

FACT SHEET

Ricin

What is it?

Ricin is a poison that can be made from the waste left over from processing castor beans. It can be in the form of a powder, a mist, or a pellet, or it can be dissolved in water or weak acid. It is a stable substance. For example, it is not affected much by extreme conditions such as very hot or very cold temperatures.

Its use

- Castor beans are processed throughout the world to make castor oil. Ricin is part of the waste “mash” produced when castor oil is made. Amateurs can make ricin from castor beans.
- Ricin has some potential medical uses, such as bone marrow transplants and cancer treatment (to kill cancer cells).

Exposure

- It would take a deliberate act to make ricin and use it to poison people. Accidental exposure to ricin is highly unlikely.
- People can breathe in ricin mist or powder and be poisoned.
- Ricin can also get into water or food and then be swallowed.
- Pellets of ricin, or ricin dissolved in a liquid, can be injected into people’s bodies.
- Depending on the route of exposure (such as injection), as little as 500 micrograms of ricin could be enough to kill an adult. A 500-microgram dose of ricin would be about the size of the head of a pin. A much greater amount would be needed to kill people if the ricin were inhaled (breathed in) or swallowed.
- Ricin poisoning is not contagious. It cannot be spread from person to person through casual contact.
- In 1978, Georgi Markov, a Bulgarian writer and journalist who was living in London, died after he was attacked by a man with an umbrella. The umbrella had been rigged to inject a poison ricin pellet under Markov’s skin.
- Some reports have indicated that ricin may have been used in the Iran-Iraq war during the 1980s and that quantities of ricin were found in Al Qaeda caves in Afghanistan.

How does ricin work?

Ricin 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, and eventually the whole body can shut down and die. Specific effects of ricin poisoning depend on whether ricin was inhaled, swallowed, or injected.

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Signs and symptoms

1. *Inhalation:* Within a few hours of inhaling significant amounts of ricin, the likely symptoms would be coughing, tightness in the chest, difficulty breathing, nausea, and aching muscles. Within the next few hours, the body's airways (such as lungs) would become severely inflamed (swollen and hot), excess fluid would build up in the lungs, breathing would become 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.
2. *Ingestion:* If someone swallows a significant amount of ricin, he or she would have internal bleeding of the stomach and intestines that would lead to vomiting and bloody diarrhea. Eventually, the person's liver, spleen, and kidneys might stop working, and the person could die.
3. *Injection:* Injection of a lethal amount of ricin at first would cause the muscles and lymph nodes near the injection site to die. Eventually, the liver, kidneys, and spleen would stop working, and the person would have massive bleeding from the stomach and intestines. The person would die from multiple organ failure.

Death from ricin poisoning could take place within 36 to 48 hours of exposure, whether by injection, ingestion, or inhalation. If the person lives longer than 5 days without complications, he or she will probably not die. Showing these signs and symptoms does not necessarily mean that a person has been exposed to ricin.

Treatment

No antidote exists for ricin. Ricin poisoning is treated by giving the victim 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 the victim was poisoned (that is, by inhalation, ingestion, or injection). Care could include such measures as helping the victim breathe and giving him or her intravenous fluids and medications to treat swelling.

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