

WEAPONS OF MASS DESTRUCTION MANUAL FOR FIRST RESPONDERS

Chemical Agents

Biological Agents

Dirty Bombs

Ordinary Explosives

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DEFINITIONS

1. **Dirty bomb**: Radioactive materials wrapped around high explosives; designed more to spread radioactive material to panic and disrupt the life of a city than to kill people directly. Not a nuclear bomb.
2. **First Responder**: Anyone who might be asked to respond to a Weapon of Mass Destruction (WMD) incident, including Coast Guard field units, fire fighters, police officers, and emergency responders.
3. **Hot zone**: The three dimensional area where the chemical agent, biological agent, radioactive agent, or explosive agent is present. It's the area where you as the responder could be injured or die if you enter unprotected. Also known as the contaminated zone.
4. **Level A**: A fully encapsulated chemically resistant suit with an independent air supply.
5. **Personal Protective Equipment (PPE)**: Clothing and equipment designed to safeguard the health of the wearer.
6. **Self contained breathing apparatus (SCBA)**: An independent, portable tank of air.
7. **Toxin**: A chemical poison made by living things, including bacteria and funguses. Toxins aren't living things but chemicals, often big and complex chemicals.
8. **Viral hemorrhagic fevers (VHF)**: A group of about a dozen viruses that cause mild to fatal disease. The Ebola virus, yellow fever, and dengue fever are VHF's, for example.
9. **Weapon of Mass Destruction (WMD)**: These can be weapons using chemical agents, biological agents, radiation agents (dirty bombs), and ordinary explosives used either individually or in combination.

WHO THIS MANUAL IS INTENDED FOR

We have written this section of the manual for just about anyone who might be asked to respond to a Weapons of Mass Destruction (WMD) incident, including Coast Guard field units, fire fighters, police officers, and emergency responders. We've tried to make this manual easy to read and understand. Our goal is to save the first responder's life and to thereby increase the odds that the first responder can save actual or potential victims. We have put into this guide some of what you need to know to survive and be effective in your job as a first responder. So we have not included large amounts of technical information; we want to hit the important, life saving ideas. There are numerous technical references in books and on the Internet, and we encourage responders to do further reading. The more you learn the better you'll be able to do your job, and the greater the odds you'll survive!

This is not an advanced training manual - those are available commercially. This is not intended for National Strike Force members and similar well trained, well equipped, and well experienced hazardous materials and weapons of mass destruction responders, although we hope there are things here they will find helpful. But hours might pass before such experienced people arrive to relieve first responders, and it is these first responders we want to help.

As a first responder we hope you will read this and think about what it says. Please ask questions, discuss it with your teammates, and read other first responder guides. We hope that you take this with you when you respond, and, time permitting, are able to reread the pages that apply to your incident. It's very possible (and it's our hope) that you will survive a WMD incident response and you will effectively rescue those who rely on your services.

INTRODUCTION TO WEAPONS OF MASS DESTRUCTION

WHY THIS MANUAL: In a perfect world, you would never be involved in a weapon of mass destruction (WMD) incident. But, as you know, this is an imperfect world and we must expect terrorists to attack us again. In a way terrorism has now replaced more conventional military threats to our country. When you are involved in a WMD incident you are in a much more dangerous environment than you have ever been in before. WMD incidents demand different responses - sometimes your best response is not to go in. This manual discusses four types of WMD's:

1. Chemical - toxic and irritating gases and liquids
2. Biological - bacteria and viruses
3. Dirty bombs - ordinary high explosives used to disperse radioactive materials
4. Ordinary explosives - high explosive materials used in bombs

WHAT YOU'RE UP AGAINST: Don't go into the hot zone without Level A equipment and another responder for backup who also must have Level A equipment. You must have training, knowledge, and practice. You must have detection equipment, decontamination supplies, and full medical first aid supplies. You must have medical and technical people arriving on the scene within a few minutes. We all know that you're not going to have all of this when you're get to a WMD or a potential WMD scene. You're likely going to be on your own when you arrive and maybe for hours after. You will have to decide whether you can safely respond (that you can survive the response) and if you can effectively respond (that you can actually do some good).

We have developed this guide to give you a chance to survive a WMD response. Please read this manual, ask questions, and think about what it says. In a response you'll have very little time to read the information about the agent involved. Probably you will only have time to read the bullets, it's helpful to read the entire manual carefully before you ever have to respond. You have to read all of it, not just one or two sections - you might even be faced with more than one type of weapon during a single attack.

This manual will help you recognize a hot zone and may help you make the most important decision you'll ever make in a WMD attack - do you enter the hot zone or not? But ultimately the

manual can't tell you whether to go in. You will have to decide whether to enter the hot zone. Remember, a dead hero never did anyone any good. WMD's are much more dangerous than the usual incidents you face - you may have to back off if the odds are too big. And you also have to recognize that if one WMD is bad enough, there could be more. Terrorists love to put two or more weapons in the same place, one or more delayed specifically to kill the emergency responders. Even an ordinary bomb, not a WMD, going off after you respond to a WMD attack is a big threat to you. At the very minimum you have to be aware of this possibility.

We hope this manual makes you think about what you should do before you have to respond to a WMD.

With preparation and good judgment, you can survive a WMD attack and maybe save some lives in the process.

WMD versus Hazmat: WMD's have some things in common with hazardous materials incidents. After all, a Phosgene spill from a barge or tank car has a lot in common with a terrorist breaching a Chlorine tank on a barge or tank car. But in many ways you can expect a terrorist act to be more destructive. After all, a terrorist attack is planned to cause panic, death, and injury, while a hazardous material incident is, after all, accidental and not designed to cause maximum damage. That's why some people call WMD's "Hazmat with an attitude" - but if that line has some truth, it's really "Hazmat with a very bad attitude."

But even "Hazmat with a very bad attitude" is inadequate. Unlike a tank failure that releases Chlorine accidentally, a terrorist wants to kill the first responders as a bonus. Terrorists have made a specialty in planting two or more bombs - one goes off and as first responders try to save lives, a second bomb goes off, killing those whose only thought is to help victims. You have to think about the possibility of two (or even more) separate WMD's set to go off, the later ones aimed directly at you. Do not go into the hot zone without appropriate protective equipment. Do not assume that the initial incident is the only possible incident.

WMD hoaxes: To be effective, terrorists don't even have to release a WMD - even a hoax can be very disruptive. Entire office buildings have been evacuated, first responders and medical personnel called in, and people have been "decontaminated" with a fire hose outside their building all because some joker decided to send a letter containing white powder to a worker in the building. Unfortunately we have to assume an incident is real and not a hoax until authorities can prove the incident to be a hoax. While we all hope that every WMD incident is a hoax, study of known WMD incidents shows that

most are unfortunately real. **You must treat all reports of WMD incidents or potential incidents as the real thing until proven otherwise.**

What this manual isn't: This isn't a guide to command structure or organizational principles. Command structures and organizations are very important but are not what this manual is about. What we're trying to do in this manual is keep you alive and increase your chances of saving lives. You're the first responder, which means you're first at the scene of a WMD incident. You're it! Later, with more people and resources at the scene, organization becomes very important. But this manual covers what to do in the beginning of a response, before dozens of people and vehicles arrive.

What you must do: WMD's threaten responders much more than most conventional disasters. Your chances of surviving a WMD incident and saving lives will improve if you read, understand, and follow this manual. It's not going to help the victims or keep you alive if you go charging into the scene of a WMD attack without thinking or preparation.

First responders are at a disadvantage. They are by definition not experts in WMD's, but they are expected to respond to a WMD incident. Only by studying this manual and other resources can you keep yourself alive while helping victims and potential victims.

In many ways WMD's are more of a threat from panic than physical damage. Some people call them "weapons of mass disruption" rather than "weapons of mass destruction" because of their ability to disrupt normal life more than conventional high explosives; terrorists often want to spread fear and panic even more than kill, and WMD's are made to order for that. For example, the 2001-2002 anthrax attacks caused much more trouble than if the terrorist had used letter bombs. While anthrax killed only a few people, it cost millions of dollars to clean up, forced buildings to be evacuated for months, and scared millions of people. WMD's are very effective at very low cost, and risk few terrorist lives compared to the numbers they kill and injure. Sadly we have to expect many more WMD incidents in the future.

The principles for WDM first responders:

1. Hesitate - don't rush in and ask questions later! Take time to decide what to do.
2. Evaluate the situation - size up the situation - think about what's happening and what you should do.
3. Isolate - after evaluating where the hot zone is, don't let anyone other than a responder enter the hot zone, and don't let other responders enter the hot zone without

- proper equipment. Set up a barrier line, even if you have only simple yellow emergency tape.
4. Evacuate - get people out of the hot zone without risking your own life. Don't go into the hot zone without proper equipment. Keep victims and others who might have been exposed from getting too far away - medical and police will want to talk to them.
 5. Decontaminate - but only if you can do it without endangering yourself. Use a fire hose if possible so you won't have to get close to the victims; in some cases a victim can self decontaminate.
 6. Cooperate - when other responders arrive, follow standard organizational principles. But above all cooperate; there'll be time later to argue who's boss; right now try to save lives.
 7. Communicate - let other emergency and medical authorities know what your situation is and what you're doing. But if you think there might be a flammable vapor around, don't use your radios (or any other electrical equipment) near the incident. Retreat to a vapor free area to use that radio.
 8. Investigate - actually, the first responder won't do any real criminal investigation, but you must remember this is a crime scene and responders and others shouldn't disturb crime scenes. Preserve the crime scene (for all terrorism is a crime as well as an act of war); observe, remember, and report to police and the FBI what you have seen.
 9. Administrate - have one person in charge, with the person in charge in the command post away from the hot zone.

Guidelines for first responders:

Think before you respond!!

Your first goal is to stay alive so you can save lives.

You must assume that there might be more WMD's waiting to go off.

You must act against panic; you could have more people killed in the panic than directly by the WMD.

You must assume this is the real thing and not a hoax until it's proven to be a hoax.

INTRODUCTION TO CHEMICAL WARFARE AGENTS

You may have to respond to chemical emergency incidents as a part of your job, and one of these might be a chemical warfare attack.

In this section we try to give you information that will save your life while helping you to save the lives of others. Please read this section before you have to respond. In an emergency there won't be time to read, understand, and ask questions about this information.

Hopefully you will never have to use this information. However, if you do have to respond to a terrorist attack; your life could depend on your reading and understanding the ideas in this manual. If you do prepare yourself by reading and understanding these ideas, you probably will do a better job in responding to a chemical incident.

Let's say you've just gotten to a serious chemical warfare incident. Perhaps you have a report that it's a Sarin attack, some intelligence that a Sarin attack is possible, or you know that there have been sixteen Sarin terrorist attacks in other parts of the country in the last few weeks. You get there and see sick people with symptoms matching Sarin, and no sign of a fire or explosion. So you treat this as a Sarin attack. More likely is that you respond to an incident not suspecting a chemical attack. If you see people sick or unconscious, especially where there's no fire or explosion, you should ask yourself if this could be a chemical or biological attack. And if you think it might be, stay out unless you have proper equipment. Without proper equipment (Level A) you probably won't help the victim but you're likely to get yourself killed or injured. During WORLD WAR I the attacking army sometimes released two agents - an irritant to make people take off their gas mask and another to kill the now unprotected victim. You might have to face two chemical agents, not just one! And whatever you do, remember that there might be one or more bombs or additional WMD's just ready to go off and kill you as you try to help the victims.

Some common industrial chemicals carried by ship, barge, tank car, and/or tank truck have been used as chemical warfare agents, and we have included these in both the Chemical Hazards Response Information System (CHRIS) and in this Weapons of Mass Destruction manual. Phosgene is an example; it's used to make plastics and other products and is transported in great volume.

Yet Phosgene was an effective poison gas in World War I and terrorists could use it just as effectively today. We have included Phosgene in both the CHRIS manual and this WMD manual; you may need the technical information in the CHRIS manual under Phosgene, or you may have a terrorist act where you need nontechnical information in this WMD manual to keep yourself alive while helping the victims.

You may notice our emphasis on keeping you, the responder, alive and able to act. This is not an accident. Chemical warfare agents can easily kill or disable the responder, and not only is a dead or disabled responder bad enough, but a dead or disabled responder can't help victims. Some of these agents are so bad that you may have to back away from an incident if you can't help without killing yourself. Above all, your job is to save lives, and that includes your own.

HOW TO RESPOND TO CHEMICAL AGENT ATTACKS

Outline of the Chemical Agent section: We've given each chemical warfare agent its own two pages. The first page contains bullets that provide the minimal information to keep you and the victims alive. In an incident you may only have time to read the bullets. The second page gives you information about the chemical agent, how it works, who to notify, how to decontaminate the victim, and how to give first aid to the victim. The last paragraph on the second page is called **Technical**; the idea is to provide technical information as further reading, information that you won't really need for your response, but you might find interesting and that will help you understand the chemical agent.

FIRST PAGE: The first thing you'll see is a graphic with between one to five skull and crossbone symbols. The more dangerous the chemical is the more skull and crossbones you'll see. At a glance you'll get a good idea just how dangerous the chemical is.



We've listed a short set of bullets to help you respond to a chemical warfare release without getting killed. In an emergency you probably won't have enough time to more than read these bullets. Please do what the bullets say to do - that way both you and the victims (and everyone else in the area) will have the best chance of survival.

SECOND PAGE: Please read the information for each chemical agent before an emergency. You may not have time to go through it in a chemical attack. We've divided the information into a set of paragraphs for your convenience. The first thing you'll see is a graphic with one to five skulls and crossbones, just as on the first page. As before, this is to give you an idea just how dangerous the chemical is in a quick and direct way.

INTRODUCTION: This paragraph introduces the chemical agent and gives you a broad outline of its hazards.

HOW BAD IS IT? This is the first question you're likely to ask. If the chemical is a bad one and we scare you, then we've done

our job. And all of these agents are so bad they deserve at least your respect - if not fear!

RESPONSE: This paragraph is very important. We offer a guide for you - what to do and what not to do. Please follow this advice because it could save your life.

DETECTION: How do you know what the chemical agent is, and where it is? This paragraph tells you how to find the boundaries of the hot zone - if that's possible. Unfortunately, for some chemical agents there is no easy way to do this.

SYMPTOMS: This important paragraph tells you what to look for in the victim. Sometimes the only way you can tell where the chemical agent is will be by the victims, and it's useful to know what to look for. If you aren't sure which chemical is involved, the symptoms might help you figure it out.

FIRST RESPONDERS: This paragraph is very important. We offer a guide for you - what to do and what not to do. Please follow this advice because it might save your life.

FIRE: Some chemical agents burn. Even those that can't burn could be a problem, because you could have tanks of chemical agents next to a fire. This paragraph covers whether you should put out a fire (remember, a fire gets rid of the chemical agent, and the agent is likely to be worse than the fire), how to put it out, what firefighting agent to use, and how to protect intact containers of chemical agent from overheating and rupturing. It's always best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning liquid around.

EVACUATION: Probably the single best thing you can do is to get everyone away from the hot zone. Not only is this the first thing you should do, it could be the only safe thing you should do!

WATER POLLUTION: The chemical agent could get into the water, so this paragraph directs you to contact pollution control authorities and advise shutting water intakes.

REACTIVITY: Some chemicals react violently with other chemicals and materials, including, unfortunately, fire fighting agents, and chemical warfare agents are no exception. We cover the chemicals, materials, and fire fighting agents that will react with the chemical agent, including water if that's a problem. This is important because if you ignore this you could end up with a fire or an explosion to add to your problems.

PHYSICAL PROPERTIES: It's important to know some of the physical properties of the chemical agent so you can respond

properly. It's useful to know whether the agent will float on water, sink in the air, freeze or boil, or decompose in water. We offer this information in a nontechnical way that will be helpful to you.

TECHNICAL: We've included this to provide background to those that would like to learn a little more about the chemical agent. You won't need this information to respond to a chemical incident, but you might find it interesting. If not, ignore it; we've put it at the end of the page for that reason.

GENERAL RESPONSE TO A CHEMICAL AGENT ATTACK

Scenario: You respond to an incident and see people obviously sick; there's a strange smell, you've heard a report of possible chemical attacks, there's a vapor in the air with the color green, and so you decide you should treat this as a chemical warfare attack. But you don't know what the chemical agent is. Here's what to do:

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Enter the hot zone only if you're wearing complete Level A protection.
- **Don't** put out a fire - unburned chemicals are usually worse than burned agents.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Never perform mouth to mouth resuscitation - you might die too.
- Don't touch the victim unless you're wearing Level A - you don't want to get the chemical agent on yourself.

- Immediately decontaminate victim without touching, using a water spray (unless the agent reacts with water) or anything, available, even dirt.
- Immediately decontaminate yourself, using water (unless the agent reacts with water) or anything available, even dirt.

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DISCUSSION

INTRODUCTION: Chemical warfare agents are great tools for terrorists. Not only do these agents kill and injure in a very unpleasant way, they spread terror throughout the population. Some of these agents are common industrial chemicals so they are easy to get. Others are not available so they can't be bought or stolen. These must be made in a chemical lab or sent from another country.

HOW BAD IS IT? These vary from mild agents like tear gas (incapacitating agents) that merely makes you temporarily ill all the way up to those that can kill you with one breath (purified Sarin is an example). Until you know what it is you have to respond as if it's very bad.

DETECTION: You can't usually depend on sight and smell. Smell particularly is a bad way to detect it, because not all agents smell, some people simply can't smell some agents, and the agent usually kills your sense of smell very fast. In fact, if you do smell something at first and then the smell goes away, that could mean that the chemical is beginning to poison you by killing your sense of smell, which means you must leave the area immediately.

SYMPTOMS: These will vary from chemical agent to chemical agent, and may provide a clue as to which agent you've got. But remember that people can react differently to chemical agents. Also, different agents can produce similar symptoms. Here are some general symptoms that may tell you that you've got a chemical attack:

- Mass casualties with little or no sign of simple injury (as from an explosion, for example)
- Unconscious people
- People with convulsions
- People with skin reddening or blistering
- People having trouble breathing
- Dead animals and vegetation
- Strange smells, smoke color, vapor clouds

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing. Begin washing immediately. Caution: There are a few chemicals that react with water, and some of these react violently and others give off chemicals that are even worse than the chemical agent itself. Most of the time you'll be OK using water, but if you see a reaction stop until an expert can give you instructions.
- Immediate flush the eyes gently with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to have the victim (not you) immediately wash with water, then have the victim (again, not you) remove all their clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Have the victim (not you) wash with soap and warm water.
- Decontaminate with diluted household bleach (10%, or 1½ cups of bleach to one gallon of water), but don't let any bleach solution get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent. Have command check the victim before the victim leaves the scene.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Never touch your face, eyes, or mouth between the time you enter the hot zone and the time you decontaminate yourself.

FIRST RESPONDERS: You will not help the victim if you kill or injure yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** Until you know what the agent is either stay out or wear appropriate Personal Protective Equipment (PPE). But if you're able to help the victims, you have to do it quickly to save lives and prevent permanent injuries. If you have the equipment and training do the following:

- Have the victim move to fresh air without exposing yourself - if the victim can't move do not move the victim unless you have Level A - never go near the hot zone, even to save lives, unless you have appropriate PPE.
- Call for medical and hazmat assistance immediately.
- Immediately decontaminate victim without touching using a fire hose(spray or fog to prevent injury to the victim).
- Only when the victim is outside the hot zone and decontaminated can you help. If breathing is difficult, give oxygen. If the victim is not breathing, give artificial respiration. Never perform mouth-to-mouth resuscitation - you could kill yourself! Use a bag/mask apparatus instead. If the victim's heart has stopped, give CPR.
- Do not make the victim vomit; the agent will cause additional damage as it comes back up.
- Get the victim to a hospital or doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed.

FIRE: In case of fire, let it burn. Most agents are so bad that the burned chemical agent is better than the unburned agent. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment (fire monitor), so you will be away from the burning chemical agent. It's always best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning liquid around. Since you don't know what the agent is, use a universal foam, since both ordinary foam and water hoses will not be effective for many chemical agents except on the smallest fires. If you see a tank or container of agent near a fire, use water spray or fog (unmanned if possible to reduce danger to you) to cool the container so it won't burst and make the chemical attack a bigger problem.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat

authorities, health and pollution control officials, and the FBI. Don't become a victim yourself trying to respond to a chemical attack; you will only make yourself sick and maybe get yourself killed!

WATER POLLUTION: You don't want people to drink water containing the chemical agent. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Since you don't know what the chemical agent is, don't put anything on the agent. You should use water when you are decontaminating victims.

PHYSICAL PROPERTIES: Without knowing what the agent is there's no way to know what the physical properties are. To be on the safe side always stay upwind and uphill from a spill.

TECHNICAL: Chemical agents range from the temporarily disabling to the almost instant killer. You have to respect these chemicals and have to assume the worst.

ADAMSITE



(DM)

(ad-dam-site)

WHEN YOU RESPOND -



- Evacuate everyone immediately including yourself.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Decontaminate victim without touching.
- Don't touch the victim - you don't want to get DM on you.
- Never perform mouth to mouth resuscitation - you'll get sick too.



ADAMSITE

(DM)

(ad-dam-site)



DISCUSSION

INTRODUCTION: Adamsite (often called DM) is designed not to kill or injure but to make you temporarily unable to resist. The idea is to cause you to throw up so violently that you will have to stop doing whatever you are doing, but not to do permanent damage. DM is too weak to be a good military weapon but at the same time it's too strong to use against civilians. Enough of the DM and you will die, especially if you are indoors. This is worse than tear gas, but less dangerous than Sarin.

HOW BAD IS IT? The fact that it was used in war by the British and was produced in large quantities by the Russians and the North Koreans says it's a dangerous agent. Adamsite is a solid that doesn't turn into vapor easily. You get it into the air by heating it or putting it in a small explosive - the gas quickly becomes a large number of small liquid droplets that float downwind in the air. When it contacts the skin or the moist tissues in the eyes, nose, and lungs (mucous membranes), it causes you to cry, your nose to run; you will cough, feel pain, become disoriented, and, if there's too much of it, you will die. But most of the time, especially when you are outdoors, you will live. It's a good way to cause panic. If in a crowded place (football stadium, for example), DM can do more damage through panic than through direct contact. You really don't want to get DM on you, but some other chemical agents are much worse. The solid is stable so it can remain dangerous for weeks, so notify local authorities so they can keep people away and clean up.

DETECTION: Actually, there's no quick detection system. At room temperature it's a light green to yellow crystal solid. There is no odor but you will feel it when you are exposed to the tiny droplets (aerosol). You can usually figure out when DM has been released from the symptoms.

SYMPTOMS:

General: Come in contact with DM and you will vomit, which is why it's considered a vomiting agent.

Eyes: Your eyes will burn and you will involuntarily cry. Sometimes your eyelids swell so much your eyes close, but your eyesight isn't damaged once you can open your eyelids again.

Nose and mouth: Both will burn, you'll sneeze, your mouth will water.

Lungs: Your lungs and air passages will burn, and breathing might become difficult and irregular. You will cough.

Skin: You'll have a burning sensation.

Heart: Your heartbeat may become irregular.

Swallowing/Eating: If you somehow swallowed or ate DM you will vomit, have intestinal cramps, and have diarrhea.

Death: No, it's unlikely. But if you get enough of it you will die. In most cases DM will be so unpleasant that you will run away before you get exposed to enough of it to kill you.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference. Certainly the quicker the DECONTAMINATION the better the victim will feel.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.

- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: The impact of an exploding DM canister might be more dangerous than the DM itself (treat as a normal wound), particularly if you're outdoors. And when the DM canisters explode, they become so hot they can burn people (treat as a normal burn). You probably won't have much to do beyond decontaminating victims and keeping people away from the hot zone. DM is worse than ordinary tear gas, especially if it's inside a building. You'll be able to help as follows:

- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Notify police, FBI, medical and hazmat authorities, and emergency authorities.
- Remove the victim to fresh air without exposing yourself - avoid touching the victim.
- Some symptoms may appear only hours later.
- If you have to go into an area with DM, wear an approved filter respirator or SCBA, goggles, and protective clothing (Level A is best, but you will survive without it if you are in outdoors. Indoors you should have Level A protection).
- Get immediate medical attention.
- Stomach: Do not make the victim vomit. Get medical attention.
- Lungs: Remove the victim to fresh air. If breathing difficult, give Oxygen. If breathing stops, give

artificial respiration, but not mouth to mouth (you don't want to become a victim too).

- If the victim was hit by pieces of an exploding DM canister, treat as a conventional wound.
- Notify local authorities so they can keep people away from the DM on the ground - DM crystals can remain dangerous for weeks.

FIRE: In case of fire, **DO NOT PUT OUT THE FIRE.** DM vapor and liquid are so bad that the fire is safer than the unburned DM. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use water or ordinary foam. It's always best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning liquid around. In the unlikely situation where there is a pile of DM canisters adjacent to a fire, cool the canisters with large amounts of water, but first evacuate the area - if the canisters rupture from heating, toxic gases could kill. DM can give off toxic gases in a fire or when heated.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't get yourself sick or killed trying to respond to DM. But remember that a mass panic could be worst than the DM - you have to control the evacuation.

WATER POLLUTION: You don't want people to drink water with DM in it. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: DM will corrodes some metals, so remember that a container of DM could fall apart if you touch it. Otherwise it appears not to be reactive.

PHYSICAL PROPERTIES: DM is a solid that vaporizes only when heated. DM canisters disperse fine droplets (aerosols) into the air. This will float downwind, so stay upwind from a spill. You may be able to knock DM out of the air by spraying water into where you think the DM droplets are.

TECHNICAL: How does Adamsite (DM) work? Actually, there's not reported on this, but it can decompose to form Hydrogen chloride, a serious irritant. DM has an Arsenic atom in its molecule, and many arsenic-containing compounds are dangerous. It's not clear how DM causes vomiting. For the record, DM is Diphenylaminearsine. Adamsite is named for the American chemist Roger Adams, but a German chemist had invented it a few years earlier for use in WW I.

ARSINE

(are-seen)



WHEN YOU RESPOND -



- Evacuate everyone immediately including yourself.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Get the victims out of the hot victim zone without hurting yourself.
- **Never** perform mouth to mouth resuscitation - you'll get sick too.





ARSINE

(are-seen)



DISCUSSION



INTRODUCTION: Arsine is a very toxic industrial chemical that has not been used in war. Phosgene, for example, is about ten times worse. But it would make a great terror weapon. Since Arsine is an industrial chemical some people have been exposed over the years and it isn't pretty. The advantage to the terrorist is that by being an industrial chemical, Arsine doesn't have to be made, it can be stolen or bought!

HOW BAD IS IT? Governments have looked at using Arsine in war, but since they already had worse agents (Phosgene is ten times as bad), no one ever used it. But it's bad enough for a terror weapon, and it's available from industry either by buying it or stealing it. Since most victims don't feel bad until about 2 hours later to as much as 24 hours later, your response will be much more difficult and much more dangerous than when you respond to an agent that produces immediate irritation or pain.

DETECTION: Actually, there's no quick detection system. Arsine is a colorless gas with a garlic or fishy smell, but you need much more Arsine to smell it than it takes to hurt you - and some people can't smell it, so don't depend on smell! Unfortunately there are no reported test strips available. And you can't depend on symptoms, either, because most victims show no signs until after the exposure.

SYMPTOMS:

General: Come in contact with enough Arsine and you will die. In lower amounts you will feel weak, dizzy, nauseous, have a headache, vomit, and even go into a coma. But, amazingly, most victims do not feel bad until later, as much as a day later. This delay can make your response more difficult and more dangerous.

Eyes: No effects reported.

Nose and mouth: No effects reported.

Lungs: Your lungs and air passages may be irritated and you may cough. Your lungs may fill with fluids and make it hard to breathe.

Skin: Arsine doesn't seem to irritate the skin, but since Arsine is often transported and stored as a liquefied gas your skin will feel cold.

Heart and blood: You can die from heart failure. Arsine attacks the blood, and destroys red blood cells.

Swallowing/Eating: Since it's a gas, you can't swallow or eat it.

Kidneys: Arsine will injure or destroy your kidneys.

Death: Unfortunately, if you breathe a lot of Arsine you will die, and some have died long after exposure. This is a very dangerous agent.

DECONTAMINATION: Since Arsine is a gas, you don't have to decontaminate victims or yourself.

- If you don't have the equipment and training, don't enter the hot zone to rescue and treat victims.

FIRST RESPONDERS: You probably won't have much to do beyond rescuing victims and keeping people away from the hot zone. Arsine is bad, especially if it's inside a building. You'll be able to help as follows:

- Notify police, FBI, medical and hazmat authorities, and emergency authorities.
- Remove the victim to fresh air without exposing yourself - avoid touching the victim.
- Some symptoms may appear only hours later.
- If you have to go into an area with Arsine, wear an approved filter respirator or SCBA, goggles, and Level A equipment.
- Get immediate medical attention.
- Remove the victim to fresh air. If breathing difficult, give Oxygen. If breathing stops, give artificial respiration, but not mouth to mouth (you don't want to become a victim too).
- If the victim was hit by pieces of an exploding Arsine tank, treat as a conventional wound.

FIRE: In case of fire, **DO NOT PUT OUT THE FIRE.** Arsine is so bad that the fire is safer than the unburned Arsine. If you can shut off the flow of gas don't do anything else - let the fire burn out. The gases from the fire are bad but not as bad as Arsine. In the unlikely situation where there is a tank of Arsine adjacent to a fire, cool the tank with large amounts of water, but first evacuate the area - if the tank ruptures from heating, Arsine could kill. Again, Arsine gives off toxic gases in a fire or when heated, but these are not as bad as the Arsine itself. You can use a water spray to "knock down" the toxic gases coming from an Arsine fire.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't get yourself sick or killed trying to respond to Arsine. But remember that a mass panic could be very bad too - you have to control the evacuation.

WATER POLLUTION: Since Arsine is a gas, water pollution is unlikely to be a problem. Still, warn pollution control authorities just in case.

REACTIVITY: Arsine will is stable but will react with a few oxidizing compounds. It is very flammable, and when burned Arsine gives off dangerous products.

PHYSICAL PROPERTIES: Arsine is a gas that is stored at pressure or as a liquid. You may be able to knock Arsine out of the air by spraying water into where you think the Arsine droplets are.

TECHNICAL: How does Arsine work? Arsine is a powerful reducing agent that reacts with the hemoglobin in the blood, and destroys red blood cells. These damaged red blood damage (and even destroy) the kidneys. Arsine is used by industry in electroplating, and in making semiconductors for the electronic industry. Sometimes just adding water or acid to a material containing Arsenic makes Arsine gas. For the record Arsine is composed of one Arsenic atom and three Hydrogen atoms.



CHLOROPICRIN

(klor-ro-pi-krin)



WHEN YOU RESPOND -



- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Enter area only if wearing Level A.
- Evacuate the area! Chloropicrin will not burn but containers in a fire will explode.



CHLOROPICRIN

(klor-ro-pi-krin)

DISCUSSION

INTRODUCTION: Chloropicrin is an important soil pesticide, often mixed with other chemicals, killing fungus, insects, bacteria, and nematodes (small worms), and industry is making more and more because it's replacing other chemicals more dangerous to the environment, and it's used to make other chemicals. Chloropicrin is an old chemical, a Scottish chemist having invented it in 1848. Chloropicrin is harmful when you breathe it, you get it on your skin or in your eyes, and when you drink it, so it made an effective chemical agent in WW I (the U.S. and France made artillery shells filled with Chloropicrin). When the liquid is vaporized, it breaks down into poisonous like Phosgene (another WW I chemical weapon). Since tank trucks, tank cars, and tank vessels carry this throughout the world in large quantities, it is a potential terrorist agent, even though the world's military forces no longer consider it a chemical weapon. Some forms of tear gas contain Chloropicrin, though.

HOW BAD IS IT? The fact that Chloropicrin was a WORLD WAR I poison chemical says it all. It attacks you when you breathe it, when you get it in your eyes and skin, and when you drink it. It's a strong acid, so you'll feel it immediately. Since this is a popular pesticide, people have been injured or killed accidentally - and you can die in 10 minutes from breathing this chemical.

DETECTION: Chloropicrin is a clear, colorless to light green oily liquid with a very irritating smell - sharp and pungent. But don't depend on your nose, because some people can not smell it - and even if there's too little to smell it can hurt you. It gives off some vapor, enough to injure or kill you. One clue is that it makes your eyes water. But the best way to detect Chloropicrin is with commercial detection tubes.

SYMPTOMS: This is a strong acid, so it will chemically burn part of the body it contacts, inside or outside the body.

Breathing: Chloropicrin will irritate your nose and throat, and you will cough, have trouble breathing, become dizzy, vomit, turn blue (the Chloropicrin is preventing oxygen from getting to body tissues), and your lungs will fill with fluid or with blood. Enough Chloropicrin and you will die.

Skin: At low doses your skin will feel irritation and turn slightly red. At higher doses your skin will burn and scars will form. Chloropicrin will go into your body through the burned skin.

Eyes: You'll feel irritation and pain, you'll cry, your eyes will turn red, you'll suffer permanent damage to your eyesight, and you could go blind

Swallowing: Chloropicrin will burn your mouth and throat, and get into you blood and body through the damage. Drink enough and you will die.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Call for medical and hazmat assistance immediately.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in

the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.

- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: You will not help the victim if you kill yourself. The only safe way you can enter is if you wear Level A. You could die without protection. Depending on the dose and the equipment you have:

- Enter hot zone only if wearing Level A.
- Remove the victim to fresh air without exposing yourself - don't touch the victim unless you're wearing Level A!
- Call for medical and hazmat assistance immediately.
- Only when the victim is outside the Chloropicrin zone can you help. If breathing is difficult, give oxygen. If the victim is not breathing, give artificial respiration. Never perform mouth-to-mouth resuscitation - you will only kill yourself! Use a bag/mask apparatus instead. If the victim's heart has stopped, give CPR.
- Remove the victim's contaminated clothing and flush the victim's skin for at least 15 minutes with large amounts of water and call a doctor immediately.
- Hold the eyelids open and flush the victim's eyes for at least 15 minutes with large amounts of water and call a doctor immediately.
- Get medical attention for the victims as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed for up to 24 hours.
- Make the victim rest until the victim gets medical attention, even if there are no symptoms - this delays the bad effects from the Chloropicrin.
- If in a building, shut down heating, ventilation, and air conditioning systems.
- Do not make the victim vomit. If the victim is awake, give the victim water, and after that milk.

FIRE: **Evacuate the area!** Chloropicrin will not burn. However, it is possible that a Chloropicrin tank will be adjacent to a fire. In a fire a Chloropicrin tank will heat and the tank may overpressurize and explode, so evacuate the area. Even if the tank doesn't fail, the safety valve may open releasing Chloropicrin, so evacuate. When heated, Chloropicrin breaks down to poison gases like Phosgene, which is another good reason to evacuate, and at high temperature it can violently break down into several poisonous gases. The danger from a heated Chloropicrin tank is too great to risk a manned fire fighting effort; if possible, an unattended fire monitor aimed at the upper part of the Chloropicrin tank will cool the tank and may prevent tank failure. In general, it's best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning fuel around. If there is a reason that you have to extinguish a fire near a Chloropicrin tank, use a fire fighting agent (water, ordinary foam, alcohol foam, or dry chemical) appropriate for that fuel.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't get yourself killed trying to respond to a Chloropicrin release.

WATER POLLUTION: When liquid Chloropicrin enters water, it mixes very slowly, falling to the bottom of the river or pond where it breaks down in less than a day. Sill, to be on the safe side, warn pollution control authorities and advise shutting water intakes. Chloropicrin is very poisonous to fish.

REACTIVITY: Chloropicrin can violently breakdown when shocked - keep this in mind, because if a container falls it could violently explode. Chloropicrin reacts with Aluminum, Magnesium, and alloys containing these metals. It reacts, sometimes violently, with some types of rubbers and plastics, as well as some chemicals including common Sulfuric acid, and bases. It's stable unless it's heated to a high temperature when it explosively breaks down to other poison gases. It breaks down in a few hours to a few days in water, in soil, and in the air, but some of the things it breaks down into are pretty bad.

PHYSICAL PROPERTIES: Chloropicrin is carried and stored as a liquid, which gives off enough vapor to kill you. The vapor is much heavier than air, so it will flow downwind and downhill - stay upwind and uphill from a spill. It will fall to the bottom in water and slowly breakdown rather than mix.

TECHNICAL: How does Chloropicrin work? Certainly it is a strong acid that will chemically burn any living tissue it contacts. Beyond that it isn't clear how it kills people. But

it gets into the body through all possible pathways, breathing, drinking, and contacting the skin and eyes. Your lungs can fill with blood and/or other fluids, so you drown. It's a horrible way to die. Chloropicrin is consumed in the lungs, so it doesn't attack other parts of the body. In animal studies, Chloropicrin doesn't cause cancer and it doesn't have any effects on reproduction or future generations. Chloropicrin is formally called Trichloronitromethane and Nitrochloroform, with the formula of CCl_3NO_2 .

CN TEAR GAS

(see en tear gas)



WHEN YOU RESPOND -

- Evacuate everyone immediately including yourself.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Decontaminate victim without touching.
- **Don't** touch the victim - you don't want to get CN on you.
- **Don't** put out a CN fire - unburned CN is worse than burned CN.
- **Never** perform mouth to mouth resuscitation - you'll get sick too.



CN TEAR GAS

(see en tear gas)

DISCUSSION

INTRODUCTION: CN tear gas (there are other kinds of tear gas; this information applies only to CN) is designed not to kill or injure but to make you temporarily unable to resist. The Germans invented it in 1870 but it was the French who first used it to stop civilian riots in the colonies in the 1920's. The U.S. funded tests to make it more effective and created a powdered form for police to use. CN is the stuff in Mace that makes Mace so effective. The idea is to cause pain, burning, and discomfort to skin, eyes, noses, and lungs, but not to do permanent damage. Unfortunately, both Mace and CN can kill if you get enough on you and don't get it off. Usually, you'll feel miserable, but you'll live. In fact, the impact of an exploding CN canister might just be more dangerous than the CN itself.

HOW BAD IS IT? CN is a solid that doesn't turn into vapor easily. You spread CN using a spray can or a small explosive (forming an aerosol - fine solid dust-like particles that float in the air). When it contacts the skin or the moist tissues in the eyes, nose, and lungs, it causes pain, burning, and general misery. Your blood pressure can go up, and your breathing can become irregular, but you'll live. It's a good way to cause a very serious panic, and if there's enough of it on people and they are unable to get it off they might die. If in a crowded place (football stadium, for example), CN can do more damage through panic than through direct contact. You really don't want to get CN on yourself, but compared to other chemical agents, this really isn't too bad. One more point: CN can remain dangerous for weeks, so notify local authorities so they can keep people away and clean up.

