

Module 1 - Potential Use of CBRN Weapons

- Lesson 1: What is a CBRN Terrorist Incident?
- Lesson 2: CBRN Events, A Real Possibility

Module 2 - CBRN Materials, Types, Effects and Incident Indicators

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- Lesson 2: Biological Agents
- Lesson 3: Radiological and Nuclear Material

Module 3 - Steps That Should Be Taken

Lesson 1: Steps That Should Be Taken

Module 4 - The CBRN Support Infrastructure

Lesson 1: The CBRN Support Infrastructure

Module 5 - Psychological or Social Responses

Lesson 1: Psychological or Social Responses

Final Exam

Module 1 Lesson 1: What is a CBRN Terrorist Incident?



Introduction

Welcome to the lesson: *What is a CBRN Terrorist Incident?*

This lesson will provide you with the definition of a CBRN terrorist incident, and explore some related terrorist incidents in North America.

Lesson Objectives:

At the end of this lesson you will be able to:

- Define the term “CBRN”
- Define the term “CBRN terrorist incident”
- Describe examples of terrorist incidents



Lesson Structure

In this lesson we will:

- Define the term “CBRN”
- Define the term “CBRN terrorist incident”
- Explore examples of terrorist incidents
- Summarize the lesson
- Complete a short lesson test

Module 1 Lesson 1: What is a CBRN Terrorist Incident?



In Context

The events of September 11, 2001 and the anthrax incidents of Fall 2001 have brought growing attention to terrorist threats.

Continuing terrorist attacks around the world demonstrate that no country is immune from the threat of terrorism. There is ongoing concern over the threat of chemical, biological, radiological, and nuclear (CBRN) terrorism.



Module 1 Lesson 1: What is a CBRN Terrorist Incident?



What is a CBRN Terrorist Incident?

Most likely your knowledge of CBRN terrorist incidents comes from radio, television, and the Internet. You have probably seen or heard about examples of suicide bombers, hijacked airliners, and car bombs.

The Government of Canada has a definition of *CBRN* and of *CBRN terrorist incidents*. What do you think the terms mean?



September 11, 2001 – A terrorist controlled aircraft crashes in a field in Pennsylvania.



CBRN

Weaponized or non-weaponized chemical, biological, radiological, and nuclear materials that can cause significant harm. This includes Dangerous Goods, Hazardous Materials, contaminated food, livestock and crops.

These materials pose significant threats in the hands of terrorists. [1]

[1] Chemical, Biological, Radiological, and Nuclear Strategy of the Government of Canada

Chemical
Biological
Radiological
Nuclear

Module 1 Lesson 1: What is a CBRN Terrorist Incident?



CBRN Terrorist Incident

An intentional CBRN incident that includes acts involving serious violence to persons or property where the offence potentially has a political, religious, or ideological objective either in Canada or a foreign state, or is a matter of national interest. [1]

[1] *CBRN Strategy, the Criminal Code of Canada and the Security Offences Act*

Could the following be considered an example of a CBRN terrorist incident?

An extreme religious group tries to cause harm to people by adding a biological agent to the city's water supply in order to bring attention to an issue.

- a Yes
- b No

Submit



Terrorist Incidents in North America.

Canada and its allies are potential targets of CBRN terrorism. While there has been no specific CBRN threat to Canada, below are some related examples that have occurred in North America.

Review each incident for more detail.

- 1982 – Ontario
- 1982 – California
- 1984 – Quebec
- 1984 – Oregon
- 1995 – Ohio
- 1995 – Yukon
- 1999 – Washington



September 11, 2001 – A terrorist controlled aircraft crashed in a field in Pennsylvania.



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- 1999 – Washington

Toronto, ON, October 14, 1982. A Toronto manufacturing plant was bombed. The Direct Action group claimed responsibility for the attack which injured 10 people. The plant was manufacturing components for cruise missiles.

The estimated cost of the disaster is \$6,770,000.[1]

[1] Canadian Disaster Database, PSEPC



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Armenian terrorists tried to bomb the Air Canada freight terminal at the Los Angeles International Airport. The police department's bomb squad deactivated the device before it exploded.

The terrorists were acting against Canadian targets to revenge the 1982 arrest of an Armenian terrorist group.



Los Angeles Airport



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- 1999 – Washington

Montreal, September 3, 1984. A retired U.S. military officer planted a bomb in Montreal's Central Station to protest a papal visit to Canada scheduled to take place the following week. The bomb killed 3 people and wounded 45 others. [1]

[1] Canadian Disaster Database, PSEPC



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Review each incident for more detail.

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- 1999 – Washington

Members of a terrorist group put Salmonella (a bacteria that can cause food poisoning) in salad bars and coffee creamers. Although 750 people got sick, no one died.



Areas where large groups of people gather are prime terrorist targets.



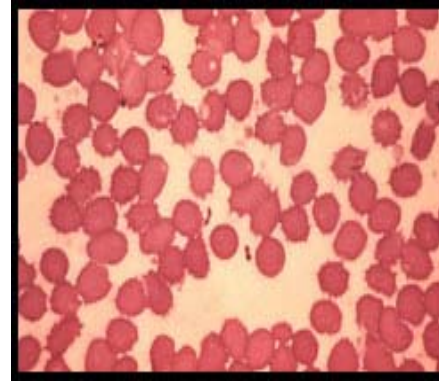
Terrorist Incidents in North America.

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Review each incident for more detail.

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- 1999 – Washington

Larry Wayne Harris was convicted of having three bottles of bubonic plague. He was suspected to be plotting an attack.[1]



This is a micrograph of a blood smear containing *Yersinia pestis* plague bacteria.

[1] Schweitzer, G.E. and C.D. Schweitzer, *A Faceless Enemy*, Perseus Publishing, Cambridge, MA, 2002, p.121



Terrorist Incidents in North America.

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- 1999 – Washington



Northwestern Canada and Alaska

Thomas Lewis Lavy was charged with trying to smuggle ricin into Canada. He planned to use the toxin as a weapon. Lavy hung himself in his jail cell.[1]

[1] Schweitzer, G.E. and C.D. Schweitzer, *A Faceless Enemy*, Perseus Publishing, Cambridge, MA, 2002, p.121



Terrorist Incidents in North America.

Canada and its allies are potential targets of CBRN terrorism. While there has been no specific CBRN threat to Canada, below are some related examples that have occurred in North America.

A terrorist was arrested while trying to smuggle explosives into a small town in Washington. It looked like he was involved in a plan to detonate a bomb at the Los Angeles International Airport.

Review each incident for more detail.

- 1982 – Ontario
- 1982 – California
- 1984 – Quebec
- 1984 – Oregon
- 1995 – Ohio
- 1995 – Yukon
- 1999 – Washington**



An explosive dissemination device



In Summary

In this lesson, we learned how Canada defines CBRN and CBRN terrorist incidents. We also looked at examples of terrorist incidents that have occurred in North America.



Terrorism is a modern reality for which we must prepare.



Lesson Test

You have completed the lesson: *What is a CBRN Terrorist Incident?*

Next you will be presented with a lesson test. The test will prepare you for the CBRN Awareness course final exam.

NOTE:

- You will not be able to go back into the lesson once you have started the test.
- The passing grade for the lesson test is 70%.

Module 1 Lesson 1: What is a CBRN Terrorist Incident?



True or False: CBRN materials are harmless in the hands of terrorists.

TRUE

FALSE

Module 1 Lesson 1: What is a CBRN Terrorist Incident?



True or False: CBRN includes Dangerous Goods, Hazardous Materials, contaminated food, livestock and crops.

TRUE

FALSE

Module 1 Lesson 1: What is a CBRN Terrorist Incident?



True or False: The following is an example of a CBRN terrorist incident:

A political group attacks several banks with a chemical agent in order to intimidate the public about its economic security.

TRUE

FALSE

Module 1 Lesson 1: What is a CBRN Terrorist Incident?



Which of the following could be defined as a CBRN terrorist incident? Select the TWO correct answers.

- a An accident at a chemical manufacturing plant causes health effects for employees and environmental damage.
- b A fanatical organization plants a radioactive source in a country's embassy in retaliation for the capture of its members.
- c The water supply of a city is tainted with a biological agent by a group wanting to influence the country's foreign policy.
- d A contagious form of avian influenza is spread to a number of farms when farmers unknowingly use infected feed for their chickens.

Submit



Introduction

Welcome to the lesson CBRN Events, A Real Possibility?

This lesson will explore reasons why terrorists use CBRN weapons and what their potential targets might be.

In order for a weapon to have the desired result, it must create a psychological as well as a physical impact. In this lesson, we will examine how a CBRN attack can have different impacts on victims.

Lesson Objective:

At the end of this lesson you will be able to:

- recognize that a real possibility of a CBRN threat exists;
- list reasons why CBRN weapons may be used;
- describe likely targets and explain the potential; and
- describe possible dissemination devices.



Lesson Structure

In this lesson we will:

- demonstrate that a CBRN threat is indeed a possibility;
- review several CBRN attacks;
- discover some potential terrorist targets;
- see why CBRN weapons are weapons of choice;
- look at every day items that can be used to disseminate contaminants;
- summarize the lesson; and
- complete a short lesson test.



A CBRN Threat Is It a Real Possibility?

TOKYO, 1995: The attack on a busy Tokyo subway is an example of a terrorist incident that shocked the world. A religious sect manufactured and used the deadly chemical agent sarin, releasing it in a crowded subway car. The attack caused the deaths of 12 people and injured 5510 others. The terrorists use of a CBRN weapon changed the face of terrorism.



Victims of the 1995 Tokyo subway attack.



A CBRN Threat Is It a Real Possibility?

New York, 2001: Before September 11, 2001, few would have thought a commercial aircraft could be a Weapon of Mass Destruction (WMD). The number of casualties and terror caused by this attack was staggering.

