



# EXPOSURE – (SARIN, VX, GA, GF) HAZARDOUS MATERIALS



Escambia County, Florida - ALS/BLS Medical Protocol

## **DO NOT ATTEMPT TO RESCUE ANYONE IN A SUSPECTED OR DOCUMENTED CONTAMINATED AREA**

The US military has established a regimen of atropine and pralidoxime to counteract the effects of exposure to nerve agents such as Sarin, VX and Soman. To achieve maximum effectiveness, these antidotes must be administered as quickly as possible, to the poisoned subjects.

Before making patient contact, make sure appropriate decontamination has been performed including clothing removal in a liquid exposure, prior to contact. All responding personnel should act with due caution to any incident that presents with multiple non-traumatic patients or incidents where vapors, clouds, or unknown type of liquids are present.

Although criminal acts and terrorism are one source of nerve gas exposure, the accidental release of similar organophosphate compounds in places such as hardware stores, garden supply facilities and research centers should not be ruled out.

### **Nerve Agents:**

GA (Tabun)	Ethyl N, N-dimethyl phosphoramidocyanide
GB (Sarin)	Isopropyl-methylphosphonofluoridate
GD (Soman)	1,2,2-Trimethylpropyl methylphosphonofluoridate
GF	Cyclohexyl-methylphosphonofluoridate
VX	S-[2-(diisopropylamino)ethyl] methylphosphonothiolate

### **Signs & Symptoms:**


Nerve agents are toxic materials that produce injury and death within seconds to minutes. The signs and symptoms caused by nerve agents are characteristic and not difficult to recognize with a high index of suspicion.



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Signs and symptoms of nerve agent poisoning are:


- 1 Lacrimation (tearing)
- 2 Unexplained rhinorrhea (runny
- 3 Salivation (drooling)
- 4 Diaphoresis (sweating)
- 5 Pulmonary edema
- 6 Miosis (constriction of pupils)
- 7 Blurred vision
- 8 Faciculations (muscle twitching)
- 9 Paralysis
10. Weakness
11. Airway constriction
12. Loss of consciousness nose)
13. Altered Mental Status
14. Seizures
15. GI distress (abdominal cramps)
16. Apnea
17. Tightness in chest
18. Shortness of breath



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19. Nausea & vomiting
20. Uncontrolled urination
21. Uncontrolled defecation

The acronym 'SLUDGE' is a convenient way to remember the signs and symptoms of nerve gas exposure.

**S**= Salivation

**L**= Lacrimation (tearing)

**U**= Urination

**D**= Defecation or Diarrhea

**G**= GI Distress

**E**= Emesis (vomiting)

### MARK-1 Auto injector

The MARK-1 kit contains two separate auto injectors with the following medications:

- **AtroPen®- atropine sulfate**, 2 mgs in 0.7mL; and
- **ComboPen®- pralidoxime chloride (2-PAM)**, 600 mgs in 2 mL.

Each auto-injector is a disposable, spring-loaded, pressure activated system prefilled with medication. Its simplicity, concealed needle and speed of injection render it quick, easy and convenient for self or buddy aide.


The MARK-1 kit consists of one atropine and one pralidoxime auto-injector linked together with a plastic clip. The atropine is administered first followed by the pralidoxime.



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### MARK-1 Auto injector Administration Procedure:

This procedure is also covered under [Medical Procedure 4.17](#).

When a first responder arrives on a scene of a potentially contaminated site with suspected nerve agents, he or she must wear personal protective equipment. If symptoms of nerve agent exposure manifest, you must **IMMEDIATELY** self-administer the nerve gas antidote.

### Site Selection


- 1 The injection site for administration is normally in the **outer thigh muscle**. It is important that the injections be given into a large muscle area; or, if the individual is thinly built, then the injections should be administered into the **upper outer quadrant of the buttocks**. DO NOT inject into areas close to the hip, knee, or thighbone;
- 2 Remove MARK-1 kit from the protective pouch;
- 3 Hold unit by plastic clip. (See graphic A);
- 4 Remove AtroPen from slot number 1 of the plastic clip. The yellow safety cap will remain in the clip and the AtroPen will now be armed. **DO NOT hold unit by green tip. The needle ejects from the green tip.** (See graphics B & C);
- 5 Grasp the unit and position the green tip of the AtroPen on victim's outer thigh.
- 6 Push firmly until auto-injector fires. Hold in place for 10 seconds to ensure atropine has been properly delivered. Using a jabbing motion may result in a improper injection or injury to the thigh or buttocks. Carefully remove the auto injector by pulling straight away from your injection site. The needle will still be exposed.
- 7 Remove 2-PAM Cl ComboPen from slot number 2 of the plastic clip. The gray safety cap will remain in the clip and the ComboPen will now be armed. DO NOT hold the unit by the black tip. **The needle ejects from the black tip.**