DETECTION: Actually, there's no quick detection system beyond symptoms - people know they've been hit with something bad - CN is a white, crystalline solid with a sweet odor. You might not know which tear gas you're dealing with, but the response to tear gas agents is about the same; whether it's CN or another tear gas is not too important.

SYMPTOMS:

Eyes: Your eyes will burn and you can't stop crying. Victims will want to rub their eyes, and if they do they may damage the eyes; people wearing contact lenses will probably have more trouble than those not wearing them. If you get a lot of CN in your eyes and don't wash it out you could permanently hurt your eyes.

Nose and mouth: Both will burn, your mouth may water, and you may throw up.

Lungs: Your lungs and air passages will burn, and breathing might become irregular. You will cough and your lungs may fill with fluid.

Skin: You'll have a burning sensation, and if the humidity is high or your clothes wet you may have chemical burns.

Swallowing/Eating: You probably won't have any problems, but if the CN dose is heavy and you do somehow swallow the CN solid particles you might vomit. But you'll have no serious damage.

Heart: Your heart rate and blood pressure might go up, but this is more due to the pain and panic than any direct action from CN on the body.

Death: It's very unlikely but has happened. Usually it wrecks your lungs and you stop breathing, not a good way to go. But it's not likely that anyone would be exposed to that much CN without running away, unless they're trapped in a room and can't get out.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.

- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: The impact of an exploding CN canister might be more dangerous than the CN itself (treat as a normal wound). And when the CN canisters explode, they become so hot they can burn people (treat as a normal burn). You probably won't have much to do. CN goes away in the wind very quickly and the victim quickly recovers. Only those with a very heavy dose (more than usually expected in a riot control incident) will require assistance. At the worst, you'll suffer the same symptoms. But if the amount of CN in the air is high, especially if the CN is released in a building, you'll be able to help as follows:

- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Notify police, FBI, medical and hazmat authorities, and emergency authorities.
- Remove the victim to fresh air without exposing yourself - avoid touching the victim.
- Symptoms appear quickly after exposure.
- If you have to go into a CN zone, wear an approved filter respirator or SCBA, goggles, and protective clothing (Level A is best, but you will survive without it).

- If the victim is really complaining, the dose may have been very high, so get medical attention.
- Stomach: Do not make the victim vomit (CN will cause additional damage coming back up). Get medical attention.
- Lungs: If breathing difficult, give Oxygen. If breathing stops, give artificial respiration, but not mouth to mouth (you don't want to become a victim too).
- If the victim was hit by pieces of an exploding CN canister, treat as a conventional wound.
- Notify local authorities so they can keep people away from the CN on the ground - some types of CN can remain dangerous for weeks.

FIRE: In case of fire, **DO NOT PUT OUT THE FIRE**. CN vapor is so bad that the fire is safer than the unburned CN. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use water or ordinary foam. It's always best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning liquid around. In the unlikely situation where there is a pile of CN canisters adjacent to a fire, cool the canisters with large amounts of water, but first evacuate the area - if the canisters rupture from heating, toxic gases could kill. CN can give off toxic Hydrogen chloride in a fire or when heated.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't get yourself tear gassed trying to respond to CN. But remember that the worst danger from CN is that a crowd will panic - you have to control the evacuation.

WATER POLLUTION: You don't want people to drink water with CN in it. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: CN reacts with water forming Hydrochloric acid (this is what causes the "burning" symptoms). It also reacts slowly with metals.

PHYSICAL PROPERTIES: CN is a solid that vaporizes at an extremely slow rate. CN canisters disperse fine particles (dust size) into the air. This will float downwind, so stay upwind from a spill. You may be able to knock CN out of the air by spraying water into where you think the CN particles are, but remember that the water then has Hydrochloric acid in it, which is very dangerous.

TECHNICAL: How do tear gas agents work? Actually, there's not agreement on this, but that doesn't matter very much because usually you don't have to treat victims (they recover within minutes). Experts suggest that these agents interfere with a victim's enzymes; but it also appears that tear gases can give pain without doing bodily damage. Since CN breaks down when mixed with water to form Hydrochloric acid, the "burning" symptoms are probably due to the acid. CN is interesting among chemical warfare agents because it is a solid with very low vapor pressure, and is dispersed in dust-like particles, rather than as a liquid or a gas. Governments developed CN to temporarily incapacitate people rather than kill them, meaning that you don't have much to do as a first responder. But if a victim gets a high dose, you'd better get them some medical attention after performing first aid. For the record, CN is Chloroacetophenone, or $C_6H_5(CH_2Cl)CO$. Please note that the CN is more effective in stopping people than CS tear gas but at the same time it is more likely to hurt people than CS. That's why the military and police prefer CS.

CR TEAR GAS

(see are tear gas)

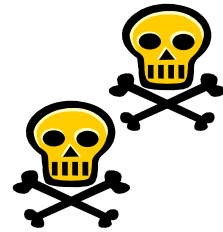


WHEN YOU RESPOND -

- Evacuate everyone immediately including yourself.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Decontaminate victim without touching.
- **Don't** touch the victim - you don't want to get CR on you.
- **Don't** put out a CR fire - unburned CR is worse than burned CR.
- **Never** perform mouth to mouth resuscitation - you'll get sick too.

CR TEAR GAS

(see are tear gas)



DISCUSSION

INTRODUCTION: CR tear gas (there are other kinds of tear gas; this information applies only to CR) is designed not to kill or injure but to make you temporarily unable to resist. It's a new tear gas that makes you cry more than the other tear gases but has fewer other effects on the victim. It's a powder that is either spread out by a small explosive charge or is dissolved in another chemical and water and sprayed. The idea is to make your eyes water so badly that you can't do anything but run away. Unless you're in room with it and you can't get out, you won't die from CR, but you won't feel good about it!

HOW BAD IS IT? CR is a solid that doesn't turn into vapor easily. You spread powdered CR using a small explosive (forming an aerosol - fine solid dust-like particles that float in the air), or you dissolve it in a chemical and water and spread it from a pressurized spray can. When it contacts the skin or the moist tissues in the eyes, nose, and lungs, it causes pain, burning, and general misery. Your blood pressure can go up, and your breathing can become irregular, but you'll live. It sticks around in the air and in your clothes. It's a good way to cause a very serious panic, and if there's enough of it on people and they are unable to get it off they might die. If in a crowded place (football stadium, for example), CR can do more damage through panic than through direct contact. You really don't want to get CR on yourself, but compared to other chemical agents, this really isn't too bad. One more point: CR can remain dangerous for weeks, so notify local authorities so they can keep people away and clean up.

DETECTION: Actually, there's no quick detection system beyond symptoms - people know they've been hit with something bad - CR is a yellow, crystalline solid with a pepper smell. You might not know which tear gas you're dealing with, but the response to tear gas agents is about the same; whether it's CR or another tear gas is not too important.

SYMPTOMS: You'll feel it seconds after CR hits you, and once you wash it off it takes 10-30 minutes for the symptoms to go

away, unless you've got permanent damage. That's a long time to be miserable, so be careful in your response.

Eyes: Your eyes will burn and you can't stop crying. Victims will want to rub their eyes, and if they do they may damage the eyes; people wearing contact lenses will probably have more trouble than those not wearing them. If you get a lot of CR in your eyes and don't wash it out you could permanently hurt your eyes.

Nose and mouth: Both will burn, your mouth may water, and you may throw up.

Lungs: Your lungs and air passages will burn, and breathing might become irregular. You will cough and your lungs may fill with fluid.

Skin: You'll have a burning sensation, and if the humidity is high or your clothes wet you may have chemical burns.

Swallowing/Eating: You probably won't have any problems, but if the CR dose is heavy and you do somehow swallow the CR solid particles you might vomit. But you'll have no serious damage.

Heart: Your heart rate and blood pressure might go up, but this is more due to the pain and panic than any direct action from CR on the body.

Death: It's very unlikely but has happened. Usually it wrecks your lungs and you stop breathing, not a good way to go. But it's not likely that anyone would be exposed to that much CR without running away, unless they're trapped in a room and can't get out.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference. Remember that CR doesn't mix very much with water, so use a lot of water to get it off the victim.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.

- Immediately flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: The impact of an exploding CR canister might be more dangerous than the CR itself (treat as a normal wound). And when the CR canisters explode, they become so hot they can burn people (treat as a normal burn). You probably won't have much to do if you can wash the victim and, if the symptoms are bad, remove the victim's clothes. CR goes away in the wind very quickly (but can remain in the ground and in clothes) and when it's gone the victim quickly recovers. Only those with a very heavy dose (more than usually expected in a riot control incident) will require assistance. At the worst, you'll suffer the same symptoms. But if the amount of CR in the air is high, especially if the CR is released in a building, you'll be able to help as follows:

- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Notify police, FBI, medical and hazmat authorities, and emergency authorities.
- Remove the victim to fresh air without exposing yourself - avoid touching the victim.
- Symptoms appear quickly after exposure.

- If you have to go into a CR zone, wear an approved filter respirator or SCBA, goggles, and protective clothing (Level A is best, but you will survive without it).
- If the victim is really complaining, the dose may have been very high, so get medical attention.
- Stomach: Do not make the victim vomit (CR will cause additional damage coming back up). Get medical attention.
- Lungs: If breathing difficult, give Oxygen. If breathing stops, give artificial respiration, but not mouth to mouth (you don't want to become a victim too).
- If the victim was hit by pieces of an exploding CR canister, treat as a conventional wound.
- Notify local authorities so they can keep people away from the CR on the ground - some types of CR can remain dangerous for weeks.

FIRE: In case of fire, **DO NOT PUT OUT THE FIRE.** CR vapor is so bad that the fire is safer than the unburned CR. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use water or ordinary foam. It's always best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning liquid around. In the unlikely situation where there is a pile of CR canisters adjacent to a fire, cool the canisters with large amounts of water, but first evacuate the area - if the canisters rupture from heating, toxic gases could kill. CR can give off toxic Hydrogen cyanide and Nitrogen oxides in a fire or when heated, and both are not healthy!

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't get yourself tear gassed trying to respond to CR. But remember that the worst danger from CR is that a crowd will panic - you have to control the evacuation.

WATER POLLUTION: You don't want people to drink water with CR in it. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: CR doesn't react with water, and no other reactions are reported. When heated it can give off Hydrogen cyanide.

PHYSICAL PROPERTIES: CR is a solid that vaporizes at an extremely slow rate. CR canisters disperse fine particles (dust size) into the air. This will float downwind, so stay upwind from a spill. You may be able to knock CR out of the air by

spraying water into where you think the CR particles are, but remember that the water then has CR in it, which is very dangerous.

TECHNICAL: How do tear gas agents work? Actually, there's not agreement on this, but that doesn't matter very much because usually you don't have to treat victims (they recover within minutes). Experts suggest that these agents interfere with a victim's enzymes; but it also appears that tear gases can give pain without doing bodily damage. CR is interesting among chemical warfare agents because it is a solid with very low vapor pressure, and is dispersed in dust-like particles or dissolved in other liquids, rather than as a liquid or a gas. Governments developed CR to temporarily incapacitate people rather than kill them, meaning that you don't have much to do as a first responder. But if a victim gets a high dose, you'd better get them some medical attention after performing first aid. For the record, CR is Dibenzoxazepine, or $C_{13}H_9NO$.

CS TEAR GAS

(see ess tear gas)



WHEN YOU RESPOND -

- Evacuate everyone immediately including yourself.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Decontaminate victim without touching.
- **Don't** touch the victim - you don't want to get CS on you.
- **Don't** put out a CS fire - unburned CS is worse than burned CS.
- **Never** perform mouth to mouth resuscitation - you'll get sick too.



CS TEAR GAS

(see ess tear gas)

DISCUSSION

INTRODUCTION: CS tear gas (there are other kinds of tear gas; this information applies only to CS) is designed not to kill or injure but to make you temporarily unable to resist. The idea is to cause pain, burning, and discomfort to skin, eyes, noses, and lungs, but not to do permanent damage. CS is the "preferred" tear gas, but there are others. You'll feel miserable, but you'll live. In fact, the impact of an exploding CS canister might be more dangerous than the CS itself.

HOW BAD IS IT? CS is a solid that doesn't turn into vapor easily. You spread CS using a spray can or a small explosive (forming an aerosol - fine solid dust-like particles that float in the air). When it contacts the skin or the moist tissues in the eyes, nose, and lungs (mucous membranes), it causes pain, burning, and general misery. Your blood pressure can go up, and your breathing can become irregular, but you'll live. It's a good way to cause panic. If in a crowded place (football stadium, for example), CS can do more damage through panic than through direct contact. You really don't want to get CS on you, but compared to other chemical agents, this really isn't too bad. One more point: Some types of CS can remain dangerous for weeks, so notify local authorities so they can keep people away and clean up.

DETECTION: Actually, there's no quick detection system beyond the nose - CS is a white, crystalline solid with a pepper like odor. But you can usually figure out when CS has been released from the symptoms. Fortunately, the response to tear gas agents is about the same; whether it's CS or another tear gas is not too important.

SYMPTOMS:

Eyes: Your eyes will burn and you will involuntarily cry. Sometimes your eyelids swell so much your eyes close, but your eyesight isn't damaged once you can open your eyelids again.

Nose and mouth: Both will burn, you'll sneeze, and your mouth will water.

Lungs: Your lungs and air passages will burn, and breathing might become irregular. But even if you have asthma or other breathing problems, CS doesn't make things worse.

Skin: You'll have a burning sensation, and if the weather is very hot and the CS dose heavy, you may have something like a sun burn.

Heart: Your heart rate and blood pressure might go up, but this is more due to the pain and panic than any direct action from CS on the body.

Swallowing/Eating: You probably won't have any problems, but if the CS dose is heavy and you do somehow swallow the CS solid particles you might vomit. But you'll have no serious damage. Children and adults have actually eaten CS, but except for diarrhea and cramps had no symptoms.

Death: No, it's very unlikely. Test animals have been killed after massive amounts of CS, but it's not likely that anyone would be exposed to that much CS without running away.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.

- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: The impact of an exploding CS canister might be more dangerous than the CS itself (treat as a normal wound). And when the CS canisters explode, they become so hot they can burn people (treat as a normal burn). You probably won't have much to do. CS goes away in the wind very quickly and the victim quickly recovers. Only those with a very heavy dose (more than usually expected in a riot control incident) will require assistance. At the worst, you'll suffer the same symptoms. But if the amount of CS in the air is high, especially if the CS is released in a building, you'll be able to help as follows:

- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Notify police, FBI, medical and hazmat authorities, and emergency authorities.
- Remove the victim to fresh air without exposing yourself - avoid touching the victim.
- Some symptoms may appear only hours later.
- If you have to go into a CS zone, wear an approved filter respirator or SCBA, goggles, and protective clothing (Level A is best, but you will survive without it).
- If the victim is really complaining, the dose may have been very high, so get medical attention.
- Stomach: Do not make the victim vomit (CS will cause additional damage coming back up). Get medical attention.

- Lungs: If breathing difficult, give Oxygen. If breathing stops, give artificial respiration, but not mouth to mouth (you don't want to become a victim too).
- If the victim was hit by pieces of an exploding CS canister, treat as a conventional wound.
- Notify local authorities so they can keep people away from the CS on the ground - some types of CS can remain dangerous for weeks.

FIRE: In case of fire, **DO NOT PUT OUT THE FIRE.** CS vapor is so bad that the fire is safer than the unburned CS. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use water or ordinary foam. It's always best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning liquid around. In the unlikely situation where there is a pile of CS canisters adjacent to a fire, cool the canisters with large amounts of water, but first evacuate the area - if the canisters rupture from heating, toxic gases could kill. CS can give off toxic Hydrogen cyanide in a fire or when heated.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't get yourself tear gassed trying to respond to CS. But remember that the worst danger from CS is that a crowd will panic - you have to control the evacuation.

WATER POLLUTION: You don't want people to drink water with CS in it. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: CS appears not to be reactive.

PHYSICAL PROPERTIES: CS is a solid that vaporizes at an extremely slow rate. CS canisters disperse fine particles (dust size) into the air. This will float downwind, so stay upwind from a spill. You may be able to knock CS out of the air by spraying water into where you think the CS particles are.

TECHNICAL: How do tear gas agents work? Actually, there's not agreement on this, but that doesn't matter very much because usually you don't have to treat victims (they recover within minutes). Experts suggest that these agents interfere with a victim's enzymes; but it also appears that tear gases can give pain without doing bodily damage. CS is interesting among chemical warfare agents because it is a solid with very low vapor pressure, and is dispersed in dust-like particles, rather than as a liquid or a gas. The military developed CS to temporarily incapacitate people rather than kill them, meaning

that you don't have much to do as a first responder. But if a victim gets a high dose, you'd better get them some medical attention after performing first aid. For the record, CS is o-Chlorobenzylidenemalononitrile. Please note that the more familiar Mace is CN rather than CS; CN is less effective in stopping people than CS, but at the same time it is more likely to hurt people than CS. That's why the military and police prefer CS.



CYANOGEN CHLORIDE

(sy-ann-oh-gen klor-ride)

WHEN YOU RESPOND -



- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Enter only if you're wearing level A PPE.
- Notify police, FBI, medical, hazmat, emergency authorities.
- **Never** perform mouth to mouth resuscitation - you'll die too.



CYANOGEN CHLORIDE

(sy-ann-oh-gen klor-ride)

DISCUSSION



INTRODUCTION: Cyanogen chloride is an industrial chemical that can be used as a chemical warfare agent - it's pretty dangerous. A terrorist can either steal it or rupture a tank Cyanogen chloride in a populated area, killing and injuring many people. In your body Cyanogen chloride becomes cyanide, a deadly poison. Cyanogen chloride is similar to Hydrogen cyanide because it forms Hydrogen cyanide inside your body. But it also forms Hydrochloric acid when it mixes with water or water vapor, meaning that it irritates your skin, eyes, nose, and throat, and in large amounts can severely burn your skin and blind you. And since it's stored as a cold liquid, it will give you frostbite if it gets on you.

HOW BAD IS IT? Cyanogen chloride is very effective in hurting and killing people. It's similar to Hydrogen cyanide because it poisons you, but when it can also irritate and even burn you because it forms Hydrochloric acid when it mixes with water. The gas dissolves in the water in your lungs and in the sweat on your skin and becomes concentrated Hydrochloric acid. This concentrated acid burns badly and you will suffer immediate pain; scarring, blindness, and death are all possible, even likely in high exposures. When you breathe Cyanogen chloride gas or when it gets onto your skin and enters your body it forms poisonous cyanide, which can kill. Cyanogen chloride can create dangerous blood problems, and if you breathe enough of it you may have internal bleeding. But if you don't die you will probably recover completely except for skin scarring and eye damage or blindness, which are usually permanent.

DETECTION: The vapor is colorless, so you can't really see where it is. When the gas mixes with the air, especially humid air, it forms droplets of Hydrochloric acid and you may be able to see a white vapor cloud. It has a pungent odor but many are not able to smell it. There are several automatic cyanide detectors available, including Draeger tubes, and even simple High School pH paper is effective in detecting the gas.

SYMPTOMS: Cyanogen chloride's major symptoms are irritation, pain, burning, and death. Because Cyanogen chloride is carried and stored as a compressed liquid or refrigerated gas, it will be very cold when it leaves the container. You will feel cold and the gas could actually freeze your skin eyes, nose, and throat.

Breathing: It is irritating at low doses, painful at higher doses, and at high doses your throat will swell and go into spasms that can lead to death. Your lungs can fill with fluid and you will have trouble breathing, and could actually drown from the fluid in your lungs.

Skin: At low doses your skin will feel irritation and turn slightly red. At higher doses your skin will burn and scars will form. You'll get frostbite where the liquid touches the skin, eyes, nose, and throat.

Eyes: Again, it starts at irritation, then pain, and finally permanent damage to the eyes ending at permanent blindness.

Swallowing: Since it's a gas, you can't really eat this agent. It's hard to believe that people would drink the very cold, boiling liquid Cyanogen chloride, but it would easily kill you from the Hydrochloric acid and cyanide forming in your stomach, as well as from the frost bite.

DECONTAMINATION: Because Cyanogen chloride is a gas at normal temperature, the liquid will quickly evaporate. The bigger problem is that when it mixes with water it makes Hydrochloric acid. Since the stronger (more concentrated) the acid is the worse it is, you must dilute it as much as possible. And you must decontaminate quickly before it has time to do much damage. Extra minutes before DECONTAMINATION might make a big difference.

- Even though Cyanogen chloride is a gas and therefore the victim can't spread the agent to others, if the victim is wet or his clothes are wet the victim may spread Hydrochloric acid to others outside the hot and warm zones. So it's a good idea to wash a victim thoroughly so that he can't spread the acid to others.
- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't

even wait for soap or for the victim to remove clothing, begin washing immediately.

- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction. Don't use bleach to decontaminate the victim.
- Wash the victim with warm water with soap. After DECONTAMINATION, treat the acid burns as you would with burns from a fire.
- Decontaminate with water or with soap and water. Do not decontaminate with diluted household bleach.
- Be sure you've decontaminated the victims as much as you can before they leave the area.
- If you get some of the acid on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A and a self-contained breathing apparatus. Depending on the exposure and the equipment you have:

- Remove the victim to fresh air without exposing yourself - don't enter the hot zone without Level A.
- Call for medical help immediately.
- Only when the victim is outside the hot zone can you help. If breathing is difficult, give oxygen. If the victim is not breathing, give artificial respiration. Never perform mouth-to-mouth resuscitation - you will only kill yourself! Use a bag/mask apparatus instead. If the victim's heart has stopped, give CPR. Look for frostbite (the gas escaping from the container is very cold).
- Keep victim warm.

FIRE:

Let it burn! Cyanogen chloride will not burn, but getting close to put out a fire surrounding a broken Cyanogen chloride container is very dangerous. Use an unattended fire monitor to "knock down" the Cyanogen chloride gas, but remember that the water that's on the ground is now an acid, and maybe a concentrated, dangerous acid. Stay away from it!

Containers: If you see containers or tanks of Cyanogen chloride with a fire near by, you've got big problems. Cyanogen chloride can't burn, but the container can explode if it's heated by the surrounding fire, so you should evacuate immediately. If a container of Cyanogen chloride is near a fire, use water hoses (use an unmanned fire monitor if possible to reduce the danger to you) to cool the container so it won't explode. Since the container can explode even if you are trying to keep it cool, evacuate the area.

Fire fighting risks: The Cyanogen chloride gas and the Hydrochloric acid forming when the gas mixes with the firefighting water are both dangerous, so you could easily get killed fighting a fire. That's why you usually should let the surrounding fire burn out rather than risk your life.

But if you really have to fight the fire: If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. Use the fire fighting method that's best for what's burning. But first think it through - do you really have to fight this fire?

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't become a victim yourself trying to respond to a Cyanogen chloride release.

WATER POLLUTION: You don't want people to drink water containing Hydrochloric acid. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Cyanogen chloride breaks up in water to form Hydrochloric acid and cyanide. It dissolves quickly in water to form Hydrochloric acid. The gas and the acid are reactive with many other materials, including metals. But the risk to people from the toxic gas is so great that reactivity is really a small problem.

PHYSICAL PROPERTIES: Cyanogen chloride is a gas that moves downwind and downhill; it's diluted by the wind. It is heavier than air which means that it sticks together longer than if it were lighter than air. Stay upwind from a spill. It will dissolve in water, so spraying water into the cloud from an

unmanned fire monitor will help react it with water as well as mix it with the air and get rid of it. But remember the water will be full of Hydrochloric acid.

TECHNICAL: Cyanogen chloride's main advantage to the terrorist is that it's an industrial chemical, and they can open up a container in a crowded city, killing and injuring large numbers. How does Cyanogen chloride work? When it gets to the skin, eyes, nose, and lungs it dissolves in water forming concentrated Hydrochloric acid, which is very corrosive. Essentially the acid burns its way through living tissue. In the case of the respiratory system, fluid (water and blood) flows out of the damaged cells and floods the lungs. Breathing is hard, and the victim can actually drown! Washing is a simple way to get the acid off the skin and eyes, but there's no simple way to get it out of the lungs. Doctors can give patients antidotes to the cyanide poisoning, which is why you should call a doctor immediately for the victims. Chemically, it's ClCN

DIPHOSGENE (DP)

(di-foss-gene)



WHEN YOU RESPOND -



- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Enter area only if wearing Level A.
- Evacuate the area! Diphosgene will not burn but containers in a fire will explode.



DIPHOSGENE (DP)

(di-foss-gene)

DISCUSSION

INTRODUCTION: Diphosgene is a toxic liquid that can be dispersed into droplets in air, and Diphosgene vapor is toxic too. Diphosgene is not an industrial chemical, and so any release will be a terrorist attack rather than an industrial accident. Its symptoms are similar to Phosgene, but in addition Diphosgene causes your eyes to tear. When a terrorist spills liquid Diphosgene it vaporizes and gets into your lungs where it breaks down into Phosgene (a chemical warfare agent) and attacks the inside of your lungs. The Germans used Diphosgene successfully in WW I.

But it kills - Diphosgene was a WORLD WAR I poison gas. It's no longer used by the military because there are better, more sinister agents, but terrorists might use it. It's diabolical because you can breathe it for several hours without feeling any effects - and then it is too late.

HOW BAD IS IT? The fact that Diphosgene was a WORLD WAR I poison chemical says it all. Diphosgene kills by damaging the lungs. You effectively drown in your own fluids (blood, water, etc.), and you die by suffocation. But with medical care you may survive. Even if you live, your lungs can be permanently damaged, and sometimes people have new problems years after they are exposed. Breathing the vapor is by far the worst danger, but getting the liquid in your eyes or on your skin can produce acid burns. So even if you're wearing a respirator or SCBA, you should wear Level A. It's similar to Phosgene - when Diphosgene contacts water, it breaks down to form Phosgene. In your lungs and on your skin the Phosgene breaks down to form a strong acid which will burn the inside of your lungs.

DETECTION: Diphosgene is a yellowish liquid that has a high boiling point, but it is so toxic that even the small amount of vapor it forms is dangerous. The vapor form is a colorless gas

having the smell of new mowed hay. But don't depend on your nose, because not only does Diphosgene have a mild odor that you can easily miss, but some people can't smell it. The best way to detect it is with test detectors for Phosgene, because Diphosgene breaks down to form Phosgene.

SYMPTOMS: Eye irritation, coughing, sneezing, hoarseness, shortness of breath, and other breathing problems leading to death. It also can irritate the eyes and skin, but not everybody gets these symptoms.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Call for medical and hazmat assistance immediately.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: You will not help the victim if you kill yourself. The only safe way you can enter is if you wear Level A. You could die without protection. Depending on the dose and the equipment you have:

- Enter hot zone only if wearing Level A.
- Remove the victim to fresh air without exposing yourself - don't touch the victim unless you're wearing Level A!
- Call for medical and hazmat assistance immediately.
- Only when the victim is outside the Diphosgene zone can you help. If breathing is difficult, give oxygen. If the victim is not breathing, give artificial respiration. Never perform mouth-to-mouth resuscitation - you will only kill yourself! Use a bag/mask apparatus instead. If the victim's heart has stopped, give CPR.
- Get medical attention for the victims as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed for up to 24 hours.
- Make the victim rest until the victim gets medical attention, even if there are no symptoms - this delays the bad effects from the Diphosgene.
- If in a building, shut down heating, ventilation, and air conditioning systems.

FIRE: **Evacuate the area!** Diphosgene will not burn. However, it is possible that a Diphosgene tank will be adjacent to a fire. In a fire a Diphosgene tank will heat and the tank may overpressurize and explode, so evacuate the area. When heated, Diphosgene breaks down to toxic Phosgene which breaks down into Chlorine and Hydrogen chloride gases, which is another good reason to evacuate. The danger from a heated Diphosgene tank is too great to risk a manned fire fighting effort; if possible, an unattended fire monitor aimed at the upper part of the Diphosgene tank will cool the tank and may prevent tank failure. In general, it's best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning fuel around.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't get yourself killed trying to respond to a Diphosgene release.

WATER POLLUTION: When liquid Diphosgene enters water, it forms Phosgene which in turn forms Hydrochloric acid, and you don't

want people to drink water containing acid. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Diphosgene won't react with common chemicals. Diphosgene will slowly break down in water to form Phosgene which breaks down to form Hydrochloric acid, and when heated it breaks apart into the gases Chlorine and Hydrogen chloride. It reacts with metals so it has to be stored in glass bottles.

PHYSICAL PROPERTIES: Diphosgene is carried and stored as a pressurized gas, although in cold weather it can liquefy. The vapor is much heavier than air, so it will flow downwind and downhill - stay upwind and uphill from a spill. It will decompose in water, so an unmanned fire monitor may be useful.

TECHNICAL: How does Diphosgene work? The vapor gets into the lungs and forms Phosgene which in turn forms hydrochloric acid, which literally destroys the tissue between the tiny blood vessels (capillaries) and the tiny air sacks (alveoli) in the lungs. This means that blood flows into the lungs, and you drown. It's a horrible way to die. Diphosgene is consumed in the lungs, so it doesn't attack other parts of the body. Diphosgene is just one of a number of pulmonary (lung) agents and is very similar in its behavior to Phosgene. For the record Diphosgene is Trichloromethyl chloroformate; as its name suggests, when Diphosgene breaks down it forms two molecules of Phosgene.



ETHYLDICHLOROARSINE (ED)

(eth-thil-die-klor-ro-are-seen)

When you respond -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim.
- Don't touch the victim - you don't want to get Ethyldichloroarsine on your skin.



ETHYLDICHLOROARSINE (ED)

(eth-thil-die-klor-ro-are-seen)

DISCUSSION

INTRODUCTION: The Germans used Ethyldichloroarsine in WW I, and at least two countries tested it in later years. The Italians and Japanese may have used it in WW II. Ethyldichloroarsine contains Arsenic, and the Arsenic compound in it attacks the body. Since there are more effective agents, the major powers don't use it today. But less developed nations and terrorists may use it since Ethyldichloroarsine is effective against unprotected people and is easy to make from pesticides. Ethyldichloroarsine blisters the skin, eyes, and lungs, but pain and blisters are delayed - sometimes that's a useful thing in terrorism. If the victim doesn't get away, Ethyldichloroarsine will attack many organs leading to death. The death rate is lower than for other chemical agents, and recovery usually takes a long time and a lot of medical treatment.

HOW BAD IS IT? Ethyldichloroarsine is a liquid that doesn't give off much gas; unfortunately it doesn't take much gas to hurt your lungs. A terrorist will put it in an exploding bomb or shell and breaks up the liquid into tiny droplets that float in the air (aerosol) and slowly vaporize. Ethyldichloroarsine gets to you as small droplets in the air (aerosols) primarily through the skin and lungs. If you're exposed you'll feel irritation rather than pain at first; hopefully you'll run away before you're exposed to more of the agent. Activated charcoal blocks the agent, and level A is effective, but not rubber; Ethyldichloroarsine can attack rubber if the exposure is long.

DETECTION: Ethyldichloroarsine is a colorless liquid with a fruity (but irritating to the nose) smell, but don't depend on smell to detect it. You can't depend on pain to tell you you're in trouble either, because at first the Ethyldichloroarsine

doesn't make your skin hurt. After an hour or more you feel pain and blisters appear, but by then you'll probably have suffered a large exposure. The military has test papers that can detect Arsenic compounds, but there is no simple way to detect Ethyldichloroarsine specifically.

SYMPTOMS:

Eyes: Your eyes will immediately be irritated, but you'll have no pain at first. Later you'll have pain and your eyes may be permanently damaged; you may go blind.

Lungs: You will immediately feel irritation but pain will be delayed. You will sneeze and cough and your lungs will fill with fluid. Enough Ethyldichloroarsine and you will stop breathing either from your lungs filling with fluid (you will drown) or muscle spasms preventing breathing. Eventually Ethyldichloroarsine poisons many parts of the body. This is a dangerous agent.

Skin: You will not immediately feel pain or see blisters form on your skin; that takes time, at least a few minutes for the pain and about 12 hours for the painful blistering. Sometimes you will immediately feel stinging irritation.

Stomach: It's hard to believe anyone would swallow Ethyldichloroarsine, but it could happen. Ethyldichloroarsine will poison many parts of the body. Swallow enough and it will kill you.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference, especially since Ethyldichloroarsine leaves the body fast. Fortunately, Ethyldichloroarsine rapidly breaks down in water, so you can reduce the danger by washing with water.

- If you don't have the equipment and training don't enter the hot or the warm zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot or the warm zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediately flush the eyes with water for at least 15 minutes.

- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (0.5%, or one part bleach to 200 parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the Ethyldichloroarsine.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A. You have to be quick; the only way to prevent injury is immediate DECONTAMINATION. Depending on the dose and the equipment you have:

- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of Ethyldichloroarsine.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!
- Only when the victim is outside the hot and warm zones and decontaminated can you help. If breathing is difficult, give oxygen.
- Do not make the victim vomit if the victim has swallowed Ethyldichloroarsine. Give the victim milk if conscious.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because symptoms are delayed.

FIRE: Ethyldichloroarsine doesn't burn. In cases where Ethyldichloroarsine is in a burning area, evacuate the area. If there is some reason that you have to put out the fire - for

example, there are things you can't let burn nearby - use unattended equipment. If you suspect that there are containers of Ethyldichloroarsine located in or close to the fire, use unattended equipment to spray water on the containers to keep them from rupturing.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI. Don't help the terrorists by killing yourself trying to respond to an Ethyldichloroarsine release.

WATER POLLUTION: Ethyldichloroarsine dissolves rapidly in water and breaks down into toxic products that are much less dangerous than Ethyldichloroarsine, but still poisonous. You don't want people to drink water containing even the breakdown products because they contain Arsenic compounds. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Ethyldichloroarsine will react with water and sweat, but does not react in a dangerous way with common materials. As it breaks down in water or sweat, it produces Arsenic compounds which are less dangerous than Ethyldichloroarsine but still bad for you. Diluting Ethyldichloroarsine with large amounts of water is a good way to get it off a victim.

PHYSICAL PROPERTIES: Ethyldichloroarsine gives off enough gas to hurt you badly. The vapor and liquid droplets are heavier than air so Ethyldichloroarsine will flow downwind and downhill - stay upwind and uphill from a spill. It will decompose in water, so an unmanned fire monitor may be useful, spraying water into a cloud of Ethyldichloroarsine.

TECHNICAL: The Germans used this agent in WW I and other countries studied it for use in warfare. The Ethyldichloroarsine molecule breaks down into the free radical AsCl_2 that attacks and kills tissue. This free radical attacks sulfhydryl groups in proteins that control cell functions, leading to tissue death. Doctors can give victims chelating agents (BAL is effective; BAL stands for British Anti-Lewisite); the chelating agent binds to the Arsenic atom and stops it from harming the victim.

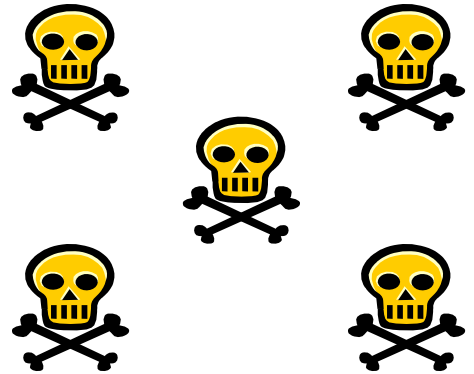


When you respond -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim, remove all clothing.
- Don't touch the victim or his clothes - you don't want to get GF on you.

GF

(gee eff)



DISCUSSION

INTRODUCTION: The Germans invented GF during WW II as a chemical weapon that attacks the nervous system. Fortunately the Germans never used it in combat, and there's no evidence for anyone else using it. After the end of the World War II other, more effective nerve agents replaced it. But it is not too hard to make, and terrorists might make and use it. It is designed to kill, but it can injure or incapacitate in lower amounts. GF is a liquid that is very dangerous if you get it on your skin, if you breathe the vapor, or if you drink it mixed in water. Without immediate treatment you could die.

HOW BAD IS IT? GF is a liquid that doesn't give off much gas; unfortunately it doesn't take much gas to hurt your lungs. Since it vaporizes so slowly any liquid on the ground, in clothing, or in a building will continue to be dangers for days. A terrorist will put in it an exploding bomb or shell to break up the liquid into tiny droplets that float in the air (aerosol) and slowly vaporize. GF gets to you as small droplets in the air (aerosols) primarily through the skin, eyes, and lungs. If you're exposed you may not feel anything for hours, or you may feel effects immediately. You will need to wear Level A to protect yourself, and if you don't you may be seriously injured or may even die. Normal clothing and things like ordinary plastic gloves won't help you.

DETECTION: GF is a clear, colorless liquid, with no smell to it. You can't depend on pain to tell you if you've been attacked, because symptoms may be delayed.

SYMPTOMS: Symptoms may be immediate or may not come for almost a day after.

General: You will get a headache, nausea, hallucinations, and convulsions.

Eyes: Your eyes will hurt, your vision blurs, and your eyes will water.

Nose: Your nose will run.

Lungs: You will cough, breathe rapidly, and have chest tightness. With high doses you will have trouble breathing and may suffocate and die.

Skin: You will sweat and your muscles will twitch where GF touched the skin.

Stomach: GF mixes with water so you can drink it without knowing it. And if you get it on your skin it can go quickly to the stomach and produce the same symptoms. You'll feel sick - you will have frequent urination, diarrhea, nausea, vomiting, and stomach pain.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference. And keep in mind that GF doesn't vaporize and go away fast. It vaporizes slowly, so it can remain as a liquid and hurt people for days.

- If you don't have the equipment and training don't enter the hot or the warm zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot or the warm zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediately flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction. GF stays in clothing, so don't touch it with bare skin - if possible, seal contaminated clothing in a plastic bag.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (0.5%, or one part bleach to 200 parts water), but don't let any get in

the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.

- Remember that the water you use to decontaminate the victims is dangerous.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the GF.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A. You have to be quick; the only way to prevent injury is immediate decontamination. Depending on the dose and the equipment you have:

- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of GF, both liquid droplets and vapor.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. And if you get some GF on your clothes take them off immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!
- Only when the victim is outside the hot and warm zones and decontaminated can you help. If breathing is difficult, give oxygen.
- Do not make the victim vomit if the victim has swallowed GF, and do not give the victim any liquids to drink.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed. Only a doctor can give the antidotes to GF.
- Remember that the water you use to decontaminate the victims is dangerous.

FIRE: Unburned GF is much worse than burned GF, so don't put out the fire unless you really have to. In case of fire, evacuate the area. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. The heat from a fire will

help decompose the GF. And remember that the water from the fire contains GF, and is very dangerous.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI. Don't help the terrorists by killing yourself trying to respond to a GF release.

WATER POLLUTION: GF dissolves in water and remains very dangerous. A terrorist might poison the water supply, or a GF attack might get into a stream used for drinking water. You don't want people to drink water mixed with GF. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: GF will mix with water and will break down in water. It will also break down when heated or in a fire. Diluting GF with large amounts of water is a good way to get it off a victim, but remember that the wash water is very dangerous because this break down is slow.

