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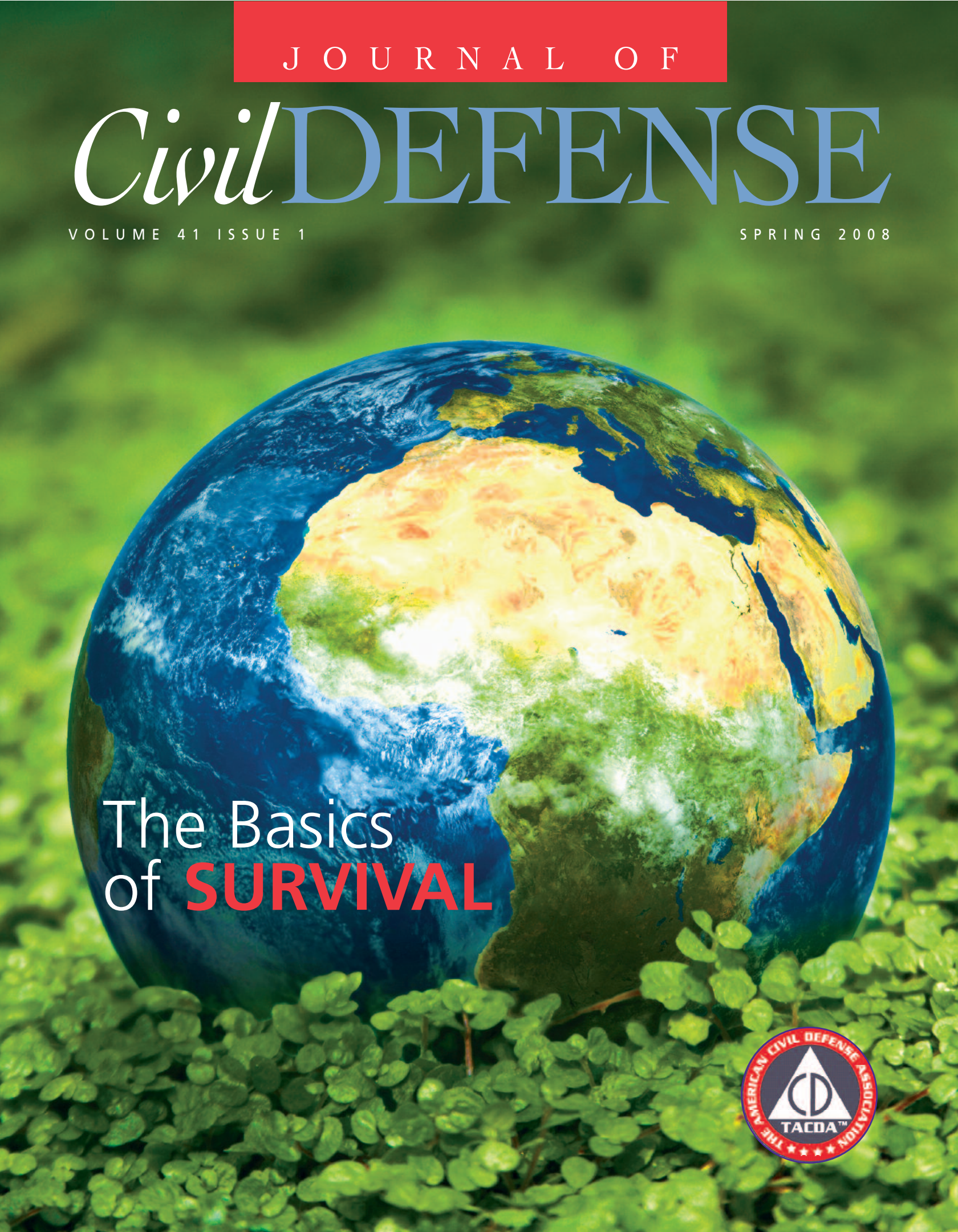

The Basics of SURVIVAL

THE AMERICAN CIVIL DEFENSE ASSOCIATION
TACDA™

Annual MEMBERSHIP MEETING

Speakers for the annual membership meeting will be Jay Whimpey, Jonathan Jones, Paul Seyfried, and Sharon Packer.




