



## **TOXIC SYNDROME DESCRIPTION** **Interim document, 10-23-03**

### **Ricin or Abrin Poisoning**

#### **Summary statement**

Ricin is a potent biological toxin that is derived from castor beans. Its mechanism of action in the body is inhibition of protein synthesis. Clinical manifestations are dependent on the route of exposure. Ingestion of ricin typically leads to profuse vomiting and diarrhea followed by multisystem organ failure and possibly death within 36 to 72 hours of exposure. Inhalation of ricin typically leads to respiratory distress, fever, and cough followed by the development of pulmonary edema, hypotension, respiratory failure, and possibly death within 36 to 72 hours.

The amount and route of the exposure to ricin and the premorbid condition of the person exposed will contribute to the time of onset and the severity of illness. For example, the inhalation of ricin would be expected to lead to a quicker onset of poisoning and to cause a more rapid progression of poisoning compared with the ingestion of ricin, given the same exposure amount.

#### **Signs and symptoms of exposure**

The following is a more comprehensive list of signs and symptoms that may be encountered in a person exposed to ricin. The list does not convey prioritization or indicate specificity. Also, partial presentations (an absence of some of the following signs/symptoms) do not necessarily imply less severe disease.

##### ***General***

- Weakness
- Malaise
- Fatigue
- Fever

##### ***Gastrointestinal signs and symptoms***

- Nausea
- Vomiting
- Abdominal pain
- Liver injury

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***Central nervous system signs and symptoms***

- Headache
- Lethargy
- Convulsions
- Coma
- Peripheral neuropathy (1–3 weeks after acute exposure)
- Neuropsychological symptoms (several days after exposure): memory loss, restlessness, confusion

***Cardiovascular signs***

- Tachycardia
- Hypotension
- ECG changes (repolarization, S-T segment, and T-wave changes)

***Respiratory signs and symptoms***

- Tachypnea
- Dyspnea
- Pulmonary edema

***Genitourinary signs***

- Hemoglobinuria
- Oligouria
- Renal failure

***Laboratory findings***

- Anemia
- Elevated bilirubin (indirect)
- Hyperkalemia
- Damaged red blood cells (basophilic stippling, anisocytosis, Heinz-Ehrlich bodies)
- Low haptoglobin
- Elevated plasma-free hemoglobin levels
- Elevated urinary hemoglobin
- Elevated BUN and creatinine
- Abnormal liver function tests
- Thrombocytopenia
- Elevated blood or spot urine arsenic level

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**Note:** The actual clinical manifestations of a ricin or abrin exposure may be more variable than the syndrome described above.

This toxic syndrome description 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](http://www.bt.cdc.gov) or call the CDC public response hotline at (888) 246-2675 (English), (888) 246-2857 (Español), or (866) 874-2646 (TTY).

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