



Protecting Workers from Exposure to Fentanyl

Topics

- What is fentanyl and why is it a concern for our employees?
- Which employees have potential for exposure?
- How does exposure occur?
- How can we protect our employees?
- How do we respond to an exposure?
- What are the resources for further information?

Higher Education

A new challenge for colleges: opioid-addicted students

Driven by deaths or state pressure, institutions are opening "recovery houses"

by KELLY FIELD

September 12, 2018



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Fentanyl worth \$1.6 million found in car carrying toddler at Otay Mesa border crossing

News / Public Safety

Brett Keiman, Nashville Tennessean

Published 5:00 a.m. CT Sept. 10, 2018 | Updated 1:29 p.m. CT Sept. 10, 2018

Tennessee's prescription pill addiction is getting better, but fentanyl looms large

Seven Wilmington first responders receive accidental dose of fentanyl through misplaced fan

Josephine Peterson and Adam Duvernay, Delaware News Journal Published 1:09 p.m. ET Sept. 7, 2018 | Updated 5:33 p.m. ET Sept. 10, 2018

Health

Connecticut fentanyl deaths on pace to increase 9 percent

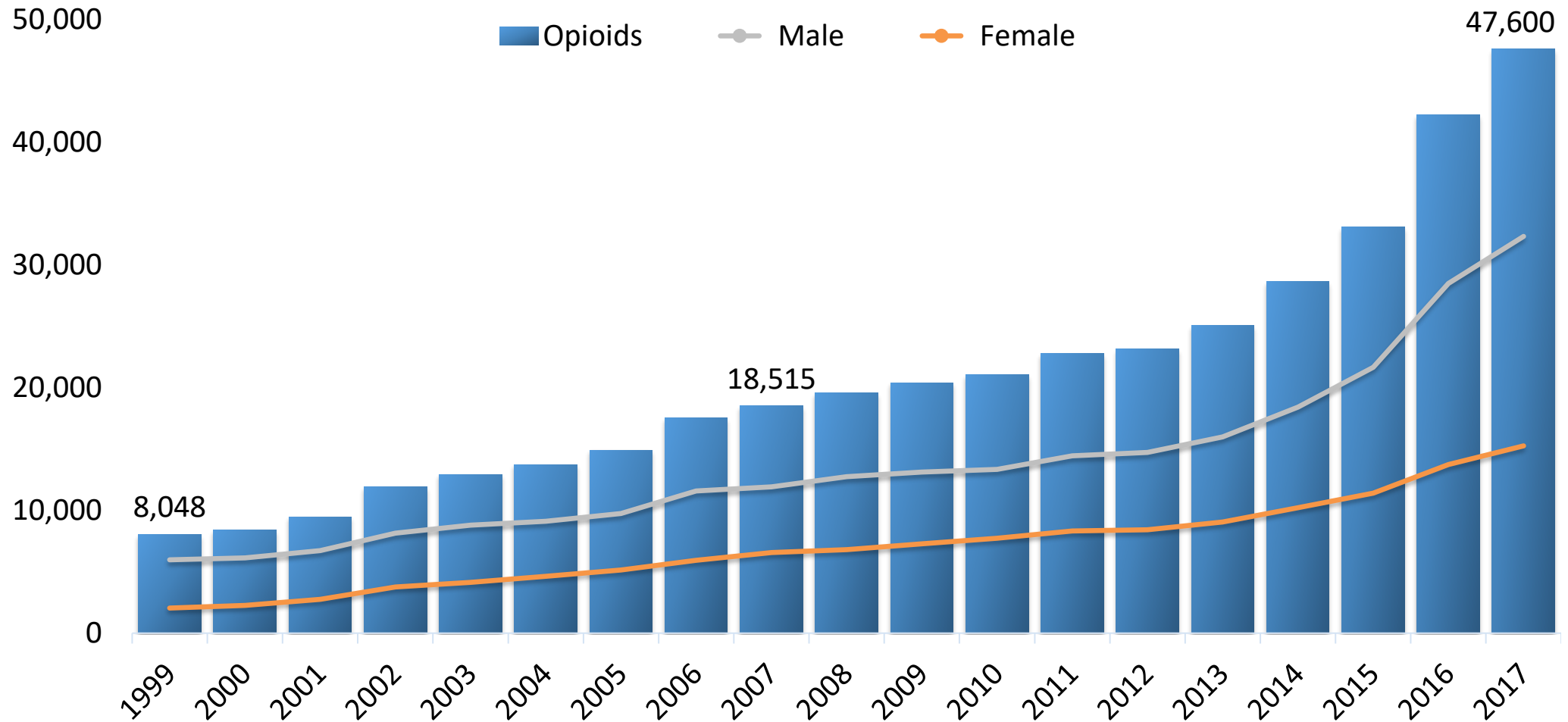
By: The Associated Press

Updated: Sep 13, 2018 10:49 AM EDT
Updated: Sep 13, 2018 05:59 PM EDT



White powder found in Costa Mesa motel room prompts hazmat response

National Drug Overdose Deaths Involving Any Opioid, Number Among All Ages, by Gender, 1999-2017



Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Opioids

- Prescription

- Oxycodone (e.g., OxyContin[®], Percocet[®])

- Hydrocodone (e.g., Vicodin[®], Lortab[®])

- Morphine

- Fentanyl

- Illegal (Illicit)

- Heroin

- Fentanyl



Fentanyl

- A powerful synthetic opioid similar to morphine and heroin (50 to 100 times more potent than morphine)
- Prescription fentanyl: often prescribed for serious pain (may be prescribed as lozenges called “lollipops,” tablets, sprays, patches, injectables)
- Illegal (Illicit) fentanyl: manufactured primarily in China and Mexico

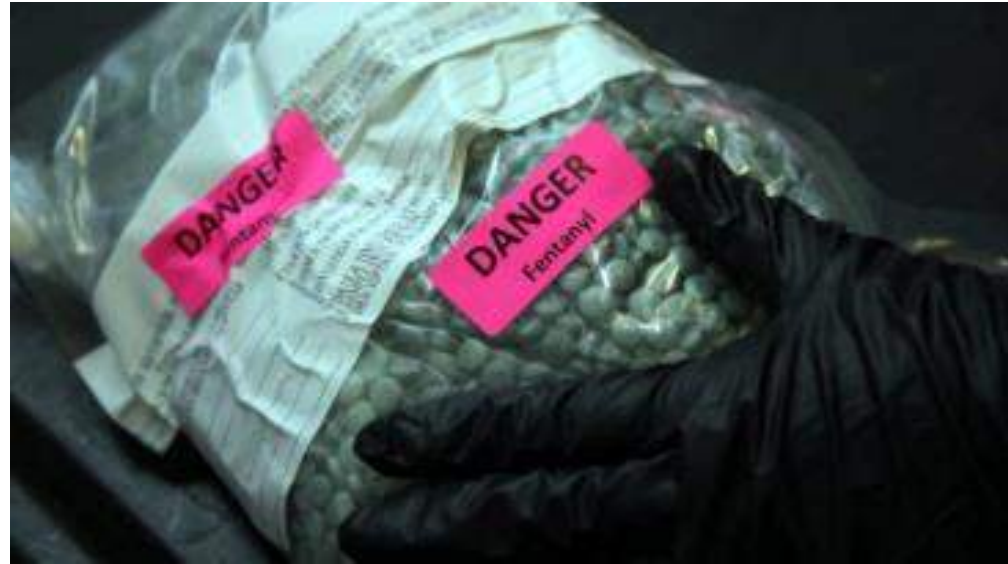
Illicit Fentanyl Forms

- Powder
 - White
 - Pink
 - Purple
 - Blue
 - Green
- Other forms
 - Pill
 - Capsule
 - Liquid
 - Blotter Paper



Illegal (Illicit) Fentanyl

- Formulated into tablets that look like therapeutic drugs
- Fentanyl is often mixed with heroin and other illicit drugs
- Frequently users do not know that the drug they are using has fentanyl in it



Fentanyl Analogues

- Carfentanil
- Acrylfentanyl
- Butyrfentanyl
- Alfentanil
- Sufentanil
- Remifentanil



Potency Compared to Morphine

100

10,000

How Toxic is Fentanyl?

- 2-3 milligrams of fentanyl can induce respiratory depression, arrest, and death
- Comparable to 5-7 grains of salt



What Are the Routes of Occupational Exposure?

Inhalation of
powders and
aerosols

Mucous
membrane
absorption
(nose, eyes)

Incidental
ingestion
(hand to
mouth)

Accidental
inoculation
with sharps
or needles

Skin
???

How Much Exposure is Too Much?