Make Reservations at:
Courtyard By Marriott
10701 South Holiday Park Dr.
Sandy, UT USA 84070
801-571-3600

All current TACDA members and friends are invited to the

ANNUAL MEMBERSHIP MEETING
Friday, Aug. 22, 2008
6:30 pm
Courtyard By Marriott, Sandy, Utah
(10701 South 160 West)

The nominating committee, consisting of our current executive committee, has nominated Bill Perkins to serve for the next two years as our new TACDA President and the current board as now stands to continue in their service with TACDA. We welcome all members to this meeting and your vote will be appreciated.

There is no fee for attendance at the Friday evening meeting; however, everyone will be expected to pay for his or her own food and lodging. Members are invited to join the board for dinner at 5:00 pm, Friday, August 22nd at the restaurant inside the hotel.

On Saturday, Aug. 23, 2008 there will be a tour for anyone that wishes to see a shelter. There will be a $20 fee for this tour, and lunch and transportation will be included in the price of the tour. There will be a breakfast buffet on Saturday morning at a price of $10 per person. We will meet in the Marriott Lobby at 10:00 am for the shelter tour. Please wear appropriate clothing and shoes for climbing down ladders. The reservations deadline for this tour is August 15th.

Prices for entrees run between $11.00 and $18.00. Room rates start at $199.00. Please see the agenda for this meeting on the TACDA web site http://www.tacda.org.

Mail your reservation and check to:
TACDA, 11576 S. State St. #502, Draper, UT 84020




IN THIS ISSUE

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PRESIDENT'S MESSAGE

It has been a privilege and pleasure to serve TACDA as president over the past two years. It has been great to visit with the members of the Board of Directors, staff, and members of the organization. It is always nice to visit with people who have an interest in preparing for disasters and protecting the general population of this great country.

My final wish is that those who are acquainted with this great organization will continue to try and help others learn about TACDA and what it has to offer. Some very basic knowledge and a few basic preparations can save many lives and needless suffering in a disaster situation. We know by the experience of many who have actually been in those situations, that very small efforts provide great dividends in such trying situations.

Please share what you know with those around you. Your family, friends, co-workers, and even casual acquaintances desperately need the information collected and made available by TACDA but it is up to you to introduce them and to share what you know, and help them understand how important it is to prepare.

I look forward to a continuing relationship with TACDA in whatever role I am able to fulfill. I will continue to find useful preparedness information and experiment with various survival techniques and share this information with all of you through TACDA as I continue to enjoy a relationship with our great members.

I would like to express my appreciation to everyone for making The American Civil Defense Association what it is today.

Sincerely,

Jay R. Whimpey
TACDA President

FROM THE **EDITOR**

In this issue, we have reprinted articles from past journals covering the 'Basics of Survival' for most disasters. All these subjects are covered more fully in our Academy of Civil Defense. This document is available for download on our web site, http://www.tacda.org.

We have not included articles on Water and Sanitation in this issue, as they will be covered more fully in our next journal. Please see Academy lessons #9 and 10 for more information on water and sanitation. During times of emergency, when normal sanitation methods of food, water, garbage, trash, and sewage may be disrupted, it is critical that rules and procedures be established to safe guard proper health, or disastrous results may be experienced. The ability to store, clarify and purify water is essential to our survival.

- Store 55 gallons for each person in your family for emergency use.
- Clean and disinfect all water storage containers before filling.
- Fill cleaned containers with pure water.
- If in doubt of the purity of the water, first clarify and then purify the water.
- Clarify cloudy water by allowing it to settle and then filtering through paper filters, cloth, etc.
- Purify with accepted methods such as boiling, iodine crystals, water filters or the addition of chlorine (all methods are not equal in their ability to destroy parasites.

Proper management of toilet facilities and garbage during times of emergency may have a greater affect on your health than any other single element of sanitation. Bacterial infections such as typhoid and dysentery can be just as devastating as the earthquake or flood that caused the emergency.

