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# The rise of overdose deaths involving fentanyl and the value of early warning:

The Canadian Community Epidemiology Network on Drug Use (CCENDU)

**Matthew Young**

**Canadian Centre on Substance Use and Addiction**



# Disclosure Statement

- I have no affiliation (financial or otherwise) with a pharmaceutical, medical device or communications organization.



# Acknowledgement

This work is made possible through a financial contribution from Health Canada.

The views expressed herein do not necessarily represent the views of Health Canada.

# Presentation overview

- About the Canadian Centre on Substance Use and Addiction (CCSA)
- Monitoring New Drug Trends in Canada
- Sentinel Surveillance in Canada: The Canadian Community Epidemiology Network on Drug Use (CCENDU)
  - What it is and how it works
  - Alerts and Bulletins that have been issued
  - Impact
  - Current initiatives
  - Advantages and disadvantages of this model
  - The future

# About CCSA

- **Vision:** A healthier Canadian society where evidence transforms approaches to substance use.
- **Mission:** To address issues of substance use in Canada by providing national leadership and harnessing the power of evidence to generate coordinated action.
- **Value Proposition:** CCSA was created by Parliament to provide national leadership to address substance use in Canada. A trusted counsel, we provide national guidance to decision makers by harnessing the power of research, curating knowledge and bringing together diverse perspectives.

# Monitoring New Drug Trends in Canada

- **Self-report surveys** (Health Canada)
- **Enforcement data** (Health Canada)
- **Internet monitoring** (Health Canada)
- **Opioid overdose surveillance** (Public Health Agency of Canada and Canadian Institute for Health Information)
- **Poison Centre Exposures** [regional Poison Control Centres and the Canadian Surveillance System for Poison Information (CSSPI)]
- **Sentinel surveillance** (CCSA)



# Sentinel Surveillance in Canada



**CCENDU**

**Canadian Community  
Epidemiology Network  
on Drug Use**

**RCCET**

**● Réseau communautaire  
● canadien d'épidémiologie  
● des toxicomanies**



# CCENDU RCCET

Canadian Community Epidemiology Network on Drug Use • Réseau communautaire canadien d'épidémiologie des toxicomanies

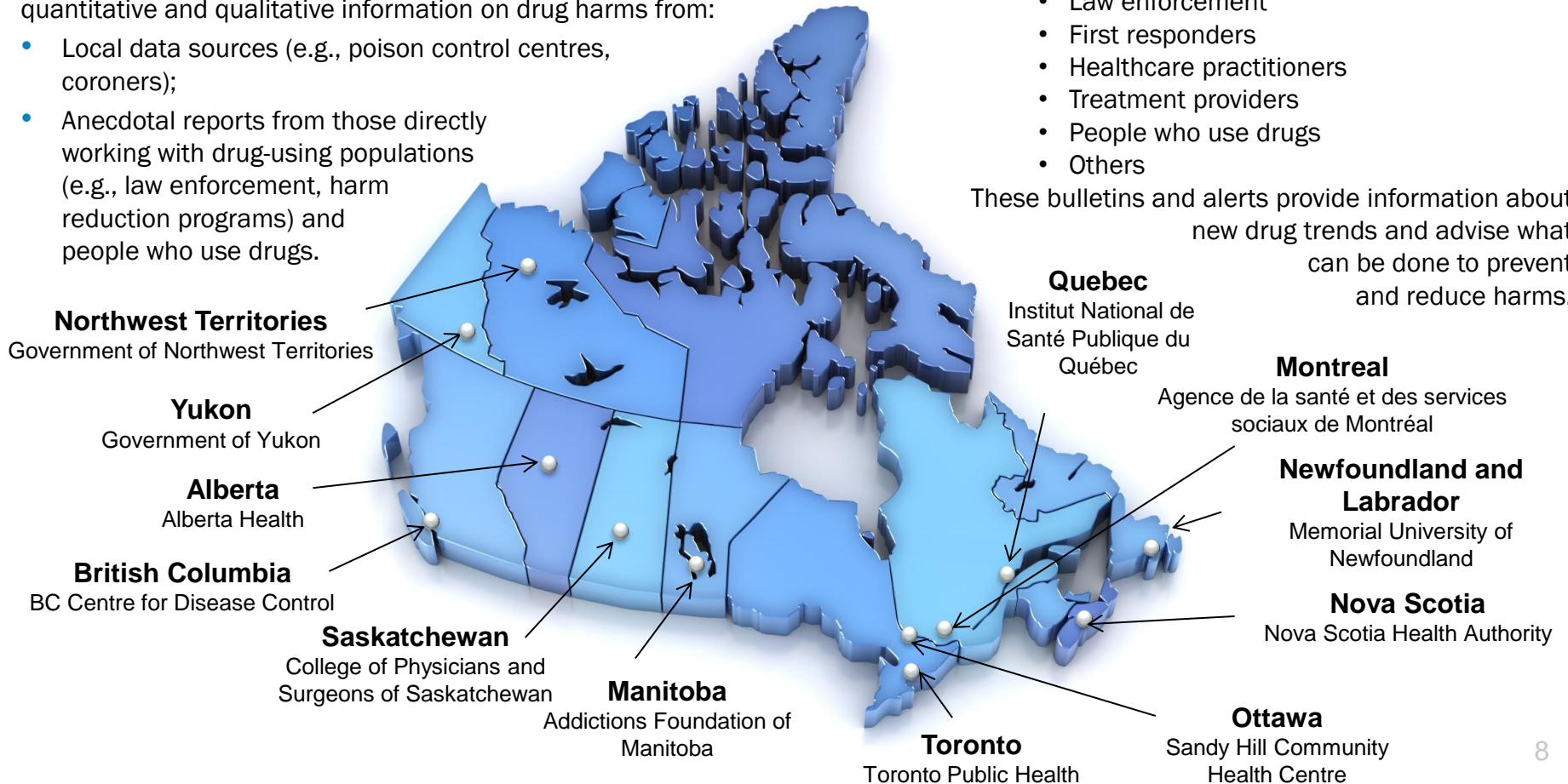
CCENDU is a sentinel surveillance network made up of representatives across Canada. Each site coordinator collects quantitative and qualitative information on drug harms from:

- Local data sources (e.g., poison control centres, coroners);
- Anecdotal reports from those directly working with drug-using populations (e.g., law enforcement, harm reduction programs) and people who use drugs.

This information is then collated and assessed for risk at the national level. If warranted, CCENDU issues alerts to:

- Law enforcement
- First responders
- Healthcare practitioners
- Treatment providers
- People who use drugs
- Others

These bulletins and alerts provide information about new drug trends and advise what can be done to prevent and reduce harms.

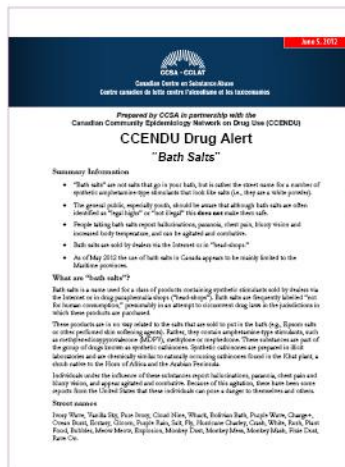





Number of  
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**1,580**

# Alerts and Bulletins

2012 2013 2014 2015 2016 2017 2018 2019



June 5, 2012



**CCSA - CCLAT**  
Canadian Centre on Substance Abuse  
Centre canadien de lutte contre l'alcoolisme et les toxicomanies

*Prepared by CCSA in partnership with the  
Canadian Community Epidemiology Network on Drug Use (CCENDU)*

## CCENDU Drug Alert

### **"Bath Salts"**

**Summary Information**

- "Bath salts" are not salts that go in your bath, but is rather the street name for a number of synthetic amphetamine-type stimulants that look like salts (i.e., they are a white powder).
- The general public, especially youth, should be aware that although bath salts are often identified as "legal highs" or "not illegal" this does not make them safe.
- People taking bath salts report hallucinations, paranoia, chest pain, blurry vision and increased body temperature, and can be agitated and combative.
- Bath salts are sold by dealers via the Internet or in "head-shops."
- As of May 2012 the use of bath salts in Canada appears to be mainly limited to the Maritime provinces.

