

Carfentanil - Background

What is carfentanil?

The drug carfentanil (4-carbomethoxyfentanyl) is an analogue of the synthetic opioid fentanyl. It was first synthesized in 1974 by *Janssen Pharmaceutica*, and was sold under the trade name of Wildnil®.

Carfentanil acts as an agonist on the mu-opioid receptors in the central nervous system. This causes effects similar to other opioids, such as analgesia and extreme sedation. It also suppresses the respiratory system, depresses the cough reflex, and constricts pupils.

What is it used for?

Traditionally, carfentanil is used by veterinarians to tranquilize and sedate farm animals, or large wild animals in need of care (e.g., deer and moose). Wildlife rangers also use combinations of drugs (including carfentanil) for sedating wild bison. Because it is so potent, veterinarians who use carfentanil wear protective gear, such as gloves and face shields, when administering the drug. In the United States, veterinarians must have a Drug Enforcement Agency (DEA) number, and be on the approved user's list.

Why is it so dangerous?

Carfentanil is one of the most toxic opioids currently known, with studies showing it to be 10,000 times more potent than morphine, and 100 times more potent than fentanyl. In humans, a dose as small as 1 microgram is enough to elicit a response to the drug and about 20 micrograms, which is less than a grain of salt, is enough to be fatal.

There are reports of drug dealers adding carfentanil to traditional drugs because it is cheaper, more potent, and easier to obtain than heroin or cocaine. It is unlikely that drug users are aware that they are receiving drugs laced with carfentanil, and may be more likely to overdose when taking their usual dose.

Fatalities and treatment

Between September 2016 and the end of November 2016, there were 15 confirmed deaths in Alberta linked to carfentanil, and a total 32 deaths the entire year. Between January 1 and May 13, 2017, 34 deaths in Alberta had been linked to carfentanil. Naloxone has been used to reverse carfentanil overdoses; however, greater than normal doses are required to revive those who have overdosed. In response to the current opioid crisis in Alberta, naloxone kits have been made publicly available at over 900 registered sites, including some pharmacies.

Carfentanil and the law

Carfentanil is a controlled schedule I drug in Canada. Unauthorized possession of a schedule I drug may result in a maximum of six months jail time and a \$1000 fine, if treated as a summary conviction offence. If treated as an indictable offence, the maximum penalty is seven years jail time. Those charged with trafficking also face lifetime imprisonment, with a mandatory one-year jail sentence for trafficking a Schedule I drug under 1 kg.

In an attempt to help decrease the availability of carfentanil, fentanyl, and other potent opioids, provincial legislation has been passed to restrict access to pill press machines. This law came into effect January 2017. Illegally possessing a pill press machine can result in fines ranging from \$50,000 to \$375,000 and possible jail time from six months to one year.

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