- Separate Rubbish from Garbage
- Burn the Rubbish
- Bury garbage under at least 18 inches of dirt or place it in 20 or 30 gallon cans with tight fitting lids until it can be properly disposed of.
- Learn the basics of building an outside latrine and store the pre-fabricated building materials for construction.

Familiarity with the effects associated with the deployment of weapons of mass destruction (EMP, thermal, blast, radiation, chemical and biological warefare) will lead us to the natural conclusion to build shelters and to store food and survival supplies. Please see Academy lessons #2-6 for further information on these subjects. Sheltering includes the ability to stay warm in the winter and cool in the summer. Learn the basics of the construction of cold weather clothing, boots and sleeping bags using soft foam as an insulator (TACDA Academy lesson #11).

Store the proper food, equipment and medical supplies and learn the basics of first aid (lessons 12 and 15).

Communications are essential to our mental stability. Reliable information during a disaster or escalating crisis is paramount to survival. People need to know the scope of the disaster.

Sincerely,

Sharon Packer
JCD Editor

Food & Water

September/October 2005

Many people have inquired about the types of foods that can be eaten after a nuclear event. In this article, we will address some of the "do's" and "do not's" of post-nuclear survival, particularly as they relate to food and water.

Fallout from a nuclear explosion consists of tiny particles of dirt and debris fused with fission products. Alpha and beta particles in the fallout can persist for long periods of time and will contaminate any food to which it comes in contact. On the other hand, gamma radiation from the fallout is not a particle and does not contaminate food. In some cases, gamma radiation is actually used to purify food. Our challenge will be in differentiating between foods that can and cannot be cleansed of alpha and beta particles.

Most gamma radiation will not persist beyond two weeks after the nuclear event. Fruits and vegetables harvested from fallout zones in the first month post-attack may need to be decontaminated before consuming. Decontamination can be accomplished by washing exposed parts, removing outer leaves and peeling. FEMA material has stated that most vegetables and fruits that can be washed and pealed, can safely be eaten. If the nuclear event were to occur at harvest time, you could still harvest smooth, hard skinned vegetables and fruits such as apples, potatoes, carrots, squashes, and any other fruits and vegetables you could both wash and peal. You should not harvest fuzzy fruits such as raspberries, strawberries or peaches. Cauliflower and broccoli should not be eaten from the garden because of the uneven nature of their outer layers.

People in areas of low fallout accumulation may be able to plant crops the next season. Small plots of land could be scraped of the upper few inches of contaminated soil and planted. The contaminated soil containing the fallout should be moved away from the garden area. It seems unlikely that there would be any large farming activities for some time.

People may have the opportunity to cover small garden plots with plastic before fallout arrives, generally in low fallout areas that have received no blast. Storage of large rolls of plastic would be advantageous.

Some plants requiring calcium (such as broccoli and cauliflower) will take up radioactive strontium 90 because of its chemical similarities to calcium. If we eat the food containing the radioactive strontium, the strontium will be deposited in our bones. Liming of acid soil will reduce this uptake.

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The prudent will store at least a one-year supply of basic foods.

If possible, in areas of significant fallout deposition, you should plant foods with low calcium content such as potatoes, grains, beans, apples, tomatoes, peppers, sweet corn, squash and cucumbers.

Storage of non-hybrid seeds is extremely important. Hybrid seeds will not reproduce quality fruit. Seeds last several years if stored covered in airtight containers in a cool, dry area. Farming implements should also be stored in a safe place and protected from blast.

The prudent will store at least a one-year supply of basic foods.

Before opening canned foods, the can should be wiped or washed if contamination is suspected. Meats and dairy products that are wrapped or are kept within closed showcases or refrigerators should remain free from contamination.

Refrigerated foods should be eaten first, then food from the freezer as it thaws, and then canned and non-contaminated packaged foods. Crops, which are in the early stages of growth in heavy fallout areas, will absorb radioactive materials through their leaves or roots and would be difficult to decontaminate.

