



Canadian Community  
Epidemiology Network  
on Drug Use



Canadian Centre  
on Substance Use  
and Addiction

## Substance Use Trends in Canada

Issue No. 4

# Fentanyl Analogues

## About the Canadian Community Epidemiology Network on Drug Use

The [Canadian Community Epidemiology Network on Drug Use](#) (CCENDU), co-ordinated by the Canadian Centre on Substance Use and Addiction (CCSA), publishes this newsletter regularly to inform people living in Canada about emerging substance use issues and trends, pulling from the best available information sources at the time of publication. To find the archive of past editions of *Substance Use Trends in Canada*, visit [our website](#).

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## About Fentanyl Analogues

Fentanyl analogues are synthetic opioids that are structurally related to fentanyl and have similar effects. Some recent examples include: Carfentanil, acetylfentanyl, furanyl fentanyl, fluorofentanyl and methylfentanyl.<sup>1</sup>

Most fentanyl analogues in the unregulated drug supply are produced illegally. As a result, their precise effects and potency as well as their risks relative to fentanyl are often unknown. New, uncharacterized analogues continue to emerge.

Exposure to fentanyl analogues is often unintentional because they are added to or replace other opioids people intend to consume, primarily fentanyl. This is in addition to the co-occurrence of other adulterants like nonmedical benzodiazepines and xylazine. Together, these co-occurrences significantly increase the risk of drug poisoning and other serious health complications for people using opioids from the unregulated supply.

To better understand this situation, information was gathered via our CCENDU networks and partners in January 2025. This newsletter summarizes their reports and analysis from other data sources.

## Key Findings

- Fentanyl analogues have been detected across Canada, though some regional differences exist in the prevalence of specific analogues and their co-occurrence with fentanyl.
- In 2024, fluorofentanyl (mostly para-) and ortho-methylfentanyl were most common across the country, though carfentanil is still being detected and is discussed frequently in the media.
- The unpredictability in presence, potency and duration of action are important considerations when discussing fentanyl analogues.
- The increasing number of new fentanyl analogues and their unpredictable combinations with fentanyl and other tranquilizers such as benzodiazepines and xylazine, enhance the risk of experiencing harms among people who use drugs (PWUD).

## Reports from CCENDU Sites

CCENDU is a pan-Canadian network of community partners with sites in British Columbia, Alberta, Manitoba, Ontario, Quebec, Nova Scotia, and Newfoundland and Labrador. Each site collects information from their local partners and networks about substance-related trends and response options.

**Figure 1: CCENDU sites that reported on fentanyl analogues**

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<sup>1</sup> Resource from Toronto's Drug Checking Service: <https://drugchecking.community/drug-dictionary/>



Fluorofentanyl and methylfentanyl are the most detected analogues across the country, although carfentanil is still detected. There are links between the presence of these analogues and increased drug poisoning.

To read the reports from each of the CCENDU sites, please refer to the full-text PDF version of this edition of *Substance Use Trends in Canada* online.

### **British Columbia**

The site at the BC Centre for Disease Control reported that fentanyl is still detected the most, but samples with two or more fentanyl analogues are also often found (commonly para-fluorofentanyl and methylfentanyl). Carfentanil is rarer but still of concern due to its potency, which makes it inherently more difficult to dose.

The site also reported that monitoring fentanyl concentration in the drug supply as a measure of potency or toxicity of illegal fentanyl must be done with caution given the presence of analogues. A decline in average fentanyl concentration may not be associated with lower average potency if there are unaccounted analogues present that are co-occurring with fentanyl.



## Alberta

The site reported that para-fluorofentanyl and methylfentanyl are the most frequently and consistently identified analogues, while others such as carfentanil, bromofentanyl, methoxyacetylfentanyl, and cyclopropylfentanyl appear sporadically over shorter periods of time.

Carfentanil has been linked to clusters of drug toxicity events, especially in Edmonton, where it was linked to a higher proportion of opioid-related deaths (14%) compared to the rest of Alberta (8%) between January and September 2024. Increases in carfentanil also seem to parallel increases in opioid toxicity response rates by emergency medical services.

Samples containing fentanyl, fentanyl analogues or both, also frequently contain one or more of the following: Other high-potency opioids, nonmedical benzodiazepines and xylazine.

Adaptive responses reported by the site include harm reduction efforts such as naloxone distribution and drug checking, as well as adjustments to opioid agonist therapy protocols.

## Northern Ontario

The site in northern Ontario reported two notable instances of fentanyl analogues in the region in the second half of 2024, including the detection of carfentanil at the supervised consumption site in Thunder Bay and detection of fluorofentanyl in a toxic drug poisoning death.

