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FEATURED ARTICLE

Establishing an NBC Safe Room
By The American Civil Defense Association

Much talk is heard these days about sheltering. More specifically, people are asking where they can find their "local public fallout shelter" in the event of an emergency. As a result of such inquiries, we decided to look into the matter a bit closer, especially after the director of Homeland Security suggested that citizens obtain information on the location of public facilities in their area. Our conclusion was that although each municipality and local governmental entity may have different resources available and different policies related to public use of these resources, it is our understanding that, generally speaking, the "public shelters" are not exactly public after all. Rather, it has been suggested that these sheltering facilities are reserved for officials and those in leadership positions, in an effort to maintain continuity of government in the event of disaster.

To many, this may sound like "bad" news, however, there are many, many different preparedness avenues that we, as individuals and communities, can take which offer reasonable, practical and affordable disaster preparedness and mitigation solutions, eliminating the need for public sheltering.

In fact, we have received a great number of questions concerning the construction of a "Safe Room" which can be used as shelter in the event of an NBC incident, such as a terrorist attack on American soil. There are many ways to prepare a safe room in an existing building, such as the well-known recommendation of sealing off a specific room with plastic sheeting and tape. While practical and relatively inexpensive, this option does have the potential of becoming dangerous, and even lethal, if not implemented correctly. For example, it is not enough to just close off a room, but proper ventilation must also be established to avoid dangerous CO/CO2 poisoning.

… In fact, according to one major U.S. shelter manufacturer, the three (3) most important and necessary factors to consider when designing any type of sheltering facilities are ventilation, shielding, and water supply. It is absolutely essential to have proper ventilation and filtration of air in any type of shelter to avoid disastrous and potentially fatal complications and problems resulting from the undesirable build-up of CO/CO2 inside the shelter.

The American Civil Defense Association (TACDA) now offers a small unit known as a "NBC COLLECTIVE PROTECTION UNIT" which is designed to turn any existing room in a home or office building into an NBC safe room, without the need for plastic, duct tape, calculating complex computations for determining CO/CO2 build-up levels, etc. In addition to being utilized as a family protection unit, this system is also very appropriate for protecting corporate offices, emergency operations centers, school and college classrooms, hospitals and special care organizations, government facilities, etc., as it can be easily installed into virtually any existing room.

(Continued on page 2)

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… These systems are capable of providing an adequate supply of filtered air for up to 18 persons for three months, 24 hours a day and works by drawing outside air through its bank of 6 filter medias and introducing it into the shelter area creating a slight overpressure. This overpressure is to keep any unfiltered air from migrating back into the shelter area through any structural cracks or breaches in the room.

The smaller unit, designed to accommodate up to eight persons, will turn virtually any room up to 20 cubic meters (approximately 1300 cu. Ft.) into an NBC protective safe room. The larger unit, likewise, will accommodate up to 18 persons and a room capacity up to 29 cubic meters (approximately 1800 cu. Ft.).

The system also eliminates the occupants' need to wear gas masks or biological/chemical protective clothing while in the safe room, enabling them to enjoy a safe, free and comfortable stay. This, however, would not completely eliminate the need or usefulness of such protective clothing, as they would still be needful in the event that occupants had to leave the safe room and go into exposed areas for any reason.

Perhaps one of the most impressive and important features of these units is the fact that they are light-weight and extremely easy to install in virtually any building, by virtually anyone.

The system operates from any standard 110-240 volt AC power source. In the event of a line power failure, the unit is equipped with a double-redundant emergency back up system. For the first back up, the system will automatically revert to the user-supplied 12-volt automotive/Deep-Charge battery, and when the power grid comes back on line, it will automatically re-charge the battery. When operating in "battery back-up" mode, the system should continue to function for approximately 6 to 7 hours. The second back up is a Manual Blower that can be used alternatively or in cases of a dead battery.