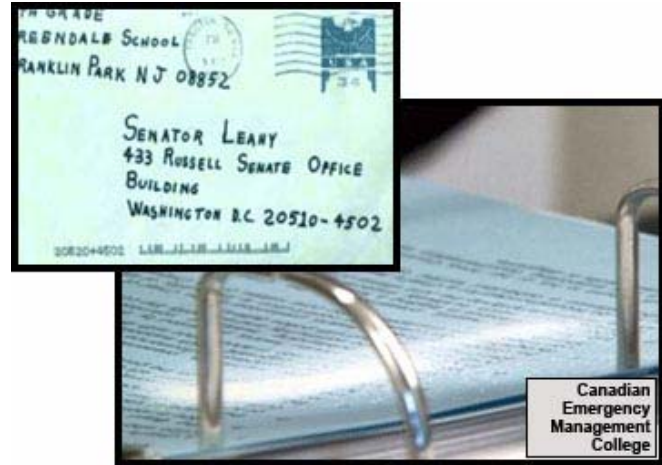


Aftermath of September 11, 2001.



A CBRN Threat Is It a Real Possibility?

USA, 2001: The fear of a biological terrorist attack was realized in October, 2001. It was discovered with the first use of Anthrax in Florida, New Jersey, New York, and Washington DC. The letters containing Anthrax were mailed from inside the United States.



Letters mailed from within the U.S. contained anthrax.



A CBRN Threat Is It a Real Possibility?

Experts agree that if CBRN materials were used with a bomb, it would be a catastrophe. The number of deaths would be very high. It would also pose a massive challenge for emergency and health care agencies. In an urban setting, CBRN weapons could cause a large number of deaths and mass panic.

As Canadians, we do not often think that a CBRN attack is a possibility. However, Canada must be prepared to deal with the threat that these weapons pose.



The impact of terrorism can be reduced by having a trained response.



Think About It!

In the next few minutes, we will be looking at potential targets for terrorists. The questions are intended to get you thinking. There are no right or wrong answers.

Think about your community. Are there any places or events that may be potential targets for terrorists?

What Are Some Likely Targets?



Religious Groups



How Terrorists Select Targets

We have some information about how potential targets are identified. In general, terrorists want to achieve one or more of the following:

- cause harm to a large number of victims;
- attract media attention;
- cause mass panic, a state of insecurity and weakness
- cripple an economy; and
- harm a political, social, religious, or industrial opponent.



Could this building be a target?



What Are Some Likely Targets?

Based on the goals previously outlined, which of the following do you think might be likely targets? *(Select all that apply)*

- a transportation facilities
- b industrial storage facilities
- c religious properties
- d military installations, public security/financial institutions
- e vehicles that transport toxic materials
- f events that host crowds such as sporting events, concerts, etc.
- g hospitals

Submit



The Effects of Terrorism

No matter what the target, terrorism can have negative effects on the entire population.

Terrorism can also be bad for the economy. For example, the attack on the World Trade Center had a significant effect on stock markets worldwide. In addition, the loss of jobs and businesses had a huge impact on the economy.





Why CBRN Weapons?

What characteristics would terrorists look for in a CBRN weapon, given the goals that were discussed previously? (*Select all that apply*).

- a Potential for damage/destruction
- b Limited knowledge required to use
- c Cost effective
- d Ease of use
- e Transportable

Submit



Why Use CBRN Weapons?

Easy to use - It is very easy for terrorists to access the people and the material needed to build a CBRN weapon.

Effective for mass destruction Terrorist groups now seem focused on killing large numbers of the general public or on destroying critical infrastructure. In the past, they attempted to kill powerful or symbolic individuals. CBRN weapons are perfect for this type of attack.



An unusual fog appearing on a subway car



What Are Some Possible Dissemination Devices?

Terrorists can use many every day devices to spread contamination.

- Ordinary spraying devices, such as fire extinguishers, or aerosol cans
- Heating or air conditioning systems in buildings
- More elaborate mechanisms, e.g. a crop duster
- Explosive devices such as bombs
- Food or water supplies
- Envelopes or small packages



There are many devices that could be used to disseminate CBRN material.



In Summary

In this lesson we:

- determined that a real possibility of a CBRN threat exists;
- listed reasons why CBRN weapons may be used;
- described likely targets and explained the potential effects of terrorist attacks using CBRN weapons; and
- described possible dissemination devices.

Throughout this lesson, you were made aware of the potential use of Chemical, Biological, Radiological, and Nuclear (CBRN) weapons by terrorists. Actual examples of terrorist attacks in North America and throughout the world provided a picture of likely targets and outlined some basic reasons for such attacks. Various means of disseminating contaminants were also reviewed.

This information is important. Keep it in mind as you reflect on the possible damage a CBRN attack could cause on your workplace or community.



Lesson Test

You have completed the lesson: *CBRN Events, A Real Possibility?*

Next you will be presented with a lesson test. The test will prepare you for the *CBRN Awareness Course* final exam.

NOTE:

- You will not be able to go back into the lesson once you have started the test.
- The passing grade for the lesson test is 70%.



Which of the following would be potential (likely) targets for the use of a CBRN weapon? *Select all that apply*

- a Canada's federal parliament buildings
- b The Toronto International Auto Show
- c Private individual
- d Montreal's subway system

Submit

Module 1 Lesson 2: CBRN Events, A Real Possibility.



Which of the following would NOT be objectives of a CBRN attack?
Select all that apply

- a Retaliation against your neighbour
- b Cause mass panic and insecurity
- c To benefit the victims
- d Attract media attention
- e Cripple an economy
- f Harm a large number of people

Submit

Module 1 Lesson 2: CBRN Events, A Real Possibility.



There are two primary reasons why CBRN weapons are used, select them from the list below.

- a When used, CBRN weapons generate sympathy for the terrorist organization
- b Easy to use, limited technical expertise required to use a CBRN weapon
- c CBRN weapons are focused, kill selectively only identified targets
- d Good for harming / killing indiscriminately large numbers of people

Submit



Which of the following statements is true?

- a Disseminating the effects of a CBRN weapon is a highly technical process.
- b It's quite possible to disseminate the effects of a CBRN weapon using "every day" devices.
- c Although "every day" devices can be used, a lot of technical knowledge is still required.

Submit



Introduction

Welcome to the *Chemical Agents* lesson.

Materials that could be used as chemical weapons will be examined to understand their potential impact on a large-scale event. We will explore:

- the definition of chemical agents;
- how they enter the body;
- signs and symptoms found in victims of a chemical agent attack; and
- indicators that a chemical agent was used in an attack.

Lesson Objectives:

At the end of this lesson you will be able to:

- describe chemical agents;
- explain how they enter the body;
- describe the signs and symptoms of their presence; and
- identify the indicators of an attack.



Lesson Structure

In this lesson we will:

1. explore chemical agents;
2. discover what they are and how they enter the body;
3. study the signs and symptoms and the indicators of an attack;
4. summarize the lesson; and
5. take a brief lesson test.



In Context...

Many household chemicals could be used as chemical agents in a CBRN attack. They do not have to be highly complex compounds in order to cause harm.

Which of the following products do you think could be used to form the basis for a chemical attack? *Select all that apply.*

- a Rat poison
- b Lawn fertilizer
- c Laundry bleach
- d Chlorine for your swimming pool

Submit



Chemical Agents

Chemical weapons are specifically designed to kill or to seriously injure people. Many chemical weapons are similar to household products, such as insect sprays, but chemical weapons are much more hazardous.

Chemical weapons are often used because they are easy and cheap to make. They work quickly and can cause mass injury and panic. Some chemical weapons only require a small amount of a particular chemical to cause death.



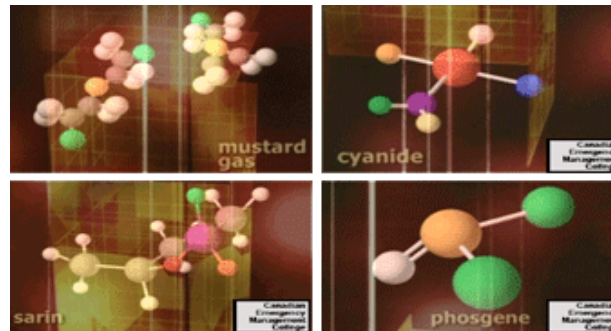
Chemical weapons are especially attractive to terrorists.



What Are They?

Some chemical agents, when slightly altered, can be used for industrial purposes.

For example, the chlorine used in swimming pools was first used during World War I as a choking agent.



Chemical agents are often derived from common ingredients.



What Are They?

The four types of chemical agents are:

- nerve agents
- blood agents
- blister agents
- choking agents



Example molecular structures.

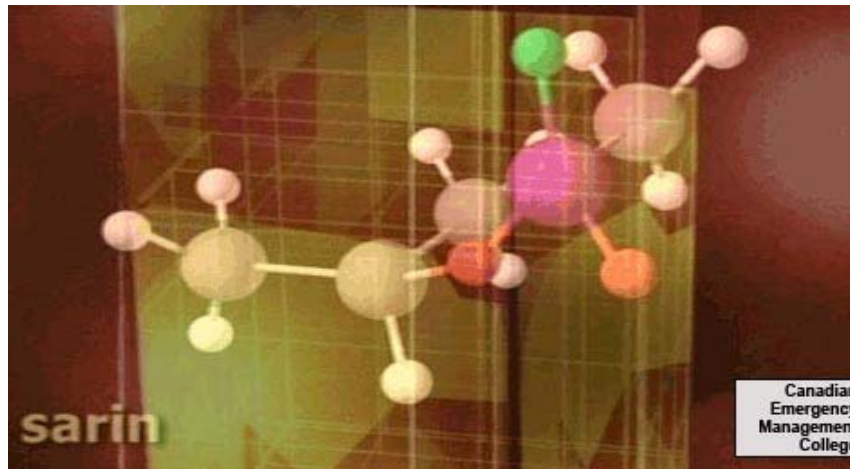


What Are They?

The four types of chemical agents are:

- **nerve agents**
- blood agents
- blister agents
- choking agents

Nerve agents attack and damage the central nervous system.



