

Print-And-Go Sheet: Osmium Tetroxide Post-Exposure Guidance



This information sheet identifies immediate first aid actions that should be taken following an Osmium tetroxide exposure.

Seek medical assistance immediately after an Osmium tetroxide exposure, and take this document to the medical staff providing treatment. Be sure also to display your Weill Cornell Medicine employee ID card when visiting the medical provider.

Note: This guidance document provides information that medical personnel can reference but does not give individualized medical care or treatment protocols.

How to Seek Medical Assistance

- For exposures Monday to Friday, 8:00 am – 4:00 pm:
 - WCM Upper East Side Employees:** Go to the Payson House basement Workforce Health and Safety (WHS) clinic at 1315 York Avenue or call 212-746-4370.
 - Lower Manhattan Employees:** Go to the NewYork Presbyterian (NYP) Lower Manhattan G level WHS at 170 William Street, Rooms G73A and G73B or call 212-312-5249.
 - Students:** Go to Student Health Services (SHS) at 230 E. 69th Street, Suite 2BB (between 2nd and 3rd Avenue) or call 646-962-6942.
- For exposures after business hours:
 - WCM Upper East Side Employees and Students:** Go to the NYP Emergency Room at 525 East 68th Street or call 212-472-2222.
 - Lower Manhattan Employees:** Go to the NYP Lower Manhattan Hospital Emergency Room at 170 William Street or call 212-312-5070.

Give this sheet to the physician so they understand that you may have been exposed to Osmium tetroxide, and that this is a medical emergency.

You can contact the NYP ER at 212-472-2222 or by dialing 2-2222 from any campus phone.

Hazard Summary

Osmium tetroxide is a colorless to pale yellow solid with a chlorine-like odor that develops when powdered osmium metal is exposed to air. In solution, it is used in organic syntheses and microscopy staining. Osmium tetroxide sublimates at room temperature, transitioning directly from a solid to a gaseous state.

Osmium tetroxide is highly poisonous, even at low concentrations. It can cause irreversible eye damage and long-term toxicity to the liver and kidneys.

Symptoms of exposure to Osmium tetroxide exposure may not occur until several hours following exposure. For information about exposure controls, please refer to the WCM Laboratory Chemical Hygiene Plan (<https://ehs.weill.cornell.edu/sites/default/files/4.1labchp.pdf>).

Signs and Symptoms of Exposure

- Skin Exposure** – Skin contact with osmium tetroxide vapor can result in dermatitis. Direct skin contact can result in severe irritation and burns. A greenish or blackish discoloration of the skin may result from direct contact.
- Eye Contact** – Osmium Tetroxide is a severe eye irritant with symptoms ranging from irritation to tearing, halos or clouding, and a gritty feeling in the eyes. Exposure to vapors can damage the cornea. **Eye exposure to concentrated solutions may result in severe damage or possible blindness.**
- Inhalation** – Inhalation of osmium tetroxide vapors may result in headache, coughing, dizziness, difficulty breathing, lung damage. **Inhalation may be fatal at high enough concentrations.**
- Ingestion** – Ingestion can lead to liver and kidney damage.



**Weill Cornell
Medicine**

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Environmental Health and Safety

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Post-Exposure Medical Evaluation & Treatment

1. VERIFY THAT FIRST AID WAS PERFORMED

- Remove all contaminated clothing immediately.
- Ensure skin was thoroughly washed with copious amounts of soap and water for at least 5 minutes, and that mucus membranes or eyes were washed with copious amounts of saline or plain water for at least 15 minutes.
- Do not squeeze the area of injury or use chemicals like bleach, as they are not known to be beneficial and may break down the skin's barrier function.

2. IMMEDIATE MEDICAL CARE

- In case of inhalation exposure, if breathing has stopped, immediately begin resuscitation. Intubate the victim early in the course of treatment. Significant inhalation exposures may require mechanical ventilation.**
- Excise any necrotic tissue on the skin.
- Depending on the victim's state of consciousness and presence of airway obstructions, administer large amounts of water for the victim to drink.
- Give the victim activated charcoal and use gastric lavage while protecting the airway.

3. MEDICATION

- For inhalation exposures, administer humidified inhalations and antitussive drugs for the upper airways.
- Administer diuretics and aerosolized bronchodilators to manage pulmonary edema and bronchoconstriction.
- Consult with an ophthalmologist in case of ocular exposure, and a dermatologist and plastic surgeon in case of skin exposure if necrotic tissue is present.

4. TESTING

- Monitor for complete blood count, electrolytes, urinalysis, and liver and renal functions following a significant exposure.
- Monitor arterial blood gases and conduct a chest x-ray and pulmonary function testing if the victim is showing symptoms of respiratory tract irritation or respiratory depression.
- Conduct spirometry tests to evaluate pulmonary function, particularly if inhalation exposures are suspected.

Next Steps for Exposed Individual

- If evaluated at the ER, follow up with your respective campus provider** (WHS or Student Health) the following business day and complete an accident report there. Continue follow-up as directed by WHS.
- Notify your supervisor of the incident.**
- EHS will likely contact you for follow-up investigation in order to prevent similar incidents from occurring in the future. Feel free to share any information with them in order to help keep the campus safe.

Contact Information

- EHS: 646-962-7233, ehs@med.cornell.edu
- Security: 212-746-0911
- Workforce Health and Safety: 212-746-4370 (NYP Weill Cornell), 212-312-5249 (NYP Lower Manhattan)
- Student Health Services: 646-962-6942

References

- "Osmium Tetroxide: A New Kind of Weapon." The Israel Medical Association Journal, November 2007. <https://pubmed.ncbi.nlm.nih.gov/17987767/>.
- "Osmium Tetroxide." New Jersey Department of Health and Senior Services Hazardous Substance Fact Sheet. <https://nj.gov/health/eoh/rtkweb/documents/fs/1441.pdf>.