PHYSICAL PROPERTIES: GF gives off enough gas to hurt you badly. The vapor and liquid droplets are heavier than air so GF will flow downwind and downhill - stay upwind and uphill from a spill. It will mix in water, so an unmanned fire monitor may be useful, spraying water into a cloud of GF. But remember that the water contains GF and can hurt you.

TECHNICAL: The Germans invented this nerve agent as a WW II weapon, but for some reason the Germans didn't use chemical warfare in World War II. The U.S. military term "GF" indicates that this was one of the last nerve agents the Germans invented. How do GF and other nerve agents work? These are similar to many of the commercial pesticides, only much worse. They are organophosphorous cholinesterase inhibitors. The first word - organophosphorous - means that this is an organic compound (carbon, hydrogen, oxygen) containing phosphorous. The second and third word - cholinesterase inhibitor - means that this keeps several enzymes from working. It's interesting - when your brain wants your muscles and glands to relax it sends chemical messages. GF and other nerve agents interfere with these chemicals, so your nerves continue to "fire"; eventually your muscles tire out, and, among other things, you stop breathing. Since GF works through the nerves it's called a nerve agent. GF can get to you when you breathe, through the skin, through the eyes, and by drinking water with GF in it (GF mixes with water). A doctor can inject victims with antidotes (there is a special nerve agent kit; also, doctors may use Atropine), so you should get medical attention for the victim as soon as possible. For the record, GF is an organophosphate called Cyclohexylmethylphosphorofluoridate or $\text{CH}_3\text{P}(\text{O})(\text{F})(\text{cyclo-C}_6\text{H}_{11})$, which explains why it has a short name of GF.



HYDROGEN CHLORIDE

(hi-dro-gen klor-ride)

WHEN YOU RESPOND -



- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Enter only if you're wearing level A PPE.
- Notify police, FBI, medical, hazmat, emergency authorities.
- **Never** perform mouth to mouth resuscitation - you'll die too.
- Decontaminate victim without touching.



HYDROGEN CHLORIDE

(hi-dro-gen klor-ride)

DISCUSSION



INTRODUCTION: Hydrogen chloride is a major industrial chemical that can be used as a chemical warfare agent that is pretty dangerous. A terrorist can either steal it or rupture a tank car or tank truck containing Hydrogen chloride in a populated area, killing and injuring many people. The gas easily dissolves in water forming very concentrated Hydrochloric acid - and very concentrated Hydrochloric acid is extremely corrosive. If the gas gets into your lungs you could easily die; when the gas gets on your skin or in your eyes it can severely burn your skin and blind you. If Hydrochloric acid gets on you it will seriously burn you and hurt.

HOW BAD IS IT? Hydrogen chloride is very effective in hurting and killing people. The gas dissolves in the water in your lungs and in the sweat on your skin and becomes concentrated Hydrochloric acid. This concentrated acid burns badly and you will suffer immediate pain; scarring, blindness, and death are all possible, even likely in high exposures. Hydrogen chloride can create dangerous blood problems, and if you breathe enough of it you may have internal bleeding. But if you don't die you will probably recover completely except for skin scarring and eye damage or blindness, which are usually permanent.

DETECTION: Hydrogen chloride vapor is colorless to slightly yellow, so you can't really see where it is. When the gas mixes with the air, especially humid air, it forms droplets of Hydrochloric acid and you may be able to see a white vapor cloud. It has a pungent odor but many are not able to smell it in low (but still dangerous) concentrations. There are several Hydrogen chloride detectors commercially available, and even simple High School pH paper is effective in detecting the gas.

SYMPTOMS: Hydrogen chloride's major symptoms are irritation, pain, burning, and death. Because Hydrogen chloride is carried and stored as a compressed liquid or refrigerated gas, it will be very cold when it leaves the container. You will feel cold and the gas could actually freeze your skin and other tissues.

Breathing: It is irritating at low doses, painful at higher doses, and at high doses your throat will swell and go into spasms that can lead to death. Your lungs can fill with fluid and you will have trouble breathing, and could actually drown from the fluid in your lungs.

Skin: At low doses your skin will feel irritation and turn slightly red. At higher doses your skin will burn and scars will form.

Eyes: Again, it starts at irritation, then pain, and finally permanent damage to the eyes ending at permanent blindness.

Swallowing: Since it's a gas, you can't really eat this agent.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. The gas is very soluble in water forming Hydrochloric acid. Since the stronger (more concentrated) the acid is the worse it is, you must dilute it as much as possible. And you must decontaminate quickly before it has time to do much damage. Extra minutes before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction. Don't use bleach to decontaminate the victim.
- Wash the victim with warm water with soap. After DECONTAMINATION, treat the acid burns as you would with burns from a fire.
- Decontaminate with water or with soap and water. Do not decontaminate with diluted household bleach.

- Be sure you've decontaminated the victims as much as you can before they leave the area.
- Even though Hydrogen chloride is a gas and therefore the victim can't spread the agent to others, if the victim is wet or his clothes are wet the victim may spread Hydrochloric acid to others outside the hot and warm zones. So it's a good idea to wash a victim thoroughly so that he can't spread the acid to others.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A and a self-contained breathing apparatus. Depending on the exposure and the equipment you have:

- Remove the victim to fresh air without exposing yourself - don't enter the hot zone without Level A.
- Call for medical help immediately.
- Only when the victim is outside the hot zone can you help. If breathing is difficult, give oxygen. If the victim is not breathing, give artificial respiration. Never perform mouth-to-mouth resuscitation - you will only kill yourself! Use a bag/mask apparatus instead. If the victim's heart has stopped, give CPR. Look for frostbite (the gas escaping from the container is very cold).
- Keep victim warm.

FIRE:

Let it burn! Hydrogen chloride will not burn, but getting close to put out a fire surrounding a broken Hydrogen chloride container is very dangerous. Use an unattended fire monitor to "knock down" the Hydrogen chloride gas, but remember that the water that's on the ground is now an acid, and maybe a concentrated, dangerous acid. Stay away from it!

Containers: If you see containers or tanks of Hydrogen chloride with a fire near by, you've got big problems. Hydrogen chloride can't burn, but the container can explode if it's heated by the surrounding fire, so you should evacuate immediately. If a container of Hydrogen chloride is near a fire, use water hoses (use an unmanned fire monitor if possible to reduce the danger to you) to cool the container so it won't burst. Since the

container can explode even if you are trying to keep it cool, evacuate the area.

Fire fighting risks: The Hydrogen chloride gas and the Hydrochloric acid forming when the gas mixes with the firefighting water are both dangerous, so you could easily get killed fighting a fire. That's why you usually should let the surrounding fire burn out rather than risk your life.

But if you really have to fight the fire: If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. Use the fire fighting method that's best for what's burning. But first think it through - do you really have to fight this fire?

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't become a victim yourself trying to respond to a Hydrogen chloride release.

WATER POLLUTION: You don't want people to drink water containing Hydrochloric acid. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Hydrogen chloride is stable even when heated or in contact with water, acids, and bases. It dissolves quickly in water to form Hydrochloric acid. The gas and the acid are reactive with many other materials, including metals. When reacting with water, flammable Hydrogen forms, especially when there's moisture or water around. But the risk to people from the gas is so great that reactivity is really a small problem.

PHYSICAL PROPERTIES: Hydrogen chloride is a gas that moves downwind and downhill; it's diluted by the wind. It is heavier than air which means that it sticks together longer than if it were lighter than air. Stay upwind from a spill. It will quickly dissolve in water, so spraying water into the cloud from an unmanned fire monitor will help react it with water as well as mix it with the air and get rid of it.

TECHNICAL: Hydrogen chloride's main advantage to the terrorist is that it's easy to get as toxic chemicals go, and they can breach a tank car or tank truck in a crowded city, killing and injuring large numbers. How does hydrogen chloride work? When it gets to the skin, eyes, nose, and lungs it dissolves in water forming concentrated Hydrochloric acid, which is very corrosive. Essentially the acid burns its way through living tissue. In the case of the respiratory system, fluid (water and blood) flows out of the damaged cells and floods the lungs. Breathing is hard, and the victim can actually drown! Washing is a simple

way to get the acid off the skin and eyes, but there's no simple way to get it out of the lungs.



HYDROGEN CYANIDE

(hi-dro-gen sy-ann-ide)

WHEN YOU RESPOND -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Enter only if you're wearing level A PPE.
- **Don't** put out a Hydrogen cyanide fire - unburned Hydrogen cyanide is worse than burned Hydrogen cyanide.
- Notify police, FBI, medical, hazmat, emergency authorities.
- **Never** perform mouth to mouth resuscitation - you'll die too.
- Decontaminate victim without touching.

HYDROGEN CYANIDE

(hi-dro-gen sy-ann-ide)



DISCUSSION

INTRODUCTION: Hydrogen cyanide is a chemical warfare agent that is pretty much all or nothing - it either kills you or you fully recover. The French used it during WORLD WAR I with limited effect, and there is evidence the Iraqis used it against Iran and the Kurds. This is the chemical used in gas chambers to execute criminals. And it's available to terrorists since American manufacturers produce several hundred thousand tons per year for industrial purposes, and ship it by truck, train, and ship each year. A liquid boiling at 78°F, the gas easily spreads out, and it takes a higher dosage to kill people than nerve agents. The most dangerous way to enter the body is breathing it, but it can also pass through the skin or be eaten. Hydrogen cyanide is very flammable, and will explode.

HOW BAD IS IT? Hydrogen cyanide (or Hydrocyanic acid) is so effective in killing people that it's used to execute criminals. But that's in a room - it's not as effective in the open air because it vaporizes fast and spreads out in the wind fast. If you breathe enough of it you will become unconscious and then go into convulsions in a few minutes and stop breathing in a few more. If the dose is high enough, you could lose consciousness almost immediately and die soon after. On the other hand, if you survive you will almost always fully recover. It's not as deadly as nerve agents - Sarin is 26 times more deadly - but still you wouldn't want to breathe it. And just to add to the danger, it's very flammable and will explode.

DETECTION: Both the vapor and liquid are colorless, so you can't see where it is. Your nose isn't a good way to detect it, either, because while Hydrogen cyanide is famous for having the odor of bitter almonds, half of the population can't smell it! The best way to detect it is with a Draeger tube or a military detector kit.

SYMPTOMS: Hydrogen cyanide either kills you or it doesn't, and the major symptom is death. For very low doses there are no symptoms, and for higher doses you may become dizzy, weak, anxious, nauseous, and have trouble breathing. With very big

does you'll first go into convulsions, vomit, and gasp for breath, then you'll stop breathing, and finally your heart will stop beating - death. Since cyanide interferes with the body's use of oxygen, victim's skin often turn red, as the arteries and veins are saturated with oxygen.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A. Depending on the exposure and the equipment you have:

- Remove the victim to fresh air without exposing yourself - don't enter the hot zone without Level A.
- Call for medical help immediately.
- Only when the victim is outside the hot zone can you help. If breathing is difficult, give oxygen. If the victim is not breathing, give artificial respiration. Never perform mouth-to-mouth resuscitation - you will only kill yourself! Use a bag/mask apparatus instead. If the victim's heart has stopped, give CPR.
- Do not make the victim vomit; it will cause additional damage as it comes back up.
- Keep victim warm

FIRE:

Let it burn! In case of fire, let Hydrogen cyanide burn. Hydrogen cyanide is very flammable, but it's so bad that you're better off letting it burn than having to cope with the unburned poison gas - burned Hydrogen cyanide is safer than the unburned poison gas.

Containers: If you see containers or tanks of Hydrogen cyanide with a fire near by, you've got big problems. Hydrogen cyanide can explode, so you should evacuate immediately. If a container of Hydrogen cyanide is near a fire, use water hoses (use an unmanned fire monitor if possible to reduce danger to you) to cool the container so it won't burst. Since the container can explode if heated, evacuate the area.

Fire fighting risks: Heat and water can convert cyanides to Hydrogen cyanide gas, so you could easily get killed fighting a fire. And a cloud can drift downwind until it finds a spark or flame and starts burning - it will burn all the way back to the spill.

But if you really have to fight the fire: If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. Use alcohol foam, since both ordinary foam and water hoses will not be effective except on the smallest fires. If you don't have foam it's always best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning liquid around. But first think it through - do you really have to fight this fire?

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the

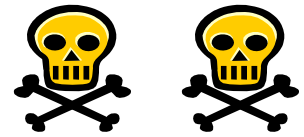
FBI. Don't become a victim yourself trying to respond to a Hydrogen cyanide release.

WATER POLLUTION: You don't want people to drink water containing cyanide. Warn pollution control authorities and advise shutting water intakes.

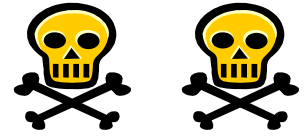
REACTIVITY: Hydrogen cyanide is unstable when heated or in contact with water, acids, and bases. Reactivity with other common materials isn't a problem, but this is very flammable and can explode in the air.

PHYSICAL PROPERTIES: Hydrogen cyanide quickly vaporizes and is diluted by the wind. It is lighter than air which helps get rid of it. Stay upwind from a spill. It will slowly dissolve in water, so spraying water into the cloud from an unmanned fire monitor will help react it with water as well as mix it with the air and get rid of it.

TECHNICAL: Cyanides seem to be the terrorist's preferred chemical! In February 2002 Italian police arrested terrorists having nine pounds of a cyanide salt along with maps of various targets. In March, 2002, a man was arrested for storing a cyanide salt in the Chicago subway. How does hydrogen cyanide work? Blood spreads it through the body and the cyanide ion bonds to the iron in cells so that the cell can't get oxygen from the blood. The cells "asphyxiate." This means that cells quickly die and body functions stop. There are many chemical agents that work by releasing cyanide ions into the blood, and Hydrogen cyanide is just the simplest. You can get Hydrogen cyanide either from an industrial plant, from a truck, a train, or a container, or you can make it by mixing a strong acid with a cyanide salt; if you eat or drink cyanide salts they will form Hydrogen cyanide in the body and could kill you. Your body can react with and remove small amounts of cyanide ion without any bad effects (it's actually in some foods we eat, but in very small amounts that your body can easily handle), but can easily be overwhelmed by large doses. There are some antidotes (there's some question about how effective these are), but you have to give them immediately after exposure, because victims often die quickly after that exposure. And you'd better be sure the victim is poisoned by Hydrogen cyanide, because the antidotes can make a sick person worse if no Hydrogen cyanide's involved.



LEWISITE



(lew-is-site)

When you respond -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim.
- Don't touch the victim - you don't want to get Lewisite on you.
- If you have to put out a Lewisite fire, use water, foam, or carbon dioxide, if not, evacuate.



LEWISITE

(lew-is-site)

DISCUSSION

INTRODUCTION: Lewisite is a WORLD WAR I chemical weapon that was too late for combat, but may have been used by the Japanese in China during WW II. It is designed to incapacitate, but can injure and kill in higher doses. There is little information on its effects on humans, with only animal testing. Lewisite is a liquid that blisters the skin and does great damage. It also attacks the eyes and the lungs. If you get this on your skin you will feel immediate stinging; your skin will blister within half a day, with deep skin burns. If you breathe Lewisite you will feel immediate burning pain.

HOW BAD IS IT? Lewisite is a liquid that doesn't give off much gas; unfortunately it doesn't take much gas to hurt your lungs. The military puts in it an exploding bomb or shell and breaks up the liquid into tiny droplets that float in the air (aerosol) and slowly vaporize. Lewisite gets to you as small droplets in the air (aerosols) primarily through the skin and lungs. If you're exposed you'll feel it immediately, and you'll want to run away. Lewisite easily goes through fabrics and even rubber (you can safely wear Level A, but only for about an hour because Lewisite slowly passes through even Level A) and you'll be able to see skin damage after only a few minutes; the damage continues for as long as 12 hours forming blisters. It doesn't seem to damage blood marrow but will cause blood fluids to leak and lower your blood pressure. Liquid in your eyes will produce blindness within a few minutes. Finally, experts believe it may cause cancer.

DETECTION: Lewisite is a colorless, oily liquid, with a mild smell of geraniums. You can depend on pain to tell you you're in trouble, because Lewisite hurts as soon as you get the liquid on you or you breathe the vapors.

SYMPTOMS:

Eyes: Your eyes will immediately hurt, your eyelids swell, and your cornea will scar. Within only one minute you will have permanent damage to your eyes and can even go blind.

Lungs: You will immediately feel the effects. You will sneeze and cough, your nose will run, and your lungs will fill with fluid. You will be chilled and your blood pressure will fall; eventually Lewisite poisons many parts of the body.

Skin: You will immediately feel stinging pain. Your skin will redden, sting, and eventually blister (up to 12 hours after exposure).

Stomach: It's hard to believe anyone would swallow Lewisite, but it could happen. Lewisite will poison many parts of the body. You will be chilled and your blood pressure will fall; swallow enough and it will kill you.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training don't enter the hot or the warm zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot or the warm zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediately flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (0.5%, or one part bleach to 200 parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.

- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the Lewisite.
- Use the antidote "Antilewisite" if you have it; it is very effective

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A, and even then the Level A equipment is good for no more than one hour with Lewisite. You have to be quick; the only way to prevent injury is immediate DECONTAMINATION. Depending on the dose and the equipment you have:

- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of Lewisite.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!
- Only when the victim is outside the hot and warm zones and decontaminated can you help. If breathing is difficult, give oxygen.
- Do not make the victim vomit if the victim has swallowed Lewisite. Give the victim milk if conscious.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed.

FIRE: In case of fire, evacuate the area. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. You can fight Lewisite fires with water streams, water fog, ordinary foam, universal foam, and, for confined fires, carbon dioxide.

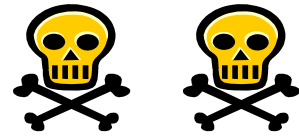
EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI. Don't help the terrorists by killing yourself trying to respond to a Lewisite release.

WATER POLLUTION: Lewisite dissolves rapidly in water and breaks down into toxic products that are much less dangerous than Lewisite, but still poisonous. You don't want people to drink water containing even the breakdown products because they contain Arsenic products. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Lewisite will react with water and sweat, but does not react in a dangerous way with common materials. As it breaks down in water or sweat, it produces Arsenic containing materials which are less dangerous than Lewisite but still bad for you. Diluting Lewisite with large amounts of water is a good way to get it off a victim.

PHYSICAL PROPERTIES: Lewisite gives off enough gas to hurt you badly. When heated it boils and decomposes at about 374°F, and it freezes at 0°F (but some types of Lewisite have additives that keep it a liquid below 0°F). The vapor and liquid droplets are heavier than air so Lewisite will flow downwind and downhill - stay upwind and uphill from a spill. It will decompose in water, so an unmanned fire monitor may be useful, spraying water into a cloud of Lewisite.

TECHNICAL: The American chemist Lewis invented this chemical agent too late to be used in WW I, but there are reports that Japan used it against the Chinese in WW II. How does Lewisite work? No one really knows the entire story, but it does react with many enzymes which damages the body. Lewisite will blind you and blister your skin severely, and with enough it will kill. Fortunately you will know that you've been exposed because you will feel immediate pain. For the record, it is Dicloro-2-chlorovinyl arsine, ClChChAsCl₂. There is an antidote, a British product called antilewisite (other names being BAL and Dimercaprol), which you can give victims.



METHYLDICHLOROARSINE

(MD)



(met-thill-die-klor-ro-areⁿ seen)

When you respond -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim.
- Don't touch the victim - you don't want to get Methyldichloroarsine on you.



METHYLDICHLOROARSINE

(MD)



(met-thill-die-klor-ro-are~~seen~~)

DISCUSSION

INTRODUCTION: Methyldichloroarsine is a WORLD WAR I chemical weapon that the Germans used with great success. After the end of the war other, more effective chemicals replaced it, and so it has never been used since by the military powers. But since it is easier to make than other poisons, terrorists may decide to use it. It is designed to kill, but it can injure or incapacitate, in lower amounts. Based on wartime experience there is information on its effects on humans. Methyldichloroarsine is a liquid that blisters the skin, eyes, and lungs. If you get this on your skin you will feel immediate stinging; your skin will blister with deep skin burns. If you breathe Methyldichloroarsine you will feel immediate burning pain. If you get the liquid in your eyes you will also feel immediate pain. And the liquid drops suspended in air are a bigger danger than the vapor.

HOW BAD IS IT? Methyldichloroarsine is a liquid that doesn't give off much gas; unfortunately it doesn't take much gas to hurt your lungs. A terrorist will put in it an exploding bomb or shell to break up the liquid into tiny droplets that float in the air (aerosol) and slowly vaporize. Methyldichloroarsine gets to you as small droplets in the air (aerosols) primarily through the skin, eyes, and lungs. If you're exposed you'll feel it immediately, and you'll want to run away. You will need to wear Level A to protect yourself, and if you don't your skin will hurt severely. It will attack rubber gear and begin to break it down after a long exposure.

DETECTION: Methyldichloroarsine is a colorless liquid, with a mild smell of geraniums or fruity odor. You can depend on pain

to tell you you're in trouble, because Methylchloroarsine hurts as soon as you get the liquid on you or you breathe the vapors. But don't depend on odor; not everyone can smell low concentrations of this chemical.

SYMPTOMS:

Eyes: Your eyes will immediately hurt, your eyelids swell, and your cornea will scar. You could suffer permanent eye damage or blindness.

Lungs: You will immediately feel the effects. You will feel pain and irritation, and fluid will start to fill your lungs. With high doses you will have trouble breathing and may even suffocate.

Skin: You will immediately feel stinging pain. Your skin will redden, sting, and eventually blister. Mild exposures look like poison ivy.

Stomach: It's hard to believe anyone would swallow Methylchloroarsine, but it could happen. Methylchloroarsine will poison many parts of the body.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training don't enter the hot or the warm zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot or the warm zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediately flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (0.5%, or one part bleach to 200 parts water), but don't let any get in

the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.

- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the Methyldichloroarsine.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A. You have to be quick; the only way to prevent injury is immediate decontamination. Depending on the dose and the equipment you have:

- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of Methyldichloroarsine, both liquid droplets and vapor.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!
- Only when the victim is outside the hot and warm zones and decontaminated can you help. If breathing is difficult, give oxygen.
- Do not make the victim vomit if the victim has swallowed Methyldichloroarsine. Give the victim milk if conscious.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed.
- Make sure you decontaminate yourself, even if you think you are not contaminated.

FIRE: In case of fire, evacuate the area. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. The heat from a fire will help decompose the Methyldichloroarsine, and it will certainly vaporize the droplets; the liquid is more of a threat than the vapor.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI. Don't help the terrorists by

killing yourself trying to respond to a Methyldichloroarsine release.

WATER POLLUTION: Methyldichloroarsine dissolves rapidly in water and breaks down into toxic products that are much less dangerous than Methyldichloroarsine, but still poisonous. You don't want people to drink water containing even the breakdown products because they contain Arsenic products. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Methyldichloroarsine will react with water and sweat, but does not react in a dangerous way with common materials. As it breaks down in water or sweat, it produces Arsenic containing materials which are less dangerous but still bad for you. Diluting Methyldichloroarsine with large amounts of water is a good way to get it off a victim.

PHYSICAL PROPERTIES: Methyldichloroarsine gives off enough gas to hurt you badly. The vapor and liquid droplets are heavier than air so Methyldichloroarsine will flow downwind and downhill - stay upwind and uphill from a spill. It will decompose in water, so an unmanned fire monitor may be useful, spraying water into a cloud of Methyldichloroarsine.

TECHNICAL: The Germans invented it for use as a poison gas, but it is no longer used by military powers; better ones are available. How does Methyldichloroarsine work? No one really knows the entire story, but it does react with many enzymes which damages the body. Methyldichloroarsine will blind you and blister your skin severely, and with enough it will kill. Fortunately you will know that you've been exposed because you will feel immediate pain. For the record, it is CH_3AsCl_2 . There is an antidote, a British product called antilewisite (other names being BAL and Dimercaprol), which you can give victims.



MUSTARD GAS



(mus-tard gas)

When you respond -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim.
- Don't touch the victim - you don't want to get Mustard gas on you.
- If you have to put out a Mustard gas fire, use an alcohol foam; if not, evacuate.



MUSTARD GAS

(mus-tard gas)



DISCUSSION

INTRODUCTION: Mustard gas is a WORLD WAR I chemical weapon still in military use and designed to incapacitate, but with high doses it has killed people. It's a liquid that blisters the skin and does great damage. It also attacks the eyes and the lungs and over a long exposure damages the bone marrow. Since you don't notice any effects for several hours you may let it go until after the damage is done; you have to decontaminate immediately to prevent problems. Interestingly, some of it's WORLD WAR I victims thought it smelled like mustard, and the name stuck to this day!

HOW BAD IS IT? Mustard gas is a liquid that doesn't give off much gas until heated to 100°F, so the military puts in it an exploding bomb or shell and breaks up the liquid into tiny droplets that float in the air (aerosol). Mustard gas gets to you as small droplets in the air (aerosols) primarily through the skin and lungs. It can attack through your stomach, but that's less important. The really bad feature of Mustard gas is that the damage doesn't appear for at least two hours (and can be delayed for two days), so you may continue to get exposed; at least with tear gases you immediately leave due to the tear gas' pain! Mustard gas easily goes through fabrics (but not through Level A) and can actually do more damage to skin under clothing than through bare skin. Some of the Mustard gas binds to the skin but most ends up in the blood and attacks many of your organs. Fortunately, it takes very large amounts of Mustard gas to do serious damage to your organs; usually it's only the skin and lungs that suffer. After a single attack your air pipes leading to the lungs may develop problems, but there is no evidence that you will get cancer. Your skin, however, may have permanent scars. Finally, Mustard gas can remain effective in

the soil for weeks, so it's important to notify the proper authorities for cleanup.

DETECTION: Mustard gas is an oily liquid, light yellow to brown in color, with an onion, garlic, or Mustard gas odor. As usual, you can't depend on the smell, so the best approach is to use one or more of the military indicator papers that change color when exposed to Mustard gas. You can't depend on pain to tell you you're in trouble, because the effects from Mustard gas appear only hours afterwards.

SYMPTOMS:

Eyes: Eyes are the most sensitive to Mustard gas. Your eyes will suffer irritation, pain, and permanent damage to the cornea. If you get the liquid in your eyes it may puncture the cornea and you may lose your eye.

Lungs: Mustard gas will attack the moist tissues (mucous membranes) of your lungs and air passages, and if the dose is large, even the muscles of the air passages. The damage moves downward, so the tiny air sacks (alveoli) suffer last. In very severe cases your lungs can fill with blood. Bacteria can attack the damaged tissues and give you bacterial pneumonia, which makes things even worse. You die when your lungs can no longer work.

Skin: After 2-48 hours your skin shows all the signs of sun burn. At small doses you have little blisters looking like poison ivy. But if you're exposed to more, your skin will blister, and in the worst cases the tissue will die. This can lead to serious infections. And you will have permanent scarring.

Stomach: It's hard to believe anyone would eat Mustard gas, but it has happened, usually with people eating contaminated food. Mustard gas attacks the moist tissues (mucous membranes) and you'll vomit and feel very sick; in more severe cases you may have diarrhea or constipation. Eat enough Mustard gas and you will die.

Central Nervous System: Mustard gas can give you convulsions, and some people with small doses have been sluggish. Some effects have lasted for a year.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training don't enter the hot zone to rescue and decontaminate victims. If the

victim can't move, decontaminate without touching and without entering the hot zone.

- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A (polyurethane is resistant to Mustard gas). You have to be quick; the only way to prevent injury is immediate decontamination. Depending on the dose and the equipment you have:

- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of Mustard gas.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!

- Only when the victim is outside the Mustard gas zone and decontaminated can you help. If breathing is difficult, give oxygen.
- Do not make the victim vomit if the victim has swallowed Mustard gas.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed.
- The victim's blood, sweat, and blister liquids do not contain Mustard gas and are not a threat to the first responder.

FIRE: In case of fire, evacuate the area. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. Mustard gas requires an alcohol foam, and both ordinary foam and water hoses will not be effective except on the smallest fires. If you don't have foam, it's best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning liquid around. If a container of Mustard gas is near a fire, it could get very hot and explode. Use water hoses (use an unmanned fire monitor if possible to reduce danger to you) to cool the container so it won't burst.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI. Don't help the terrorists by killing yourself trying to respond to a Mustard gas release.

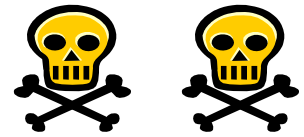
WATER POLLUTION: Mustard gas dissolves slowly in water and breaks down into toxic products, and you don't want people to drink water containing Mustard gas or its breakdown products. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Mustard gas will react with water and sweat, but does not react in a dangerous way with common materials. As it breaks down in water or sweat, Mustard gas gives off Hydrochloric acid, which is a very strong acid and will eat up skin. Diluting Mustard gas with large amounts of water is a good way to get it off a victim.

PHYSICAL PROPERTIES: Mustard gas gives off little gas until heated above 100°F, and it freezes at 57°F (but many types of Mustard gas have additives that keep it a liquid below 57°F). The vapor and liquid droplets are heavier than air so Mustard gas will flow downwind and downhill - stay upwind and uphill from a spill. It will decompose in water, so an unmanned fire

monitor may be useful, spraying water into a cloud of Mustard gas.

TECHNICAL: The German army first used Mustard gas in September 1917 at the Battle of Ypres (so the British called it Yprite). It had the advantage of passing through all available protective equipment. Reportedly it was the most effective chemical weapon of WORLD WAR I and it remains a favorite of certain governments. How does Mustard gas work? No one really knows the entire story, but it does react with water to form Hydrochloric acid that attacks tissue. Mustard gas will blind you and blister your skin severely, and with enough it will kill. Perversely you have to decontaminate immediately to prevent injury, but you don't feel pain or have any symptoms for hours. So if you think someone might have been exposed to Mustard gas, decontaminate now; don't wait to confirm that it was Mustard gas. Unlike other chemical warfare agents, the first responder faces no danger from the victim's body fluids, but will be contaminated by contact with unwashed clothing. But even if the victim survives, the body's systems are so weakened that you're susceptible to disease. There is disagreement whether a single exposure to Mustard gas can cause cancer in humans; certainly there is some evidence it attacks DNA. There is consensus that continuous exposure to Mustard gas will lead to cancer (workers making Mustard gas), and animals do develop cancer from Mustard gas. For the record, Mustard gas is bis(2-Chloroethyl)sulfide.



PHENYLDICHLOROARSINE



(PD)

(fee-nil-die-klor-ro-are-seen)

When you respond –

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim.
- Don't touch the victim – you don't want to get Phenylchloroarsine on you.
- If you have to put out a Phenylchloroarsine fire, use water, foam, or carbon dioxide, if not, evacuate.



PHENYLDICHLOROARSINE



(PD)

(fee-nil-die-klor-ro-are-seen)

DISCUSSION

INTRODUCTION: Phenylldichloroarsine is a chemical weapon used in World War I, and may have been used by others later. It is designed to incapacitate by making you vomit violently while in great pain, and if that weren't enough, it injures and can kill in higher doses. One advantage is that it doesn't break down fast unless it's mixed with water, which is an advantage in military weapons. Phenylldichloroarsine is a liquid that blisters the skin and does great damage. It also attacks the eyes and the lungs. If you get this on your skin you will feel immediate stinging; think of this as poison ivy only incredibly worse. If you breathe Phenylldichloroarsine you will feel immediate burning pain. And you will vomit violently. Unfortunately, it's similar to pesticides, and terrorists or countries wanting to make it can make it in a pesticide factory.

HOW BAD IS IT? Phenylldichloroarsine is a liquid that doesn't give off much gas; unfortunately it doesn't take much gas to hurt your lungs. The military puts in it an exploding bomb or shell and breaks up the liquid into tiny droplets that float in the air (aerosol) and slowly vaporize. Phenylldichloroarsine gets to you as small droplets in the air (aerosols) primarily through the skin and lungs. If you're exposed you'll feel it immediately, and you'll want to run away, and you'll vomit violently after only one or two minutes. Phenylldichloroarsine easily goes through fabrics and even rubber (you can safely wear Level A) and you'll be able to see skin damage very quickly. Soon blisters form, with permanent scarring in more severe cases, leaving you with permanent skin color changes. Liquid in

your eyes (or even the vapor) can damage your eyes and can blind you.

DETECTION: Phenylldichloroarsine is a colorless liquid, with no smell, making detection difficult. You can depend on pain to tell you you're in trouble, because Phenylldichloroarsine hurts as soon as you get the liquid on you or you breathe the vapors. If you start vomiting violently, it's probably Phenylldichloroarsine.

SYMPTOMS: Phenylldichloroarsine will make you vomit violently even if you don't drink it - breathing it and getting it on your skin can make you vomit.

Eyes: Your eyes will immediately hurt and your cornea will scar. You will have permanent damage to your eyes and can even go blind with even a short exposure.

Lungs: You will immediately feel the effects. You will sneeze and cough, your nose will run, and your lungs will fill with fluid. Phenylldichloroarsine damages the lungs and breathing tubes, and can lead to choking; you may have trouble breathing, and you might suffocate. Eventually Phenylldichloroarsine poisons many parts of the body.

Skin: You will immediately feel stinging pain. Your skin will redden, sting, and eventually blister.

Stomach: It's hard to believe anyone would swallow Phenylldichloroarsine, but it could happen. Phenylldichloroarsine will poison many parts of the body. Swallow enough and it will kill you.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training don't enter the hot or the warm zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot or the warm zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediately flush the eyes with water for at least 15 minutes.

- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (0.5%, or one part bleach to 200 parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the Phenylldichloroarsine.
- Use the antidote "Antilewisite" if you have it; it is very effective.
- Phenylldichloroarsine will break down in water, but remember that the pieces are pretty bad too!

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A, and even then the Level A equipment is good for no more than one hour with Phenylldichloroarsine. You have to be quick; the only way to prevent injury is immediate **DECONTAMINATION.** Depending on the dose and the equipment you have:

- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of Phenylldichloroarsine.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!
- Only when the victim is outside the hot and warm zones and decontaminated can you help. If breathing is difficult, give oxygen.
- Do not make the victim vomit if the victim has swallowed Phenylldichloroarsine. Give the victim milk if conscious.

- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed.

FIRE: Phenylldichloroarsine does burn, and that's good because burned Phenylldichloroarsine is better than unburned Phenylldichloroarsine. In case of fire, evacuate the area. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. You can fight Phenylldichloroarsine fires with water streams, water fog, ordinary foam, universal foam, and, for confined fires, carbon dioxide. Remember that after it breaks down in water into toxic Hydrochloric acid and arsenic chemicals.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI. Don't help the terrorists by killing yourself trying to respond to a Phenylldichloroarsine release.

WATER POLLUTION: When Phenylldichloroarsine mixes with water it breaks down into Hydrochloric acid and Arsenic chemicals, which are pretty bad. You don't want people to drink water containing Phenylldichloroarsine the break down pieces so warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Phenylldichloroarsine is stable. It will break down when mixed with water, but remember that the pieces are very dangerous, too.

PHYSICAL PROPERTIES: Phenylldichloroarsine gives off enough gas to hurt you badly. The vapor and liquid droplets are heavier than air so Phenylldichloroarsine will flow downwind and downhill - stay upwind and uphill from a spill.

TECHNICAL: Phenylldichloroarsine was used in World War II, and it might have been used since then. How does it work? No one really knows the entire story, but it does react with many enzymes which damages the body. Phenylldichloroarsine will blind you and blister your skin severely, and with enough it will kill. Fortunately you will know that you've been exposed because you will feel immediate pain, and you will vomit violently. For the record, its chemical formula is $C_6H_5AsCl_2$. There is an antidote, a British product called antilewisite (other names being BAL and Dimercaprol), which you can give victims.

PHOSGENE

(foss-gene)



WHEN YOU RESPOND -



- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Enter area only if wearing Level A.
- Evacuate the area! Phosgene will not burn but containers in a fire will explode.



PHOSGENE

(foss-gene)

DISCUSSION

INTRODUCTION: Phosgene is an important industrial chemical used to make plastics and other valuable things. But it kills - both sides used it as a poison gas during WORLD WAR I. Since tank trucks, tank cars, and tank vessels carry this throughout the world in large quantities, it is a potential terrorist agent, even though the world's military forces no longer consider it a chemical weapon.

HOW BAD IS IT? The fact that Phosgene was a WORLD WAR I poison chemical says it all. Phosgene kills by damaging the lungs. You effectively drown in your own fluids (blood, etc.), and you die by suffocation. But with medical care you may survive. Even if you live, your lungs can be permanently damaged. Breathing the vapor is by far the worst danger, but getting the liquid in your eyes or on your skin can produce acid burns. If the liquid gets on your skin, it will freeze your skin (frostbite). So even if you're wearing a respirator or SCBA, you should wear Level A.

DETECTION: Phosgene is a yellowish liquid that boils at 47°F to form a colorless gas having the smell of new mowed hay. But don't depend on your nose, because not only does Phosgene have a mild odor that you can easily miss, but it quickly takes away your sense of smell. The best way to detect it is with test detectors.

SYMPTOMS: Eye irritation, coughing, sneezing, hoarseness, shortness of breath, and other breathing problems leading to death.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Call for medical and hazmat assistance immediately.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: You will not help the victim if you kill yourself. The only safe way you can enter is if you wear Level A. You could die without protection. Depending on the dose and the equipment you have:

- Enter hot zone only if wearing Level A.
- Remove the victim to fresh air without exposing yourself - don't touch the victim unless you're wearing Level A!
- Call for medical and hazmat assistance immediately.
- Only when the victim is outside the Phosgene zone can you help. If breathing is difficult, give oxygen. If the

victim is not breathing, give artificial respiration. Never perform mouth-to-mouth resuscitation - you will only kill yourself! Use a bag/mask apparatus instead. If the victim's heart has stopped, give CPR.

- Get medical attention for the victims as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed for up to 24 hours.
- Make the victim rest until the victim gets medical attention, even if there are no symptoms - this delays the bad effects from the Phosgene.
- If in a building, shut down heating, ventilation, and air conditioning systems.

FIRE: **Evacuate the area!** Phosgene will not burn. However, it is possible that a phosgene tank will be adjacent to a fire. In a fire a Phosgene tank will heat and the tank may overpressurize and explode, so evacuate the area. Even if the tank doesn't fail, the safety valve may open releasing Phosgene, so evacuate. When heated, Phosgene breaks down to toxic Chlorine and Hydrogen chloride gases, which is another good reason to evacuate. The danger from a heated Phosgene tank is too great to risk a manned fire fighting effort; if possible, an unattended fire monitor aimed at the upper part of the Phosgene tank will cool the tank and may prevent tank failure. In general, it's best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning fuel around.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't get yourself killed trying to respond to a Phosgene release.

