

TACDA ACADEMY - CIVIL DEFENSE BASICS

4. CHEMICAL/BIOLOGICAL WARFARE

4.01 Terrorist Attack:

Terrorism takes many forms. Our government acknowledges that the potential for an attack using chemical or biological agents is very large. Most of these agents are scattered and destroyed quickly by wind and sunlight. They can, however, remain an active threat over several hours or days. Anthrax can remain in the soil for many years, but the likelihood of re-dispersion by wind is very small.

Chemical and biological agents are inexpensive, easily dispersed, and many are readily available to terrorist countries and organizations. These agents would most likely be dispersed via vapors, gas or aerosols.

4.02 Limiting your Risk:

Terrorists prefer attacks on densely populated areas or high profile buildings, such as subways, coliseums and government buildings. There would be little, if any, warning of such an attack. Risk is a factor of both probability and consequence. We limit our risk by either decreasing the probability of the event, or mitigating the consequences in these three ways:

1. Limit exposure to potential terrorist targets, such as high profile government facilities, harbors, dams and nuclear power plants.
2. Prepare ahead of time, by building a shelter, stocking supplies and preventative medications, studying evacuation routes and strengthening your immune system.
3. Learn proper responses, such as medical treatments and decontamination methods.

4.03 Biological Terrorist Attack:

The probability of a terrorist biological attack is very large and the consequences of such an attack would be devastating. Aerosol sprays containing biological agents are inconspicuous, inexpensive, and easily used against crowds. It is most likely that the public would not know of this event until someone became symptomatic of the disease 7 to 10 days later. If 50 people were exposed to the smallpox virus in four different parts of the country, the disease would soon overwhelm our emergency medical system. After 10 days the disease would spread from 50 to 500 people. In ten more days there would be 5,000 cases, and by the end of 30 days there could be as many as 50,000 cases in each of the four different areas of exposure. The disease would continue to spread until the population lost enough density that it could no longer sustain the disease growth.

4.04 Small Pox:

Small Pox is extremely contagious and travels through the air. Virus particles become airborne when the host coughs, or even talks. There is good evidence that the virus can even spread from the host's cigarette smoke. The typical incubation period is ten days, and on the average, each infected person will infect between ten and twenty people. The disease then spreads exponentially. It is very unlikely, however, that the virus could penetrate the walls of your homes. There is no need to stay in a safe room or hardened shelter during such an outbreak.



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Self-quarantine inside your home will limit the exposure (risk) to near zero. The first case of small pox any place in the country would justify 'self quarantine'.

The spread of smallpox would continue until the population density had decreased to a point that the plague could no longer sustain itself. A year's supply of food and other necessities would allow you to self-quarantine during a pandemic. Take notice of reports of strange illnesses.

4.05 Anthrax:

Anthrax is not contagious, and would not result in a pandemic. However, when symptoms of anthrax occur, the likelihood of death is almost a certainty. Herculean efforts using intravenous antibiotics may save a few, but in widespread outbreaks, there would not be enough antibiotics or hospital rooms available to treat the sick and dying.

4.06 Prophylaxis Treatment:

Prophylaxis refers to any medical or public health procedure that has the purpose to prevent, rather than treat or cure, a disease. Prophylactic measures are either primary (to prevent the development of a disease) or secondary (whereby the disease has already developed and the patient is given a vaccine or antibiotic to protect against the worsening of the process).

Vaccines are considered prophylactic, and may be used in smallpox outbreaks. Be advised, however, that the terrorist may have genetically altered the smallpox virus, and existing vaccines would then be useless. Exposure by large groups of people waiting for the vaccine may prove to be fatal.

If there is an outbreak of plague or anthrax, and you believe you have been exposed, your doctor may prescribe a medication, such as Doxycycline, as a prophylaxis. Prophylactic treatment should not be taken unless you believe you have been exposed to the bacteria.

