CCENDU Bulletin

Adulterants, Contaminants and Co-occurring Substances in Drugs on the Illegal Market in Canada

Summary

The inherent risks of substance use are significantly increased for drugs procured on the illegal market, as there is no quality control and drug contents are unpredictable. This bulletin provides a snapshot of drug contents on the illegal market in Canada, with the view to raising awareness among people who use drugs, service providers and policy makers that drug contamination is extensive and pervasive, and contributes significantly to drug-related harms. Key findings are described below.

Drugs on the illegal market tend to contain **unexpected substances**.

- Opioids and stimulants were accompanied by other psychoactive substances in 5% to 13% of samples analyzed by Health Canada's Drug Analysis Service (DAS) (up to 69% when including cutting agents).
- This co-occurrence was often unexpected, as noted by drug checking services and a study comparing self-reported drug use to urinalysis results.

Fentanyl and its analogues (e.g., **carfentanil**) are common in the illegal drug supply.

- Fentanyl or its analogues were present in nearly two-thirds (62%) of opioid-containing samples and up to 3% of stimulant-containing samples nationally (DAS data).
- Drug checking services detected fentanyl in 88% of opioid samples in British Columbia and 74% of opioid samples in Toronto.

In some cases, fentanyl is consumed intentionally or knowingly, but **unexpected exposure to fentanyl** can contribute to accidental poisoning deaths.

- Drug checking and drug content monitoring data from B.C. suggest that 14% to 36% of fentanyl exposure is unknown or unintentional (climbing to 90% in Montreal).

Other psychoactive adulterants in the illegal drug supply are raising concerns as they can alter the efficacy of drug checking and overdose response procedures. These include **benzodiazepines**, **non-fentanyl synthetic opioids** and **synthetic cannabinoids**.

There is significant regional variation in the findings.

- Fentanyl was most prevalent in Western Canada, with DAS detecting fentanyl or its analogues in 91% of opioid-containing and up to 10% of stimulant-containing samples in B.C.
- In Eastern Canada, self-reported use primarily focused on stimulants (Montreal) and most methamphetamine-containing samples analyzed by DAS were seized in Quebec.

The findings from this bulletin underscore the need for improved national data collection, monitoring and dissemination, and exploration of policy options that could enable a predictable drug supply.

Background

The inherent risks of substance use are significantly increased for drugs procured on the illegal market, as there is no quality control and drug contents are unpredictable. It is common practice in the unregulated market to intentionally mix additional substances into drugs to add bulk or enhance the effects, or to accidentally include manufacturing by-products (Cole et al., 2011). This drug adulteration increases the risk of accidental poisoning and other harms among people who use drugs, as they do not know what substances they are using or how much.

This bulletin provides a snapshot of the contents of drugs on the illegal, unregulated market in Canada, with the view to raising awareness among stakeholders, including people who use drugs, service providers, and policy makers, that drug contamination is extensive and pervasive, and contributes significantly to drug-related harms.[1]

An Important Note on Terminology

In describing the contents of drugs on the unregulated market, terminology can be challenging as the most frequently used terms, adulterant or contaminant (Cole et al., 2011), are ambiguous unless the expectation of the individual using the drug is known. For clarity, we use the terms **adulterant** or **contaminant** in situations where expectations can be assessed (e.g., drug checking), and **co-occurring substance** when the expectation of the contents is unknown (e.g., DAS data).

Further, since DAS does not report the quantity of each substance in a sample, it is unknown whether a given substance is the dominant ingredient or merely present in trace amounts, precluding terms such as "opioid samples" or "stimulant samples." We use **opioid-containing samples** to refer to samples that contain any amount of at least one opioid, including heroin, fentanyl, fentanyl analogues, non-fentanyl synthetic opioids and others, and **stimulant-containing samples** to refer to samples that contain any amount of at least one stimulant, for this bulletin including methamphetamine, cocaine or MDMA.