WATER POLLUTION: When liquid Phosgene enters water, it forms Hydrochloric acid, and you don't want people to drink water containing acid. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Phosgene won't react with common chemicals. Phosgene will slowly break down in water to form Hydrochloric acid, and when heated it breaks apart into the gases Chlorine and Hydrogen chloride.

PHYSICAL PROPERTIES: Phosgene is carried and stored as a pressurized gas, although in cold weather it can liquefy. The vapor is much heavier than air, so it will flow downwind and downhill - stay upwind and uphill from a spill. It will decompose in water, so an unmanned fire monitor may be useful.

TECHNICAL: How does Phosgene work? The vapor gets into the lungs and forms hydrochloric acid, which literally destroys the tissue between the tiny blood vessels (capillaries) and the tiny air sacks (alveoli) in the lungs. This means that blood flows into the lungs, and you drown. It's a horrible way to die. Phosgene is consumed in the lungs, so it doesn't attack other parts of the body. Phosgene is just one of a number of pulmonary (lung) agents; Chlorine is another.



PHOSGENE OXIME



(CX)

(foss-gene ox-eem)

When you respond -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim.
- Don't touch the victim - you don't want to get Phosgene oxime on you.
- If you have to put out a Phosgene oxime fire, use water, alcohol foam, or carbon dioxide, if not, evacuate.



PHOSGENE OXIME



(CX)

(foss-gene ox-eem)

DISCUSSION

INTRODUCTION: Germany invented Phosgene oxime in 1929, and it's only use is as a chemical warfare agent. Iraq may have used it during the Iran-Iraq war, and North Korea may have stocks today. It burns the skin like fire or acid burns, and is dangerous because it can pass through rubber and clothing. Phosgene oxime is fast acting, and people really feel serious pain that lasts for a long time. It's designed to incapacitate, but can injure and kill in higher doses. Phosgene oxime is a solid that melts on very hot days; it produces lots of vapor that can get into your lungs. Terrorists might add a common liquid like ether to make it into a liquid, or mix it with a more dangerous chemical warfare agent so that both go through rubber and clothing. The bottom line is that it blisters the skin and does great pain and damage. It also attacks the eyes and the lungs. If you breathe Phosgene oxime vapor you will feel immediate burning pain.

HOW BAD IS IT? Phosgene oxime is a solid that does give off dangerous gas; unfortunately it doesn't take much gas to hurt your lungs. A terrorist would put in it an exploding bomb or shell to break up the solid into tiny pieces that float in the air (aerosol) and slowly vaporize. Phosgene oxime gets to you as small pieces in the air primarily through the skin and lungs. If you're exposed you'll feel it immediately, and you'll want to run away. Phosgene oxime easily goes through fabrics and even rubber and you'll be able to see skin damage in less than a minute; you don't get blisters but you get burns that really hurt. And soon your skin dies, with recovery taking up to six months. If you get it in your eyes it could damage your eyesight or make you blind. Finally, it will attack your lungs

and damage them. All in all, this is a really bad chemical agent.

DETECTION: Phosgene oxime is a white powder that on hot days or at body temperature is a yellowish-brown liquid. It has a peppery, unpleasant smell. You can depend on pain to tell you you're in trouble, because Phosgene oxime hurts as soon as you get the liquid on you or you breathe the vapors.

SYMPTOMS:

Eyes: Your eyes will immediately hurt, your eyelids swell, and your cornea will scar. Soon you will have permanent damage to your eyes and can even go blind.

Lungs: You will immediately feel the effects. You will sneeze and cough, your nose will run, and your lungs will fill with fluid. Breathe enough of it and you could die.

Skin: You will immediately feel stinging pain. Your skin will redden, sting, and eventually blister (up to 12 hours after exposure). Get enough of it on your skin and you could die.

Stomach: It's hard to believe anyone would swallow Phosgene oxime, but it could happen. Animal studies show that your stomach and intestines would swell and bleed.

DECONTAMINATION: This is very important, and you have to decontaminate immediately, as Phosgene oxime burns the skin within a minute. Extra seconds before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training don't enter the hot or the warm zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot or the warm zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediately flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.

- Wash the victim with warm water with soap.
- Bleach doesn't work with Phosgene oxime.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the Phosgene oxime.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A. You have to be quick; the only way to prevent injury is immediate DECONTAMINATION. Depending on the dose and the equipment you have:

- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of Phosgene oxime.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!
- Only when the victim is outside the hot and warm zones and decontaminated can you help. If breathing is difficult, give oxygen.
- Do not make the victim vomit if the victim has swallowed Phosgene oxime. Give the victim milk if conscious.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed.

FIRE: In case of fire, evacuate the area. Phosgene oxime burns weakly if at all. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. You can fight Phosgene oxime fires with water streams, water fog, alcohol foam, universal foam, and, for confined fires, carbon dioxide.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI. Don't help the terrorists by killing yourself trying to respond to a Phosgene oxime release.

WATER POLLUTION: Phosgene oxime dissolves in water and breaks down into toxic products that are much less dangerous than Phosgene oxime, but still poisonous. You don't want people to drink water containing even the breakdown products. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Phosgene oxime will react with water and sweat, and will break down when it touches metals. It also breaks down when heated. Still, when it breaks down it forms Hydrochloric acid, which is less dangerous but will still hurt you. Diluting Phosgene oxime with large amounts of water is a good way to get it off a victim.

PHYSICAL PROPERTIES: Phosgene oxime gives off enough gas to hurt you badly. On a hot day or at body temperature it melts, and it gives off a lot of very dangerous gas. The vapor, liquid droplets, and solid powder are heavier than air so Phosgene oxime will flow downwind and downhill - stay upwind and uphill from a spill. It will decompose in water, so an unmanned fire monitor may be useful, spraying water into a cloud of Phosgene oxime.

TECHNICAL: Germans invented Phosgene oxime in 1929 but wasn't until after WW II that the military tested concentrated Phosgene oxime and discovered that it was a very effective and very painful chemical warfare agent that penetrates rubber and clothing. It's especially dangerous when mixed with other chemicals because it burns away the skin letting the other agents enter the skin easily. The Iraqis may have used it in the Iran-Iraq war, and North Korea may have produced stocks. There's no industrial use for it, so little is known about it's behavior. How does Phosgene oxime work? No one really knows, but it eats its way through the skin to the blood. Phosgene oxime will blind you and kill your skin horribly, and with enough it will kill. Fortunately you will know that you've been exposed because you will feel immediate pain. For the record, it is Dichloroformoxime with the military designation CX and the chemical formula CHCl_2NOH .



RED PHOSPHOROUS

(red foss-for-us)

When you respond -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim.
- Don't touch the victim - you don't want to get Red Phosphorous on you.
- If you have to put out a Red Phosphorous fire, use water spray or water fog, if not, evacuate.



RED PHOSPHOROUS

(red foss-for-us)

DISCUSSION

INTRODUCTION: Red Phosphorous is a chemical weapon used to make smoke, but no military is known to have used it as a weapon of mass destruction. Because the smoke it makes is very irritating, Red Phosphorous would make a good irritating weapon but it wouldn't kill. Red Phosphorous can also be used as an irritating powder that can be spread in the air. It irritates your skin, eyes, lungs, and throat. Although Red Phosphorous is not easy to get there is a black market because people use it to make illegal drugs.

HOW BAD IS IT? Red Phosphorous is a solid that you can grind into a powder that is very irritating to the skin, eyes, lungs, and throat. You can also burn it and the smoke will irritate the skin, eyes, lungs, and throat. You won't die from one exposure, but you will want to leave the area.

DETECTION: Red Phosphorous is a red solid with very little smell. You can depend on irritation to tell you that you've been exposed, and if the Red Phosphorous is being burned you'll see the smoke.

SYMPTOMS: Red Phosphorous will irritate you but won't do much more damage than that.

Eyes: It irritates your eyes and make them water and red. But it won't do permanent damage.

Lungs: It irritates your nose, throat, and lungs but won't do permanent damage. But it won't do permanent damage.

Skin: It irritates the skin, and your skin will become red and will itch. But it won't do permanent damage.

Stomach: It's hard to believe anyone would swallow Red Phosphorous, but it could happen. You can be sure that you don't want to eat it but the symptoms of eating it are not reported.

DECONTAMINATION: This is important, and it's a good idea to decontaminate as soon as you can.

- If you don't have the equipment and training don't enter the hot or the warm zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot or the warm zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediately flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (0.5%, or one part bleach to 200 parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the Red Phosphorous.

FIRST RESPONDERS: There's no point in getting Red Phosphorous on yourself since it is only irritating the victim, not killing him, but if you do you won't die. Still, do not enter an area contaminated with either vapor or liquid unprotected. At the minimum, wear gloves and coveralls to protect your skin. Wear a filter mask to protect your lungs; an SCBA would be better.

- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of Red Phosphorous.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!
- Only when the victim is outside the hot and warm zones and decontaminated can you help. If breathing is difficult, give oxygen, but this should not be a problem.
- Do not make the victim vomit if the victim has swallowed Red Phosphorous. Give the victim milk if conscious.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, just to be certain.

FIRE: Red Phosphorous burns, and is more dangerous when it burns because the smoke is more irritating than the unburned chemical. In case of fire, evacuate the area. You can put out the fire by water fog or water mist - do not use a straight fire stream because that will only spread out the Red Phosphorous. Other things like foam aren't as effective. If there is a container of Red Phosphorous near a fire, the heat might change it to the dangerously flammable White Phosphorous form, so keep the container cool with water from a fire hose, and put out the fire around the container if possible.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI.

WATER POLLUTION: When Red Phosphorous mixes with water it reacts slowly if it reacts at all. There doesn't seem to be a problem with Red Phosphorous in water. Still, just in case, warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Red Phosphorous is very stable. When heated (but not on fire) it becomes White Phosphorous which is dangerously flammable, so if you think that a container of Phosphorous is in a fire, try to put out that fire.

PHYSICAL PROPERTIES: Red Phosphorous is a solid that has to be heated very hot before it gives off vapor or changes to the

dangerously flammable White Phosphorous form, so you want to keep Red Phosphorous from getting too hot.

TECHNICAL: Red Phosphorous is used in warfare to make smoke, but it never was used as a chemical weapon. No one really knows how it irritates your skin, eyes, lungs, and throat, but fortunately it doesn't kill in the amounts you can expect to get in a terrorist incident. The chemical formula is simply P. Red and White Phosphorous are different forms of the element Phosphorous, with the White Phosphorous being very dangerously flammable - it will burn when exposed to air without an igniter. Interestingly, about 1% of your body weight is Phosphorous!



SARIN



(GB)

(sar-rin)

WHEN YOU RESPOND -



- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Enter only if you're wearing level A.
- **Don't** put out a Sarin fire - unburned Sarin is worse than burned Sarin.
- Notify police, FBI, medical, hazmat, emergency authorities.
- **Never** perform mouth to mouth resuscitation - you'll die too.
- **Don't** touch the victim - you don't want to get Sarin on yourself.
- Immediately decontaminate victim without

touching, using water or anything
else
available, even dirt.

- Immediately decontaminate yourself
using
water or anything else available,
even
dirt.



SARIN

(GB)

(sar-rin)



DISCUSSION



INTRODUCTION: Sarin is an extremely dangerous nerve agent. In 1994 Japanese terrorists successfully used impure Sarin in an attack on the Tokyo subway that thoroughly terrorized people. They managed to kill several people and injure several hundred more, using an impure Sarin; the pure stuff would have killed many more. The bottom line is that Sarin is extremely dangerous, even if it's not pure.

HOW BAD IS IT? Sarin is a liquid that vaporizes more slowly than water. Both the liquid and the vapor can kill you. Large amounts can hurt you in one minute, and can quickly lead to death. In fact, a single drop, if vaporized, can kill everyone in a room! Sarin is 26 times more deadly than cyanide gas and 20 times more deadly than Potassium cyanide - that's the stuff they use in the gas chamber to execute criminals! So you can see just how bad Sarin is.

DETECTION: Both the vapor and liquid are colorless, so you can't see where the Sarin gas is. Your nose isn't a good way to detect Sarin either, because Sarin has a mild odor that you can easily miss, and Sarin quickly takes away your sense of smell. The best way to detect it is with test detectors (paper coated with chemicals) that change color when exposed to Sarin and other nerve agents.

SYMPTOMS: Sarin attacks the nervous system, which is why they call it a nerve gas.

Low dose: Localized sweating, muscular twitching, pinpoint eye pupils, runny nose, chest tightness, shortness of breath, dimness of vision.

High dose: headache, cramps, nausea, vomiting, twitching, jerking, staggering, convulsions, drowsiness, coma, respiratory arrest, death.

DECONTAMINATION: This is very important. You have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA WITHOUT PROTECTION WHERE THERE ARE PEOPLE OBVIOUSLY SICK OR WHERE YOU SUSPECT SARIN GAS OR VAPOR MAY BE.** The only way you can survive an entry is if you wear Level A. If you have the equipment and training do the following:

- Remove the victim to fresh air without exposing yourself to the Sarin liquid or vapor – but don't go near the hot zone unless you are wearing Level A
- Call for medical and hazmat assistance immediately
- Unless you are wearing Level A do not touch the victim. If the victim is conscious, tell the victim to get undressed so that you can decontaminate using water from a fire hose(spray or fog to prevent injury to the victim). Again, never touch the victim unless you are wearing Level A
- Only when the victim is outside the hot zone and decontaminated can you help. If the victim's breathing is difficult, give oxygen. If the victim is not breathing, give artificial respiration. Never perform mouth-to-mouth resuscitation – you will only kill yourself! Use a bag/mask apparatus instead. If the victim's heart has stopped, give CPR.
- Do not make the victim vomit; the Sarin will cause additional damage as it comes back up.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed.

FIRE: In case of fire, let it burn. Sarin vapor is so bad that the burned Sarin is safer than unburned Sarin. If there is some reason that you have to put out the fire – for example, there are things you can't let burn nearby – use unattended equipment (fire monitor). It's always best to use a spray or fog pattern rather than a solid stream, to avoid spreading the burning liquid around. Sarin requires an alcohol foam, since both ordinary foam and water hoses will not be effective except on the smallest fires. If a container of Sarin is near a fire, use water hoses (unmanned if possible to reduce danger to you) to cool the container so it won't burst.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, medical and hazmat authorities, health and pollution control officials, and the FBI. Don't become a victim yourself trying to respond to a Sarin release.

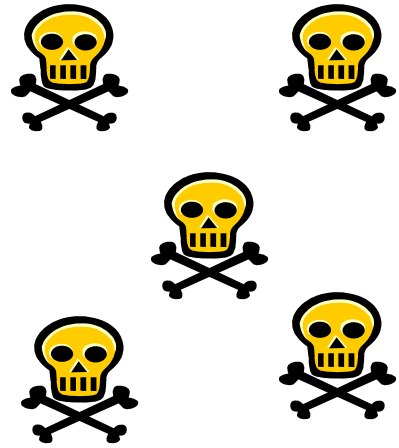
WATER POLLUTION: You don't want people to drink water containing Sarin. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Keep Sarin away from acids, bases (alkalis), and water (except when you are decontaminating victims).

PHYSICAL PROPERTIES: Sarin vaporizes slower than water does. Since the vapor is heavier than air it will flow downwind and downhill - stay upwind and uphill from a spill. It will decompose in water, so an unmanned fire monitor may be useful.

TECHNICAL: The U.S. military term "GB" indicates that this was the second nerve agent the Germans invented. How do Sarin and other nerve agents work? These are similar to many of the commercial pesticides, only much worse. They are organophosphorous cholinesterase inhibitors. The first word - organophosphorous - means that this is an organic compound (carbon, hydrogen, oxygen) containing phosphorous. The second and third word - cholinesterase inhibitor - means that this keeps several enzymes from working. It's interesting - when your brain wants your muscles and glands to relax it sends chemical messages. Sarin and other nerve agents interfere with these chemicals, so your nerves continue to "fire"; eventually your muscles tire out, and, among other things, you stop breathing. Since Sarin works through the nerves it's called a nerve agent. It also interferes with tissue and blood enzymes. With medical treatment enzymes repair themselves, but otherwise the enzyme will not be repaired, and only as the body makes new enzymes will the damage disappear. This is a slow process, since the body replaces enzymes only at about 1% per day. That means without medical help it takes a long time to get well.

SOMAN
(GD)
(soh-man)



When you respond -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim, remove all clothing.
- Don't touch the victim or his clothes - you don't want to get Soman on you.

SOMAN

(GD)

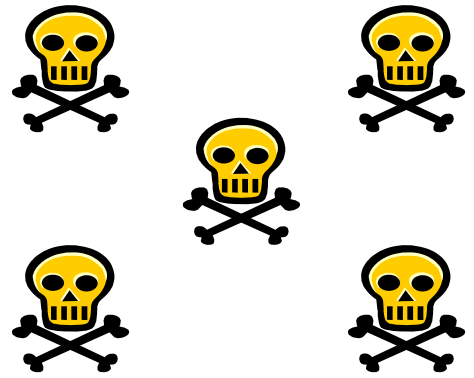
(soh-man)

DISCUSSION

INTRODUCTION: The Germans invented Soman in 1944 for use as an insecticide and, and were testing it for use as a nerve agent when the war ended. After the end of the World War II many countries adopted it as a weapon because it is incredibly effective at killing people. It might have been used in the Iran-Iraq war, but there is no proof that it's ever been used in combat. Unfortunately it would be an excellent weapon for terrorists. It is designed to kill, but it can injure or incapacitate in lower amounts. Soman is a liquid that is very dangerous if you get it on your skin, if you breathe the vapor, or if you drink it mixed in water. Without immediate treatment you will probably die.

HOW BAD IS IT? Soman is a liquid that doesn't give off much gas; unfortunately it doesn't take much gas to hurt your lungs. A terrorist will put in it an exploding bomb or shell to break up the liquid into tiny droplets that float in the air (aerosol) and vaporize. Soman gets to you as small droplets in the air (aerosols) or gas primarily through the skin, eyes, and lungs. If you're exposed to the agent you will feel the effects immediately, but if you get the liquid on your skin you may feel it within a few minutes or its effects might be delayed for as long as most of a day. You will need to wear Level A to protect yourself, and if you don't you may be seriously injured or may even die.

DETECTION: Soman is a colorless liquid, with a mild smell of rotting fruit or Vicks Vapo-Rub. But don't depend on odor; not everyone can smell low concentrations of this chemical. You can't depend on pain to tell you if you've been attacked,



because symptoms may be delayed. The military has detection tubes for Soman.

SYMPTOMS: Symptoms may be immediate or may not come for most of a day.

Eyes: Your eyes will hurt, your vision blurs, and your eyes will water.

Lungs: You will cough, breathe rapidly, and have chest tightness. With high doses you will have trouble breathing and may suffocate.

Skin: You will sweat and your muscles will twitch where Soman touched the skin.

Stomach: Soman mixes with water so you can drink it without knowing it. You'll feel sick - you will have frequent urination, diarrhea, nausea, vomiting, and stomach pain.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training don't enter the hot or the warm zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot or the warm zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediately flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction. Soman stays in clothing, so don't touch it with bare skin - if possible, seal contaminated clothing in a plastic bag.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (0.5%, or one part bleach to 200 parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.

- Remember that the water you use to decontaminate the victims is dangerous.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the Soman.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A. You have to be quick; the only way to prevent injury is immediate DECONTAMINATION. Depending on the dose and the equipment you have:

- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of Soman, both liquid droplets and vapor.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. And if you get some Soman on your clothes take them off immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!
- Only when the victim is outside the hot and warm zones and decontaminated can you help. If breathing is difficult, give oxygen.
- Soman gets on clothes and evaporates for 30 minutes, so contaminated clothes are very dangerous. Do not touch the victim's clothing.
- Do not make the victim vomit if the victim has swallowed Soman, and do not give the victim any liquids to drink.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed. Only a doctor can give the antidotes to Soman.
- Remember that the water you use to decontaminate the victims is dangerous.

FIRE: In case of fire, evacuate the area. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. The heat from a fire will help decompose the Soman. And

remember that the water from the fire contains Soman, and is very dangerous.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI. Don't help the terrorists by killing yourself trying to respond to a Soman release.

WATER POLLUTION: Soman dissolves in water and remains very dangerous. A terrorist might poison the water supply, or a Soman attack might get into a stream used for drinking water. You don't want people to drink water mixed with Soman. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: Soman will mix with water and will break down when heated or in a fire. Diluting Soman with large amounts of water is a good way to get it off a victim, but remember that the wash water is very dangerous.

PHYSICAL PROPERTIES: Soman gives off enough gas to hurt you badly. The vapor and liquid droplets are heavier than air so Soman will flow downwind and downhill - stay upwind and uphill from a spill. It will mix in water, so an unmanned fire monitor may be useful, spraying water into a cloud of Soman. But remember that the water contains Soman and can hurt you.

TECHNICAL: The Germans invented this nerve agent in 1944 for use as a weed killer but quickly discovered that it was killing people; the Germans were still testing it when World War II ended. Many governments adopted it as their favorite nerve agent because it kills people so easily. The U.S. military term "GD" indicates that this was the third nerve agent the Germans invented ("GC" was already given to Gonorrhea). How do Soman and other nerve agents work? These are similar to many of the commercial pesticides, only much worse. They are organophosphorous cholinesterase inhibitors. The first word - organophosphorous - means that this is an organic compound (carbon, hydrogen, oxygen) containing phosphorous. The second and third word - cholinesterase inhibitor - means that this keeps several enzymes from working. It's interesting - when your brain wants your muscles and glands to relax it sends chemical messages. Soman and other nerve agents interfere with these chemicals, so your nerves continue to "fire"; eventually your muscles tire out, and, among other things, you stop breathing. Since Soman works through the nerves it's called a nerve agent. Soman can get to you when you breathe, through the skin, through the eyes, and by drinking water with Soman in it (Soman mixes with water). A doctor can inject victims with antidotes (there is a special nerve agent kit; also, doctors may use Atropine), so you should get medical attention for the victim as soon as possible. There's even a pill you can take before exposure that prevents Soman from hurting you. For the

record, Soman is an organophosphate called
1,2,2-Trimethylpropoxyfluoro(methyl)phosphine oxide, or
 $\text{CH}_3\text{P}(\text{O})(\text{F})\text{OCH}(\text{CH}_3)\text{C}(\text{CH}_3)_3$.

TABUN
(GA)
(tay-bun)



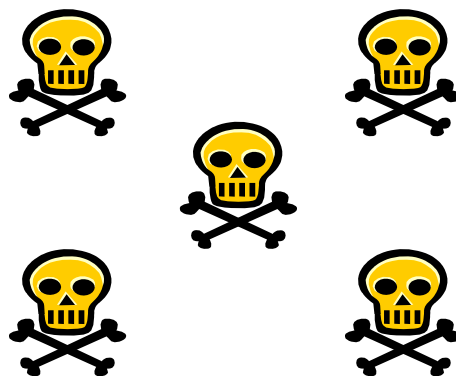
When you respond -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim, remove all clothing.
- Don't touch the victim or his clothes - you don't want to get Tabun on you.

TABUN

(GA)

(tay-bun)



DISCUSSION

INTRODUCTION: Tabun was originally invented as a weed killer! But the Germans decided to use it as a WORLD WAR II chemical weapon that attacks the nerves; fortunately the Germans never used it in combat. After the end of the World War II other, more effective nerve agents replaced it, but it was reportedly used by Iraq in the Iraq-Iran war. Since it is easier to make than other nerve agents, terrorists may decide to use it. It is designed to kill, but it can injure or incapacitate in lower amounts. Tabun is a liquid that is very dangerous if you get it on your skin, if you breathe the vapor, or if you drink it mixed in water. Without immediate treatment you could die.

HOW BAD IS IT? Tabun is a liquid that doesn't give off much gas; unfortunately it doesn't take much gas to hurt your lungs. A terrorist will put in it an exploding bomb or shell to break up the liquid into tiny droplets that float in the air (aerosol) and slowly vaporize. Tabun gets to you as small droplets in the air (aerosols) primarily through the skin, eyes, and lungs. If you're exposed you may not feel anything for hours, or you may feel effects immediately. You will need to wear Level A to protect yourself, and if you don't you may be seriously injured or may even die.

DETECTION: Tabun is a colorless liquid, with a mild smell of geraniums or fruity odor. Sometimes Tabun forms cyanide, which smells like burnt almonds. But don't depend on odor; not everyone can smell low concentrations of this chemical. You

can't depend on pain to tell you if you've been attacked, because symptoms may be delayed.

SYMPTOMS: Symptoms may be immediate or may not come for almost a day after.

Eyes: Your eyes will hurt, your vision blurs, and your eyes will water.

Lungs: You will cough, breathe rapidly, and have chest tightness. With high doses you will have trouble breathing and may suffocate.

Skin: You will sweat and your muscles will twitch where Tabun touched the skin.

Stomach: Tabun mixes with water so you can drink it without knowing it. You'll feel sick - you will have frequent urination, diarrhea, nausea, vomiting, and stomach pain.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training don't enter the hot or the warm zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot or the warm zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediately flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction. Tabun stays in clothing, so don't touch it with bare skin - if possible, seal contaminated clothing in a plastic bag.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (0.5%, or one part bleach to 200 parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.

- Remember that the water you use to decontaminate the victims is dangerous.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the Tabun.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A. You have to be quick; the only way to prevent injury is immediate DECONTAMINATION. Depending on the dose and the equipment you have:

- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of Tabun, both liquid droplets and vapor.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. And if you get some Tabun on your clothes take them off immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!
- Only when the victim is outside the hot and warm zones and decontaminated can you help. If breathing is difficult, give oxygen.
- Do not make the victim vomit if the victim has swallowed Tabun, and do not give the victim any liquids to drink.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed. Only a doctor can give the antidotes to Tabun.
- Remember that the water you use to decontaminate the victims is dangerous.
- Make sure you decontaminate yourself, even if you think you are not contaminated.

FIRE: In case of fire, evacuate the area. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. The heat from a fire will help decompose the Tabun. And

remember that the water from the fire contains Tabun, and is very dangerous.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI. Don't help the terrorists by killing yourself trying to respond to a Tabun release.

WATER POLLUTION: Tabun dissolves in water and remains very dangerous. A terrorist might poison the water supply, or a Tabun attack might get into a stream used for drinking water. You don't want people to drink water mixed with Tabun. Warn pollution control authorities and advise shutting water intakes.

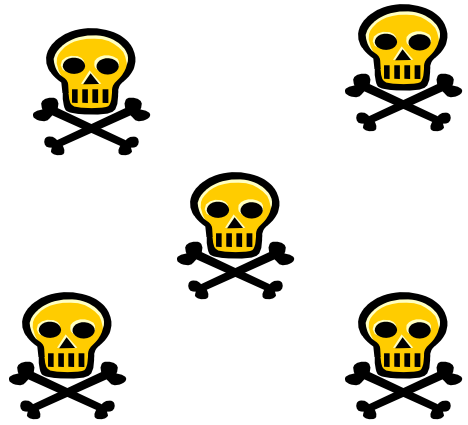
REACTIVITY: Tabun will mix with water and will break down when heated or in a fire. Diluting Tabun with large amounts of water is a good way to get it off a victim, but remember that the wash water is very dangerous.

PHYSICAL PROPERTIES: Tabun gives off enough gas to hurt you badly. The vapor and liquid droplets are heavier than air so Tabun will flow downwind and downhill - stay upwind and uphill from a spill. It will mix in water, so an unmanned fire monitor may be useful, spraying water into a cloud of Tabun. But remember that the water contains Tabun and can hurt you.

TECHNICAL: The Germans invented this nerve agent in 1936 for use as a weed killer but found it killed people; but for some reason the Germans didn't use chemical warfare in World War II. The U.S. military term "GA" indicates that this was the first nerve agent the Germans invented. How do Tabun and other nerve agents work? These are similar to many of the commercial pesticides, only much worse. They are organophosphorous cholinesterase inhibitors. The first word - organophosphorous - means that this is an organic compound (carbon, hydrogen, oxygen) containing phosphorous. The second and third word - cholinesterase inhibitor - means that this keeps several enzymes from working. It's interesting - when your brain wants your muscles and glands to relax it sends chemical messages. Tabun and other nerve agents interfere with these chemicals, so your nerves continue to "fire"; eventually your muscles tire out, and, among other things, you stop breathing. Since Tabun works through the nerves it's called a nerve agent. Tabun can get to you when you breathe, through the skin, through the eyes, and by drinking water with Tabun in it (Tabun mixes with water). A doctor can inject victims with antidotes (there is a special nerve agent kit; also, doctors may use Atropine), so you should get medical attention for the victim as soon as possible. For the record, Tabun is an organophosphate called Ethyl dimethylamidocyanophosphate, or $C_5H_{11}O_2N_2P$.

VX

(vee-ecks)

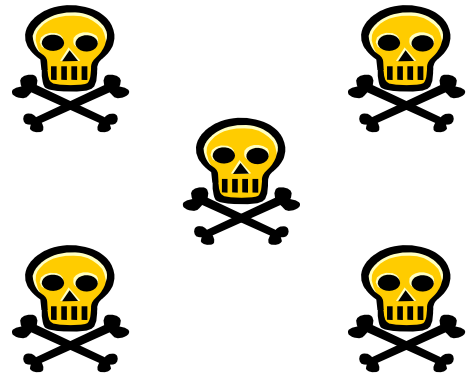


When you respond -

- Evacuate everyone immediately including yourself.
- Immediately call for medical and hazmat assistance.
- Notify police, FBI, medical, hazmat, emergency authorities.
- Immediately decontaminate victim, remove all clothing.
- Don't touch the victim or his clothes - you don't want to get VX on you.

VX

(vee-ecks)



DISCUSSION

INTRODUCTION: The British invented VX in 1950 for use as an insecticide and discovered that it was very effective at killing people. The British gave it to the United States for development and the U.S., France, and Russia turned it into a weapon. VX is called a nerve agent because it attacks through the nerves in the body, and it is the most dangerous of the nerve agents. The major powers never used it, but there are reports that Iraq used it in their war with Iran and used VX to kill Iraqi Kurds. Japanese terrorists used VX three times to assassinate people, and did kill one man. Fortunately, VX is difficult to make - some of the ingredients are banned from commerce, and VX is so dangerous to make that terrorists might try to make less dangerous nerve agents. Unfortunately terrorists might be able to buy or steal VX from Russian stockpiles. VX would be an excellent weapon for terrorists. It is designed to kill, but it can injure or incapacitate in lower amounts. VX is a liquid that is very dangerous if you get it on your skin, if you breathe the vapor, or if you drink it mixed in water. It evaporates so slowly that getting on your skin is the main danger rather than breathing it. Without immediate treatment you will probably die.

HOW BAD IS IT? Experts have estimated that a VX droplet on your skin less than the size of the period at the end of this sentence will kill you. VX is really bad, the worst of the nerve agents. VX is a liquid that doesn't give off much gas; unfortunately it doesn't take much gas to hurt your lungs (it evaporates as slowly as motor oil). A terrorist will put in it an exploding bomb or shell to break up the liquid into tiny droplets that float in the air (aerosol). VX gets to you as small droplets in the air (aerosols) mostly through the skin, eyes, and lungs. If you're exposed to VX you will probably feel it within a few minutes, or the effects may be delayed for as

long as most of a day. You will need to wear Level A to protect yourself, and if you don't you may be seriously injured or may even die.

DETECTION: VX is a colorless to brown-yellow liquid, with no smell or taste at all. It looks like common motor oil. You can't depend on pain or other symptoms to tell you if you've been attacked, because symptoms may be delayed.

SYMPTOMS: Symptoms may be immediate or may not come for most of a day. And the symptoms are so bad you'll welcome death!

Eyes: Your eyes will hurt, your eyes get blurry, and your eyes will water.

Lungs: You will cough, breathe rapidly, and have chest tightness. With high doses you will have trouble breathing and may suffocate.

Skin: You will sweat and your muscles will twitch where VX touched the skin.

Stomach: VX mixes with water so you can drink it without knowing it. You'll feel sick - you will have frequent urination, diarrhea, nausea, cramps, vomiting, and stomach pain.

General: You will twitch, jerk, and stagger; you'll have a headache, become confused, feel sleepy, have convulsions, and become unconscious.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before DECONTAMINATION might make a big difference.

- If you don't have the equipment and training don't enter the hot or the warm zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot or the warm zone.
- Liquid VX evaporates so slowly that it stays around for a long time - don't touch anything that might have had VX on it, including clothing.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediately flush the eyes with water for at least 15 minutes.

- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction. VX stays in clothing, so don't touch it with bare skin - if possible, seal contaminated clothing in a plastic bag.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (0.5%, or one part bleach to 200 parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Remember that the water you use to decontaminate the victims is dangerous.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the VX.

FIRST RESPONDERS: You will not help the victim if you kill yourself. **DO NOT ENTER AN AREA CONTAMINATED WITH EITHER VAPOR OR LIQUID UNPROTECTED.** The only way you can survive an entry is if you wear Level A. You have to be quick; the only way to prevent injury is immediate DECONTAMINATION. Depending on the dose and the equipment you have:

- Liquid VX evaporates so slowly that it stays around for a long time - don't touch anything that might have had VX on it, including clothing.
- Evacuate the area and shut down heating, ventilation, and air conditioning systems to prevent further spread of VX, both liquid droplets and vapor.
- Call for medical and hazmat assistance immediately.
- If you get some of the agent on yourself, decontaminate immediately. And if you get some VX on your clothes take them off immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Remove the victim to fresh air without exposing yourself - don't touch the victim!
- Only when the victim is outside the hot and warm zones and decontaminated can you help. If breathing is difficult, give oxygen.

- VX gets on clothes and evaporates slowly for a very long time, so contaminated clothes are very dangerous. Do not touch the victim's clothing.
- Do not make the victim vomit if the victim has swallowed VX, and do not give the victim any liquids to drink.
- Get the victim to a doctor as soon as possible, even if symptoms do not appear serious, because sometimes symptoms are delayed. Only a doctor can give the antidotes to VX.
- Remember that the water you use to decontaminate the victims is dangerous.
- Make sure you decontaminate yourself, even if you think you are not contaminated.

FIRE: In case of fire, evacuate the area. Burning or heating VX will destroy it, and what's left over is still dangerous but a lot less dangerous than VX, so it's better to let the fire burn. If there is some reason that you have to put out the fire - for example, there are things you can't let burn nearby - use unattended equipment. Never fight a fire without Level A. The heat from a fire will help decompose the VX. And remember that the water from the fire contains VX, and is very dangerous.

EVACUATION: Your best response is to get everyone away from the area. Notify police, fire authorities, health and pollution control officials, and the FBI. Don't help the terrorists by killing yourself trying to respond to a VX release.

WATER POLLUTION: VX doesn't mix with water very much, but the little that does mix with water will be very dangerous. A terrorist might poison the water supply, or a VX attack might get into a stream used for drinking water. You don't want people to drink water mixed with VX. Warn pollution control authorities and advise shutting water intakes.

REACTIVITY: VX will mix very slowly with water and will break down very slowly - but unfortunately it breaks down into a poison. It will also breakdown when heated or in a fire. Diluting VX with large amounts of water is a good way to get it off a victim, but remember that the wash water is very dangerous.

PHYSICAL PROPERTIES: The vapor and liquid droplets are heavier than air so VX will flow downwind and downhill - stay upwind and uphill from a spill. It will mix slowly in water, so an unmanned fire monitor may be useful, spraying water into a cloud of VX. But remember that the water contains VX and can hurt you.

TECHNICAL: The British invented this nerve agent in 1950 for use as a weed killer but quickly discovered that it killed people; they gave it to the U.S., which made it into a weapon, as did France and Russia. They all adopted it because it kills people so easily. The U.S. military term "VX," with the V standing for Venom. There are several other related "V's," but VX is by far the most "popular." How do VX and other nerve agents work? These are similar to many of the commercial pesticides, only much worse. They are organophosphorous cholinesterase inhibitors. The first word - organophosphorous - means that this is an organic compound (carbon, hydrogen, oxygen) containing phosphorous. The second and third word - cholinesterase inhibitor - means that this keeps several enzymes from working. It's interesting - when your brain wants your muscles and glands to act it sends chemical messages. VX and other nerve agents interfere with these chemicals, so your nerves continue to "fire"; eventually your muscles tire out, and, among other things, you stop breathing. Since VX works through the nerves it's called a nerve agent. VX can get to you when you breathe, through the skin, through the eyes, and by drinking water with VX in it (VX mixes with water). A doctor can inject victims with antidotes (there is a special nerve agent kit; also, doctors may use Atropine), so you should get medical attention for the victim as soon as possible. For the record, VX is an organophosphate called o-Ethyl-S-(2-diisopropylaminoethyl) methylphosphonothioate, or $\text{CH}_3\text{CH}_2\text{O}-\text{P}(\text{O})(\text{CH}_3)-\text{SCH}_2\text{CH}_2\text{N}(\text{C}_3\text{H}_7)_2$.

INTRODUCTION TO BIOLOGICAL WARFARE AGENTS

You may have to respond to emergency incidents as a part of your job, and one of these might be a biological warfare attack. And a biological attack is very dangerous.

In this section we try to give you information that will save your life while helping you to save the lives of others. Please read this section before you have to respond. In an emergency there won't be time to read, understand, and ask questions about this information.

Hopefully you will never have to respond to a biological attack. But we are entering a new phase of warfare, where terrorists are capable of inhuman biological warfare and are willing to spread disease for their own political ends. If you respond to a terrorist attack, your life could depend on your reading and understanding the ideas in this manual.

Let's say you get a call to go to the site of an incident. Perhaps you know that there's been several Ebola outbreaks in your area and terrorists have publicly promised more; you get to the site and see sick people with symptoms matching Ebola, so you treat it as an Ebola attack. Perhaps you respond to an incident not suspecting a biological attack. If you see people sick or unconscious, especially where there's no fire or explosion, you should ask yourself if this could be a biological or chemical attack. And if you think it might be, stay out unless you have proper equipment. Without proper equipment (Level A for most biological agents) you probably won't help the victim but you're likely to get yourself killed or at least very sick.

You may notice our emphasis on keeping you, the responder, alive. This is not an accident. Biological warfare agents can easily kill the responder, and there's not much reason to trade your life for the life of a victim when, with proper protection, (Level A for most biological agents) you can help the victim without endangering yourself. You have to back away from an incident if you can't safely help victims. Above all, your job is to save lives, and that includes your own.

Outline of the Biological Agent section: We've given each biological warfare agent its own two pages. The first page contains bullets that provide the minimal information to keep you and the victims alive. In an incident you may only have time to read the bullets. The second page gives you information about the biological agent, how it works, who to notify, how to

decontaminate the victim, and how to give first aid to the victim.

FIRST PAGE: The first thing you'll see is a graphic with between one to five skull and crossbone symbols. The more dangerous the biological agent is, the more skull and crossbones you'll see. At a glance you'll get a good idea just how dangerous the biological agent is.