Doxycycline acts as a prophylaxis (preventive treatment) against the Anthrax bacteria, only if taken BEFORE the symptoms occur. This same prophylaxis may also work against Cholera and Bubonic plague.

Carefully follow your physician's advice for dosage and medication, as many people will have side effects from these antibiotics. Small children and expectant mothers can have adverse effects from Doxycycline and other Tetracyclines. Doxycycline has a short shelf life. If Doxycycline is taken after its expiration date, it becomes toxic. Carefully watch the expiration dates on all your medications. Doxycycline appears to be either the drug of choice or the alternative drug of choice for plague, Anthrax, Brucellosis, Tularemia, Cholera, Q Fever, Glanders and Lyme's Disease. Doxycycline is NOT the drug of choice for Typhoid. Your doctor may choose to use Cipro or Chloramphenicol for Typhoid outbreaks.

4.07 Expedient Sheltering (Self Quarantine):

The probability of a localized terrorist attack against individual homes is near zero. The biological agents will not travel beyond the local area of dispersion.



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If disease has not been spread via missile attack, the best protection against the spread of the disease is to stay at home. There is no need to put yourself and your family into a plastic bubble (duct tape and plastic).

If there is not a common ventilation system or common walls (such as found in double homes, apartments or hotels), the disease causing agents will not penetrate into the home from the outside. The virus from smallpox has been known to spread via cigarette smoke, and could enter your home from a nearby open window. Keep your doors and windows closed.

Stay quarantined until the pandemic has ended. If you have proper food, water and supplies, you will not need to leave your home. By staying in your home, you will not contract the disease unless you were previously exposed. Do not allow other people to come into your home unless they have been quarantined in an outer area for a period of 2 full weeks. Take notice of reports of strange illnesses. The first case of small pox any place in the country would justify 'self quarantine'.

Take great care when dealing with the sick. Wear facemasks, glasses, shoe covers, and disposable rubber gloves and clothing. Burn all bedding and clothing contaminated by the sick.

Do NOT burn human or animal carcasses. Bury them with quick lime. The fire will burst the lungs of the carcass and spread the spores.

4.08 Preparations for 'Self Quarantine:

A national pandemic could cause a temporary loss of the infrastructure. In order to 'self quarantine' you must have a one year's supply of food, medicine, fuel and a 2 month's supply of clean, pure drinking water.

In the event that the infrastructure of our country fails, you will need to have the capability to forage for water. Carefully review the lesson on water storage, filtration and purification.

4.09 Terrorist Chemical Attack:

Stay alert and report suspicious packages left unattended or spray trucks or crop dusters in unlikely places. Immediate threat can be recognized in some of the following ways:

- You see people running down the street, choking, falling, and convulsing.
- You are walking through a neighborhood and you smell something odd and there are no human or animal sounds, including birds or insect sounds.
- You enter a neighborhood and you see dead birds or animals, and even more importantly, dead insects.
- You can see a cloud of something moving down the street or a cloud of something spewing from an overturned tanker.

Those contaminated with biological agents may not become symptomatic for days or even weeks. Most chemical agents, however, act very quickly and people become symptomatic immediately.



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4.10 Chemical Attack:

If you are involved in a chemical attack, cover your mouth and nose with a cloth, and run from the area. If you are in your car, shut your windows, and leave the scene as quickly as possible. Remember, your car is not airtight. Turn off your heat & air conditioning and put your air on 'recirculate'.

Do not do any of the following, as it may cost your life:

- Do not remove the cloth from your mouth to scream or warn others.
- Do not take time to call 911 until you are well away from the area.
- Do not try to treat the victims. People contaminated with chemical agents are not contagious, but the chemical agents clinging to the victim's clothing or bodies can contaminate others who come in contact with them.
- Do not go into a basement or subway. The chemicals are heavier than air and will move downward.

