There is no medical treatment for ricin poisoning after it has entered the bloodstream. Symptoms usually start to show within hours to days after exposure, depending on the dosage and route of administration. Treatment here is mainly supportive, including bed rest and analgesics, and any specific therapy depends on the patient's condition. There is no confirmed evidence that ricin can penetrate intact skin.

Ricin will remain stable in foods as long as they are not heated, and it will have little to no effect on people who are not breathing. Terrorists have considered delivering ricin in foods and as a contact poison, although we have no scientific data to indicate that ricin can penetrate intact skin.

Radiological and Nuclear Devices

Radiological Dispersal Device (RDD)

An RDD is a conventional bomb that is used to deliver a small amount of radioactive material to cause destruction, contamination, and injury. The RDD is a conventional bomb that is detonated to disperse radioactive material. There are two types of RDDs: passive and explosive.

A passive RDD is a system in which unshielded radioactive material is dispersed by atmospheric winds. It can be made by dispersing radioactive materials and unshielded radioactive materials in the air. The dispersion of radioactive materials can cause injury or death.

An explosive RDD is a system in which radioactive material is dispersed by the explosive force of the bomb. Explosive RDDs are designed to disperse radioactive materials, and the explosive force can be used to disperse radioactive materials, causing injury or death.

A variety of radioactive materials are commonly used in RDDs, including Cesium-137, Strontium-90, and Cobalt-60. These materials can be used to make RDDs that are portable and can be easily transported.

An atmospheric RDD is any system in which radioactive material is dispersed by atmospheric winds. These RDDs can be used to cause injury or death, and they can be made by dispersing radioactive materials and unshielded radioactive materials in the air.

A nuclear RDD is a system in which a nuclear weapon is detonated to disperse radioactive material. Nuclear RDDs are used to cause injury or death, and they can be made by dispersing radioactive materials and unshielded radioactive materials in the air.

Use of an RDD by terrorists could result in health, environmental, and economic effects, as well as political and social effects. The effects of an RDD can be devastating, causing injury or death and leading to levels of contamination requiring costly and time-consuming cleanup efforts.

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Terrorist CBRN: Materials and Effects

Background

Al-Qa'ida and associated extremist groups are looking for a wide variety of potential agents and delivery means to develop and deliver biological, chemical, radiological, and nuclear (CBRN) weapons on or near a large-scale civilian population. Al-Qa'ida has launched attacks using CBRN agents in the past, and they continue to evaluate these threats. The group is considered to be capable of launching a number of CBRN attack scenarios, including a spectrum of terrorist CBRN threats.

Chemical Agents

Chemical agents are the most plentiful of the CBRN materials and can be derived from a variety of sources. They are often employed in relatively simple delivery systems and can be used in different materials, forms, and quantities. Various chemical agents have been identified that can be used to incapacitate a large number of people or cause mass casualties.

Organophosphate Pesticides

Organophosphate pesticides such as parathion are in the same chemical class as nerve agents. Although these pesticides are much less toxic, their effects and medical treatments are the same as for military-grade nerve agents. Nerve agents target the nervous system and cause panic and disruption. Medical treatments are available, but they need to be administered quickly.

Poisonous Organics

Poisonous organics include cyanides, which are often used in small-scale scenarios. Medical treatments are available, but they need to be administered quickly.

Toxic Industrial Chemicals

Toxic industrial chemicals such as chlorine and phosgene are industrial chemicals that are transported in multiton shipments by road and rail. Rupturing the container can easily disseminate these gases. The effects of chlorine and phosgene are similar to those of mustard agent.

Biological Agents

Biological agents are organisms that can cause incapacitation or death. At high doses, cyanides cause immediate collapse. Medical treatments are available, but they need to be administered quickly.

Botulinum Toxin

Botulinum toxin is produced by the bacterium Clostridium botulinum, which occurs naturally in soil. Al-Qa'ida has explored the possibility of using biological aircraft for large-area dissemination of biological warfare agents. Although it is not possible to attack a specific target with biological agents, they could cause widespread panic and disruption.

