

What's Contaminating Toronto's Drug Supply?

Insights from Samples Checked by Toronto's Drug Checking Service January 1 – December 31, 2021



August 16, 2022

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Acknowledgements

We acknowledge the members of our community advisory board, our partner organizations, and those that have lost their lives – both in the ongoing drug poisoning crisis and long before – due to policies of drug criminalization.

We acknowledge that the land on which we operate Toronto's Drug Checking Service is the traditional territory of many nations including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee, and the Wendat peoples, and is now home to many diverse First Nations, Inuit, and Métis peoples.

We acknowledge that racialized communities and survivors of colonization are disproportionately impacted by unjust drug policies. We strive to support the development of equitable drug policies that are responsive to the needs of racialized people who use drugs – including Black, Indigenous, and People of Colour – and their communities.

Our work would not be possible if people who use drugs did not access our service and, as a result, advocate for themselves and contribute to solutions that impact them. We thank our community advisory board of people who use drugs in Toronto who consult on the design and execution of Toronto's Drug Checking Service, as well as our partners, collaborators, and regulators for their ongoing commitment:

- Alliance for Collaborative Drug Checking
- British Columbia Centre on Substance Use
- Canadian Centre on Substance Use and Addiction's National Drug Checking Working Group
- Centre for Addiction and Mental Health
- Health Canada's Drug Analysis Service
- Health Canada's Office of Controlled Substances
- Moss Park Consumption and Treatment Service
- Office of the Chief Coroner for Ontario
- Ontario Harm Reduction Network

- Parkdale Queen West Community Health Centre
- Public Health Ontario
- South Riverdale Community Health Centre
- St. Michael's Hospital (Unity Health Toronto)
- Street Health
- The Works at Toronto Public Health
- Toronto Harm Reduction Alliance
- Toronto Paramedic Services
- Toronto Public Health
- Trip! Project
- Vancouver Island Drug Checking Project

• Ontario Poison Centre

This report was supported by the St. Michaels's Hospital Foundation and a Health Canada Substance Use and Addictions Program grant to Unity Health Toronto to implement and evaluate a drug checking pilot in Toronto, Canada (Arrangement #: 1718-HQ-000027). Our funders had no role in the research, design, or writing of this report, nor did they have a role in the decision to publish it.

About Toronto's Drug Checking Service

<u>Toronto's Drug Checking Service</u> is a free, anonymous, and confidential public health service that aims to reduce the harms associated with substance use and, specifically, to prevent overdose by uncovering the toxicity and potency of the unregulated drug supply.

Currently operating as a five-year pilot within the <u>Centre on</u> <u>Drug Policy Evaluation</u> at the <u>St. Michael's Hospital site of</u> <u>Unity Health Toronto</u>, in collaboration with numerous partners, the program is funded by Health Canada's Substance Use and Addictions Program and the St. Michael's Hospital Foundation.

What's the Unregulated Drug Supply?

The unregulated drug supply includes illegal drugs, as well as legal drugs diverted from regulated markets for sale through criminal channels.

By way of exemptions from Canada's Controlled Drugs and Substances Act, Toronto's Drug Checking Service is piloting what is known as "offsite drug checking", which involves collecting controlled substance samples at one organization and transporting them to another for analysis. This offsite drug checking model leverages existing instruments, human resources, and community-based services.

Controlled substance samples, including substances and drug equipment after it has been used, are collected at five community health agencies in Toronto that offer supervised consumption, known as "collection sites":

- Moss Park Consumption and Treatment Service
- Parkdale Queen West Community Health Centre (Parkdale site)
- Parkdale Queen West Community Health Centre (Queen West site)
- South Riverdale Community Health Centre
- <u>The Works at Toronto Public Health</u>

Five days per week, samples are transported by bike courier to the clinical laboratory at the <u>Centre for</u> <u>Addiction and Mental Health</u> or <u>St. Michael's Hospital</u>, known as "analysis sites", where they are analyzed using highly sophisticated <u>mass spectrometry technologies</u> (gas or liquid chromatography). These technologies provide precise information about which drugs are found in each sample and some information about how much of each drug is present (i.e., qualitative and quantitative results). Within a day or two, detailed results are returned to the agency that collected the sample and communicated to the service user, in person, by phone, or by email, along with tailored strategies to reduce harm and referrals to drug-related, health, and social services.

Beyond educating individual service users, results for all samples are collated, analyzed, and <u>publicly</u> <u>disseminated every other week</u> to communicate drug market trends and inform care for people who use drugs, advocacy, policy, and research.

Purpose of This Report

The purpose of this report is to highlight and summarize findings in the contamination, volatility, and increasing toxicity of Toronto's unregulated drug supply, as made evident through samples checked by Toronto's Drug Checking Service from January 1 to December 31, 2021.

This report will focus on noteworthy contamination of opioid samples in 2021 – particularly the noteworthy contamination of the unregulated fentanyl supply – in an effort to inform policymakers, clinicians, researchers, harm reduction staff, and the public about drugs that are believed to be contributing to the drug poisoning and overdoses crises, as well as offer suggestions as to why these drugs may be presenting. Findings from all samples checked in 2021 are available by viewing graphs and tables found on <u>our website</u>.

This report also includes information on the contamination of depressants and stimulants by noteworthy drugs. Much less emphasis has been placed on these drug types given that data from Toronto's Drug Checking Service does not reflect an increase in their toxicity relative to the unregulated fentanyl supply. To that end, this report does not include information on the contamination of psychedelic drugs like 2C class, ketamine, or LSD, as there were no significant contaminant findings to share.

Lastly, we hope this report serves as an advocacy tool for the immediate increase in available harm reduction services, safer alternatives to the unregulated drug supply, as well as for policies that are responsive to the needs of people who use drugs in Toronto and beyond (e.g., decriminalization and regulation).

