



Communicable Disease Case Reporting and Investigation Protocol **RICIN POISONING**

I. IDENTIFICATION AND DEFINITION OF CASES

A. **Clinical Description:** The major symptoms of ricin poisoning depend on the route of exposure and the dose received, though many organs may be affected in severe cases. Initial symptoms of ricin poisoning by inhalation may occur as early as four to eight hours and as late as 24 hours after exposure. Following ingestion of ricin, initial symptoms typically occur in less than 10 hours. Death from ricin poisoning could take place within 36 to 72 hours of exposure, depending on the route of exposure and the dose received.

- **Inhalation:** Within a few hours of inhaling a significant amount of ricin, the likely symptoms would be respiratory distress, fever, cough, nausea, and tightness in the chest. Heavy sweating may follow as well as fluid building up in the lungs (pulmonary edema). This would make breathing even more difficult, and the skin might turn blue. Excess fluid in the lungs would be diagnosed by x-ray or by listening to the chest with a stethoscope. Finally, low blood pressure and respiratory failure may occur, leading to death. In cases of known exposure to ricin, people having respiratory symptoms should seek immediate medical care.
- **Ingestion:** If someone swallows a significant amount of ricin, he or she would likely develop vomiting and diarrhea that may become bloody. Severe dehydration may result, followed by low blood pressure. Other signs or symptoms may include seizures and blood in the urine. Within several days, the person's liver, spleen, and kidneys might stop working, which could result in death.
- **Skin and eye exposure:** Ricin in powder form is unlikely to be absorbed through intact skin (unless it is carried in a solvent that enhances absorption) but can enter the bloodstream through abraded skin or wounds. Contact with ricin powders or products may cause redness and pain of the skin and the eyes. Ricin present on one's hands may also result in incidental ingestion while eating or through other hand-to-mouth behaviors.

B. Laboratory Criteria:

1. **Biologic:** The Wisconsin State Lab of Hygiene (WSLH) and Centers for Disease Control and Prevention (CDC) can assess selected specimens on a provisional basis for urinary ricinine, an alkaloid in the castor bean plant. Urinary ricinine testing is only available at WSLH or CDC.
2. **Environmental:** Detection of ricin in environmental samples (such as, suspect food, water, or environmental samples), as determined by CDC. Ricin can be detected qualitatively by time-resolved fluoroimmunoassay (TRF) in environmental specimens (for example, filters, swabs, or wipes).

C. Wisconsin Surveillance Case Definition:

- **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 (for example, credible threat or patient history regarding location and time) exists for ricin 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 the etiology of the agent is known with 100% certainty.

II. REPORTING

- A. **Wisconsin Notifiable Disease Category I – Methods for Reporting:** This disease shall be reported **IMMEDIATELY BY TELEPHONE** to the patient's local health officer or to the local health officer's designee upon identification of a case or suspected case, per Wis. Admin. Code § [DHS 145.04\(3\)\(a\)](#). In addition to the immediate report, complete and fax, mail or electronically report an Acute and Communicable Disease Case Report (DHS [F-44151](#)) to the address on the form, or enter the data into the Wisconsin Electronic Disease Surveillance System, within 24 hours.

- B. **Responsibility for Reporting:** According to Wis. Admin. Code § [DHS 145.04\(1\)](#), persons licensed under Wis. Stat. ch. [441](#) or [448](#), laboratories, health care facilities, teachers, principals, or nurses serving a school or day care center, and any person who knows or suspects that a person has a communicable disease identified in [Appendix A](#).
- C. **Clinical Criteria for Reporting:** If ricin poisoning is suspected or known, cannot be ruled out, and/or when a terrorist event is suspected or known, follow health care facility policies and immediately notify:
 - 1. Hospital epidemiologist, infection control professional, or other designated health care facility personnel.
 - 2. Health care facility laboratory director or designee.
 - 3. State poison control center at 800-222-1222.
 - 4. Local and state health departments. The local and state health department(s) will contact local law enforcement and the Federal Bureau of Investigation (FBI).
- D. **Laboratory Criteria for Reporting:** Laboratory confirmation of ricin or a diagnosis without laboratory confirmation if the clinical and epidemiological evidence is overwhelming.

III. CASE INVESTIGATION

- A. **Responsibility for Case Investigation:** It is the responsibility of the local health department (LHD) to investigate or arrange for investigation of suspected or confirmed cases as soon as is reasonably possible. A case investigation may include information collected by phone, in person, in writing, or through review of medical records or communicable disease report forms, as necessary and appropriate.
- B. **Required Documentation:**
 - 1. Complete the Wisconsin Electronic Disease Surveillance System (WEDSS) disease incident investigation report, including appropriate, disease-specific tabs.
 - 2. Upon completion of investigation, set WEDSS disease incident process status to “Sent to State.”
- C. **Additional Investigation Responsibilities:**
 - 1. Contact and work with Division of Public Health (DPH) and FBI staff on the investigation.
 - 2. DPH and FBI staff will coordinate the testing of clinical specimens and/or environmental samples at WSLH. If a clinical specimen tests positive for ricinine or an environmental sample tests positive for ricin at WSLH, it may be sent to CDC for additional testing, defining, archiving, or storage.

IV. PUBLIC HEALTH INTERVENTIONS AND PREVENTION MEASURES

Ricin is most often thought of as an agent of bioterrorism. Ingestion or inhalation can kill a person quickly. No exposure should be assumed to be accidental.

- A. Immediate hospital treatment is required for case patients and any others who may have been exposed. Inform emergency room personnel that the patient and their contacts are thought to have ingested or inhaled ricin if the route of exposure is known or suspected.
- B. Local and state health departments should immediately contact local law enforcement and the FBI at 414-276-4684.
- C. Isolate the area(s) where the exposure was reported to have occurred. Do not enter the area except to remove the patient while wearing Level A personal protective equipment.
- D. Determine if others consumed suspect food or water or were exposed to suspect dust or airborne particles.
- E. Source investigation will be undertaken by the FBI.
- F. Source cleanup will be overseen by the local health department, with guidance and assistance provided by the DPH Bureau of Environmental and Occupational Health (BEOH), US Environmental Protection Agency, and 54th Civil Support Team.

V. CONTACTS FOR CONSULTATION

- A. Local and/or state health departments should immediately contact local law enforcement and the FBI at 414-276-4684.
- B. Contact the DPH 24-hour on-call service at 608-258-0099 and request that the chemical and natural disaster on-call staff be alerted.
- C. Contact the Wisconsin Poison Center at 800-222-1222.
- D. For non-emergency information, contact a DPH BEOH toxicologist at 608-266-2663.

VI. RELATED REFERENCES

Centers for Disease Control and Prevention website: <https://emergency.cdc.gov/agent/ricin/hp.asp>