**What are "bath salts"?**

Bath salts is a name used for a class of products containing synthetic stimulants sold by dealers via

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**8,529**

# Alerts and Bulletins



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CCENDU Bulletin, April 2013

## Misuse of Opioids in Canadian Communities

*Prepared by CCSA in partnership with the  
Canadian Community Epidemiology Network on Drug Use*

The Canadian Community Epidemiology Network on Drug Use (CCENDU) is a nation-wide network of community-level partners who share information about local trends and emerging issues in substance use and exchange knowledge and tools to support more effective data collection.

CCENDU Bulletins provide timely information on new drug use trends or on topics of immediate concern, using rapidly assembled evidence ranging from scientific literature to qualitative reports from those directly serving local, high-risk populations. In January 2013, CCENDU site coordinators expressed an interest in sharing information about opioid misuse in their communities given the discontinuation of OxyContin® and the introduction of OxyNeo®. What follows is a series of short snapshots describing opioid misuse in Canadian communities.

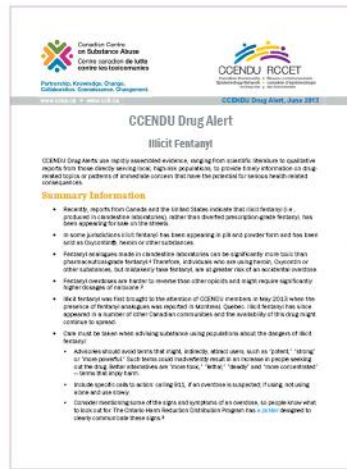
### Background

#### What Are Opioids?

Opioids are a class of drugs that depress the central nervous system and are primarily used in medicine as analgesics. That is, they are used to reduce or suppress the body's response to pain. Opioids also produce feelings of euphoria and are used for this purpose as well. Consuming opioids

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**5,850**

# Alerts and Bulletins





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des toxicomanies

**CCENDU Drug Alert, June 2013**

## CCENDU Drug Alert

### Illicit Fentanyl

CCENDU Drug Alerts use rapidly assembled evidence, ranging from scientific literature to qualitative reports from those directly serving local, high-risk populations, to provide timely information on drug-related topics or patterns of immediate concern that have the potential for serious health-related consequences.

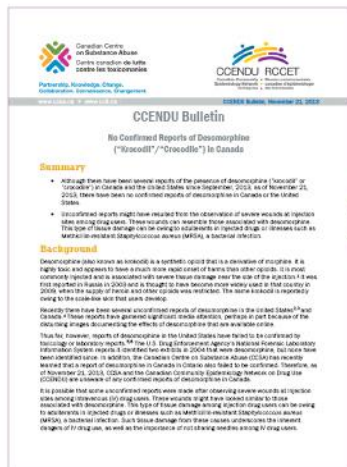
#### Summary Information


- Recently, reports from Canada and the United States indicate that illicit fentanyl (i.e., produced in clandestine laboratories), rather than diverted prescription-grade fentanyl, has been appearing for sale on the streets.
- In some jurisdictions illicit fentanyl has been appearing in pill and powder form and has been sold as Oxycontin®, heroin or other substances.
- Fentanyl analogues made in clandestine laboratories can be significantly more toxic than pharmaceutical-grade fentanyl.<sup>1</sup> Therefore, individuals who are using heroin, Oxycontin or other substances, but mistakenly take fentanyl, are at greater risk of an accidental overdose.
- Fentanyl overdoses are harder to reverse than other opioids and might require significantly higher dosages of naloxone.<sup>2</sup>

Number of  
downloads since  
release  
**3,866**

# Alerts and Bulletins

2012      2013      2014      2015      2016      2017      2018      2019






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des toxicomanies

CCENDU Bulletin, November 21, 2013

## CCENDU Bulletin

### No Confirmed Reports of Desomorphine ("Krocodil" / "Crocodile") in Canada

#### Summary

- Although there have been several reports of the presence of desomorphine ("krocodil" or "crocodile") in Canada and the United States since September, 2013, as of November 21, 2013, there have been no confirmed reports of desomorphine in Canada or the United States.
- Unconfirmed reports might have resulted from the observation of severe wounds at injection sites among drug users. These wounds can resemble those associated with desomorphine. This type of tissue damage can be owing to adulterants in injected drugs or illnesses such as Methicillin-resistant *Staphylococcus aureus* (MRSA), a bacterial infection.