We've listed a short set of bullets to help you respond to a biological warfare release without getting you killed. In an emergency you probably won't have enough time to more than read these bullets. Please do what the bullets say to do - that way everyone will have the best chance of survival.

SECOND PAGE: Please read this information for each biological agent before an emergency. You may not have time to go through it in an actual terrorist incident. We have divided the information into a set of paragraphs for your convenience. The first thing you'll see is a graphic with one to five skulls and crossbones, just as on the first page. As before, this is to give you an idea just how dangerous the biological agent is in a quick and direct way.

INTRODUCTION: This paragraph introduces the biological agent and gives you a broad outline of its hazards.

SYMPTOMS: This is an important paragraph. It tells you what to look for in the victim. Nonmedical responders probably will not be able to tell whether it's a biological warfare attack and if it is, where the biological agent is. The only clue is where the victims are, and it's useful to know what to look for. And if have an idea what biological agent is involved (or even a guess), the symptoms might confirm or reject your idea. But be careful, symptoms can be misleading; that's another reason we advise getting medical people to the scene as quickly as possible.

THE BODY'S REACTION: This paragraph tells you how the body reacts to the biological assault. You need to know something about this so you understand what the victim (and you, the responder) is up against. If this scares you, that's good; terrorists choose biological agents because these agents do things to you that are scary, painful, and all too often fatal.

VACCINATION: This paragraph discusses vaccines; in some cases, you can get vaccinated after exposure. In other cases, you need to get vaccinated before the emergency. Unfortunately, good vaccines don't exist for most of the biological warfare agents. New vaccines are being developed, and old ones improved; bacteria and viruses sometimes mutate so that good vaccines are no longer effective. So please treat this paragraph as something that could change.

GENERAL RESPONSE TO A BIOLOGICAL AGENT ATTACK

Scenario: You respond to an incident and see people obviously sick; you know there's been a report of a possible of a biological attack in your area, but you don't know which one. You look and don't think it's a chemical attack. You have to act, but you don't know what the biological agent is. Here's what to do:

- Keep people away.
- Immediately call for medical help.
- **Don't** enter the hot zone without wearing full Level A equipment.
- Avoid contact with possible victims and anything that might have come in contact with them.
- **Don't** let anyone leave the hot zone – health authorities may quarantine those who may have been exposed.
- Shut down all heating, ventilation, and air conditioning.
- Notify the FBI and local health authorities.

DISCUSSION

INTRODUCTION: Biological warfare is a natural for terrorists. Unlike a chemical weapon, which is limited to where the chemical is, a biological weapon is a disease that reproduces itself and may continue to spread from area to area and from person to person. Several countries took natural diseases and made them worse, and some of these might fall into the hands of terrorists. Not only are these diseases capable of hurting many people, they could easily create panic. Your job is to contain

the disease until specialized medical personnel arrive. Above all, don't expose yourself.

SYMPTOMS: Since so many diseases have similar symptoms, and since people having the same disease can show somewhat different symptoms, it's hard to decide what biological agent is involved from symptoms alone. But the symptoms may provide a clue as to which agent you're facing. And if you have an idea what biological agent is involved (or even a guess), the symptoms might confirm or reject your idea. But be careful, symptoms can be misleading; that's another reason we advise getting medical people to the scene as quickly as possible.

THE BODY'S REACTION: The body reacts differently to different biological agents. If you know the disease you will have some idea how the body will react. But if you don't know the disease you have to figure any part of the body might be involved.

VACCINATION: Basically, unless you are completely sure what the biological agent is and that you have complete protection from that disease by vaccination, you aren't protected from the biological agent. So don't expose yourself to the biological agent. Unfortunately good vaccines exist for only some biological warfare diseases. If you have been vaccinated against the disease you're responding to, and that vaccination hasn't expired, you'll be able to enter the hot zone. And you can be vaccinated for at least one disease after exposure. But in most cases there is no effective vaccine.

And even if you're 100% certain you're OK, remember that someone may have altered the bacteria or virus to make it more effective and more resistant to the vaccine. And remember that some vaccines give no protection after months or years pass. So your best bet is not to expose yourself to the disease.

HOW TO RESPOND TO BIOLOGICAL AGENT ATTACKS

HISTORY: Many of the biological agents are "improved" versions of diseases that have been around for centuries, while others are new. All of these are bad, and you should avoid exposing yourself at all times. Since biological agents can multiply (they are diseases, of course) they can continue infecting people far from the place where they were first released. A chemical agent will eventually go away, mixing with air and becoming diluted to the point where it's no longer harmful. That's why a terrorist might go with a biological agent - it can spread.

HOW BAD IS IT? This varies from things that will just make you sick to things that will kill you in a few days. Until you know what the agent is you have to respond as if it's very bad.

DIAGNOSIS: You are not going to be able to figure out what disease it is. Only medical people can do it. The only way you're going to know what disease you're facing is through a confirmed report by medical experts (that may well take days to determine) or by knowing that a specific biological attack is already in progress. You really can't be sure by the victim's symptoms.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.

- Decontaminate with diluted household bleach (10%, or 1½ cups of bleach to one gallon of water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent. Don't let them leave until medical people examine them.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

EXPOSURE TREATMENT: Medical treatment must be left to the medical experts. Obviously the medical treatment depends on the disease. But there are three things you can do:

- Keep the victim quiet and resting.
- Keep everyone away from the hot zone.
- Keep everyone that might have been exposed from leaving until medical people can talk to them.

EVACUATION: Unless you know the biological agent is not contagious, evacuation and quarantine are the best things you can do.

- Keep everyone away from the hot zone
- Don't let people who may have been exposed get away before medical people arrive (they have to check for medical problems and tell potential victims what to do, or quarantine them).
- Keep out of the hot zone yourself.

CLEAN UP: Medical people will tell you what to do about decontamination, depending on the biological agent and the overall situation. Do not try to clean up without direction from experts.

AFLATOXINS

(aff-fla-tox-ins)



WHEN YOU RESPOND -

- Keep people away.
- Immediately call for medical help.
- Don't breathe, touch, or eat anything that might be contaminated with Aflatoxins.
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI, local health authorities. and pollution agencies.

AFLATOXINS

(aff-fla-tox-ins)



DISCUSSION

INTRODUCTION: Aflatoxins are a group of similar chemicals made by fungus that live on plants (corn, peanuts) and other foods (milk, meat) from animals that have eaten plants with Aflatoxins. These chemicals have bad effects on animal organs especially the liver; they cause liver and other cancers. And Aflatoxins are known to give humans cancer. Normally people eat small amounts of Aflatoxins each day, so small that they aren't hurt. But people do get sick if they do consume large amounts of Aflatoxins. No military or terrorist group has ever used Aflatoxins as a weapon, but reportedly some have at least considered them as weapons of mass destruction. Weaponized Aflatoxin would probably be in the form of the chemical toxin in tiny droplets or very small particles that float in the air (aerosol). If a terrorist spread Aflatoxins on a city's food supplies it would injure people, particularly young people, and would cause panic because people would be afraid that they would soon have liver cancer, which is incurable. In India in 1974, Aflatoxins-contaminated corn made 400 people sick, and killed over 100. In England in 1960, 100,000 turkeys died from eating peanuts containing Aflatoxins.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Aflatoxins attack without having victims with symptoms or some days or even weeks after the Aflatoxins attack with many victims with symptoms.

SYMPTOMS: Medical people don't know much about the symptoms of Aflatoxins poisoning in people, but do know a lot about poisoning in animals. If people eat food containing Aflatoxins they will probably have the same symptoms. These include:

For small amounts you will feel have a rash, nausea, and headache

You bleed inside your body

Your lungs fill with fluid

You will have serious liver damage, including liver cancer

You will have problems in digesting food

And if you eat too much food with Aflatoxins on it, you'll really get sick and die

THE BODY'S REACTION: When the Aflatoxins chemicals get inside you, they damage your stomach and more importantly, your liver. Since you can't live without a liver and since liver cancer is incurable, this is very serious.

VACCINATION: There's no vaccine for Aflatoxins.

HOW TO RESPOND TO AFLATOXINS ATTACKS

HISTORY: No country or terrorist group has ever used Aflatoxins, but there have been reports that some have considered it as a weapon of mass destruction. The U.S. government tests the food supply to ensure that Aflatoxins don't contaminate our food supply, and so there have not been any outbreaks in this country - but there have been in other countries.

HOW BAD IS IT? It takes a tiny amount of Aflatoxins to hurt you, but in this country at least our food does not contain that much Aflatoxins. But if someone grew the right fungus he could produce enough Aflatoxins to turn our food into poison. And the poisonous Aflatoxins could make people feel sick and actually give people fatal liver cancer.

DECONTAMINATION: Decontamination isn't a first responder's problem for Aflatoxins, since the only way to get hurt is to eat or drink contaminated food. Simply keep people from eating or drinking contaminated food. Other people will remove the food and dispose of it properly.

- Tell people to boil water, cook all food, and wash their hands after going to the bathroom.
- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets of toxin. If the victim can't move, decontaminate without touching and without entering the hot zone.

- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: This is easy - just don't eat or drink the contaminated food, and keep other people from eating or drinking it. Make victims comfortable and send for medical assistance. Just in case you have touched the contaminated food, shower and change clothes before eating.

DIAGNOSIS: Unfortunately Aflatoxins symptoms resemble symptoms from other diseases. Only medical people can determine if food is contaminated or that people have eaten or drank food contaminated with Aflatoxins. There are methods for finding whether food has Aflatoxins on it, including test kits, but unless you are expecting an Aflatoxins attack you probably won't have the kit or the training to use these kits.

EXPOSURE TREATMENT: If you are responding at the time of the Aflatoxin attack, call for medical help - this biological agent is dangerous. Make sure those who may have been exposed talk to medical people so they will know what symptoms to look for. Just in case you have touched the contaminated food, shower and change clothes before eating.

If you are responding when Aflatoxin symptoms appear, immediately call for medical assistance. If the victim's lungs fill with fluid, give him Oxygen if his breathing is difficult.

Other than that, either take the victim to the hospital or wait for medical assistance, while making the victim comfortable

EVACUATION: You don't necessarily have to evacuate people from the site of an Aflatoxins incident, but keep them from eating or drinking food that might be contaminated.

At the time Aflatoxin symptoms appear, evacuation isn't necessary.

CLEAN UP: Once the contaminated food is removed, there should be no danger left, either at the time of the attack or at the time symptoms appear.

ANTHRAX

(ann-thracks)



WHEN YOU RESPOND -



- Keep people away.
- Immediately call for medical help.
- Don't breath, touch, or eat anthrax spores or anything that is contaminated with it.
- Avoid contact; stay upwind and evacuate.
- Notify the FBI, local health authorities. and pollution agencies.

ANTHRAX

(ann-thracks)



DISCUSSION

INTRODUCTION: Anthrax is a bacterial disease in cattle that can be transmitted to humans. When exposed to air, anthrax bacteria form incredibly small spores that can survive decades in the soil. When the spores get wet or when they enter the body they become active and multiply, and produce toxins (poisons) that destroy parts of the body. Anthrax attacks people in three ways:

- The skin
- The lungs
- The stomach.

Governments have weaponized Anthrax, and tragically terrorists attacked and killed civilians by sending Anthrax spores in the mail. This would be a very effective weapon, making people very, very sick and killing many of them.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Anthrax attack without having victims with symptoms or some days or even weeks after the Anthrax attack with many victims with symptoms.

SYMPTOMS: These vary depending on how you got Anthrax disease, usually appearing within a week.

Breathing: This is the most dangerous way to get Anthrax! The Anthrax spores must be made into an aerosolized powder (that is, ground so small that it floats in the air). While no one knows the number of spores needed to kill, one estimate is only 50,000; since spores are microscopic, this is less than the size of a pinhead. A tiny amount of spores can kill many people. Symptoms appear after 1 to 60 days, and are like the flu - sore throat, mild fever, and muscle aches. But after a few hours to

a few days, it becomes worse, leading to shock and lung failure. About 80% - 100% die, even with the best medical care.

Skin: The bacteria enter in a skin cut or break, becoming first a raised bump, then a blister, and finally a painless ulcer with dead skin in the middle. About 20% of these cases end in death, but death is rare if the victim gets antibiotics, only about 1%.

Eating: This happens when you eat raw or uncooked meat or contact infected animal skin or hides. You get a severe bellyache leading to fever, nausea, vomiting, diarrhea, and sores at the base of the tongue. About 25-60% of these cases end in death.

THE BODY'S REACTION: When Anthrax gets inside you, your body makes chemicals called antibodies that fight the Anthrax bacteria. But if you have too many bacteria, the body loses and you die. The Anthrax vaccine "teaches" the body how to make antibodies without Anthrax; when you get Anthrax into your body the vaccination in effect gives your body more "ammunition" to fight the bacteria.

VACCINATION: Fortunately you can be vaccinated against Anthrax, and the vaccine is pretty effective. However, you have to be vaccinated before exposure, so this won't help first responders unless they routinely get vaccinated. And the U.S. Government does not recommend vaccination except for those who are likely to be exposed to Anthrax in their work and the military (biological warfare). The vaccine has unpleasant side effects so it's not a good idea to routinely get vaccinated unless you might be exposed to Anthrax.

HOW TO RESPOND TO ANTHRAX ATTACKS

HISTORY: Several countries (at least Iraq and the Soviet Union) have made this disease into a very dangerous weapon, creating Anthrax varieties that are more dangerous than those in the wild. Then they make the bacteria form spores and coat the spores with materials that allow them to spread out and float in the wind ("aerosolize") until the spores find people or animals to attack. In 2001-2002 someone attacked the United States through the U.S. mail, killing and injuring several. Decontaminating Congressional offices and Post Offices took great effort, a long time, and cost a fortune. The bottom line is that this stuff is extremely dangerous.

HOW BAD IS IT? It takes a tiny amount of Anthrax spores - less than a pinhead - to kill each victim, so a few ounces could kill many, many people in crowded areas, and cause wide spread panic. Some estimates suggest a single attack could kill hundreds of thousands in one city alone. Since that could include you, too, be careful!

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: You have to be careful! Don't get Anthrax on you or breath/swallow the spores. Remember that the victim's clothes or body may have spores, and since the spores are so small you won't be able to see them. Touch the spores and you can get skin Anthrax. If you think Anthrax spores might be in the area, stay out unless you have level A. Paper test strips are about the best detection device during an emergency.

Shut off heating, ventilation, and air conditioning (HVAC) systems so that spores will not be spread throughout the building. At the minimum you need Tyvek or equivalent overalls

with air purifying respirators. Unfortunately, PPE is not 100% effective, so be prepared for possible exposure and go to a doctor for possible antibiotic treatment for inhalation Anthrax. Taking antibiotics after exposure will reduce the chances of getting Anthrax. Do not automatically take antibiotics; you shouldn't take them unless you have been exposed (this is where the medical help comes in); antibiotics can have bad side effects (but not as bad as Anthrax!). One good thing - you can't "catch" Anthrax from a person with inhalation Anthrax.

DIAGNOSIS: Unfortunately Anthrax symptoms resemble symptoms from other diseases. Only blood and tissue tests can prove that you have Anthrax, so if you are exposed you must see a doctor. They look for the Anthrax bacteria in tissue samples and toxins in the blood.

EXPOSURE TREATMENT: If you are responding at the time of the Anthrax attack, immediately call for medical help. Wear level A. Since breathing the spores can quickly kill people, treat possible breathing incidents as medical emergencies. Make sure those who may have been exposed talk to medical people so they will know what symptoms to look for. If you think you have been exposed, wash with warm water and soap to remove the spores. If possible, take a shower and wash your clothes.

If you are responding when Anthrax symptoms appear, immediately call for medical help. Don't let anyone leave, because victims' lives depend on medical treatment.

EVACUATION: At the time of an Anthrax attack, wear level A, evacuate people from the site of an Anthrax incident, and decontaminate them with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Anthrax symptoms appear, get immediate medical assistance. Don't let anyone enter the area.

CLEAN UP: At the time of the Anthrax attack you should decontaminate everything that might have come in contact with Anthrax - but only if you have level A. Clean up with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Anthrax symptoms appear, you still have a problem, because Anthrax spores can remain dangerous for decades in the soil, in buildings, and on food. If you have level A, clean up with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open

wounds, or mouth). If you don't have bleach, use soap and water.

BOTULISM

(bot-tu-lis-im)



WHEN YOU RESPOND -



- Keep people away.
- Immediately call for medical help.
- Don't breathe, touch, or eat anything that is contaminated with Botulism.
- Avoid contact; stay upwind and evacuate.
- Notify the FBI, local health authorities. and pollution agencies.



BOTULISM

(bot-tu-lis-im)

DISCUSSION

INTRODUCTION: Botulism toxin is the most dangerous biological poison known! When Botulism bacteria grow on food they produce a toxin (a chemical poison) that is very bad. When you eat it or breathe it and don't get medical treatment you have a very good chance of dying, because the toxin stops your muscles from working, and that includes stopping your muscles that make you breathe. There are several "natural" ways of getting Botulism, but the only one we have to worry about - eating or drinking food that has the toxin on it. As a weapon, there's another way of getting Botulism, breathing small droplets with the toxin that float in air (aerosol). Either way, when the toxin gets inside your body, it behaves pretty much the same. And if a terrorist or an enemy government attacked the U.S. with a well developed Botulism weapon we would be in trouble, and remember that even tiny amounts will kill you, so it's a real threat.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Botulism attack without having victims with symptoms or some days or even weeks after the Botulism attack with many victims with symptoms.

SYMPTOMS: There's information on the symptoms of eating food contaminated with Botulism toxin, but none on breathing it. Medical people believe that the symptoms for breathing it are about the same as eating it.

Your muscles will relax, and in bad cases you will become almost paralyzed. You will have blurred vision, drooping eyelids, slurred speech, difficulty swallowing, muscle weakness, and, eventually, paralysis. When the muscles controlling your breathing weaken, you have trouble breathing. If this gets worse you stop breathing and you die.

THE BODY'S REACTION: When the Botulism toxin gets inside you, it stops the ends of your nerves from working permanently. If you don't die your nerves grown new ends so that your muscles can move again. Unfortunately, regrowing these new ends is very slow, and some victims take years to get well.

VACCINATION: There is no vaccine for Botulism toxin, but people are trying to find one. There is an antitoxin that helps, but it's not a replacement for a vaccine. It's important to get all exposed people to a doctor so that he can find out who has Botulism and give him the antitoxin.

HOW TO RESPOND TO BOTULISM ATTACKS

HISTORY: The Japanese made a weapon out of Botulism during World War II and tested it on POW's. Reportedly the Germans also made it into a weapon (but never used it); in response, the United States developed ways to protect Allied troops. After World War II the United States, Britain, and Russia all worked on Botulism toxin weapons. Later, Iraq was reported to have made enough toxin to kill everyone in the world three times over! Fortunately, if they did they never used it in war. And Japanese terrorists did attack civilians and U.S. military bases in Japan with the toxin; fortunately, these attacks were ineffective, most likely because the terrorist group was not very competent. But in the hands of competent terrorists Botulism is a real threat!

HOW BAD IS IT? It takes a tiny amount of Botulism - less than a pinhead - to kill each victim, so a few ounces could kill many, many people, and cause wide spread panic. Since that could make you sick or kill you, you've got to be very careful!

DECONTAMINATION: This is very important, because the toxin on skin and clothes remains dangerous. Later, others will have to remove contaminated food and clean surfaces where there may be toxin. Fortunately boiling destroys the toxin (a good reason for cooking food!).

- Tell people to boil water, cook all food, and wash their hands after going to the bathroom.
- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets of toxin. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't

even wait for soap or for the victim to remove clothing, begin washing immediately.

- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: You have to be careful! Don't get Botulism on yourself and certainly don't eat or drink anything during your response. Remember that the victim's clothes or body may have toxin, and that the tiny droplets of weaponized Botulism are so small you won't be able to see them. Breathing the toxin droplets can give you Botulism. If you think Botulism might be in the area, stay out until you get proper personal protective equipment (PPE), including protective clothing and respiratory protection. Unfortunately there is no easy test method (there are no test strips or detectors) for Botulism.

Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny droplets floating in the air that contain Botulism will not be spread throughout the building. After the response is over you should go to a doctor to see if you have Botulism; the idea is that you only get the Botulism antitoxin only if you have Botulism. Since it's the toxin that does all the damage, antibiotics have no effect on Botulism. One good thing - you can't "catch" Botulism from a person with Botulism.

DIAGNOSIS: Unfortunately Botulism symptoms resemble symptoms from other diseases. Only blood and other body fluid tests can prove that you have Botulism, so if you are exposed you must see a doctor. They look for the Botulism toxins in body fluids.

EXPOSURE TREATMENT: If you are responding at the time of the Botulism attack, make sure those who may have been exposed talk to medical people so they will know what symptoms to look for. Since breathing the toxin can interfere with breathing, treat possible breathing incidents as medical emergencies. If you think you have been exposed, wash with warm water and soap to remove the toxin. If possible, take a shower and wash your clothes.

If you are responding when Botulism symptoms appear, make the victims comfortable and get them to a hospital for treatment.

EVACUATION: At the time of a Botulism attack, evacuate people from the site of a Botulism incident, and decontaminate them.

At the time Botulism symptoms appear, evacuation isn't necessary.

CLEAN UP: At the time of the Botulism attack you should decontaminate everything that might have come in contact with Botulism. Clean up with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Botulism symptoms appear, you still have a problem, because Botulism toxin can remain dangerous for some time in the soil, in buildings, and on food. If you know where the Botulism attack took place, clean up and/or disposal is critical.

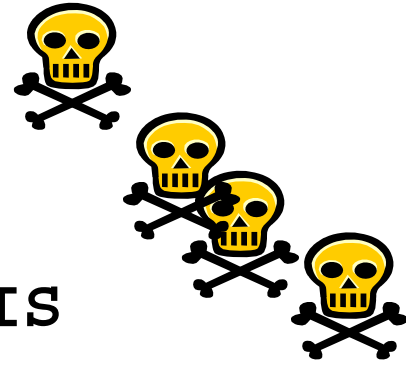


BRUCELLOSIS

(bru-cell-oh-sis)

WHEN YOU RESPOND -

- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.



BRUCELLOSIS

(bru-cell-oh-sis)

DISCUSSION

INTRODUCTION: Brucellosis is an animal disease that people can catch; not many people catch it in the U.S., no more than 200 a year, but it really messes up peoples' health and so the U.S. and other countries have made it into a military weapon. Brucellosis is a tiny, single cell creature (bacteria) that can be spread in tiny liquid droplets floating in the air (aerosol) that attack many systems in your body. The time between getting the disease and getting the symptoms is from one to four weeks, sometimes even more. So first responders will either face the actual Brucellosis attack without having victims with symptoms or weeks after the Brucellosis attack with many victims with symptoms. With treatment, victims have at least a 90% chance of survival, but the "cure" months takes months and even years. And sometimes the symptoms return. So you don't want to catch it. Sometimes Brucellosis attacks body organs, including the heart, even requiring major surgery. Fortunately, you rarely get Brucellosis from another person.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Brucellosis attack without having victims with symptoms or some days or even weeks after the Brucellosis attack with many victims with symptoms.

SYMPTOMS: Brucellosis attacks many parts of the body, and can be mild or very serious. No one person has all of the symptoms all of the time; these include:

Symptoms within eight weeks: "Flu-like," fever, sweats, weakness, lack of appetite, headache, and back pain.

Symptoms after one year: Fevers coming and going, arthritis, nerve problems, joint problems, weight loss, coughing, chest pain, stomach pain, constipation, diarrhea, vomiting, weakness, long term fatigue, dizziness, and serious mental depression.

THE BODY'S REACTION: The Brucellosis bacteria get into the body through the skin, when you eat or drink contaminated food, and by breathing the bacteria. They end up spreading through the body and attack just about any part. If you don't get treatment - antibiotics -you will suffer and possibly die. And even after treatment sometimes Brucellosis comes back. And unfortunately after recovery you won't have immunity to the disease.

VACCINATION: While there are vaccines for cattle there are none for people, and, unfortunately, the cattle vaccine doesn't work for people.

HOW TO RESPOND TO BRUCELLOSIS ATTACKS

HISTORY: This is a disease found all over the world, in cattle, goats, pet dogs, and many plant eating animals. It's not too common in the U.S., but because the Brucellosis bacteria can be spread in the air in tiny droplets it's been made into weapon. Governments and terrorists have never used Brucellosis but it would be an effective long term weapon that if released in quantity in a big city would fill up hospitals in a few weeks and cause panic.

HOW BAD IS IT? It's bad enough to kill a small percentage if they don't get medical treatment. Any large Brucellosis epidemic in the U.S. would have to be terrorism since we have a high level of sanitation. Most infected people would be in bad shape for weeks to months even with treatment. Untreated, about 10% will die. It's more of a terror and panic weapon than an immediate killer, and it would be a burden on the economy. Just what a terrorist would like.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference. The hard part is knowing that there's been a Brucellosis attack, because it takes 1-8 weeks for symptoms to appear. There isn't much need to decontaminate an area by the time symptoms appear, as the Brucellosis bacteria will not be a threat after that much time passes. But if you immediately know there's been a Brucellosis attack (for example, a terrorist announces that he's made a Brucellosis attack in your area), Brucellosis decontamination is important.

- If you don't have the equipment and training don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't get anything from the victim on you - wear gloves and a mask. Unfortunately there is no easy test method (paper test strip or detector) for Brucellosis. Don't let anyone get away. Medical people have to talk to them about the possibility that they have been exposed to Brucellosis and what they need to look for and do. Be sure to wash your hands with soap and water. Since the Brucellosis bacteria can survive in food and water for a time, disease experts may order decontamination. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny droplets floating in the air that contain Brucellosis will not be spread throughout the building.

If you are responding when Brucellosis symptoms appear, you don't have to worry about decontamination. Your job is to make victims comfortable and get them to a hospital.

Above all, immediately call for medical assistance.

DIAGNOSIS: Medical people diagnosis Brucellosis by a variety of laboratory tests and X-rays. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: If you are responding at the time of the Brucellosis attack, make sure those who may have been exposed talk to medical people so they will know what symptoms to look for. Since it takes so long for symptoms to appear, there really is no rush.

If you are responding when Brucellosis symptoms appear, make the victims comfortable and get them to a hospital for testing. There is no rush at this point.

EVACUATION: At the time of a Brucellosis attack immediately get people out of the area.

At the time Brucellosis symptoms appear, evacuation isn't necessary.

CLEAN UP: At the time of the Brucellosis attack you should decontaminate everything that might have come in contact with Brucellosis. Clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Brucellosis symptoms appear, the only danger is contamination from the victim. Fortunately getting Brucellosis from an infected person is very rare; still, clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

CHOLERA

(kall-ler-ah)



WHEN YOU RESPOND -

- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.



CHOLERA

(kall-ler-ah)



DISCUSSION

INTRODUCTION: Cholera is a disease that's killed millions over the years. Yet most victims have mild symptoms or no symptoms at all! But if you are one of the 5-10% that gets it bad, you will be very sick and if you don't get help you could die within hours. You're not going to catch cholera from another person (not easily, anyway), but the cholera bacteria thrive in unclean water. In poor countries sewage contaminates the water supply and food, and if one person gets infected, almost everybody gets the disease. If a terrorist put cholera bacteria in the water supply it could be a good weapon, particularly if the victim lived in a country with a weak medical system. A terrorist might weaponized Cholera by making it in the form of Cholera bacteria in tiny droplets that float in air (aerosol). But if you get a bad form of Cholera and you don't go to a Doctor, you have a 50% chance of dying. If promptly treated, cholera is easy to cure (99% cure rate). Basically all the victim needs to do is just drink salt water but in very severe cases the victim needs sterile water injected into the blood.

SYMPTOMS: The odds are that you will have no symptoms or only very mild ones. If you show signs, they will appear from six hours to five days after exposure. You suddenly get massive diarrhea and dehydration, with nausea and vomiting. Toxic chemicals build up in your body, you lose salts from your body (the opposite of drinking Gatorade), and your systems collapse. It's not pleasant. Without treatment, people have died within two or three hours, but most have more time to get medical treatment. While this looks like other, less serious diseases, the symptoms are very severe. In effect, you die of thirst even if you drink a lot.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Cholera attack without having victims with symptoms or some days or even weeks after the Cholera attack with many victims with symptoms.

THE BODY'S REACTION: The bacteria get into the intestine and stays there, producing a chemical that makes the tissues pump water out of the blood, resulting in massive water loss, including salts. Your body fights back and if you live you have partial immunity from cholera for a time. But your body can lose; you become dehydrated and lose salts and you die of dehydration or shock.

VACCINATION: Two oral vaccines provide some protection but you should not count on it. Since your chances of getting the severe form of cholera are so small, the fact that the vaccines aren't very good, and that some people have serious reactions to the vaccines, medical authorities recommend against routine vaccination.

HOW TO RESPOND TO CHOLERA ATTACKS

HISTORY: This is an old disease that seems to have spread from Asia. Cholera swept across the planet seven times in the 19th and 20th centuries, but today you'll find natural cholera only in those areas where sanitation is primitive (the U.S. had its last serious outbreak in 1911). Unfortunately people bring it into the country from overseas visits or bring in contaminated food. While people have speculated about using cholera as a weapon, there's no evidence yet that anyone has. But for those areas without proper sanitation it could prove effective, especially if there was little modern medicine.

HOW BAD IS IT? It's bad enough to kill millions if they don't get medical treatment. Any large cholera epidemic in the U.S. would have to be terrorism since we have a high level of sanitation. Most people never have many symptoms, but 5-10% will get severe cholera, and 50% of those will die unless they get treatment. With treatment, only about 1% will die. But anyway you look at cholera, it's a nasty thing to catch.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference. And even though we say that cholera spreads through drinking water, you don't want to contact the victim's body fluids.

- If you don't have the equipment and training don't enter the hot zone to rescue and decontaminate victims. If the victim

can't move, decontaminate without touching and without entering the hot zone.

- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: You have to be careful! Don't get anything from the victim on you - wear gloves and a mask. Unfortunately there is no easy test method (paper test strip or detector) for cholera. Don't let anyone get away. Medical people have to talk to them about the possibility that they have been exposed to cholera and what they need to look for and do. Be sure to wash your hands with soap and water. Since the cholera bacteria can survive in food and water for a time, disease experts may order decontamination.

Above all, immediately call for medical assistance.

DIAGNOSIS: Medical people diagnosis cholera by looking for bacteria in the vomit or diarrhea, because the symptoms are similar (although much more severe) for other diseases.

EXPOSURE TREATMENT: If you are responding at the time of a Cholera attack, tell those in the area not to drink water (or

anything else, to be safe), and make sure those who may have been exposed talk to medical people so they will know what symptoms to look for.

If you are responding at the time Cholera symptoms appear, call for medical help immediately. In some cases the disease kills within two or three hours of the first symptom. In all but the worst cases, medical people will give salt water with sugar to the victim. With the worst cases they will give salt water with sugar through a needle into the blood stream. Antibiotics help shorten the time you're sick, but have no effect on whether you live or die. Some types of cholera have developed resistance to some antibiotics. Without treatment you have a 50% chance of dying; with treatment, you almost always will live - 99% do.

EVACUATION: Whether you are responding at the time of a Cholera attack or at the time symptoms appear, you don't need to evacuate the area since it's very hard to catch cholera from a victim. But wash your hands and disinfect everything contaminated by the victim with bleach.

CLEAN UP: At the time of the Cholera attack you should decontaminate everything that might have come in contact with Cholera. Clean up with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Cholera symptoms appear, you still have a problem, because you have to clean up any body fluids from Cholera victims. Clean up with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

CRYPTOSPORIDIUM PARVUM

(kryp-toe-spore-id-dee-um parr-vum)

CRYPTO
(kryp-to)



WHEN YOU RESPOND -

- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.

CRYPTOSPORIDIUM PARVUM

(kryp-toe-spore-id-dee-um parr-vum)

CRYPTO
(kryp-to)



DISCUSSION

INTRODUCTION: Cryptosporidium parvum is a disease that animals and people can catch; Cryptosporidium parvum is the name of the tiny single cell creature (a protozoan) that makes people sick. To make this story easier, let's call it "Crypto" which most medical people (not surprisingly!) use. Crypto makes you sick, giving you diarrhea that you don't want to have. Unless your body's natural resistance is reduced (AIDS and cancer reduce your body's ability to resist disease), you'll get better in a week or two without treatment, which is good because there's no real treatment. If your body's resistance is reduced, you will take much longer to recover, if you ever recover, and you may die of Crypto or other diseases that take advantage of you when you have Crypto. Crypto spreads by spore-like cysts that the Crypto bacteria make in sick people and sick animals, and that the sick people and sick animals excrete in their feces. These cysts can live in the ground, in food, and in water for long times, and if you eat these cysts they get into your intestines and produce the diarrhea that really defines this disease. You can't catch Crypto except by eating or drinking something with Crypto in it. Weaponized Aflatoxin would probably be in the form of the chemical toxin in tiny droplets or very small particles that float in the air (aerosol). Sometimes Crypto attacks the lungs or the gall bladder in people with AIDS and similar problems. But an estimated 80% of Americans have had Crypto and almost all survived it. While no one has turned Crypto into a weapon, it could be a good one because there is no medicine and there is no way to kill the Cysts except by heating

them. And when the water supply in Milwaukee became contaminated with Crypto, all 403,000 who drank that water became sick, and about 100 with other medical problems couldn't fight the Crypto attack and died!

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Crypto attack without having victims with symptoms or some days or even weeks after the Crypto attack with many victims with symptoms.

SYMPTOMS: Crypto gets into your intestines, and gives you diarrhea, stomach, nausea, headache, fever, loss of appetite, and loss of weight. These symptoms go away in a week or two, but if the victim has weakened resistance, they often don't go away and the victim sometimes dies.

THE BODY'S REACTION: The Crypto gets into the body by drinking or eating something with Crypto, and get into the intestines. They invade the intestines and give you the disease. The body fights back, and wins in a week or two. But if you have a weakened response - AIDS or Cancer, for example - your body can't fight back and you may die. There is no medicine available, although people are trying to find one.

VACCINATION: There is no vaccine for Crypto.

HOW TO RESPOND TO CRYPTO ATTACKS

HISTORY: This is a disease found all over the world, in cattle, birds, pets, and many plant eating animals. Although scientists discovered the Crypto single cell creature in 1907, it wasn't until 1976 that doctors connected it with the symptoms! Crypto is probably very common in the U.S., but since other things can give the same symptoms no one really knows, because testing to see if you've got Crypto is expensive and takes time. But there have been many confirmed mass outbreaks, the biggest in Milwaukee when the water supply for 403,000 people became infected with Crypto; all 403,000 came down with the disease and about 100 people died. No government or terrorist has ever weaponized Crypto, but it would make an effective weapon because the spore-like cysts are so hard to kill. Just add them to the water or food supply and you could have millions with diarrhea for a week or two. And the terrorists would kill a few hundred people with other health problems. It's a real threat, but more of a discomfort than a killer for most people.

HOW BAD IS IT? It's bad enough to kill those with reduced resistance even if they get medical treatment. Since we can't prevent accidental Crypto outbreaks we can't prevent terrorists from attacking us with Crypto. It's more of a terror and panic

weapon than an immediate killer, and it would be a burden on the economy. Just what a terrorist would like.

DECONTAMINATION: The only way to kill Crypto is by heating to almost the boiling point of water. So Crypto on the ground or on surfaces is hard to decontaminate. You can kill Crypto in food and water only by heating - boiling and cooking. The hard part is knowing that there's been a Crypto attack, because it takes 2 - 12 days for symptoms to appear. Once the symptoms appear there isn't much you can do either - just tell the victims and their families to wash their hands frequently with hot water and practice good hygiene. But if you immediately know there's been a Crypto attack (for example, a terrorist announces that he's made a Crypto attack in your area), Crypto decontamination is important.

- Tell people to boil water, cook all food, and wash their hands after going to the bathroom.
- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets of toxin. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated,

be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't get anything from the victims on you. Unfortunately there is no easy test method (paper test strip or detector) for Crypto - it takes a medical laboratory to find out whether a victim has Crypto. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny droplets floating in the air that contain Crypto will not be spread throughout the building.

If you are responding when Crypto symptoms appear, you don't have to worry about decontamination. Advise victims to be clean, boil water and cook food, drink lots of fluids and wash their hands after going to the bathroom. For victims with reduced response, advise them to contact their doctors at once because their life is in danger.

DIAGNOSIS: Medical people diagnosis Crypto by a variety of laboratory tests that take days before they get an answer. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: If you are responding at the time of the Crypto attack, tell those who may have been exposed talk to medical people so they will know what symptoms to look for. Since it takes so long for symptoms to appear, there really is no rush. Tell them to boil water and cook food. Tell those with reduced resistance to contact their doctor.

If you are responding when Crypto symptoms appear, tell victims to drink lots of fluids. Tell those with reduced resistance to immediately contact their doctor.

EVACUATION: Evacuation is not necessary, either at the time of the attack or at the time symptoms appear.

CLEAN UP: At the time of the Crypto attack you should discard contaminated food.

At the time Crypto symptoms appear, the only danger is contamination from the victim. People should wash their hands after going to the bathroom.

EBOLA

(ee-bow-lah)

WHEN YOU RESPOND -

- Keep people away.
- Immediately call for medical help.
- Don't touch victims or anything the victims might have touched
- Avoid contact; stay upwind and evacuate.
- Notify the FBI, local health authorities. and pollution agencies.



EBOLA

(ee-bow-lah)



DISCUSSION

INTRODUCTION: This is probably the worst disease in this manual. Ebola is a virus that is 50-90% fatal, depending on the specific variety. It was first discovered in Africa in 1976 and infected 1,000, killing most of them in a horrible way - their body begins to bleed from all openings, and they die from shock. The disease really makes you feel bad, destroys your liver and kidneys, and attacks just about every part of your body. Ebola spreads by contact with body fluids of all types and very easy to catch. Ebola can survive in water but medical people don't think it infects people that way. No government or terrorist group has turned Ebola into a weapon. But if someone changed Ebola so that it can be spread in tiny liquid droplets that float in the air (aerosol), it would be a very dangerous weapon.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Ebola attack without having victims with symptoms or some days or even weeks after the Ebola attack with many victims with symptoms.

SYMPTOMS: Simply put, these are horrible. After 2-16 days, you will have most of these symptoms:

Early symptoms: Fever, severe headache, nausea, weakness, and vomiting.

Later symptoms: Diarrhea (often severe), chest pain, coughing, severe weakness, and skin rash.

Final symptoms: Bleeding from every body opening and through the skin, swelling of the face and other body parts, damage or destruction of the liver, kidneys and other organs, and infections taking advantage of your weakened condition.

Overall, this is a miserable disease, and as a responder you should be very careful so you don't catch it.