Retailing for well under $2,500.00, these NBC COLLECTIVE PROTECTION UNITS provide both individuals as well as corporate entities with the ability to quickly and effectively create an NBC Safe Room at virtually any structural location, at a very affordable price.

If you, your family, community or agency would be interested in obtaining an NBC Collective Protection System as mentioned above, please, contact TACDA toll-free at 1-800-425-5397 to speak with a representative.

[The points of view and opinions expressed in this article are those of the author(s) and do not necessarily indicate or reflect specific policies, opinions or view points held by any specific TACDA officers.]

CIVIL DEFENSE NEWS & OPINIONS

No Defense for Criticism on Missile Defense Testing

by Baker Spring
The Heritage Foundation, February 28, 2003

Today, the military is unable to shoot down even a single ballistic missile that is launched against U.S. territory. The Department of Defense is addressing this by planning to give a developmental missile defense system an operational capability to close this glaring vulnerability as soon as possible.

Senator Dianne Feinstein of California is very upset. In a February 21 letter to Secretary of Defense Donald Rumsfeld, she states that the system should go through a battery of operational tests before the military may be allowed to use it.

This criticism might be justified except for the fact that Sen. Feinstein's letter fails to provide an alternative approach for defending the American people against missile attacks for the foreseeable future.

The irony in Sen. Feinstein's position is that Californians are among the U.S. citizens most at risk today from a rogue state missile attack. CIA Director George Tenet confirmed, in congressional testimony on February 12, that North Korea has a ballistic missile capable of reaching the western U.S. The irony is made even more palpable by the fact that this North Korean missile has not been tested. Apparently, Sen. Feinstein thinks it is not a problem that North Korea has given a ballistic missile capable of hitting her constituents an operational capability without testing it, but objects to the U.S. military fielding a system under similar circumstances that may give the people of California a chance at being defended against this threat.

California's senior senator does not stop there, adding in her letter to Secretary Rumsfeld that, "Indeed, given the potential cost of a failure of missile defense, I believe that, if anything, it should be required to meet more stringent test standards than normally required."

Conspicuous by its absence in the letter is a detailed explanation of those costs. The fact is that the Department of Defense is seeking to give the developmental system an operational capability. It is not proposing to circumvent either developmental or operational tests. The costs in terms of questions about the ultimate effectiveness and reliability of a fully deployed missile defense system by giving the military access to the system in the interim are nonexistent. All the tests that Sen. Feinstein has requested will be conducted.

Under the circumstances, it becomes impossible to avoid the question of whether the criticisms leveled at the missile defense system are motivated by policy considerations and not on the basis of concern about whether the military will obtain an effective and reliable system. After all, missile defense critics have argued for decades in favor of the previous policy that made vulnerability to missile attack a virtue. This policy was overturned by President Bush last year and led to his December 17, 2002 decision to give the developmental system an operational capability.

Certainly, the policy of purposeful vulnerability to missile attack is consistent with Sen. Feinstein's apparent willingness to leave her constituents exposed to the North Korean threat. If this is the case, Sen. Feinstein should not hide her policy

preferences behind a technical argument about the testing process. If she believes that exposing Californians to missile attacks is a good thing for strategic stability and national security she should tell them. And she should not be surprised if her constituents disagree.

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FOCUS ON EMERGENCY MANAGEMENT AND PUBLIC SAFETY

What Every Public Safety Officer Should Know About Radiation and Radioactive Materials

By The NLECTC

This quick-reference guide for public safety personnel provides basic information about and an understanding of radiation, radiation hazards, and initial response. It is not intended to replace an agency's existing policies, procedures, or training. Agency response protocols should be developed and followed for response to suspect weapons of mass destruction incidents. This aid is not intended to serve as a response guide.

Introduction:
Radiation is part of our environment. It comes from both natural and manmade sources. Natural sources include cosmic radiation from space, radioactive rocks and soils, and other radioactive materials found in food and water. Humans have been exposed to these natural radiation sources since the dawn of humanity. Manmade sources of radiation include medical diagnosis and treatment, nuclear power industry, scientific research, consumer products, and nuclear weapons testing.