Sarin structure.

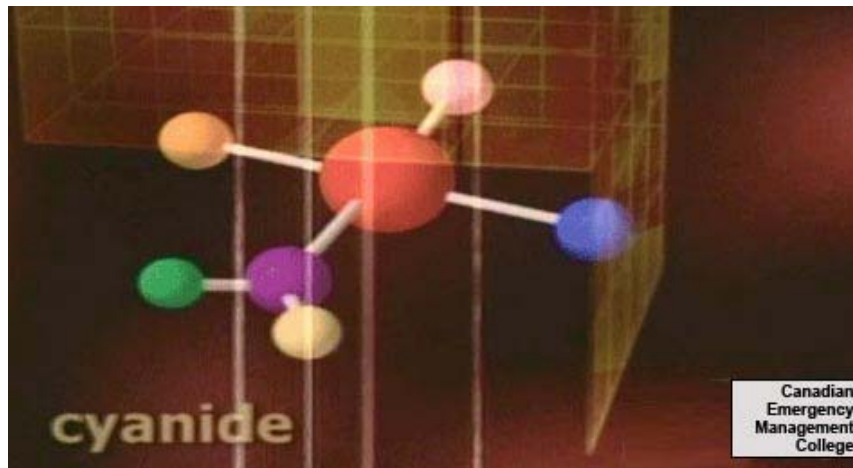


What Are They?

The four types of chemical agents are:

- nerve agents
- **blood agents**
- blister agents
- choking agents

Blood agents attack the blood by blocking the flow of oxygen.



Cyanide structure.



What Are They?

The four types of chemical agents are:

- nerve agents
- blood agents
- **blister agents**
- choking agents

Blister agents affect the skin, eyes, mucous membranes, and respiratory system.



Mustard gas structure.

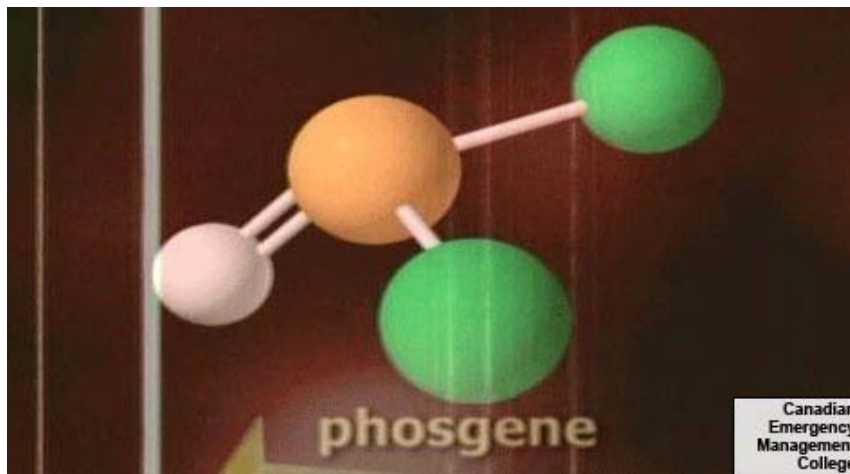


What Are They?

The four types of chemical agents are:

- nerve agents
- blood agents
- blister agents
- **choking agents**

Choking agents affect the respiratory system.



Phosgene structure.



Riot Control Agents

Riot control agents are chemical agents that produce non-lethal and temporary impairment.



Pepper Spray



How They Enter the Body

Chemical agents can enter the body by:





Signs and Symptoms

Each chemical has different effects. The effect will depend on the amount of chemical used, the length of exposure to it, how it gets into the body, and how concentrated it is. Symptoms may include:

- Pinpoint pupils and reduced vision
- Redness or irritation of eyes and skin
- Coughing and/or choking
- Shortness of breath or tightening of the chest
- Nausea and vomiting
- Runny nose
- Dizziness
- Loss of consciousness
- Seizures



Coughing is a potential symptom of exposure.



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Coughing is a potential symptom of exposure.

Chemical agents can act within seconds or minutes. The symptoms can be similar to cold and flu type illnesses. If a lot of people have the same symptoms at the same time, it is unlikely that the symptoms are due to an illness.



Indicators of an Attack

Indicators of a chemical attack are probably the easiest type of CBRN attack to recognize. Chemical agents usually have an immediate and noticeable effect on people.



Tokyo Subway - 1995: Several subway stations were affected; in many cases doctors successfully administered shots of atropine (an antidote) to victims, but for some it was too late.



Indicators of an Attack

Indicators may include:

- **Individuals all displaying similar symptoms**



Potential attack indicators.



Indicators of an Attack

Indicators may include:

- Individuals all displaying similar symptoms
- **Abandoned spraying devices or packages**



Potential attack indicators.



Indicators of an Attack

Indicators may include:

- Individuals all displaying similar symptoms
- Abandoned spraying devices or packages
- **Unusual fogs, clouds, mists - particularly indoors**



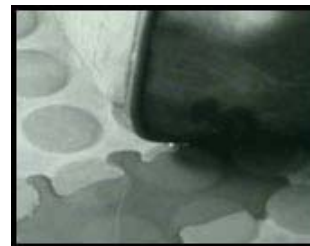
Potential attack indicators.



Indicators of an Attack

Indicators may include:

- Individuals all displaying similar symptoms
- Abandoned spraying devices or packages
- Unusual fogs, clouds, mists - particularly indoors
- **Pools of liquid that have no visible source or an unusual source**



Potential attack indicators.



Indicators of an Attack

Indicators may include:

- Individuals all displaying similar symptoms
- Abandoned spraying devices or packages
- Unusual fogs, clouds, mists - particularly indoors
- Pools of liquid that have no visible source or an unusual source
- **Unusual and unexplained dead animals, birds, or insects**



Potential attack indicators.



Indicators of an Attack

Indicators may include:

- Individuals all displaying similar symptoms
- Abandoned spraying devices or packages
- Unusual fogs, clouds, mists - particularly indoors
- Pools of liquid that have no visible source or an unusual source
- Unusual and unexplained dead animals, birds, or insects
- **Abnormal odours or unusual smells**



Potential attack indicators.



Indicators of an Attack

Indicators may include:

- Individuals all displaying similar symptoms
- Abandoned spraying devices or packages
- Unusual fogs, clouds, mists - particularly indoors
- Pools of liquid that have no visible source or an unusual source
- Unusual and unexplained dead animals, birds, or insects
- Abnormal odours or unusual smells
- **An explosion**



Potential attack indicators.



Review

Which of the following are potential, immediate symptoms of a chemical attack? *Select all that apply.*

- a Sneezing
- b Pinpoint pupils and reduced vision
- c Nausea
- d Redness or irritation of eyes and skin
- e Seizures

Submit



In Summary

In this lesson, we:

- described chemical agents;
- explained how they enter the body;
- described the signs and symptoms of their presence; and
- identified the indicators of an attack.

Throughout this lesson, you learned how to recognize the use of chemical agents by studying their effects. You learned how these agents can cause harm and how they can enter the human body. The lesson also outlined specific symptoms, signs, and indicators that you can use to determine the presence of chemical agents.



Lesson Test

This completes the lesson on *CBRN Materials Chemical Agents*. Next you will be presented with a lesson test.

This test will prepare you for the CBRN Awareness Course final exam.

NOTE:

1. You will not be able to go back into the lesson once you have started the test.
2. The passing grade for the lesson test is 70%.



Which of the following is a symptom of exposure to a chemical agent?

- a Pinpoint pupils and reduced vision
- b Nausea and vomiting
- c Seizures
- d Loss of consciousness
- e Redness or irritation of eyes and skin
- f All of the above

Submit



Which of the following statements are TRUE about chemical agents? *Select both that apply.*

- a There are three categories of chemical agents: viruses, toxins, and bacteria.
- b Signs and symptoms of chemical agent exposure are usually delayed.
- c There are four types of chemical agents: nerve, blister, blood, and choking.
- d Signs and symptoms of a chemical agent exposure appear almost immediately.

Submit



Which of the following statements is FALSE? *Select the correct answer.*

- a One key to identifying a chemical attack is that a lot people have the same symptoms at the same time.
- b Chemical agents can enter the body by direct contact, injection, breathing them in, or by eating and drinking.
- c Chemical weapons are not usually used because they are expensive and difficult to make.
- d Chemical weapons are often used because they are easy and cheap to make.

Submit



How can chemical agents enter the body? *Select all that apply.*

- a Through your eyes
- b By eating contaminated food
- c By inhalation
- d No answers are correct

Submit



Introduction

Welcome to the *Biological Agents* lesson.

Materials that could be used as biological weapons will be examined to understand their potential impact on a large-scale event. We will explore:

- the definition of a biological agent;
- how it enters the body;
- signs and symptoms found in victims; and
- indicators that it was used in an attack.

Lesson Objectives:

At the end of this lesson you will be able to:

- describe biological agents;
- explain how they enter the body;
- describe the signs and symptoms of their presence; and
- identify the indicators of an attack.



Lesson Structure

In this lesson we will:

1. explore biological agents;
2. discover what they are and how they enter the body;
3. study the signs and symptoms, and the indicators of an attack;
4. summarize the lesson; and
5. take a brief lesson test.



Introduction

Biological agents are living organisms or the product of living organisms. They can be used by terrorists to kill or disable people.

Biological agents are particularly troublesome because they can go undetected for hours or days. They may appear like a common cold, flu, or other illness.

Some biological agents can be deadly in very small quantities.



External signs of exposure to biological agents. (source CDC: Phil)



What Are They?

There are three categories of biological agents, all of which can be deadly:

- Bacteria: examples include the plague and anthrax
- Viruses: examples include smallpox and VHF
- Toxins: examples include botulism and ricin





What Are They?