If possible, animals should be put under cover before fallout arrives and should not be fed contaminated food and/or water. Animals can be slaughtered for food, if they do not appear to be sick. The bones and organs, however, should be removed and disposed of before cooking the meat. The animal may have been foraging on plants and grasses contaminated with Strontium-90.

Since Strontium-90 looks chemically much like calcium, the bone cannot differentiate between Strontium and Calcium, and will absorb the Strontium into the bone. If we cook the meat with the bones, the Strontium from the bones will then be absorbed into our bones. Eggs from poultry can be eaten. Fish from streams and lakes, such as trout and perch can be eaten. Bottom feeders such as carp and catfish should not be consumed because their food sources would be contaminated by radioactive particles.

Thyroid Blocking Agents (TBA) tablets should be started as soon after the nuclear attack as possible. Consult your physician NOW, for proper dosages for you and for each member of your family. People with thyroid problems may not be able to take TBA, therefore make sure your physician is aware of any thyroid irregularities you may have. The thyroid is always 'looking' for iodine and cannot distinguish between pure iodine and the radioactive isotope. TBA fills the thyroid with healthy iodine and prevents the uptake of radioactive form of the isotope. The thyroid will only accept iodine in certain forms. TBA is formulated with potassium and the proper isotope of iodine. Do not take iodine internally in any other form. TBA is a medicine and can cause certain side effects. TBA should only be taken in the event of a nuclear disaster.

Well water will likely not be available during a power failure. Hand pumps which will pump from as deep as 200 feet are available through many Amish catalogs. Emergency water filtration and decontamination methods will be discussed in the next issue of the *Journal of Civil Defense*. Be creative. Drinkable water can be found in many unexpected places, such as hot water heaters, toilets tanks (not the bowl), etc. A deficiency of vitamin C could cause symptoms of scurvy within four to six weeks. Store a year's supply of vitamin C as well as other multi-vitamins and minerals. A good expedient way to provide vitamin C is through consumption of sprouted seeds or beans. Instructions are given in the book entitled, "Nuclear War Survival Skills", which is available through the TACDA Store at www.tacda.org.

We cannot overly express the importance of a year's supply of food. Many disasters, both natural and man-made, likely will cause a shortage of food or even famine. Even the most God-fearing people will often reconsider and/or lose all moral values when their children are starving.

As always, we encourage you to be prudent and alert. Don't forget … *study, think, observe and prepare.* ●

Expedient SHELTERING

July/August 2005

Deep underground shelters will protect us from all NBC effects within a very short distance of ground zero. However, building such shelters is not possible for all people, especially for those living in apartments. It is also possible that after building a shelter, a nuclear event could occur when we are not in the vicinity of the shelter. This may be discouraging to some, but I believe if we carefully follow our STOP concept (Study, Think, Observe and Prepare), we will find a solution.

Look at the risk by considering both probability and consequence of the event. There are many natural fallout and blast shelters already in our neighborhoods. If we plan ahead, these shelters could be quickly accessed in the event of an emergency.

EVACUATION

Study: Study your options of various evacuation routes leaving your area. Keep a note pad and pencil in a covered container outside your home, so that family members can leave vital information for you if they have left the area. Evacuation is a viable solution if the event is small and localized.

Think: Keep tuned to the radio. Authorities may be able to warn you of escalating crises.

Observe: Take notice of unnatural situations: empty trucks and cars in unusual places or people who are acting strangely. Watch for anniversaries of previous events.

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Prepare: As part of your basic preparations, a small survival kit (72- hour kit) should be placed in the trunk of every car. Supplies should also be stored at our workplaces and in our homes. Always keep your car at least half-full of fuel.

ABOUT EXPEDIENT SHELTERING FROM NUCLEAR

Study: If the event is wide spread, we may need to shelter in the nearest place possible. If early warning is taken from a loss of electrical power (see EMP in *Journal of Civil Defense*, volume 38, issue #3) we could have as much as 25 minutes warning of a possible attack by ICBM missiles.

