



PURPOSE

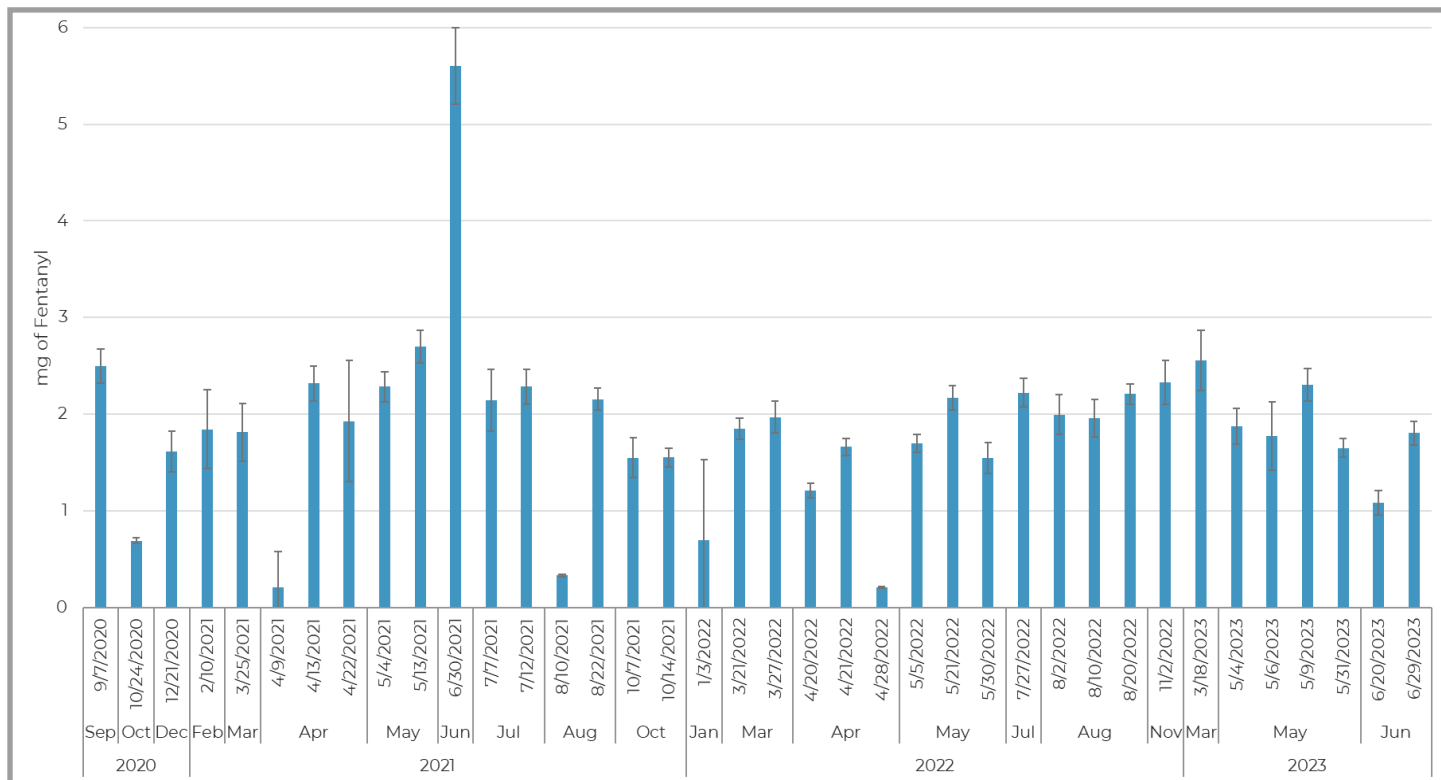
Samples seized from the Southwest border ports of entry by Customs and Border Protection (CBP) are submitted to the Center for Forensic Science Research and Education (CFSRE) for the purposes of qualitative and quantitative testing. The purpose of this report is to provide information on the quantitative results for tablets seized in 2020—2023.

BACKGROUND

30—50 tablets from seizures suspected to contain fentanyl were submitted. The tablets were separated into populations by appearance. 15 or 30 tablets from each population (if available) were tested. Tablets were analyzed by liquid chromatography tandem mass spectrometry (LC/MS/MS). Select drugs and adulterants identified in the samples were quantitated to determine their purity. The samples in this report originated from three ports of entry - AZ-POE 1 and CA-POE 2 & 3.