## Quebec

The site at the Institut national de santé publique du Québec reported fluorofentanyl and methylfentanyl as the most common analogues in 2024, based on Health Canada's Drug Analysis Service (DAS) data.

Fluorofentanyl has been detected on multiple occasions in suspected opioid-related deaths, whereas methylfentanyl is not yet included in post-mortem analyses.

Additionally, para-fluorofentanyl was the most frequently detected analogue in urine of PWUD, appearing in nearly 5% of 1,140 participants in a 2023 study.\*

Overall, the presence of fentanyl analogues among deaths involving fentanyl or its analogues is increasing, from 33% in 2017 to 65% in 2024, with fluorofentanyl driving a significant portion of this increase.

\*Projet suprarégional d'analyse de drogues dans l'urine de personnes qui consomment au Québec.

## Insights from National Drug Supply Monitoring

[Health Canada's Drug Analysis Service \(DAS\)](#) and the [Canadian Drug and Substance Watch \(CDSW\)](#) provide information on the presence of substances in the unregulated drug supply. DAS analyzes the content of substances seized by law enforcement agencies, and the CDSW combines DAS data with other data sources, including wastewater and online forums.

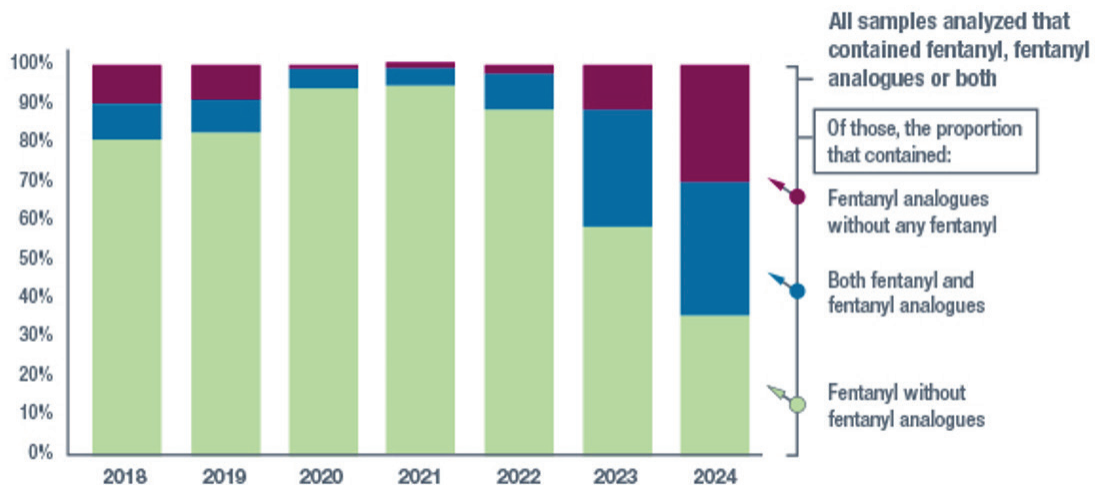


Data from Health Canada show that a broad range of fentanyl analogues are present in the drug supply and that more samples contain analogues (with or without fentanyl present) than fentanyl alone. New analogues continue to emerge to varying degrees across the country.

To access more detailed data, please refer to the full-text PDF version of this edition of *Substance Use Trends in Canada* online.

Between 2018 and 2024, DAS analyzed 87,506 samples containing fentanyl. Among these, co-occurrences of analogues increased by more than six times from 2021 to 2024. In 2024, samples containing fentanyl analogues (with or without co-occurring fentanyl) outnumbered fentanyl-only samples (refer to Figure 2).

**Figure 2: Proportion of seized samples containing fentanyl, fentanyl analogues or both, over time in Canada**



Note: Findings presented here may differ from other data from Health Canada’s DAS as these data may be presented and analyzed in a different manner. Source: Drug Analysis Service and Cannabis Laboratory. (2024).

DAS data also showed regional variation in co-detection of fentanyl and its analogues. In the west (British Columbia and Prairies), most analogues were found in combination with fentanyl. In Ontario and Quebec, detection of analogues without fentanyl was more common, whereas in the Atlantic regions, detection of fentanyl without analogues was more common. Fentanyl analogues have not been detected in the absence of fentanyl in the Territories.

The most frequently detected fentanyl analogue in Canada in 2024 was para-fluorofentanyl, followed by methylfentanyl and carfentanil. While carfentanil remains the third most frequently detected analogue, the number of carfentanil-positive samples decreased to about 60% of the number seen in 2018 and 2019. In 2024, para-fluorofentanyl has been detected over four times more frequently than carfentanil was in 2018–2019.