Implications of Toronto's Unregulated Drug Supply

Health system utilization and overdose

Compared to 2020, Toronto's Drug Checking Service saw a 74% increase in the number of samples checked. This was not surprising given the maturity of the pilot and that 2021 marked the most tragic year to date for the drug poisoning and overdose crises across Canada. In Toronto alone there were:

- 6,005 non-fatal suspected overdose calls received by Toronto Paramedic Services¹
- 3,947 emergency department visits to hospitals due to opioid poisoning¹
- 565 (511 confirmed and 54 probable) opioid toxicity deaths reported by the Office of the Chief Coroner for Ontario¹
- 479 hospitalizations due to opioid poisoning¹
- 357 fatal overdose calls received by Toronto Paramedic Services¹

These statistics do not include the number of overdoses that were reversed among the city's ten supervised consumption sites, as this information is not publicly available. However, staff at a single supervised consumption site — The Works, implemented by Toronto Public Health — reversed over 1,000 overdoses in 2021.¹ The above statistics reflect the significant and traumatic consequences of people's need to rely on an unregulated and increasingly toxic drug supply.

Local policy response

On January 4, 2022, Toronto Public Health submitted an exemption request to Health Canada for an exemption from Section 56(1) of the *Controlled Drugs and Substances Act*, which would allow for the possession of drugs for personal use in Toronto (i.e., drug decriminalization). While decriminalization is an important step in separating drug use from criminality, and reducing the stigma associated with drug use, it does not improve or address the increasingly toxic unregulated drug supply that people who use drugs must navigate.

Safer opioid supply programs

In recent years, safer opioid supply (SOS) pilot programs have emerged in Canadian cities in an effort to reduce people's dependency on the unregulated drug market, hopefully decreasing the risk of overdose and other adverse health outcomes. The exact number of SOS participants in Toronto is uncertain, due to the unknown number of providers prescribing regimens, but it is estimated that less than 300 people in Toronto have access to SOS pilot programs. For those who are fortunate enough to be able to access these programs, it is acknowledged in the community that some medications and regimens

currently available to people who use drugs – such as methadone, morphine, and hydromorphone – are not always meeting people's needs due to high tolerances that have resulted from prolonged use of high-potency opioids, such as fentanyl, personal drug preferences, as well as additional potential dependencies on benzodiazepines or other drugs contaminating the unregulated fentanyl supply that are not widely co-prescribed.² As a result, some of those enrolled in SOS programs are not able to stop accessing the unregulated supply entirely. Data generated by Toronto's Drug Checking Service helps to explain why medications currently being offered as part of treatment and SOS programs may not be meeting some people's needs.

The average amount of fentanyl in a "point" or dose (100 mg) of fentanyl is 4,000 µg, or approximately 320-400 mg of morphine (and 4% of the fentanyl sample). This means that in a gram of fentanyl, an assumed low average daily dose, people are consuming 40,000 µg of fentanyl or approximately 3,200-4000 mg of morphine per day.³ Other drugs found in expected fentanyl samples not currently quantified by Toronto's Drug Checking Service, such as nitazene opioids, likely further increase people's opioid tolerances and the strength or potency of the opioid they are using, with implications for opioid substitution prescribing. See the Opioid Contamination section of this report for more information on noteworthy drugs contaminating expected fentanyl samples.

Community perspectives on Toronto's Drug Checking Service

In the absence of an accessible regulated supply, people who use drugs rely on drug checking to make the most informed drug use decisions. After receiving results from samples submitted to Toronto's Drug Checking Service, service users have shared the following feedback:

"Don't use often, this sample seemed not right, so got [it] tested"

"Found out drug was not what I thought it was, useful info"

"Drug was not what I expected, glad to know what it was"

"Helpful to know what I am using"

"It allowed me to make an informed decision in taking and how to consume this drug. [I] was worried that the substance might have been contaminated with fentanyl or other substances. It allowed me to have the knowledge and surety that the substance is not contaminated"

Other communication we receive from community members reflects the reality that drug checking alone is not enough, and that while having access to information on the drugs you consume is important, people are still at significant risk of non-fatal and fatal overdose when relying on the unregulated supply:

² Government of Canada. <u>Early findings from safer supply pilot projects</u>. 2022.

³ Information from the median amount of fentanyl found in 379 expected fentanyl samples quantified in 2021. These statements assume the 10 mg sample analyzed is completely representative of the drug that the sample is taken from (which may be unlikely given the <u>Chocolate Chip Cookie Effect</u>). Morphine conversions assume fentanyl is 80-100 times stronger than morphine.

"Hi, I'm looking to get on a safe supply. I'm tired of taking drugs off the street it's too risky...I've been struggling with opioid use for 6 years now. I've been on both methadone and Suboxone and nothing seems to help me. I keep buying opioids off the street, whatever I can get my hands on. I can't afford to keep doing this. I've been looking around since 2019 for [a] safe opioid supply [program]. I can't find one anywhere, all the clinics and hospitals tell me to ask my methadone doctor, he's not on board with the idea..."

Policy recommendations

The risk of death related to use of unregulated drugs is severe. Policymakers in Canada have the ability to change the trajectory of the drug poisoning and overdose crises. Policy responses to improve the lives of people who use drugs could include, but are not limited to:

- Scaling up access to a more readily available regulated supply (inclusive of a variety of medications that reflect people's needs and preferences)
- Increasing the number of harm reduction hubs (e.g., supervised consumption sites, drug checking, naloxone and syringe distribution) in communities across Canada
- Immediately starting a process of legislative change to end criminal penalties for possession of all drugs and creating a national public health regulatory framework⁴

Toronto's Drug Checking Service aims to provide evidence that supports such policy changes.

Contamination Of Toronto's Unregulated Drug Supply

As a service that is funded to help better understand the impact of drug checking on overdose-related risks, we focus our efforts on sharing information related to drugs we know to be either most contaminated or that are most likely to result in overdose and/or adverse health events.

