, and others may be breakdown products from GCMS analysis.



Community feedback

Many participants were strongly in favour of sharing results related to every individual sample.

Others were put off by the potential information overload of reporting every sample, or the risk of further stigmatising or surveilling certain communities.

While there were disagreements, a strong consensus emerged on the importance of providing *multiple levels of engagement* for users of this kind of information.

> As a drug taker and drug worker, I would obviously love access to info on each individual sample and the ability to isolate data points to analyse them in groups … I hope that is something that is being thought about because I think it could engage young drug takers in their drug use in a positive and interactive way.
>
> Consultation participant

> I believe there needs to be thought invested into who might choose to overlay certain narratives on public data — and possibly protections put in place to ensure data is not used to further harmful or exclusionary political or ideological agendas.
>
> Consultation participant

Part 2: Considerations

1. What to collect and report
2. How to share
3. Audience and purpose
4. Intended and unintended consequences
5. Legality and criminalisation
6. Establishing data systems

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What to collect and report

Trust matters – we can only ask for information that the community is willing to report, otherwise they may not use the service. Co-design is imperative!

- Identification information (appearance, sensory features, packaging)
- Content information (contents, purity)
- ? Experiential reports and anecdotes
- ? Technical and complex information
- Explain why this info, and provide service access to all, even if refused

One participant described a preference for “simple graphs like pie charts that are easy to interpret are great for breaking down drug checking service findings”, while another participant reacted negatively to an example of a graphical dashboard saying “it’s all just graphs, it just looks like homework”.

How to share

- Websites, posters, SMS, apps
- ? Social media (but not ONLY social media)
- ? Traditional media
- ! Community networks
- ! Situation-specific communication channels

> Communities have always looked after each other, this is how they've gotten info for ages.
>
> Consultation participant

Screenshots of a festival app push notification alert sent to attendees of a multi-day music festival, courtesy of Fiona Measham.

Audience and purpose

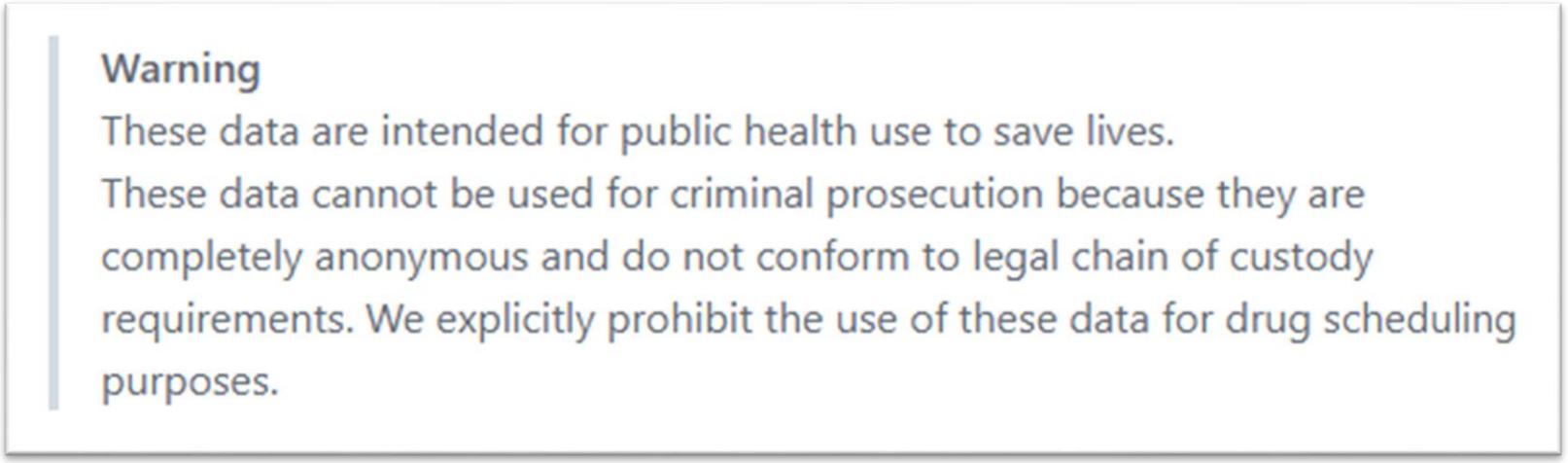
Audience	Purpose
People who use drugs	Provide practical, digestible & actionable info to reduce harm; leverage info sharing within social networks
Healthcare workers	Equip workers with info to improve response to unusual drugs or new drug trends; help them support their clients
Event organisers and promoters	For event-based drug checking, helps them communicate relevant health info directly with event attendees and on-site health services
Family, friends, caregivers	Empower these groups to identify and respond to drug overdoses and understand harm reduction principles and practices
General public	Reach more people who use drugs who may be