There are three categories of biological agents, all of which can be deadly:

- Bacteria: examples include the **plague** and anthrax
- Viruses: examples include smallpox and VHF
- Toxins: examples include botulism and ricin



Plague patient displaying a swollen axillary lymph node. After the incubation period of 2-6 days, symptoms of the plague appear. They include severe malaise, headache, shaking chills, fever, and pain and swelling, or adenopathy (swelling) in the affected regional lymph nodes (known as buboes). (Source CDC: PHIL)



What Are They?

There are three categories of biological agents, all of which can be deadly:

- Bacteria: examples include the plague and **anthrax**
- Viruses: examples include smallpox and VHF
- Toxins: examples include botulism and ricin



Anthrax lesion on the skin of the forearm caused by the bacterium *Bacillus anthracis*. Here the disease has manifested itself as a cutaneous ulceration, which has begun to turn black. Hence the origin of the name "Anthrax", after the Greek name for coal. (Source CDC: PHIL)



What Are They?

There are three categories of biological agents, all of which can be deadly:

- Bacteria: examples include the plague and anthrax
- Viruses: examples include **smallpox** and VHF
- Toxins: examples include botulism and ricin



This photograph shows the face of a boy infected with smallpox; facial lesions in various stages of resolution. In this picture of the face, the pocks are seen in greater detail. A few have been rubbed off from the cheeks and nose. At this point in time, the patient is still highly contagious. (Source CDC: PHIL)



What Are They?

There are three categories of biological agents, all of which can be deadly:

- Bacteria: examples include the plague and anthrax
- Viruses: examples include smallpox and **VHF**
- Toxins: examples include botulism and ricin



Isolated female patient diagnosed with Crimean-Congo hemorrhagic fever (C-CHF). Crimean-Congo Hemorrhagic Fever is a tick-borne hemorrhagic fever with documented person-to-person transmission, and a fatality rate of approximately 30%. This widespread virus has been found in Africa, Asia, the Middle East, and eastern Europe. (Source CDC: PHIL)



What Are They?

There are three categories of biological agents, all of which can be deadly:

- Bacteria: examples include the plague and anthrax
- Viruses: examples include smallpox and VHF
- Toxins: examples include **botulism** and ricin



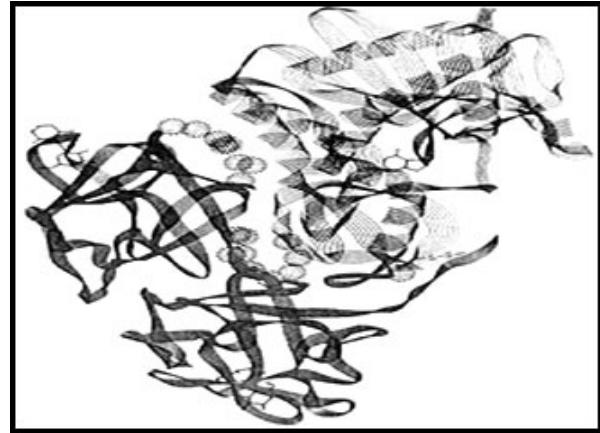
Six week old infant with botulism. This is evident in the marked loss of muscle tone, especially in the region of the head and neck. (Source CDC: PHIL)



What Are They?

There are three categories of biological agents, all of which can be deadly:

- Bacteria: examples include the plague and anthrax
- Viruses: examples include smallpox and VHF
- Toxins: examples include botulism and **ricin**



Ricin is a highly lethal poison (i.e. the 3rd most lethal substance known) and is now sometimes used as an agent of bioterrorism. It is derived from the commonly found castor bean, which is borne from the castor plant, *Ricinus communis*. (Source CDC: PHIL)



How They Enter the Body

Biological agents enter the body in the following ways:





Signs and Symptoms

The symptoms and effects of each biological agent are different. Young, healthy people are less likely to be affected by biological agents than the elderly, or chronically or seriously ill persons. Symptoms may include:

- Coughing
- Flu-like indicators
- Shortness of breath
- Weakness or fatigue
- Vomiting
- Diarrhea



Some common symptoms could be coughing, flu-like symptoms, shortness of breath, weakness or fatigue, vomiting, or diarrhea.



Signs and Symptoms

Biological agents can take hours or days to make people sick. If released in a public place, it could take some time before any physical signs or symptoms become apparent.

If the agent is contagious and produces flu-like symptoms, it can be awhile before it is identified that infected people are infecting others.



Some common symptoms could be coughing, flu-like symptoms, shortness of breath, weakness or fatigue, vomiting, or diarrhea.



Indicators of an Attack

Biological agents can be odourless and invisible. Often the only way to recognize an attack is by the occurrence of such indicators:

- An unusual number of people displaying flu-like symptoms
- An unusual or unscheduled insecticide-like spraying
- Abandoned spraying devices
- An unusual number of people with flu-like symptoms at an unusual time of year
- Several people exhibiting food poisoning symptoms such as vomiting and diarrhea
- A call from a terrorist reporting the attack





Review

Which of the following are symptoms of exposure to a biological agent? *Select the correct answer*

- a Flu-like symptoms
- b Coughing
- c Weakness/fatigue
- d All of the above

Submit



In Summary

In this lesson, we:

- described biological agents;
- explained how they enter the body;
- described the signs and symptoms of their presence; and
- identified the indicators of an attack.

Throughout this lesson you learned how to recognize the use of biological weapons by studying their effects. You learned how biological agents can cause harm and how they can enter the human body. The lesson also outlined specific symptoms, signs, and indicators that you can use to determine the presence of biological agents.



Lesson Test

This completes the lesson on *CBRN Materials Biological Agents*.

Next you will be presented with a lesson test.

This test will prepare you for the *CBRN Awareness Course* final exam.

NOTE:

1. You will not be able to go back into the lesson once you have started the test.
2. The passing grade for the lesson test is 70%.



Which of the following are typically symptoms of exposure to a biological agent? *Select both that apply.*

- a Pinpoint pupils and reduced vision
- b Diarrhea
- c Seizures
- d Weakness/fatigue
- e Redness or irritation of eyes and skin

Submit



Which of the following statements are true about biological agents? *Select both that apply.*

- a There are three categories of biological agents: viruses, toxins, and bacteria.
- b Signs and symptoms of a biological exposure appear almost immediately.
- c There are four types of biological agents: nerve, blister, blood, and choking.
- d Anthrax and botulism are two examples of biological agents.

Submit



Which of the following may be indicators of a biological attack? *Select all that apply.*

- a several people exhibiting severe burns
- b abandoned spraying devices
- c several people exhibiting food poisoning symptoms such as vomiting and diarrhea
- d unusual number of people displaying flu-like symptoms

Submit



Young, healthy people are less likely to be affected by biological agents than the elderly, or chronically or seriously ill persons. True or False?

TRUE

FALSE



Introduction

Welcome to the *Radiological and Nuclear Material* lesson.

Radioactive Materials that could be used as weapons will be examined to understand their potential impact in a large-scale event. The effects of a nuclear explosion are outside the scope of this course. We will explore:

- the definition of radiological and nuclear material;
- how they enter the body;
- signs and symptoms found in victims; and
- indicators that they were used in an attack.

Lesson Objectives:

At the end of this lesson you will be able to:

- describe the radiological/nuclear material;
- explain how they enter the body;
- describe the signs and symptoms of their presence; and
- identify the indicators of an attack.



Lesson Structure

In this lesson we will:

- explore radiological and nuclear material;
- discover what they are and how they enter the body;
- study the signs and symptoms, and the indicators of an attack;
- summarize the lesson; and
- take a brief lesson test.



Background of Radiation

Within the context of CBRN terrorism, radiation refers to the energy given off by radiological material.

Radioactive materials are found in solid, liquid, gas and powder forms.

Radiation cannot be seen, heard, felt, smelled, or tasted but when used in a terrorist incident, it can be both powerful and damaging due to:

1. general public fear of radiological material; and
2. the potential hazards of radiological material.



Radiation is invisible and highly lethal.



Background Radiation

Radiation is everywhere in the natural environment. It comes from the sun, outer space, soil and rocks, the air, and even from within our own bodies.

We are all exposed to natural, background radiation every day.





Man-made Radiation

Radiation can also come from human-made sources such as smoke detectors, x-ray machines, medical radioisotopes, and industrial equipment.

All of these materials have the potential to be dangerous if they are not handled properly. Many people (such as doctors, dentists, nurses, uranium miners, and nuclear power plant workers) also receive doses several times the natural background as part of their jobs with no measurable ill effects.

The use of controlled radioactive materials is common.



A CAT study is a method of obtaining thin cross sectional images of the body. The CAT utilizes X-rays in the computerized reconstruction of the images.



Nuclear Materials

Nuclear plants use radiological material to produce energy by using the nuclear reaction, also known as fissioning or the splitting of atoms.

The fissioning process produces high amounts of explosives, which is why radiological material that is fissionable is used for nuclear plants and nuclear weapons.

What is the difference between a nuclear plant and a nuclear bomb? A power plant is a controlled nuclear reaction – a bomb is not.



Darlington Nuclear Generating Station



How They Damage the Body

Unlike chemical and biological agents, some radiological materials do not need to contact or enter the body in order to cause harm. Some of the radiation emitted by radioactive materials can pass through containers, walls, clothing, etc., potentially harming people nearby.





How They Enter the Body

Alternatively you may be exposed by:





Signs and Symptoms

Exposure to extremely high doses of radiation can cause skin reddening or burns, or acute radiation syndrome. Short-term symptoms of acute radiation syndrome appear seconds to a couple of days after exposure. Symptoms include:

- Nausea
- Vomiting
- Diarrhea
- Convulsions
- Unconsciousness
- Death



Radiation Burn: Someone whose skin has been burned by exposure to radiation.



Indicators of an Attack

Radioactive and nuclear materials can be used in an attack in the following ways:

- **Planting a sealed radioactive source in a populated area**



Sealed sources of Radioactive Material



Indicators of an Attack

Radioactive and nuclear materials can be used in an attack in the following ways:

- Planting a sealed radioactive source in a populated area
- **Spreading radioactive material using a dissemination device, such as a dirty bomb which spreads radioactive material upon explosion**



An example of a dirty bomb.