When a drug is submitted to the service, we ask the service user what it was bought or got as, and this is what we call the expected drug. The below graph summarizes popular <u>expected drugs</u> and instances where the only drug found in the substance was the expected drug – in other words, when the results met the service user's expectations.



Proportion of substance samples that contained only the expected drug

1,978 substances checked | January 1 – December 31, 2021

For the purposes of this report, we have included active metabolites of the expected drug or closely related drugs that could present as a result of breakdown during analysis, or due to the sensitivity of the drug checking technologies, in the proportion of substances that contained only the expected drug: ¹ MDMA included MDA, MBDB, or MDEA | ² Ketamine included deschloroketamine | ³ Heroin included 6-MAM (heroin-related)

Overwhelmingly in 2021, opioids continued to be significantly more contaminated than other expected drug types. For example, no expected heroin or carfentanil substances contained only the expected drug, all were contaminated, or did not contain any of the expected drug; expected fentanyl substances only met service users' expectations 5% of the time. Conversely, expected methamphetamine and ketamine substances met service users' expectations 85% and 81% of the time, respectively.

The remainder of this report will focus on noteworthy expected opioid contamination, particularly contamination of the unregulated fentanyl supply, as a means to bring more awareness and attention to just how volatile and toxic the unregulated supply has become.

Two visualizations on Toronto's Drug Checking Service's website provide more information about noteworthy drugs found in samples: <u>Other drugs found</u> and <u>Noteworthy drug</u> <u>trends</u>.

Opioid Contamination

Expected fentanyl samples

Fentanyl is the drug most often submitted to Toronto's Drug Checking Service and makes up approximately 50% of samples. In 2021, 1,327 expected fentanyl samples were checked – 43% (573) of these were substances. Key insights related to expected fentanyl contamination in 2021 include:

- 14% (191) of samples were known to be associated with overdose
- Only 5% (29) of substances met service users' expectations (meaning fentanyl was the only drug found in 5% of substances)
- 16% (94) of substances did not contain any fentanyl
- The median amount of fentanyl found in substances was 4% (for someone who uses a gram of fentanyl a day, this is equivalent to approximately 3200-4000 mg of morphine/day or 40,0000 μ g/day⁵)
- 71% (942) of samples contained fentanyl and at least one or more respiratory and central nervous system depressant, specifically:
 - 86% (812) contained fentanyl and at least one benzodiazepine-related drug
 - 49% (460) contained fentanyl and at least one fentanyl-related drug
 - 12% (117) contained fentanyl and at least one nitazene opioid
 - 6% (54) contained fentanyl and xylazine
 - 5% (44) contained fentanyl and at least one opioid-related drug
 - 1% (14) contained fentanyl and carfentanil
 - 1% (11) contained fentanyl and at least one synthetic cannabinoid-related drug

Benzodiazepine-related contamination of fentanyl samples

In 2021, media outlets like <u>VICE</u> and <u>The Conversation</u> started publicizing the term "benzo-dope" to describe fentanyl or opioids from the unregulated market that had been contaminated with benzodiazepine-related drugs. It has been suggested that benzodiazepines were introduced to the unregulated fentanyl supply in order to "give it legs," or increase the length of time that the effects are felt.⁶

The combination of benzodiazepines and opioids can be problematic at the time of drug use because they increase the risk of dangerous suppression of vitals (e.g., slowing down of breathing, blood pressure, heart rate) and increase chances of prolonged sedation. Not only does this put individual's physical safety at risk (e.g., overdose, assault), but lengthy sedation and complex overdose management also put additional strain on harm reduction and health services with limited resources.

Long term, the co-use of benzodiazepines and opioids can be problematic as people can quickly become physically and psychologically dependent on benzodiazepines, and experience withdrawals if the market shifts despite potentially never knowing they were consuming them. Benzodiazepine withdrawal includes sleep disturbance, irritability, and seizures.⁷

When Toronto's Drug Checking Service launched in 2019, benzodiazepine-related drugs presented in 34% of fentanyl samples. Between October and December 2020, the presence of benzodiazepine-related drugs peaked at 81% of fentanyl samples. In 2021, at least one benzodiazepine-related drugs was found in 60-70% of fentanyl samples.

This level of volatility has dire consequences. For people looking to stop or reduce their use of fentanyl from the unregulated supply, this means they will not only likely experience opioid withdrawal symptoms, but could experience benzodiazepine withdrawal symptoms as well. Co-prescribing of opioids and benzodiazepines is contraindicated and therefore not widely administered by clinicians.⁸ This is problematic for people wishing to reduce their use of fentanyl via medication-assisted treatment as their potential benzodiazepine substitution needs will likely go unmet.

Toronto's Drug Checking Service began publicly reporting the <u>amount of certain drugs found</u> in expected fentanyl substances checked in July 2021. In 2021, 47% of fentanyl samples contained etizolam, and the median amount of etizolam found in fentanyl substances was 2%. Until October 2021, etizolam was the benzodiazepine-related drug that presented most often in expected fentanyl samples.

Etizolam is a short-acting benzodiazepine-related drug, used in some countries to treat anxiety and insomnia, but not approved for use in Canada. It is believed to be approximately 5-10 times stronger

⁶ Krausz RM, et al. <u>Shifting North American drug markets and challenges for the system of care</u>. Int J Ment Health Syst. 2021 Dec 20;15(1):86.

⁷ Pétursson H. <u>The benzodiazepine withdrawal syndrome</u>. Addiction. 1994 Nov;89(11):1455-9.

⁸ National Institute on Drug Abuse. <u>Benzodiazepines and Opioids</u>. 2022.

⁹ Assumes the 10 mg sample is completely representative of the drug that sample is taken from, which may be unlikely given the <u>Chocolate Chip Cookie Effect</u>. This range assumes etizolam is 5-10 times stronger than diazepam.

than diazepam (Valium), a commonly prescribed benzodiazepine. Assuming someone who uses fentanyl uses a gram a day (a conservative assumed daily dose), they could be consuming approximately 22 mg of etizolam per day, or 110-220 mg of diazepam,⁹ 3200-4000 mg of morphine per day (median average amount of fentanyl found),⁵ as well as other noteworthy contaminants (e.g., flualprazolam or xylazine) that are not currently quantified by Toronto's Drug Checking Service.