What Is Radiation and What Is Contamination?
Radiation is a form of energy. The atoms of some elements are radioactive and spontaneously release energy (radiation) as they transform from unstable to stable forms. Most elements are stable and do not emit radiation and therefore are not considered radioactive.

Radioactive material located in a place where it is not wanted is known as contamination. For example, radioactive fuel contained in a nuclear reactor is not considered contamination. However, if that same fuel is released from the reactor into the environment during an accident, it is considered contamination.

Different Kinds of Radiation:
Remember that radiation is a form of energy released from a radioactive atom. That energy can be released in four different forms: alpha particles, beta particles, gamma rays, and neutrons. Awareness of the different forms of radiation will better prepare you to protect yourself and the public.

Alpha particles can travel short distances (inches). A sheet of paper or the outer layer of a person's skin easily stops them. Radioactive materials that emit alpha particles are hazardous only when inhaled, ingested, absorbed, or injected.

Beta particles can travel farther and can pass through a sheet of paper and some clothing, but are stopped by thin metal or glass. Beta particles can damage skin, but like alpha particles the greatest hazard comes when a person inhales, ingests, absorbs, or is injected with materials that emit beta particles.

Gamma rays are similar to x rays. They travel at the speed of light through air. Concrete, lead, steel, and other dense materials can be used to block (shield) gamma rays. Gamma rays can be an extreme external body hazard.

Neutrons are extremely small atomic particles. They can travel long distances in air and are released when an atom breaks apart, a process known as fission. Water and concrete can be used to shield neutrons. Neutrons, like gamma rays, can be an extreme external body hazard.

Special instrumentation and trained personnel are needed to accurately identify the form(s) of radiation. Reliable packaging information (if available) may also help to determine the radiation form.

Natural Sources of Radiation:
Radiation emitted by radioactive elements is naturally present in soil, water, and air. Radioactive materials are found all the way up the food chain, including in humans. The human body naturally contains many radioactive elements. Building materials, such as granite, contain radioactive materials. Even the air we breathe contains small concentrations of the radioactive gas radon, which seeps from the Earth's crust. Cosmic radiation from outer space also is a source of natural radiation. The atmosphere screens out most cosmic radiation, but some still penetrates to the ground. The dose from cosmic radiation increases with altitude. As a result, people living at higher elevations receive a higher cosmic radiation dose than those living at sea level. People whose occupations require airline travel will experience a higher level of radiation exposure for the same reason.

Manmade Sources of Radiation:
Radioactive materials can be produced in nuclear reactors. X-ray machines and nuclear reactors are examples of manmade radiation sources. Manmade radioactive materials are used in medicine, industry, research, and nuclear weapons.

Medical uses of radiation can be roughly broken into diagnostic and therapeutic. Diagnostic uses include routine x-rays and injection or ingestion of radioactive materials for imaging internal organs. Therapeutic applications include cancer treatments. Industrial uses include well logging, physical property measurements, smoke detectors, and weapon night sights (tritium). Special nuclear materials, such as plutonium and uranium, are used in nuclear weapons.

What Is a Dirty Bomb?
According to the Environmental Protection Agency (EPA), the term "dirty bomb" commonly refers to a device that spreads

radioactive material by exploding a conventional (non-nuclear) explosive, such as dynamite. Dirty bombs are sometimes called radiological dispersal devices. Typically, the threat of a dirty bomb is from the explosion, not from radioactive materials or radiation. However, the spread of radioactive contamination is likely to create hysteria and terror among the public and contaminate the exposed area. Dirty bombs are not traditional nuclear weapons and cannot cause mass devastation like a nuclear weapon or an improvised nuclear device. They are difficult to accurately describe or characterize because they may be constructed using different types of containers and virtually any industrial or medical radiation source.

