

PROTECTION OF WORKERS FROM SYNTHETIC OPIOID EXPOSURE: OHS information for employers

KEY INFORMATION

- **Synthetic opioids (SO) are considered a hazardous substance**
- **Exposure risk is the product of many factors**
- **Proper personal protective equipment (PPE) selection is dependent on a thorough understanding of the associated risks.**

THE HAZARDS: What are the hazards of synthetic opioids?

Synthetic opioids (SO) such as fentanyl and its analogue carfentanil* are rapid-acting drugs that depress central nervous system and respiratory function. They are estimated to be hundreds of times more potent than non-SO and may be found as powders, liquids, nasal sprays, and pills. They may be mixed in with other illicit drugs or labeled as such.

SO are hazardous substances as defined in the Alberta Occupational Health and Safety (OHS) code and worker exposure must be kept as low as reasonably achievable.

THE EFFECTS: What are health effects of SO?

Exposure can have immediate adverse health effects such as:

- nausea and/or vomiting,
- confusion,
- altered heart rate,
- difficult, slow breathing or respiratory arrest,
- reduced level of consciousness, and
- cardiac arrest.

THE EXPOSURE: How can workers be exposed?

Exposure routes vary based on the form of the drug, and may occur through ingestion, inhalation and absorption via skin or mucous membrane contact, and by injection. Ingestion may occur from hand to mouth activities such as eating and smoking. As with most workplace chemical hazards, inhalation poses a risk where the substances have become airborne.

SO may be a hazard in a variety of workplaces and to a variety of workers including, but not limited to:

- first responders,
- housekeeping staff,
- health care professionals,
- supportive living staff,
- remediation workers, and
- other front line workers.

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*The term synthetic opioids will be used to include synthetic opioids, synthetic opioid analogues, morphine analogues, the W- and U-series opioids, and others in the synthetic opioids family for the remainder of this information resource.


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Risk also depends on the work environment. The risk posed by SO is dependent on the:

- quantity of material,
- state of the material, and
- extent to which it is disturbed and/or aerosolized.

Not all exposures are equal. The form of the substance and the activities or interaction with the substance must be considered. For example, the potential harm from exposure in pill form is very different from SO in a powder form.

Because of this variability, a single control method for SO cannot be prescribed. The hazards need to be assessed task by task in the context of the specific work site activities and the selected controls.

THE CONTROLS: How can I protect workers from harm?

Eliminating or preventing exposure is the best way to protect workers. When employers cannot eliminate the hazard, they must follow a hierarchy of controls, which specifies steps required to assess and control the hazard.

The plan should involve workers and should:

- identify workers at risk of exposure,
- explain the hazards to workers,
- identify required training and PPE,
- describe signs and symptoms of exposure, and
- describe what to do in case of exposure.

Training

Employers must ensure that workers who perform jobs where SO are reasonably anticipated should receive special training in conducting an on-site hazard assessment related to SO. Trained workers should demonstrate an understanding of the following related to SO:

- how to recognize the different forms and determine the quantity and/or presence of it,
- what the potential exposure routes are,
- the potential for it to be present in an impure form, such as an ingredient in other illicit substances,
- how to recognize the signs and symptoms of exposure,
- first aid response, and when and how to seek medical help, and
- when to use PPE including what PPE is necessary, how to properly put on, use, take off, properly dispose of and maintain PPE, and the limitations of the PPE.

Hierarchy of Controls

Listed in order of preference, the following controls should be used where possible to eliminate or reduce exposure.

- Eliminate or substitute materials
- Use engineering controls
- Use administrative controls
- Use personal protective equipment (PPE)

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Personal Protective Equipment and Respiratory Protective Equipment

Personal Protective Equipment (PPE) – Key Points

- Providing a worker with PPE without proper training is not sufficient to protect them.
- The proper selection of PPE is critical and is dependent on an in-depth understanding of the properties of the hazard, the specific work site conditions, and the workers' interaction with the hazard.
- It is important to recognize that the exposure level and risk can change, and that the selected PPE must be adjusted accordingly.
- Typically, equipment designed to protect the hands, face, mucous membranes and other exposed skin or clothing is required (PPE should protect workers from skin contact with SO).
- Depending on the situation and expected contact with SO, many options are available.