#### Background

Desomorphine (also known as krocodil) is a synthetic opioid that is a derivative of morphine. It is highly toxic and appears to have a much more rapid onset of harms than other opioids. It is most commonly injected and is associated with severe tissue damage near the site of the injection.<sup>1</sup> It was first reported in Russia in 2003 and is thought to have become more widely used in that country in 2009, when the supply of heroin and other opioids was restricted. The name krocodil is reportedly

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**19,109**

# Alerts and Bulletins




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CCENDU Drug Alert, February 2014

## CCENDU Drug Alert

### Increasing Availability of Counterfeit Oxycodone Tablets Containing Fentanyl

This alert updates an earlier CCENDU Drug Alert. Please see *CCENDU Drug Alert: Illicit Fentanyl* (posted July 25, 2013) at [www.ccsa.ca](http://www.ccsa.ca).

This alert is to advise that counterfeit oxycodone (popular brand name OxyContin®) pills containing fentanyl have become increasingly available in several Canadian communities. The presence of fentanyl in these counterfeit pills increases the risk of overdose among people using them.

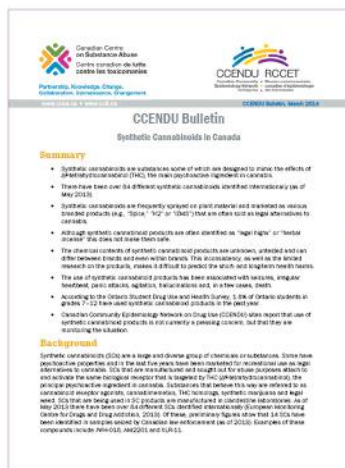
The pills resemble oxycodone tablets. Some are green and stamped with "CDN" on one side and the number 80 on the other (see Figure 1). They are being referred to colloquially as "green monsters" or "green beans" in eastern Canada and "green jellies" or "street oxy" in Western Canada. While the green tablets appear to be more widely available, pills have also surfaced that are white with the number 10 stamped in place of the 80. We have reports of these pills appearing in Alberta and British Columbia in November–December 2013 and have recently received reports of large quantities available in St John's, Newfoundland (as of February 2014).

After verification with Health Canada's Drug Analysis Service (DAS), laboratory tests of seized counterfeit oxycodone tablets (different brands, sizes and colours) were most often found to contain fentanyl (89% of the time). Much less frequently tablets were found to contain Alprazolam or Ketamine as the active ingredient. Note that DAS only analyzes a subset of the substances seized by law enforcement agencies.

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# Alerts and Bulletins

2012 2013 2014 2015 2016 2017 2018 2019



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CCENDU Bulletin, March 2014

## CCENDU Bulletin

### Synthetic Cannabinoids in Canada

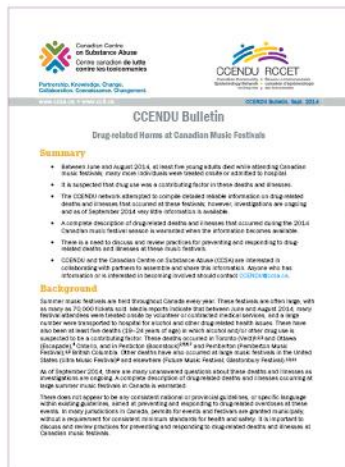
#### Summary

- Synthetic cannabinoids are substances some of which are designed to mimic the effects of  $\Delta^9$ -tetrahydrocannabinol (THC), the main psychoactive ingredient in cannabis.
- There have been over 84 different synthetic cannabinoids identified internationally (as of May 2013).
- Synthetic cannabinoids are frequently sprayed on plant material and marketed as various branded products (e.g., "Spice," "K2" or "IZMS") that are often sold as legal alternatives to cannabis.
- Although synthetic cannabinoid products are often identified as "legal highs" or "herbal incense" this does not make them safe.
- The chemical contents of synthetic cannabinoid products are unknown, untested and can differ between brands and even within brands. This inconsistency, as well as the limited research on the products, makes it difficult to predict the short- and long-term health harms.
- The use of synthetic cannabinoid products has been associated with seizures, irregular heartbeat, panic attacks, agitation, hallucinations and, in a few cases, death.