- Airborne exposure:
 - No regulatory occupational exposure limits (OELs) established (OSHA has not developed a permissible exposure limit)
 - No approved method for measuring airborne exposure
- Surface contamination
 - No standard for how much can be on a surface
 - Recent bill for cleaning up fentanyl-contaminated properties indicates surface contamination must be below the limit of detection

Signs and Symptoms

- Overdose may result in:
 - Stupor
 - Pinpoint pupils that later may become dilated
 - Cold and clammy skin
 - Cyanosis: blue or purplish discoloration due to low oxygen
 - Choking/gurgling sounds
 - Coma
 - Respiratory failure leading to death
- Use of Naloxone (Narcan[®]) to treat overdosed employee

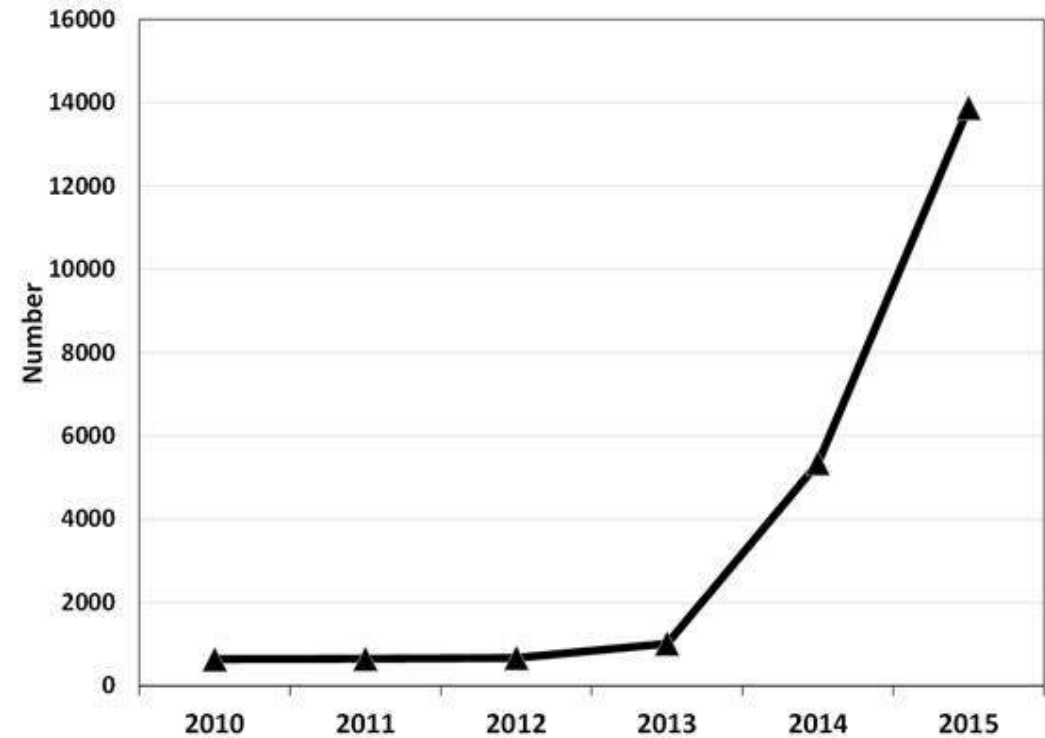
The presence of a triad of symptoms is strongly suggestive of opioid poisoning:

1. Coma
2. Pinpoint pupils
3. Respiratory depression

Law Enforcement



Number of Reported Law Enforcement Encounters Testing Positive for Fentanyl in the US: 2010 - 2015



www.cdc.gov
Your Source for Credible Health Information

Jails/Prisons



Crime Scene Investigators



Crime/Toxicology Labs



Medical Personnel



Haz Mat Response



Death Sector



Clean-Up Contractors



Photos courtesy of Mayken Hazmat Solutions.



2 of 23

Exterior of 16 Cherry St. where police conducted an early morning raid on Friday, Feb. 10, 2017, in Saratoga Springs, N.Y. Fentanyl, a synthetic opioid painkiller that is 50 times as powerful as heroin, was found on surfaces inside the home, State Police said. (Will Waldron/Times Union)



8 of 23

Evidence is collected from 16 Cherry St. on Friday, Feb. 10, 2017, in Saratoga Springs, N.Y. Fentanyl, a synthetic opioid painkiller that is 50 times as powerful as heroin, was found on surfaces inside the home that police raided before dawn on Friday, State Police said. (Will Waldron/Times Union)

Border Patrol/Customs



CREDIT: U.S. CUSTOMS & BORDER PROTECTION

Above: A bag of pills confiscated at the San Ysidro border are shown in this image, Aug. 2, 2018.

