

Prevalence of Fentanyl and Its Analogues in Court-Ordered Mandatory Drug Testing in Hair

2020 Internship Showcase

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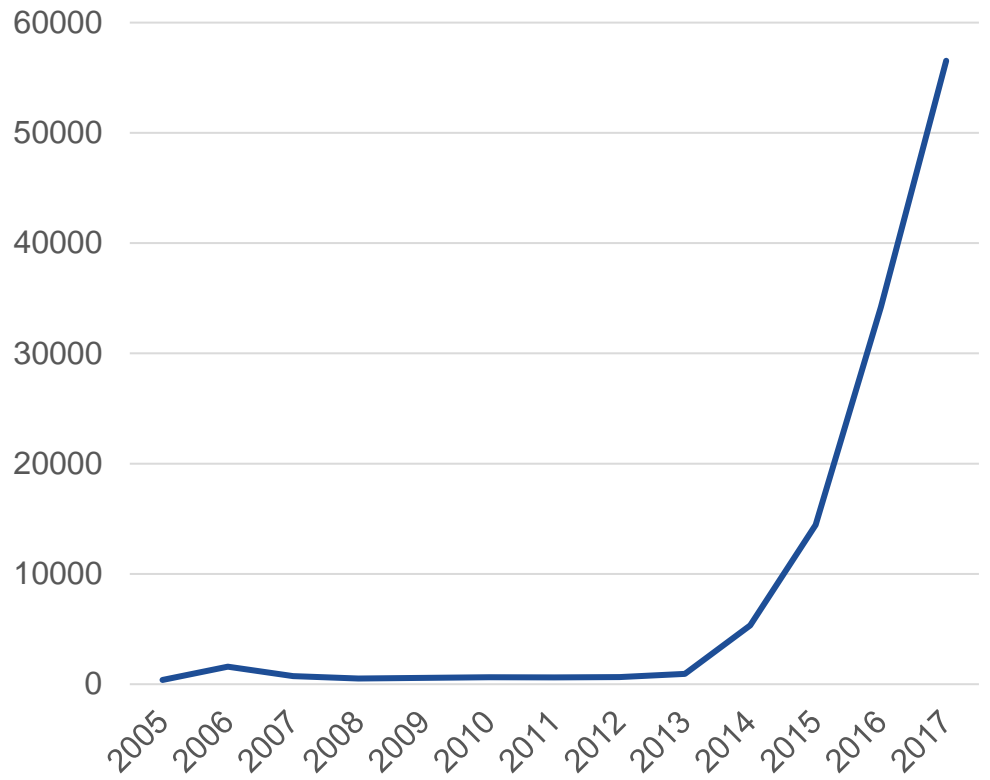


Fentanyl

Top five drug seizures in 2018:

1. Methamphetamine
2. Cannabis/THC
3. Cocaine
4. Heroin
5. Fentanyl

Laboratory Drug Seizures of Fentanyl



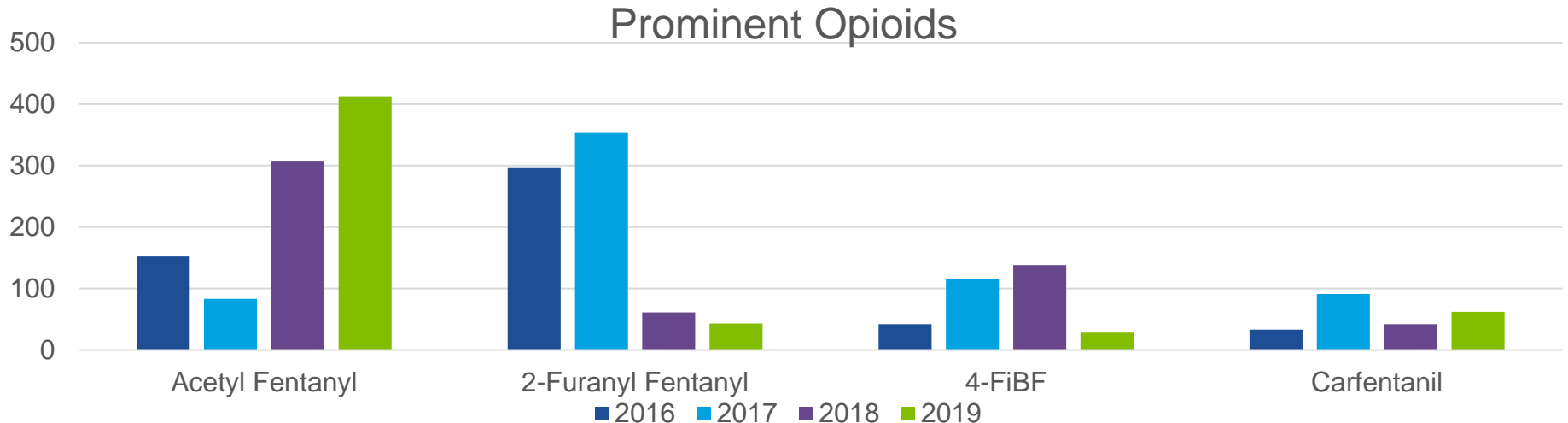
Current Methods for Analysis

- Current methods focus on heroin, codeine, and morphine targets.
- Historically, fentanyl exposure comes from fentanyl-containing heroin.
- Now, fentanyl and its analogs are used on their own.
- Many samples potentially could be falsely reported as negative if fentanyl and its analogs are not included in the testing.
How many fentanyl and analog users are being missed?