Detection of Radioactivity:
The most obvious means of determining the presence of radioactive material is by locating a radiation warning symbol on a vehicle, container, or object, or at the entrances and exits of a room or facility. Nuclear radiation cannot be seen, heard, smelled, or tasted. It can be detected, however, using proper instrumentation. Various types of detectors are required to detect specific types of radiation. Some simple radiation detection instruments are available commercially. These types of detectors include personal devices used to detect radiation exposure and are similar to those worn by x-ray or medical personnel; duty-belt-worn detectors, commonly referred to as radiation pagers, which can be used for searching for sources; handheld monitors for determining radiation exposure data; and larger, more sophisticated instrumentation, which can be used to determine the type of radioactive atoms present. The cost of these types of detectors ranges from several hundred to several thousand dollars.

What Actions Do I Take If I Suspect a Radioactive Source or Contamination?

Follow the protocols established by your agency. Remember: Detection and identification of a radioactive source and contamination require special training and instrumentation. The extent of contamination can depend on many factors, including the size of the explosive, if any; the amount and type of radioactive material used; the weather; and the terrain.

Department policies and procedures may differ regarding whom to contact if a radiological event is suspected. Make sure you have ready access to telephone numbers to contact the appropriate resources. In addition to your immediate supervisor and Fire/HazMat response units, you should also be prepared to contact the following:

- Federal Bureau of Investigation (FBI)
- Federal Emergency Management Agency (FEMA)
- Environmental Protection Agency (EPA)
- Nuclear Regulatory Commission (NRC)

What Are the Risks and How Do I Protect the Public and Myself?
The fundamental principle in radiation protection is that all exposures should be kept to a minimum.

Typically, exposure to radioactivity has no immediate symptoms (asymptomatic). We are all continually exposed to natural radiation. However, heavy exposure to intense sources, although rare, can cause radiation sickness, which can include nausea, vomiting, and diarrhea. Eye damage, increased cancer risk, genetic defects, and even death can also result from higher exposure levels.

Three key factors influence an individual's radiation dose from exposure to a given source: time, distance, and shielding.

Time. The most direct way to reduce a radiation dose is to reduce the time spent working with or in the vicinity of radiation sources. If the exposure time is cut in half, the dose will be cut in half.

Distance. When the working distance from a point radiation source is increased by a factor of two, the dose received from that source will be reduced by a factor of four. Moving from 20 feet to 40 feet from the source will decrease your exposure to 1/4 of the original exposure.

Shielding. Shielding is the use of any material to reduce the intensity of the radiation by absorbing or reflecting the radiation.

Again, first and foremost, follow your agency's response protocol. If one is not available, remember: In the case of an explosion, the blast may cause injury and death to those in its immediate proximity. Also, entry without proper equipment, training, and procedures into an area with dispersed radioactive materials may put you at risk.

Individuals or items suspected of being radiologically contaminated should be isolated and secured until they can be surveyed with proper radiation detection instrumentation. Only trained personnel should perform the survey and decontamination of individuals or property. The area also should be secured so that unauthorized personnel are not exposed to radiation and do not disturb the scene.

Remember that dust and other airborne particles and fragments from an exploded dirty bomb may contain radioactive materials. Appropriate respiratory equipment and clothing should be worn and proper procedures followed.

For more information about other resources addressing this topic, contact the National Law Enforcement and Corrections Technology Center system at 800-248-2742, or email *asknlectc@nlectc.org*. The web address is *www.justnet.org*.

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LETTER TO MEMBERS

Dear Member,

Recently, I have received several letters concerning the FEMA and HLS recommendation to citizens for preparing for terrorist attacks involving weapons of mass destruction. Due to the current threats that we are facing, we felt that it would be appropriate to share one of these letters with our members, along with my response. Please keep in mind that the comments below are my personal beliefs and convictions only, and do not necessarily reflect the views and opinions of TACDA or any of my fellow officers. Also, remember that everyone is entitled to their own opinions and that there is definitely more than one way to prepare for disaster. We should all, as individuals, take the time and responsibility to sit down and develop a disaster preparedness, response and recovery plan that fits our individual or group needs and requirements.