Cyanides

Cyanides are colorless-to-pale yellow liquids that can be easily used to poison food or drinks. Cyanide salts can be disseminated as a contact poison when mixed with food or beverages. Botulinum toxin is also effective in small-scale scenarios.

Toxic Plant Toxins

Ricin is a plant toxin that is 30 times more potent than the nerve agent VX by weight. It is readily obtainable by extraction from common castor beans. The toxicity of ricin is 50 times greater than that of VX.

Pharmacological properties such as those just described are in the public domain. All chemical and biological agents are available to anyone who wants to buy them. However, medical treatments for any of the above threats are the same as for military-grade nerve agents.

Nuclear Weapons

Nuclear weapons are the most destructive and disruptive of all CBRN weapons. Nuclear weapons can cause huge economic damage. Nuclear weapons are considered to be in the possession of a number of states.

Initial Skin Contact with Mustard Causes Mild Skin Irritation, Which Develops Into More Severe Yellow Fluid-Filled Blisters. Inhalation of Mustard Damages the Lining of the Lungs and Causes Enlarged Airways. It Causes Nausea, Vomiting, and Diarrhea. In High Doses, It Causes Severe Blistering of the Skin, Moisture Loss, and Death.
This pamphlet contains a summary of typical agents and CBRN devices available to al-Qa’ida and other terrorist groups. It is not intended to be a summary of the overall threat from al-Qa’ida’s CBRN program.

**Chemical Agents**

- **Mustard Agent**
  - Mustard is a blister agent that poses a contact and inhalation threat. Exposure to mustard can cause severe skin damage and respiratory distress. Medical treatments are available, but they need to be used immediately for severely exposed individuals.

- **Cyanides**
  - Sodium or potassium cyanides are white-to-pale yellow salts that can be easily used to poison food or drinks. Cyanide can be dispersed as a contact or inhalation threat, and the poisoning can be fatal. Symptoms usually appear within six to 24 hours, and there are only limited treatments available.

- **Sodium Phosphide**
  - Sodium phosphide can cause severe skin damage, respiratory distress, and death. Inhalation exposure can cause death, and it is highly toxic via skin contact and ingestion.

- **Charcoal**
  - Charcoal is a water-soluble agent that can cause severe skin damage, respiratory distress, and death. Inhalation exposure can cause death, and it is highly toxic via skin contact and ingestion.

- **Phosgene**
  - Phosgene is a highly toxic chemical that can cause severe skin damage, respiratory distress, and death. Inhalation exposure can cause death, and it is highly toxic via skin contact and ingestion.

- **Sulfur mustard**
  - Sulfur mustard can cause severe skin damage, respiratory distress, and death. Inhalation exposure can cause death, and it is highly toxic via skin contact and ingestion.

**Biological Agents**

- **Botulinum toxin**
  - Botulinum toxin is produced by the bacterium *Clostridium botulinum* and can cause severe muscle weakness and death. Symptoms usually appear within six to 24 hours after exposure, and there are only limited treatments available.

- **Smallpox**
  - Smallpox is a highly contagious disease that can cause severe skin damage, respiratory distress, and death. Inhalation exposure can cause death, and it is highly toxic via skin contact and ingestion.

- **Ricin**
  - Ricin is a plant toxin that is 30 times more potent than the nerve agent VX by weight and is readily dispersed through contact or inhalation threats. Symptoms usually appear 24 to 36 hours after exposure, and there are only limited treatments available.

**Nerve Agents**

- **Sarin**
  - Sarin is a highly toxic chemical that can cause severe skin damage, respiratory distress, and death. Inhalation exposure can cause death, and it is highly toxic via skin contact and ingestion.

- **Tabun**
  - Tabun is a highly toxic chemical that can cause severe skin damage, respiratory distress, and death. Inhalation exposure can cause death, and it is highly toxic via skin contact and ingestion.