Think: In the event of the detonation of a fission weapon, we must protect ourselves from both blast and radiation. Radiation decays very quickly. Ninety percent of the gamma radiation decays after the first seven hours, leaving only 1/10th of the original levels. After two days the radiation levels decrease to 1/100th of the original levels, and after two weeks we have only 1/1000th of the original levels remaining. In most situations, after two days, we could leave our expedient shelter and go quickly to our homes. However, if possible, we should stay sheltered for two full weeks.

Observe: You should always carry a small dosimeter or nukealert meter. Watch the radiation levels carefully. Penalty tables show us that if we accumulate between a total of 150 and 250 roentgens (R) of radiation in one week, we would expect few if any deaths. If you receive more than 10 roentgens (R) in the first hour, the accumulated doses may exceed that number. In that event, look for a better location or add shielding to your area. If caught away from your home and shelter during an actual emergency, consider some of the following areas for expedient sheltering possibilities:

Garages: Service pit area.

Basements: Look for basements with small amounts of exposure. Homes with walkout basements will not provided adequate shielding.

Churches: Pipe chases from boiler rooms.

Banks: Basement vault or safety deposit areas.

Hospitals: Usually have massive basements and are well built. Some hospitals have underground tunnels between buildings.

Residential homes: Look for basements with maximum soil coverage.

Schools: Most schools have pipe chases and some have good basements.

Mines: Stay well back from the entrance. Be aware of possible danger from gas, falling timber, rocks, or shafts.

Caves: Stay well back from entrances.

Tunnels: Consider railroad, car and pedestrian tunnels.

Culverts: Look for long runs under highways. Be aware of possible danger from rats or water runoff.

Boiler Rooms: In churches, schools, and other large buildings

Underpasses: There is good blast protection (10 psi) high up under over passes, however there is no radiation protection.

Community Swimming Pool Equipment Rooms: Be aware of possible danger from chlorine gas, which is often stored in pressurized containers.

City and County Buildings: Many have underground tunnels between buildings.

Underground Parking Garages: Provide both blast and radiation protection, however, be aware that there is danger that the upper floors may fall and trap you.

Boats: Covered boats in a lake provide good radiation protection, but little blast protection. Be aware that you must have capabilities to wash fallout from the cover.

State or County E.O.Cs: These buildings are usually well built and well stocked.

Root Cellars: These offer better radiation protection than blast protection. Subways, fire departments and armories are usually well built and can also be considered as possible expedient sheltering solutions.

Prepare: Keep in mind that a home basement is not adequate protection in and of itself, even in areas of light fallout. However, shelter could be taken in the basement under a strong table.

Two feet of books or other heavy objects should be placed on and around the table. A hose could be attached to the water heater and run to the shelter for drinking water. A five-gallon bucket with plastic bags could be used for sanitation. These options, however, must be initiated well before hand.

ABOUT EXPEDIENT SHELTERING FROM CHEMICAL/ BIOLOGICAL

Study: Chemical agents dispersed by terrorists would most likely take place in densely populated areas, such as found in subways or coliseums. There is little one can do to prepare for such an attack except to stay away from large crowds and be alert to suspicious behavior.

Decontamination procedures must occur immediately. Our government has given the general public the recommendation to purchase plastic and duct tape for constructing 'safe rooms' against the threat of chemical or biological attack. The plastic and duct tape scenario, in my estimation, would serve only one purpose. It would make a great BODY BAG. It would take hours to prepare the room in this manner. The CO2 build up would occur very quickly and within a short period we would be forced to open doors or windows.

We need 88 cubic feet per person

to shut down for 5 hours. If our ceilings were 8 ft. tall, each person sheltered would need 11 square feet of space. A six-person family would need a room approximately 8 ft. x 8 ft. After five hours, the CO2 levels would reach 3% and the family would be forced to leave. It would take much more time to prepare the room with plastic than it would take to evacuate. Israel, on the other hand, has been told to keep a 'safe room' ready at all times. They have the threat to their homes from short-range missiles, and they have a warning system, sirens and communications that has been deployed and exercised. We have neither the threat nor the warning system.