Do the following:

- If you are near a multi-floor building, run up the stairs to the highest floor. Go into a bathroom, if possible, and shut the door. Make sure the windows are shut.
- Turn off air conditioning and heating. If it cannot be turned off, place a wet towel over the vent.
- Remove your clothing if you think it is contaminated.
- If you think that a chemical is on your skin, shower immediately.
- Call 911 as soon as you are safe, and report your location.
- Remember, the same rules for any sheltering in place apply to a chemical event. However, speed is of the essence.
- When sheltering in place with no air filter, you must refresh your air supply every 2 to 3 hours; otherwise you could suffocate. The door to the inner room may be opened for a few minutes so fresh air will enter. When doing this, wear a scarf or mask. If there is a shower in the room, turn it on before the door is opened and leave it on until the door is closed. This provides a moisture shield, which will help keep chemicals, biological, or radioactive contaminants at a minimum.

4.11 Decontamination and treatment for Nerve Agents:

Store household bleach. For decontamination of nerve agents, the patient's skin should be washed with household bleach diluted 1:10, or with soap and water. Use plain water when washing the eye area. Wash or spray all contaminated objects with 0.5% bleach. Food, not in sealed cans, cannot be decontaminated!

Seek Treatment at a hospital for the following:

- Excessive bleeding
- Trouble breathing or persistent cough
- Trouble walking or using an arm or leg
- Severe stomach, back or chest pains
- Severe headache, blurred vision or burning eyes



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- Excessively dry mouth, vomiting or diarrhea
- Rash or burning skin
- Hearing problems
- Injuries that increase in pain, redness or swelling
- Injuries that do not improve after 24 to 48 hours

What to expect at the hospital:

- Long waits To avoid long waits, if possible choose a hospital farther away from the event.
- Triage. Following a large-scale disaster, injuries are generally treated on a "worst first" basis. Triage is not "first come, first served".
- Limited information. In large-scale emergency, emergency officials at hospitals, clinics and evacuation centers cannot track every individual by name. It may be difficult to get information about loved ones.

4.12 If you are at Home:

The probability of a localized chemical attack against our homes is extremely low. Terrorists want large numbers of fatalities for their efforts. They know that sunlight and wind dilute, disperse and destroy these agents; and they would, most likely, not use them in this way. Most biological agents, on the other hand, can be spread person to person. Symptoms do not occur immediately, and it may not be obvious that there has been an attack until the disease is well under way. Biological agents have a great potential for mass loss of life than do chemical weapons.

4.13 Evacuation:

Your risk from an accidental chemical spill becomes greater if your home is near a highway or rail system. Safe rooms must be built well ahead of the exposure, to be effective. If you do not have a safe room or shelter, make preparations for a possible quick evacuation. Keep gas masks and 72-hour kits in an accessible place. Study areas of most likely contamination and map routes away from those areas. Carefully review Lesson # 11 (Evacuation, 72-Hour Kits and Communications Supplies).

4.14 Duct-tape and Plastic:

In the event of an escalating crises or chemical spill, FEMA has given the general public the recommendation to purchase plastic and duct tape for constructing 'safe rooms' for their protection. It would take hours to prepare the room in this manner.

After entering the room, the accumulation of CO₂ would occur very quickly and within a short period the people in the room would be forced to open doors or windows. It would take much more time to line the room with plastic than it would take to evacuate.

Israel, on the other hand, has been told to keep a 'safe room' ready at all times. Their country is under constant attack and threat from enemies near their borders. Short-range missile deployment of bio-warfare agents poses a real and present danger. Government officials have instructed their citizens to prepare 'safe room' in their homes with air supplies, filters, food and emergency supplies. They have deployed a system of sirens and emergency communications and the people exercise and understand the warning system. We, in the U.S. on the other hand, have



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neither the threat nor the warning system to support such an effort against short-range missile deployment of biological agents.

