

CCENDU Drug Alert

Xylazine

What Is Xylazine?

- Xylazine is a tranquilizer used in veterinary medicine. It has analgesic and muscle relaxant properties.
- It requires a veterinary licence for purchase and use. Trade names include Rompun® and Anased®.
- It is not approved for human use by any authorizing association in Canada nor the United States.

Xylazine in the Unregulated Drug Supply

- Xylazine use among people who use drugs has been reported in the literature since the early 2000s. It was first identified in the unregulated drug supply in Canada in 2012.
- There is evidence for both intentional and unintentional use of xylazine. For example, people who use drugs have reported using it to prolong some of the effects of fentanyl.
- It has also emerged as an increasingly common cutting agent in both Canada and the United States. It is commonly added to opioids on the unregulated market, particularly fentanyl, and has also been identified alongside cocaine and methamphetamine.

Why Is It a Concern?

- Xylazine can lower heart rate, blood pressure and breathing. Combining xylazine with opioids or central nervous system depressants like benzodiazepines or alcohol can significantly depress these vital functions, increasing the risk of overdose and death.
- Because xylazine is sometimes added to opioids as an adulterant, people may be unaware of its presence in the unregulated supply, raising the risk for people who use drugs.
- For overdoses involving combinations of xylazine and opioids, naloxone can reverse the opioid effects but has no effect on xylazine. This can impact the success of the overdose response. There is no pharmaceutical antidote specifically for xylazine.
- Frequent xylazine use is reportedly associated with a higher prevalence of skin problems, including abscesses, ulcers and infections (compared with those who do not use xylazine).

Reports from CCENDU

The following data were compiled from an information request sent to site leads of the Canadian Community Epidemiology Network on Drug Use (CCENDU), led by the Canadian Centre on Substance Use and Addiction (CCSA). The information was received between May 24 and 31, 2022. The table presents a summary of the situation and responses in communities as reported by seven CCENDU sites (for a list of all sites, visit the [CCENDU web page](#).)



CCENDU site	Local situation	Targeted responses
British Columbia	<p>Drug checking services co-ordinated by the B.C. Centre on Substance Use (BCCSU) indicate that between January 2021 and April 2022, 0.65% of opioid/“down” samples tested positive for xylazine. Monthly prevalence ranged from 0.25% in July 2021 to 1.95% in February 2022. However, samples can contain xylazine below the detection limit. Xylazine was also detected in samples expected to be nonmedical benzodiazepines (NMBs), ketamine and MDMA.</p> <p>In 2021, 13% of all xylazine-containing samples analyzed and reported by Health Canada’s Drug Analysis Service (HC DAS) came from BC ($n = 69$). So far in 2022 it has been 24% ($n = 141$).</p>	<p>The BC Centre for Disease Control (BCCDC) issued five provincial alerts for xylazine between April 2021 and May 2022.</p> <p>Information on xylazine has been disseminated to the public, including:</p> <ul style="list-style-type: none"> • A BCCDC information sheet (January 2022) • A BCCSU information sheet (May 2020) <p>Drug checking services are releasing up-to-date information on detection of adulterants, including xylazine. Results are available from:</p> <ul style="list-style-type: none"> • The BCCSU data visualization dashboard • Substance (Vancouver Island Drug Checking Project) monthly reports
Manitoba	Between January 2020 and April 2022, HC DAS received and analyzed only two samples from Manitoba containing xylazine (one in September 2020 and one in March 2022). There are no other reports of xylazine occurrence in Manitoba.	None to report.
Ontario – Thunder Bay	Between January 2020 and April 2022, HC DAS received and analyzed six samples from Thunder Bay containing xylazine (one in July 2021, two in September 2021, one in February 2022, one in March 2022 and one in April 2022). There are no other reports of xylazine occurrence in Thunder Bay.	None to report.
Ontario – Toronto	<p>Toronto’s Drug Checking Service is reporting a significant increase in the number of expected fentanyl samples containing xylazine in 2022. At the time of reporting in May 2022, 18% of fentanyl samples checked since April contained xylazine, compared with 8% during the same period in 2021.</p> <p>HC DAS data show that in 2021, 77% of all xylazine-containing samples came from Ontario ($n = 409$), with 24% of all xylazine-containing samples coming from Toronto ($n = 125$). So far in 2022, 72% of all xylazine-containing samples have come from Ontario ($n = 425$), with 13% of all samples coming from Toronto ($n = 79$).</p>	<p>Toronto Public Health has released several drug alerts related to xylazine, including:</p> <ul style="list-style-type: none"> • “Horse tranquilizer” circulating in Toronto’s unregulated drug supply: Xylazine (October 2020) • Xylazine circulating in Toronto’s unregulated drug supply (December 2020) <p>Drug alerts mentioning xylazine can be found on the City of Toronto website.</p> <p>Toronto’s Drug Checking Service releases up-to-date information on detection of adulterants, including xylazine, through their data visualization tool.</p>
Quebec	<p>In 2021, 2.1% of all xylazine-containing samples analyzed and reported by HC DAS came from Quebec ($n = 11$). So far in 2022, it has been 2.2% ($n = 13$).</p> <p>Xylazine was found in 0.76% of urinalysis samples from 660 participants in the ongoing Drug Testing Project in Quebec. All xylazine positive samples were from Montreal (data collected from September to October 2021). Xylazine is not yet included in post-mortem toxicology analyses in Quebec.</p>	None to report.
Nova Scotia	Between January 2020 and April 2022, HC DAS received and analyzed one sample containing xylazine from Nova Scotia (April 2020). There are no other reports of xylazine occurrence in Nova Scotia.	None to report.
Newfoundland and Labrador	Between January 2020 and April 2022, there were no samples containing xylazine received by HC DAS for analysis.	None to report.