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**2,814**

# Alerts and Bulletins

2012      2013      2014      2015      2016      2017      2018      2019



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CCENDU Bulletin, Sept. 2014

## CCENDU Bulletin

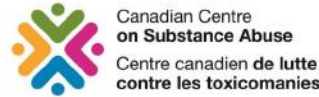
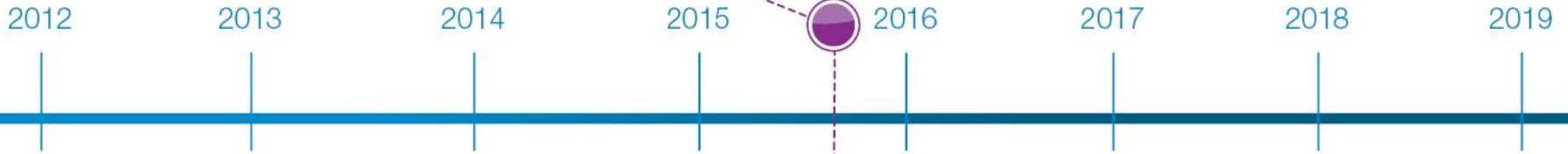
### Drug-related Harms at Canadian Music Festivals

#### Summary

- Between June and August 2014, at least five young adults died while attending Canadian music festivals; many more individuals were treated onsite or admitted to hospital.
- It is suspected that drug use was a contributing factor in these deaths and illnesses.
- The CCENDU network attempted to compile detailed reliable information on drug-related deaths and illnesses that occurred at these festivals; however, investigations are ongoing and as of September 2014 very little information is available.
- A complete description of drug-related deaths and illnesses that occurred during the 2014 Canadian music festival season is warranted when the information becomes available.
- There is a need to discuss and review practices for preventing and responding to drug-related deaths and illnesses at these music festivals.
- CCENDU and the Canadian Centre on Substance Abuse (CCSA) are interested in collaborating with partners to assemble and share this information. Anyone who has information or is interested in becoming involved should contact [CCENDU@ccsa.ca](mailto:CCENDU@ccsa.ca).

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CCENDU Bulletin, August 2015

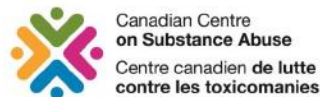
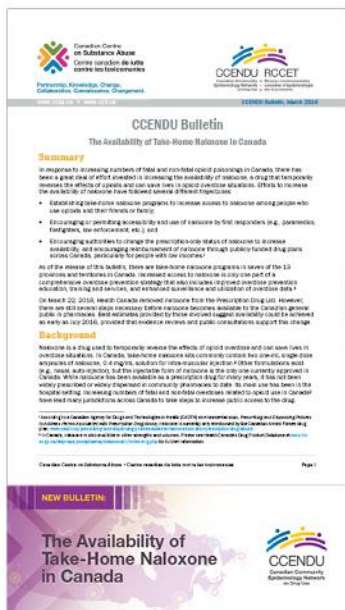
## CCENDU Bulletin

### Deaths Involving Fentanyl in Canada, 2009-2014

#### Summary

- Between 2009 and 2014, there were at least 655 deaths in Canada where fentanyl was determined to be a cause or a contributing cause. This represents an average of one fentanyl-implicated death every three days over this time period. This figure is likely an underestimate.
- Between 2009 and 2014, there were at least 1,019 drug poisoning deaths in Canada where post-mortem toxicological screening indicated the presence of fentanyl. More than half of these deaths occurred in the latter two years, 2013 and 2014. On average, this represents almost two deaths every three days over these two years. This figure is likely an underestimate.
- Within the last six years, the number of deaths involving fentanyl in Canada's four largest provinces has increased markedly. Increases across the years examined have ranged from almost doubling to an increase of over 20 times (see Table 1).
- Due to jurisdictional differences in legislation, regulation and customs for reporting, investigating and classifying deaths, extreme caution is advised when making comparisons across provincial and territorial boundaries.
- To allow for more accurate national estimates of drug poisoning deaths in the future, this bulletin recommends that jurisdictions collaborate to standardize information reported on for drug poisoning deaths.