Average¹ amount of etizolam

Based on 126 expected fentanyl substances checked | January 1 – December 31, 2021

A sample	A dose ²	Assumed daily dose ²
0.01 gram (10 mg)	0.1 gram ("a point")	1 gram
0.2 mg / sample $^{-1}$ - 2 mg of diazepam ³ / sample	2 mg / dose ~11 – 22 mg of diazepam ³ / dose	22 mg / day ~110 – 220 mg of diazepam ³ / day

¹ Median

² Assuming the 10 mg sample is completely representative of the drug that sample is taken from, which may be unlikely given the Chocolate Chip Cookie Effect

³ Range assumes etizolam is 5 – 10 times stronger than diazepam

While etizolam is currently the only benzodiazepine Toronto's Drug Checking Service quantifies, there is often more than one benzodiazepine-related drug found in expected fentanyl samples. In fact, 36% of expected fentanyl samples in 2021 contained two or more benzodiazepine-related drugs.

In October 2021, flualprazolam – a high-potency, short-acting benzodiazepine-related drug similar to alprazolam (Xanax) – overtook etizolam as the benzodiazepine-related drug that presented most often in expected fentanyl samples; another clear demonstration of the volatility of the unregulated drug supply.

In 2021, Toronto's Drug Checking Service identified 15 different benzodiazepine-related drugs in expected fentanyl samples. Below is a time series graph that demonstrates how the most common benzodiazepine-related drugs found in expected fentanyl samples have changed since the service launched in October 2019 and until December 31, 2021.

Benzodiazepine-related drugs found in expected fentanyl samples over time

2,305 expected fentanyl samples checked | October 10, 2019 – December 31, 2021



Benzodiazepine-related drugs found in expected fentanyl samples in 2021 not included in this graph due to the infrequency in which they presented: alprazolam (Xanax), clonazepam, clonazolam, desalkylflurazepam, diazepam (Valium), flurazepam, and temazepam.

Nitazene opioid contamination of fentanyl samples

Synthesized in the 1950s to relieve pain, nitazene opioids are a group of synthetic opioids that were never approved for market, but now regularly present in expected fentanyl samples checked by Toronto's Drug Checking Service – sometimes replacing fentanyl as the opioid found.

Nitazene opioids first presented in samples in February 2021. Subsequently, they were found in 14% of expected fentanyl samples from April to December 2021. The emergence and presence of nitazene opioids in Toronto's unregulated drug supply coincided with an increase in non-fatal and fatal overdose calls received by Toronto Paramedic Services, as well as overdose deaths in Toronto, as reported by Toronto's harm reduction community, <u>Toronto Public Health</u>, and local media (e.g., <u>Toronto Star</u>).

Below is an overview of the nitazene opioids identified in Toronto's unregulated fentanyl supply in 2021, their suggested potency, and the total number of samples they were found in:

	Drug name	Suggested strength compared to fentanyl	First identified	Found in how many samples
1	Metonitazene	Similar strength	May 31, 2021	58
2	lsotonitazene/protonitazene*	Up to 5x stronger	February 12, 2021	55
3	Etonitazepyne	10x stronger	July 13, 2021	36
4	Etodesnitazene	Similar strength	June 24, 2021	5
5	5-Aminoisotonitazene	Similar to heroin	May 17, 2021	3
6	Etonitazene	10x stronger	May 5, 2021	3

Nitazene opioids identified in Toronto's unregulated fentanyl supply in 2021

* As isotonitazene and protonitazene have a very similar chemical structure, it is not currently possible for Toronto's Drug Checking Service to differentiate between the two. For this reason, we report the two drugs together.

The introduction of nitazene opioids continues a trend in unregulated drug markets towards greater potency, which is ascribed to supply sanctioning efforts. Examples of such policies include regulations intended to curb the export of fentanyl and fentanyl precursors likely driving manufacturers' desire to ship smaller amounts of increasingly potent substances, and thereby reducing the chances of drug seizures.¹⁰ Nitazene opioids are a poignant example of how drug policies focused on supply reduction push the unregulated drug supply to become increasingly toxic and volatile.

Xylazine contamination of fentanyl samples

Xylazine is an animal tranquilizer typically used by veterinarians on horses, deer, dogs, and cats for sedation, muscle relaxation, and pain relief and is not approved for human use. It was first detected by Toronto's Drug Checking Service in September 2020 but has been found in the unregulated drug supply in Puerto Rico and elsewhere in the United States as far back as 2000 and 2007, respectively.¹¹

Xylazine is known to cause central nervous system and respiratory depression, as well as cardiovascular effects (low blood pressure and slower heart rate), much like opioids and benzodiazepines. In addition to these effects, regular use of xylazine has been associated with open skin ulcers, or abscesses, that are painful and prone to infection.¹² This was recently noted in <u>VICE's</u> <u>article on "tranq-dope" in Philadelphia</u>, where xylazine is reportedly causing an increase in wounds and amputations among people who use opioids.

In 2021, xylazine presented in a relatively small number of expected fentanyl samples checked by Toronto's Drug Checking Service – as low as 1% from October to December and as high as 8% from April to June. A dramatic increase in xylazine has been noted thus far in 2022, with xylazine presenting in 16% of fentanyl samples checked from January to March.

The majority of people who use fentanyl in Toronto are likely unaware that xylazine is present in the unregulated drug supply, and that it poses considerable health risks. While Toronto's Drug Checking Service and its community partners make every effort to inform people about what is being found in the unregulated drug supply, this information in isolation does not change people's ability to access safer regulated alternatives. Using at a supervised consumption site, using with a friend, doing a test dose, and carrying naloxone are all harm reduction practices many people report engaging in after receiving drug checking results, but, ultimately, service users must use what they have access to in the absence of alternatives.

