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U.S. Department of Health & Human Services

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Organophosphorus Pesticides and Nerve Agents - Tabun (GA), Sarin (GB), Soman (GD), VX, and [Fourth Generation Agents \(FGAs\) \(Pesticide Syndrome, also called Cholinergic or Nerve Agent Toxidrome\)](#)

Nerve agents are highly poisonous chemicals that work by preventing the nervous system from working properly. Nerve agents and other organophosphate pesticides cause acetylcholinesterase inhibition, resulting in signs and symptoms such as pinpoint pupils, eye pain, sweating, drooling, tearing, vomiting, and seizure, also known as **Pesticide Syndrome, or Cholinergic Toxidrome.**

Nerve Agents - Acute Patient Care Guidelines

[Nerve Agents - Prehospital Management](#)

[Nerve Agents - Emergency Department/Hospital Management](#)

New Guidelines for Fourth Generation Agents

[Fourth Generation Agents](#)

[Fourth Generation Agents: Safety Awareness for First On-Scene Responders](#)

[Fourth Generation Agents: Reference Guide](#)

[Fourth Generation Agents: Prehospital Medical Management Guidelines](#)

[Fourth Generation Agents: Hospital Medical Management Guidelines](#)

Concise toxidrome definition: Overstimulation of cholinergic receptors leading to first activation and then fatigue of target organs, leading to pinpoint pupils, seizing, wheezing, twitching, and leaking all over.

Rationale or reasoning for toxidrome decisions: The name was chosen based upon clinical relevance and accuracy as well as ease of recall. Examples of names initially considered: SLUDGE, DUMB BELLS, BBB, MTWHF, CCC, organophosphate-like, acetyl cholinesterase, pinpoint pupils, wet all over, twitching, and seizing (three seizing toxidromes).

Issues or concerns about this toxidrome: Toxidrome encompasses insecticides and nerve agents, which can differ radically in potency; clinical onset varies by state of agent and route of exposure as well as in special populations (including children); management differs between insecticides and nerve agents; chemical aging a concern with GD and possibly with certain insecticides; differing clinical presentation in children; training will need to address possible confusion between "cholinergic," "anticholinergic," and "anticholinesterase." Infants and young children in many instances present only with neurological signs and symptoms.

Cholinergic examples of industrial chemicals and potential chemical warfare/terrorism agents: Carbamate (e.g., aldicarb and methomyl) and OP (e.g., chlorpyrifos and parathion) insecticides; nerve agents (e.g., GA, GB, GD, GF, VX, and Fourth Generation Agents)

The clinically relevant routes of exposure and types of sources: Inhalation, dermal, and ingestion.

The organ systems generally affected: Central nervous system (CNS) and heart.

The initial signs and symptoms:

- **SLUDGE**

- Salivation
- Lacrimation
- Urination
- Defecation
- Gastrointestinal (GI)
- Emesis
- Miosis
- Changed mental status and respiratory distress (bronchospasm)

- **SLOBBERED**

- Salivation
- Lacrimation
- Obtundation
- Bronchoconstriction/Bronchorrhea
- Bradycardia
- Eye findings
- Reduced vascular tone
- Emesis
- Diarrhea

A progression of signs and symptoms includes: Local effects (vapor to face: miosis, lacrimation, hypersalivation, wheezing; liquid to skin: local sweating with fasciculations or twitching) progressing to systemic effects (GI, CNS) with increasing exposure or increasing dose; with high dose, all signs and symptoms can occur suddenly; rapidly fatal if untreated.

The underlying pathology, biological processes, or modes of action include: Cholinergic crisis.

Common treatment protocol, specific antidotes and key supportive measures: Atropine, 2-PAM (oximes), benzodiazepines, airway and breathing support, scopolamine [not FDA-approved], ketamine [not FDA-approved], and decontamination as indicated.

Source:

[Report to the Toxic Chemical Syndrome Definitions and Nomenclature Workshop](#) (PDF - 2.01 MB) (DHS, NLM, May, 2012)

Information from Other Resources

[Resource Comparison](#) 

Information from CDC, WISER, and CAMEO

[Emergency Response Safety and Health Database \(CDC/NIOSH\) »](#)

- [Sarin \(GB\)](#)
- [Soman \(GD\)](#)
- [Tabun \(GA\)](#)
- [VX](#)

[WISER \(NIH/NLM\) »](#)

- [Sarin](#)
- [Soman](#)
- [Tabun](#)
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[CAMEO \(EPA, NOAA\) »](#)

- [Sarin](#)
- [Soman](#)
- [Tabun](#)
- [VX](#)

[Medical Management Guidelines for Acute Chemical Exposures \(CDC/ATSDR\) »](#)

- [Nerve Agents: Tabun \(GA\); Sarin \(GB\); Soman \(GD\); and VX](#)

[Chemical Emergencies \(CDC\) »](#)

- [Toxic Syndrome Description: Nerve Agent and Organophosphate Pesticide Poisoning \(Signs and symptoms, differential diagnosis\)](#)
- [Nerve Agents \(Case Definition, Case Studies in Environmental Medicine\)](#)
- [Sarin \(GB\)](#)
- [Soman \(GD\)](#)
- [Tabun \(GA\)](#)
- [VX](#)

Additional Resources:

ChemIDplus - Chemical dictionary, structures, and links to many Internet resources (NIH/NLM)

[Sarin](#), [Soman](#), [Tabun](#), [VX](#)

Hazardous Substances Data Bank - Comprehensive, peer-reviewed toxicology data (NIH/NLM)

[Sarin](#), [Soman](#), [Tabun](#), [VX](#),

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Specific Chemicals

[Common HazMat Chemicals](#)

Quick Links

[CHEMM Intelligent Syndromes Tool: CHEMM-IST](#)

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