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?
A new challenge for colleges: opioid-addicted students

Driven by deaths or severe problems, institutions are opening “recovery houses.”

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

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

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

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

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

Connecticut fentanyl deaths on pace to increase 9 percent

By: The Associated Press
Published: Sep 13, 2018 10:43 AM EDT
Updated: Sep 13, 2018 01:29 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
Border Patrol/Customs

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

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.
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 Analogue (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)
• Reduce exposure to a hazard (fentanyl) through the use or 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
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

1. 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 these 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.

Synthetic opioids (sufentanil, lofentanil, carfentanil, UN-47700, and others) are highly toxic organic solids (UN 3821). Synthetic opioids may be found as powders, liquids, nasal sprays, and pills. The particular 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 “bodybagging” 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.
Determining PPE is Based on Two Factors:

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<thead>
<tr>
<th>Potential Synthetic Opioid Exposure Risk</th>
<th>EMS Patient Care</th>
<th>Law Enforcement (patrol)</th>
<th>Structural Fire</th>
<th>Special Operations (Hazmat, Technical Rescue, SWAT, EOD, etc.)</th>
<th>Investigations/Evidence Collection</th>
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<tbody>
<tr>
<td>Minimal (no visible product)</td>
<td>I</td>
<td>I</td>
<td>III</td>
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<td>N/A</td>
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<tr>
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## PPE Descriptions (Simplified)

<table>
<thead>
<tr>
<th>PPE Recommendations</th>
<th>Skin Protection</th>
<th>Eye/Face/Respiratory Protection</th>
</tr>
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<tbody>
<tr>
<td>Low Risk (I)</td>
<td>• Nitrile gloves</td>
<td>• None</td>
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<tr>
<td></td>
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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?
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**Skin Protection**

- **Low Risk (I)**: Nitrile gloves, Uniform
- **Moderate Risk/Small Volume Hazard (II)**: Nitrile gloves, Uniform
- **Fire Risk (III)**: Structural firefighting protective ensemble
- **Moderate Risk/High Volume Hazard (IV)**: Nitrile gloves, Uniform, Long sleeves and/or sleeve covers
- **High Risk/Particulate Hazard (V)**: Multi use ensemble
- **High Risk/Chemical Hazard (VI)**: Protective ensemble

**Eye/Face/Respiratory Protection**

- **Low Risk (I)**: None
- **Moderate Risk/Small Volume Hazard (II)**: P100 filtering facepiece with safety glasses
- **Fire Risk (III)**: Self-contained breathing apparatus (SCBA)
- **Moderate Risk/High Volume Hazard (IV)**: 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)**: Full facepiece APR with P100 filters, or Powered air purifying respirator (PAPR) with P100 filters, or SCBA
- **High Risk/Chemical Hazard (VI)**: Full facepiece APR with chemical biological radiological nuclear (CBRN) cartridges, or Full facepiece PAPR with CBRN cartridges, or SCBA
Example 2

• Crime scene investigator arrives on site and sees a small amount of powdered material and pills

• What PPE is reasonable?
### Operational Response Function

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### Simplified PPE Descriptions

#### Skin Protection
- Low Risk (I): Nitrile gloves, Uniform
- Moderate Risk/Small Volume Hazard (II): Nitrile gloves, Uniform
- Fire Risk (III): Structural firefighting protective ensemble
- Moderate Risk/High Volume Hazard (IV): Nitrile gloves, Uniform, Long sleeves and/or sleeve covers
- High Risk/Particulate Hazard (V): Multi use ensemble
- High Risk/Chemical Hazard (VI): Protective ensemble

#### Eye/Face/Respiratory Protection
- Low Risk (I): None
- Moderate Risk/Small Volume Hazard (II): P100 filtering facepiece with safety glasses
- Fire Risk (III): Self-contained breathing apparatus (SCBA)
- Moderate Risk/High Volume Hazard (IV): 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, or Powered air purifying respirator (PAPR) with P100 filters, or SCBA
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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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**PPE Recommendations**

**Skin Protection**
- Nitrile gloves
- Uniform
- Long sleeves and/or sleeve covers
- Multi use ensemble
- Protective ensemble

**Eye/Face/Respiratory Protection**
- None
- P100 filtering facepiece with safety glasses
- 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
- Full facepiece APR with chemical biological radiological nuclear (CBRN) cartridges, or
- Full facepiece PAPR with CBRN cartridges, or
- SCBA

**Decon Operations**
- N/A

**Operational Response Function**
- EMS Patient Care
- Law Enforcement (patrol)
- Structural Fire
- Special Operations [Hazmat, Technical Rescue, SWAT, EOD, etc.]
- Investigations/Evidence Collection
- Operations
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
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

1. 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 Usines 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 μm, 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 "bagging" 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 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.
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)

  • 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%20Responders.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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