



## CASE DEFINITION

### Nerve Agents or Organophosphates

#### Clinical description

Nerve agent or organophosphate toxicity might result from multiple routes of exposure and is a cholinergic syndrome consisting of excess respiratory and oral secretions, diarrhea and vomiting, diaphoresis, convulsions, altered mental status, miosis, bradycardia, and generalized weakness that can progress to paralysis and respiratory arrest (1-3).

In certain cases, excessive autonomic activity from stimulation of nicotinic receptors will offset the cholinergic syndrome and will include mydriasis, fasciculations, tachycardia, and hypertension.

#### Laboratory criteria for diagnosis

- *Biologic:* A case in which nerve agents in urine are detected, as determined by CDC or one of five LRN laboratories that have this capacity. Decreased plasma or red blood cell cholinesterase levels based on a specific commercial laboratory reference range might indicate a nerve agent or organophosphate exposure; however, the normal range levels for cholinesterase are wide, which makes interpretation of levels difficult without a baseline measurement or repeat measurements over time.

-OR-

- *Environmental:* Detection of organophosphate pesticides in environmental samples, as determined by FDA. However, a confirmation test for nerve agents in environmental samples is not available.

#### Case classification

- *Suspected:* A case in which a potentially exposed person is being evaluated by health-care workers or public health officials for poisoning by a particular chemical agent, but no specific credible threat exists.
- *Probable:* A clinically compatible case in which a high index of suspicion (credible threat or patient history regarding location and time) exists for nerve agent or organophosphate pesticide exposure, or an epidemiologic link exists between this case and a laboratory-confirmed case.
- *Confirmed:* A clinically compatible case in which laboratory tests have confirmed exposure.

The case can be confirmed if laboratory testing was not performed because either a predominant amount of clinical and nonspecific laboratory evidence of a particular chemical was present or a 100% certainty of the etiology of the agent is known.

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### Additional resources

1. Sidell FR. Soman and sarin: clinical manifestations and treatment of accidental poisoning by organophosphates. *Clin Toxicol* 1974;7:1-17.
2. Sidell FR. Nerve agents. In: Zajtchuk R, Bellamy RF, eds. *Textbook of military medicine: medical aspects of chemical and biological warfare*. Washington, DC: Office of the Surgeon General at TMM Publications, Borden Institute, Walter Reed Army Medical Center; 1997:129-79.
3. Holstege CP, Kirk M, Sidell FR. Chemical warfare: nerve agent poisoning. *Crit Care Clin* 1997;13:923-42.

This document is based on CDC's best current information. It may be updated as new information becomes available. For more information, visit [www.bt.cdc.gov/chemical](http://www.bt.cdc.gov/chemical), or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

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