

**Washtenaw/Livingston MCA, HEMS MCA**  
**System Protocols - Hazardous Materials Medical Response Team**  
**ORGANOPHOSPHATE POISONING**

Initial Date: April 24, 2019  
Revised Date: Nov. 5, 2025

Section 11-12

### **Organophosphate Poisoning**

FORMS: Liquids, solids (dusts, wettable powders) and aerosols.

ROUTES OF EXPOSURE: Skin and eye, inhalation, ingestion, skin absorption

#### **SIGNS AND SYMPTOMS:**

**CNS:** Altered mental status, seizures, coma, fasciculation and death

**Eye:** Pain, lacrimation, blurred vision and constricted pupils.

**Cardiovascular:** Bradycardia or tachycardia, ventricular arrhythmias, A-V blocks, hypotension or hypertension.

**Respiratory:** Respiratory failure or arrest, prominent wheezing, acute pulmonary edema, bronchial secretions, dyspnea and tightness of the chest.

**Gastrointestinal:** Nausea/vomiting/diarrhea, abdominal cramps, excessive salivation, urination and defecation.

**Skin:** Pale, cyanotic skin with excessive diaphoresis.

**Other:** SLUDGE syndrome (salivation, lacrimation, urination, defecation, G.I. pain and emesis)  
DUMBELS (diarrhea, urination, miosis, bronchorrhea, bronchospasm, and bradycardia, emesis, lacrimation, salivation)

NOTE: In general, cardiac dysrhythmias and seizures can be corrected with atropine therapy. Lasix is not effective in treating pulmonary edema!

### **Pre-Medical Control**

#### **PARAMEDIC**

1. Follow **General Hazardous Materials Treatment** protocol.
2. Consider CPAP.

In the symptomatic patient with significant exposure administer treatment in the following order:

1. Administer Atropine: Adult dose: 0.5 – 2 mg IV/IO push or IM. Pediatric dose: 0.05 mg/kg IV/IO push or IM, min 0.1 mg, max 5 mg. Initial dosing

**Washtenaw/Livingston MCA, HEMS MCA**  
**System Protocols - Hazardous Materials Medical Response Team**  
**ORGANOPHOSPHATE POISONING**

Initial Date: April 24, 2019  
Revised Date: Nov. 5, 2025

**Section 11-12**

should be given as soon as possible.

2. If no effect (which helps confirm the diagnosis) repeat Atropine q 2-5 minutes until lungs are dry (noted by decreased rhonchorous breath sounds), patient ventilates easily and the MAP is > 60 mm Hg. There is no maximum dose in Organophosphate Poisoning.
3. If available, as an alternative to individual Atropine and Pralidoxime, Mark 1 or Duo Dote Auto injector kits may be used. Administration per Mark I Kit/Duo Dote auto injector Dosing Directive – See Chart
4. Follow **Seizures Protocol** and administer a benzodiazepine IV/IO/IM/IN for a patient with either seizure or arrest.

**Post-Medical Control**

1. Pralidoxime (2-PAM), Adult: 1 gm IV or IM (max 1 gm IV, 2 gm IM) over 5 – 10 minutes. Pediatric: 25 mg/kg IV or IM (max 1 gm IV, 2 gm IM) over 5 – 10 minutes. Dose may be repeated in 30 – 60 minutes (1 – 2 doses) for weakness or high Atropine requirements.

**NOTES:**

In cases of skin absorption atropine may not reverse respiratory paralysis. Do not give aminophylline, theophylline, morphine, furosemide or succinylcholine.

Pupillary dilation is an early response and can't be used to guide therapy. Tachycardia is not a contraindication to Atropine therapy and may actually lessen as the hypoxia resolves with drying up of the secretions and clearing of the bronchospasm. The patient must be observed carefully for ventricular arrhythmias secondary to hypoxia, especially when administering atropine. In massive organophosphate overdoses huge amounts of atropine may be needed.

**Washtenaw/Livingston MCA, HEMS MCA**  
**System Protocols - Hazardous Materials Medical Response Team**  
**ORGANOPHOSPHATE POISONING**

Initial Date: April 24, 2019  
 Revised Date: Nov. 5 2025

**Section 11-12**

\*Mark I Kit Dosing Directive

	Clinical Findings	Signs/Symptoms	Required Conditions	Mark I Kits To Be Delivered
<b>SELF-RESCUE</b>	<b>Threshold Symptoms</b>	<ul style="list-style-type: none"> <li>• Dim vision</li> <li>• Increased tearing</li> <li>• Runny nose</li> <li>• Nausea/vomiting</li> <li>• Abdominal cramps</li> <li>• Shortness of breath</li> </ul>	Threshold Symptoms -and- Positive evidence of nerve agent or OPP on site	1 Mark I Kit (self-rescue)
<b>ADULT PATIENT</b>	<b>Mild Symptoms and Signs</b>	<ul style="list-style-type: none"> <li>• Increased tearing</li> <li>• Increased salivation</li> <li>• Dim Vision</li> <li>• Runny nose</li> <li>• Sweating</li> <li>• Nausea/vomiting</li> <li>• Abdominal cramps</li> <li>• Diarrhea</li> </ul>	Medical Control Order	1 Mark I Kit
	<b>Moderate Symptoms and Signs</b>	<ul style="list-style-type: none"> <li>• Constricted pupils</li> <li>• Difficulty breathing</li> <li>• Severe vomiting</li> </ul>	Constricted Pupils	2 Mark I Kits
	<b>Severe Signs</b>	<ul style="list-style-type: none"> <li>• Constricted pupils</li> <li>• Unconsciousness</li> <li>• Seizures</li> <li>• Severe difficulty breathing</li> </ul>	Constricted Pupils	3 Mark I Kits (If 3 Mark I Kits are used, administer 1 <sup>st</sup> dose of available benzodiazepine)
<b>PEDIATRIC</b>	<b>Pediatric Patient with Non-Severe Signs/Symptoms</b>	<i>Mild or moderate symptoms as above</i>	Positive evidence of nerve agent or OPP on site	Age ≥8 years old: <ul style="list-style-type: none"> <li>• As Above</li> </ul> Age <8 years old <ul style="list-style-type: none"> <li>• Per Medical Control</li> </ul>
	<b>Pediatric Patient with Severe Signs/Symptoms</b>	<ul style="list-style-type: none"> <li>• Constricted pupils</li> <li>• Unconsciousness</li> <li>• Seizures</li> <li>• Severe difficulty breathing</li> </ul>	Severe breathing difficulty  Weakness	Age ≥ 8 years old: <ul style="list-style-type: none"> <li>• 3 Mark I Kits</li> </ul> Age < 8 years old: <ul style="list-style-type: none"> <li>• 1 Mark I Kit</li> </ul> Contact Medical Control as needed

**\*NOTE: 1 Mark I Kit equals 1 Duo Dote**