Increased illicit use of opioids, including synthetic opioids such as fentanyl and its analogue carfentanil, is a source of potential risk to law enforcement, first responders, and public health teams. To help guide these responders, this document provides information to help with personal protective equipment selection for various situations.

Fentanyl is a powerful synthetic drug that is similar to morphine and heroin but is 50 to 100 times more potent. Fentanyl and its analogs are members of the class of drugs known as rapid-acting synthetic opioids that alleviate pain. Other drugs in this class include fentanyl analogs, such as acetylfentanyl, butyrfentanyl, carfentanil, alfentanil, sufentanil and remifentanil. Fentanyl acts quickly to depress central nervous system and respiratory function. Exposure to fentanyl may be fatal.

Responders are most likely to encounter synthetic opioids in powder, tablet or liquid form.

https://www.cdc.gov/niosh/topics/fentanyl/default.html
Occupational Exposure Levels for Fentanyl

Fentanyl and its analogues such as Carfentanyl do not have established occupational exposure limits (OELs).
https://www.cdc.gov/niosh/ershdb/emergencyresponsecard_29750022.html

Pharmaceutical manufacturers have developed internal OELs based on their own risk assessments. The common time-weighted average exposure limits used by the pharmaceutical industry are reported as 0.0001 mg/m³ for Fentanyl, 0.00032 mg/m³ for Carfentanyl, and 0.001 mg/m³ for Alfentanil (Van Nimmen et al.).

Exposure Routes

Potential exposure routes of greatest concern include Inhalation, Mucous Membrane Contact (Eyes/Nose), Ingestion and Percutaneous (Needlestick)

Any of these exposure routes can potentially result in a variety of symptoms that can include the rapid onset of life-threatening respiratory depression.

Skin contact is also a potential exposure route, but is not likely to lead to overdose unless large volumes of concentrated powder are encountered over an extended period of time. If visible contamination is promptly removed, brief skin contact is not expected to lead to toxic effects.
https://www.cdc.gov/niosh/topics/fentanyl/default.html
Personal Protective Equipment – NIOSH

Identifying the PPE appropriate for the risk is done by first selecting the correct job category and then the level of exposure anticipated.

Who is at Risk?

NIOSH has identified the following job categories as positions where responders might come into contact with fentanyl or its analogues:

- **Pre-Hospital Patient Care**: Emergency medical services (EMS) providers, including first responders, fire department and private companies who attend to individuals with suspected fentanyl overdose. Responders may encounter drugs or drug paraphernalia on or near the patient.
- **Law Enforcement**: Law enforcement officers who perform day-to-day law enforcement duties. Law enforcement officers may come into contact with fentanyl during the course of their daily activities such as traffic stops, apprehending and searching subjects, and responding to fentanyl overdose calls.
- **Investigation and Evidence Handling**: Law enforcement personnel who conduct investigations related to fentanyl. Activities may include executing search warrants and collecting, transporting, and storing evidence. Evidence collection activities in the field have the potential to aerosolize powders. Also, law enforcement personnel who handle evidence in the chain of custody have the potential to come into contact with fentanyl unless controls are in place to prevent exposures.
- **Special Operations and Decontamination**: Workers who conduct special operations where exposure to large amounts of fentanyl are expected. Examples include hazardous material incident response teams responding to a release or spill, and law enforcement officers executing search warrants on opioid processing or distribution sites, or participating in other tactical operations. These activities may aerosolize powders

Exposure Levels Defined by NIOSH as Follows:

**Minimal**: Response to a situation where it is suspected that fentanyl may be present but no fentanyl products are visible
- Example: An EMS response to a suspected fentanyl overdose or law enforcement operation where intelligence indicates fentanyl products are suspected but are not visible on scene

**Moderate**: Response to a situation where small amounts of fentanyl products are visible
- Example: An EMS response to a suspected fentanyl overdose or law enforcement operation where fentanyl products are suspected and small amounts are visible on scene

**High**: Response to a situation where liquid fentanyl or large amounts of fentanyl products are visible
- Example: A fentanyl storage or distribution facility, fentanyl milling operation, or fentanyl production laboratory
Personal Protective Equipment Recommendations for Protection Against Fentanyl