4.15 Safe Rooms:

Review lesson #11 (Evacuation & Emergency Supplies) and lesson #3, (Sheltering in Place). 'Safe Rooms' are typically built against two threats-home invasion and bio warfare. If you believe your risk from chemical attack or spills is great, prepare an inner room for such an eventuality. Install a reliable air ventilation system and HEPA gas filter. Make sure the system incorporates both manual and electric function. Teach all family members how to use the system. Store food, water and supplies for a 7-day stay.

People often choose to harden these rooms for multi-threat use. Shielding your safe room against radiation provides further protection. Building an airtight room underground mitigates blast and fire. Use your resources wisely. A hardened NBC shelter is an all-hazard shelter.

4.16 Water Supplies:

Botulism or cholera could purposefully be introduced into our water supplies. Word would spread quickly and the casualties would be limited to those infected during the first few days. We could further limit our risk by always 'drinking yesterday's water'. During times of concern, gather water daily. Do not drink that water for one full day. If there have been no reports of wide spread sickness, drink yesterday's water and draw today's water for tomorrow's consumption. During actual crises, drinking water should be boiled or filtered with a good grade water filter.

4.17 Ballistic Missile Attack:

Many authorities believe a bio-weapon attack, via a ballistic missile, would likely follow a full-scale nuclear attack. The area of exposure from missile-deployed bio-weapons would be very large. In an escalating crisis for an NBC attack, evacuation of populations would be of little use, as there are no safe places from missile-deployed bio-weapons. Protection from a full scale NBC attack can only be achieved in hardened NBC shelters.

4.18 Hardened NBC Sheltering:

If you have access to a hardened NBC shelter, stay sheltered for at least one month following a full-scale nuclear exchange. Bio-warfare agents on the ground will quickly be destroyed by sunlight and weather. Most homes, however, would be left uninhabitable, as the aerosols from missile deployment would enter through heating and air conditioning ducts and small cracks in the doors and windows. Those areas would be difficult (or impossible) to decontaminate.

After a nuclear attack, do not re-enter your home until you are sure it is free of contamination. Listen to your short wave radio for news of wide spread disease. If there has been missile deployment of bio-warfare agents, continue to live in your shelter.



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FROM THE WEB SITE OF MEDICAL CORPS

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General Guidelines for Antibiotics:

All antibiotics are not alike. They do their job in different ways.

Trying to remember what guidelines apply to which antibiotic can be confusing. There are, however, general guidelines that can be observed and will take the guesswork out of what to do. Remember, these are "General".

- Antibiotics are NOT good for you. Antibiotics are for killing a living organism--as in a disease. If you do not have a disease, then do not take them.
- Antibiotics will not kill a virus. Antibiotics do not help flu or colds because flu and colds are caused by a virus. Do not take them for colds or flu.
- If you have an allergic reaction, quit taking the antibiotic and, if possible, change antibiotics. Allergic reactions may include one or more of the following: rash, intense itching, hives, vomiting, swelling and other unusual symptoms.
- More is not better. Read the label. If the antibiotic is supposed to be taken 3 times a day then take it 3 times a day. If it says to take 4 times a day then that is what you should do.
- Antibiotics can increase the effect of anticoagulants. Some antibiotics will make the effects of anticoagulants--such as Coumadin—more intense.
- Unless specifically directed, two different antibiotics should not be taken together. For instance, the Penicillins and Tetracyclines will cancel each other out.
- Do not take antibiotics with antacids, certain supplements, laxatives or food.
- Certain antibiotics will combine with metals such as calcium, iron, magnesium and aluminum and render the antibiotic useless or less effective. Some supplements contain calcium, magnesium or iron.
- Laxatives may contain magnesium. Food often has calcium such as from animals. Antibiotics should be taken either an hour before a meal or two hours after.
- Antibiotics interfere with birth control pills. Some antibiotics can render birth control pills less effective. If someone starts taking antibiotics while counting on birth control pills then they can become pregnant.
- Antibiotics make humans susceptible to sunburn.
- Antibiotics will give you diarrhea.
- General Guideline "dose" for antibiotics used for preventing symptoms from a biological attack (for prophylaxis). The number of days to take the antibiotic will depend on the agent used—example: Anthrax 60 to 100 days.



