



COLOMBO PLAN



cfsre

The Center for Forensic  
Science Research & Education

.....

Public health and public safety officials should be on the lookout for the veterinary sedative carfentanil, a highly potent fentanyl analog, which was last seen in quantity in 2017 in the US illicit drug supply.

Carfentanil is the most potent opioid yet seen in the illicit drug market, and its presence is a significant public health threat causing respiratory depression and death.

April 2026

## Emerging Synthetic Opioid Threats:

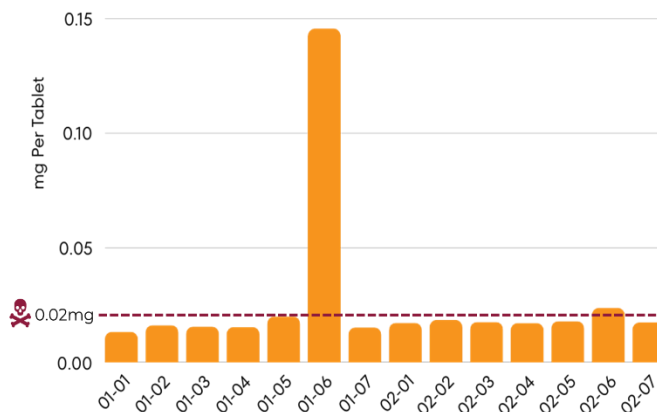
# Carfentanil in Counterfeit Tablets and Powders in the United States

- Selected seizures from the U.S. Southwest border were submitted to CFSRE for qualitative and quantitative testing. This snapshot highlights an atypical cluster of counterfeit “M30” tablets and powders containing **carfentanil**, an ultra-potent synthetic opioid, sometimes present without fentanyl. Findings underscore escalating variability in the illicit supply and the need for heightened clinical, laboratory, and public-safety preparedness.

- Carfentanil is an ultra-potent, and highly addictive synthetic opioid originally developed in the 1970s as a veterinary tranquilizer for large animals such as elephants. It is about 10,000 times more potent than morphine, and 100 times more potent than fentanyl. Illicitly manufactured carfentanil entered the U.S. drug supply in the mid-2010s, where minute dosing errors and adulteration of heroin or fentanyl have driven mass overdoses and high fatality rates.
- In collaboration with Customs and Border Protection (CBP), the Colombo Plan Drug Assistance Program (DAP) established its **SENTINEL** program under which seized tablets and powders suspected of containing fentanyl are analyzed at CFSRE using a surveillance and profiling workflow that includes microscopic imaging, GC/MS, LC-QTOF-MS for qualitative identification, and LC-MS/MS for quantitative analysis.
- Starting in May 2025 individual exhibits of both powders and tablets began testing positive for carfentanil. The tablets seized are typically counterfeit “M30” oxycodone tablets, blue in color and monogrammed “M” in a square on one side and “30” on the other, with an approximate diameter of 6.55 mm. A total of 7 tablets were tested in each case.
- Tablet Case 1:** May 2025, CFSRE received a batch containing 30 tablets, seized from the Southwest Border.
- Tablet Case 2:** August 2025, CFSRE received a batch containing 30 tablets, seized from the same location.



- The tablets in each case were very similar in appearance. **Tablets in case 1 contained on average 0.03mg/tablet with a range of 0.01-0.15mg/tablet**, while **tablets in case 2 contained 0.02mg/tablet with a range of 0.017-0.024mg/tablet**. Importantly, none of the tablets in either case contained any fentanyl, and carfentanil was the only opioid present. Both tablets also contained the adulterants acetaminophen and metamizole.



**Tablet Case 1 and 2:** This figure shows the distribution of potency in the tablets from case 1 and 2. Of note case 1 contained one outlier tablet with **5x more** carfentanil than the average of either case 1 or case 2. **At 0.15mg of carfentanil, considering its potency as 10 times that of fentanyl, this tablet contained a total of 15mg fentanyl-equivalents, more than 7 times the DEA estimate of 2mg as a lethal dose.**

**Powder Case 1:** June 2025, CFSRE received an exhibit containing a violet purple powder (R124, G98, B201).



**Findings**

- Fentanyl
- 4-ANPP
- Lidocaine
- Xylazine
- Carfentanil
- Ethyl 4-ANPP
- Pivaloyl fentanyl
- Phenethyl 4-ANPP
- N-Propionyl Norfentanyl
- Acetyl Fentanyl

**Powder Case 2:** September 2025, CFSRE received an exhibit containing a light-colored purple powder (R167, G159, B193).