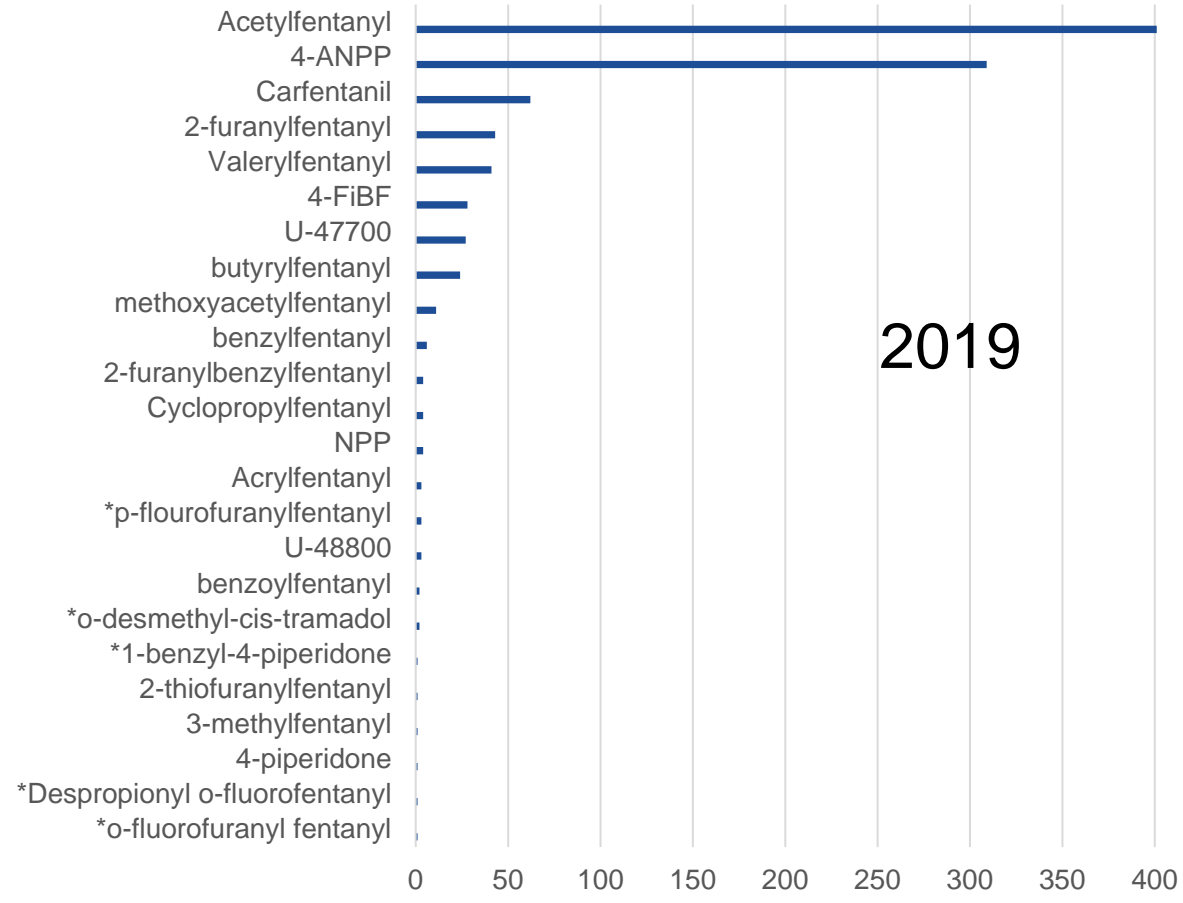
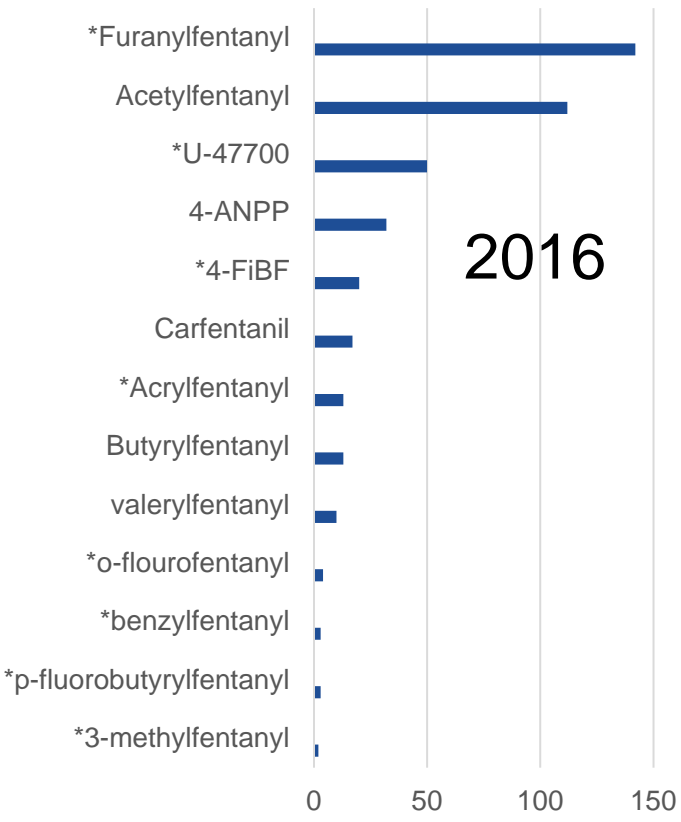
Fentanyl and Analog Use

- Because of changes in legal status, fentanyl analogs often change in popularity.
- These changes increase the difficulty for analysis because new analogs are constantly being developed.

What analogs are new and popular, so testing is accurate?



Fentanyl Analog Trends



* Reported for the first time in that year

Decontamination of Hair

- Decontamination is necessary to remove external contamination.
- Specific washes remove different types of contamination.
- Fentanyl and its analogs are normally decontaminated with a variation of
 - Organic: Dichloromethane
 - Aqueous: Water

Extraction of Fentanyl from Hair

- Used to pull drug out of the hair matrix
 - Liquid-liquid
 - In general, lower limits of detection and quantification
 - Uses more organic solvent
 - Solid phase
 - Requires less time and technical skill
 - Less need for solvent