The CDSW tool identified\* a total of 12 unique fentanyl analogues detected through web and wastewater monitoring between January 2023 and June 2024. The fentanyl analogues with the highest number of identifications from wastewater were meta-fluorofentanyl and para-fluorotetrahydrofuranfentanyl (12 identifications for each). The only analogue identified in both wastewater and web monitoring was para-fluorofentanyl. Other fentanyl analogues of note detected through wastewater monitoring include: Acrylfentanyl, alpha-methylbutyrylfentanyl, para-fluoroisobutyrylfentanyl and ortho-methylfentanyl.

\*Identifications in CDSW are counted by summing unique identifications of a substance for each combination of month and province and territory covered in the reporting.

## Reports from Drug Checking Services

The [National Drug Checking Working Group \(NDCWG\)](#), co-ordinated by CCSA, is a pan-Canadian community of practice of drug checking service providers and their local, provincial, territorial and federal partners. The NDCWG has representatives from drug checking services in Yukon, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec and Prince Edward Island.

**Figure 3: Drug checking services that reported on fentanyl analogues**



Participating drug checking services reported a variety of fentanyl analogues and precursors over the previous six months, with fluorofentanyl and ortho-methylfentanyl the most common.

Several services reported a decline in fentanyl detection alongside a rise in analogues.

Many also reported samples containing both fentanyl and analogues, which can further increase overdose risk.



To read the reports from each of the drug checking sites, please refer to the full-text PDF version of this edition of *Substance Use Trends in Canada* online.

## British Columbia

The [British Columbia Centre on Substance Use](#) (BCCSU), which compiles data from drug checking services across the province, reported detecting fluorofentanyl and ortho-methylfentanyl over the previous six months.

Over the course of 2024, they observed a decrease in fentanyl detection (from 44% of unregulated opioid samples in January to 33% in August), while detection of fentanyl analogues increased.

Fluorofentanyl surpassed fentanyl as the most detected analogue in August and September (present in 35–36% of samples) before declining to 17% in December. Meanwhile, ortho-methylfentanyl, the most recent fentanyl analogue to emerge, steadily increased in prevalence, from 5% of unregulated opioid samples in February to 13% in December.

[Fraser Health Authority](#) (included in the BCCSU report above) additionally reported detecting not only fentanyl analogues but also intermediates or metabolites in recent months, including norfentanyl, despropionyl fluorofentanyl, despropionyl ortho-methylfentanyl, T-Boc-Norfentanyl, N-Boc para-fluoro Norfentanyl, fluoronorfentanyl, and N-Propionylpara-fluoro Norfentanyl – sometimes without the final intended fentanyl analogue present. They also reported that in the Fraser Health area, ortho-methylfentanyl was as prevalent as fentanyl and surpassed para-fluorofentanyl in November 2024.

[Substance Drug Checking](#) in Victoria, which uses different technologies than those reported by BCCSU and Fraser Health, reported detecting carfentanil, fluorofentanyl, and ortho-methylfentanyl over the previous six months.

## Alberta

[Spectrum Drug Testing](#) in Edmonton reported mostly detecting ortho-fluorofentanyl and para-fluorofentanyl over the previous six months, as well as tetrahydrofuran fentanyl, isobutyrfentanyl, ortho-methylfentanyl, and N-Boc Norfentanyl.

Overall, they have observed an increase in fentanyl positivity using test strips (which can capture some but not all analogues), including in MDMA and methamphetamine samples.

## Ontario

[Toronto's Drug Checking Service](#) reported mostly detecting fluorofentanyl and methylfentanyl-related drugs over the previous six months, as well as acetyl fentanyl, bromofentanyl, carfentanil, and valeryl fentanyl. This is in addition to seven other fentanyl analogues detected since launching their service in 2019, including 4-fluorobutyrylfentanyl (4-FBF) or 4-fluoroisobutyrylfentanyl, butyryl fentanyl or isobutyryl fentanyl, furanyl fentanyl, furanylethyl fentanyl, N-methyl norcarfentanil, ocfentanil, and  $\beta$ -hydroxy fentanyl.



Between July 1 and December 31, 2024, they found fentanyl analogues in 77% of expected fentanyl samples, compared to less than 10% when the service launched in October 2019. At their peak, in September 2024, fentanyl analogues were detected in 86% of expected fentanyl samples. In addition, in this timeframe (July–December 2024), at least one high-potency\* fentanyl analogue was detected in combination with fentanyl in 53% of expected fentanyl drug samples, and a fentanyl analogue was detected in 78% of samples associated with an overdose.