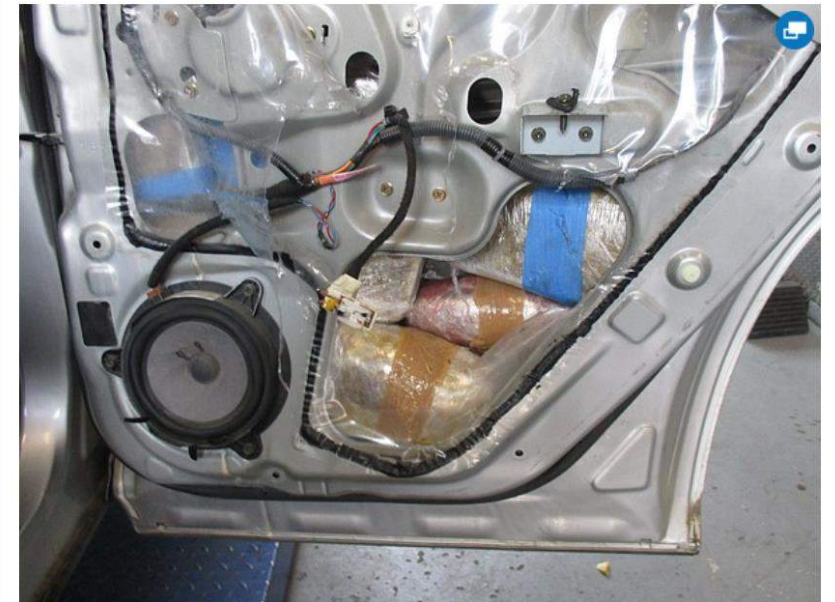
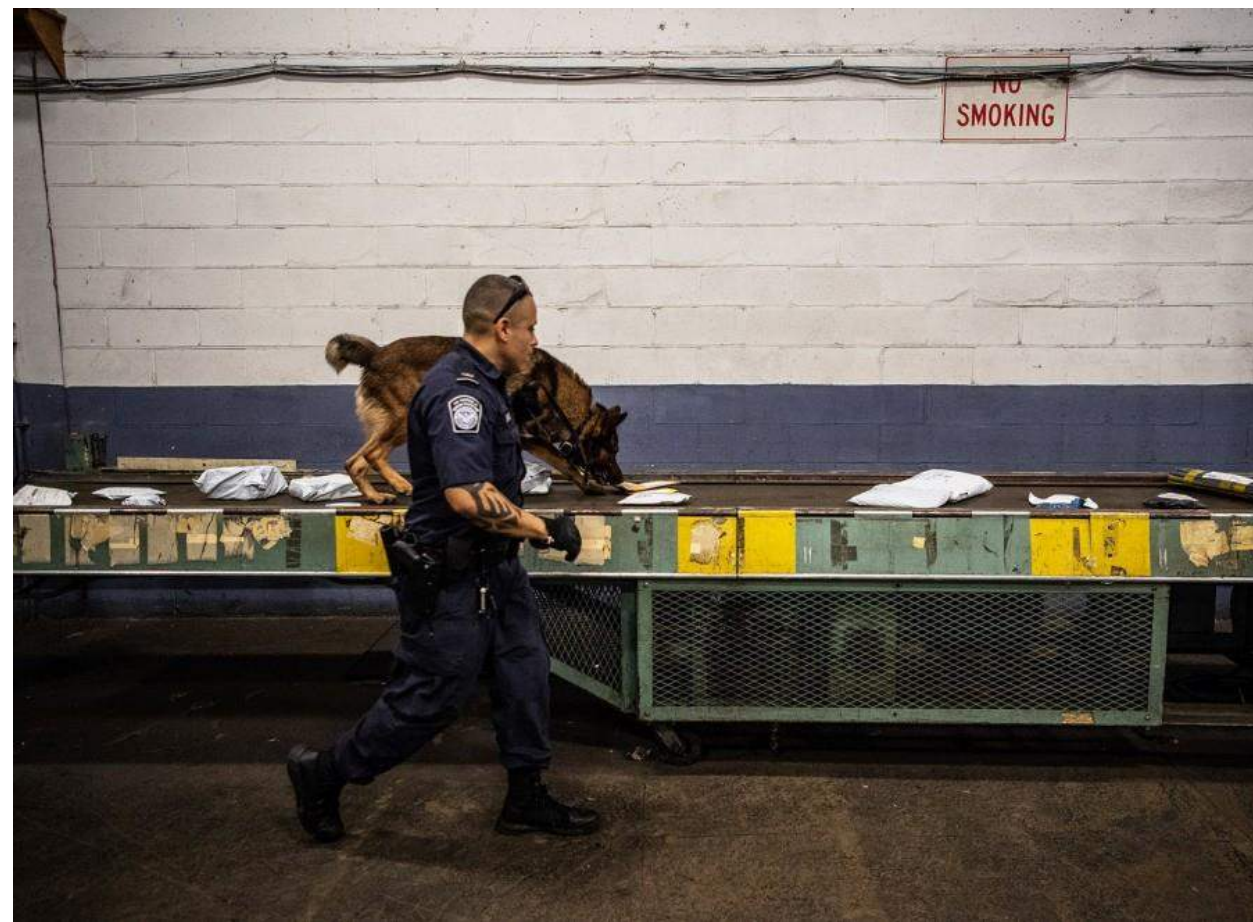


PHOTO CREDIT: U.S. CUSTOMS & BORDER PROTECTION

The front driver's side door of a car that attempted to smuggle drugs into the U.S. is shown in this photo, Aug. 2, 2018.