¹¹ Bowles JM, et al. <u>Xylazine detected in unregulated opioids and drug administration equipment in Toronto, Canada: clinical and social implications</u>. Harm Reduct J. 2021 Oct 13;18(1):104.

¹² Torruella RA. <u>Xylazine (veterinary sedative) use in Puerto Rico</u>. Subst Abuse Treat Prev Policy. 2011 Apr 11;6:7.

Opioid- and fentanyl-related drug contamination of fentanyl samples

Fentanyl- and opioid-related drugs presenting in expected fentanyl samples tend to either indicate incomplete synthesis or increase the potency of fentanyl.¹³

In 2021, 36% of expected fentanyl samples contained at least one publicly reported fentanyl- or opioid-related drug. Below is an overview of publicly reported fentanyl- or opioid-related drugs identified in Toronto's unregulated drug supply in 2021:

Publicly reported fentanyl- or opioid-related drugs identified in Toronto's unregulated fentanyl supply in 2021

	Drug name	Proportion (and number) of expected fentanyl samples the drug was found in
1	Despropionyl fentanyl (4-ANPP)*	33% (433)
2	Furanyl UF-17	3% (44)
3	Acetyl fentanyl	3% (42)
4	Benzyl fentanyl	2% (29)
5	Furanylethyl fentanyl	Less than 1% (5)
6	Valeryl fentanyl	Less than 1% (5)
7	Fluorofentanyl	Less than 1% (2)
8	Furanyl fentanyl	Less than 1% (2)
9	Bromofentanyl	Less than 1% (1)
10	U-51754	Less than 1% (1)

* The only known inactive fentanyl by-product Toronto's Drug Checking Service reports publicly is despropionyl fentanyl (4-ANPP), as there is agreement in the drug checking community that its presence may reflect the quality of the fentanyl (indicating incomplete synthesis or local manufacturing).

In addition to the drugs included in the table above, Toronto's Drug Checking Service identified the following fentanyl- or opioid-related drugs: 2'-fluorofentanyl, 2'-methyl fentanyl, fentanyl (hydroxy), methyl acetyl fentanyl, n-(2C-C) fentanyl, n-(2C-D) fentanyl, n-methyl fentanyl, norfentanyl, and phenethyl 4-ANPP. These drugs were not reported publicly as they are believed to be inactive by-products that would not help service users make more informed drug use decisions.

Many of the active fentanyl- or opioid-related drugs listed above are included in Toronto's Drug Checking Service's <u>drug dictionary</u> – a growing list of the many drugs identified by the program, each with a brief description and indication of whether the drug has been classified as noteworthy by the service.

¹³ Schueler HE. <u>Emerging Synthetic Fentanyl Analogs</u>. Acad Forensic Pathol. 2017 Mar; 7(1): 36–40.

Expected Percocet samples

In 2021, 46 expected Percocet samples were checked, accounting for 2% of all samples – all were substances. Key insights from Percocet substances in 2021 include:

- 22% (10) met service users' expectations (i.e., contained only acetaminophen and oxycodone – the two drugs that make up Percocet)
- 35% (16) did not contain any drugs
- 22% (10) contained only acetaminophen
- 4% (2) contained only oxycodone
- 4% (2) contained a high-potency opioid (fentanyl or a nitazene opioid)

Expected heroin samples

In 2021, 33 expected heroin samples were checked, accounting for less than 1% of all samples – 67% (22) were substances. Only 32% (7) of expected heroin substances contained heroin or the heroin-related drug 6-MAM, while high-potency opioids (fentanyl or nitazene opioids) were found in 64% (14). None met service users' expectations (i.e., contained only heroin or 6-MAM).

Why do key insights only include information on substances?

For samples that are not expected to be fentanyl, we've chosen to only report on substances checked (as opposed to substances and used equipment). This is in order to reduce the potential for misreporting noteworthy contamination in other expected drugs, as we know drug equipment may be reused. For more information on this, see the limitations section.

Expected carfentanil samples

In 2021, 11 expected carfentanil samples were checked, accounting for less than 1% of all samples– 82% (9) were substances. Key insights from carfentanil substances in 2021 include:

- None contained carfentanil and therefore none met service users' expectations
- 89% (8) contained one or more noteworthy drugs or contaminants, specifically:
 - 89% (8) contained a high-potency opioid (fentanyl or a nitazene opioid)
 - 56% (5) contained at least one benzodiazepine-related drug

Depressant Contamination

Expected benzodiazepine samples

In 2021, 96 expected benzodiazepine samples were checked, accounting for 3% of all samples – all were substances. For some samples, the specific expected benzodiazepine-related drug was not included, and therefore we have not commented on whether or not expected benzodiazepine-related drug samples met service users' expectations. Key insights from benzodiazepine-related substances in 2021 include:

- Stated expected benzodiazepine-related drugs submitted were: alprazolam (Xanax), bromazolam, clonazepam, diazepam (Valium), etizolam, flualprazolam, and lorazepam (Ativan)
- 25% (24) contained only benzodiazepine-related drugs
- 2% (2) contained one or more noteworthy drugs or contaminants, specifically:
 - 2% (2) contained fentanyl only one of these samples contained a benzodiazepine-related drug
 - 1% (1) contained carfentanil this sample also contained a benzodiazepine-related drug

Stimulant Contamination

In 2021, 865 expected stimulant samples were checked, accounting for 30% of all samples – 94% (811) were substances. The following stimulants were the most commonly checked and accounted for 29% of all samples in 2021*:

- 10% (301) were expected to be cocaine
- 8% (235) were expected to be methamphetamine
- 8% (218) were expected to be MDMA
- 2% (47) were expected to be amphetamine
- 1% (38) were expected to be crack cocaine

* The following expected stimulants (or stimulant-related drugs) accounted for the other 1% of all samples in 2021: 2,5-dimethoxy-4-methylamphetamine (DOM), 3-methylmethcathinone (3-MMC), 4-FA, 4-Chloro-2,5-DMA (DOC), Adderall, lisdexamphetamine (Vyvanse), MDA, mescaline, methylone, methylphenidate (Ritalin).