753 tablets from 39 seizures were quantitated. The majority of the tablets were seized from AZ-POE 1 (85%), while 11% were seized from CA-POE 2 and 4% were seized from CA-POE 3. The tablets analyzed from CA-POE 3 were from one seizure on May 31, 2023. The tablets from CA-POE 2 represent three seizures on May 9, 2023, June 20, 2023, and June 29, 2023. The average amount of fentanyl in mg per tablet by date is shown in Figure 1. Each date represents one seizure with the exception of May 6, 2023, which contains data for two seizures. Generally, tablets from the same seizure were similar in purity. Only four seizures had a coefficient of variation above 20%. In fact, 66% of seizures had a coefficient of variation below 10%. **Overall, the mean purity was determined to be 1.8 mg per tablet or 1.6% fentanyl with a median concentration of 1.9 mg per tablet (1.7% fentanyl).** The fentanyl concentration ranged from 0.012 mg—6.6 mg per tablet indicating that while most tablets are within a similar range, it is possible for a person who uses drugs to encounter low purity tablets and much higher purity tablets, which poses a risk of overdose.

Figure 1: Average amount of fentanyl (mg per tablet) in seizures of “M30” tablets over time



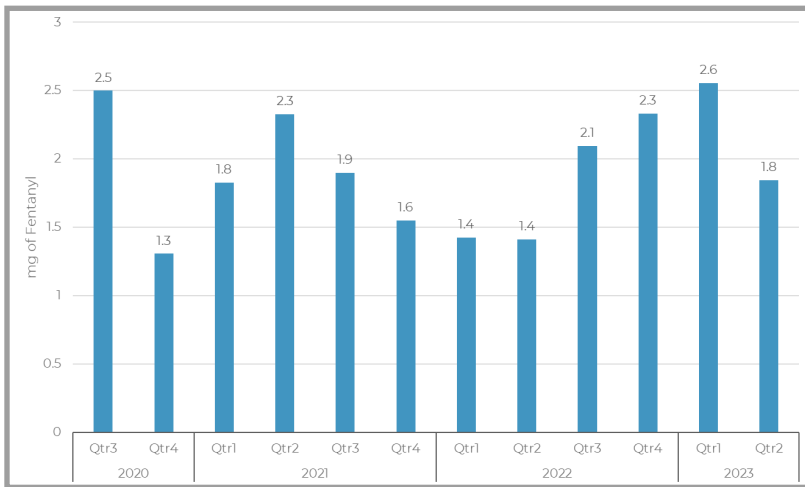


Figure 2: Average amount of fentanyl (mg per tablet) in tablets by quarter

Year	Mean mg per Tablet	Median mg per Tablet
2020 (n=60)	1.6	1.8
2021 (n=249)	2.0	1.7
2022 (n=255)	1.6	1.9
2023 (n=189)	1.9	1.9

Table 1: Average amount of fentanyl in tablets by year

Assessment of the amount of fentanyl per tablet on a quarterly and a yearly basis indicates that there is not an increasing or decreasing trend in the amount of fentanyl contained in tablets from 2020 to 2023. Closeness between the mean and median of the mg of fentanyl per tablet is a further indicator of the consistency in concentration between seizures of “M30” tablets.

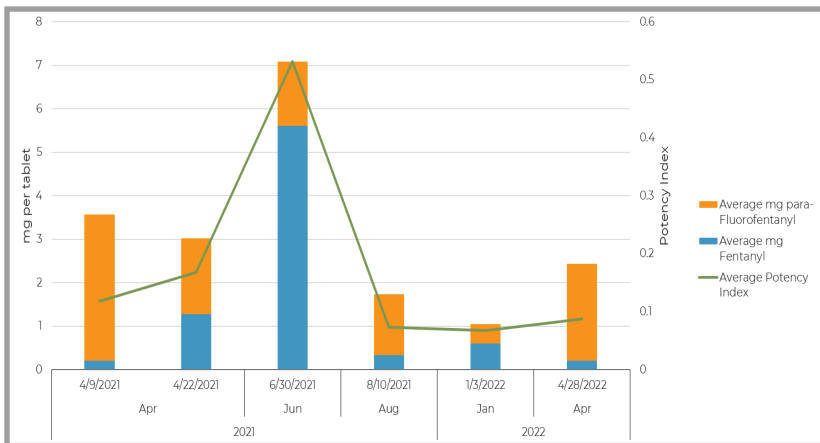


Figure 3: Average amount of fentanyl and para-fluorofentanyl (mg per tablet) and a measure of potency in tablets containing a mixture of opioids.

Six seizures (102 tablets) quantitated contained a mixture of fentanyl and para-fluorofentanyl. These tablets did not exhibit a clear trend, as the ratio of fentanyl to para-fluorofentanyl varied from seizure to seizure (Figure 3). A potency index calculation was performed on the tablets that contained both fentanyl and para-fluorofentanyl to determine the overall potency index of the combination of the two opioids. The potency index¹ allows for an assessment of the total opioid content by including potency factor calculated by comparing the EC₅₀ value (effective concentration) of opioids to fentanyl, and also taking the purity of the sample into account. The overall potency index of the tablets varied and exhibited no clear trend.

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¹ Krotulski, AJ, Shinefeld, J, DeBord, J, Logan, BK (2022), *Fentanyl Purity, Potency, & Synthesis: Real-Time Testing of Opioid Drug Products in the United States*, Center for Forensic Science Research and Education, United States of America.