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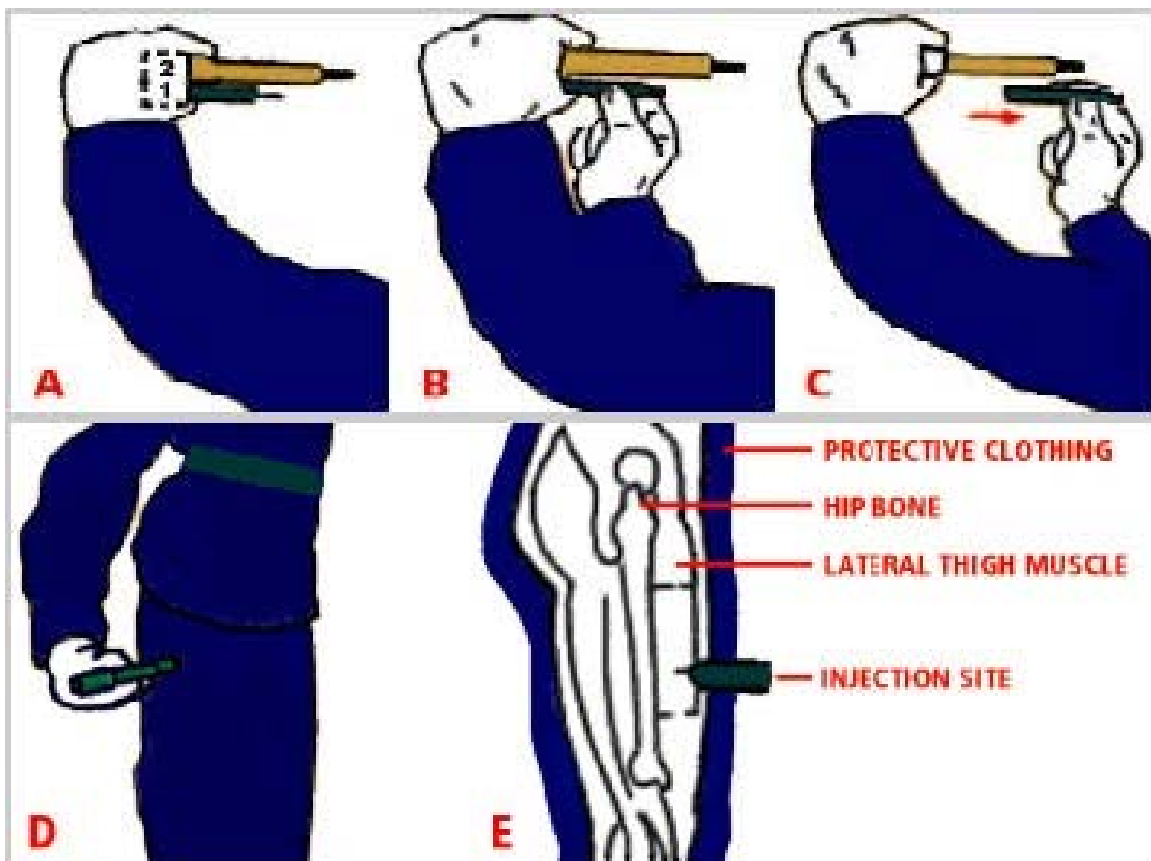
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- 8 Grasp the unit and position the black tip of the ComboPen on victim's outer thigh.  
(See graphics D & E.)
- 9 Push firmly until auto-injector fires, hold in place for 10 seconds to ensure Pralidoxime Chloride has been properly delivered. This plunges the needle through the clothing and into the muscle and at the same time injects the antidote into the muscle tissue.
10. Massage the injection sites, if time permits.


If nerve agent symptoms are still present after 15 minutes, repeat injections. If symptoms still exist after an additional 15 minutes, repeat injections for a third time. If after the third set of injections symptoms remain, do not give any more antidotes but seek medical help.



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## Dosage Scheme for MARK-1 Administration


Signs & Symptoms	Onset	# of MARK-1 kits to be used
<b>Vapor: Small Exposure</b> Pinpoint Pupils Runny Nose Mild SOB	Seconds	One (1) MARK-1 kit May repeat in 10 minutes if symptoms remain.
<b>Liquid: Small Exposure</b> Sweating Twitching Vomiting Feeling Weak	Minutes to Hours	One (1) MARK-1 kit May repeat in 10 minutes if symptoms remain.
<b>Both: Large Exposure</b> Seizures Apnea Copious Secretions	Seconds to Hours	Two (2) MARK-1 kits initially.



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