Note. In addition to the targeted responses noted above, all reporting jurisdictions offer harm reduction services, such as ensuring availability of overdose training and take-home naloxone, and provide harm reduction advice to people who use drugs. Depending on the jurisdiction, free drug checking and observed consumption services and rapid access to addictions medicine clinics may also be available.



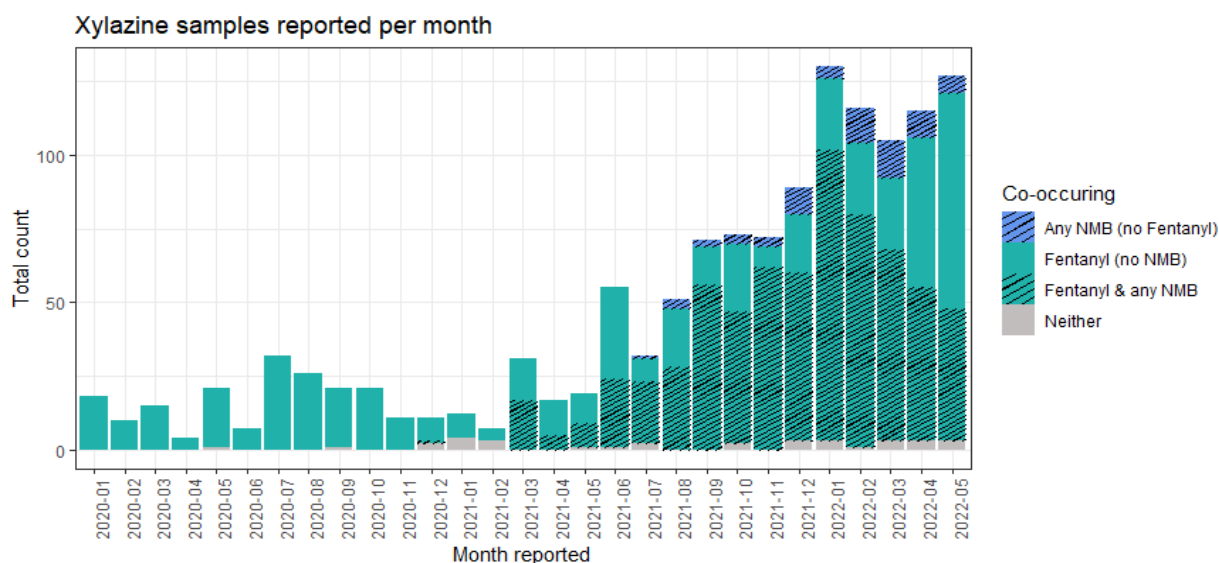
Coinciding Trends

Health Canada's Drug Analysis Service

Health Canada's Drug Analysis Service (HC DAS) analyzes samples seized and submitted by law enforcement agencies in Canada. DAS may not consistently report xylazine detection as it is not a controlled substance.

HC DAS data show a significant increase in samples containing xylazine between January 2020 and April 2022 (Figure 1). Importantly, when xylazine was detected in a sample, it tended to co-occur with fentanyl (90% to 98% of xylazine-containing samples in 2020–2022) or both fentanyl and a nonmedical benzodiazepine (NMB) (57% to 61% of xylazine-containing samples in 2021–2022). The most commonly co-occurring NMBs (95%) were flualprazolam, flubromazepam, flubromazolam and etizolam (see the [CCENDU Bulletin on NMBs](#) for more information). Conversely, the proportion of fentanyl samples that contained xylazine increased from 1.4% in all of 2020 to 6.9% so far in 2022 (January to May), and the proportion of fentanyl samples containing both xylazine and an NMB increased from 0% in all of 2020 to 4.5% so far in 2022 (January to May).

Figure 1: Counts (n) of xylazine samples and co-occurrence with fentanyl and nonmedical benzodiazepines (NMB)



Note: Dates displayed are the month in which samples were analyzed and reported by HC DAS. Seizure and submission of the samples may have occurred several weeks prior. Results may differ from other data presented by HC DAS due to differences in how the data are analyzed and displayed.

The National Drug Early Warning System

The National Drug Early Warning System (NDEWS) is a monitoring and early warning network for emerging drugs in the United States. It is funded by the National Institute on Drug Abuse (NIDA) to the University of Florida (PI: Cottler, Co-Is: Goldberger, Nixon, Striley), New York University (Co-I: Palamar), and Florida Atlantic University (Co-I: Barenholtz).

