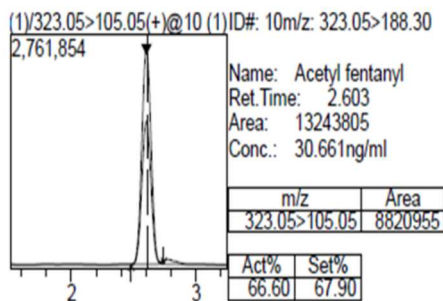


## Fentanyl Analogues and the Opioid Epidemic

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Last winter, the Toxicology Times published a two-part series on fentanyl in relationship to the opioid crisis in the United States. San Diego Reference Laboratory is now offering an expanded confirmation panel to analyze fentanyl, norfentanyl and six analogs of fentanyl in urine specimens to aid you in the detection of opioid abuse.

While SDRL was developing the expanded fentanyls analysis, we were already detecting acetylfentanyl in patient samples. Here is an actual chromatogram of 30 ng/mL acetylfentanyl along with the detection limits of our assay:



Drug	Detection Limit (ng/mL)
Fentanyl	0.1
Norfentanyl	0.25
Acetylfentanyl	0.1
Acrylfentanyl	0.1
Carfentanil	0.1
Furanylfentanyl	0.1
Cis-3-methylfentanyl	0.1
U-47700	0.1

Fentanyl analogues (fentanyls) are increasingly involved in overdose deaths, up as much as 540% in the last three years.<sup>1</sup> In 2017, nearly 200 people died from drug overdoses every day. Carfentanil is so toxic that the DEA has issued a safety bulletin to police and safety responders with recommendations as to how to recognize and safely handle drug substances that may contain carfentanil.<sup>2</sup>

Fentanyl (also known as fentanil) was developed as a pain medication that is 50 to 100 times more potent than morphine.<sup>3</sup> Because fentanyl has a rapid onset of action, a relatively short duration, and less of an effect on blood pressure, it became

the anesthetic of choice in cardiac surgery. 1,700 kilograms of fentanyl were used globally in 2013.<sup>4</sup>

Analogues of fentanyl have been made for pharmaceutical markets, most notably alfentanil and sufentanil, for use in pain relief and heart surgery, respectively. Other synthetic analogues have been copied from research articles by clandestine labs. For example, ohmefentanyl is 6,300 times stronger than morphine and carfentanil is 10,000 times stronger than morphine. Both are available by mail order as “research chemicals” from China.

Classified as a Schedule II drug by the DEA decades ago, fentanyl was unregulated in China until only very recently. Clandestine Chinese labs sell fentanyl and analogues of fentanyl to smugglers and cartels and have even branched out into the mail order business. Drug cartels learned that the manufacturing and transportation of fentanyl was easier and delivered a higher profit margin than trafficking in conventional drugs. This, coupled with the downturn of the US illicit marijuana trade caused the cartels to promote fentanyl distribution into the United States.

### ???

### Question of the Month

**???** *Did You Know ???*

SAMHSA supports an integrated treatment approach to treating co-occurring mental and substance use disorders. Integrated treatment requires collaboration across disciplines. Integrated treatment planning addresses both mental health and substance abuse, each in the context of the other disorder. Treatment planning should be client-centered, addressing clients’ goals and using treatment strategies that are acceptable to them. Integrated treatment or treatment that addresses mental and substance use conditions at the same time is associated with lower costs and better outcomes such as: reduced substance use, improved psychiatric symptoms and functioning, decreased hospitalization, increased housing stability, fewer arrests, improved quality of life

Source: SAMHSA  
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**Question:** Does Fentanyl cross-react with any other drug(s)?  
**Answer:** No. Fentanyl, a schedule II prescription drug, is a synthetic narcotic pain-killer of high potency and short duration of action. It is used as an anesthetic during surgery and for persons with chronic, moderate-to-severe pain who already are physically tolerant to Opiates. Even though Fentanyl has properties similar to Morphine, it has a different chemical structure and will not cross-react with the reagents for Morphine or other Opiates. Thus, a patient’s urine or saliva sample that tests positive for Opiates (or any other drug) is not positive due to a Fentanyl source. SDRL offers a separate test specifically for Fentanyl to determine if a patient has Fentanyl in their system (positive) or has potentially diverted their dose (negative).

The content of San Diego Reference Laboratory’s Publication, The Toxicology Times, is provided free of charge and is intended to assist the medical personnel in the interpretation of laboratory results for drug treatment programs. The information contained in The Toxicology Times is not intended or implied to be a substitute for professional medical advice.

## Fentanyl Analogues and the Opioid Epidemic

### References

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