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CCENDU Bulletin, March 2016

## CCENDU Bulletin

### The Availability of Take-Home Naloxone in Canada

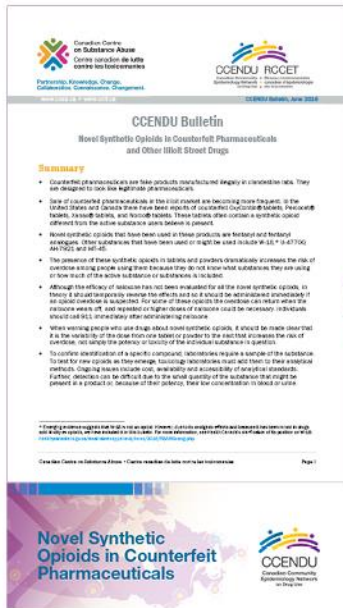
#### Summary

In response to increasing numbers of fatal and non-fatal opioid poisonings in Canada, there has been a great deal of effort invested in increasing the availability of naloxone, a drug that temporarily reverses the effects of opioids and can save lives in opioid overdose situations. Efforts to increase the availability of naloxone have followed several different trajectories:

- Establishing take-home naloxone programs to increase access to naloxone among people who use opioids and their friends or family;
- Encouraging or permitting accessibility and use of naloxone by first responders (e.g., paramedics, firefighters, law enforcement, etc.); and
- Encouraging authorities to change the prescription-only status of naloxone to increase availability, and encouraging reimbursement of naloxone through publicly funded drug plans across Canada, particularly for people with low incomes.<sup>1</sup>

As of the release of this bulletin, there are take-home naloxone programs in seven of the 13 provinces and territories in Canada. Increased access to naloxone is only one part of a comprehensive overdose prevention strategy that also includes improved overdose prevention education, training and services, and enhanced surveillance and utilization of overdose data.<sup>1</sup>

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CCENDU Bulletin, June 2016

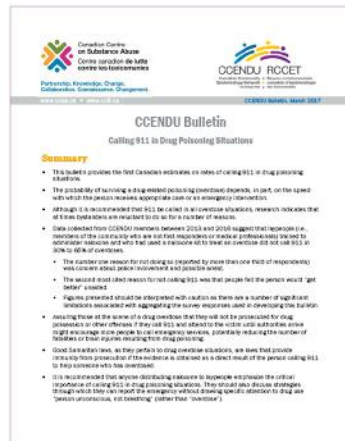
## CCENDU Bulletin

### Novel Synthetic Opioids in Counterfeit Pharmaceuticals and Other Illicit Street Drugs

#### Summary

- Counterfeit pharmaceuticals are fake products manufactured illegally in clandestine labs. They are designed to look like legitimate pharmaceuticals.
- Sale of counterfeit pharmaceuticals in the illicit market are becoming more frequent. In the United States and Canada there have been reports of counterfeit OxyContin® tablets, Percocet® tablets, Xanax® tablets, and Norco® tablets. These tablets often contain a synthetic opioid different from the active substance users believe is present.
- Novel synthetic opioids that have been used in these products are fentanyl and fentanyl analogues. Other substances that have been used or might be used include W-18,<sup>\*</sup> U-47700, AH-7921 and MT-45.
- The presence of these synthetic opioids in tablets and powders dramatically increases the risk of overdose among people using them because they do not know what substances they are using or how much of the active substance or substances is included.

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release  
**1,408**



## CCENDU Bulletin

### Calling 911 in Drug Poisoning Situations

#### Summary

- This bulletin provides the first Canadian estimates on rates of calling 911 in drug poisoning situations.
- The probability of surviving a drug-related poisoning (overdose) depends, in part, on the speed with which the person receives appropriate care or an emergency intervention.
- Although it is recommended that 911 be called in all overdose situations, research indicates that at times bystanders are reluctant to do so for a number of reasons.
- Data collected from CCENDU members between 2013 and 2016 suggest that laypeople (i.e., members of the community who are not first responders or medical professionals) trained to administer naloxone and who had used a naloxone kit to treat an overdose did not call 911 in 30% to 65% of overdoses.
  - The number one reason for not doing so (reported by more than one third of respondents) was concern about police involvement and possible arrest.
  - The second most cited reason for not calling 911 was that people felt the person would "get better" unaided.