Indicators of an Attack

Radioactive and nuclear materials can be used in an attack in the following ways:

- Planting a sealed radioactive source in a populated area
- Spreading radioactive material using a dissemination device such as a dirty bomb which spreads radioactive material upon explosion
- **Detonating a nuclear weapon**

What is the difference between a dirty bomb and a nuclear bomb? Click Next to find out.



A warhead being prepared for transport.



Indicators of an Attack

Dirty bombs are very different from nuclear weapons. Dirty bombs may cause some damage due to the initial explosion, but their primary purpose is to spread radioactive material.



Indicators of an Attack

The detonation of a nuclear weapon would be immediately obvious due to the extremely large explosion. For all but the smallest nuclear weapons, immediate effects are felt primarily from the massive blast and heat, not radiation.

For large weapons, radiation from fallout (radioactive material thrown into the air and falling back to the ground) may be a hazard for a long time following the explosion.



Nuclear weapons testing.



Indicators of an Attack

The only way to conclude that there has been an attack using radioactive materials is to use radiation detection equipment. Other possible indicators of such an attack may include:

- radiation warning symbols on sources or abandoned containers;
- threats related to radioactive or nuclear material; and
- people displaying signs and symptoms of exposure to radiation.



Radioactive Material Storage Bag



Review Radiological and nuclear material

Which ONE of the following statements is FALSE with regards to radiological and nuclear material?

- a Low level exposure to radiological material has significant, long-term health risks.
- b You can only detect radiological and nuclear material with specialized detection equipment.
- c You may be exposed to radiological material without direct contact with the source.
- d Immediate effects of a nuclear explosion are not typically massive doses of radiation.

Submit



In Summary

In this lesson, we:

- described the radiological/nuclear material;
- explained how they enter the body;
- described the signs and symptoms of their presence; and
- identified the indicators of an attack.

Throughout this lesson, you learned how to recognize the use of radiological and nuclear materials by studying their effects. You learned how these agents can cause harm in the environment and how they can enter the human body.

The lesson also outlined specific symptoms, signs, and indicators that you can use to determine the presence of radiological and nuclear material.



Lesson Test

This completes the lesson on *CBRN Materials*.

Next you will be presented with a lesson test.

This test will prepare you for the *CBRN Awareness Course* final exam.

NOTE:

1. You will not be able to go back into the lesson once you have started the test.
2. The passing grade for the lesson test is 70%.



Which of the following statements are **true** about radiological and nuclear material? *Select both that apply.*

- a Low level doses of radiation do not have any significant, long term health risks.
- b You are able to tell a radioactive material because it glows in the dark.
- c You may be exposed to radiological material without directly contacting a source.
- d The immediate effects of a nuclear explosion are limited to massive doses of radiation.

Submit



Which of the following statements are FALSE? *Select all three that apply.*

- a Symptoms of moderate levels of radiological exposure are apparent almost immediately after exposure.
- b Radiological and nuclear weapons are often used because they are easy and cheap to make.
- c Radiological material requires direct contact with the body in order to cause harm.
- d Dirty bombs are designed to spread radioactive material.

Submit



Immediate effects of a large scale nuclear explosion are felt primarily from the: *Select all three that apply.*

- a Blast
- b Heat
- c Radiation
- d Debris

Submit



The use of controlled radioactive materials is common.

TRUE

FALSE



Introduction

Welcome to the *Steps That Should Be Taken* Lesson.

Since you may be the first person to notice the signs of a possible CBRN terrorist attack, it is important to know what steps to take in the first few moments.

While the incident may involve injuries, illness, damage to buildings, and other property, there are steps you can take to help protect yourself and alert first responders.

Lesson Objectives:

At the end of this lesson you will be able to:

- observe your surroundings;
- take self-protective measures (e.g., agent avoidance techniques, emergency wash down);
and
- follow your organizations emergency plan(s).



Lesson Structure

In this lesson we will:

- talk about the importance of being aware of your surroundings;
- discover how you can take simple steps to protect yourself;
- describe the significance of knowing and following your employers emergency plans;
- summarize the lesson; and
- take a brief lesson test.



In Context...

You hear a small explosion, and upon investigation, you find several unconscious people.



Victims show signs of illness.

What are your priorities? Select two.

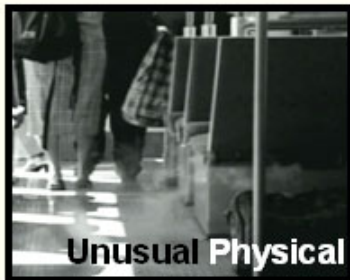
- a Leave the potentially contaminated area.
- b Provide medical assistance to casualties.
- c Remove casualties from the area.
- d Contact authorities.

Submit



Observe Your Surroundings

It is important that you are observant of your surroundings. In particular you should be aware of:



Unusual Physical Indicators



Medical Signs and Symptoms



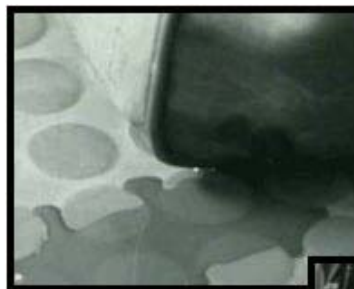
Environmental Signs



Observe Your Surroundings Physical Signs

Be aware of your surroundings. Physical signs of a CBRN incident could include:

- unusual pools of liquid on the ground;
- abnormal smell at the location;
- strange fog or clouds indoors;
- unusual devices;
- things out of place;
- signs of explosives in the area; and
- suspicious activity.



Physical signs of attack.



Observe Your Surroundings Medical Signs and Symptoms

Look for medical symptoms or signs of distress such as:

- many people exhibiting similar signs of illness; or
- people displaying strange behaviours or acting out of the ordinary.



Experiencing fatigue, dizziness or other unusual symptoms



Observe Your Surroundings Environmental Signs

Environmental signs like dead animals, birds, and insects in the area can also be a clue. They may be affected before humans and could indicate the presence of CBRN materials.



Unusual signs such as dead birds or animals



Observe Your Surroundings - Review

Which of the following may be indicators of a CBRN incident? Select all that apply.

- a One staff member out of 25 has flu-like symptoms
- b Dead animals with no apparent cause of death
- c Mist coming out of an air conditioning duct
- d Four out of five people who ate at the same buffet are violently ill

Submit



Protect Yourself

If you suspect that a CBRN incident has occurred:

- stay calm;
- cover your nose and mouth with a cloth;
- take frequent shallow breaths;
- remove yourself from the immediate hazard area;
- go to a safe area and notify the authorities;
- be prepared to describe what you saw, in detail; and
- protect the scene by ensuring others don't enter it.

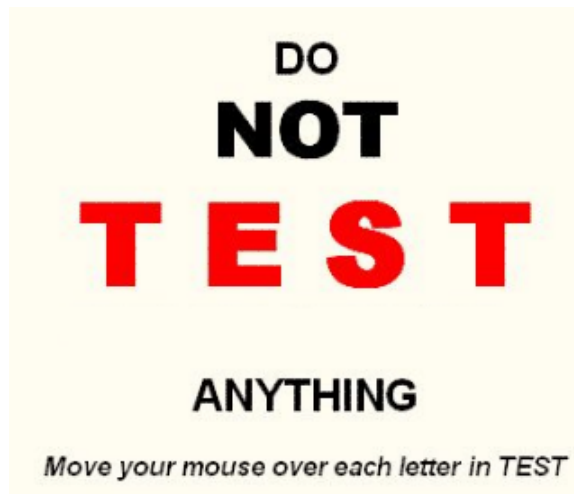


Remove yourself from the immediate hazard area and notify authorities.



Protect Yourself

If you suspect that a CBRN incident has occurred:





Protect Yourself

If you believe that you have been exposed to CBRN agents:

- remove all outer clothing, if possible; and
- flush affected areas with cool water.



Flush affected areas with cool water.



Protect Yourself

Wait in a safe location near the site in order to receive important information such as:

- risk assessment;
- possible decontamination; and
- health counseling.

People who leave the scene and rush to their doctors office or the hospital risk not getting important information or care. They also risk spreading the contamination beyond the incident site.



Decontamination is provided to those who do not leave the scene.



Protect Yourself - Review

If you are involved in a CBRN incident, what should you do? *Select the two correct statements.*

- a If you believe that you have been contaminated, wash yourself with cool water.
- b Before leaving the contaminated site, take deep breaths to calm yourself down.
- c Wait in a safe location near the site in order to receive important information, such as risk assessment and possible decontamination.
- d Help injured people before leaving the scene.

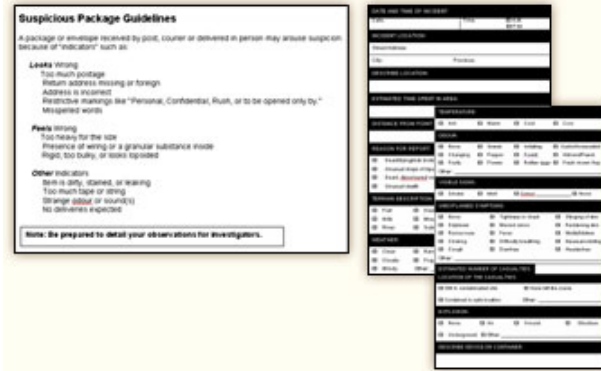
Submit

Module 3 Lesson 1: Steps That Should Be Taken

Follow Your Organizations Emergency Plan

Emergency plans should also include instructions and other reference materials such as checklists, building drawings, and telephone numbers.

If you are not aware of your organizations emergency plans, check with your supervisor or those responsible within your organization. Emergency plans should be available for every public workplace.



Click to enlarge each of the above emergency guideline documents.



Follow Your Organizations Emergency Plan - Think About It!