The Inquiry:

Dear Ms. Packer,

I have been referred to you by Civil Defense here in Maryland. A notice appears in the front page of today's Washington Post advising disaster preparations for the home. The federal government has been very vague in what we are to do in the event of an NBC attack, but they are convinced that we should prepare by creating a safe sealed room, but fail to mention how we are to breathe in such a space.

We are to use duct tape and plastic sheeting to seal windows, doors and all cracks. How are we to breathe in such a space? What kind of "vents" could we possibly create that would not compromise the seal? This sounds like the old "duck and cover" advice from the 50's!

Can you offer any genuine advice on creating a breathable safe space at home in such an event? I live in a 1920's house with leaky windows and doors and cracked plaster with radiator heating. The basement is wet/damp. I was therefore selecting a room on the main floor, but all rooms have 2 windows to the outside.

I should also mention I live about 10 miles from the Capitol building of Washington, DC. (Ground zero!) I do not know that there is much we really could do in such an event. I live about 5 miles from the Brentwood Mail facility that was contaminated. I am 1 mile from the Anacostia River, and less that 1/2 mile from the rail road lines. A nearby church was designated in the 1950's as a civil defense shelter, but I don't believe that it is stocked as such any longer.

Any advice that you could offer would be welcome.

My Response:

I too, believe that we have been given the old 'duck and cover' story. The plastic scenario, as you so astutely recognized, will not work in and of itself. CO2 build up would occur very quickly. A concentration of CO2 over 3% is unacceptable. Each person will produce about .67 cubic feet/hr of CO2. For example, if each person has 88 cubic feet of room in the shelter, 3% of that 88 cubic feet would equal 2.64 cubic feet. Since the CO2 production per person equals 0.67 cubic feet/ hr, it would take 2.64 cubic feet divided by 0.67 = 4 hours to reach the limit of 3% CO2 for one person. You can, therefore, stay in the safe room without replenishing your air supply for 4 hours if you have 88 cubic feet per person. However, if properly prepared ahead of time, you could probably evacuate faster than you could prepare your room with plastic.

*[**NOTE:** Specially engineered ventilators with filters designed to remove chemical/biological warfare agents are available for sale to the general public and would be valuable if we were given 'early warning' of a pending attack. For more information on new safe-room technology available through The American Civil Defense Association (TACDA), please contact us at 1-800-425-5397 or send email to info@tacda.org.]*

I personally do not believe that a chemical attack will be a problem to the general public in their homes. Chemicals are typically used against troops, subways, and small contained areas. It would not be practical for a terrorist to use chemical warfare in cities, as chemical agents dissipate very quickly in sunlight. Rather, I believe that a much more likely scenario would be the use of biological warfare agent such as Smallpox or Anthrax. In the event of such an attack, you would most likely not be aware that it had been spread until someone became symptomatic of the disease 7 to 10 days later. Going into your safe room after this length of time would have no value.

If you do not have common ventilation with another home (duplex, double home, apartments, hotels, etc.), the Smallpox virus most likely will only be spread from person to person. In this case, I would recommend 'self quarantine'. Go into your home, close your doors, and don't go to the store, church, work, or any place else. And don't let anyone else into your home. If you don't have the virus, you won't get it. If you have the virus, you won't give it to anyone. There is no need to put yourself into a plastic bubble.