THE BODY'S REACTION: When Ebola gets inside you, it goes to single type of blood cell and the cells lining your stomach and intestines. It destroys these cells, and messes up your blood's ability to stop bleeding. So in half of the cases the victim starts to bleed uncontrollably. The virus attacks your liver and kidney, and other organs, too. If your body develops an ability to fight the virus (antibodies) before you die, you'll live. But you'll be in pain and feel horrible. This is one disease to avoid - as a responder, be careful.

VACCINATION: Unfortunately there is no vaccine for Ebola, but there are several groups trying to develop one. One of their major reasons is that Ebola is so bad that if terrorists turn it into a weapon the world will really need a vaccine. But a vaccine is probably years away.

HOW TO RESPOND TO EBOLA ATTACKS

HISTORY: Ebola has been around only since 1976; it's one of those new diseases that appear every few years. Fortunately, no country or terrorist group has made Ebola into a weapon. Ebola is so horrible that it's probably too horrible for military use, but terrorists would love to have it. They would have to change the virus some to make it into a weapon, but if they could we'd be in trouble.

HOW BAD IS IT? It takes a tiny amount of Ebola virus - much, much less than a pinhead - to kill each victim, so a few ounces could kill many, many people in crowded areas, and cause wide spread panic. And the virus spreads from person to person by body fluids. Since that could include you, too, be careful!

DECONTAMINATION: If Ebola is turned into a weapon it probably would be as tiny liquid droplets that float in the air (aerosol). Ebola virus can live outside people and when it multiplies in the body it leaves the body in body fluids. Touch any of these body fluids and you will get Ebola too. So the first thing is protect yourself with Level A equipment.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.

- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: You have to be careful! Don't get Ebola on you or breathe/swallow the tiny droplets in the air. Remember that the victim's clothes or body may have body fluids containing the virus; touch these body fluids and you'll probably get Ebola. If you think Ebola spores might be in the area, stay out until you put on Level A, including protective clothing and respiratory protection. Unfortunately there is no way for you to test to see if Ebola virus is there, so you must act as if it is there, or you could die. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny droplets floating in the air that contain Ebola will not be spread throughout the building.

You need to wear level A equipment. And remember, you can easily "catch" Ebola from a person with Ebola.

DIAGNOSIS: Unfortunately the first symptoms of Ebola often look like symptoms from other diseases. Only blood and tissue tests can prove that you have Ebola, so if you are exposed you must see a doctor. They look for the Ebola virus in body and tissue samples and toxins in the blood.

EXPOSURE TREATMENT: Call for medical help. If you think you have been exposed, wash with warm water and soap to remove the spores. If possible, take a shower and wash your clothes.

EVACUATION: Evacuate people from the site of an Ebola incident, and decontaminate them.

CLEAN UP: Whether you are responding at the time of the Ebola virus attack or when the Ebola virus symptoms first appear, cleaning up is tricky. Since Ebola virus can live for some hours or days in the soil and in buildings, it would be good if responders could clean up Ebola virus. But cleaning up Ebola is very dangerous, and only medical people can decide whether or not to clean up after an attack is a good idea. At the minimum you need to wear level A. Medical people might ask you to clean up or they might decide to leave things as they are and just keep people from entering the contaminated area and let the Ebola virus die.

E. COLI



(ee kol-lie)

WHEN YOU RESPOND -

- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.



E. COLI

(ee kol-lie)

DISCUSSION

INTRODUCTION: E. Coli is a disease that animals and people can catch; E. Coli is the name of the tiny single cell creature (bacteria) that lives in everyone's intestines. Usually, E. Coli is good for you - it helps to digest food and makes a vitamin that you need. But there are different kinds of E. Coli, and some of them will make you sick, and maybe really sick. And instead of diarrhea and other mild sickness, some people get a much worse disease that sometimes kills them. Unless your body's natural resistance is reduced (AIDS and cancer reduce your body's ability to resist disease) or you're very young or very old, you'll get better in a week or so, which is good because there's no real treatment. If your body's resistance is reduced, you will take much longer to recover, and you may die of E. Coli or other diseases that take advantage of you when you have E. Coli. And if you have one of the very bad kinds of E. Coli, you'll be much sicker and have a better chance of dying. E. Coli reproduces every 20 minutes and leave your body in your feces. When you eat something contaminated with these bacteria, you get E. Coli. E. Coli bacteria can live in the ground, in food, and in water for long times; fortunately, heating kills the bacteria, and so that's one reason to cook food and pasteurize milk and juices, and purify water. You can't catch E. Coli except by eating or drinking something with E. Coli in it. Since it takes 2 to 4 days between getting the disease and getting the symptoms, first responders will either face the actual E. Coli attack without having victims with symptoms or days after the E. Coli attack with many victims with symptoms. Sometimes E. Coli attacks the kidneys and other areas

and really makes you sick. But all people have E. Coli in their intestines and it's really only when the bad kinds (there are hundreds of kinds out there), attack that you really get into trouble. While no one has turned E. Coli into a weapon, it could be a good one because there is no medicine and there is no way to kill the bacteria without heating them. But if terrorists or a government took a very bad kind of E. Coli and put it in small droplets in the air (aerosol), they could make a dangerous and fatal weapon. And we know that contaminated food has made hundreds sick at one time. E. Coli kills a good chunk of the 2,000,000 in the world that die each year from diarrhea, and that's without it being weaponized!

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual E. Coli attack without having victims with symptoms or some days or even weeks after the E. Coli attack with many victims with symptoms.

SYMPTOMS: E. Coli gets into your intestines, and gives you a stomach ache, vomiting, fever, diarrhea (and sometimes bloody diarrhea), and stomach cramps. These are similar to symptoms for other diseases, but E. Coli would be a likely cause for mass outbreaks. Normally these symptoms go away in a week or two, but if the victim has weakened resistance, or is very young or very old, the E. Coli spread, the symptoms get worse, and the victim sometimes dies. And if the E. Coli is one of those very bad kinds, the symptoms are very bad and the victim could die.

THE BODY'S REACTION: The E. Coli gets into the body by drinking or eating something with E. Coli, and it gets into the intestines. They invade the intestines and give you the disease. The body fights back, and wins in a week or two. But if you have a weakened response - AIDS or Cancer, for example - your body can't fight back and you may die. There is no medicine available, although people are trying to find one.

VACCINATION: There is no vaccine for E. Coli.

HOW TO RESPOND TO E. COLI ATTACKS

HISTORY: E. Coli live in the intestines of all animals - in fact, if you didn't have them, you'd need vitamin supplements and you'd have a hard time digesting food. So, you say, how could this be made into a weapon? Well, there are some varieties that kill, and if you get enough of even the regular kind you will get sick and could die. Certainly any weaponized E. Coli would be one of the worst kinds! E. Coli was discovered in 1885, but it wasn't until a couple of decades ago that doctors realized that it could make people sick and even kill. And recently a new type appeared which is still rare but is very dangerous! There's been times when E. Coli contaminated food or

water made several hundred people sick. If a terrorist took the worst kind of E. Coli and put it in small water droplets and spray the droplets in the air (aerosol) in a crowded place, they would make thousands of people sick with diarrhea for a week or two. And the terrorists would kill a few hundred people with reduced body resistance. It's a real threat, but more of a discomfort than a killer for most people.

HOW BAD IS IT? It's bad enough to kill those with reduced resistance and the very young and very old even if they get medical treatment. Since we can't prevent accidental E. Coli outbreaks we can't prevent terrorists from attacking us with E. Coli. It's more of a terror and panic weapon than a quick, major killer, and it would be a burden on the economy. Just what a terrorist would like.

DECONTAMINATION: You kill E. Coli by heating (that's one reason to cook food and pasteurize milk and juices) and by adding Chlorine (that's why we have water treatment plants). So E. Coli on the ground or on surfaces is hard to decontaminate. The hard part is knowing that there's been a E. Coli attack, because it takes 2 - 12 days for symptoms to appear. Once the symptoms appear there isn't much you can do either - just tell the victims and their families to wash their hands frequently with hot water and practice good hygiene. But if you immediately know there's been a E. Coli attack (for example, a terrorist announces that he's made a E. Coli attack in your area), E. Coli decontamination is important.

- Tell people to boil water, cook all food, and wash their hands after going to the bathroom.
- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets of toxin. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.

- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't get anything from the victim on you. Unfortunately there is no easy test method (paper test strip or detector) for E. Coli - it takes a medical laboratory to find out whether a victim has E. Coli. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny droplets floating in the air that contain E. Coli will not be spread throughout the building.

If you are responding when E. Coli symptoms appear, you don't have to worry about decontamination. Advise victims to be clean, boil water and cook food, drink lots of fluids and wash their hands after going to the bathroom. For victims with reduced response or the very young or very old, tell them to contact their doctors at once because their life is in danger.

DIAGNOSIS: Medical people diagnosis E. Coli by a variety of laboratory tests that take days before they get an answer. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: Unfortunately antibiotics only make the disease worse. If you are responding at the time of the E. Coli attack, tell those who may have been exposed talk to medical people so they will know what symptoms to look for. Since it takes so long for symptoms to appear, there really is no rush. Tell them to boil water and cook food. Tell those with reduced resistance, the very young, and the very old to contact their doctor.

If you are responding when E. Coli symptoms appear, tell victims to drink lots of fluids. Tell those with reduced resistance to immediately contact their doctor.

EVACUATION: Evacuation is not necessary.

CLEAN UP: At the time of the E. Coli attack you should discard contaminated food.

At the time E. Coli symptoms appear, the only danger is contamination from the victim. People should wash their hands after going to the bathroom.

GLANDERS



(gland-ders)

WHEN YOU RESPOND -



- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.



GLANDERS

(gland-ders)

DISCUSSION

INTRODUCTION: Glanders is a horse disease that hasn't existed in the Western world for over a half century. So, you ask, what is a horse disease that doesn't exist anymore in the U.S. doing in this Weapons of Mass Destruction Manual? Well, reportedly the Germans tried to use Glanders to cripple the United States war effort in World War I! Terrorists would love to weaponize this disease - people can get Glanders, and if they get it, at least half die with the best medical treatment, and almost all will die if not treated. And since almost no American Doctor has ever treated someone with Glanders, it'd make a great weapon. Glanders is an old disease (even Shakespeare mentions it), and in 1882 scientists discovered the bacteria that causes the disease. In WW I the Germans used Glanders as a weapon to kill horses the Russian army used for supply and artillery, and it may have been effective; the Russians had an increase in soldiers with Glanders. The Germans also tried to spread Glanders in the United States to cripple our war effort. In WW II the Japanese spread Glanders in China to kill horses and people; the Russians reportedly weaponized it and in the 1980's produced as much as 2,000 tons of dried agent in one year! You get Glanders breathing it or getting it on your skin; the bacteria can get into you blood (100% fatal). Fortunately it's almost impossible to get Glanders from another victim. Symptoms vary from lung damage, blood disease, and skin ulcers, with a death rate of 50% if treated and 95-100% if not. The scary thing is that except for one lab scientist, no person has had the disease in the United States since 1945, so doctors will have trouble recognizing Glanders and treating it. If

weaponized, Glanders will probably be spread in tiny liquid droplets that float in the air (aerosol).

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Glanders attack without having victims with symptoms or some days or even weeks after the Glanders attack with many victims with symptoms.

SYMPTOMS: Glanders has three forms, on the skin, in the nose, and in the lungs, and can be acute (fast acting, killing in about a week), chronic (slower to develop but just as fatal), and latent (damage to the lungs but otherwise few symptoms, lasting for years). After three to ten days you develop symptoms of general illness and pains in your arms and legs. If untreated it eventually spreads to the blood and kills you.

Skin: Bumps in the skin form, usually breaking open and forming open wounds called ulcers that give off a disgusting liquid.

Nose: Sores in the nose form with a yellow-green liquid flowing out. This liquid contains the bacteria and is very dangerous.

Lungs: Areas of the lungs are infected and form growths. The victim coughs severely, and has all the symptoms of pneumonia.

Blood: Glanders can spread from the skin, nose, and lungs to the blood, and when Glanders gets into the blood, you have only a week or so to live. At the start you have fever, sweats, sore muscles, chest pains, and diarrhea. The disease spreads to many internal organs, bones, joints, and lymph nodes, and kills parts or all of each.

THE BODY'S REACTION: The Glanders gets into the body by breathing in the bacteria (weaponized Glanders will probably be spread as bacteria in tiny droplets floating in air (aerosol) or getting the bacteria through a break in the skin. Wherever the Glanders bacterial land they kill that part of your body, with open sores in your skin or destroyed areas in you lungs or nose. If it gets to your blood the bacteria make poisons (toxins) that quickly kill you unless you get medical help, and even then half of the victims die. Unlike other diseases, your body can't kill the attacking bacteria.

VACCINATION: There is no vaccine for Glanders.

HOW TO RESPOND TO GLANDERS ATTACKS

HISTORY: Glanders doesn't exist in the wild in the Western world. If you get it you got it from a biological warfare attack. Several countries have weaponized it, and it's probably not too hard to make Glanders into a terror weapon. The Germans used it in WW I and the Japanese in WW II, and the Russians

reportedly made large amounts in the years after WW II. Since this disease had been gone from the United States for half a century, people really don't know how to treat it or even recognize it, so a Glanders attack could be devastating.

HOW BAD IS IT? Simply put, it's bad. With the best medicine it's 50% fatal, without medicine it's 95%-100% fatal. There's no vaccine, and Glanders is resistant to some antibiotics; the Russians made a version that is resistant to many antibiotics. It's a really big threat to our country; without medicine you're not likely to survive. And unlike most diseases, if you survive Glanders you can get it again and again - your body doesn't develop any immunity to it.

DECONTAMINATION: You kill Glanders by heating or with common disinfectants like bleach. The bacteria dry out and die within a week or two, and sunlight also kills the bacteria. The hard part is knowing that there's been a Glanders attack, because it takes three days to a week for symptoms to appear. Once the symptoms appear you have to get them to a doctor for sulfa drugs or antibiotics. But if you immediately know there's been a Glanders attack (for example, a terrorist announces that he's made a Glanders attack in your area), Glanders decontamination is important.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets that have the bacteria. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.

- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't get anything from the victim on you. Unfortunately there is no easy test method (there are no test strips or detectors) for Glanders - it takes a medical laboratory to find out whether a victim has Glanders. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny particles floating in the air that contain Glanders will not be spread throughout the building.

If you are responding when Glanders symptoms appear, you don't have to worry about decontamination. Just get the victim to the emergency room and let the doctors take over from there.

DIAGNOSIS: Medical people diagnosis Glanders by a variety of laboratory tests that take days before they get an answer. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: Decontaminate the victims and get them to the emergency room. Be sure to decontaminate yourself.

If you are responding when Glanders symptoms appear, get the victims to the doctor. Unfortunately, there's little experience in treating Glanders victims (one case in the U.S. since 1945). Medical authorities recommend Sulfa drugs and some antibiotics; once the disease gets into the blood even these don't work. As a responder your job is limited to getting victims to the emergency room without the victim coughing or getting liquids from his wounds on you - these liquids contain the Glanders bacteria.

EVACUATION: At the time of a Glanders attack, get everyone out of the hot zone immediately.

At the time Glanders symptoms appear, evacuation isn't necessary.

CLEAN UP: At the time of a Glanders attack, clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

By the time Glanders symptoms appear, clean up from the original attack isn't necessary.



HANTAVIRUS

(hant-ta-vi-rus)

WHEN YOU RESPOND -

- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- Don't go into the hot zone without a respirator.
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.



HANTAVIRUS

(hant-ta-vi-rus)

DISCUSSION

INTRODUCTION: Hantavirus is a virus disease that lives in rats - it doesn't hurt rats, but it is almost always fatal in people. The rat's urine and other waste has the virus, and when dried it floats in the air (aerosol). When you breathe these particles, get some on your skin, or eat or drink something with some in it, you get the virus. There are several types of Hantaviruses, the one in the US attacking your lungs. Another, from Asia, attacks you kidneys. The first known Hantavirus attack was in 1913 in Russia, but it wasn't until the Korean War that it got its name. The American Hantavirus wasn't discovered until 1993, but since then it has killed over a hundred people. If you don't get medical help, you'll almost certainly die. If treated, about 35% or 40% die. No government or terrorist ever weaponized Hantavirus, but it would make a good terror weapon, unfortunately. You get Hantavirus breathing it, getting it on your skin, or drinking or eating something that it's in. Fortunately it's almost impossible to get Hantavirus from another victim. You start with mild flu-like symptoms, and then it gets bad - lung damage, kidney damage, or heart failure. The American kind of Hantavirus fills your lungs with fluid and you drown. There's no vaccine and no medicine yet, although the Army is working on a drug that will serve both as a vaccine and medicine. The scary thing is that most medical people are not going to recognize it or know how to treat in because it's so rare. If weaponized, Hantavirus will probably be spread in tiny liquid droplets or dry particles that float in the air (aerosol).

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Hantavirus attack without having victims with symptoms or some days or even weeks after the Hantavirus attack with many victims with symptoms.

SYMPTOMS: Hantavirus begins by acting like the flu - fever, aches and pains, headache, nausea, vomiting, diarrhea, and dry cough. The American form leads to your lungs filling with water so you're short of breath and you really have a hard time breathing. The Asian form is different - it starts the same but you have bad fever, bleeding, kidney failure, and shock. Hantavirus can damage your heart, too, and some die from that. Many victims just think they have the flu, but if they or their doctors don't realize it's Hantavirus in time, they may delay treatment until it's too late to save their life.

THE BODY'S REACTION: The Hantavirus gets into the body by breathing in the virus (weaponized Hantavirus will probably be spread as virus particles in tiny droplets or in dry dust floating in air (aerosol), and victims breathe these droplets or particles or get the virus through a break in the skin. You can even get it when you eat or drink something contaminated with the virus. Depending on the kind of virus it attacks different organs, but with the same result - untreated, your body will not be able to kill the virus and you will almost certainly die. You need hospital intensive care to help your body fight the virus.

VACCINATION: There is no vaccine for Hantavirus.

HOW TO RESPOND TO HANTAVIRUS ATTACKS

HISTORY: Hantavirus exists in the wild in most rural areas. But you'll most likely get it from a biological warfare attack. No country has weaponized it, at least that we know of, but it's probably not too hard to make Hantavirus into a terror weapon. Since this is a rare disease, people really don't know how to treat it or even recognize it, so a Hantavirus attack could be devastating. And untreated it is almost always a killer.

HOW BAD IS IT? Simply put, it's bad. With the best medicine it's 35% or 40% fatal, without medicine it's almost always fatal. There's no vaccine, and Hantavirus there are no medicines to cure it. The Army is developing a drug that acts like a vaccine and a medicine, but it's at an early stage. It's a really big threat to our country; without medicine you're probably going to die.

DECONTAMINATION: You kill Hantavirus by heating or with common disinfectants like bleach or rubbing alcohol. The virus is

still bad when it dries out, but it doesn't remain dangerous very long. Sunlight also can kill the virus. The hard part is knowing that there's been a Hantavirus attack, because it takes one to five weeks for symptoms to appear, and at first it looks like a case of the flu. But if you immediately know there's been a Hantavirus attack (for example, a terrorist announces that he's made a Hantavirus attack in your area), Hantavirus decontamination is important.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets that have the bacteria. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't get anything from the victim on you. Unfortunately there is no easy test method (paper test strip or detector) for Hantavirus - it takes a medical laboratory to find out whether a victim has Hantavirus. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny droplets floating in the air that contain Hantavirus will not be spread throughout the building.

If you are responding when Hantavirus symptoms appear, you don't have to worry about decontamination. Just get the victim to the emergency room and let the doctors take over from there.

DIAGNOSIS: Medical people diagnosis Hantavirus by a variety of laboratory tests that take days or even weeks before they get an answer. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: Decontaminate the victims and get them to the emergency room. Be sure to decontaminate yourself.

If you are responding when Hantavirus symptoms appear, get the victims to the doctor. Unfortunately, there's no medicine yet to cure Hantavirus. About the only thing doctors can do is give "supportive care"; in this case, for the Hantavirus that attacks the lungs they remove fluid from the lungs and give Oxygen. For the Hantavirus that attacks the kidneys they use kidney dialysis. These days you've got better than a 50-50 chance of living if you get to the doctor in time, but in a WMD attack with so many victims it may be hard to treat everybody.

EVACUATION: At the time of a Hantavirus attack get everyone out of the hot zone immediately.

At the time Hantavirus symptoms appear evacuation isn't necessary.

CLEAN UP: At the time of a Hantavirus attack clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Hantavirus symptoms appear clean up isn't necessary except from victim's body fluids.

PLAGUE

(plague)

(Pneumonic Plague)
(Bubonic Plague)
(Septicemic Plague)



WHEN YOU RESPOND -

- Keep people away.
- Immediately call for medical help.
- Avoid contact with possible victims and anything that might have come in contact with them.
- **Don't** let anyone leave the hot zone - health authorities may quarantine those who may have been exposed.
- Shut down all heating, ventilation, and air conditioning.
- Notify the FBI and local health authorities.

PLAGUE

(plague)

(Pneumonic Plague)

(Bubonic Plague)

(Septicemic Plague)



DISCUSSION

INTRODUCTION: Plague is one of the greatest killers in history, and it's still around today. We've all heard of bubonic Plague, but that's only one of the three types of Plague caused by the same bacteria, and it isn't even the worst of the three! If a terrorist could spread Plague in a crowded city we would have panic and many dead. In nature Plague comes from fleas that suck blood from rodents infected with the Plague bacteria and then infect people when they suck their blood. People can get the Plague directly by handling sick rodents. And the Russians made the inhalation form of Plague into a weapon that an army can use - and, unfortunately, terrorists could use this weaponized Plague agent to kill! Probably a weaponized form of Plague would have the Plague in tiny droplets that float in the

air (aerosol). A weapon could really hurt large numbers of people.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Plague attack without having victims with symptoms or some days or even weeks after the Plague attack with many victims with symptoms.

TYPES OF PLAGUE:

- **Pneumonic Plague:** The Plague bacteria infect the lungs. You can get it from a terrorist attack by breathing the tiny liquid droplets (aerosols) containing the bacteria. Victims can then spread the bacteria to other people by sneezing or other body fluids. If you have one of the other two forms of Plague, the bacteria can spread to the lungs. The death rate from this form is almost 100% if untreated.
- **Bubonic Plague:** This is the "traditional" form. When the bacteria enter your body from a flea bite or through a break in the skin, the bacteria swell the lymph nodes (usually in the armpits, groin, and neck) with incredible pain and fever, chills, and weakness. People can't give other people this form of Plague directly. You have a 50-50 chance of living if you don't get treated, and a 95% chance of living if you do.
- **Septicemic Plague:** This form involves bacteria multiplying in the blood. While the lymph nodes don't swell, the disease appears very much like bubonic Plague. In addition, you have low blood pressure and you get clotting problems, with one or more body organs failing. You get it when the bacteria from the other two forms get into the blood. You can also get it when bacteria enter the blood directly from a flea bite or a break in the skin. The death rate from this form is almost 100% if untreated. You can't catch form of Plague from other people, fortunately.

SYMPTOMS: The airborne type (most likely choice of terrorists) produces the first symptoms - fever, headache, and weakness - two - six days after exposure. You then develop pneumonia with shortness of breath, chest pain, cough, and may even cough up blood. Within 2-4 days this leads to breathing failure and shock. Unless you get antibiotics within one day after you get sick, your blood and/or lungs get infected and you die. With the medical care available in the United States, only about 5% die.

THE BODY'S REACTION: Almost certainly a terrorist will spread Plague through the air. When you inhale an airborne tiny droplet containing the bacteria (aerosol), the bacteria settle in the lungs and multiply while destroying the lung tissue.

Eventually this lung infection produces pneumonia, which is close to 100% fatal if untreated. When a victim coughs he makes tiny droplets containing the bacteria that will infect others. Victims catching Plague the natural way (that is, not from a terrorist attack) get the bacteria in their blood where it initially reaches the lymph nodes. The infected lymph nodes become large and tender, and the bacteria spreads to other body organs. Eventually the bacteria can spread to the lungs and then back to the blood where large infections can kill you. Not a pretty picture, and unless your body's natural defenses are reinforced by antibiotics, your chances of living are not all that good. Death is usually from toxic shock throughout your body or from heart or lung failure.

VACCINATION: There are vaccines for the Plague that provide some help for pneumonic Plague but you have to take them before you are exposed, and they require many shots over a 6-8 month period, plus boosters. Since you won't know about a terrorist attack months before it happens, this won't help. And these vaccines may not be effective against the terrorist's most likely choice - bacteria in water droplets spread through the air (aerosols). The U.S. is developing a vaccine for use after exposure to the pneumonic Plague, but this isn't ready yet.

HOW TO RESPOND TO PLAGUE ATTACKS

HISTORY: First appearing in Egypt in 541 AD, bubonic Plague swept over Europe several times, in one epidemic killing 1/3rd of the population; it literally changed history. The Japanese successfully attacked the Chinese people with Plague during World War II. Today the U.S. sees about 10-20 cases a year and the world sees 1,000-3,000 cases. But it's the weaponized form that's the real threat today. The Plague bacteria can be spread in tiny liquid droplets (aerosols) that can survive for an hour. In that time the bacteria could infect thousands.

What happens in nature is that rodents in the wild have the disease and give it to rats living in cities and towns. The rats get sick and die. The fleas on the rats leave the dead rats and because there are people around the infected fleas move to people and spread the disease to people. In those societies where rats and fleas are a part of life, everybody can become a victim; this is particularly true in crowded, poor cities. So it's easy to see how medieval Europe was so hard hit. With better sanitation people no longer live with rats and fleas. And yet today a terrorist with weaponized Plague might be even more effective.

The Plague bacteria can survive in the air for no more than an hour. Once people have inhaled the Plague bacteria, they will spread it to other people. But if the victims are quarantined and treated, the infection can be stopped.

HOW BAD IS IT? One single bacterium in your body can kill you! If left untreated, a terrorist attack could kill huge numbers of people just as natural bubonic Plague did in medieval Europe. But with antibiotics your chances of survival are good, and with proper quarantine and treatment the authorities can stop the infection spread.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: You have to be careful! Don't get the Plague bacteria on you or in your lungs. It's unlikely that you will ever respond to someone with Plague, but you could respond to a terrorist attack. Remember that the bacteria could be in the

air - stay out until you get level A. Unfortunately there is no easy test method (paper test strip or detector) for Plague.

Shut off heating, ventilation, and air conditioning (HVAC) systems so that the bacteria will not be spread throughout the building. And don't let anyone get away. They need to be quarantined and treated with antibiotics. While the bacteria can survive in the air in small liquid droplets (an aerosol) for only an hour at the most, it can infect people who breathe it. Since it can survive for long periods at very cold temperatures or in food and other moist solids, disease experts may order decontamination.

Above all, immediately call for medical assistance.

DIAGNOSIS: Medical people figure out whether a victim has Plague by looking for bacteria in the blood and internal organs with a microscope. They can also identify chemicals produced by the bacteria and antibodies produced by your cells (antibodies are chemicals your body's cells produce to kill bacteria; they are often different for different types of bacteria).

EXPOSURE TREATMENT: If you are responding at the time of the Plague attack, immediately call for medical help. Wear level A. Since breathing the bacteria can quickly kill people, treat possible breathing incidents as medical emergencies. Make sure those who may have been exposed talk to medical people so they will know what symptoms to look for. If you think you have been exposed, wash with warm water and soap to remove the spores. If possible, take a shower and wash your clothes. The only treatment is antibiotics. With antibiotics you have a much better chance of living. Antibiotic treatment for 7 days will protect people who have had direct, close contact with infected patients.

If you are responding when Plague symptoms appear, immediately call for medical help. Evacuate people from the site of a Plague incident, and don't let them leave. They must be quarantined and given antibiotics.

EVACUATION: At the time of an Plague attack, wear level A, evacuate people from the site of an Plague incident, and decontaminate them with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Plague symptoms appear, get immediate medical assistance. Don't let anyone enter the area.

CLEAN UP: At the time of the Plague attack you should decontaminate everything that might have come in contact with

Plague - but only if you have level A. Clean up with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Plague symptoms appear, Keep people away from the site of the Plague release. Medical authorities will determine whether any other action is needed.



PSITTACOSIS

(sit-ta-ko-sis)

WHEN YOU RESPOND -

- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- Don't let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.



PSITTACOSIS

(sit-ta-ko-sis)

DISCUSSION

INTRODUCTION: Psittacosis is a disease that animals and people can catch; Psittacosis is the name of the tiny single cell creature (bacteria) that makes people sick. It's a common disease of birds, especially parrots (the disease is named for them) and pigeons, but most birds get them. And when they have Psittacosis they spread the bacteria in their feces and when they sneeze. The bacteria can live for a long time even dried out, and the dried dust gets into the air and people breathe it, making their lungs sick. It's like having the flu or pneumonia, and it kills about 30% of victims, especially those who are old or who have weak natural resistance (AIDS and cancer reduce your body's ability to resist disease). Most recover even if they are not treated, although you'll feel bad for weeks. With antibiotics almost everyone lives (99%) and gets better quickly. But it's dangerous and not something you want to get, especially since without treatment you may die of Psittacosis or other diseases that take advantage of you when you have Psittacosis. You can catch Psittacosis from other people and other animals, but almost all of the time you catch it from birds. While no one has turned Psittacosis into a weapon, about 800 people caught it in 1930 and in 1984 15 Belgium customs officers came down with Psittacosis from smuggled parakeets! Any weaponized Psittacosis will be a very strong variety, and would almost certainly be a fine dry powder that floats in the air (aerosol) so that victims would breathe it. Fortunately ordinary cleaners like bleach kill the Psittacosis bacteria.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Psittacosis attack without having victims with symptoms or some days or even weeks after the Psittacosis attack with many victims with symptoms.

SYMPTOMS: When you breathe in the bacteria, you don't always get sick. But many do, and symptoms pretty much are involve your lungs:

Lungs: Cough, chest pain, sore throat, flu like symptoms, pneumonia.

General symptoms: Fever, headache, fatigue, muscle aches.

When you have it bad: Nervous system problems, diarrhea, vomiting, kidney failure, liver disease, heart disease, death.

THE BODY'S REACTION: The Psittacosis gets into the body by breathing in dust containing the bacteria. Once inside your lungs they enter the lung cells and start multiplying while they destroy the cells. Antibiotics help the body kill the attacking bacteria; without that help the body has a harder time fighting back. If you don't get antibiotics you could die, especially if you have a weakened response - AIDS or Cancer, for example - your body can't fight back and you may die.

VACCINATION: There is no vaccine for Psittacosis.

HOW TO RESPOND TO PSITTACOSIS ATTACKS

HISTORY: This is a disease found all over the world in birds mostly but sometimes in other animals. Psittacosis is an old disease, being first named in 1892. Psittacosis is relatively common in bird, and many birds have the disease and can infect other birds and people without being sick. It's hard but possible for people to infect other people, so responders have to be careful when around Psittacosis victims. The number of reported Psittacosis victims in the US is less than 20 per year, but this means that doctors may not recognize this disease. While Psittacosis isn't a problem now, imagine several big attacks where terrorists spread dust containing dried bacteria. Thousands to hundreds of thousands could come down with this disease, a disease that only a few doctors have ever seen. It's a real threat, and with a breakdown in the medical system, a lot could die.

HOW BAD IS IT? It's bad enough to kill people if they don't get medical treatment, especially those with reduced resistance (AIDS or Cancer, for example) if they get medical treatment. It'd make a good terror weapon because it would overload the medical system.

DECONTAMINATION: Fortunately, Psittacosis is easy to kill, using common disinfectants like bleach. Be sure not to stir up the dust - it gets into the air and people breathe it, so wet things down first. The hard part is knowing that there's been a Psittacosis attack, because it takes 1 - 4 weeks symptoms to appear. The dried out bacteria can live for a long time, so even after symptoms appear you should try to decontaminate if you know where the Psittacosis attack was.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets of toxin. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't get anything from the victim on you. Unfortunately there is no easy test method (paper test strip or detector) for Psittacosis - it takes a medical laboratory to find out whether a victim has Psittacosis. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the

tiny particles floating in the air that contain Psittacosis will not be spread throughout the building.

If you are responding when Psittacosis symptoms appear, you don't have to worry about decontaminating the victim. Advise the victim to get to the emergency room, but don't get near the victim unless you have at least a respirator (it's hard to catch Psittacosis from a person, but it's good to be careful).

DIAGNOSIS: Medical people diagnosis Psittacosis by a variety of laboratory tests that take days before they get an answer. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: If you are responding at the time of the Psittacosis attack, tell those who may have been exposed talk to medical people so they will know what symptoms to look for. Since it takes so long for symptoms to appear, there really is no rush. If you have level A equipment, you can clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

If you are responding when Psittacosis symptoms appear, get victims to an emergency room quickly. Avoid getting any body fluids from victims on yourself; Psittacosis is hard to get from a sick person (you normally catch it from birds), but just to be on the safe side wash decontaminate yourself with soap and water or diluted household bleach (10%, or 1½ cups of bleach to one gallon of water), and wash your clothing.

EVACUATION: If you are responding at the time of the attack, you have to be careful! Evacuate the area, and if you have level A, decontaminate. Otherwise, keep people away until equipped responders can arrive.

If you are responding at the time symptoms appear and you know where the Psittacosis attack took place, evacuate the areas, and if you have level A, decontaminate. Otherwise, keep people away until equipped responders can arrive.

CLEAN UP: At the time of the Psittacosis attack you should decontaminate the area if you have level A. Otherwise, keep away. Clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Psittacosis symptoms appear and you know where the Psittacosis attack took place, you should decontaminate the area if you have level A. Otherwise, keep away. Clean up surfaces

with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

Q-FEVER



(queue-fee-ver)

WHEN YOU RESPOND -

- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.

Q-FEVER



(queue-fee-ver)

DISCUSSION

INTRODUCTION: Q-Fever is a disease that animals and people can catch; Q-Fever is the name of disease that tiny single cell creature (bacteria) that makes people sick. It's a common disease of farm animals, ticks, and some other animals, and people can get it. Strangely, except for animals having abortions, they show few if any symptoms. People are the only ones that have symptoms. Animals with Q-Fever spread the bacteria in their feces, their nose, their milk, and in fluids when they give birth. This dries out and the bacteria can live for a long time dried out, and the dried dust gets into the air and people breathe it, making their lungs sick. People also get it when they touch contaminated animals or contaminated straw or dirt. It's like having the flu or pneumonia, and but fortunately it kills less than 1% of its victims, and is especially bad for those who have heart defects. Most recover even if they are not treated, although you'll feel bad for weeks. With antibiotics almost everyone lives (99%) and gets better quickly. But it's dangerous because about 10% get a long term form of Q-Fever and it can attack your liver and heart - some victims need heart valve replacement; those especially those who are old or who have weak natural resistance (AIDS and cancer reduce your body's ability to resist disease) often get this kind of Q-Fever. It's very hard to catch Q-Fever from other people, but it has happened and you should be careful around victims. Since it takes 10 to 40 days between getting the disease and getting the symptoms, first responders will either face the actual Q-Fever attack without having victims with symptoms or days or weeks after the Q-Fever attack with

many victims with symptoms. Q-Fever would make a good weapon because it could make a lot of people sick without really killing them - temporarily preventing them from fighting. The Russians may have turned it into a weapon during WW II, and the German Army reported several serious outbreaks. The U.S. studied Q-Fever as a weapon after WW II but ended all work in the 1970's. And a Japanese terrorist group tried to weaponize it but managed only to make themselves sick with Q-Fever! There's been many outbreaks over the years involving up to a few dozen people, and blood tests show that in some areas a large fraction of people have had it without really knowing it! They probably just thought they had the flu. But weaponized Q-Fever would be a very strong variety, and would almost certainly be a fine dry powder that floats in the air (aerosol) so that victims would breathe it. Fortunately ordinary cleaners like bleach kill the Q-Fever bacteria.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Q-Fever attack without having victims with symptoms or some days or even weeks after the Q-Fever attack with many victims with symptoms.

SYMPTOMS: When you breathe in the bacteria, or touch something contaminated with the bacteria, or drink unpasteurized milk, you don't always get sick. But many do, and Q-Fever produces two forms of disease, short term and long term:

Short term disease: Flu-like symptoms, including fever, headache, weakness, cough, chest pain, stomach pain, sweating, chills, nausea, diarrhea, and vomiting. This lasts about a week or two, shorter if treated with antibiotics.

Long term disease: After a delay of from one year to twenty years, victims get a more serious kind of disease that attacks the liver (hepatitis), heart valves, and lungs (pneumonia).

THE BODY'S REACTION: The Q-Fever gets into the body by breathing in dust containing the bacteria, or drinking unpasteurized milk, or even touching something with the bacteria on it. Once inside your lungs they enter the lung cells and start multiplying while they destroy the cells. Antibiotics help the body kill the attacking bacteria; without that help the body has a harder time fighting back. You'll almost always live even if you don't get the antibiotics, but you'll feel better and get over it quicker if you do. The longer term kind of Q-Fever is more serious, and you need to get antibiotics; some people need new heart valves.

VACCINATION: There are two vaccines for Q-Fever, but neither is approved for civilian use in the U.S. There's a problem with these vaccines; you have to be tested for Q-Fever before you get

the vaccine. If you have Q-Fever you can't get the vaccine because your body will react badly to the vaccine and make things worse.

HOW TO RESPOND TO Q-FEVER ATTACKS

HISTORY: This is a disease found all over the world in animals and ticks. Q-Fever is an old disease, being discovered in Australia in 1937. They named the disease Q-Fever - a strange name - because they didn't want to name it after a location in Australia or connect it to farm animals for political and business reasons. "X" wasn't a bad name, but it was already taken for another disease. So they named it "Q-Fever" with the idea that the name wouldn't offend; they said it stood for "Query-Fever" because no one knew what caused it at that time, "Query" being the Australian word for "Question." Q-Fever is relatively common in animals, ticks, and people, and animals can have the disease and can infect other animals and people without being sick. It's hard but possible for people to infect other people, so responders have to be careful when around Q-Fever victims. The number of reported Q-Fever victims in the US is low, but this means that doctors may not recognize this disease. While Q-Fever isn't a problem now, imagine several big attacks where terrorists spread dust particles small enough to float in the air and containing dried Q-Fever bacteria. Thousands to hundreds of thousands could come down with this disease, a disease that not many doctors have ever seen before. It's a real threat, and could overload the medical system. Since the dried bacteria can remain alive for months, it could be a serious long term problem.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Q-Fever attack without having victims with symptoms or some days or even weeks after the Q-Fever attack with many victims with symptoms.

HOW BAD IS IT? The Q-Fever bacteria are very effective in giving you the disease - experts figure from 1 to 10 bacteria can give you the disease! It's bad enough to kill people if they are old or have low resistance to disease - but less than 1% die from it. It'd make a good terror weapon because it would overload the medical system.