Mail/Packages





U.S. Customs and
Border Protection

Mariposa Port of Entry
Nogales, Arizona

KILLING AMERICA: INSIDE THE OPIOID EPIDEMIC

WILL TRUMP'S WALL STEM FLOW OF DRUGS INTO U.S.?

CNN

7:49 PM ET

ERIN BURNETT

Workers at Risk

- Law enforcement (e.g., police, DEA, school public safety)
- Detentions (e.g., jail/prison workers)
- Crime scene investigators
- Crime/Toxicology labs
- Medical personnel (EMS, emergency room)
- Hazardous materials responders
- Death sector (e.g., medical examiners)
- Fentanyl-contaminated property clean up contractors
- Border patrol agents
- Mail/package handlers (e.g., USPS, FedEx, etc.)
- Others
 - Social workers
 - Park maintenance
 - Property managers/landlords
 - Security guards

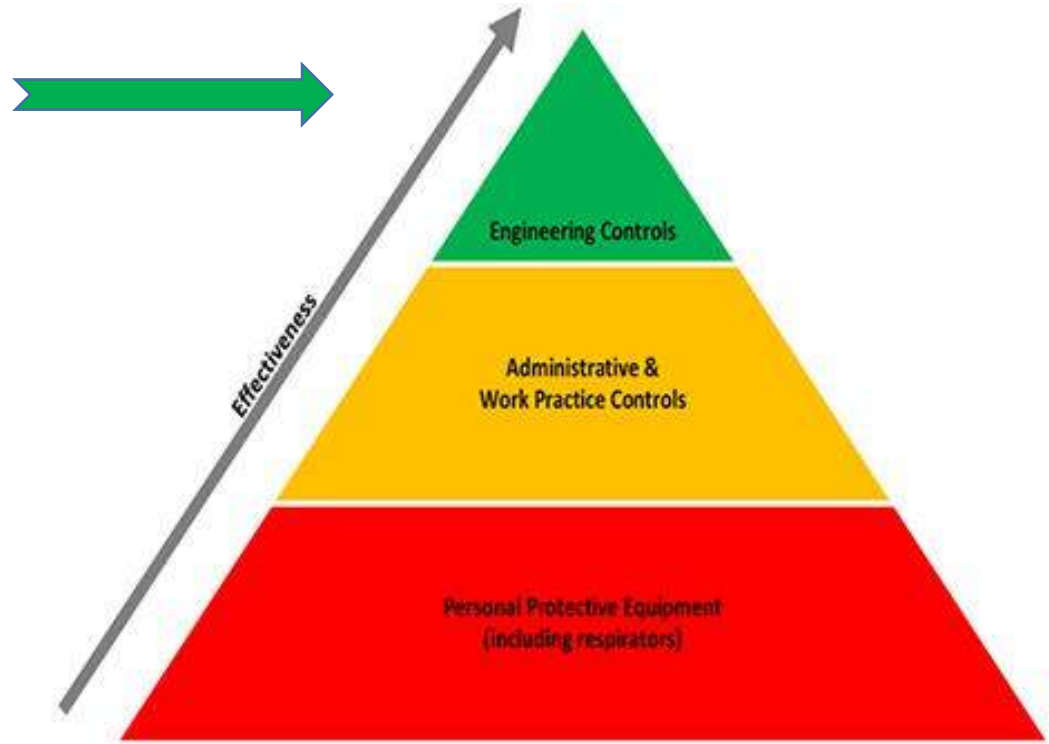
Can We Protect Employees?

- Fairly new issue for workplace safety
 - No specific OSHA regulations to follow
 - Every situation is different
-
- Can use existing guidelines...

