

## Carfentanil

*"Heroin is Being Laced with a Terrifying New Substance"*

*"DEA Sounds Alarm on Elephant Tranquilizer"*

*"Deadly Opioid Overwhelms First Responders and Crime Labs in Ohio"*

These are just a few of the many news headlines that have been appearing in recent weeks, all concerning the potent fentanyl analogue, carfentanil. Carfentanil (Wildnil®) is a sedative/anesthetic agent for elephants, polar bears, and other large exotic animals. It is classified as a Schedule II controlled substance in the U.S., but is not approved for human use. In recent months, carfentanil has surfaced in communities, mixed with heroin or sold as heroin. In August and September 2016, Ohio police linked carfentanil to opioid overdoses, and the first indictments for selling carfentanil in the U.S. occurred on September 21 in Cincinnati. Other states, primarily in the mid-west and southeast, are also reporting carfentanil drug seizures and overdoses, some yet to be confirmed. A one kilogram package of carfentanil, capable of producing millions of fatal doses, was seized at a British Columbia airport in late June 2016 bound for Calgary from China.

Carfentanil is 10,000 times more potent than morphine, 5,000 times more potent than heroin, and 100 times more potent than fentanyl. The lethal dose is unknown. However, it's estimated that 2 milligrams of fentanyl can be fatal, therefore as little as 200 micrograms of carfentanil might be lethal, a dose that is 1/100<sup>th</sup> of the amount shown next to the penny in the photograph. Overdoses present with signs and symptoms likely to be seen with other opioids, primarily CNS depression, respiratory depression and constricted pupils. Naloxone is an opioid antagonist and should reverse the effects of carfentanil overdoses, but it has been suggested that large doses might be required. Patients should be observed for recurring opioid effects for 2-24 hours after naloxone administration (*Ann Emerg Med 2003;41:700-705*). Typical urine drug tests will not identify carfentanil. Post-mortem testing for fentanyl analogues occurs in most states, but very few labs are able to test for carfentanil or have reference materials to identify it.

There is concern that first responders such as law enforcement officers and EMS providers could develop toxicity if exposed to potent opioids such as fentanyl and its analogues, especially carfentanil. Many agencies are recommending that field-testing of suspected heroin be suspended. The Drug Enforcement Administration (DEA) released a safety alert about carfentanil on September 22, 2016 ([www.dea.gov/divisions/hq/2016/hq092216.shtml](http://www.dea.gov/divisions/hq/2016/hq092216.shtml)). An American College of Medical Toxicology/American Academy of Clinical Toxicology position statement approved July 2017 ([www.acmt.net/resources\\_position.html](http://www.acmt.net/resources_position.html)) states that incidental dermal absorption of fentanyl is unlikely to cause opioid toxicity (*updated August 7, 2017*). However, because of the potency of carfentanil and fentanyl analogues, only trained first responders should handle substances suspected of being illicit drugs.



2 mg of powder shown next to a penny (DEA)

### Did you know?

**Aerosolized carfentanil has been studied and used as an incapacitating or calmative agent?**

In October 2002, Chechen rebels seized a Moscow theatre, taking more than 800 hostages. The Chechens threatened to blow up the theatre if their demands were not met. The Russian military used a gas to incapacitate the rebels before storming the theatre. Hundreds of hostages were transported to hospitals, many with classic opioid overdose effects. Physicians reported that naloxone reversed the effects in many patients; however, 127 hostages died and more than 650 required hospitalization. Although Russia said later that a fentanyl derivative was in the gas, evidence strongly suggests that carfentanil and an anesthetic such as halothane was used.

*Ann Emerg Med 2003; 41: 700-705.  
J Anal Toxicol 2012; 36: 647-56.*



@MPCToxTidbits