ABOUT EXPEDIENT SHELTERING AGAINST BIOLOGICAL ATTACK

Study: Expedient sheltering will not be practical in a full-scale national attack. Dispersion of these agents by missiles will penetrate all but the finest NBC shelters. The probability of full-scale biological attack, without an accompanying nuclear war, is near zero.

Expedient sheltering against full-scale NBC attack is quite impractical. The probability of a localized terrorist biological attack, however, is huge. The consequences would be devastating. The risk, therefore, must be of prime consideration.

Think: There are many and various ways a terrorist could disperse biological agents. It is most likely that the public would not know of this event until someone became symptomatic of the disease seven to ten days after the event. If 50 people were exposed to the smallpox virus in four different parts of the country, we could quickly see exponential growth of the disease. After ten days the disease would spread from 50 to 500 people. In ten more days we could see 5,000 cases, and by the end of 30 days we could see 50,000 cases in each of the four different areas of exposure. The disease would continue to spread until the population lost enough density to no longer sustain the growth.

Once a person becomes symptomatic of small pox or anthrax, only the most Herculean medical procedures can save their life. The best expedient shelter in this scenario is to stay within the walls of your own home.

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

Homemade filtration systems will do no good against biologicals. The probability of an attack against your home is near zero. The biological agents will not travel beyond the local area of dispersion. The walls, doors and windows of your home will protect you from people on the outside who may be carriers of the disease. If you should have family and friends come to your home after you have quarantined yourself, let them stay in an outer building until they have gone through a two- week quarantine period.

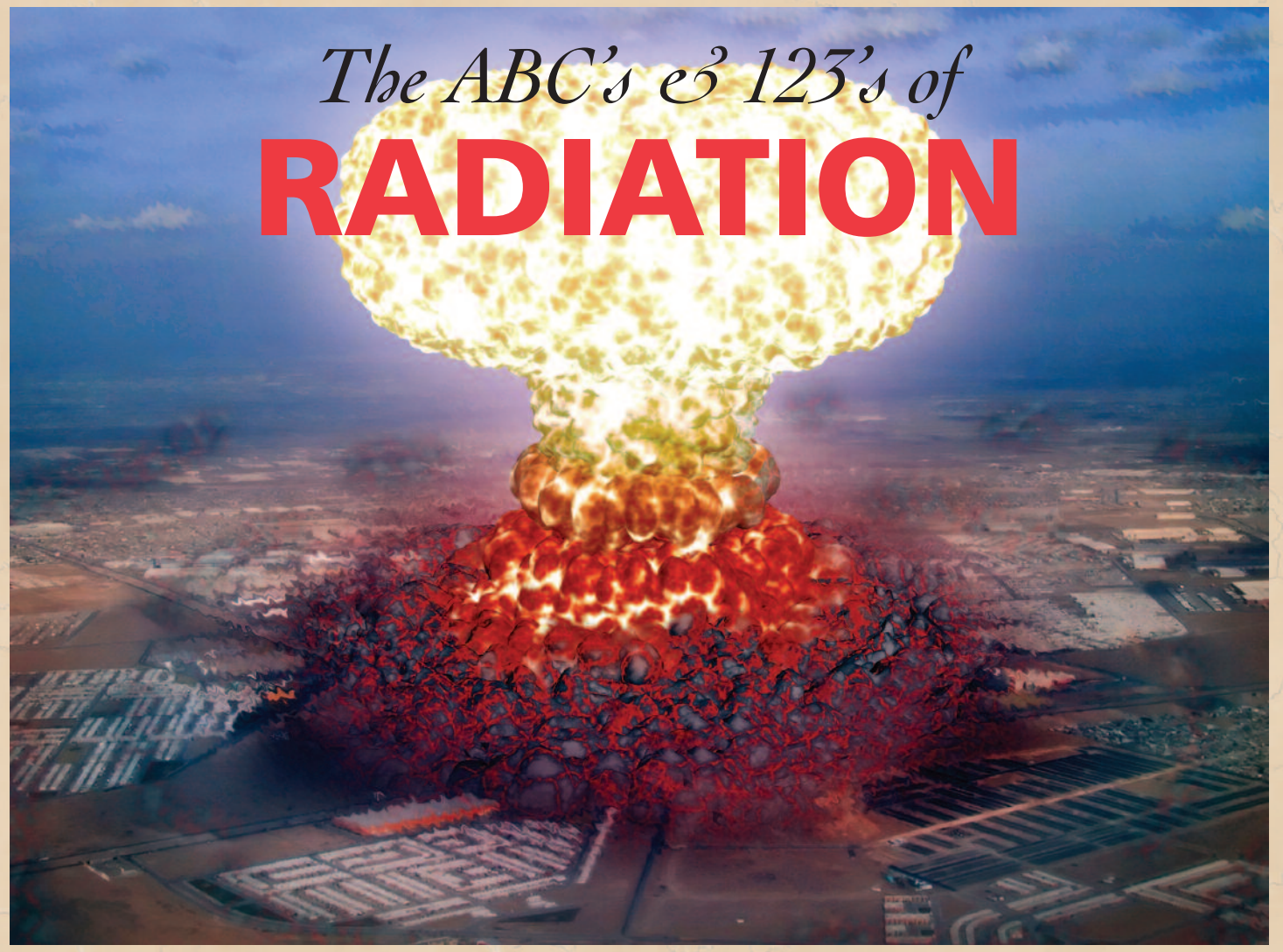
Observe: Take notice of reports of strange illnesses. The first case of small pox any place in the country would justify 'self quarantine'.