Most Current Guidelines

- Interagency Board (IAB)
 - Recommended Best Practices to Minimize Emergency Responder Exposures to Synthetic Opioids, Including Fentanyl and Fentanyl Analogs (Oct 2017)
 - Recommendations on Selection and Use of Personal Protective Equipment and Decontamination Products for First Responders Against Exposure Hazards to Synthetic Opioids, Including Fentanyl and Fentanyl Analogues (Aug 2017)
- National Institute for Occupational Safety and Health (NIOSH)
 - Preventing Occupational Exposure to Emergency Responders (Aug 2017)
 - Preventing Occupational Exposure to Healthcare Personnel in Hospital and Clinic Settings (April 2018)

Engineering Controls



- Reduce exposure to a hazard (fentanyl) through the use of engineered machinery or equipment

Engineering Controls - Examples



Powder Hood



Isolator/Glovebox



Mail Processing
Containment Hood

Engineering Controls - Examples



HEPA Vacuum



Eyewash/Shower

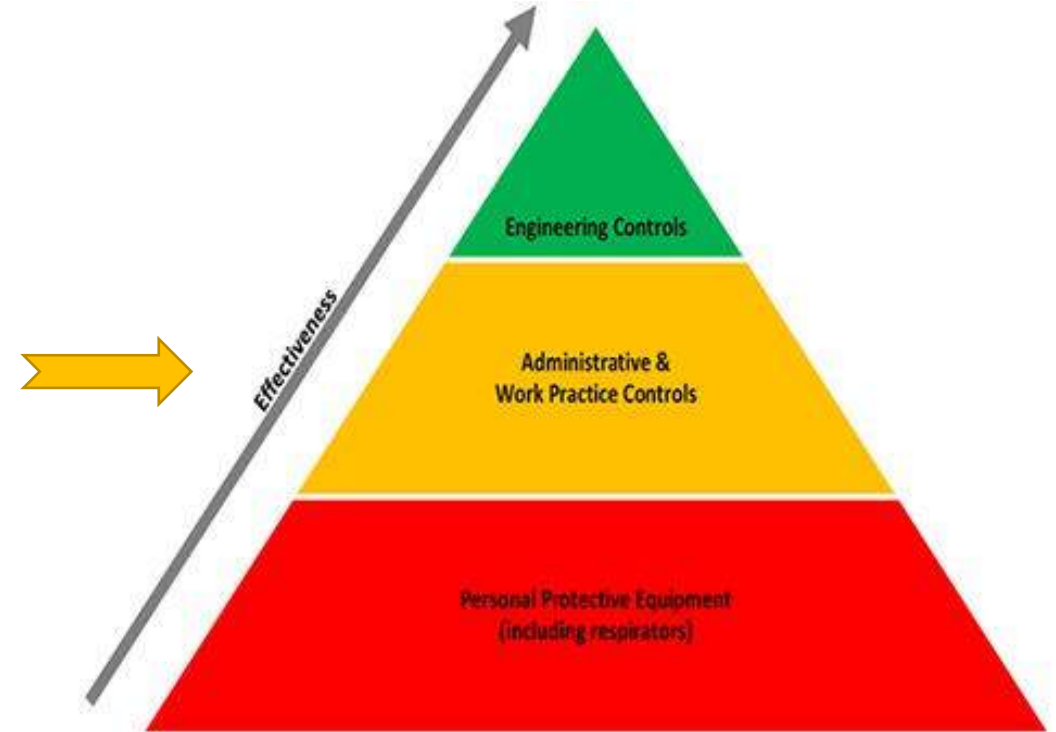


Sharps Container



Picker

Work Practice Controls (Administrative Controls)



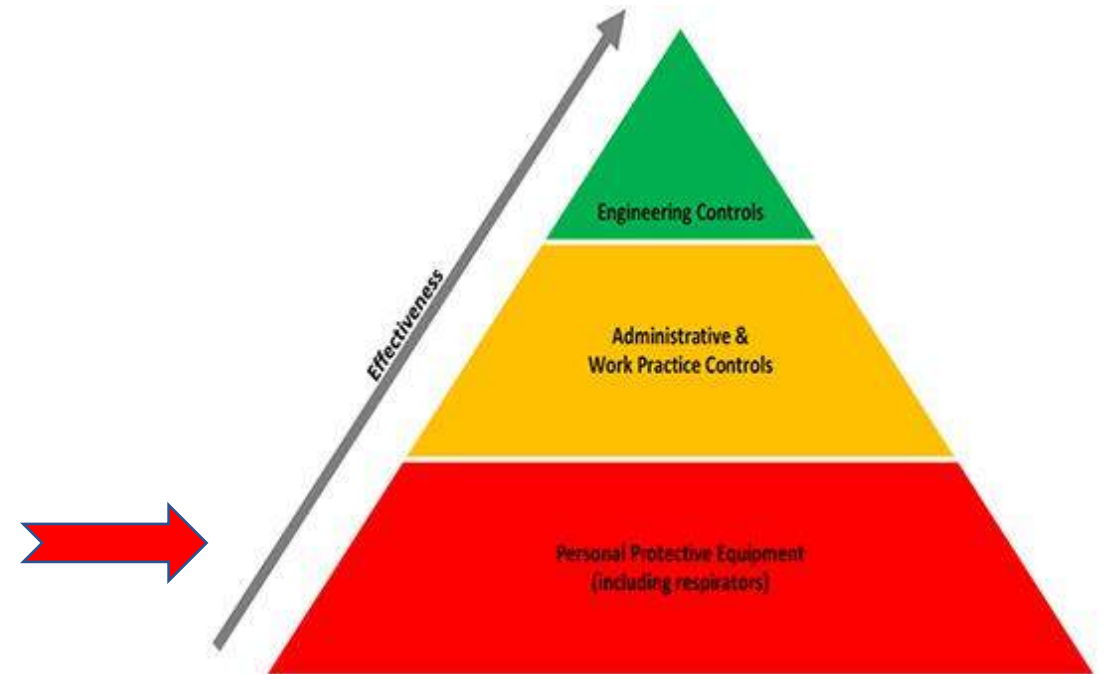
- Changes in work procedures such as written safety policies, schedules, and training to reduce exposure to hazards