The term **cutting agent** refers to adulterants or co-occurring substances that are not psychoactive and unlikely to contribute to substance-related overdose, although some can be associated with other health risks (Brunt, van den Berg, Pennings, & Venhuis, 2017; Carcinogenic Potency Project, 2007).

Finally, in line with the *Lexicon of Non-Stigmatizing Substance Use-Related Language* developed by the Public Health Agency of Canada (2020), we refer to **(accidental) substance poisoning**, rather than **overdose**, where possible, except when the latter is part of a commonly used phrase (e.g., "overdose response team").

Data Sources

The bulletin summarizes data from three primary sources:

- Health Canada's Drug Analysis Service (DAS), which identifies substances contained in samples seized by law enforcement. The bulletin includes data from April 2018 to August 2019.
- The **National Drug Checking Working Group,** a collection of drug checking service providers from across the country. Members providing data for this bulletin include: the B.C. Centre on Substance Use in collaboration with regional health authorities; the Centre on Drug Policy Evaluation, which leads a multi-site drug checking services pilot project in Toronto; the Ontario Harm Reduction Network; and the Sandy Hill Community Health Centre's Oasis Program in Ottawa. Reporting timeframes for this bulletin span 2018 and 2019 and are noted in the text.
- A **drug content monitoring study** led by the B.C. Centre for Disease Control and the Centre intégré universitaire de santé et de services sociaux du Centre-Sud-de-l'Ile-de-Montréal. The study surveys self-reported recent substance use among people accessing harm reduction services, and compares responses to urinalysis results that determine which substances were actually used. Data were collected May–August 2018 in B.C. and August–September 2018 in Montreal.

[1] See the full report, *Adulterants, Contaminants and Co-occurring Substances in Drugs on the Illegal Market in Canada*, for more detailed information.

Findings

Drugs on the Illegal Market Tend to Contain Unexpected Substances

In samples analyzed by DAS, many co-occurring substances were present:

- Among opioid-containing samples (n = 23,338), one in eight (13%) contained another psychoactive substance. This increased to over two-thirds (69%) when including cutting agents;[2]
- Among methamphetamine-containing samples (n = 37,625), more than one in ten (11%) contained another psychoactive substance, increasing to almost half (46%) when including cutting agents; and
- Among cocaine-containing samples (n = 38,429), one in 20 (5%) contained another psychoactive substance, increasing to almost a third (29%) when including cutting agents.

Drug checking data indicated that substance co-occurrence is not always expected or desired:

- Drug checking services in Toronto found that between July and October 2019, 43% of all submitted samples (n = 101/233) contained at least one unexpected noteworthy drug.[3] They also found that only 6% of samples expected to be opioids (n = 6/97) and 34% of samples expected to be stimulants (n = 16/47) contained mostly the expected drug.[4]
- Among samples analyzed by B.C. drug checking services between January and July 2019, 83% of submitted samples (n = 2971/3589) matched client expectations.

Drug content monitoring (survey and urinalysis data) further confirmed that people who use drugs are exposed to substances other than those intended. For example, in B.C. up to 36% of survey respondents had positive urine screens for substances they did not report using, suggesting unexpected exposure. Up to 26% had negative urine screens for substances they did report using, meaning they consumed unexpected or inert substances instead.

Fentanyl and Its Analogues Are Common in the Illegal Drug Supply

According to national DAS data, fentanyl or its analogues were present in nearly two-thirds (62%) of opioid-containing samples and up to 3% of stimulant-containing samples. This finding was particularly the case in B.C., where fentanyl or its analogues were present in 91% of opioid-containing samples and up to 10% of stimulant-containing samples (see regional variation section).

Similarly, drug checking identified fentanyl in the drug supply:

- In Toronto, fentanyl was detected in 74% of samples expected to be opioids (n = 72/97).
- In B.C., fentanyl was detected in 88% of samples expected to be opioids (n = 1876/2127), 1% of samples expected to be stimulants (n = 5/571), and 5% of samples expected to be depressants (n = 5/94).