DECONTAMINATION: Fortunately, Q-Fever is not hard to kill, using common disinfectants like bleach or ethyl alcohol; milk can be decontaminated through Pasteurization. Be sure not to stir up the dust - it gets into the air and people breathe it, so wet things down first. The hard part is knowing that there's been a Q-Fever attack, because it takes 10-40 days for symptoms to appear. The dried out bacteria can live for months, so even

after symptoms appear you should try to decontaminate if you know where the Q-Fever attack was.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets of toxin. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't get anything from the victim on you. Unfortunately there is no easy test method (paper test strip or detector) for Q-Fever - it takes a medical laboratory to find out whether a victim has Q-Fever. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny particles floating in the air that contain Q-Fever will not be spread throughout the building.

If you are responding when Q-Fever symptoms appear, you don't have to worry about decontaminating the victim. Advise the victim to go to the emergency room, but don't get near the victim unless you have at least a respirator.

DIAGNOSIS: Medical people diagnosis Q-Fever by a variety of laboratory tests that take days before they get an answer. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: If you are responding at the time of the Q-Fever attack, tell those who may have been exposed talk to medical people so they will know what symptoms to look for. Since it takes so long for symptoms to appear, there really is no rush. If you have level A equipment, you can . Clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time the symptoms appear, get the victims to an emergency room. Remember that the Q-Fever bacteria can still be around, so wear level A. Avoid getting any body fluids from victims on yourself; Q-Fever is hard to get from a sick person (you normally catch it from animals), but just to be on the safe side clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

EVACUATION: If you are responding at the time of the attack, you have to be careful! Evacuate the area, and if you have level A, decontaminate. Otherwise, keep people away until equipped responders can arrive.

If you are responding at the time symptoms appear and you know where the Q-Fever attack took place, evacuate the areas, and if you have level A, decontaminate. Otherwise, keep people away until equipped responders can arrive.

CLEAN UP: At the time of the Q-Fever attack you should decontaminate the area if you have level A. Otherwise, keep away. Clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Q-Fever symptoms appear and you know where the Q-Fever attack took place, you should decontaminate the area if you have level A. Otherwise, keep away. Clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

RICIN

(rye-sin)



WHEN YOU RESPOND -

- Keep people away.
- Immediately call for medical help.
- Don't breathe, touch, or eat anything that might be contaminated with Ricin.
- Notify the FBI, local health authorities. and pollution agencies.



RICIN

(rye-sin)



DISCUSSION

INTRODUCTION: Ricin is a protein made by the castor bean that is incredibly toxic. It's so toxic that it can even be used as a cancer drug and maybe even a drug for AIDS. Yet the castor plant is a beautiful plant in people's yards, and in some countries the castor beans are used as beads on necklaces. Children and adults have eaten just a few beans and died from the poison Racin! And castor beans are an important industrial plant - people grow a vast amount of castor beans plants, and turn the beans into important and valuable industrial products. After the Castor oil is squeezed out of the castor bean about 5% of what's left is Ricin. Although people have used weak castor oil as a laxative and general cure all, pure Ricin kills in a few days. What Ricin does is get into the body's cells and prevents the cells from making new proteins. Since your body is always making new proteins, this means that within a few hours your body starts having trouble, serious trouble, working - your body's systems shut down and you can die. It's as if something stopped all the automobile factories from building new cars and trucks - in time there'd be nothing moving on the highways and the world would have trouble working! Because Ricin isn't a living thing but rather a chemical that is made by living things, it probably wouldn't make as effective a military weapon as viruses or bacteria like the Ebola virus or Anthrax, but it would make a great terrorist weapon because it's easy to make and easy to use. Ricin can be put into food or water, or ground up into fine particles that float in the air (aerosol), and people who breathe or eat it will get sick. The Bulgarians and Russians have used it to murder political enemies, and terrorists in the U.S. (and people just trying to murder people they don't like) have made Racin and may have used it in letter. There are reports that the Iraqi's used Racin in their war with Iran, and U.S. forces found it in Al Qaeda camps in Afghanistan.

And making it worse is the fact that medical people don't really have experience with Ricin victims.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Ricin attack without having victims with symptoms or some days or even weeks after the Ricin attack with many victims with symptoms.

SYMPTOMS: Medical people don't know much about the symptoms of Ricin poisoning in people, but do have some experience in accidental poisoning. The symptoms depend on how Ricin gets inside the victim, and how much. People often die in a 1½ days to 3 days, but if you're still alive after 5 days you'll probably live.

Breathing: In a few hours you will feel it hard to breathe, fever, cough, nausea, chest tightness, sweating, aching muscles, fluid in your lungs, low blood pressure, blue skin, and finally death when you stop breathing.

Eating: In a few hours you will start to vomit and have diarrhea, including bloody diarrhea; you will develop low blood pressure, hallucinations, and bloody urine. In a few days organs like your liver, spleen, and kidneys might stop working, and then you may die.

Skin: Ricin can only get through the skin through cuts and bruises; your skin gets red and hurts. Get enough Ricin through the skin and your symptoms will be like eating it.

Eyes: Your eyes will get red and hurt

THE BODY'S REACTION: When the Ricin chemicals get inside you, they block the body's protein factories. If you didn't get too much Ricin, you live. If not, your body stops working and you die.

VACCINATION: There's no vaccine for Ricin, but there's one that looks promising, and at this time it's being tested.

HOW TO RESPOND TO RICIN ATTACKS

HISTORY: For centuries farmers know the dangers to their farm animals from eating castor beans. In fact, people found castor beans in 6,000 year old Egyptian tombs. Castor oil's been used for centuries as medicine, and scientists have known about Ricin's effect on stopping the body from making proteins since 1800! The U.S. and Britain worked together on building bombs carrying Ricin in WW II, but the only reported military use was by Iraq in their war with Iran; we discovered large amounts of Ricin in Al Qaeda caves in Afghanistan. Terrorists and plain old murderers have tried to use it, not very effectively; the

Bulgarian and Russian governments have successfully used it to murder politicians they don't like. It would make a good terrorist weapon, unfortunately.

HOW BAD IS IT? It takes a very tiny amount of Ricin to hurt you, and there's a huge amount of castor beans for terrorists to work with. Unlike diseases that multiply in your body, Ricin is a chemical made by a plant, so it won't spread from victim to healthy person like a disease. But to give you an idea of how deadly a poison it is, a pound of Ricin if spread on food could kill 500,000 people. So it's dangerous!

DECONTAMINATION: If the Ricin attack was by small particles of Ricin floating in the air (aerosol), then you have to decontaminate if you have the equipment. This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or 1½ cups of bleach to one gallon of water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent. Don't let them leave until medical people examine them.

- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: You have to be careful! Since a Ricin attack is probably going to be by small particles of Ricin floating in the air (aerosol), don't breathe it or get it on you. Remember that the victim's clothes or body may have Ricin; touch them and you can get Ricin. If you think Ricin particles might be in the area, stay out until you get level A, proper personal protective equipment (PPE), including protective clothing and respiratory protection. Unfortunately there is no easy test method (paper test strip or detector) for Ricin.

Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny droplets floating in the air that contain Ricin will not be spread throughout the building. And don't let anyone get away. They need to be quarantined and vaccinated. The Ricin chemical doesn't go away quickly, and it can "survive" in clothing and bedding for long periods. So you have to "quarantine" or decontaminate things as well as people.

Above all, immediately call for medical assistance.

DIAGNOSIS: Unfortunately Ricin symptoms resemble symptoms from other diseases, especially the common flu. Only medical people can judge if there's been a Ricin attack, and it's not easy for them!

EXPOSURE TREATMENT: If you are responding at the time of a Ricin attack, tell those who may have been exposed talk to medical people so they will know what symptoms to look for. Since it can take only a day and a half for symptoms to appear, they should get to a doctor that day there really is no rush. If you have level A equipment, you can clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

Call for medical help. If the victim's lungs fill with fluid, you give Oxygen if his breathing is difficult. Other than that, either take the victim to the hospital or wait for medical assistance, while making the victim comfortable. Make all exposed people shower and change clothes. Just in case you have gotten Ricin on yourself or your clothing, shower and change clothes. Go to a doctor as soon as you can. Make all exposed people go to the emergency room.

EVACUATION: If you are responding at the time of the attack, you have to be careful! Evacuate the area, and if you have

level A, decontaminate. Otherwise, keep people away until equipped responders can arrive.

If you are responding at the time symptoms appear and you know where the Ricin attack took place, evacuate the areas, and if you have level A, decontaminate. Otherwise, keep people away until equipped responders can arrive.

CLEAN UP: At the time of the Ricin attack you should decontaminate the area if you have level A. Otherwise, keep away. Clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time Ricin symptoms appear and you know where the Ricin attack took place, you should decontaminate the area if you have level A. Otherwise, keep away. Clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.



SALMONELLA

(sal-mon-nell-lah)

WHEN YOU RESPOND -

- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- BEWARE! This makes you sick - from very serious food poisoning to Typhoid fever!
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.



SALMONELLA

(sal-mon-nell-lah)

DISCUSSION

INTRODUCTION: Salmonella is really two diseases that people can catch; one is simple food poisoning that people get from animals and other people, and the other is a much more serious disease called Typhoid that only people can catch. Please note that Typhoid, or Typhoid fever, is a very different disease from Typhus fever, even though they sound the same. Salmonella is the name of the tiny single cell creatures (bacteria) that can get into your intestines when you eat contaminated food. Those that are old or young and those with their body's natural resistance is reduced (AIDS and cancer reduce your body's ability to resist disease) get Salmonella more often and have a harder time recovering. Now if you get the food poisoning type you will feel miserable for up to a week, and sometimes get a form of arthritis that is hard to cure. But one type of Salmonella causes Typhoid fever, which is a very serious disease. You can't catch Salmonella except by eating something with Salmonella in it, usually meat or eggs but sometimes fruit. Since the Salmonella bacteria leave your body in your feces, if the food is clean or if you cook it you can't get Salmonella. While no one has turned Salmonella into a weapon, it could be a good one because there really is no medicine and there is no way to kill the bacteria without heating them. And the Typhoid kind of Salmonella is a real threat to your health. If terrorists or a government took a very bad kind of Salmonella, especially the Typhoid kind, and put it in small liquid droplets in the air (aerosol), they could make a dangerous and fatal weapon. We know that contaminated food has made hundreds sick at one time. Salmonella kills a good chunk of the 2,000,000 in the world that

die each year from diarrhea, and that's without it being weaponized!

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Salmonella attack without having victims with symptoms or some days or even weeks after the Salmonella attack with many victims with symptoms.

SYMPTOMS: Salmonella symptoms often seem like the flu or other stomach problems, at least at the beginning.

Food poisoning type of Salmonella: Nausea, vomiting, stomach cramps, diarrhea (sometimes bloody), fever, headache.

Complications: A few victims have painful joints, eye irritation, painful urination, and can turn into arthritis that is hard to cure.

Typhoid type of Salmonella: Fever, weight loss, headache, constipation, and death without medical help.

THE BODY'S REACTION: The Salmonella gets into the body by drinking or eating something with Salmonella, and it gets into the intestines. They invade the intestines and give you the disease. The body fights back, and wins in a week or two unless it's the Typhoid type of Salmonella. But if you have a weakened response - AIDS or Cancer, for example - your body can't fight back and you may die. In the Typhoid type of Salmonella, the bacteria leave the intestines and attack other parts of the body. Usually your body needs antibiotic to help fight the disease.

VACCINATION: There is no vaccine for the food type of Salmonella, although people are working on it and at least one group of medical researchers is testing a possible vaccine. There's a vaccine for the Typhoid type, but people don't routinely take it like, say, polio, vaccine.

HOW TO RESPOND TO SALMONELLA ATTACKS

HISTORY: The food poisoning type of Salmonella lives in the intestines of animals, but the Typhoid type lives only in people. So, you say, how could this be made into a weapon? Well, there are some varieties that kill, and if you get enough of even the milder kind you will get sick and could die. Certainly any weaponized Salmonella would be one of the worst kinds! An American discovered salmonella in 1885, and Typhoid and food poisoning are old diseases. But there seems to be an increase in Salmonella food poisoning world wide, and at least one kind of Salmonella that is immune to antibiotics. There have been times when Salmonella-contaminated food or water made

several hundred people sick. If a terrorist took a bad kind of Salmonella and put it in small water droplets and spray the droplets in the air (aerosol) in a crowded place, they would make thousands of people sick with diarrhea for a week or two. And the terrorists would kill a few hundred people with reduced body resistance. It's a real threat, but more of a discomfort than a killer for most people. However, if a terrorist used an antibiotic resistant kind of Typhoid Salmonella, tens of thousands could die. It's a real threat.

HOW BAD IS IT? Even the food poisoning type is bad enough to kill those with reduced resistance (those having AIDS or cancer, for example) and the very young and very old even if they get medical treatment. The Typhoid type can kill easily if untreated; an antibiotic resistant kind would really have a high death rate. Since we can't prevent accidental Salmonella outbreaks we can't prevent terrorists from attacking us with Salmonella. The food poisoning type is more of a terror and panic weapon than an immediate killer, and it would be a burden on the economy. Just what a terrorist would like. But the Typhoid type, especially an antibiotic resistant one, would be a mass killer.

DECONTAMINATION: You kill Salmonella by heating and by washing (that's one reason to cook food and wash fruit and vegetables). So Salmonella on the ground or on surfaces is hard to decontaminate. The hard part is knowing that there's been a Salmonella attack, because it takes 8-72 hours for symptoms to appear. Once the symptoms appear there isn't much you can do either - just tell the victims and their families to wash their hands frequently with hot water and practice good hygiene. And warn them about the possibility that it might be the Typhoid type, which means they have to get medical help. But if you immediately know there's been a Salmonella attack (for example, a terrorist announces that he's made a Salmonella attack in your area), Salmonella decontamination is important.

- Tell people to boil water, cook all food, and wash their hands after going to the bathroom.
- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets of toxin. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.

- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the Salmonella attack, you have to be careful! Don't get anything from the victim on you. Unfortunately there is no easy test method (paper test strip or detector) for Salmonella - it takes a medical laboratory to find out whether a victim has Salmonella. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny particles floating in the air that contain Salmonella will not be spread throughout the building.

If you are responding when Salmonella symptoms appear, you don't have to worry about decontamination. Advise victims to be clean, boil water and cook food, drink lots of fluids and wash their hands after going to the bathroom. For victims with reduced response or the very young or very old, advise them to contact their doctors at once because their life is in danger. And if it's the Typhoid type, tell them to go to the emergency room immediately.

DIAGNOSIS: Medical people diagnosis Salmonella by a variety of laboratory tests that take days before they get an answer. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: Unfortunately antibiotics only make the food poisoning type worse. If you are responding at the time of the Salmonella attack, tell those who may have been exposed talk to medical people so they will know what symptoms to look for. Since it takes so long for symptoms to appear, there really is no rush. Tell them to boil water and cook food. Tell those

with reduced resistance to contact their doctor. If it's the Typhoid type, tell them to go to the emergency room.

If you are responding when Salmonella symptoms appear, tell victims to drink lots of fluids. Tell those with reduced resistance to immediately contact their doctor. If it's the Typhoid type, tell them to go to the emergency room.

EVACUATION: At the time of a Salmonella attack, evacuation is not necessary.

At the time Salmonella symptoms appear, evacuation is not necessary.

CLEAN UP: At the time of the Salmonella attack you should discard contaminated food.

At the time Salmonella symptoms appear, the only danger is contamination from the victim. People should wash their hands after going to the bathroom.



SHIGELLA DYSENTERIAE

(shi-gel-la diss-in-tear-ee-ah)

WHEN YOU RESPOND -

- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
-
- Notify the FBI and local health authorities.



SHIGELLA DYSENTERIAE

(shi-gel-la diss-in-tear-ee-ah)

DISCUSSION

INTRODUCTION: Shigella is a disease that only people and monkeys and chimps can catch; Shigella is the name of the tiny single cell creature (bacteria) that can get into your intestines and make you sick. There are different kinds of Shigella, and some are very bad - and we can be sure terrorists would use the worst kind. The "dysenteriae" refers to dysentery - basically, severe diarrhea and generally bad feeling. Shigella causes most dysentery. Usually, you get sick with diarrhea and feel miserable, but some people get a much worse disease that sometimes kills them. Unless your body's natural resistance is reduced (AIDS and cancer treatments reduce your body's ability to resist disease) or you're very young or very old, you'll get better in 2 to 7 days, which is good because there's no real treatment. If your body's resistance is reduced, you will take much longer to recover, and you may die of Shigella or other diseases that take advantage of you when you have Shigella. And if you have one of the very bad kinds of Shigella, you'll be much sicker and have a better chance of dying. The Shigella get into your intestines and reproduce inside intestine cells. Many kinds of Shigella make a chemical poison that does further damage to your intestines. The Shigella bacteria leave your body in your feces. When you eat something contaminated with these bacteria, you get Shigella. You find Shigella bacteria on contaminated food, milk, or water and when you eat uncooked or undercooked food, unwashed vegetables, or drink unpasteurized milk or unpurified water, you can get Shigella. Put another way, you can't catch Shigella except by eating or drinking something with Shigella in it. Since it takes 12 to 48 hours between getting the disease and getting the symptoms, first responders will either face the actual Shigella attack without having victims with symptoms or days after the Shigella attack with many victims with symptoms. While no one has turned Shigella into a weapon, it could be a good one because there is no way to kill the bacteria

without heating them. But if terrorists or a government took a very bad kind of Shigella and put it in small droplets in the air (aerosol), they could make a dangerous and fatal weapon. And we know that contaminated food has made hundreds sick at one time. Shigella kills a good chunk of the 2,000,000 that die each year from diarrhea, and that's without it being weaponized! In one epidemic in Guatemala, 112,000 people had it and 10,000 died! And there are about 300,000 cases each year in the U.S.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Ricin attack without having victims with symptoms or some days or even weeks after the Ricin attack with many victims with symptoms.

SYMPTOMS:

Food poisoning: Shigella gets into your intestines, and gives you diarrhea, stomach ache, vomiting, fever, diarrhea (and sometimes bloody diarrhea), and stomach cramps. These are similar to symptoms for other diseases, but Shigella would be a likely cause for mass outbreaks. Normally these symptoms go away from 2 to 7 days without treatment. Some people don't have any symptoms, but can make others sick.

Severe cases: About 3% of victims end up with something much worse, including nerve problems, convulsions, kidney problems, blood problems, and bad arthritis.

Fatalities: If the victim has weakened resistance (AIDS, for example), or is very young or very old, the Shigella spread, the symptoms get worse, and the victim sometimes dies. And if the Shigella is one of those very bad kinds, the symptoms are very bad and the victim could die.

THE BODY'S REACTION: The Shigella gets into the body by drinking or eating something with Shigella bacteria, and it gets into the intestines. They invade the intestines and reproduce, damaging the intestines. The Shigella bacteria also give off a toxic chemical that does even more damage to the intestines. The bacteria leave the body in the feces. The body fights back, and wins in a week or two. But if you have a weakened response - AIDS, Cancer treatments - your body can't fight back and you may die. Doctors give antibiotics to victims with severe cases, but you usually recover from the food poisoning type on your own. Some kinds of Shigella have can survive antibiotics, which is a very bad thing for the victim.

VACCINATION: There is no vaccine for Shigella but medical people are trying out some possible vaccines. For now, unfortunately, there's no vaccine for first responders or the public.

HOW TO RESPOND TO SHIGELLA ATTACKS

HISTORY: Shigella can live in the intestines of people and closely related animals like monkeys and chimps. Shigella was discovered a century ago by a Japanese scientist named Shiga, and the disease is a growing problem all over the world, especially where people don't have clean water and food. There have been epidemics with hundreds of thousands have been sick and tens of thousands died, so it is bad enough without being made into a weapon. Medical people have evidence that Shigella can spread through the air in small droplets (aerosol) and still make people sick. If a terrorist took the worst kind of Shigella and put it in small water droplets and spray the droplets in the air (aerosol) in a crowded place, they would make thousands of people sick with diarrhea for a week or two. And the terrorists would kill a few hundred people with reduced body resistance. It's a real threat, but more of a discomfort than a killer for most people.

HOW BAD IS IT? It takes about 10-100 bacteria to make you sick, a tiny amount! This is strong stuff. It's bad enough to kill those with reduced resistance and the very young and very old even if they get medical treatment. Since we can't prevent accidental Shigella outbreaks we can't prevent terrorists from attacking us with Shigella. It's more of a terror and panic weapon than an immediate killer, and it would be a burden on the economy. Just what a terrorist would like.

DECONTAMINATION: You kill Shigella by heating (that's one reason to wash vegetables, cook food, and pasteurize milk, and drink only purified water). The hard part is knowing that there's been a Shigella attack, because it takes 12 to 48 hours for symptoms to appear. Once the symptoms appear there isn't much you can do either - just tell the victims and their families to wash their hands frequently with hot water and practice good hygiene. But if you immediately know there's been a Shigella attack (for example, a terrorist announces that he's made a Shigella attack in your area), Shigella decontamination is important.

- Tell people to boil water, cook all food, and wash their hands after going to the bathroom.
- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't

even wait for soap or for the victim to remove clothing, begin washing immediately.

- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or 1½ cups of bleach to one gallon of water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent. Don't let them leave until medical people examine them.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't get anything from the victim on you. Unfortunately there is no easy test method (paper test strip or detector) for Shigella - it takes a medical laboratory to find out whether a victim has Shigella.

If you are responding when Shigella symptoms appear, you don't have to worry about decontamination. Advise victims to be clean, boil water and cook food, drink lots of fluids and wash their hands after going to the bathroom. For victims with reduced response or the very young or very old, advise them to contact their doctors at once because their life is in danger.

DIAGNOSIS: Medical people diagnosis Shigella by a variety of laboratory tests that take days before they get an answer. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: If you are responding at the time of the Shigella attack, tell those who may have been exposed talk to medical people so they will know what symptoms to look for. Since it takes so long for symptoms to appear, there really is no rush. Tell them to boil water and cook food. Tell those

with reduced resistance to contact their doctor. Unfortunately antibiotics only make the disease worse.

If you are responding when Shigella symptoms appear, tell victims to drink lots of fluids. Tell those with reduced resistance to immediately contact their doctor.

EVACUATION: Evacuation is not necessary either at the time of a Shigella attack or at the time Shigella symptoms appear.

CLEAN UP: At the time of the Shigella attack you should discard contaminated food and milk.

At the time Shigella symptoms appear, the only danger is contamination from the victim. People should wash their hands after going to the bathroom.

SMALLPOX

(small-pocks)



WHEN YOU RESPOND -

- Keep people away.
- Immediately call for medical help.
- Avoid contact with possible victims and anything that might have come in contact with them.
- **Don't** let anyone leave the hot zone- health authorities may quarantine those who may have been exposed.
- Shut down all heating, ventilation, and air conditioning.
- Notify the FBI and local health authorities.



SMALLPOX (small-pocks)



DISCUSSION



INTRODUCTION: Smallpox is a highly contagious disease (a virus) that no longer exists in nature - but terrorists may have it. It's an old disease that infects only humans and can live outside people for only two weeks or so. Usually this is not fatal but it can kill and usually leaves disfiguring scars. Fortunately you can be vaccinated even after exposure (but before symptoms appear), and 99% live. No terrorists have ever used Smallpox as a weapon, but the British may have used it against American Indians in the 1700's. Weaponized Smallpox would probably be in the form of the virus in tiny droplets that float in the air (aerosol). Since medical authorities haven't vaccinated people for many years and the protection from being vaccinated probably wore off by now, people have no protection against it. So Smallpox would be a very effective weapon.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Smallpox attack without having victims with symptoms or some days or even weeks after the Smallpox attack with many victims with symptoms.

SYMPTOMS: About 30% of those exposed will catch Smallpox. After about 12 days Smallpox starts with fever, vomiting, headache, and backache. Within two or three days sores appear, with pimples, blisters, or boils. These are pus filled and have the virus inside. They appear more on the face, arms and legs, but do appear over the rest of the body, and they appear at roughly the same time.

THE BODY'S REACTION: When Smallpox gets inside your body, it takes over the cell's machinery, so that the cell makes large numbers of duplicates of the virus. Eventually it kills the cell and spreads to internal organs, the mouth, and especially the skin. Pus filled blisters containing the virus form and allow bacteria and other viruses to enter your body and make you sick. You can die from these infections or from a heart attack or shock, and you can die from the toxins coming from the war between the virus and the body. If you survive, the scabs from the blisters will leave permanent, ugly scars. And Smallpox can also cause blindness and male sterility.

VACCINATION: Fortunately you can be vaccinated against Smallpox, even four days after exposure, and your chances of catching the disease and of dying from it are greatly reduced. Doctors don't routinely vaccinate people any more, because the world's medical organizations eliminated Smallpox in 1980. In earlier years people were routinely vaccinated as babies, but unfortunately the vaccination wears out and so even those vaccinated have little or no protection. Medical people do not recommend automatic vaccination because a small fraction of people will react to the vaccine and die. Only those who work with the Smallpox virus and some military personnel have been vaccinated in recent years. Currently, the U.S. Government's plan is in being changed to a policy of vaccinating the entire population within two weeks after a Smallpox outbreak, with health and emergency workers being vaccinated first. The United States is building a stockpile of vaccine large enough to vaccinate the entire population. However, this policy could change again.

HOW TO RESPOND TO SMALLPOX ATTACKS

HISTORY: It's called Smallpox to distinguish it from "Great Pox" (Syphilis). Smallpox is an old disease (perhaps appearing in Egypt before 1500 BC), and at one time just about everybody got it; Queen Elizabeth I was a survivor, for example. But Smallpox is a serious disease, and one that would make a good biological warfare agent, since it can be spread by blankets and clothing. Smallpox killed an estimated 500 million people in the 20th Century, and that wasn't as a weapon of war! There are stories that the British gave Native Americans blankets from Smallpox victims during the 1700's (said to be very effective), and the Japanese considered using Smallpox in World War II.

Around 1980 the Soviet Union made large quantities to use in bombs and missiles. Even though the only known Smallpox virus is stored in the U.S. and Russia, no one knows if there are any other supplies elsewhere in the world.

The Smallpox virus (Variola virus) can live outside the human body for no more than a couple of weeks, and it can't infect animals. But it's possible that a single virus particle can give you Smallpox. Hard work by the world's medical community eradicated this disease by 1980 in the wild. So there's no longer any reason to vaccinate anyone except for the few laboratory workers caring for the Smallpox samples in the U.S. and Russia. Everyone else has little or no resistance to the virus, and so the world is vulnerable to terrorists releasing Smallpox. Unfortunately, even after all these years, the medical community still can't treat the disease, other than by vaccination. And Smallpox's initial symptoms are like those the flu or chicken pox, so Doctors (most of whom have never seen Smallpox), will have trouble identifying it at first.

HOW BAD IS IT? Spanish explorers carried this disease into the Americas, killing three million Aztecs and 100,000 Incas, and that was without even trying to use Smallpox as a biological weapon. Just imagine what an enhanced Smallpox weapon could do without vaccination! If you get Smallpox, at the minimum, you will have disfiguring scarring. Just as with the common cold, Smallpox comes in several varieties, some having a high fatality rate. Fortunately the two most common types are not as dangerous as some rarer types, with one common type killing about 1% of unvaccinated victims and the other about 30% of the unvaccinated and 1% of the vaccinated. The time between exposure to the virus and the first symptoms is about 12 days, but you only have four days to get vaccinated after you are exposed, so you should get vaccinated if you think the attack involved Smallpox. The virus can be spread through the air in small liquid droplets (an aerosol), in body fluids, and in clothing and blankets. But once you have the disease there's nothing Doctors can do for you but let it run its course. If you live you will have disfiguring scars, and Smallpox can cause blindness and male sterility.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other

system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.

- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Get vaccinated within four days.

RESPONSE: You have to be careful! Don't get the Smallpox virus on you. It's unlikely that you will ever respond to someone with Smallpox blisters (there's virus in those blisters), but you may respond to a Smallpox attack. Remember that the victim's clothes or body may have the virus; touch them and you can get Smallpox. If you think Smallpox might be in the area, stay out until you get level A. Unfortunately there is no easy test method (paper test strip or detector) for Smallpox.

Shut off heating, ventilation, and air conditioning (HVAC) systems so that the virus will not be spread throughout the building. And don't let anyone get away. They need to be quarantined and vaccinated. While the virus can survive in the air in small liquid droplets that float in the air (an aerosol) for only a day at the most, it can survive in clothing and bedding for longer periods. So you have to "quarantine" or decontaminate things as well as people.

Above all, immediately call for medical assistance.

DIAGNOSIS: The body forms chemicals to fight the Smallpox virus (antibodies) and medical workers can test the victim's blood. Also they use an electron microscope to identify the virus, but this isn't perfect - they can't tell Smallpox from cowpox or monkeypox. For the first 12 days or so you have no symptoms, and for the first two or three days the symptoms are similar to other mild diseases. Then come the blisters spreading over the body, and by then vaccination is too late. So it's important to get vaccinated immediately after you're exposed.

EXPOSURE TREATMENT: If you are responding at the time of the Brucellosis attack, immediately call for medical help. The only treatment is immediate vaccination, and there isn't any other treatment. In a few cases people have had Smallpox without any symptoms, but still spread the disease. So everyone exposed must be quarantined and vaccinated.

If you are responding when Smallpox symptoms appear, immediately call for medical help. Don't let anyone enter or leave (including yourself).

EVACUATION: At the time of a Smallpox attack, don't let anyone enter or leave. They must be quarantined and vaccinated.

At the time Smallpox symptoms appear, don't let anyone enter or leave. They must be quarantined

CLEAN UP: At the time of a Smallpox attack, keep people away from the site of the Smallpox release. Medical authorities will determine whether to keep people away from the site (the Smallpox will die within a couple of weeks outside the human body) or to decontaminate the area.

At the time Smallpox symptoms appear, don't let anyone enter or leave. Medical authorities will determine whether to keep people away from the site (the Smallpox will die within a couple of weeks outside the human body) or to decontaminate the area.



STAPHYLOCOCCAL ENTEROTOXIN B

(staff-low-kok-kal en-ter-oh-tocks-in
bee)

SEB

WHEN YOU RESPOND -

- Keep people away.
- Immediately call for medical help.
- Don't breathe, touch, or eat anything that might be contaminated with Staphylococcal Enterotoxin B (SEB)
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI, local health authorities. and pollution agencies.



STAPHYLOCOCCAL ENTEROTOXIN B

(staff-low-kok-kal en-ter-oh-tocks-in
bee)

SEB

DISCUSSION

INTRODUCTION: Staphylococcal Enterotoxin B is a chemical (toxin) produced by a tiny creature (bacteria). Not surprisingly experts have a short name it - SEB. The bacteria is bad enough to give you a belly ache and give you a skin disease, but what's worse is that the bacteria make a chemical - a toxin, another word for poison - really puts you out of action. It's the chemical that's called SEB. SEB gives you food poisoning and puts you in bed for a couple of weeks. It can kill, too, especially those body can't fight back well - like those with AIDS or Cancer. What happens is that SEB attacks the body's cells lining the intestines, and the cells fight back, usually winning without medical help. There are two types of SEB, one where the SEB toxin is on food and you eat it, the other where the SEB toxin is mixed with water and broken up into tiny droplets that float in the air (aerosol) and you breathe it. Breathing it is much, much worse, and, most likely, is the way a terrorist would use it. SEB is hard to destroy - boil it, dry it out, store it for a year - it'll still make you sick. No military or terrorist group has ever used SEB as a weapon, but reportedly some have at least considered them as weapons of mass destruction. If a terrorist sprayed SEB in air in a crowded building or at a football game it would make thousands sick and probably kill a few. And the victims would be sick for a couple of weeks.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual SEB attack without having victims with symptoms or some days or even weeks after the SEB attack with many victims with symptoms.

SYMPTOMS: You'll probably live, but you'll be very sick for about two weeks.

Breathing: About 1-12 hours after breathing tiny droplets of SEB, you'll feel fever, headache, and chills, and you will cough. In bad cases you'll have chest pain and your lungs could fill with fluid making it hard to breathe, and your blood pressure could fall. In the very worst cases, when you breathe a lot of SEB, you'll die.

Eating: if you eat something with SEB on it, you'll feel nausea, vomiting, and diarrhea.

THE BODY'S REACTION: When the SEB gets inside you, they attack the cells along your intestines. In fighting this attack, the cells make chemicals that make you sick.

VACCINATION: There's no vaccine for SEB although medical people are hard at work developing vaccines.

HOW TO RESPOND TO SEB ATTACKS

HISTORY: No country or terrorist group has ever used SEB, but there have been reports that both the United States and Russia considered it as a weapon of mass destruction. SEB would make people sick for a couple of weeks, and kill a few, so it's really more of an incapacitating agent rather than a killer.

HOW BAD IS IT? It takes a tiny amount of SEB to make you sick and unable to work for a couple of weeks. If you breathe a lot more, you might die, especially if AIDS or Cancer has weakened your body. Just imagine the disruption terrorists could cause if they made everyone at the beach sick for a couple of weeks and killed some of them. The good part is that it can't be spread from victim to victim, and being only a toxic chemical it doesn't multiply in the body like a bacteria or virus does.

DECONTAMINATION: Diluted household bleach (10%, or one part bleach to nine parts water) makes a good decontaminating agent. Keep people out of the contaminated area, and keep them from eating or drinking contaminated food. Remove contaminated food and dispose of it properly.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets of toxin. If the victim can't move, decontaminate without touching and without entering the hot zone.

- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't enter the hot zone without a filter mask, and don't get anything from the victim on you. Unfortunately there is no easy test method (paper test strip or detector) for SEB. Just in case you have touched the contaminated food, shower and change clothes. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny particles floating in the air that contain SEB will not be spread throughout the building.

If you are responding when people are already sick from SEB, advise victims to be clean, boil water and cook food, drink lots of fluids and see their doctor if symptoms appear. For victims with reduced response or the very young or very old, advise them to contact their doctors at once because their life is in danger.

DIAGNOSIS: Medical people diagnosis SEB by their symptoms and the fact that large numbers of people get sick at the same time. Diagnosis is hard because the symptoms are similar to many other diseases and laboratory work is not very helpful.

EXPOSURE TREATMENT: All that you can do for victims is to make them comfortable and get them to the emergency room,

particularly AIDS or Cancer has reduced their body's normal resistance. Interestingly, that's all doctors do too -at most treat the symptoms because there's no direct treatment for this disease. In very bad cases doctors will put victims on machines to help them breathe, and give them fluids. Antibiotics don't work against the chemical toxin.

If you are responding when SEB symptoms appear, tell victims to drink lots of fluids. Tell those with reduced resistance to immediately contact their doctor.

EVACUATION: If you are responding at the time of the SEB attack, evacuate the hot zone - the SEB droplets can float in the air for some time.

If you are responding at the time symptoms appear, you don't need to evacuate the area.

CLEAN UP: If you are responding at the time of the SEB attack, discard all contaminated food and drink and while wearing respiratory protection you can clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

If you are responding at the time the SEB symptoms appear and you know where the SEB attack took place, discard all contaminated food and drink and while wearing respiratory protection you can clean up surfaces with household bleach and people with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

TULAREMIA

(too-lar-eem-ee-a)



WHEN YOU RESPOND -



- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them.
- Unless you have breathing protection,
stay out of the hot zone
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.



TULAREMIA

(too-lar-eem-ee-a)

DISCUSSION

INTRODUCTION: Tularemia is a rare bacteria disease in people but infects 200 kinds of animals, from ticks and insects to farm animals and many wild furry animals. People get it from contaminated food, animal waste, and tick bites. Incredibly, there are less than 200 cases a year in the U.S., and with antibiotics 99% or more live. Even without treatment most survive. So why is Tularemia dangerous? The answer is simple - it doesn't take much to make you sick, especially if you breathe it - as little as 10 Tularemia bacteria can make you sick. And of all the ways to get it breathing it is the most dangerous. The Tularemia bacteria are strong and can be converted into weapon by mixing it into liquids and making tiny droplets that float in the air (an aerosol). And since few U.S. doctors have ever treated someone with Tularemia, and the early symptoms look like other diseases, Tularemia would make a great weapon. Tularemia is an old disease, discovered in 1837 in Japan and named in 1911 for a county in California. There are reports that Russians sprayed it on the Germans during the battle of Stalingrad (but Tularemia infected both sides and may have been simply a disease outbreak coming from the battle). We do know that the Japanese tested Tularemia during WW II and that both the U.S. and Russia weaponized it after WW II. Fortunately it's almost impossible to get Tularemia from another victim. There are six different kinds of Tularemia depending on how the Tularemia bacteria enter the body - it attacks the lungs, skin, eyes, glands, throat, and entire body (a typhoid-like disease). But since the only way to make Tularemia into a weapon is to make it into tiny liquid droplets that float in the air (aerosol) to attack the lungs, we'll concentrate on that form.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Tularemia attack without having victims with symptoms or some days or even weeks after the Tularemia attack with many victims with symptoms.

SYMPTOMS: Tularemia has six types, attacking the lungs, skin, eyes, glands, throat, and entire body (a typhoid-like disease), but as a weapon of mass destruction we need to worry about only the lung form. When you breathe Tularemia, symptoms appear after 1-21 days. These symptoms include: fever, chills, headache, fatigue, coughing, vomiting, chest pain, bronchitis, and pneumonia. It can also attack the entire body and you feel bad all over. To confuse things, some victims have problems all over their body but not in their lungs.

THE BODY'S REACTION: When Tularemia gets into the body by breathing in the bacteria (weaponized Tularemia will probably be spread as bacteria in tiny droplets floating in air (aerosol)), the bacteria enters lung cells, multiplies, and kills lung cell. The body has cells that eat the bacteria, and in most cases win and the victim lives. Antibiotics help the body fight by killing Tularemia bacteria. If the bacteria spread, you have problems all over your body. Ultimately it's this form that kills you rather than the damage it does to your lungs.

VACCINATION: Right now there is no vaccine for anyone. This is complicated. The Russians developed a vaccine and gave it to a good part of their population. Unfortunately, the vaccine became useless after years of use and doesn't work anymore. The U.S. developed a vaccine and gave it to people working in labs on Tularemia, but not to the general public. This vaccine is no longer approved or used even for lab workers. About all that we can say is that there's no effective vaccine anywhere in the world but people are working on one.

HOW TO RESPOND TO TULAREMIA ATTACKS

HISTORY: This is a rare disease in the U.S. but not so rare in other parts of the world. It's already been weaponized, and Russia may have used it in WW II. Both the U.S. and Russia made effective weapons out Tularemia (the U.S. destroyed all stockpiles in 1973, and the Russians made the Tularemia they used resistant to antibiotics). And it doesn't take very much to make you sick - about 25 bacteria could kill you, much less than a pinhead. Most doctors haven't seen this disease before so recognizing it and treating it may be a problem. So a Tularemia attack could be devastating.