Work Practice Controls - Examples

- Establish SOPs based on risk
- Provide training
- Establish zones to reduce number of exposed employees
- Prohibit field testing of drugs
- Use test equipment that does not require manipulation (unwrapping) of sample
- Minimize/modify activities to prevent aerosolizing drugs
- Try to get advance warning of possible presence of fentanyl
- Ensure staff have and are trained in Naloxone

Personal Protective Equipment

- Eye, face, body, hand, respiratory protection





Recommendations on Selection and Use of Personal Protective Equipment and Decontamination Products for First Responders Against Exposure Hazards to Synthetic Opioids, Including Fentanyl and Fentanyl Analogues

I. BACKGROUND

Increased illicit use of opioids, including synthetic opioids such as fentanyl and its analogue carfentanil, is a source of increased risk to responders. Most routine encounters between patients or detainees and EMS or law enforcement do not present a significant threat of toxic exposure. While there are anecdotal reports of public safety personnel being exposed to opioids during operations, they are largely unconfirmed. To proactively address the potential risks, this document establishes guidance for personal protective equipment selection and use, decontamination, detection, and medical countermeasures for first responders who may be exposed to opioids in the course of their occupational activities. Throughout the remainder of this document, the term synthetic opioids will be used to include fentanyl, fentanyl analogues, morphine analogues, the U-series opioids, and others.

Synthetic opioids (sufentanil, lofentanil, carfentanil, UN-47700, and others) are highly toxic organic solids (UN 2811) Synthetic opioids may be found as powders, liquids, nasal sprays, and pills. The particulate size of synthetic opioid powders typically ranges from 0.2 to 2.0 mm, and the powders are easily aerosolized. The powders are both water and lipid soluble and present primarily a respiratory hazard. A secondary dermal hazard exists if there is direct skin contact with large bulk amounts of concentrated threat materials.

Powder-like substances can become airborne and present a respiratory hazard, particularly during activities such as “burping” containers of potential narcotics or “brushing” powdered residues from surfaces. Therefore, during encounters involving these types of materials, actions must be taken to avoid such aerosolization. Covering, wetting or leaving containers unopened are essential safety precautions. Use of proper personal protective equipment and standard safe work practices to prevent inhalation of powders and to minimize direct skin contact with residues should be instituted as soon as the potential presence of such materials is suspected.

The InterAgency Board for Equipment Standardization and Interoperability (IAB) is a voluntary collaborative panel of emergency preparedness and response practitioners from a wide array of professional disciplines that represents all levels of government and the public safety sector. Based on direct field experience, IAB members advocate for and assist in the development and implementation of performance criteria, standards, and test protocols, and technical, operating, and training requirements for all-hazards incident response equipment with a special emphasis on Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) issues.

Determining PPE is Based on Two Factors:

Potential Synthetic Opioid Exposure Risk	Operational Response Function					
	EMS Patient Care	Law Enforcement (patrol)	Structural Fire	Special Operations (Hazmat, Technical Rescue, SWAT, EOD, etc.)	Investigations/ Evidence Collection	Decon Operations
Minimal (no visible product)	I	I	III	I	I	N/A
Moderate (small volume; known or suspected product visible; patients)	II	II	III	II	II	N/A
Moderate (large volume storage/ distribution)	IV	IV	III	IV	IV	IV
High (milling lab) [particulates]	Do Not Enter		III	V	V	V
High (production lab) [chemicals]			III	VI	VI	V

PPE Descriptions (Simplified)

