

## **Nerve Gas**

Although a completely equipped civil defense shelter should have an air supply filtered from chemical and biological agents, it should also contain antidotes, where possible, for some of the more common dangers. One such antidote is atropine as was issued to American soldiers during the recent Middle Eastern War.

The following article on the source and correct use of atropine appeared in the November issue of Civil Defense Perspectives written by Dr. Jane Orient. (This newsletter is available from 1601 N. Tucson Blvd. Suite 9, Tucson, AZ 85716. Telephone 602-326-3529.)

### **Atropine Use**

“Nerve gas” agents, like the potent organophosphate insecticides, are acetylcholinesterase (AChE) inhibitors. Acetylcholine is a neurotransmitter, the “messenger” at the synapse between two nerve cells or a nerve and muscle cell. After the message is delivered, the acetylcholine is broken down by AChE. If the AChE doesn’t work, acetylcholine accumulates, causing excessive, uncoordinated stimulation, followed by depression or paralysis.

The symptoms are:

Constriction of the pupils and blurred vision; excessive secretions: tearing, salivation, sweating, vomiting, diarrhea, runny nose, and bronchorrhea (excessive bronchial secretions); muscle twitching, followed by weakness or paralysis (death may result from paralysis of the respiratory muscles); slowing of the heart rate and a drop in blood pressure; bronchospasm and laryngospasm, causing wheezing or inability to move air; relaxation of the sphincters, causing incontinence; convulsions, coma, and loss of the respiratory drive.

In treating this type of poisoning, the same ABC priorities apply as with any patient: Airway, Breathing, Circulation. Establish an airway by clearing secretions and keeping the tongue out of the back of the throat, as with an oral airway. If the victim is not breathing, begin mouth-to-mouth ventilation.

Give atropine. Atropine blocks the action of acetylcholine at certain types of nerve endings (muscarinic junctions) and thus reverses some of the effects of the AChE inhibitors (not the muscle paralysis). The dose is 2 mg intramuscularly, repeated every 3 to 8 minutes until marked signs of atropinization appear: flushed face, dry mouth, widely dilated pupils, and rapid heart rate. (The pupils are not a reliable sign as they can remain constricted even when enough atropine has been given.)