Among its projects, NDEWS monitors online mentions of psychoactive substances on Reddit, a social media platform with more than 430 million active users worldwide. [Validation on historical trends](#) reveals that detection of novel psychoactive substances (NPS) in drug subreddit discussion is predictive of subsequent emergence in toxicology data and other real-world signals. Early detection of NPS trends by web monitoring serves as a source for further investigation and collaboration with NDEWS partners (see Barenholtz et al., 2021).



In 2022, discussion of xylazine on Reddit increased sharply from about 20 mentions in January to nearly 150 mentions in May (Figure 2). This increase follows a more gradual rise observed in fall 2021, suggesting broader awareness of xylazine in the past year. While this trend report quantifies mentions in drug-specific subreddits, xylazine has also frequently appeared in other subreddit forums in recent months.

View additional [NDEWS Web Surveillance indicators online](#) or [subscribe to the NDEWS weekly briefing](#).

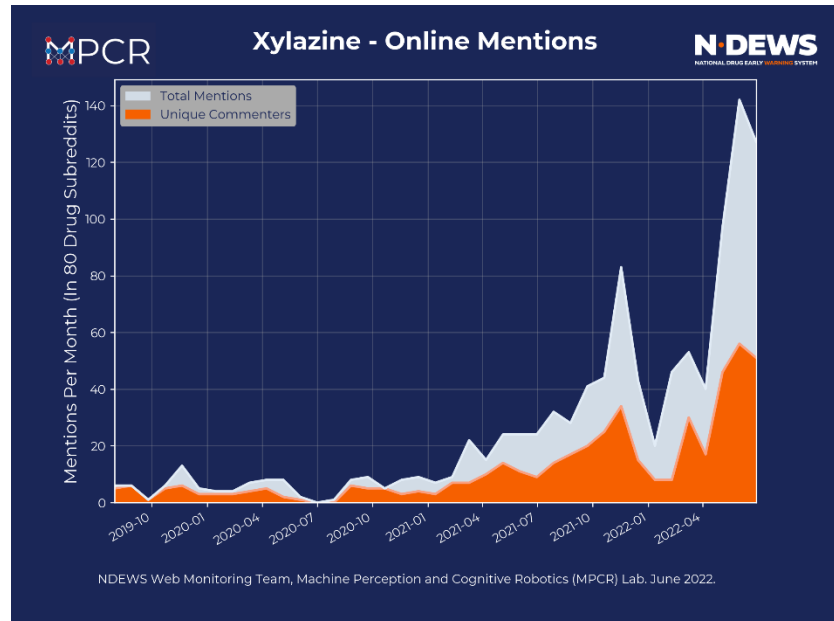


Figure 2. National Drug Early Warning System (NDEWS). (2022, May). Alert from the NDEWS web monitoring team: Online mentions of Xylazine.

Implications and Recommendations

- The unregulated drug supply is toxic and unpredictable. Xylazine is appearing increasingly, often alongside opioids and NMBs, increasing unintentional risks and harms to people who use drugs.
- Some of these harms may be mitigated by communicating xylazine trends to policy makers, first responders, people who use drugs and those who work directly with them. This would allow for informed decision making and more targeted responses. Important points to communicate are:
 - Naloxone is a key harm reduction tool for reversing overdoses involving opioids. However, people administering naloxone should be aware that it will not reverse the additional effects of xylazine.
 - Fentanyl test strips cannot detect xylazine. People using fentanyl strips should be aware that their drugs could contain xylazine, increasing risk even when the test is negative.
- A second strategy for mitigating harms is supporting the development, implementation and scale-up of low-barrier harm reduction services. This includes drug checking, which can inform people of the contents of their drugs and help monitor the unregulated supply, and observed consumption sites, which can help address overdoses involving xylazine and other adulterants.
- A third strategy is expanding access to safer supply programs to minimize reliance on the unregulated and toxic drug supply, and unintended exposure to adulterants, including xylazine.

Resources

- [Xylazine factsheet from BCCDC harm reduction services](#) (Toward the Heart)
- [Xylazine factsheet from the National Institute on Drug Abuse](#) (NIDA)
- [Xylazine Identified in the Unregulated Drug Supply in British Columbia, Canada](#) (Journal article)
- [Xylazine detected in unregulated opioids and drug administration equipment in Toronto, Canada: clinical and social implications](#) (Journal article)



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CCSA, through CCENDU, along with NDEWS will continue to monitor the situation in the unregulated drug supply in Canada and the United States. If you have any questions, comments, information or corrections to this alert, or wish to subscribe and receive updates as new information becomes available, email CCENDU@ccsa.ca for Canadian or ndews-cc@ufl.edu for American trends or information. For more information on CCENDU and to review previous CCENDU Alerts and Bulletins, visit www.ccsa.ca/ccendu.

Prepared by the CCSA in partnership with the
Canadian Community Epidemiology Network on Drug Use (CCENDU)

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

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ISBN 978-1-77178-982-0

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