PPE Recommendations	Skin Protection	Eye/Face/Respiratory Protection
Low Risk (I)	<ul style="list-style-type: none"> Nitrile gloves Uniform 	<ul style="list-style-type: none"> None
Moderate Risk/ Small Volume Hazard (II)	<ul style="list-style-type: none"> Nitrile gloves Uniform 	<ul style="list-style-type: none"> P100 filtering facepiece with safety glasses
Fire Risk (III)	<ul style="list-style-type: none"> Structural firefighting protective ensemble 	<ul style="list-style-type: none"> Self-contained breathing apparatus (SCBA)
Moderate Risk/High Volume Hazard (IV)	<ul style="list-style-type: none"> Nitrile gloves Uniform Long sleeves and/or sleeve covers 	<ul style="list-style-type: none"> P100 filtering facepiece with non-vented or indirect vented goggles, or Half mask air purifying respirator (APR) with P100 filters and with non-vented or indirect vented goggles, or Full facepiece APR with P100 filters
High Risk/Particulate Hazard (V)	<ul style="list-style-type: none"> Multi use ensemble 	<ul style="list-style-type: none"> Full facepiece APR with P100 filters, or Powered air purifying respirator (PAPR) with P100 filters, or SCBA
High Risk/Chemical Hazard (VI)	<ul style="list-style-type: none"> Protective ensemble 	<ul style="list-style-type: none"> Full facepiece APR with chemical biological radiological nuclear (CBRN) cartridges, or Full facepiece PAPR with CBRN cartridges, or SCBA

Skin/Eye Protection



Respiratory Protection



P100 Filtering Facepiece
(minimum and most;
common)



SCBA (maximum for
extensive exposure; rare)

Example 1

- Law enforcement called to a possible drug crime area. Officer arrives and sees no visible drugs.
- What PPE is reasonable?



	Operational Response Function					
Potential Synthetic Opioid Exposure Risk	EMS Patient Care	Law Enforcement (patrol)	Structural Fire	Special Operations (Hazmat, Technical Rescue, SWAT, EOD, etc.)	Investigations/ Evidence Collection	Decon Operations
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Example 2

- Crime scene investigator arrives on site and sees a small amount of powdered material and pills
- What PPE is reasonable?



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Example 3

- Cleanup contractor is cleaning up a hotel room where significant powder is visible.
- What PPE is reasonable?



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Responding to an Exposure

Three FDA Approved Products

- **Injectable** (e.g., syringe)
 - Professional training required (e.g., EMT or paramedic)
- **Auto-injectable** (Evzio): often packaged w/ 2 doses
- **Nasal spray** (Narcan): often packaged w/ 2 doses





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Resources

- Guidelines

- Interagency Board (IAB) Recommendations on Selection and Use of Personal Protective Equipment and Decontamination Products for First Responders Against Exposure Hazards to Synthetic Opioids, Including Fentanyl and Fentanyl Analogues (Aug 2017)

<https://www.interagencyboard.org/sites/default/files/publications/IAB%20First%20Responder%20PPE%20and%20Decontamination%20Recommendations%20for%20Fentanyl.pdf>

- IAB Recommended Best Practices to Minimize Emergency Responder Exposures to Synthetic Opioids, Including Fentanyl and Fentanyl Analogs (Oct 2017)

<https://www.interagencyboard.org/sites/default/files/publications/IAB%20Recommended%20Best%20Practices%20for%20Opioid%20Response%20October%202017.pdf>

- NIOSH Preventing Occupational Exposure to Emergency Responders (Aug 2017)

<https://www.cdc.gov/niosh/topics/fentanyl/risk.html>

- NIOSH Preventing Occupational Exposure to Healthcare Personnel in Hospital and Clinic Settings (April 2018)

<https://www.cdc.gov/niosh/topics/fentanyl/healthcareprevention.html>

- Fentanyl Safety Recommendations for First Responders (DEA)

<https://www.dea.gov/sites/default/files/Publications/Final%20STANDARD%20size%20of%20Fentanyl%20Safety%20Recommendations%20for%20First%20Respond....pdf>

Resources (cont'd)

- Naloxone
 - Narcan <https://www.narcan.com/>
 - Evzio <https://evzio.com/patient/how-to-use-evzio/>
- California Department of Public Health Naloxone Statewide Standing Order FAQs
<https://www.cdph.ca.gov/Programs/CCDPHP/DCDIC/SACB/CDPH%20Document%20Library/Naloxone/Naloxone%20FAQs%20062118.pdf>
- American Industrial Hygiene Association Working Group
<https://www.aiha.org/get-involved/volunteer-groups>
- FentaTIPS app
- **NEW** Fentanyl Contaminated Property Cleanup Act (AB 1596)
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB1596
- **NEW** Illicit Drug Tool-Kit for First Responders (NIOSH)
<https://www.cdc.gov/niosh/topics/fentanyl/toolkit.html>

Thank You

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