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CCENDU Bulletin, August 2017

## CCENDU Bulletin

### Substance-related Harms at Canadian Music Festivals from May to July 2017

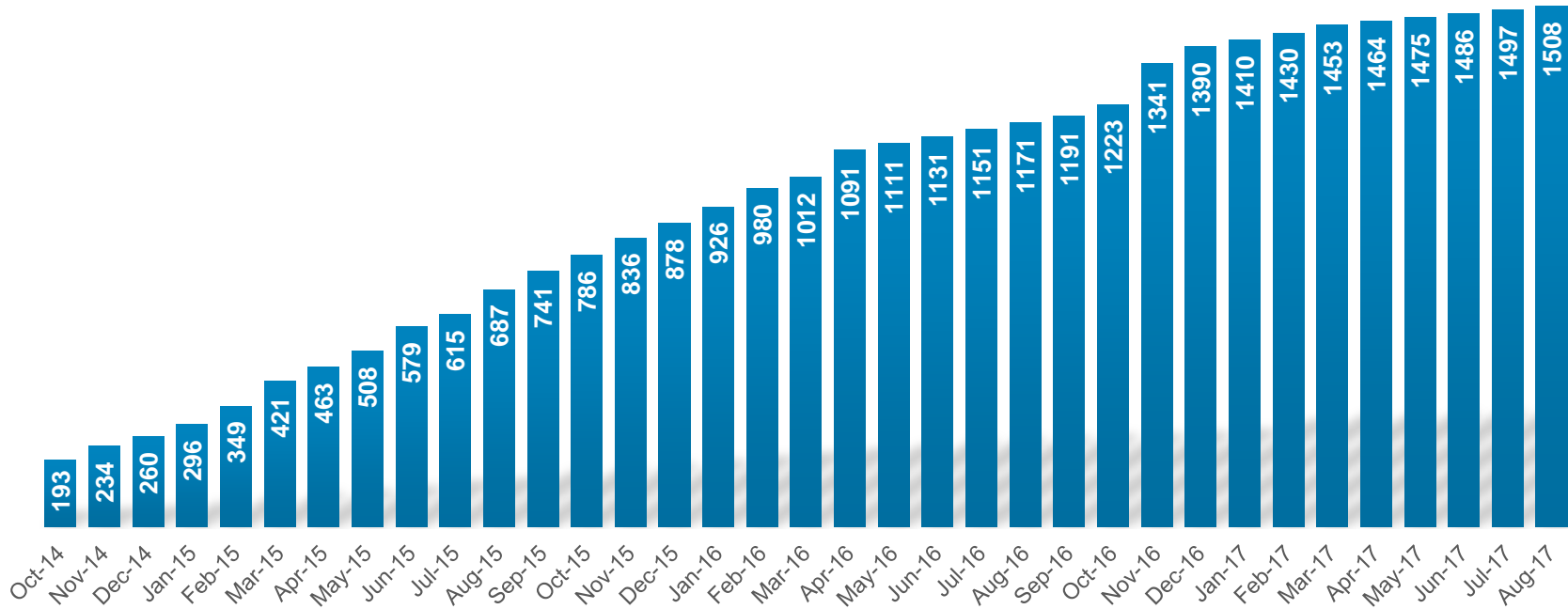
CCSA and Mass Gathering Medicine's 2015 report, *Preventing Drug- and Alcohol-related Harms at Music Festivals in Canada*, made a number of recommendations to improve the health and safety of Canadians attending music festivals. One recommendation highlighted the need for those associated with festivals to share more rapidly information about known drug risks so that organizers of upcoming festivals are aware of new trends and can learn from experience. To meet this end, this bulletin presents data and anecdotal reports on substance-related harms at recent Canadian music festivals. The bulletin can serve to inform those providing harm reduction and medical services at upcoming music festivals.

Researchers conducted informal interviews with individuals who provided harm reduction or medical services at music festivals held in British Columbia, Alberta, Ontario and Quebec between May 1, 2017, and July 31, 2017. The goal was to gather information on substance-related harms, specifically focusing on new or unexpected differences in substance use this year compared to previous years. This bulletin summarizes information collected from these interviews, and is intended for a broad audience including event organizers, harm reduction, medical and health service providers, health professionals, law enforcement professionals and others involved with music festivals.