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[2] Cutting agents include acetaminophen, acetylprocaine, acetylsalicylic acid, benzocaine, caffeine, chloroprocaine, chloroquine or its salts, dimethylsulphone, hydroxychloroquine or its salts, levamisole, lidocaine, mannitol, phenacetin, procaine, quinine or its salts or derivatives, quinidine.

[3] An unexpected noteworthy drug is defined by the Centre on Drug Policy Evaluation as highly potent, linked to overdose or other adverse effects, or may not be desired by some clients.

[4] A drug that contains mostly the expected drug is defined as containing 75–100% of the expected substance relative to other substances in the sample (not including non-drug fillers).

Fentanyl and Its Analogues Are Not Always Used Intentionally or Knowingly

Drug checking data from B.C. suggest that clients expected fentanyl in at least 74% of opioid samples (n = 1581/2127). However, detection of fentanyl in 88% of samples (n = 1876/2127) suggests that up to 14% of samples contained unexpected fentanyl.

Similarly, drug content monitoring identified more fentanyl-positive urine screens than individuals who reported using fentanyl:

- Among B.C. respondents whose urine tested positive for fentanyl (n = 183/309), only 64% reported using it, suggesting over one-third (36%) were unintentionally or unknowingly exposed.
- Among Montreal respondents whose urine tested positive for fentanyl (n = 33/341), only 10% (n = 3) reported using it, suggesting over 90% were unintentionally or unknowingly exposed.

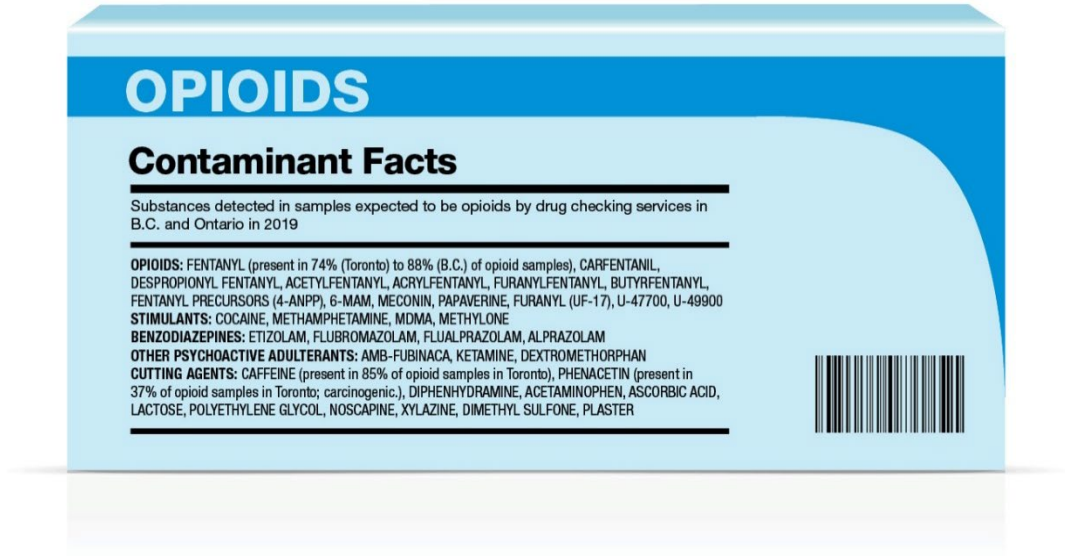
Further, drug checking data from Ontario and B.C. indicated unexpected fentanyl presence in counterfeit medications (e.g., pills manufactured to resemble Percocet™ [oxycodone and paracetamol] or Xanax™ [alprazolam]). Drug checking services also detected the fentanyl analogue carfentanil in samples expected to be fentanyl. This is of concern because carfentanil is more toxic than fentanyl (Stewart, 2017) and has been linked to a recent spike in substance poisoning deaths in Ontario and B.C. (Toronto Public Health, 2019; British Columbia Coroners Service, 2020).