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Doxycycline (Taken orally):

- Adult (8 years and older or weigh more than 100 pounds--45kg): 100mg by mouth every 12 hours.
- Children (Children under 8 years or less than 100 pounds—45kg) 2.2mg per kg of weight, taken by mouth every 12 hours (1kg equals 2.2 pounds)

Ciprofloxacin (Taken orally):

- Adult (8 years and older or weigh more than 100 pounds--45kg): 500mg by mouth every 12 hours.
- Children (Children under 8 years or less than 100 pounds—45kg) 10-15 mg/kg taken by mouth every 12 hours, not to exceed the total of 1,000mg per day

Amoxicillin Anthrax exposure:

Alternative for allergies to Doxycycline and Ciprofloxacin

- Adult (8 years and older or weigh more than 100 pounds--45kg): 500mg by mouth every 8 hours.
- Children (Children under 8 years or less than 100 pounds—45kg) 80 mg/kg/day divided every 8 hr, not to exceed 500 mg/dose taken by mouth every 8 hours

Note: Amoxicillin is not a drug-of-choice for most biological weapons.

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You will note that Doxycycline is either the drug of choice or the alternative drug of choice in prophylaxis of these agents as well as others like Malaria. Sometimes it is taken in conjunction with another drug like rifampin. Nine disease agents are included in this study:

1. **Plague Prophylaxis:**
<http://www.bt.cdc.gov/Agent/Plague/plague-biological-weapon-abstract.asp>
2. **Anthrax prophylaxis:**
<http://www.bt.cdc.gov/DocumentsApp/Anthrax/10312001/han49.asp>
3. **Brucellosis:**
<http://www.fas.org/nuke/intro/bw/agent.htm#b04>
4. **Tularemia:**
<http://www.bt.cdc.gov/agent/tularemia/tularemia-biological-weapon-abstract.asp#5>
5. **Cholera:**
<http://www.rehydrate.org/dd/su52.htm>
6. **Q Fever:**
<http://www.cdc.gov/ncidod/dvrd/qfever/>
7. **Glanders:**
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10837435&dopt=Abstract
8. **Lyme's Disease:**
<http://www.hopkins-arthritis.som.jhmi.edu/news-archive/2001/doxycycline.html>
9. **Typhoid:**
Doxy is not the drug of choice for Typhoid. Cipro is one of the drugs of choice for Typhoid as is Chloramphenicol and some others. Typhoid will be a problem if we have a breakdown of our medical social infrastructure. Humans are carriers of Typhoid. As with many diseases, Typhoid is becoming drug resistant to several antibiotics such as Cipro (<http://www.cdc.gov/ncidod/EID/vol9no12/03-0230.htm>). Amoxicillin is a good drug too, but because of its wide use, especially in Dental, we are getting a lot more Amoxicillin resistant infections:
 - <http://www.medicalcorps.org/pharmacy/AmoxicillinClavulanate.htm>
 - <http://www.medicalcorps.org/pharmacy/doxycycline.htm>
 - <http://www.medicalcorps.org/pharmacy/chloramphenicol.htm>
 - <http://www.medicalcorps.org/pharmacy/ciprofloxacin.html>



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Before a Terrorist Attack:

- Be Alert. Take notice of unattended cars and trucks. Report suspicious activities.
- Study family, work and community disaster plans.
- Identify your nearest hospitals.
- Carry proper identification and insurance information
- Keep your car at least half full of gas at all times
- Keep a 72-hour kit in your vehicle
- Other supplies for your vehicle. Fire extinguisher, water, dosimeter or radiation meter, flashlight, gas mask, and family evacuation tags

During a Terrorist Attack:

- Cover your mouth and nose with anything, and run from the danger.
- Stay away from damaged buildings to avoid falling glass and bricks.
- Do not go to a basement or subway.
- If near a multi-story building, go to the highest floor possible.
- Do not return to the scene.