The following questions are intended to get you thinking about your work environment.

1. What emergency plans does your organization have in place?
2. Who is responsible for them?
3. When were they last updated?
4. Where are the plans kept?



In Summary

In this lesson we:

- discussed the importance of observing your surroundings;
- described self-protective measures; and
- talked about following your organizations emergency plan(s).

In this lesson you learned about some of the indicators of a CBRN situation, and of the importance of being familiar with your organizations emergency plans. The lesson also covered the ways in which you can avoid or minimize contamination.

The **T.E.S.T** reminder is important: don't **T**aste, **E**at, **S**mell or **T**ouch anything if you suspect CBRN contamination.



Lesson Test

You have completed the lesson: *Steps That Should Be Taken*.

Next you will be presented with a lesson test. The test will prepare you for the CBRN Awareness Course final exam.

NOTE:

1. You will not be able to go back into the lesson once you have started the test.
2. The passing grade for the lesson test is 70%.



If you are involved in a CBRN incident, what are your priorities? Select both correct answers.

- a Provide medical assistance to the injured.
- b Contact authorities.
- c Leave the potentially contaminated area.
- d Remove the injured from the CBRN area.

Submit



Which of the following may be indicators of a CBRN incident. Select the three answers that apply.

- a Twenty staff out of 25 have flu symptoms
- b Mist coming out of an air conditioning duct
- c One of 20 people who ate at the same buffet become ill
- d Dead animals with no apparent cause of death

Submit

Module 3 Lesson 1: Steps That Should Be Taken



Determine whether the following statement is true or false.

T.E.S.T. is an important acronym to remember when it comes to protecting yourself in the event of a CBRN incident. T.E.S.T. stands for Do NOT Taste, Eat, Smell or Touch anything.

- a True
- b False

Submit



Which of the following two statements provides **WRONG** advice to a person involved in a CBRN incident? *Select both that apply.*

- a Help injured people before leaving the scene.
- b Wait in a safe location near the site in order to receive important information, such as risk assessment and possible decontamination.
- c Before leaving the contaminated site, take deep breaths to calm yourself down.
- d If you believe that you have been contaminated, wash yourself with cool water.

Submit



Introduction

Welcome to The *CBRN Support Infrastructure* lesson.

This lesson will provide a look at the resources that will assist you in the event of a CBRN attack. Providing concise, accurate information to responders will contribute to the overall effectiveness of the response.

Lesson Objectives:

At the end of this lesson you will be able to:

- Identify the appropriate authorities to contact in the event of a CBRN attack;
- Describe the critical information a contact needs in order to begin a safe response; and
- Identify those who will arrive first at the scene and what to expect from them.



Lesson Structure

In this lesson we will:

- list the information to provide to the emergency operator or dispatch,
- view a guide that shows how to organize information prior to a call,
- identify potential responders and the role they will perform during an incident,
- summarize the lesson; and
- complete a short lesson test.



In Context...

From an office tower overlooking a crowded, urban area, you see a white chemical cloud. Many people look sick.

When you call the emergency operator or dispatcher, what information should you be prepared to provide?

What information should you be prepared to provide? Check all that apply.

- a The type of chemical
- b The number of victims
- c A safe location to meet emergency responders
- d Symptoms of the injured
- e The amount of property damage

Submit



Notify Authorities

When an attack occurs, the first thing to consider is self preservation. Once you have protected yourself, you should immediately call the proper authorities. The information you give the emergency operator or dispatcher will help determine who will respond and how long it will be until they arrive. The responders may be from fire, police, or emergency medical services.

Your immediate action is important and will contribute to the best possible response.





What Information Will Responders Need?

The information that you give to the emergency operator or dispatcher is extremely important and could prevent emergency workers from becoming victims as they arrive on the scene. You should provide the following:

- location of incident;
- number of victims;
- symptoms of injured;
- type of incident;
- type of vehicle or container involved;
- specific indicators of a CBRN incident; and
- meeting place: inform authorities of a safe location where you will meet workers arriving on the scene.

These forms show examples of the type of information dispatchers will be seeking. Click each form to view.

ANNEX B - CBRN INCIDENT REPORTING GUIDE FOR EMERGENCY CALL CENTERS

DATE AND TIME OF INCIDENT:

Date: 11/14/10 Time: 01:33
01:34

INCIDENT LOCATION:

Street Address: [Redacted]

City: [Redacted] Province: [Redacted]

DESCRIBE LOCATION:

ESTIMATED TIME SPENT IN AREA:

00:00

DISTANCE FROM POINT OF IMPACT OR INCIDENT:

000 meters

REASON FOR REPORT:

Dead/Symptomatic birds, insects, or animals Unusual stress
 Unusual drops of liquid Unusual odors
 Dead, discolored vegetation Visible cloud
 Unusual death Other

TERMIN DESCRIPTION:

Flat Desert Sparse trees Shore
 Hills Mountains Urban Thick bush
 Snow Suburban Forest Other

WEATHER:

Clear Rainy Snowy Dust
 Cloudy Foggy Misty Wind
 Windy Other

Blank Form

ANNEX B - CBRN INCIDENT REPORTING GUIDE FOR EMERGENCY CALL CENTERS

DATE AND TIME OF INCIDENT:

Date: 11/14/10 Time: 01:33
01:34

INCIDENT LOCATION:

Street Address: 123 Labrador Street

City: Ottawa Province: Ontario

DESCRIBE LOCATION:

City Hall - Postal Administration & Procurement

ESTIMATED TIME SPENT IN AREA:

10 minutes

DISTANCE FROM POINT OF IMPACT OR INCIDENT:

400 meters

REASON FOR REPORT:

Dead/Symptomatic birds, insects, or animals Unusual stress
 Unusual drops of liquid Unusual odors
 Dead, discolored vegetation Visible cloud
 Unusual death Other

TERMIN DESCRIPTION:

Flat Desert Sparse trees Shore
 Hills Mountains Urban Thick bush
 Snow Suburban Forest Other

WEATHER:

Clear Rainy Snowy Dust
 Cloudy Foggy Misty Wind
 Windy Other

Completed Form



Level of Severity

Some incidents may not always be the result of an attack. If you see unusual signs but don't think the matter is urgent, call your local Public Health Unit. Their personnel can provide advice and help you further assess the situation.

Scenario

After eating at a party one person in a large group gets a mild case of food poisoning.

Is this an emergency situation? Click Next to find out.



Large gatherings are potential targets.



Level of Severity

Some incidents may not always be the result of an attack. If you see unusual signs but don't think the matter is urgent, call your local Public Health Unit. Their personnel can provide advice and help you further assess the situation.

Not Malicious

In this type of situation, it is best to call your local Public Health Unit.



Large gatherings are potential targets.

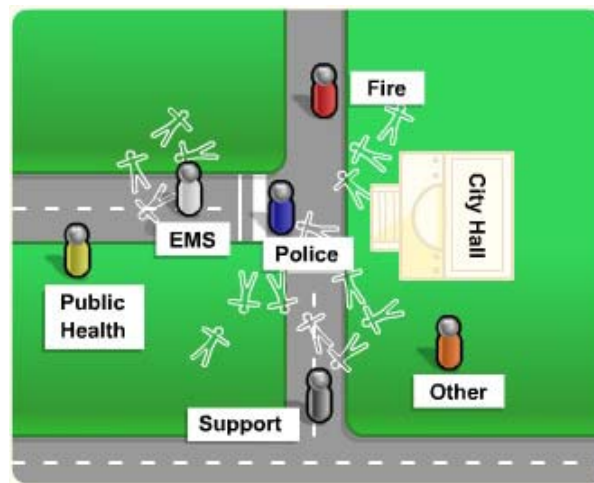


Responder Roles

When first responders arrive, they will need to meet with you at the safe place you described to the emergency operator or dispatcher. Be prepared to review the information you initially gave to the emergency operator or dispatcher. You may need to update the first responders on anything that may have happened since you reported the incident.

The incident may require a wide variety of emergency workers.

The image to the right illustrates the different types of responders. Click each responder type to learn what role they play.



Large gatherings are potential targets.



Responder Roles

Practice Based on what you have just learned, select the statements that are true.

- a Public health workers are responsible for taking inventory of the injured.
- b Fire fighters are responsible for decontaminating victims.
- c Public health workers are responsible for decontaminating victims.
- d Fire fighters are responsible for securing the scene.
- e The police are responsible for securing the scene.

Submit



In Summary

This lesson provided the guidelines for notifying the appropriate authorities in the case of a CBRN incident. The roles and responsibilities of various emergency response personnel were also reviewed.

By understanding the type of information required when reporting a CBRN event, and the roles emergency responders, you will be able to improve the speed of a coordinated response.



Lesson Test

This completes the lesson; *The CBRN Support Infrastructure*.

Next you will be presented with a lesson test.

This test will prepare you for the final exam of the CBRN Awareness Course.

- You will not be able to go back into the lesson once you have started the test.
- The passing grade for the lesson test is 70%.



What type of area should you identify to dispatch or emergency response operators?

- a A safe area for helicopters to land
- b The location in the city
- c The location of a safe area where responders can meet
- d The amount of space available for response teams

Submit



Some of the information required by dispatch will be: Select the TWO correct answers.

- a The number of injured
- b Symptoms of the injured
- c Motives for the attack
- d Cost of damage

Submit

Module 4 Lesson 1: The CBRN Support Infrastructure



You should always call an emergency operator if you see potential signs of a CBRN attack.
True or False.

TRUE

FALSE



Who is responsible for securing the area after an attack? Select the correct answer.

- a You are
- b Emergency medical services
- c The police
- d Fire fighters

Submit



Introduction

Welcome to the *Psychological or Social Responses* lesson.

The primary intent of terrorists is to terrify people. The attack on New York City in 2001 and the anthrax incidents that followed, have made us realize that we are all possible victims.

When someone intentionally tries to cause damage, people tend to have very strong reactions.