Key insights in the stimulant contamination section of this report will focus exclusively on substances. This is in order to reduce the potential for misreporting noteworthy contamination that could come from the reusing of drug equipment. For more information on this, see the <u>limitations section</u>.

Opioid contamination of expected stimulants is an understandable concern voiced by the community of people who use drugs in Toronto. For those who do not use opioids, fentanyl or other opioid-related drugs unexpectedly presenting in stimulants poses significant risks, including overdose. Luckily, Toronto's Drug Checking Service did not see a trend toward increasing opioid contamination of cocaine, crack cocaine, methamphetamine, MDMA, amphetamine, or other expected stimulants checked in 2021.

There is general agreement in the drug checking community that the unexpected presence of opioids in stimulants is likely the product of accidental cross contamination (rather than intentional adulteration). In 2021, three substances expected to be stimulants (out of 865) contained a high-potency opioid – none of them contained the expected stimulant. We believe this could be a result of the expected drug being incorrectly provided at the time of sample submission (i.e., by service user) or at the time the drug was purchased or received (i.e., by the seller or provider). The stimulant samples that contained high-potency opioids in 2021 were:

- 1 expected cocaine substance contained etonitazepyne
- 1 expected methamphetamine substance contained fentanyl
- 1 expected MDMA substance contained isotonitazene/protonitazene*

* As isotonitazene and protonitazene have a very similar chemical structure, it is not currently possible for Toronto's Drug Checking Service to differentiate between the two. For this reason, we report the two drugs together.

Expected cocaine samples

In 2021, 301 expected cocaine samples were checked, accounting for 10% of all samples – 98% (294) were substances. Key insights from cocaine substances in 2021 include:

- 58% was the median amount of cocaine found
- 65% (192) met services users' expectations meaning cocaine was the only drug found
- 27% (78) contained one or more noteworthy drugs or contaminants, specifically:
 - 13% (37) contained levamisole
 - 10% (30) contained phenacetin
 - 4% (13) contained at least one benzodiazepine-related drug 6 of these samples contained cocaine
 - 1 contained etonitazepyne this sample did not contain cocaine

Interestingly, the level of noteworthy drug contamination in cocaine decreased from 2020 to 2021. In 2020, 39% of cocaine substances contained one or more noteworthy drugs or contaminants. To see specific noteworthy drugs found in expected drugs over time, such as levamisole or phenacetin in cocaine, see the interactive <u>Noteworthy drug trends graph</u>.

Expected methamphetamine samples

In 2021, 235 expected methamphetamine samples were checked, accounting for 8% of all samples – 84% (198) were substances. Key insights from methamphetamine substances in 2021 include:

- 85% (169) met services users' expectations meaning methamphetamine was the only drug found
- 2% (3) contained one or more noteworthy drugs or contaminants, specifically:
 - 2% (3) contained at least one benzodiazepine-related drug 2 of these samples contained methamphetamine
 - 1 contained fentanyl this sample did not contain methamphetamine

Of all expected drugs, methamphetamine was identified by the service as the least frequently contaminated in 2021. This is surprising to community members, who anecdotally report methamphetamine no longer having the desired effects it once did. Based on Toronto's Drug Checking Service results, if the methamphetamine supply in Toronto is changing, it does not appear to be as a result of increased contamination from other drugs.

Expected MDMA samples

In 2021, 218 expected MDMA samples were checked, accounting for 8% of all samples – all were substances. Key insights from MDMA substances in 2021 include:

- 83% (182) met services users' expectations meaning MDMA or closely related drugs were the only drug(s) found*
- 2% (5) contained cathinone-related drugs (2-MCC, ethylone, methcathinone, methylone, and n-ethylpentylone)
- 1% (3) contained one or more noteworthy drugs or contaminants, specifically:
 - 2 contained at least one benzodiazepine-related drug one of these samples contained MDMA
 - 1 contained isotonitazene/protonitazene** this sample did not contain MDMA

* For the purposes of this report, we have included active metabolites or analogues of the expected drug or closely related drugs that could present as a result of breakdown during analysis in the proportion of substances that contained only the expected drug: MDMA included MDA, MBDB, or MDEA

** As isotonitazene and protonitazene have a very similar chemical structure, it is not currently possible for Toronto's Drug Checking Service to differentiate between the two. For this reason, we report the two drugs together.

Expected amphetamine samples

In 2021, 47 expected amphetamine samples were checked, accounting for 2% of all samples – 91% (43) were substances. Key insights from amphetamine substances in 2021 include:

- 12% (5) met services users' expectations meaning amphetamine was the only drug found
- 44% (19) contained methamphetamine
- 1 contained at least one benzodiazepine related-drug this sample did not contain amphetamine

Expected crack cocaine samples

In 2021, 38 expected crack cocaine samples were checked, accounting for 1% of all samples – 84% (32) were substances. Key insights from crack cocaine substances in 2021 include:

- 60% was the median amount of cocaine found
- 41% (13) met services users' expectations meaning cocaine was the only drug found
- 59% (19) contained one or more noteworthy drugs or contaminant, specifically:
 - 53% (17) contained phenacetin
 - 13% (4) contained at least one benzodiazepine-related drug all samples contained cocaine
 - 13% (4) contained levamisole

Conclusion

In 2021, based on findings from Toronto's Drug Checking Service, Toronto's unregulated fentanyl supply saw the introduction of nitazene opioids and a fairly dramatic fluctuation in the presence and type of benzodiazepine-related drugs found. This is in addition to the volatile presence of other respiratory and central nervous system depressants such as xylazine, carfentanil, and synthetic cannabinoid-related drugs, among others. In contrast, a decrease in noteworthy contamination of expected cocaine substances was observed – the most commonly checked stimulant.