**Findings**

- Fentanyl
- 4-ANPP
- Lidocaine
- Xylazine
- Ethyl 4-ANPP
- Procaine
- Carfentanil
- Phenethyl-4-ANPP
- N-propionyl Norfentanyl

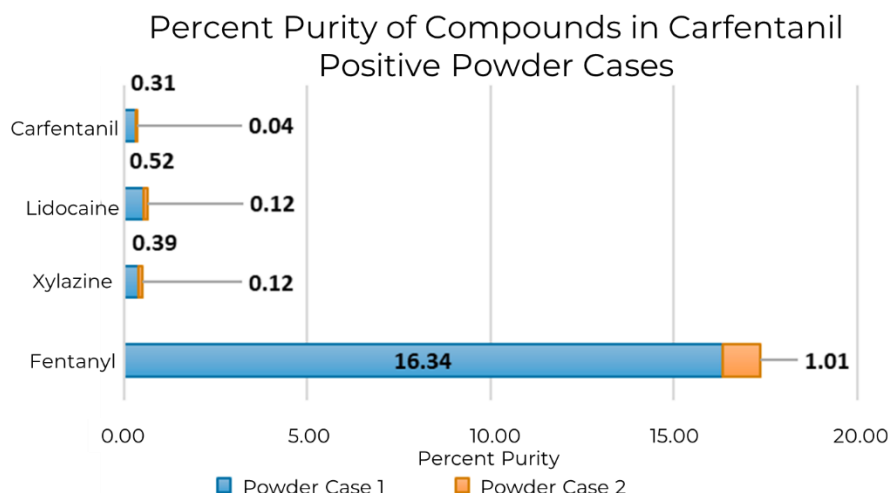
**Powder Case 1 and 2 Findings:** Compounds qualitatively confirmed are listed in descending order of normalized instrument response relative to internal standards. **Fentanyl** (Schedule II) and **carfentanil** (Schedule II) are **synthetic opioids** and contrary to the findings in the tablet cases, both were present; **xylazine**, **procaine**, and **lidocaine** are common **adulterants**. Other compounds are synthesis precursors, intermediates, or byproducts of the methods used to make fentanyl and carfentanil.

**Quantitative Findings:**

Fentanyl, lidocaine, xylazine, and carfentanil were quantified and expressed as a percentage of the total sample weight.

**Powder Case 1** contained fentanyl as the predominant compound (16.34%), with lower percent purities of lidocaine (0.52%), xylazine (0.39%), and **carfentanil (0.31%)**.

**Powder Case 2** also showed fentanyl as the predominant compound, though at a lower percent purity (1.01%), with additional compounds present at lower levels, including lidocaine (0.12%), xylazine (0.11%), and **carfentanil (0.04%)**.



**Takeaways:**

- The **powder** findings indicate that although **fentanyl** is present at concentrations ranging from 1% and 16% by weight, the potency at the street level can vary dramatically once it has been further adulterated. This variability makes it impossible for people who use drugs to anticipate the strength of what they are purchasing, which likely contributes to the continued reporting of thousands of overdose deaths a year, despite an overall decline in fentanyl purity.
- The **carfentanil** content in the **powders** also varied dramatically, however, its sheer presence markedly increases the risk of fatal outcomes for consumers unaware of its presence. Although carfentanil is present at much lower concentrations, it is 100 times more potent than fentanyl, making this combination highly lethal depending on the extent of subsequent dilution or cutting.
- While the **carfentanil** content in the **tablets** is generally more consistent, its presence still risks a potentially lethal outcome to naive consumers. This data also demonstrates that poor manufacturing quality control can result in some tablets containing highly lethal doses, even for people with tolerance. The average 0.02mg of **carfentanil** typically present in these tablets **is equivalent in potency to about 2mg of fentanyl**.
- Forensic laboratories must maintain consistent testing and reporting of all opioids present in seized materials, even when large quantities of less potent opioids are present. Substances such as **carfentanil** and the newly emergent **Orphines** highlight the importance of this comprehensive approach.

**Acknowledgements:** This report was prepared by Macenzie H. Powell, MS, Mia A. Borrelli, MS, Amanda LA Mohr, MS, Thom Browne, MA, MJ Menendez, JD, & Barry K. Logan, PhD. Funding for the preparation of this document was received by the Fredric Rieders Family Foundation from the Colombo Plan via U.S. Department of State/INL under 2019-RG-061 and 2017-RG-061, and other Colombo Plan funding sources. More information is available by contacting [barry.logan@cfsre.org](mailto:barry.logan@cfsre.org).