After a Terrorist Attack:

- Avoid crowds. Crowds of people may be targeted for a second attack.
- Avoid unattended cars and trucks. Unattended cars and trucks may contain explosives.
- Call 9-1-1 (after you are safely away from the scene)
- Notify your family, job or managers of your current location.
- Notify the proper agencies & report that you were at the scene of the incident. Terrorist bombings could also contain chemical or biological agents, and you will need to know where to find decontamination & follow-up treatment.
- Decontaminate as quickly as it is safe to do so
- Listen to the radio for further instructions



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Before a Chem/Bio Attack:

- Request information from your physician on proper prophylactic measures. (Never use Doxycycline or other forms of Tetracycline after their expiration date, as they become toxic).
- Check all suggested prophylactics, (preventative measures) and anti-biotic dosages with your physician. Some of these medicines (such as Doxycycline) may adversely affect a fetus or small children.
- Smallpox symptoms may not occur for 10 days to two weeks after exposure. Vaccines may help (even when taken after exposure).
- Store household bleach for decontamination of nerve agents.
- Prepare a 'safe room' or shelter with a proper air ventilation and filtration system.

During an Escalating Chem/Bio Crises

- Watch carefully for tampering of packages and lids. Make sure seals are intact.
- Eat only sealed foods. Drink only sealed water.
- Drink yesterday's water. Draw water daily, but don't drink it until the next day. Word of poisoned water spreads quickly. Store water in 55-gallon drums for use in an emergency.
- Avoid crowds. Limit your time in densely populated areas.
- Your car is not airtight, but it may help to keep your car windows closed and to turn off your heater and air conditioning while traveling.
- Keep tuned to an emergency radio station. Chemical attacks, in particular, act very quickly.

During a Chemical Attack

- Run away from panicked or fleeing people.
- Cover your mouth and nose and run from the area. Do not stop to give first-aid or warnings.
- Do not go into a basement or subway.
- If near a multi-story building, run upstairs to the highest floor possible and enter a room (bathroom, if possible), and shut all doors, windows and vents.
- If there is space under the door, force wet towels into the open area.
- Remove all contaminated clothing and wash your body with soap and water.
- Alert authorities only after you are safe.
- If you do not have an air filter and ventilation system, refresh your air supply every 2 to 3 hours by opening a door or window. Turn on a shower to form a vapor barrier. Cover your mouth and nose with a wet towel.



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During a Biological Attack

- It is unlikely you will know you have been exposed to a biological agent. If, however, you do know (or suspect) you have been exposed, call authorities for the proper prophylactic treatment, and begin the regimen recommended by your physician.
- During an outbreak, do not leave your home without wearing a gas mask, rubber gloves, protective clothing and shoe covers.
- In case of an actual biological attack, be prepared to stay quarantined inside your home for several months.
- Do not allow anyone into your home, until they have gone through a 14-day quarantine period.
- If there has been a confirmed attack in your area, continue recommended prophylactic treatment for 30 days.

After a Chem./Bio Attack

- Do NOT burn human or animal carcasses. Bury them with quick lime. The fire will burst the lungs of the carcass and spread the spores.
- Treat symptoms with proper antibiotics.
- Take great care when dealing with the sick. Wear facemasks, glasses, shoe covers, and disposable rubber gloves and clothing. Burn all bedding and clothing contaminated by the sick.
- Quarantine yourself and family. Do not allow anyone into your home until they have been quarantined for 10 days and are symptom free. Be prepared to stay in your home or shelter until you hear on an emergency radio station that it is safe to come out. Plague and smallpox can remain a problem for many months.
- For decontamination of nerve agents, the patient's skin should be washed with household bleach diluted 1:10, or with soap and water. Use plain water when washing the eye area. Wash or spray all contaminated objects with 0.5% bleach. Food cannot be decontaminated!