Prepare: In order to 'self quarantine' you must have a one year's supply of food, medicine, fuel and a two month's supply of clean, pure drinking water. In the event that the infrastructure of our country fails, you will need to have the capability to forage for water.

Watch for the next issue of the *Journal of Civil Defense* for articles on water storage, filtration and purification. 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 your physician for a prescription and dose, as many people will have side affects from this medicine. Small children and expectant mothers can have adverse effects from Doxycycline and other Tetracyclines. Tetracycline has a short shelf life. If you take Tetracycline after its expiration date, it becomes toxic to you.

Please watch your expiration dates carefully. We hope you will all take time to do a proper risk assessment of the disasters that could affect you and your family. Remember, post-event survival depends on pre-event preparation. ●

Once a person becomes symptomatic of small pox or anthrax, only the most Herculean medical procedures can save their life. The best expedient shelter in this scenario is to stay within the walls of your own home.



The ABC's & 123's of RADIATION

November/December 2005

Fallout: Nuclear fallout is the most far reaching of all the weapons effects. Nuclear explosions occurring near the surface of the earth cause huge amounts of debris and dirt to be drawn up into the fireball where they are vaporized and fused with fission products and radioactive residues. As the fireball cools, the vaporized material begins to condense into liquid droplets, which eventually solidify into glass-like particles. These particles constitute what we call fallout.

We can see fallout as an accumulation of dust and small particles falling onto the ground and buildings. We cannot, however, see, feel, hear or taste the radiation that is being emitted from the fallout.

Distribution of Fallout: Fallout is carried in the nuclear cloud and is moved by winds. The direction of fallout is determined by winds up to at least 80,000 feet and the velocity of the wind governs how far the cloud will travel. The United States has a variety of upper air winds. They are predominantly from west to east during the fall, winter and spring.

In the summer, the winds are more variable. Surface winds cannot be used as an indication of direction for the flow of high atmosphere winds. In addition to the wind, precipitation will affect the radioactive deposition. Rain and snow "wash" or "scrub" the air of the radioactive particles. The result is that contaminated material, which would be spread over a much larger area by the dry weather patterns, is rapidly brought down in local rain or snow areas. This is referred to as "rainout."

Terrain features also play a part in deposition. Large mountains or ridges could cause significantly more fallout on the sides facing the surface wind. Nuclear fallout from areas across the oceans will not pose a large threat to the United States. Small yield weapons deposit most of the fallout locally. The radioactive isotopes from larger yield weapons remain in the

stratosphere until the short-lived isotopes decay, and the longer-lived isotopes are significantly reduced.