Lesson Objectives:

At the end of this lesson you will be able to:

- describe the psychological or social effects of a terrorist incident;
- recognize the normal responses you can expect from yourself;
- recognize the normal responses of those around you during and after a CBRN event; and
- identify some ways in which you can help yourself during and after a CBRN event.



Lesson Structure

In this lesson we will:

1. describe the psychological / social impacts of an incident;
2. discover how people cope with common stress reactions;
3. look at the distribution of casualties;
4. talk about contamination issues;
5. summarize the lesson; and
6. take a brief lesson test.

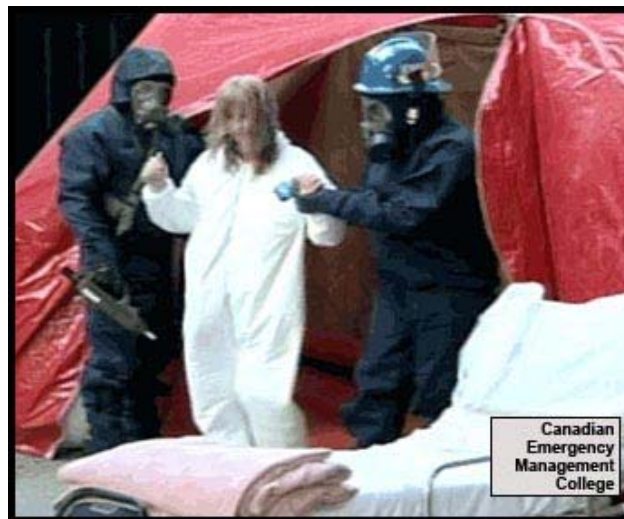


In Context...

What is the most frequent type of effect on people from a CBRN event?

- a Physical
- b Psychological

Submit



Effects from CBRN events vary.



Effects of Terrorism

CBRN attacks expose you to the unfamiliar. Potential victims face an attack characterized by the following:

- Lack of warning
- Lack of familiarity
- Degree of uncertainty
- Lack of control
- Serious threat to personal safety and security
- Disrupted social support systems
- Trauma



CBRN events have wide ranging effects on victims.



Effects of Terrorism

CBRN attacks expose you to the unfamiliar. Potential victims face an attack characterized by the following:

- **Lack of warning**
- Lack of familiarity
- Degree of uncertainty
- Lack of control
- Serious threat to personal safety and security
- Disrupted social support systems
- Trauma



September 11, 2001

Lack of warning: Some form of warning allows people to take psychological and physical protective action. A disaster that strikes without warning can cause serious social and psychological effects.



Effects of Terrorism

CBRN attacks expose you to the unfamiliar. Potential victims face an attack characterized by the following:

- Lack of warning
- **Lack of familiarity**
- Degree of uncertainty
- Lack of control
- Serious threat to personal safety and security
- Disrupted social support systems
- Trauma



Decontamination tent

Lack of familiarity: The uncertainty associated with these types of events, the materials involved, the methods of preparation, and the means of response can all lead to a general sense of helplessness and vulnerability.



Effects of Terrorism

CBRN attacks expose you to the unfamiliar. Potential victims face an attack characterized by the following:

- Lack of warning
- Lack of familiarity
- **Degree of uncertainty**
- Lack of control
- Serious threat to personal safety and security
- Disrupted social support systems
- Trauma

Degree of uncertainty: The uncertainty regarding the possibility of another attack, the extent of potential damage, the challenges of rescue attempts, or future health related implications cause more worries than situations with more visible, immediate, and predictable outcomes.



Effects of Terrorism

CBRN attacks expose you to the unfamiliar. Potential victims face an attack characterized by the following:

- Lack of warning
- Lack of familiarity
- Degree of uncertainty
- **Lack of control**
- Serious threat to personal safety and security
- Disrupted social support systems
- Trauma



Wash down after possible contamination

Lack of control: When your personal security is left in the hands of others, you may feel helpless.



Effects of Terrorism

CBRN attacks expose you to the unfamiliar. Potential victims face an attack characterized by the following:

- Lack of warning
- Lack of familiarity
- Degree of uncertainty
- Lack of control
- **Serious threat to personal safety and security**
- Disrupted social support systems
- Trauma



Victim of a CBRN attack

Serious threat to personal safety and security: Long-term health problems are a frightening possibility.



Effects of Terrorism

CBRN attacks expose you to the unfamiliar. Potential victims face an attack characterized by the following:

- Lack of warning
- Lack of familiarity
- Degree of uncertainty
- Lack of control
- Serious threat to personal safety and security
- **Disrupted social support systems**
- Trauma

Disrupted social support systems: When normally safe areas suddenly become dangerous, or if family and friends are hurt or are difficult to contact, people may experience a sudden change in their way of dealing with situations.



Effects of Terrorism

CBRN attacks expose you to the unfamiliar. Potential victims face an attack characterized by the following:

- Lack of warning
- Lack of familiarity
- Degree of uncertainty
- Lack of control
- Serious threat to personal safety and security
- Disrupted social support systems
- **Trauma**



Victim of a CBRN attack

Trauma: Dealing with death and frightening situations, as well as the resulting media coverage involved, may shock some people.



Common Stress Reactions and How to Cope

In a mass casualty situation, experience with past events indicates that, there could be many more victims experiencing psychological effects than those experiencing physical effects.

If you are involved in a terrorist incident, it is important to be mentally prepared, both for your own reactions and for the reactions of those around you.

Emotional reactions of survivors and responders will be sudden, intense, and severe, and they may affect decision-making responses and operations.





Common Stress Reactions and How to Cope

Emotional reactions include:

- fear;
- anger or rage;
- feeling overwhelmed;
- calmness;
- confusion; and
- anxiety.

Physical reactions include:

- sweating;
- shaking;
- crying;
- dizziness or nausea; and
- headaches.



Dizziness or nausea can be one physical reaction



Common Stress Reactions and How to Cope

If you are experiencing extreme anxiety or confusion and cannot perform your tasks, tell someone in charge, as they may be able to help you calm down and/or take over for you. Many people can be injured if there is a lack of awareness of the potential dangers.

Remember to: **Stop, Think, and Act.**





Common Stress Reactions and How to Cope - Review

What are some of the emotional reactions you may see in people after a CBRN event? *Select the correct answer.*

- a Anxiety
- b Confusion
- c Calmness
- d Rage
- e Fear
- f All of the above

Submit



Security Considerations

If an incident occurs when you are on-site, you may become part of the response team. Security is very important and there may be many people wanting to get in or out of the area who may arrive in waves.

First Wave: victims and potential victims

Second Wave: the media

Third Wave: family members

It is very important to restrict access to and from the site. Security measures will help prevent contamination from spreading uncontrollably.



Distribution of Casualties

In past events, up to 80% of victims by-passed the on-site emergency medical services and went directly to hospitals, clinics, and medical offices.

Unexposed citizens can overwhelm hospitals. Symptoms that occur during emergency situations, such as headaches, shortness of breath, and difficulty concentrating, are all similar to the early effects of exposure to CBRN materials.

Stress, fear, worry, and grief will make existing medical and psychological problems worse.



Local hospitals may receive walk-in victims.



Contamination Issues

If a victim requires emergency wash down and decontamination, they may have strong objections to undressing and giving up their personal effects.

Beside the struggle to help these victims, you may also be exposed to extreme weather conditions. These factors could affect you physically and psychologically.

Emergency wash down is very important. These measures may be necessary to ensure that victims do not have any CBRN contaminants on their bodies. By managing your emotions and ensuring victims understand the importance of what you are doing you will be able to help them to a greater extent.



Woman being washed down after possible contamination



Psychological Impact

Those at the scene, especially children, may react strongly to seeing workers in personal protective equipment such as gas masks and suits.

These are standard safety measures for emergency workers and it is important to reassure those who might be upset by seeing them.



Emergency workers in radiation suits this could be very disturbing, particularly to children



Lets Review

If you are involved in a potential CBRN incident, what should you do after you have notified the authorities? *Select all that apply.*

- a Remain on-site, and out of the incident area
- b Go to the nearest medical facility for an immediate checkup
- c If capable, provide assistance to the response team as directed
- d Follow instructions from the response team

Submit



In Summary

In this lesson we:

- described the psychological or social effects of a terrorist incident;
- recognized the normal responses you can expect from yourself;
- recognized the normal responses of those around you during and after a CBRN event; and
- identified some ways in which you can help yourself during and after a CBRN event.

We reviewed the importance of recognizing common emotional and physical reactions that you and those around you may experience during a terrorist incident.

By being prepared for possible reactions, you can increase your ability to cope with the situation and follow the appropriate workplace procedures.

Remember to **stop, think, and act!**



Lesson Test

You have completed the lesson: *Psychological or Social Responses*.

Next you will be presented with a lesson test. The test will prepare you for the *CBRN Awareness Course* final exam.

NOTE:

1. You will not be able to go back into the lesson once you have started the test.
2. The passing grade for the lesson test is 70%.



If you are involved in a potential CBRN incident, after notifying the authorities you should NOT:

- a remain on-site, and out of the incident area.
- b go to the nearest medical facility for an immediate checkup.
- c if capable, provide assistance to the response team as directed.
- d follow instructions of the response team.

Submit



Which of the following emotional reactions would you expect to encounter in people following a CBRN event? *Select all that apply.*

- a Anxiety
- b Confusion
- c Calm
- d Rage
- e Fear

Submit



In the event that you are involved in a CBRN incident, it is important that you:

- a React as quickly as possible.
- b Stop, think and then act.
- c Leave and let the response team work.

Submit



What can you do to help the emergency response team following a CBRN event? *Select all that apply.*

- a Provide the emergency response team with all the details that you can remember.
- b Help provide site security by controlling people coming and going from the site.
- c Stay calm, stay on site and offer assistance in any manner asked.
- d Leave the scene and get out their way.

Submit

True or False: CBRN includes Dangerous Goods, Hazardous Materials, contaminated food, livestock and crops.