- **VX**
  - VX is a highly toxic chemical that can cause severe skin damage, respiratory distress, and death. Inhalation exposure can cause death, and it is highly toxic via skin contact and ingestion.

**Radiological Devices**

- **Radiological Dispersion Devices (RDDs)**
  - RDDs are devices that can disperse radioactive materials to cause a radiological threat. RDDs can be disseminated as a contact, inhalation, or ingestion threat, and the effects can be severe, including skin damage, respiratory distress, and death.

**Toxic Industrial Chemicals**

- **Chlorine and phosgene**
  - Chlorine and phosgene are industrial chemicals that can cause severe skin damage, respiratory distress, and death. Inhalation exposure can cause death, and it is highly toxic via skin contact and ingestion.

**Plants and Animals**

- **Castor beans**
  - Castor beans, which grow on a common ornamental plant, can be processed into ricin, a highly toxic chemical that can cause death. Symptoms usually appear within six to 24 hours after exposure, and there are only limited treatments available.

**Non-Traditional Weapons**

- **Chemical Weapons**
  - Chemical weapons can be dispersed as a contact, inhalation, or ingestion threat, and the effects can be severe, including skin damage, respiratory distress, and death.

- **Biological Weapons**
  - Biological weapons can be dispersed as a contact, inhalation, or ingestion threat, and the effects can be severe, including skin damage, respiratory distress, and death.

- **Nerve Agents**
  - Nerve agents can be dispersed as a contact, inhalation, or ingestion threat, and the effects can be severe, including skin damage, respiratory distress, and death.

- **Radioactive Dispersal Devices (RDDs)**
  - RDDs are devices that can disperse radioactive materials to cause a radiological threat. RDDs can be disseminated as a contact, inhalation, or ingestion threat, and the effects can be severe, including skin damage, respiratory distress, and death.

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Ricin is a plant toxin that is 30 times more potent than the nerve agent VX by weight and is readily dispersed through contact or inhalation threats. Symptoms usually appear 24 to 36 hours after exposure, and there are only limited treatments available.
Terrorist CBRN: Materials and Effects (U)

Background

Al-Qa‘ida and associated extremist groups have a wide variety of potential agents and delivery systems to deliver them. This chapter focuses on the potential biological, chemical, radiological, and nuclear (CBRN) weapons that have been used or are likely to be used in terrorist attacks. This chapter does not address the potential for accidental release of agents in the course of the group’s operations, nor does it address defenses against those threats. The purpose of this chapter is to provide a broad overview of potential terrorist weapons of mass destruction, incorporating relatively simple delivery systems and newly developed or refined materials, stocks of radiological materials, and the potential for theft or acquisition of these materials. Potential targets include power plants, transportation hubs, and other critical infrastructure.

Biological Agents

A number of relatively simple procedures for making minimal agent stocks are available. Al-Qa‘ida has used castor beans to produce ricin, and ricin can also be produced from other sources. A crude procedure for making minimal agent stocks is available. Such stocks are capable of causing considerable harm to those who are exposed to them. Small quantities of the agent can cause severe injury or death.

Chemical Agents

Chemical agents are relatively easy to obtain, store, produce, and transport. Al-Qa‘ida and other groups have used chemical agents in attacks. Chemical agents include phosgene, mustard agent, cyanides, and nerve agents.

Radiological Agents

Radiological agents are relatively easy to produce and transport. Al-Qa‘ida and other groups have used radiological agents in attacks. Radiological agents include radioactive materials such as uranium, plutonium, and cesium.

Nuclear Devices

Nuclear devices are relatively easy to produce and transport. Al-Qa‘ida and other groups have used nuclear devices in attacks. Nuclear devices include bombs containing nuclear material, such as uranium or plutonium.

Chemical Weapons

Chemical weapons are relatively easy to produce and transport. Al-Qa‘ida and other groups have used chemical weapons in attacks. Chemical weapons include nerve agents, blister agents, and choking agents.