\*Toronto's Drug Checking Service classifies an opioid as "high-potency" if it is as strong as or stronger than fentanyl. For fentanyl analogues, this category includes carfentanil, fluorofentanyl, methylfentanyl-related drugs and ocfentanil.

## Quebec

[Dopamine](#) in Montreal reported most frequently detecting para-fluorofentanyl over the previous six months, as well as ortho-methylfentanyl and N-Propionyl para-fluoro Norfentanyl (likely a precursor in the manufacture of para-fluorofentanyl).

Para-fluorofentanyl was present in 74% of "fentanyl" samples, while fentanyl itself was only present in 16%.

Ortho-methyl fentanyl was present in 7% of the samples and in 60% of the cases in combination with fentanyl or another analogue.

N-Propionyl para-fluoro norfentanyl was present in 4% of the samples and always in combination with para-fluorofentanyl. Among the samples, 5% tested positive with fentanyl test strips, but the analogue could not be identified using their technology.

The service also noted significant variation in the concentration of fentanyl analogues across samples, which can shift quickly over short periods.

[Coopérative de solidarité SABSA](#) in Quebec City reported identifying fentanyl in samples expected to be fentanyl or its analogues but noted that it is difficult to see fentanyl analogues using their technology.

## Mentions in the Media

Media mentions are collated by CCSA via manual online searches for news releases and stories, and by CCSA's [social reporting platform](#), which uses artificial intelligence to identify relevant posts on substances or drug trends on X.

Media mentions echo data from CCENDU and drug checking sites, showing that fentanyl analogues like fluorofentanyl and carfentanil are the most common, while other analogues and precursors continue to emerge, capturing varying degrees of public attention.

To access more detailed data, please refer to the full-text PDF version of this edition of *Substance Use Trends in Canada* online.

Our media search captured 11,668 news articles and 66 posts on X mentioning types of fentanyl analogues and fentanyl precursors between January 2020 and January 2025.