Other Unexpected Psychoactive Substances Can Also Contribute to Health Risks

In addition to fentanyl and its analogues, other psychoactive adulterants have been flagged by drug checking and harm reduction services as contributing to health risks. These include:

- Novel synthetic opioids (particularly U-47700 and other compounds in the “U-Series”);
- Benzodiazepines (particularly etizolam, flualprazolam and flubromazolam); and
- Synthetic cannabinoids (particularly AMB-FUBINACA).

These substances are of concern because they are not always detected by drug checking technologies, can result in medical emergencies that present with less typical and more complex symptoms, and do not always respond as expected to naloxone.



There Is Significant Regional Variation in the Findings

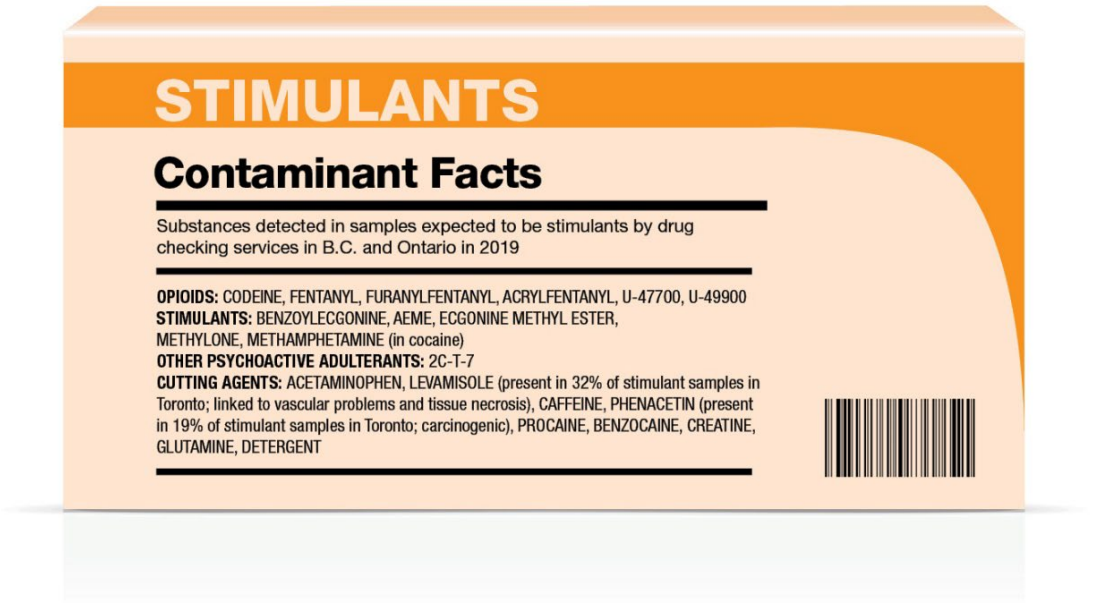
DAS data showed some noteworthy differences in the composition of samples seized in western compared to eastern provinces. For example, fentanyl was present in a significantly greater number of samples in western Canada than in the east:

- In B.C., 91% of opioid-containing samples (n = 5873/6475) included fentanyl or an analogue, compared to 62% nationwide (n = 14424/23338), 55% in Ontario (n = 5536/10093), 14% in Quebec (n = 257/1869), and 8% in the four Atlantic provinces (n =55/723 combined).
- Further, in B.C. fentanyl and analogues were present in 10% of methamphetamine-containing samples (n = 467/4783) and 7% of cocaine-containing samples (n = 389/5274), compared to 3% nationally and less than 1% in Quebec.
- Drug content monitoring also showed that fentanyl was the third-most reported drug to have been recently used in B.C. (suggesting demand), whereas it was not in the top five in Montreal.