TRUE

FALSE

True or False: The following is an example of a CBRN terrorist incident:

A political group attacks several banks with a chemical agent in order to intimidate the public about its economic security.

TRUE

FALSE

Which of the following could be defined as a CBRN terrorist incident? *Select the TWO correct answers.*

- a An accident at a chemical manufacturing plant causes health effects for employees and environmental damage.
- b A fanatical organization plants a radioactive source in a country's embassy in retaliation for the capture of its members.
- c The water supply of a city is tainted with a biological agent by a group wanting to influence the country's foreign policy.
- d A contagious form of avian influenza is spread to a number of farms when farmers unknowingly use infected feed for their chickens.

Submit

From what you have learned about CBRN terrorism, which of the following would be considered a CBRN terrorist incident?

- a A restaurant customer who is dissatisfied with a meal verbally threatens the chef.
- b An animal rights group injects turkeys with botulism at most of the major grocery chains across the country.
- c Members of a cult commit mass suicide at the instigation of their charismatic leader.
- d All answers are correct.

Submit

In 1995, terrorists released Sarin in a crowded subway car. This is an example of:

- a biological attack
- a nuclear attack
- a chemical attack
- a radiological attack

Submit

Why could events with large crowds be targeted by terrorist groups? *Select BOTH correct answers .*

- a to cause panic
- b to attract media attention
- c to make people feel secure
- d to improve the economy

Submit

Is the following statement True or False.

Thomas Lewis Levy and Marilyn Manson are two individuals that have been associated with terrorism in North America over the past 20 years.

TRUE

FALSE

Which of the following would be the most likely targets for a CBRN terrorist attack? *Select all that apply.*

- a Canada's federal parliament buildings
- b The Toronto International Auto Show
- c Montreal's subway system
- d A small, rural neighbourhood

Submit

Why would a terrorist group target a government building with a CBRN attack?

- a To harm large numbers of people
- b To make people nervous
- c To make a political statement
- d All answers are correct

Submit

Heating and air conditioning units cannot be used to spread chemical agents.

TRUE

FALSE

Biological agents can be spread through food and water supplies.

TRUE

FALSE

Is the following statement True or False?

CBRN weapons often require limited technical expertise to build and use.

TRUE

FALSE

Which of the following are typically symptoms of exposure to a chemical agent?

- a Pinpoint pupils and reduced vision
- b Redness or irritation of eyes and skin
- c Diarrhea
- d Seizures
- e All answers are correct

Submit

How do blister agents affect the body?

- a They attack and damage the central nervous system
- b They block the flow of oxygen via the blood
- c They attack the skin, eyes, mucous membranes, and respiratory system
- d They attack the respiratory system

Submit

How do nerve agents affect the body?

- a They attack and damage the central nervous system
- b They block the flow of oxygen via the blood
- c They attack the skin, eyes, mucous membranes, and respiratory system
- d They attack the respiratory system

Submit

Signs and symptoms of chemical exposure appear:

- a Almost immediately
- b Within a few hours
- c Within a day
- d After several days

Submit

Is the following statement true or false?

There are four types of chemical agents: nerve, blister, blood and choking.

TRUE

FALSE

Is the following statement true or false?

Chemical agents can enter the body by direct contact, injection, breathing them in, or by eating and drinking them.

TRUE

FALSE

Is the following statement true or false?

Chemical weapons are usually expensive and difficult to make.

TRUE

FALSE

Which of the following are typical symptoms of exposure to a biological agent?

- a Flu-like symptoms
- b Coughing
- c Weakness/fatigue
- d All answers are correct

Submit

Radioactive material can be in the form of solid material only.

TRUE

FALSE

Is the following statement true or false?

There are three categories of biological agents: viruses, toxins and bacteria.

TRUE

FALSE

Is the following statement true or false?

Anthrax, botulism, ionizing radiation, and cyanide are all examples of biological agents.

TRUE

FALSE

Is the following statement true or false?

Symptoms of exposure to a biological attack can take 24 hours or more to appear in the victims.

TRUE

FALSE

Indicators of a chemical event will usually be difficult to recognise.

TRUE

FALSE

Is the following statement true or false?

Radiation can't be seen heard, smelled or touched.

TRUE

FALSE

Sources of background radiation are:

- a the sun
- b the earth
- c outer space
- d soil and rocks
- e All answers are correct

Submit

Is the following statement true or false?

Nuclear weapons and nuclear power plants use a controlled nuclear reaction to produce energy.

TRUE

FALSE

Is the following statement true or false?

Radiation must directly contact the body to cause harm to an individual.

TRUE

FALSE

Is the following statement true or false?

Inhalation, ingestion , absorption and injection are ways that radioactive material may enter the human body.

TRUE

FALSE

Decide whether the following statement is true or false.

Receiving low doses of radiation produces no ill effects.

TRUE

FALSE

A dirty bomb is designed to:

- a spread dirty materials around
- b disseminate radioactive materials
- c create a nuclear explosion
- d clean up muddy areas

Submit

If you are involved in a CBRN incident, what are your priorities? *Select both correct answers.*

- a Provide medical assistance to the injured.
- b Contact authorities.
- c Leave the potentially contaminated area.
- d Remove the injured from the CBRN contaminated area.

Submit

Which of the following may be indicators of a CBRN incident? *Select the three answers that apply.*

- a 20 staff out of 25 have flu-like symptoms
- b Mist coming out of an air conditioning duct
- c 1 of 20 people who ate at the same buffet become ill
- d Dead animals with no apparent cause of death

Submit

Which of the following two statements provides **WRONG** advice to a person involved in a CBRN incident? *Select both that apply.*

- a Help injured people before leaving the contaminated area.
- b Wait in a safe location near the site in order to get decontaminated.
- c Before leaving the contaminated site, take deep breaths to calm yourself down.
- d If you believe that you have been infected, wash yourself with cool water.

Submit

You may suspect a CBRN incident has occurred when you:

- a observe that many people are experiencing the same symptoms at the same time.
- b notice dead animals and no apparent cause of death.
- c see smoke or a mist coming out of a ventilation grill.
- d experience the sudden on-set of severe symptoms.
- e All answers are correct.

Submit

Is the following statement true or false?

To protect yourself it is important that you do not T.E.S.T. unknown substances, which means: Do not Taste, Eat, Smell or Touch anything.

TRUE

FALSE

Which of the following actions should you take if you hear a small explosion and a couple short screams down the hall in the mail room?

- a Go immediately to the mail room to provide assistance to victims
- b Report the incident and stay in the area to direct emergency personnel
- c Leave the area immediately, go to a safe place and report the incident

Submit

Which of the following actions should you take if you suspect you have been involved in a CBRN incident?

- a Run to the nearest hospital
- b Hold your breath as long as you can
- c If you think that you have been contaminated, wash with cool water
- d Take time to look around the contaminated area, breathe deeply, and observe as many details as possible

Submit

If you are involved in a potential CBRN incident, after notifying the authorities you should NOT:

- a remain on-site, and out of the incident area.
- b go to the nearest medical facility for an immediate check up.
- c provide assistance to the response team as directed.
- d follow the instructions of the response team.

Submit

Which of the following emotional reactions would you expect to encounter in people following a CBRN event?
Select all that apply.

- a Anxiety
- b Confusion
- c Rage
- d Fear
- e Calm
- f All answers are correct

Submit

What is the role of the police at a CBRN scene?

- a Provide health information and treat people with vaccines
- b Manage decontamination
- c Provide emergency medical assistance and transport people to hospital
- d Secure the scene, investigate, and collect evidence

Submit

Is the following statement true or false?

Security is important at a CBRN scene in order to prevent the spread of contamination.

TRUE

FALSE

Which of the following statements applies to a dirty bomb?

- a Its primary intent is to disseminate radioactive material thereby contaminating an area. Subsequent cleaning of an affected area can be very difficult.
- b Immediate effects of an explosion are: blast, heat, and ionizing radiation.

Submit

Is the following statement true or false?

In order to ensure that you have not been contaminated it is important that you go to your doctor or the hospital immediately after you believe you've been infected.

TRUE

FALSE

Which of the following should you NOT do following a CBRN event?

- a Provide the emergency response team with all the details that you can remember.
- b Help provide site security by controlling people coming and going from the site.
- c Stay calm, and offer assistance in any manner asked.
- d Remove contaminated casualties from the affected area.

Submit

What information should you be prepared to provide to emergency hotline personnel when encountering a CBRN incident? *Check all that apply.*

- a The exact type of CBRN agent
- b The number of victims
- c A safe location to meet emergency responders
- d Symptoms of the injured

Submit

Some of information that will help identify the type of CBRN attack will be: *Select the TWO correct answers.*

- a Unusual smells and signs
- b Symptoms of the injured
- c Motives for the attack
- d All answers are correct

Submit

You should always call an emergency operator if you see potential signs of a CBRN attack. *True or False.*

TRUE

FALSE

Which responders are responsible for identifying hazards, rescue operations, and decontaminating victims?

- a Public health
- b Emergency medical services
- c Police officers
- d Fire fighters

Submit

What is the role of public health personnel at a CBRN incident scene?

- a To take inventory of those exposed or potentially exposed, provide public health information, and, if required, set up a treatment clinic for antibiotics or vaccines
- b To set up a safe perimeter based on their understanding of the type of agent used
- c To provide psychological counseling to victims and families
- d To establish the decontamination line

Submit

True or False? Emergency medical services are responsible for providing medical assistance and transporting patients to the hospital.

TRUE

FALSE

Select the signs that you could report seeing after a CBRN attack?

- a Dead or wilting vegetation
- b People who are choking and coughing
- c People with red welts or blisters
- d All answers are correct

Submit

Receiving moderate doses of radiation has no short term effect but might result in a long term effect such as cancer.

TRUE

FALSE

Signs and symptoms of Acute Radiation Syndrome are:

- a nausea
- b vomiting
- c diarrhea
- d convulsions
- e unconsciousness
- f death
- g all of the above

Submit