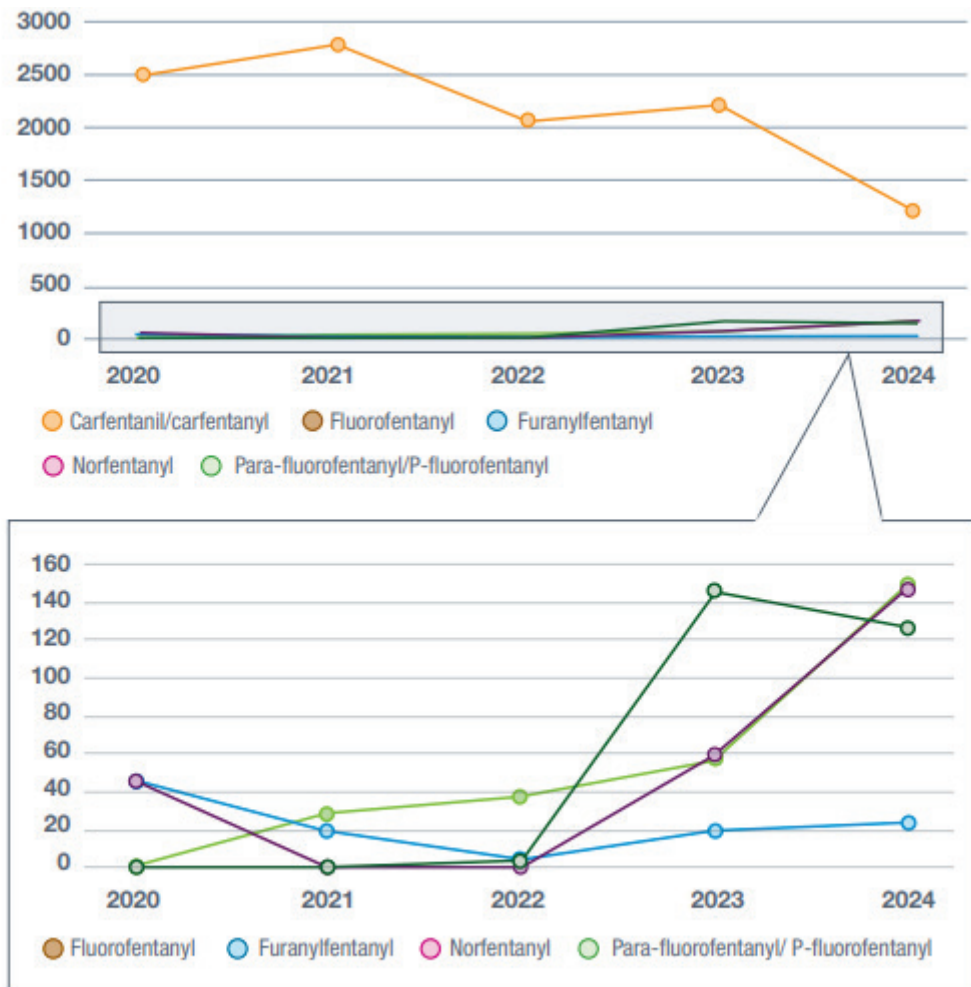


Fluorofentanyl, followed by carfentanil, were the most mentioned fentanyl analogues in 2023 on X.

Between 2023 and 2024, mentions of para-fluorofentanyl and N-propionylparafluoronorfentanyl also increased, with N-propionylparafluoronorfentanyl only appearing on X in 2024.

Meanwhile, in news articles, carfentanil was consistently the most common analogue mentioned from 2020 to 2024. Fluorofentanyl in news articles picked up in 2023, while mentions of para-fluorofentanyl or p-fluorofentanyl and norfentanyl increased in 2024 (refer to Figure 4).

Figure 4: Top mentioned fentanyl analogues in news articles, 2020-2024





Of note, the social reporting tool captured a post on X mentioning despropionylpara-fluorofentanyl in 2024, a precursor used in the synthesis of para-fluorofentanyl that was not mentioned in news articles.

## What Does It Mean?

### For People Who Use Drugs

- It's challenging to know what substances you're consuming and to anticipate and manage the associated health and safety risks because the concentration of fentanyl and its analogues in the unregulated drug supply is highly inconsistent and unpredictable.
- These challenges are compounded by additional co-occurrences of benzodiazepines and other tranquilizers with fentanyl and its analogues.
- Access local drug supply information (e.g., drug checking services), if available, to help reduce overdose risks, but know that low-barrier tools such as fentanyl test strips do not detect all analogues.
- Carry multiple doses of naloxone, if possible, to help respond to overdoses that may involve multiple high-potency opioids.

### For Clinicians and First Responders

- Be aware of what kinds of analogues are in the drug supply and their unpredictability, since approaches to care and responses to acute toxicity may need to be adjusted accordingly.
- While naloxone should always be given, be prepared to possibly administer additional doses of naloxone to manage overdose events with analogues present since some analogues are more potent and longer lasting than fentanyl.
- Know that fentanyl analogues may appear in combination with other contaminants including xylazine and benzodiazepines.
- Know that less common overdose presentations (e.g., muscle rigidity) may be present with some of the analogues.
- To appropriately treat individuals with opioid use disorder, adjustments to opioid agonist therapy may be required, as some analogues are more potent than fentanyl.

### For Policy Makers

- Know that Canada's unregulated opioid supply is increasingly contaminated by unpredictable fentanyl analogues, creating heightened overdose risks.
- Prepare for a greater demand on healthcare services because of increased emergency interventions (e.g., naloxone) as PWUD unknowingly consume fentanyl analogues.
- Carry out timely updates to data sets and surveillance programs to provide informed, flexible policy responses as new analogues can emerge at any time.



- A comprehensive response to the unpredictability and toxicity of the supply more broadly is required and should include increased access to services and supports to maximize the health and safety of PWUD and relieve strain on an already overburdened healthcare system.

## Resources

For more information on this topic, refer to these resources developed by our partners:

- Visualizations by Toronto's Drug Checking Service:
  - [Grouped noteworthy drug trends in expected fentanyl samples](#)
  - [Individual noteworthy drug trends in expected fentanyl samples](#)
  - [Number of high-potency opioids in expected fentanyl samples](#)
  - [Amount of drugs found](#)
- [Fentanyl test-strip resource](#)
- [Spotlight: The evolution of fentanyl in Canada over the past 11 years](#)
- United States:
  - [Ortho-methylfentanyl proliferating across North America as newest synthetic opioid identified in fatal drug overdoses](#)

We thank all our partners for their contributions to this newsletter. Your contributions allow us to share valuable insights with subscribers across the country.

### Prepared by the Canadian Centre on Substance Use and Addiction in partnership with the Canadian Community Epidemiology Network on Drug Use

The Canadian Community Epidemiology Network on Drug Use (CCENDU) is a nation-wide network of community level partners who share information about local trends and emerging issues in substance use and exchange knowledge and tools to support more effective data collection.

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