1. FFR: filtering facepiece respirator, N: not resistant to oil, P: oil=proof, R: resistant to oil.
2. APR: air-purifying respirator; configurations recommended: half facepiece APR with N-, P-, or R100 cartridges; full facepiece APR with N-, P-, or R100 cartridges or a chemical, biological, radiological, and nuclear (CBRN) canister.
3. PAPR: powered air-purifying respirator, configuration recommended: PAPR with high efficiency particulate air (HEPA) filter.
5. Face and eye protection is recommended when the respirator does not provide this type of protection, e.g., when wearing a disposable N-, P-, or R100 respirator or an elastomeric half facepiece APR with N-, P-, or R100 cartridges.
6. Powder-free nitrile gloves should be worn with a minimum thickness of 5+-2 mil (i.e. 0.127+-0.051 millimeters; 1 mil=0.0254 millimeters), unless manufacturer data provides performance breakthrough data for thinner gloves.
7. Wrist/arm protection may include one or more of the following: on-duty uniform with sleeves, sleevecovers, gowns, or coveralls.
<table>
<thead>
<tr>
<th>Exposure Level</th>
<th>Respiratory Protection</th>
<th>Filters</th>
<th>Eye Protection</th>
<th>Body Protection</th>
<th>Hand Protection</th>
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<tbody>
<tr>
<td>High: Response to a situation where liquid fentanyl or large amounts of fentanyl products are visible</td>
<td>3M™ Powered Air Purifying Respirator (PAPR), TR300 and TR 600 Versaflo Series</td>
<td>3M™ HE Filter TR-3712N, TR-6710N</td>
<td>3M™ S-Series (400,500,600,800) Hoods</td>
<td>3M™ Protective Coverall 4565</td>
<td>3M™ Nitrile Gloves, 90012 Or Double glove - Nitrile single use exam gloves* (5 mil thick)</td>
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<td></td>
<td>3M™ Powered Air Purifying Respirator (PAPR), RBE Breathe Easy Series</td>
<td>3M™ HE (P3) Filter 450-00-01R12 or FR-57</td>
<td>3M™ Hood BE-10, S-403</td>
<td>3M™ Disposable Protective Overboot Cover 450</td>
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<td></td>
<td>3M™ Cartridge RBE-57</td>
<td>3M™ Hood BE-10BR</td>
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<td>Self Contained Breathing Apparatus: Visit <a href="http://www.3M.com/Scotsafety">www.3M.com/Scotsafety</a></td>
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<td>Moderate – Response to a situation where small amounts of fentanyl products or drug paraphernalia are visible</td>
<td>3M™ Disposable Particulate Respirator, 8233 or 8293</td>
<td>All 3M Reusable Half and Full Face Respirators, including: 3M™ Rugged Comfort Quick Latch Half Facepiece Reusable Respirator, 6500QL 3M™ Full Facepiece Reusable Respirator, 6000 Series 3M™ Ultimate FX Full Facepiece Reusable Respirator, FF-400 Series, with 3M™</td>
<td>3M™ Particulate Filter P100 2091, 2291, or 7093</td>
<td>3M™ Safety Splash Goggle 334AF 3M™ Centurion™ Safety Splash Goggle 454AF 3M™ Goggle Gear 500 Series GG501SGAF</td>
<td>Nitrile single use exam gloves* (5 mil thick)</td>
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<td>3M™ Full Facepiece FR-7800B</td>
<td>CP3N, FR-15-CBRN</td>
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<td>Minimal – Response to a situation where it is suspected that fentanyl may be present but no fentanyl products are visible</td>
<td>Follow Standard/Universal Precautions No additional PPE required</td>
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<td>Nitrile single use exam gloves* (5 mil thick)</td>
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Suggestions contained in this document are intended for law enforcement officials that may come into contact with Fentanyl in its manufactured form, such as a powder, pill, and/or liquid form.

This document DOES NOT provide suggestions for law enforcement officials that may enter a Fentanyl manufacturing environment, such as a clandestine lab.

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