In contrast, stimulants dominated the market in eastern Canada. Note that stimulants are available and used across the country, but in the east they appear to be preferred over opioids.

- Drug content monitoring surveys listed crack, cocaine and “speed” as the three drugs reported most frequently used in Montreal.
- The greatest number of methamphetamine-containing samples analyzed by DAS were seized in Quebec (n = 14269, or 38% of all methamphetamine-containing samples nationwide).

The reasons for these regional differences have yet to be determined but could include different supply routes and distribution networks across the country. It is also interesting that reports of problematic methamphetamine use primarily originate in the west of the country (CCENDU, 2019) when the present data indicate that stimulants are more popular in the east.



Conclusions and Implications

The Canadian illegal drug supply is highly unpredictable, and people who use drugs often do not know what they are consuming or how much. While no drug is risk-free, this unpredictability significantly increases the risk for accidental substance poisoning. Specifically, although many

people (particularly in western Canada) have come to seek out fentanyl, not everyone who uses fentanyl does so intentionally or knowingly. Further, they might be exposed to a more toxic analogue (e.g., carfentanil) instead. In addition, unexpected psychoactive adulterants such as benzodiazepines, synthetic cannabinoids and non-fentanyl synthetic opioids are increasingly found in the drug supply, creating additional health risks and barriers to effective substance poisoning responses.

Based on these findings, the following next steps should be considered.

Establish a Canadian drugs observatory service to:

- Monitor drug contents and track adverse health effects to identify concerning trends;
- Improve harmonization of data collection to allow comparison across regions in Canada;
- Rapidly disseminate drug-related health alerts and response options; and
- Raise public awareness of the link between drug unpredictability and health harms.

Further develop treatment and harm reduction services, including support for:

- Education and dissemination of information among people who use drugs to ensure they are aware of contaminants, harm reduction options and substance poisoning interventions;
- Sustainability and scale-up of easily accessible harm reduction services (e.g., drug checking and supervised consumption services) to increase national coverage;
- Continued naloxone availability and overdose response training, including updated protocols to respond to inadvertent polysubstance use; and
- Increased investment in a range of treatment options to ensure that people who use drugs and those with a substance use disorder receive the needed services.

Decrease drug-related harms by advancing approaches that increase the predictability of drug contents. Such approaches include “safer supply” programs such as injectable opioid agonist treatment (Fairbairn et al., 2019) and low-barrier opioid distribution programs (Tyndall, 2018). As the evidence around these approaches is limited, next steps could include:

- Synthesizing the available evidence to identify research gaps and formulating recommendations to address them;
- Exploring and evaluating various models of delivery for such interventions to produce evidence-informed recommendations for program development, scale-up and sustainability;
- Evaluating context variables to assess what works best, for whom and why, as well as evaluating the long-term safety and efficacy of these interventions;
- Investigating the feasibility of applying a similar approach to non-opioid drugs, in light of our finding that contamination is widespread across the drug supply and that there is increased methamphetamine use across the country. Proposals for stimulant substitution or distribution programs have been put forward (Canadian Association of People Who Use Drugs, 2019; Fleming, Barker, Ivsins, Vakharia, & McNeil, 2020), and could be piloted and evaluated; and
- Analyzing the regulatory and policy barriers that need to be addressed, and employing the policy levers and facilitators that are available, to enable the development, scale-up and stability of successful interventions beyond the pilot phase.

It will also be important to monitor and assess whether large scale social changes resulting from the COVID-19 pandemic will influence the illegal drug supply (e.g., disruption of local distribution networks due to self-isolation) and level of contamination in the drug supply.

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CCENDU will continue to work with partners to disseminate drug checking results. If you have any questions, comments, information to contribute or corrections to the information in this bulletin or wish to receive updates as new information becomes available, please contact CCENDU@ccsa.ca. For more information on CCENDU and previous CCENDU Alerts and Bulletins, visit www.CCENDU.ca.

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