Current responses to the drug poisoning and overdose crises in North America are insufficient. Specific policy recommendations that have already been suggested in this report include:

- Scaling up access to a more readily available regulated supply (inclusive of a variety of medications that reflect people's needs and preferences)
- Increasing the number of harm reduction hubs (e.g., supervised consumption sites, drug checking, naloxone and syringe distribution) in communities across Canada
- Immediately starting a process of legislative change to end criminal penalties for possession of all drugs and creating a national public health regulatory framework⁴

With a record number of fatal and non-fatal overdoses being recorded in Toronto and across Canada, there has never been a more critical time for municipal, provincial, and federal levels of government to act boldly: they must intervene directly in the unregulated drug supply and scale-up the services people who use drugs need in order to remain alive.

Until the previously mentioned policy recommendations are adopted, drug checking services will remain imperative for individuals attempting to minimize the potential harms of accessing drugs from the unregulated supply.

As the only drug checking service in Ontario, and therefore the only organization publishing data on the unregulated drug supply in the province, we feel it is essential that drug checking services are made more accessible. Toronto's Drug Checking Service was funded as a pilot project, and does not have a sustainable funding source as of January 1, 2023. While the Toronto Board of Health has requested the Province of Ontario fund the service beyond its current implementation period,¹⁴ no commitment has been suggested or made as of the release of this report.

2021 Operational Accomplishments

Operational accomplishments achieved in 2021 included:

- Checking and providing individual results for 2,886 samples
- Publishing 27 reports on combined results from samples checked
- Released 4 formal <u>alerts</u> related to noteworthy drugs found unexpectedly in Toronto's unregulated drug supply and contributed data to numerous alerts released by others:
 - <u>Ultra potent opioids</u>
 - <u>Etonitazene</u>
 - <u>Isotonitazene</u>
 - <u>Carfentanil</u>
 - <u>Toronto Public Health alerts</u>
 - <u>Canadian Community Epidemiology Network on Drug Use (CCENDU) Bulletin on</u> <u>benzodiazepines</u>
- Launched the <u>Amount of drugs found table</u>, a resource presenting the amount of certain drugs found as a proportion of the total substance sample each month
- Launched the <u>drug dictionary</u>, a resource that provides information on the drugs found in Toronto's unregulated drug supply and supports harm reduction staff and service users in interpreting analysis results
- Published two academic articles related to scientific research on drug checking services:
 - Detection of synthetic cannabinoid adulteration in the unregulated drug supply in three Canadian settings
 - Drug checking services for people who use drugs: a systematic review
- 400 people joined the <u>mailing list</u> for Toronto's drug checking service, bringing the total to almost 900 people routinely receiving direct communications from the service
- Close to 11,000 unique visitors to the interactive website for Toronto's Drug Checking Service
- Provided advice, guidance, and mentorship to over 20 jurisdictions or organizations across the country looking to offer drug checking services locally
- Evidence and resources generated by Toronto's Drug Checking Service were used to inform the development of <u>Toronto's exemption request</u> to Health Canada to allow for the possession of drugs for personal use in Toronto (i.e., drug decriminalization)

Tips & Help

Checking your drugs is one way to reduce the harms associated with using drugs from an unregulated supply. Toronto's Drug Checking Service is offered alongside other harm reduction services in Toronto, including supervised consumption. These services have the most impact when used together.

- Carry and be trained to use naloxone. Naloxone, also known by the brand name Narcan, is a drug that can temporarily reverse an opioid overdose. Naloxone can be picked up for free from your <u>local</u> <u>harm reduction agency or pharmacy</u> and <u>free training</u> is available online. Consider carrying multiple doses of naloxone.
- Get your drugs checked before using. In Toronto, <u>drug checking services</u> are offered at <u>Moss Park</u> <u>Consumption and Treatment Service</u>, Parkdale Queen West Community Health Centre (<u>Queen West</u> and <u>Parkdale</u> sites), <u>South Riverdale Community Health Centre</u>, and <u>The Works at Toronto Public</u> <u>Health</u>. You can also check your drugs after you have used them by submitting used equipment, like a cooker or a filter.

Other drug checking services in Canada include <u>British Columbia Centre on Substance Use Drug</u> <u>Checking Service, Get Your Drugs Tested, and Vancouver Island Drug Checking Project</u>.

- 3. Use at a supervised consumption site or overdose prevention site. Here is a <u>list of sites that offer</u> <u>supervised consumption in Toronto</u> and an <u>interactive map of sites that offer supervised</u> <u>consumption across Canada</u>.
- 4. **Use with someone else and take turns spotting for each other**. A buddy system is safer than using alone. Stay 6 feet from your buddy if you are not from the same household to avoid passing COVID-19.
- 5. If you must use alone, let someone know before you use. Call someone you know and have them stay on the phone with you while you use. Tell them your address and keep your door unlocked. If you are in Ontario, you could call the <u>Overdose Prevention Line</u> at 1-888-853-8542. The <u>National Overdose Response Service</u> is available to anyone in Canada and can be reached at 1-888-688-NORS (6677). The Brave App is an app that can be downloaded on your phone and provides another way to let someone know before you use.
- 6. Do a small test dose first.
- 7. **Call 911 in an overdose situation**. The <u>Good Samaritan Drug Overdose Act</u> provides legal protection from drug-related charges for carrying drugs for personal use and other simple possession offences.
- 8. If your drugs did not contain what you were expecting, **consider talking to the person you got your drugs from**, or get your drugs from another source if possible.
- 9. **If you use opioids, learn more about safer supply programs**. Safer supply programs provide people who use drugs with prescribed alternatives to opioids obtained from the unregulated supply.

Here is an interactive map of sites that operate safer supply projects across Canada and a toolkit to advocate for safer opioid supply programs.