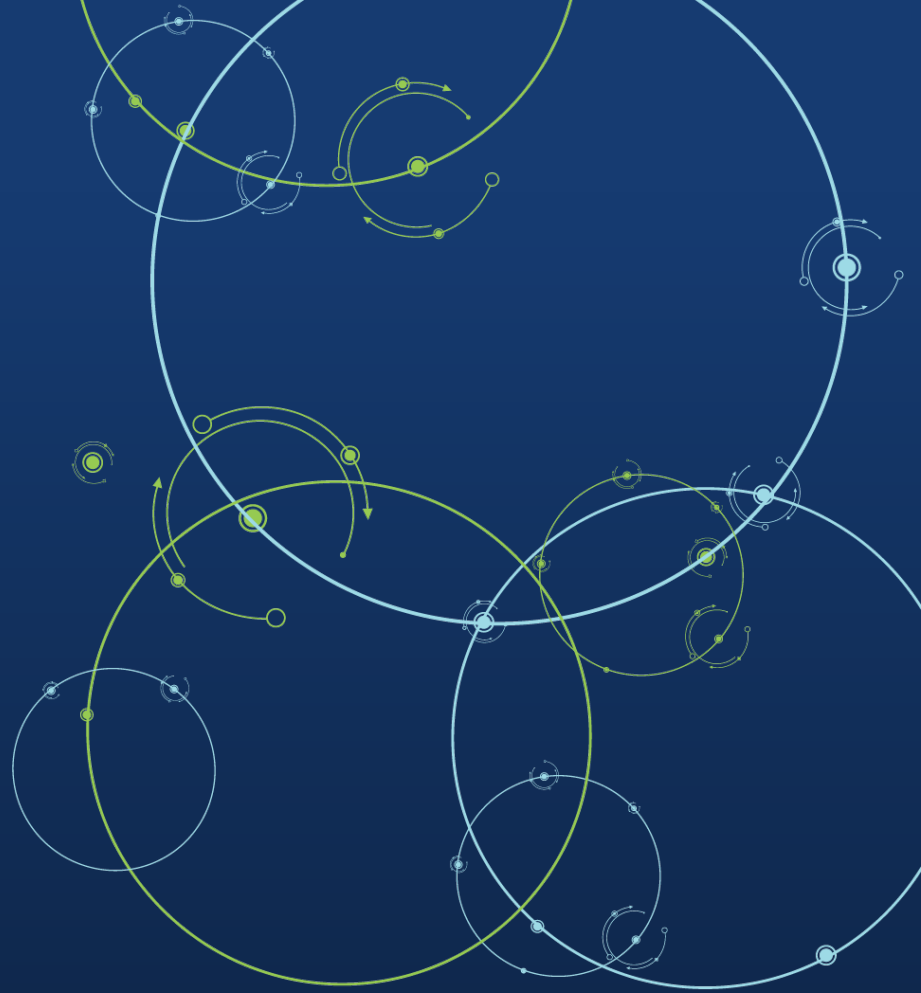
Analytical methods must be improved because fentanyl and its analogs are used at lower doses.

References

- Drug Enforcement Administration, U.S. Department of Justice. (2019, December). *2019 Drug Enforcement Administration national drug threat assessment* (DEA-DCT-DIR-007-20). Retrieved from https://www.dea.gov/sites/default/files/2020-01/2019-NDTA-final-01-14-2020_Low_Web-DIR-007-20_2019.pdf
- Special Testing and Research Laboratory, Drug Enforcement Administration, U.S. Department of Justice. (n.d.a). *Emerging threat report annual 2016*. Retrieved from <https://ndews.umd.edu/sites/ndews.umd.edu/files/emerging-threat-report-2016-annual.pdf>
- Special Testing and Research Laboratory, Drug Enforcement Administration, U.S. Department of Justice. (n.d.b). *Emerging threat report annual 2019* (DEA PRB 03-09-20-09). Retrieved from <https://ndews.umd.edu/sites/ndews.umd.edu/files/DEA-Emerging-Threat-Report-2019-Annual.pdf>

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Thank you

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