Radioactive Materials

Radioactive materials are relatively easy to produce and transport. Al-Qa‘ida and other groups have used radioactive materials in attacks. Radioactive materials include radioactive isotopes that can emit harmful radiation.

Nuclear Weapons

Nuclear weapons are relatively easy to produce and transport. Al-Qa‘ida and other groups have used nuclear weapons in attacks. Nuclear weapons include bombs containing nuclear material, such as uranium or plutonium.

Deterrence

Deterrence is the primary means of preventing terrorist attacks. This chapter provides an overview of potential terrorist weapons and their capabilities. The purpose of this chapter is to provide a broad overview of potential terrorist weapons of mass destruction, incorporating relatively simple delivery systems and newly developed or refined materials, stocks of radiological materials, and the potential for theft or acquisition of these materials. Potential targets include power plants, transportation hubs, and other critical infrastructure.
There is no treatment for ricin poisoning after it has entered the bloodstream. Victims start to show symptoms within hours to days after exposure, depending on the dosage and route of administration.

- Terrorists have looked at delivering ricin in foods and as a contact poison, although we have no scientific data to indicate that ricin can penetrate intact skin.

Ricin will remain stable in foods as long as they are not heated, and it will have few indicators because it does not have a strong taste and is off-white in color.

**Radiological and Nuclear Devices**

**Radiological Dispersal Devices (RDD)**

An RDD is a conventional bomb not a yield-producing nuclear device. RDDs are designed to disperse radioactive material to cause destruction, contamination, and injury from the radiation produced by the material.

- A passive RDD is a system in which unshielded radioactive material is dispersed or placed manually at the target.
- An explosive RDD—often called a “dirty bomb”—is any system that uses the explosive force of detonation to disperse radioactive material. A simple explosive RDD consisting of a lead-shielded container—commonly called a “pig”—and a kilogram of explosive attached could easily fit into a backpack.

An atmospheric RDD is any system in which radioactive material is converted into a form that is easily transported by air currents.

Use of an RDD by terrorists could result in health, environmental, and economic effects as well as political and social effects. It will cause fear, injury, and possibly lead to levels of contamination requiring costly and time-consuming cleanup efforts.

**Improvised Nuclear Device (IND)**

An IND is intended to cause a yield-producing nuclear explosion. An IND could consist of diverted nuclear weapon components, a modified nuclear weapon, or indigenous-designed device.

INDs can be categorized into two types: implosion and gun assembled. Unlike RDDs that can be made with almost any radioactive material, INDs require fissile material—highly enriched uranium or plutonium—to produce nuclear yield.

**Online Resources**

More detailed information on the medical aspects of chemical, biological, and nuclear weapons threats can be found at the following Internet sites:

- Medical Research and Material Command: mrmc-www.army.mil
- Medical Research Institute of Chemical Defense: chemdef.apgea.army.mil
- Medical Research Institute of Infectious Diseases: www.usamriid.army.mil
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**Radiological and Nuclear Devices**

**Radiological Dispersal Device (RDD)**

An RDD is a conventional bomb that holds a non-yield-producing nuclear device. RDDs are designed to disperse radioactive material to cause destruction, contamination, and injury. They consist of shielding or containment to protect the RDD from weather and explosive effects.

- A passive RDD is a system in which unshielded radioactive material is dispersed or placed manually at the target.
- An explosive RDD—often called a “dirty bomb”—is any system that uses the explosive force of detonation to disperse radioactive material. A simple explosive RDD consisting of a lead-shielded container—commonly called a “pig”—and a kilogram of explosive attached could easily fit into a backpack.
- An atmospheric RDD is any system in which radioactive material is converted into a form that is easily transported by air currents.

Use of an RDD by terrorists could result in health, environmental, and economic effects as well as political and social effects. RDDs can be spoofed onto any radioactive material, and they can be produced on a large scale.

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- National Institute for Occupational Safety and Health: www.cdc.gov/niosh/topics/chemical-safety/default.html