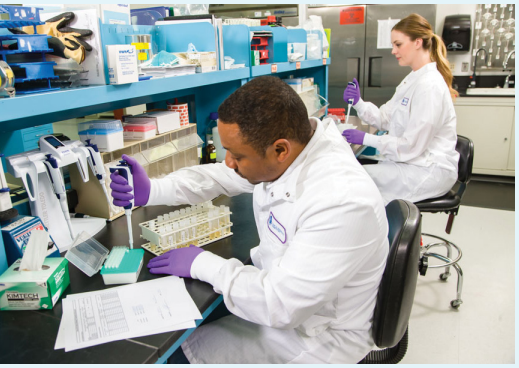

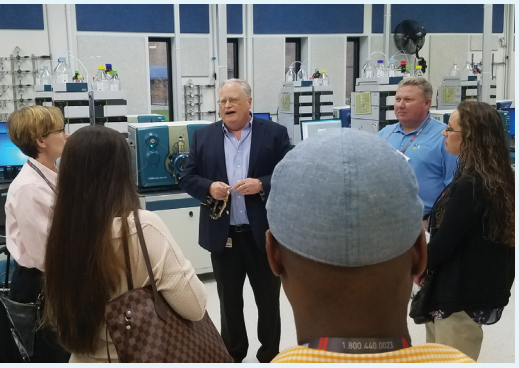

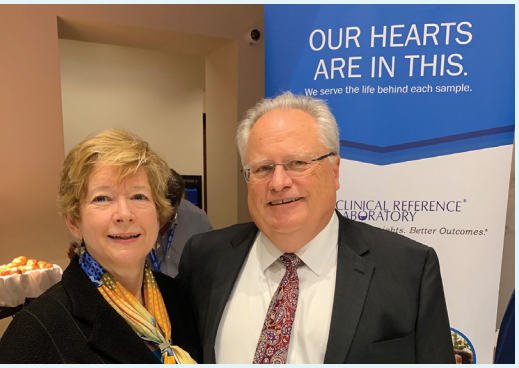

FENTANYL IN THE WORKPLACE

BY DR. DAVID KUNTZ

Fentanyl is one of the most dangerous and deadly drugs known to man. According to the Centers for Disease Control and Prevention (CDC), of the estimated 70,200 total drug overdose deaths[1] in 2017, fentanyl and fentanyl analogs (other synthetic narcotics) accounted for more than 28,400 total overdose deaths. In light of this, it's easy to conclude that fentanyl abuse contributes significantly to the total economic cost of the opioid crisis, which was estimated to be $504 billion in 2015.[2]

Fentanyl, a schedule II prescription drug, is a powerful synthetic opioid analgesic that is 50 to 100 times more potent than morphine. It is normally prescribed to treat severe pain following surgery or to treat chronic pain in people who have a tolerance to other opioids. Known by such retail names as Actiq®, Duragesic®, and Sublimaze®, fentanyl carries several common street names such as Apache, China Girl, China White, Dance Fever, Friend, Goodfella, Jackpot, Murder 8, TNT, and Tango and Cash.

The CDC also reports that the overall rates of fentanyl overdose deaths is higher among males versus females, non-Hispanic black people versus other ethnic groups, and people between the ages of 25–44.[3] Rates of fentanyl overdose deaths among non-Hispanic black people increased between 2011-2016 by nearly 141 percent per year. Fentanyl overdose death rates among Hispanic people rose by about 118 percent per year. Rates for non-Hispanic whites remained fairly static from 2011 through 2013, but then shot up by almost 109 percent in each of the following years.[4]

Opioid use, including fentanyl misuse and abuse, can be a concern in the workplace for several reasons. The short-term side effects include drowsiness, nausea, vomiting, euphoria (feeling high), difficulty breathing, headaches, dizziness and confusion, all of which can negatively impact a worker's ability to effectively and safely perform many normal job functions.