Respiratory Protective Equipment (RPE) – Key Points

- RPE must be appropriate to the identified hazard.
- Employers must adhere to relevant provisions for RPE selection in the OHS legislation.
- RPE must be selected in accordance with the Canadian Standards Association (CSA) standard currently referenced in the Alberta OHS Code and must be accompanied by a code of practice, and appropriate fit testing if required.
- Currently there are no occupational exposure limits for SO or methodology for sampling and analyzing worker exposures to SO. The referenced CSA standard provides employers with the option to use professional judgement to assess respiratory hazards including developing an estimate of the airborne concentration of the substance for each work-related task.
- If airborne exposure is identified as a hazard and there is no expertise to estimate airborne concentrations, pressure demand self-contained breathing apparatus (SCBA), or a supplied air respirator (SAR) should be selected.

Selection of PPE

Detailed guidance on PPE selection and risk categorization for first responders (i.e. minimal, moderate or high) is referenced and summarized in Table 1. These recommendations cover examples of potential exposures but are not intended to prescribe PPE for every worker or for all exposures. This table was reproduced with the intention of providing general PPE selection guidance for workers based on exposure potential.

In all cases, employers must identify worker exposure hazards and provide appropriate PPE to protect them. Detailed information resources on respirators and respiratory protection programs, including fit-testing procedures, can found in the “For More Information” section of this resource.

Exposure levels:

- Minimal - response to a situation where SO may be present but no SO products are visible. Example, an EMS response to a suspected SO overdose or law enforcement operation where

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background information suggests SO products may be present.

- Moderate - response to a situation where small amounts of SO products are visible. Example, an EMS response to a suspected overdose or law enforcement operation where SO products are visible on scene.
- High - response to a situation where liquid SO or large amounts of SO products are visible. Example, a SO storage or distribution facility, SO milling operation, or SO production laboratory.

Decontamination of Workers, PPE and Work Sites

An employer must ensure that workers have a way to properly decontaminate themselves, their PPE, tools, and equipment before they leave the work site where SO is suspected or present.

Workers who come into contact with SO should immediately wash exposed skin with soap and water and thoroughly rinse - hand sanitizers should not be used to clean contaminated skin as this may facilitate absorption and do not remove the substance from the skin. Where whole body exposure may occur, such as during high-risk activities (noted in Table 1), decontamination showers must be available.

Contaminated PPE should be removed using techniques that prevent aerosolizing powdered contaminants while avoiding unprotected contact with the outer layers of the PPE. Re-usable contaminated PPE should be lightly wetted, removed, and stored in a bag until proper washing can occur. All contaminated reusable clothing should be laundered in a safe manner. Disposable single use PPE should be placed in labeled durable 6 mil polyethylene bags and disposed of appropriately.

Decontaminating the surface of the PPE prior to removing is recommended using a highly absorbent wipe, like Fibertect™ and a peracetic acid (5%) or hydrogen peroxide-based (10%) decontamination solution. Avoid the use of free chlorine-based decontamination solutions, such as dichloroisocyanuric acid on PPE surfaces as they may deteriorate PPE materials.

Several agents including dish soap, Oxiclean®, and other chemical decontamination agents have been identified as possibly being effective for neutralizing SO. The following are recommended for cleaning contaminated surfaces, areas, and equipment:

- Dahlgren Decon solution, or
- 5% solution of peracetic acid, or
- 10% hydrogen peroxide solution, or
- 12% dichlor/trichlor solution (dichloro- or trichloroisocyanuric acids).

All waste, including disposable PPE, should be chemically neutralized where possible, or bagged, sealed and disposed of in accordance with Alberta Waste Disposal Guidelines. In addition, receiving landfills should be notified of the pending delivery in order for them to safely receive and handle the waste.