Your preparations should be focused on obtaining at least a 3 months supply of easily prepared foods (canned stews, soups, fruit, etc) and a fresh water supply. I like to store water in 55 gallon water-grade barrels which can be purchased new for about $35.00 each. You should rinse them thoroughly with full-strength Clorox (about 1/2 gallon). Role them, turn them upside down, let them sit for approximately Five (5) minutes, then rinse the Clorox out thoroughly with clean water. Buy a new garden hose, run the hose from the outside faucet into your home, and fill the barrels. The barrels will be very heavy when filled, so place them where they will be staying for a while. Put 1/4 of a cup of Clorox into the water. The water should stay fresh for a year if it does not get air and light. You should also take precautions to prohibit the barrels from freezing.

If there is an Anthrax attack, and you believe you may have been exposed, you may want to start a regiment of Doxycycline as a prophylaxis. Please be warned, however, that you should first consult a qualified physician as many people will have side affects from this medicine. Adverse reactions may occur when taking Doxycycline with other medicines, and Doxycycline can cause permanent yellowing of the teeth in small children and adversely affect their bone growth. Doxycycline has a short shelf life. If you take Doxycycline after its expiration date, it becomes toxic to you. Please take special care to watch and be aware of these dates.

In addition to chemical and biological warfare agents, terrorist attacks can also include weapons that produce radioactive fallout. Your 'safe room' would be much more effective if you incorporate shielding from radiation into the design. Concerning nuclear and radiological incidents, it would also be extremely helpful to have the proper radiation detection equipment (a dosimeter) on hand to measure radiation exposure levels. It would also be prudent to have a sufficient supply of Potassium Iodide (KI) on hand to help protect your thyroid from absorbing radioactive Iodine. For more information on dosimetry products and KI tablets, you can visit TACDA's web site at *www.tacda.org*. Also be sure to read the "Focus On Emergency Management and Public Safety" section in this issue for more information about radiation and nuclear/radiological disasters and emergencies.

As I mentioned above, the comments and suggestions are my personal recommendations. Each one of us should carefully assess our own situation, available resources, etc., and develop a preparedness plan that works for us. If you have any ideas, thoughts or suggestions of your own that you feel would be of interest or beneficial to fellow TACDA members, please, feel free to contact our offices at *info@tacda.org* to share your ideas and experiences. We are looking forward to hearing from you soon. Thank you for your support.

Best Regards,
Sharon B. Packer
Vice-President, The American Civil Defense Association

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FEATURED PRODUCT

MG-8/MG-18 NBC Collective Protection Systems

Turn virtually any existing room into an NBC Safe Room with the MG-8 or MG-18 NBC Collective Protection System.

Introduced in our "Featured Article" section, the MG-8 and MG-18 is a device that we believe will revolutionize NBC preparedness for individual families, as well as corporate America.

In just a few easy steps, the MG series units can be installed into virtually any existing room, ranging in size from approximately 1,300 cubic feet to 1,800.00 cubic feet, transforming it into an NBC safe room almost instantaneously.

These NBC protection systems are ideal for use by:

- Individuals and families wishing to secure an NBC safe room in their home.
- Preparedness-based community groups and organizations that would like to provide NBC protection for members and constituents in a centralized location(s).
- Businesses wishing to provide a safe haven for their employees.
- Schools and other educational institutions wishing to provide economical sheltering for their students and faculty.
- Emergency Operations Centers with a need to establish or enhance NBC protection for public safety workers, government officials, etc.
- Hospitals or special care institutions wishing to further assist in-house patience or clients by providing NBC protection.

As you can see, The applications for the MG-8 and MG-18 are virtually limitless.

Pricing for the MG series systems is as follows:

- MG-8, 8-person system (room size up to 1,300 cu. Ft.) for members is $2,395.00, and for nonmembers is $2,595.00.
- MG-18, 18-person system (room size up to 1,800 cu. Ft.) for members is $2,795.00, and for nonmembers is $2,995.00).
- All prices include free shipping to anywhere within the 48 contiguous United States.

If you, your company or institution is interested in the best and most effective and economical NBC collective protection unit available on the market today, please contact TACDA toll-free at 800-425-5397 to place your order, or purchase online at *www.tacda.org*.

- Please allow two to three weeks for delivery.