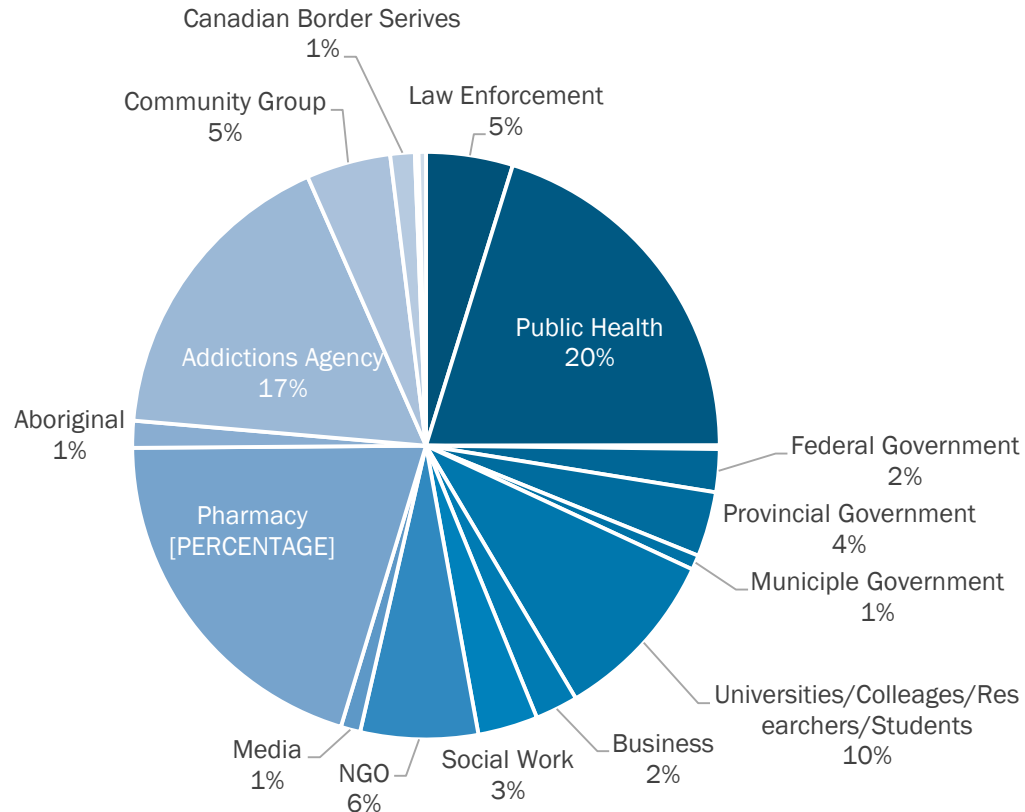
# CCENDU's Impact

Number of people who have subscribed to receive CCENDU Alerts and Bulletins



# CCENDU's Impact (cont.)

CCENDU Subscription by Sector



# CCENDU's Impact (cont.)

## Since 2012

- Over 850 media stories published that referred to CCENDU alerts or bulletins
- Alerts and bulletins downloaded > 125,000 times from CCSA's website
- Alerts and bulletins cited in domestic and international reports and releases including those by:
  - Government of Canada
  - International Narcotics Control Board
  - Royal Canadian Mounted Police
  - Canadian Harm Reduction Policy Project

# Current Initiatives

## Network growth and capacity building

- Ensuring the network is appropriately represented nationally;
- Establishing connections and relationships with stakeholders at the community level, along with key organizations in Canada
- Working on a bulletin on use of stimulants in Canada.







# The Future

- Given the new organizations and new resources monitoring drug and alcohol related harms in Canada, how might CCENDU best add value?



# List of Resources

- [The Canadian Community Epidemiology Network on Drug Use \(CCENDU\)](#) (video)
- CCENDU alerts and bulletins
  - [Substance-related Harms at Canadian Music Festivals from May to July 2017](#) (August 2017)
  - [Calling 911 in Drug Poisoning Situation](#) (March 2017)
  - [Novel Synthetic Opioids in Counterfeit Pharmaceuticals and Other Illicit Street Drugs](#) (June 2016)
  - [The Availability of Take-Home Naloxone in Canada](#) (March 2016)
  - [Deaths Involving Fentanyl in Canada, 2009-2014](#) (August 2015)
- [The Rise of Overdose Deaths Involving Fentanyl and the Value of Early Warning](#), Canadian Journal of Addiction. (2015)
- [Detecting a Signal in the Noise: Monitoring the Global Spread of Novel Psychoactive Substances using Media and Other Open-source Information](#), Human Psychopharmacology (2015)



# Contact Information

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