According to the Canadian Centre for Occupational Health and Safety,

> "opioid use and misuse tend to be higher in workplaces that have lower paid sick leave and lower job security, suggesting that individuals may feel they need to return to work quickly after an injury and use these substances to control pain. Lack of paid sick leave and lower job security may also make workers reluctant to take time off to get appropriate treatment."[5]

As of 2017, more than 70% of U.S. employers reported experiencing some impact of prescription drug use.[6] Among the most commonly reported effects of prescription drug use in the workplace include absenteeism, missed work, and the use of pain relievers while in the workplace. And the economic impact adds up quickly.
For instance:

- Substance abusers miss nearly 50% more days than their peers, totaling up to six weeks annually.[7]
- The average per capital cost to employers for each worker with an untreated substance use disorder is $6,643.[8]

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- Each untreated disorder adds an additional $1,267 per person to the annual cost of health care coverage for employers.[9]
- The average employee without a substance use disorder misses 10.5 days total per year versus an individual with a pain medication use disorder who misses an average of 29 days per year, the highest of any substance use disorder.[10]

Clinical Reference Laboratory, Inc. (CRL) has screening and confirmation procedures for fentanyl and fentanyl analogs to identify users in oral fluids. The fentanyl compounds are an extension of the opioid epidemic with tremendous escalation in overseas illicit production with the restriction in the pharmaceutical production and physician prescribing of the traditional opioids of hydrocodone and oxycodone. As part of the strategy to increase use of these drugs, dealers have included these compounds with heroin to increase potency. The drug user is not aware of the heroin "spiking", which makes overdoses common, requiring naloxone injections to save the individual. In addition, the drug distributors are also including fentanyl's into methamphetamine, cocaine and other drugs of abuse to improve the "high" and also rapidly create addiction. China has been the early provider of these compounds but manufacture and distribution has also been tracked to Mexico making these compounds easy to obtain on the street and cheap.

The fentanyl compounds have a basic core structure known as 4-ANPP and is the backbone for all fentanyl compounds. The modified fentanyl structures all have varying potency and more than 50 different compounds have been identified and distributed. The list of distributed compounds has reduced to the list below based on reports on the east coast.

There are three legitimate medical fentanyls: fentanyl, alfentanil, and sufentanil. Fentanyl is available by prescription for severe pain while alfentanil and sufentanil are injectable and associated with anesthesia but are also known to be abused by medical personnel .
CRL has created three panel options to detect fentanyl's use/abuse (1) fentanyl and its metabolite norfentanyl, (2) panel containing medical alfentanil and sufentanil, and a (3) panel to include all relevant fentanyls in circulation.

- Fentanyl
- Norfentanyl
- Alfentanil
- Sufentanil
- Methoxyacetyl fentanyl
- Acryl fentanyl
- o-Fluorofentanyl
- Furanyl fentanyl
- Cyclopropyl fentanyl
- 3-Methylfentanyl
- p-Fluorobutyryl
- 4-ANPP (precursor basic structure)

CRL methods for fentanyl and its analogs are state of the art and are performed along with the traditional drugs of abuse panel. No additional Intercept Collections are necessary to test for fentanyl or the full fentanyl analog panel. Confirmation methods are performed using LC-MS/MS with confirmation results the following day. Screening and confirmation cutoff levels are established at 1 ng/mL for all compounds.

Inquiries into the addition of fentanyl to expand their drug testing program should be addressed to the CRL Account Executives already supporting your account.

DAVID KUNTZ, PH.D.,
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Dr. Kuntz has been with CRL since 2006 and is a Board Certified Toxicologist. He is a national expert in urine adulteration and drug detection in urine, oral fluid, hair, and sweat using GC/MS, GC/MS/MS and LC/MS/MS. He has worked in workplace drug testing for over twenty years. He has testified extensively for employment hearings, child endangerment proceedings, military court-martial courts, Federal merit system protection boards, the FAA, and Department of Energy regarding drug use, interpretation, and adulteration of urine samples. In addition to workplace testing, Dr. Kuntz has been involved for many years in developing drugs of abuse testing panels for medical professionals. Dr. Kuntz is an inspector for the SAMHSA and CAP forensic drug testing programs. He currently serves on the editorial board for Clinical & Forensic Toxicology News and as a consultant to the MRO Examination Development Committee for the Medical Review Officer Certification Council (MROCC). Dr. Kuntz received his B.S. in Pharmacy from North Dakota State University and practiced five years as a retail and hospital pharmacist. He went on to receive his Masters of Science in Pharmaceutical Sciences from the University of Oklahoma and his Ph.D. in Pharmaceutical Sciences from North Dakota State University. He further completed a post-doctoral program in biochemical toxicology at Washington State University and the University of Utah.

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