



CASE DEFINITION

Elemental White or Yellow Phosphorus

Clinical description

Ingestion of elemental white or yellow phosphorus typically causes severe vomiting and diarrhea, which are both described as "smoking," "luminescent," and having a garlic-like odor. Other signs and symptoms of severe poisoning might include dysrhythmias, coma, hypotension, and death. Contact with skin might cause severe burns within minutes to hours (1-4).

Laboratory criteria for diagnosis

- *Biologic:* No specific test for elemental white or yellow phosphorus is available; however, an elevated serum phosphate level might indicate that an exposure has occurred. Although phosphate production is a by-product of elemental phosphorus metabolism in humans, a normal phosphate concentration does not rule out an elemental phosphorus exposure.
- *Environmental:* Detection of elemental phosphorus in environmental samples, as determined by NIOSH, and an elevated phosphorus level in food, as determined by FDA, might also indicate that an exposure has occurred.

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 elemental white or yellow phosphorus exposure, or an epidemiologic link exists between this case and a laboratory-confirmed case.
- *Confirmed:* A clinically compatible case in which laboratory tests on environmental samples are confirmatory.

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.

Additional resources

1. Agency for Toxic Substances and Disease Registry. Toxicological profile for white phosphorus. Atlanta, GA: Agency for Toxic Substances and Disease Registry, Division of Toxicology; 2001. Available at <http://www.atsdr.cdc.gov/toxprofiles/tp103.html>.

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2. Harbison RD. Phosphorus. In: Harbison RD, ed. Hamilton and Hardy's industrial toxicology. 5th ed. St Louis, MO: Mosby-Year Book; 1998:194-7.
3. Simon FA, Pickering LK. Acute yellow phosphorus poisoning: smoking stool syndrome. JAMA 1976;235:1343-66.
4. Talley RC, Linhart JW, Trevino AJ, Moore L, Beller BM. Acute elemental phosphorus poisoning in man: cardiovascular toxicity. Am Heart J 1972;84:139-40.

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, or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

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