Alternatively, you could **speak to a health care provider about options** like methadone or suboxone. Your <u>local harm reduction agency</u> could likely refer you to methadone or suboxone providers. Or you could contact <u>ConnexOntario</u>.

- 10. **Visit your local harm reduction agency for free supplies**, including safer injection and smoking equipment. Here is a list of <u>harm reduction agencies in Ontario</u>.
- 11. **If you are a youth who uses drugs, connect with organizations like the Trip! Project**. The <u>Trip!</u> <u>Project</u> is a Toronto-based youth-led harm reduction health information service for the dance music scene and youth who use drugs.
- 12. **Stay informed** by <u>signing up</u> to receive alerts, reports, and other information on the unregulated drug supply from Toronto's drug checking service. Results from samples checked by Toronto's drug checking service are combined and <u>shared online</u> every other week. You can also sign up for <u>Toronto Public Health's mailing list</u> to receive alerts and other drug-related information.
- 13. Act to advance the health, human rights, and dignity of people who use drugs by connecting with and supporting advocacy organizations such as <u>Toronto Harm Reduction Alliance</u>, <u>Canadian</u> <u>Association of People who Use Drugs</u>, <u>Canadian Students for Sensible Drug Policy</u>, and <u>Canadian Drug Policy</u> Coalition.

Notes

Reporting standards for drugs found

As part of our evolution as a pilot program, we are learning how to most accurately report drugs found through analysis to our service users and the public. This means our reporting will change and improve over time.

Toronto's Drug Checking Service is currently the only drug checking service in Canada that uses gas chromatography- and liquid chromatography-mass spectrometry as the primary instruments for analysis. Gas chromatography- and liquid chromatography-mass spectrometry analysis are typically conducted within a laboratory, meaning results take longer to report and are not immediately available at the point of collection. The benefits of using these instruments are their comprehensive and regularly updated libraries, allowing them to detect hundreds if not thousands of drugs, as well as their ability to detect very trace amounts of drugs. This is particularly beneficial for drug market monitoring of noteworthy drugs that typically only present in trace amounts but can increase risk of overdose or adverse effects, such as benzodiazepine-related drugs and carfentanil in opioids, or fentanyl in stimulants and psychedelics. A drawback of using such sensitive instruments are that some of the drugs they report are by-products (e.g., inactive or precursors) and their inclusion in reporting may not add value to service users' and the public's understanding of their own drug samples or the unregulated drug supply.

A role of Toronto's Drug Checking Service is to translate analysis results to meet the needs of different audiences. Part of this involves simplifying results by reducing the number of drugs reported directly to service users and on our website. Examples of drugs we no longer share with service users or on our website include norfentanyl, which is a fentanyl-related drug that is believed to be an inactive by-product, in fentanyl samples or benzoylecgonine, an inactive metabolite of cocaine, in cocaine samples.

Noteworthy drugs (!)

"Noteworthy drugs" are drugs that:

- Are linked to overdose or other adverse effects
- Are highly potent or related to highly potent drugs
- May not be desired by some service users

Noteworthy drugs are flagged when they are unexpectedly found in checked samples.

Limitations of Toronto's Drug Checking Service

It is important to understand the limitations of this drug checking service:

Checking a sample **cannot guarantee that a drug is safe to use.**

The results for a sample **may not represent the rest of the drugs that sample was taken from** (this is known as the <u>Chocolate Chip Cookie Effect</u>).

Due to technological limitations, some **drugs may be missed**.

Due to technological limitations, **non-drug fillers are not reported**. This could include non-drug fillers that may be dangerous, such as bacteria, metals, pesticides, or inorganic salts. Other non-drug fillers may not be dangerous, such as sugar or laxatives.

Some human interpretation is required by skilled laboratory technologists, meaning there could be some variation in results.

Results for used drug equipment have other limitations:

 Drug equipment, like cookers, are often re-used. The mass spectrometry technologies used for Toronto's drug checking service are so sensitive that very trace amounts of drugs may be found. This means that when drug equipment is re-used, drugs from past use

What's the Chocolate Chip Cookie Effect?

The results for a sample that is checked may not represent the rest of the drugs that sample was taken from. You can imagine your drugs as a chocolate chip cookie. If you check a piece of the cookie that is only dough, your results may not identify chocolate as present. Mixing a powder or scratching different parts of a pill when preparing a sample can increase the representativeness of your sample.

may present in the results for the sample that is being checked. This can interfere with current drug market monitoring, which is why we rely on substance samples when reporting trends for most drugs.

 Fatty acids are more commonly found in samples that are taken from used drug equipment, most likely from oils on skin. These **fatty acids can interfere with the mass spectrometry analysis**. It may be difficult to see past them to determine which drugs are present.

For these reasons, checking substances instead of used drug equipment is preferred.



The <u>Centre on Drug Policy Evaluation</u> strives to improve community health and safety by conducting research and outreach on best practices in drug policy. We work collaboratively with governments, affected communities, and civil society to guide effective and evidence-based policy responses to substance use. The Centre on Drug Policy Evaluation is housed within MAP Centre for Urban Health Solutions at St. Michael's Hospital, a site of Unity Health Toronto, in Toronto, Canada.

Learn more about <u>Toronto's Drug Checking Service</u>. <u>Sign up</u> to receive alerts, reports, and other information on Toronto's unregulated drug supply.

Like us on Facebook, <u>facebook.com/centreondrugpolicyevaluation</u>, and follow us on Twitter, <u>@drugpolicyctr</u>.

Questions or comments? We'd love to hear from you. You can reach us at <u>drugchecking@cdpe.org</u>.

Cite as: Thompson H, McDonald K, Maghsoudi N, Werb D. What's Contaminating Toronto's Drug Supply? Insights from Samples Checked by Toronto's Drug Checking Service: January 1 - December 31, 2021. Toronto: Centre on Drug Policy Evaluation. August 16, 2022.