Intended and unintended consequences

- Stigma was discussed as both a concern, but also an opportunity.
- E.g. Only publishing alerts makes all drugs appear dangerous, whereas publishing all data gives a more balanced message.
- While there was some concern about ‘advertising’ higher-strength drugs through high purity alerts, research shows people tend to reduce their dose after finding out their drug was higher purity than expected.

Legality and criminalisation

- Law enforcement priorities can undermine the operation of harm reduction initiatives where the imperatives of supply and harm reduction clash
- Earning community trust is essential for drug checking services
- A key element of building and maintaining this trust is ensuring that people who use drugs have ownership and control of the data at micro and macro levels



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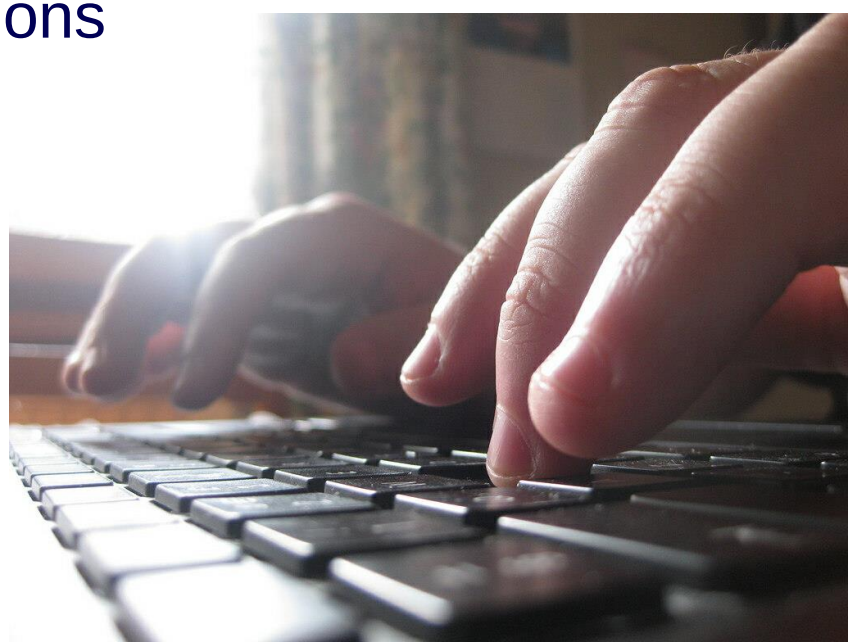
Establishing data systems

Establishing well-designed data system is imperative. Principles include:

- Co-design of data collection systems with priority communities
- Ensuring systems have adequate security features
- Data infrastructure/interface should be easy to use and fit for purpose
- Consistent data formats and standardised processes across services
- Clarity regarding data ownership and data use permissions
- Flexible enough to adapt to changing needs
- Robust data governance practices
- Future scalability of the system



Conclusions

How can Victoria build world-class drug checking communications?