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Table 1: Personal protective equipment recommendations for protection against synthetic opioids

Personal Protective Equipment	Pre-Hospital Patient Care			Law Enforcement Routine Duties			Investigations & Evidence Collection			Special Ops & Remediation			
	Min	Mod	High	Min	Mod	High	Min	Mod	High	Min	Mod	High	
Respiratory Protection													
Disposable N100, R100 or P100 FFR ¹		✓	Requires Specialized Training and Equipment ¹¹		✓	Requires Specialized Training and Equipment ¹¹		✓			✓		
Elastomeric APR ²								•	✓			•	✓
PAPR ³										•		•	•
SCBA/SAR ⁴										▪			▪
Face and Eye Protection													
Safety goggles/glasses ⁵		✓			✓		✓	✓		✓	✓		
Hand Protection													
Nitrile gloves ⁶	✓	✓		✓	✓		✓	✓		✓	✓		
Double Nitrile		•			•			•	•	•	✓		
Dermal Protection													
Wrist, Arm Protection ⁷		✓			✓			✓		✓			
Particulate hazard ensemble ⁸								✓			✓		
Chemical hazard ensemble ⁹								•			•		
Chemical hazard ensemble ¹⁰								▪			▪		
Key													
✓ Minimum protection required													
• When an on-site hazard assessment is conducted and higher protection is not warranted													
▪ If particulate and gas/vapour hazard is expected above the IDLH value or concentration is unknown SCBA is recommended													

1. FFR: filtering face piece respirator, N: not resistant to oil, P: oil-proof, R: resistant to oil.
2. APR: air-purifying respirator; configurations recommended: half face piece APR with N-, P-, or R100 cartridges; full face piece 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.
4. SCBA: self-contained breathing apparatus or SAR: supplied air respirator.
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 face piece 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, sleeve covers, gowns, or coveralls.
8. ie, NFPA 1999 single or multi-use or NFPA 1994 Class4 ensemble or OSHA HAZWOPER Standard, 29CFR1910.120 App. Level C2 or equivalent
9. ie, NFPA 1994 Class 3 ensemble or higher OSHA HAZWOPER Standard, 29CFR1910.120 App. Level C2 may be used including; Hooded chemical-resistant clothing with elastic hood (overalls and long-sleeved jacket; coveralls; one or two-piece chemical-splash suit; disposable chemical-resistant overalls) or equivalent.
 1. Boots, outer, chemical-resistant steel toe and shank.
 2. Boot-covers, outer, chemical-resistant (disposable)

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10. ie, NFPA 1994 (2007 Edition) Class 2 worn with NIOSH CBRN SCBA B, OSHA HAZWOPER Standard, 29CFR 1910.120 App. Level B2 or equivalent.
ie, NFPA 1991 NIOSH CBRN SCBA A, OSHA HAZWOPER Standard, 29CFR1910.120 App. Level A, or equivalent.
11. These tasks should be conducted by specially trained units, such as used for evidence collection, special OP, and remediation.

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Contact Us

OHS Contact Centre

Throughout Alberta

- 1-866-415-8690

Edmonton & Surrounding area

- 780-415-8690

Deaf or hearing impaired:

- 780-427-9999 (Edmonton)
- 1-800-232-7215 (Alberta)

Website

work.alberta.ca/ohs-contact-us

Get Copies of OHS Act, Regulation and Code

Alberta Queen's Printer
qp.gov.ab.ca

Occupational Health and Safety
work.alberta.ca/ohs-legislation

FOR MORE INFORMATION

- Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health (NIOSH) - Fentanyl: Preventing Occupational Exposure to Emergency Responders 2017.
<https://www.cdc.gov/niosh/topics/fentanyl/risk.html>
- Centers for Disease Control and Prevention, Workplace Safety and Health, National Institute for Occupational Safety and Health (NIOSH), Guidance on Emergency Responder Personal Protective Equipment (PPE) for Response to CBRN Terrorism Incidents
<https://www.cdc.gov/niosh/docs/2008-132/pdfs/2008-132.pdf>
- [The Interagency Board](#), 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 2017.

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