May 4, 2011

Ricin Fact Sheet

1. **What is Ricin?** – Ricin is a toxic protein made from castor beans. Castor beans are processed throughout the world to make castor oil. Ricin is part of the waste "mash" produced when castor oil is mad. The toxin (poison) can be extracted from the beans, purified, and treated to form a powder that can be inhaled. However, to-date no human cases of Ricin inhalation are known to exist. Most Ricin poisonings have occurred when the Ricin was injected or when the person swallowed the Ricin. Symptoms of Ricin poisoning occur within 4 to 12 hours after the Ricin was inhaled or swallowed.

2. **What ill health effects/symptoms does Ricin cause**? - 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. Death from Ricin poisoning could take place within 36 to 72 hours of exposure, depending on the route of exposure (inhalation, ingestion, or injection) and the dose received. If death has not occurred in 3 to 5 days, the victim usually recovers. The signs and symptoms discussed here are not specific to Ricin exposure and may occur due to other causes.

   a. **Inhalation:** Within a few hours of inhaling Ricin, the likely symptoms would be respiratory distress (difficulty breathing), 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 then turn blue. Finally, low blood pressure and respiratory failure may occur, leading to death. People who know they have been exposed to Ricin should seek medical care if they have respiratory symptoms that started within 12 hours of inhaling Ricin. Ricin in powder or mist form can cause redness and pain of the skin and the eyes.

   b. **Ingestion:** If someone swallows a significant amount of Ricin, he or she would develop vomiting and diarrhea that may become bloody. Severe dehydration may be the result, followed by low blood pressure. Other signs or symptoms may include hallucinations, seizures, and blood in the urine. Within several days, the person's liver, spleen, and kidneys might stop working, and the person could die.

3. **How do people get sick from it? -** Ricin is very toxic. It works by getting inside the cells of a person's body and preventing the cells from making the proteins they need. Without the proteins, cells die. Eventually this is harmful to the whole body, and death may occur.

4. **What should I do if I feel I'm experiencing symptoms of Ricin exposure? -** Seek medical attention right away.

5. **Is it true that there's no cure/antidote for Ricin? -** It is true that no antidote exists for Ricin. Because no antidote exists, it is important to avoid Ricin exposure in the first place. If exposure cannot be avoided, decontamination is critical. Ricin poisoning is treated by giving victims supportive medical care to minimize the effects of the poisoning. The types of

supportive medical care would depend on several factors, such as the route by which victims were poisoned (that is, whether poisoning was by inhalation, ingestion, or skin or eye exposure). Care could include such measures as helping victims breathe, giving them intravenous fluids (fluids given through a needle inserted into a vein), giving them medications to treat conditions such as seizure and low blood pressure, flushing their stomachs with activated charcoal (if the Ricin has been very recently ingested), or washing out their eyes with water if their eyes are irritated.

6. **How are respiratory anthrax and Ricin similar or different?** – They are very different. Anthrax is the spore form of a bacterium (an organism) that can be dried, purified, and made into a powder that can be inhaled (breathed in). Anthrax also occurs naturally. After anthrax spores are inhaled, they can become active, reproduce in the body, and cause disease. This process takes at least 24 hours but usually several days. However, the spore can stay in the body for weeks before becoming active and causing illness, which is why antibiotics to prevent anthrax are given for a long period (60 days) after a person has been exposed. Ricin is a toxic protein made from castor beans. The toxin (poison) can be extracted from the beans, purified, and treated to form a powder that can be inhaled. Symptoms of Ricin poisoning should occur within 4 to 12 hours if the Ricin was inhaled or swallowed.

7. **Is Ricin poisoning contagious? -** No, Ricin poisoning is not contagious. It cannot spread from person to person.

8. **Can Ricin be "aerosolized" like anthrax? -** Yes, Ricin in the form of a fine powder can be suspended in air.

9. **Has anyone ever died after being exposed to Ricin? -** Yes, several deaths have resulted after a victim was injected with Ricin. People also have been poisoned with Ricin after eating castor beans. However, most cases of eating castor beans do not result in poisoning, because it is difficult to release the Ricin from castor beans. Also, Ricin is not as well absorbed through the gastrointestinal tract when compared to injection or inhalation.

10. **What form is Ricin found in? Is it a powder? -** e Ricin can be in the form of a powder, a mist, or a pellet, or it can be dissolved in water or weak acid.

11. **Will the irradiation equipment used by the postal service have any effect on Ricin? -** Postal irradiation may have some effect, but CDC still considers Ricin to be fully functional and just as dangerous even after irradiation.

12. **For more information about Ricin:** http://www.bt.cdc.gov/agent/ricin/

This fact sheet provides general information. Please contact your physician for specific clinical information.