- Leverage global experiences tailored to local contexts
- Resource comms systems that can tailor form and message to meet needs of multiple groups
- Centre people who use drugs in planning, design & implementation
- Community data sovereignty
- Evaluate utility and effectiveness

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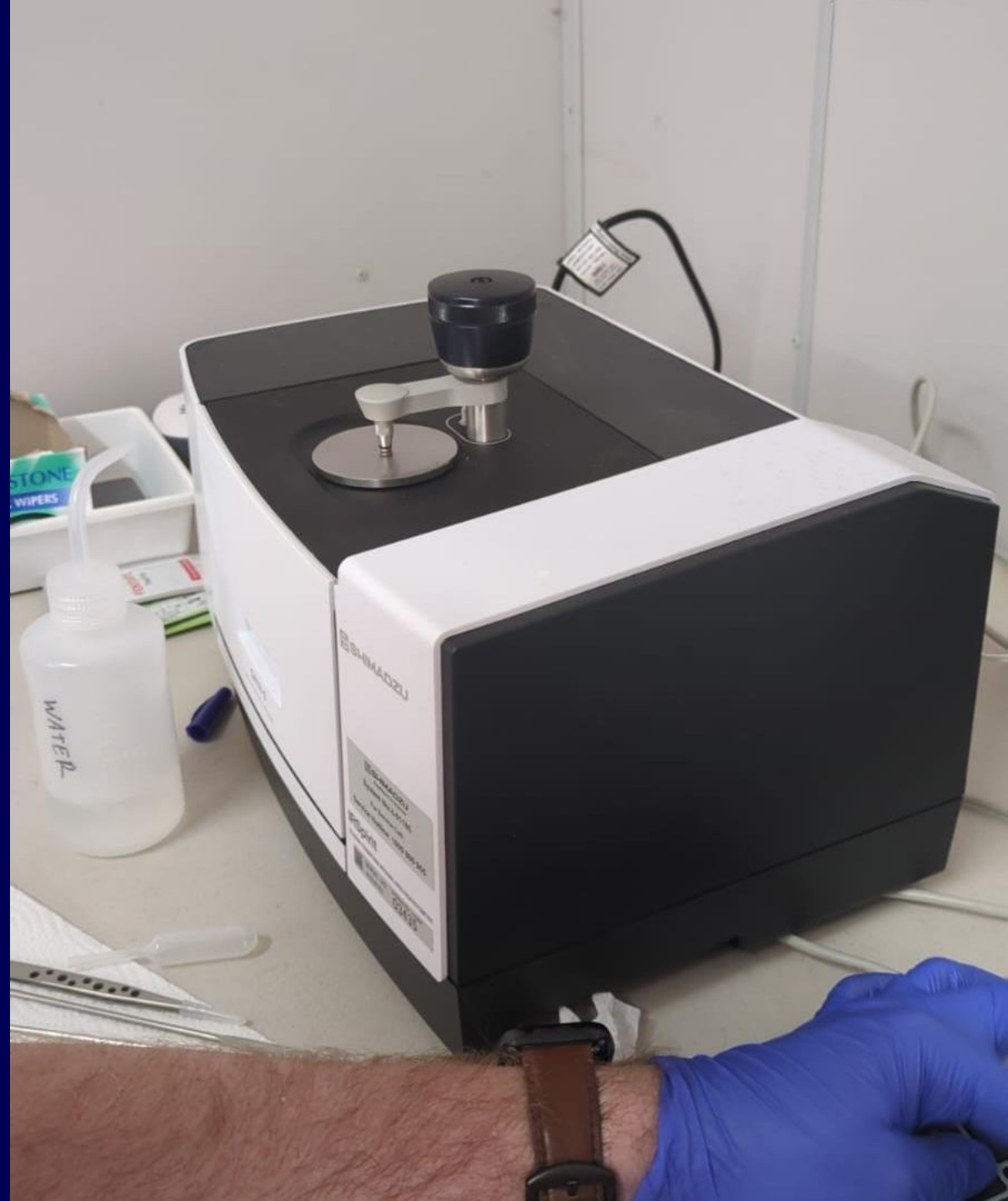

Thank you so much!

Contact us at isabelle.volpe@rmit.edu.au and monica.barratt@rmit.edu.au

Use the QR code above to download our new report!