HOW BAD IS IT? Simply put, it's bad. With the best medicine it's only 1% fatal, but without antibiotics it's up to 50% fatal. And those who survive may take months to get better. It

doesn't take much to get the breathing form, maybe 25 bacteria, in a droplet so tiny you can't even see it. There's no vaccine, and Tularemia is resistant to some antibiotics, and we should expect the weaponized type to be resistant to many antibiotics. It's a really big threat to our country; even the victims who survive will really be knocked out.

DECONTAMINATION: You kill Tularemia with common disinfectants like bleach. If it gets on skin and clothing, even soap and water will kill it. The hard part is knowing that there's been a Tularemia attack, because it takes 1-21 days for symptoms to appear. Once the symptoms appear you have to get the victims to a doctor for antibiotics. But if you immediately know there's been a Tularemia attack (for example, a terrorist announces that he's made a Tularemia attack in your area), Tularemia decontamination is important.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets that have the bacteria. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't get anything from the victim on you, and wear at least a filter mask to keep out the tiny droplets containing the Tularemia bacteria. Unfortunately there is no easy test method (paper test strip or detector) for Tularemia - it takes a medical laboratory to find out whether a victim has Tularemia. Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny droplets floating in the air that contain Tularemia will not be spread throughout the building.

If you are responding when Tularemia symptoms appear, you don't have to worry about decontamination. Just get the victim to the emergency room and let the doctors take over from there.

DIAGNOSIS: Medical people diagnosis Tularemia by a variety of laboratory tests that take days before they get an answer. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: Decontaminate the victims and get them to the emergency room. Be sure to decontaminate yourself.

If you are responding when Tularemia symptoms appear, get the victims to the doctor. Unfortunately, in most areas in the U.S. there's little experience in treating Tularemia victims. Medical authorities recommend antibiotics; there are no vaccines. As a responder your job is limited to getting victims to the emergency room without the victim coughing or getting liquids from his wounds on you - these liquids contain the Tularemia bacteria.

EVACUATION: If you are responding at the time of the Tularemia attack, get everyone out of the hot zone immediately.

If you are responding at the time Tularemia symptoms appear, you don't need to evacuate.

CLEAN UP: If you are responding at the time of the Tularemia attack, decontaminate things with household bleach, and decontaminate people with diluted household bleach (10%, or one part bleach to nine parts water). If you don't have bleach, use soap and water.

If you are responding at the time Tularemia symptoms appear, you don't have to clean up.



TYPHUS FEVER

(tie-fuss fee-ver)

WHEN YOU RESPOND -

- Get medical help immediately.
- Avoid contact with possible victims and anything that might have come in contact with them, especially clothing.
- **Don't** let anyone leave the hot zone - health authorities must talk to those who may have been exposed.
- Notify the FBI and local health authorities.



TYPHUS FEVER

(tie-fuss fee-ver)

DISCUSSION

INTRODUCTION: Typhus fever is a disease that people and fleas get (Typhus fever is very different from Typhoid fever, even though they sound the same). Typhus fever is the name of disease that tiny single cell creature (bacteria) that makes people sick. Rats can have the bacteria inside them but will never get Typhus fever - but they do give Typhus fever to lice, which give the disease to people. When fleas bite these rats they get the disease, and then the fleas give it to people. There are many diseases closely related to Typhus fever, but this is the one that killed three million people in both WW I and another three million in WW II. People can't get it from other people, only lice, and since people in the U.S. don't often get lice (simple bathing and washing your clothing will pretty much eliminate lice), and they don't live closely with rats as they do in some poor countries, Typhus fever isn't much of a problem in the U.S. It's hard to weaponized Typhus fever because you would have to infect lice (they die about 10 days after they get the Typhus bacteria) and somehow spread them widely. And without rats for the lice to live on the sick lice die in 10 days and the biological attack dies too. Before antibiotics the Typhus death rate was high, but with antibiotics it's not much of a killer. The only problem is that since U.S. doctors aren't familiar with this disease, they will have trouble recognizing it. No one has every made Typhus fever into a weapon (although someone mailed ticks to potential victims; ticks carry a related disease; apparently the terror attack failed, but unfortunately it showed the possibilities!). But where there is poor sanitation or where things break down like in a major war, in a famine, in refugee camps, or in prisons, Typhus fever is a real problem. If some group or country

figured out how to weaponized Typhus fever it would be a problem because it could make a lot of people sick without really killing them - temporarily preventing them from fighting and disrupting civilian life. There have been many outbreaks over the years involving up to several thousand people. Fortunately ordinary cleaners like bleach kill the Typhus fever bacteria.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Typhus fever attack without having victims with symptoms or some days or even weeks after the Typhus fever attack with many victims with symptoms.

SYMPTOMS: About one or two weeks after you get the bacteria from lice, you get fever and chills, headache, muscle ache, skin rash, depression, delirium, coughing, weakness, and swollen lymph nodes. Many other diseases have similar symptoms, unfortunately, so diagnosis is hard. If untreated, Typhus fever can become really bad, including kidney failure, gangrene, and a pneumonia-like disease. In the worst case people die.

THE BODY'S REACTION: The Typhus fever gets into the body from lice that have Typhus fever. The bacteria invade the cells of your body and reproduce, killing those cells. The body fights back, which causes some of the symptoms, and the bacteria gives off poisons (toxins). Antibiotics help the body kill the attacking bacteria; without that help the body has a harder time fighting back. You'll almost always live if you get the antibiotics. Once you have lived through Typhus fever, you fully recover, but the bacteria can live on inside you and years later you can come down with a milder type of Typhus fever - the body, even with antibiotics, can't always kill all of the Typhus fever bacteria.

VACCINATION: There is no approved vaccine for Typhus, but there is an experimental one for military people. Medical people are trying to develop a vaccine that can be given to civilians as well.

HOW TO RESPOND TO TYPHUS FEVER ATTACKS

HISTORY: This is an ancient disease - almost 2500 years ago Typhus fever struck Athens during wartime, killing a large number of people, and some historians say changed history. Three million military and civilians died in WW I and another three million in WW II. Typhus fever has even changed history - Napoleon lost most of his men to Typhus fever when he invaded Russia. So if terrorists weaponized Typhus fever it could be horrible. Since the number of reported Typhus fever victims in the US is very low but this means that doctors may not recognize this disease - they need lab tests to see if you have it.

HOW BAD IS IT? The Typhus fever bacteria are very effective in giving you the disease - but it can't be sent through the air or drinking water, it must come from lice. It's bad enough to kill people if they are old (a 60% death rate if untreated) or have low resistance to disease - but less than 1% die from it with treatment.

DECONTAMINATION: Fortunately, Typhus fever is not hard to kill, using common disinfectants like bleach. The hard part is knowing that there's been a Typhus fever attack, because it takes 10-40 days for symptoms to appear.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. You should wear at least a filter mask to keep from breathing the tiny droplets of toxin. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: If you are responding at the time of the attack, you have to be careful! Don't get anything from the victim on you. Unfortunately there is no easy test method (there are no test strips or detectors) for Typhus fever - it takes a medical laboratory to find out whether a victim has Typhus fever. Shut

off heating, ventilation, and air conditioning (HVAC) systems so that the tiny droplets floating in the air that contain Typhus fever will not be spread throughout the building.

If you are responding when Typhus fever symptoms appear, you don't have to worry about decontaminating the victim. Advise the victim to go to the emergency room.

DIAGNOSIS: Medical people diagnosis Typhus fever by a variety of laboratory tests that take days before they get an answer. Diagnosis is hard because the symptoms are similar to many other diseases.

EXPOSURE TREATMENT: If you are responding at the time of the Typhus fever attack, tell those who may have been exposed talk to medical people so they will know what symptoms to look for. Since it takes so long for symptoms to appear, there really is no rush.

EVACUATION: If you are responding at the time of the attack, you have to be careful! Evacuate the area, and if you have level A, decontaminate. Otherwise, keep people away until equipped responders can arrive.

If you are responding at the time symptoms appear get the victims to the hospital. By the time symptoms appear, most lice are dead from Typhus fever. But just in case be sure to decontaminate yourself - you might get lice on you.

CLEAN UP: At the time of the Typhus fever attack you should decontaminate the area if you have level A. Otherwise, keep away - you don't want to get lice on yourself.

At the time Typhus fever symptoms appear and you know where the Typhus fever attack took place, you should decontaminate the area if you have level A. Otherwise, keep away - you don't want to get lice on yourself.



VIRAL ENCEPHALITIS

(vie-rel in-seff-a-lie-tiss)

WHEN YOU RESPOND -

- Keep people away.
- Immediately call for medical help.
- Don't touch victims or anything the victims might have touched
- Avoid contact; stay upwind and evacuate.
- Notify the FBI, local health authorities. and pollution agencies.



VIRAL ENCEPHALITIS

(vie-rel in-seff-a-lie-tiss)

DISCUSSION

INTRODUCTION: Viral Encephalitis is a group of viruses that attacks the brain and spinal cord - your nervous system. It contains many virus diseases - some familiar ones are measles, mumps, polio, chicken pox, Herpes Simplex, HIV-1, rabies, and at least one kind of flu. Others are less familiar like Lassa fever, St. Louis Encephalitis, Dengue fever, and West Nile disease. Unless you know that the Viral Encephalitis you are facing is not very dangerous, you have to treat it as if it was a really bad one. It's hard to say much that applies to all these diseases, since they range from about 0% fatal to 100% fatal if not treated, and each has a different virus that causes a different disease with different symptoms. But what is common is that they all attack your nervous system and you get them from the fluids of animals - mosquito bites, tick bites, animal bites, and bird bites. Fortunately no government or terrorist has turned any of the Viral Encephalitis diseases into a weapon, but if they did make it into a weapon and they picked a bad disease, we would be in big trouble! If someone changed Viral Encephalitis so that it can be spread in small droplets that float in the air (aerosol), it would be a very dangerous weapon. And we know it can be done - Mother Nature has already done it! Where there are many rabid bats in a cave or building the air is usually full of small droplets containing the rabies virus; you can get rabies without being bitten.

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual Viral Encephalitis attack without having victims with symptoms or some days or even weeks after the Viral Encephalitis attack with many victims with symptoms.

SYMPTOMS: These range from essentially nothing to a mild cold all the way up to serious sickness, brain damage, paralysis, and death. After a few days to a few weeks you may feel some of these symptoms: Fever, headaches, fatigue, neck ache, nausea, vomiting, confusion, trouble talking, and strange behavior. If it's really bad you may become paralyzed, go into convulsions, lose consciousness (Viral Encephalitis is sometimes called sleeping sickness), and die. On the other hand you might not know you have anything!

THE BODY'S REACTION: When Viral Encephalitis gets inside you, it goes to the brain and the spinal cord. If it's bad, your brain swells, your brain bleeds, and your nerves are damaged. This is not good. It can lead to permanent nerve and brain damage, and you can even die. But if it's a mild case you may not even know you're sick, or you may think you just have the flu.

VACCINATION: There are vaccines for some Viral Encephalitis diseases - polio, measles, rabies - but no vaccines for most of them. Work is continuing, but you can't depend on a single vaccination to protect you from all Viral Encephalitis diseases, and there are no vaccines for most of the Viral Encephalitis diseases. If terrorists turn a Viral Encephalitis disease into a weapon the world will really need a vaccine but vaccines for every Viral Encephalitis diseases are years away.

HOW TO RESPOND TO VIRAL ENCEPHALITIS ATTACKS

HISTORY: Viral Encephalitis includes very old diseases like polio as well as brand new ones like West Nile disease. Fortunately, no country or terrorist group has made Viral Encephalitis into a weapon. Some of the Viral Encephalitis diseases are so horrible that they're probably too horrible for military use (but that might be exactly what a terrorist really wants), and converting them to weapons use would be difficult and dangerous. They would have to change the virus some to make it into a weapon, but if they could we'd be in trouble.

HOW BAD IS IT? It takes a tiny amount of Viral Encephalitis virus - much, much less than a pinhead - to make each victim sick, so a few ounces could kill many, many people in crowded areas, and cause wide spread panic. And for some of the diseases the virus spreads from person to person by body fluids. Since that could include you, too, be careful! Even if it doesn't kill, it could cause massive panic.

DECONTAMINATION: If someone turned a Viral Encephalitis disease into a weapon it probably would be as tiny liquid droplets in the air (aerosol). Some Viral Encephalitis disease viruses can live outside people and when they multiply in the body they can leave the body in body fluid - sneezes, coughing, feces. Touch

any of these body fluids and you will get Viral Encephalitis too. So the first thing is to protect yourself. Unless you know that the Viral Encephalitis you are facing is not very dangerous, you have to treat it as if it was a really bad one.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: You have to be careful! Unless you know that the Viral Encephalitis you are facing is not very dangerous, you have to treat it as if it was a really bad one. Don't get Viral Encephalitis on you or breathe/swallow the tiny droplets in the air. Remember that the victim's clothes or body may have body fluids containing the virus; touch these body fluids and you'll probably get Viral Encephalitis. If you think Viral Encephalitis spores might be in the area, stay out until you put on Level A, including protective clothing and respiratory protection. There is no way for you to test to see if Viral Encephalitis virus is there.

Shut off heating, ventilation, and air conditioning (HVAC) systems so that the tiny droplets floating in the air that contain Viral Encephalitis will not be spread throughout the building. You usually can't "catch" Viral Encephalitis from a person with Viral Encephalitis, but you can for some of them. So you have to act like the victim could infect you.

DIAGNOSIS: Unfortunately the first symptoms of Viral Encephalitis often look like symptoms from other diseases. Only a doctor can tell after a series of high tech tests, nothing you as a responder can do. So if you are exposed you must see a doctor.

EXPOSURE TREATMENT: If you are responding at the time of a Viral Encephalitis attack, make sure those who may have been exposed talk to medical people so they will know what symptoms to look for. If you think you have been exposed, wash with warm water and soap to remove the spores. If possible, take a shower and wash your clothes.

If you are responding when Viral Encephalitis symptoms appear, make the victims comfortable and get them to a hospital for treatment.

EVACUATION: At the time of a Viral Encephalitis attack, evacuate people from the site of the attack, and decontaminate them.

At the time Viral Encephalitis symptoms appear, evacuation isn't necessary.

CLEAN UP: At the time of a Viral Encephalitis attack clean up is a possibility. The Viral Encephalitis virus doesn't live in the soil or air - animals carry the virus to people. But a terrorist might make a weapon using virus in tiny water droplets that float in the air (aerosol). So there might be value in cleaning up Viral Encephalitis virus. Clean up is not the first responder's job; clean up is dangerous, and only medical people can decide whether or not to clean up is a good idea. They might decide to prevent people from entering a contaminated area and let the Viral Encephalitis virus die.

At the time symptoms appear, there should be no Viral Encephalitis virus in tiny water droplets that float in the air (aerosol), and the virus doesn't live in the soil or air. So there's nothing to clean up except body fluids from victims. Since these fluids can contain very dangerous Viral Encephalitis virus, medical people will have to decide whether clean up is a good idea.

VIRAL
HEMORRHAGIC
FEVERS



(vie-rel hemm-oh-rah-gick fee-ver)

VHF

WHEN YOU RESPOND -

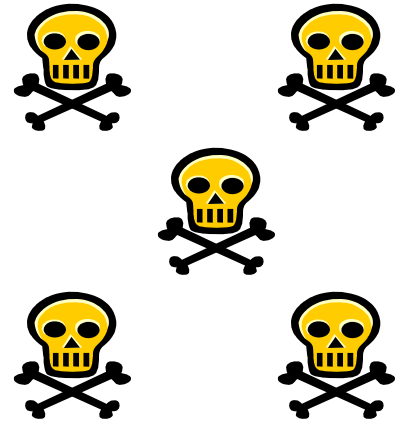
- Keep people away.
- Immediately call for medical help.
- Don't touch possible victims or anything that might have come in contact with them.
- Don't let anyone leave the hot zone - health authorities must brief those who may have been exposed.
- Notify the FBI and local health authorities.

VIRAL HEMORRHAGIC FEVERS

(vie-rel hemm-oh-rah-gick fee-ver)

VHF

DISCUSSION



INTRODUCTION: Viral hemorrhagic fevers (VHF) are a group of about a dozen viruses that cause mild to fatal disease. The Ebola virus, yellow fever, and dengue fever are VHF's, for example, and some of these VHF's are very dangerous. These live naturally and reproduce in mammals, birds, and insects and their close relatives, and not in humans. But when you come in contact with infected mammals, birds, or insects, you can catch these diseases. In most cases you catch it from another person, particularly when you contact a victim's body fluids. Usually each virus lives in only one type of mammal, bird, or insect, so that in nature each virus is limited to where that mammal, bird, or insect lives. So the virus is limited to one area rather than the whole world. But infected people can and have quickly traveled thousands of miles by airplane and infected people

where the disease was unknown. And a terrorist could release a virus anywhere in the world. The weaponized form of VHF will probably be the virus in tiny droplets that float in the air (aerosol).

Since there's some time between getting the disease and getting the symptoms, first responders will either face the actual VHF attack without having victims with symptoms or some days or even weeks after the VHF attack with many victims with symptoms.

SYMPTOMS: The first symptoms resemble other diseases. Since VHF includes many different diseases the symptoms vary a lot, but within a few days to a few weeks of exposure you begin with fever, tiredness, dizziness, aches, and weakness. Later you may have vomiting, diarrhea, abdominal pain, sore throat, severe itching, jaundice, and rash and chest pain. In bad cases the virus stops the blood from clotting or makes body tissues lose blood, so you will bleed under the skin, in internal organs, or from the mouth eyes, ears, and other body openings. That's where the name **hemorrhagic** comes from - you hemorrhage (bleed). Rarely do you die from blood loss, though. You die from shock, breathing problems, kidney failure, seizure, and collapse of the circulatory system. This is a pretty miserable set of symptoms. Your chances of survival depend on the specific virus, but range from 100% down to only 10%; if you get medical help your chances significantly improve. But even if you survive, you can still have problems - some types of VHF's do permanent damage - blindness, kidney problems, high blood pressure, and/or deafness. Of course, all of this depends on the specific VHF and sometimes even how you got the VHF!

THE BODY'S REACTION: The VHF viruses cause the blood vessel walls to leak. Eventually you bleed internally and blood comes out one or more body openings. Blood pressure falls, and the blood system can no longer do what it's supposed to do. This can lead to breathing problems and damage to the nervous system. Eventually the body fails because there's not enough blood to get oxygen to the body.

VACCINATION: There are vaccines for yellow fever, Argentinean hemorrhagic fever, and Crimean-Congo hemorrhagic fever, and others are on the way. But as a responder you can't depend on these because you have to take them in advance. These vaccines don't work once you have the disease. And besides, not only do many of these viruses change, any terrorist virus will probably be different and worse than the ones in nature, so vaccines available today may not work against these new varieties.

HOW TO RESPOND TO VIRAL HEMORRHAGIC FEVERS ATTACKS

HISTORY: This is a group of virus diseases that can be very dangerous. It's not so much that these viruses are new (some

are centuries old in people) but rather that some very bad ones are spreading to people for the first time. Of course, this means that we do not have any natural resistance to them. Most seem to come from tropical areas, but if a victim travels to other areas including the U.S. the virus can spread in colder areas. People in Australia and New Zealand have released rabbit VHF into the wild to kill off the wild rabbit population, proving that VHF can be used effectively as a weapon, at least against rabbits. Both the U.S. and Russia made VHF's into military weapons, and VHF's might well make an effective terrorist weapon (reportedly, Japanese terrorists tried to get Ebola virus but failed, so they used Sarin gas instead in the Tokyo subway).

These viruses live in mammals, birds, and insects (plus their relatives like spiders and ticks), where they don't seem to do any serious harm. Somehow the virus spreads to a person, and then from person to person. Usually the personal contact has to be close, family or medical people, who get the virus from body fluids from the victim. Some or all VHF's can live for at least a short time in tiny liquid droplets (aerosols) and infect people through the air. Finally, some VHF viruses are sexually transmitted.

Most medical efforts has gone into wiping out the rats, insects, and ticks that carry VHF's rather than fighting the disease directly. Unfortunately, this won't be too helpful in a terrorist attack.

A few of these VHF's are widespread, with 100 million people a year getting dengue fever. Others do not affect many people; only 40 people have had Marburg fever since its first victim in 1967.

HOW BAD IS IT? It's bad enough to kill millions if they don't get medical treatment. Usually the disease spreads to one person from a mammal, bird, or insect and then spreads between victim and those caring for the victims, particularly if they touch the victim's body fluids, so it's easy to catch a VHF. Depending on the specific VHF, your chances of dying are from 0% to 90%, but the odds are better if you get medical help.

These VHF's often spread in hospitals even with trained medical people - they are that easy to spread. The message is that if medical people have problems keeping these VHF's from spreading, you have to be very careful yourself!!

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training, don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Decontaminate with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth. Wash off the diluted bleach solution after 15 minutes.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.

RESPONSE: You have to be careful! Don't get anything from the victim on you - wear gloves and a mask at least, Level A would be better. Unfortunately there is no easy test method (paper test strip or detector) for VHF's. Don't let anyone get away. Medical people have to talk to them about the possibility that they have been exposed to VHF's and what they need to look for and do, and may want to quarantine them. Since the VHF virus can live for a time outside the body, disease experts may order decontamination.

Above all, immediately call for medical assistance.

DIAGNOSIS: Since symptoms resemble other diseases like the flu (especially initial symptoms), you really can't diagnosis VHF's from the symptoms. Medical people diagnosis VHF's by looking

for the virus in the blood or for the chemicals that the virus and the body produce when they go to war with each other.

EXPOSURE TREATMENT: If you are responding at the time of the VHF attack, immediately call for medical help. Wear level A. Unfortunately for most of these virus diseases about the only treatment is to have the patient rest, give fluids, blood and blood clotting chemicals, protect the victim from other infections, and make sure the victim has enough salt and water in the blood. There are some medicines that actually do well against some VHF viruses, and some victims get better when given blood from victims that have recovered. Remember that you have to isolate the victim to prevent this disease from spreading. Make sure those who may have been exposed talk to medical people so they will know what symptoms to look for. If you think you have been exposed, wash with warm water and soap to remove the spores. If possible, take a shower and wash your clothes.

If you are responding when VHF symptoms appear, immediately call for medical help. Evacuate people from the site of a VHF incident, and don't let them leave. They must get immediate medical help if they are to have a good chance of living.

EVACUATION: At the time of a VHF attack, wear level A or stay away. Because many VHF's are so easy to spread from one person to another, you really shouldn't try to evacuate anyone from the hot zone until medical help arrives. Keep people from going into the hot zone (including yourself), and keep those in the hot zone there until medical help arrives. Try to keep anyone who might be exposed from leaving so medical personnel can talk to them about possible symptoms.

At the time Plague symptoms appear, get immediate medical assistance. Don't let anyone enter the area.

CLEAN UP: At the time of the VHF attack you should decontaminate everything that might have come in contact with VHF - but only if you have level A. Clean up with diluted household bleach (10%, or one part bleach to nine parts water), but don't let any get in the victim's eyes, open wounds, or mouth). If you don't have bleach, use soap and water.

At the time VHF symptoms appear, Keep people away from the site of the Plague release. Medical authorities will determine whether any other action is needed.

INTRODUCTION TO DIRTY BOMBS

You may have to respond to a dirty bomb.

What's a dirty bomb? It's simply some radioactive material wrapped around an explosive. When you set off the explosive the radioactive material is blown into the air, contaminating everything it touches. Most of the radiation damage will come from breathing radioactive dust (alpha and beta radiation). Even tiny amounts of this dust inside your body can kill you quickly. And even if you can avoid breathing and swallowing this radioactive dust you can still be hurt or killed; invisible radiation from radioactive materials (gamma radiation) can do a lot of damage.

A dirty bomb is more a weapon of **mass disruption** than a weapon of **mass destruction**. Dirty bombs are bad for the panic they would cause and the dollar cost from the radioactively contaminated city, including clean up costs. Those immediately killed by a dirty bomb would almost certainly die from the explosive whether there were radioactive materials or not; the radioactivity won't immediately kill many by itself. The radioactive materials dispersed through the air would get on the ground and buildings. People, though, would panic and that panic could lead to large numbers of deaths and injuries. These radioactive materials, if not cleaned up, could lead to cancers, particularly lung and bone cancers. But the numbers of delayed deaths would be relatively small, with your chances of getting cancer increasing by only a few percent at most - **but only if you lived in a contaminated area that wasn't cleaned up**. Obviously you wouldn't be allowed to live there before it's cleaned up, so the delayed deaths from a dirty bomb would be minimal.

What a dirty bomb isn't: A dirty bomb isn't an A-Bomb or an H-bomb. It doesn't work that way. You start with radioactive materials and spread them out using simple dynamite or TNT. You aren't going to kill millions with this or destroy an entire city. But you will panic people and cost large amounts of money, and prevent people from using a part of a city until it's cleaned up.

Atomic/Hydrogen bomb versus a dirty bomb: A-bombs and H-bombs bombs change atoms in a tremendous explosion, giving off vast amounts of heat and form large amounts of radioactive material. These bombs give off little radiation until they're exploded. A dirty bomb is much different. A dirty bomb doesn't change atoms or create radioactive material, it just spreads the radioactivity around that the terrorist built into the bomb. It

has explosives like dynamite or TNT with radioactive material packed around it. When the explosive goes off, the radioactive material flies out and gets on people, buildings, and the ground. Again, A-bombs and H-bombs bombs create radioactive materials, but dirty bombs have only the radioactive materials they start with.

There's a practical limit to the amount of radioactive materials you can have in a dirty bomb. If you have a lot of radioactive material, the radioactivity it gives off will kill the people building the dirty bomb and carrying it to the target, unless they surround it with large amounts of lead (shielding). True terrorists usually don't seem to mind about killing themselves, but they can actually die only a few hours after radiation exposure if the amount of radiation is high enough. Now if you decide to put enough lead around the dirty bomb so you can live long enough to set it off, you would have something so big and heavy you'd have a hard time moving it to the target. And with enough radioactive material you will actually melt the bomb (radioactive materials give off heat). So terrorists can't make a dirty bomb too big.

Why a dirty bomb? A dirty bomb is solely a terrorist weapon. Years ago several governments looked at making dirty bombs but rejected the idea because the initial damage is not much worse than the explosive used to spread the radioactive materials. And the radioactive materials are a problem. They found that to do the most damage you need to powder the radioactive material to dust size so it spreads out when you set off the bomb. That way people breathe the dust-sized radioactive particles, which cause lung cancer. Fortunately, while governments can take solid pieces of radioactive materials and make them into a powder, it's not something a terrorist can do safely in a basement.

Put another way, the more radioactive material in the bomb, the more dangerous it is to the terrorist. The smaller the amount of radioactive material, the less damage and disruption it will cause to the terrorist's target.

As a military weapon it's a loser, but to a terrorist it's great - panic, after all, is what a terrorist wants, and even a small dirty bomb will scare people and cause panic. The clean up costs will be huge, and might even involve tearing down many buildings, and will probably take years. And until clean up is complete, nobody would want to enter the contaminated area. Imagine losing parts of lower Manhattan or downtown Washington for several years! That's really the terrorist's goal.

To sum it up, a dirty bomb has got to be portable, not immediately fatal to the terrorists putting it together and carrying it to the target site, and not melt itself. That's why

dirty bombs are not going to kill and injure millions of people. But they will cause panic and cost money.

Why not an atomic or hydrogen bomb? Of course, a terrorist would prefer an A-bomb or H-bomb. Making one, or even just making the material for the bomb, takes more money and skill than terrorists have. But unless the terrorist can buy or steal an A-bomb or H-bombs bomb, a dirty bomb is the most the terrorist can do. The high explosive is easy for anyone to get, but the radioactive material is more difficult. Hospitals, food irradiation facilities, and of course nuclear reactors and their waste facilities have significant amounts of radioactive materials. And a terrorist might be able to buy radioactive materials from an unfriendly government or from someone associated with a government. Still, safely handling radioactive materials takes skill and equipment, and that may be why there's never been a dirty bomb incident. But don't count on it not happening in the future!

How bad is it? Explosives experts can easily calculate the effects from the high explosive itself. These effects depend on the type of explosive and the quantity of the explosive. But if we figure that the dirty bomb would have a hundred pounds of high explosive at the most we would be looking at no more than damage to a few buildings.

Turning to the radioactive material, very few people (if any) would be immediately killed from radiation. Some people close to the dirty bomb might have radiation poisoning. The real problem comes from the radioactive material in the air that would fall onto the ground and buildings. This is similar to the radioactive fallout from A-bomb and H-bomb tests in the atmosphere. The danger would depend on the wind direction and speed and the amount and type of radioactive material. Of course, the farther away from the bomb the lower will be the amount of the radioactive material on the ground. Even close up we're not looking at anything that would immediately kill you. In fact, calculations for one case suggest that within a few blocks of the bomb, your chances of getting cancer would increase by 5% over the next 40 years, assuming no clean up and you continue live or work there over the next 40 years, which no one will do, until clean up is complete. Even here there's a question. Radiation below a certain low level may well not be a problem (that is, there may be a level that, if you're below, you won't get cancer - experts call that the threshold limit value). Experts just don't know for sure. So it's possible no one would get cancer. And it's clear that the further away from the bomb you are, the less chance of cancer.

Another estimate is that a dirty bomb could cause four extra cancers per 100,000 people exposed over the life of the 100,000, if there's no clean up. That's safer than riding in a car.

Evacuation would be a problem even if there were no panic. Panic could kill more people than the bomb itself. And the area down wind of the bomb would remain unusable until the government decontaminates the area.

We can expect a lot of clean up after a dirty bomb. This might involve dirt removal, water washing buildings, streets, and sidewalks, sand blasting buildings to remove the very tiny radioactive particles stuck in the outer walls of the buildings, and even knocking down buildings that couldn't be cleaned. The government would have to bury the radioactive dirt and building materials. This could cost billions. And until the clean up is complete, to be on the safe side only protected clean up workers should go into the hot zone - and since the hot zone could include buildings, airports, subways, bridges, and ports, a dirty bomb could have a devastating economic effect. This would be more than just inconvenient and would hurt the economy.

But remember that Hiroshima and Nagasaki are safe for people now, despite the fact that the both atom bombs released much, much more radiation than a dirty bomb could. Clean up is possible!

The important thing to remember is that the panic from a dirty bomb is the real problem. Everybody will want to get out as fast as possible. The authorities have ample time to decide how to decontaminate the city and ample time to do it; clean up isn't your job. The job for the first responder is to take care of those injured in the explosion and to get everyone out without panic.

History: During World War II when it looked like building an atomic bomb might not be possible, U.S. scientists considered dispersing radioactive materials over Germany. When work showed that a bomb could be built, they dropped this idea. Several governments have looked into dirty bombs as military, not terrorist, weapons. They found that either the dirty bomb has too much lead (shielding) around it to protect the soldier from the radiation to make it deliverable, or the radioactive material is too limited to make the weapon effective. The military, of course, rejected the idea that they would build and use a dirty bombs that would give their own soldiers enough radiation to kill them or give them cancer. Terrorists might not worry about killing their own people; they might see this as just another suicide bombing. So something like this is possible as a terrorist weapon.

In 1994, Chechen guerrillas built a dirty bomb and took it to Moscow. They didn't set the dirty bomb off (in fact they built it so it couldn't go off) as a warning to the Russian

government. According to reports Bin Laden tried to get radioactive material to build dirty bombs.



DIRTY BOMBS

Equipment: You should be in Level A equipment. But at the very minimum you must have an approved filter mask to keep you from breathing radioactive dust. This is critical. Most of the radioactivity will be in the dust, and your biggest risk is breathing the dust.

Detection: Radiation is odorless and colorless - there's no way for you to figure out whether there's radiation around except by a radiation detector like a Geiger counter. Use a portable radiation detector to find out where the hot zone is. Do not go near a dirty bomb unless you can find out where the radiation is. Do not risk your life! Also, use the radiation detector to find out if people near the dirty bomb have been exposed to radiation. Don't even try to respond if no one has a radiation detector.

Evacuation: Get people out of the hot zone. The hot zone will be mostly downwind. Use portable radiation detectors to find the hot zone. Do not let people who may have been exposed to leave. Keep them in a safe, uncontaminated area for possible decontamination; medical authorities need to brief them on the possible radiation symptoms they might have.

Traffic control: Everyone will want to leave immediately, yet you'll need road space for emergency vehicles in the other direction. Traffic control will be very important. Public transportation will also be jammed, and it's important to manage crowds trying to enter railroad and subway stations in particular. Panic could kill more people than the bomb.

Keep people out: This could be a mess. There will be people trying to help, others trying to loot, some people acting like idiots. Do not let people go into the hot zone unless they are trained responders. Keep all but emergency personnel from entering.

DECONTAMINATION: This is very important, and you have to decontaminate as soon as you can. Extra minutes before decontamination might make a big difference.

- If you don't have the equipment and training don't enter the hot zone to rescue and decontaminate victims. If the victim can't move, decontaminate without touching and without entering the hot zone.
- Use clean water from any source; if possible, use a hose (spray or fog to prevent injury to the victim) or other system so that you won't have to touch the victim; don't even wait for soap or for the victim to remove clothing, begin washing immediately.
- Immediate flush the eyes with water for at least 15 minutes.
- Wash - strip - wash - evacuate up wind and uphill: The idea is to immediately wash with water, then have the victim (not you) remove all the victim's clothing, then wash again (with soap if available) and then move away from the hot zone in an upwind and up hill direction.
- Wash the victim with warm water with soap.
- Be sure you've decontaminated the victims as much as you can before they leave the area so that they don't spread the agent.
- If you get some of the agent on yourself, decontaminate yourself immediately. Even if you think you are not contaminated, be sure to thoroughly shower and change clothes as soon as you can after the incident.
- Do not leave the area until you have been checked for radioactivity.

First aid: The blast will kill and injure people. The problem is that anyone injured is likely to have radioactive material on clothing and skin. First decontaminate the victim and then give first aid. Rarely will an injured individual suffer radiation sickness symptoms immediately after a dirty bomb goes off, so your first aid will cover normal blast injuries. People will have to see a doctor to make sure they have not been hurt by radiation.

Water pollution: Radioactive materials will enter the water and make the water unfit for use. Notify pollution authorities to immediately close water intakes.

Hospitals: Hospitals are more capable of handling normal explosion injuries than radiation sickness. So in some places medical care for those with radiation poisoning will be a problem.

Potassium iodide: Swallowing Potassium iodide (KI) pills protects only one part of the body, the thyroid gland, from only one type of radioactive material, Cesium. And there might not even be Cesium in a dirty bomb. Still, it's better than nothing, and might help to reduce panic. And even with Potassium iodide the victim must leave the area and be decontaminated.

Summary: Remember: You must wear a filter mask or Level A to keep you from breathing radioactive dust! Your job is more about blast injuries than radiation injuries. Depending on the size of the bomb, hospitals could well be overcrowded with injured. Also, roads and public transportation will be jammed from the mass evacuation, so getting victims to the hospital will not be quick. You'll have to give as much first aid as you can (after decontaminating them), and then get the victims to the hospital. Panic will be your other major concern; more could die from panic than from the dirty bomb itself.

INTRODUCTION TO ORDINARY EXPLOSIVE AGENTS

You may someday respond to a terrorist incident where the weapon is an ordinary explosive. Terrorists can steal, buy, or import explosives like dynamite, C4, and even illegal fire works (terrorists can make pipe bombs from cherry bombs, which they can buy legally in some areas). The terrorist in the Oklahoma City bombing didn't used chemicals, diseases, or dirty bombs - he went low tech and used a fertilizer bomb. Think of it - no need to go to the trouble to get chemicals, deadly bacteria or viruses, or radioactive materials. All he did was get some ammonium nitrate fertilizer and fuel oil (that's why they call it ANFO, Ammonium nitrate - fuel oil) and he had a bomb that killed a few hundred men, women, and children. Actually, more people died in the Oklahoma City bombing than in any chemical, biological, or dirty bomb attack in this country; more often terrorists use ordinary explosives than these more complicated weapons. So that's why you must know the risks of terrorist's attacks using ordinary explosives.

We can't tell you in this manual what to do for all incidents. Each incident is different and the situation you'll face is too different for hard and fast rules. All we can do is to tell you what to think about before you go in. You'll probably never have all the information you need to make the perfect decision; you'll have to quickly decide what to do and then do it. Again, all we can do is to tell you what to think about before you go in.

ORDINARY EXPLOSIVE AGENTS

WHEN YOU RESPOND -

- Immediately call for medical help.
- **Don't** enter until you decide the building won't collapse on you.
- Be aware that terrorists may have left additional bombs set to go off after the first one.
- Wear at least a filter mask if not a respirator - the bombed site may have asbestos and other toxic materials.
- Be aware that terrorists may use explosives to spread chemical agents, biological agents, or radioactive materials (dirty bombs), so these agents may be there even when all you see is a "simple" explosion.



ORDINARY EXPLOSIVE AGENTS

DISCUSSION

The risks from ordinary explosive agents are real:

Building collapse: Your first reaction will be to go into the building. But the explosion may have weakened the building and you may be caught in the collapse. The building collapse rather than the aircraft impact or the fire killed most of those who died in the World Trade Center attack. And about three hundred police and fire fighters died doing their first responder duty when they entered the building. Before you go in check the building - if it looks unsafe do not enter. If you go in to save lives you may be trapped and killed. In fact, your going in might even bring down the building. And the terrorist may have planted a second bomb just to kill responders. So entry might not be the best thing to do.

Toxic debris: Many buildings contain toxic materials including asbestos. Asbestos causes cancer and other bad diseases, and breathing it is very bad for you. Some buildings contain dangerous chemicals; if a university chemistry lab were bombed, you'd have to worry about all the chemicals inside. At the minimum, you need a filter mask whenever you see dust at the scene; a respirator would be better.

Additional terrorist weapons: Terrorists have made a practice of using two or more bombs, with the others set to go off and kill responders. This happens regularly in the Middle East. And one bombing in the U.S. had a second bomb set to go off in the target building's parking lot, probably intending to kill all those in the first responders' command post. You must be careful because additional bombs could be aimed at you. This leaves you with the horrible choice of not responding and letting victims bleed to death versus going in and being killed by a second explosion. It's not going to be an easy decision.

Other types of WMD's: Chemical agents, biological agents, and dirty bombs all can have an ordinary explosive in them. In fact, a dirty bomb has to have an ordinary bomb in it. And a bomb is a great way to spread a chemical or biological agent.

So you go to an explosion incident, rush in without thinking about the possibility of chemical agents, biological agents, or dirty bombs, and you wind up a victim. You have to check for radiation, which means you have to have a Geiger counter or equivalent. Detecting chemical and biological agents is more difficult. You will have to rely on victims' symptoms, on intelligence warnings, on recent terrorist incidents, and on smell and sight; unfortunately, none of these are very reliable. If you think you have chemical agents, biological agents, or radiation involved you have to treat this as a chemical, biological, or dirty bomb attack.