Radiation: The basic building blocks of the atom are protons, neutrons, and electrons. Nuclear radiation is an 'eruption' or' emission' of these particles from the nucleus of the radioactive elements. These high-energy emissions constitute radioactive 'decay'. Fallout from fission type nuclear weapons carries these radioactive particles to the ground where they continue to decay. Radiation from a nuclear explosion consists of gamma rays, neutrons, beta particles and a small portion of alpha particles.

Alpha particles: Alpha particles are positively charged and relatively large, consisting of two protons and two neutrons. Alpha particles are completely stopped by a sheet of paper or the outside layers of our skin and are not an external hazard. Internally, however, they will dissipate their entire energy within a small volume of body tissue, causing considerable damage.

Beta Particles: The beta particle is very small compared to an alpha particle, and is spontaneously emitted from the neutron of certain radioactive elements. It is identical to a high energy electron and has a negative charge. Most fission products are beta emitters. Beta will pose a small external hazard if fallout comes into actual contact with the skin and remains for an appreciable time. This causes a burn referred to as "beta burn". Fallout should be brushed or washed from the hair and skin as soon as possible. Beta will, however, do considerable damage if it enters the body.

Certain chemical elements tend to concentrate in specific cells. The body cannot distinguish between the pure element and the radioactive isotope of that element. Radioactive strontium and barium are similar in chemical nature to calcium and will seek the bones. These elements pose a small hazard if inhaled but care should be taken not to eat food contaminated with fallout.

Animals which have been exposed to radiation may have significant levels of strontium and barium in their bones. These animals, if healthy appearing, may be slaughtered and eaten if the bones and organs are discarded before the meat is cooked.

Foods contaminated with fallout should not be eaten unless they can be washed or peeled. All cans containing food should be washed before opening.

Iodine 131, which poses the largest threat, will seek the thyroid. Thyroid blocking agents (TBA) are available commercially. They are inexpensive and have a long shelf life. Iodine 131 has a half-life of 8 days and would be a threat for 10 half-lives or approximately 80 days.

Enough thyroid-blocking agent should be stored for each person for a three-month period. Care should be taken to keep fallout contamination from the lungs, eyes, and open wounds and to wash any food that is to be ingested.

Gamma rays: Gamma rays have no measurable mass or charge. They travel at the speed of light and originate from inside the nucleus. The emission of an alpha or beta particle from the nucleus of an atom will almost invariably be accompanied by the emission of gamma rays.

Gamma radiation will penetrate through the body and does pose an internal danger for two weeks after a nuclear detonation. In most areas, after two weeks there is no appreciable level of gamma radiation remaining.

Neutrons: Neutron radiation is part of the initial radiation that occurs in the first moments after the detonation. Neutrons are not contained in fallout. Neutrons have a range of approximately 1.5 miles from the detonation and are very penetrating. The blast levels at that range are indeed fatal if people are not in hardened shelters. All shelter entrances must contain six feet of shielding if the shelter is within that range of a target, and the dirt cover on top of the shelter must exceed six feet.

Radioactive Half-Life: Radioactive elements vary greatly in the frequency with which their atoms erupt. Some have only infrequent emissions (decay) while others are very active and radiate frequently. The rate of radioactive decay is measured in half-life. The half-life is the time required for the radioactivity of a given amount of a particular material to decrease to half its original value. The half-life of a radioactive material may range from fractions of a second up to millions of years. After 10 half-lives, radioactive elements decay to a level that is no

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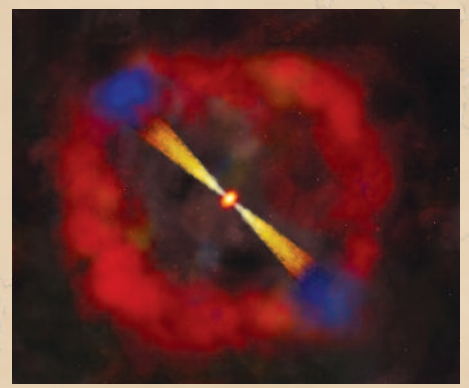
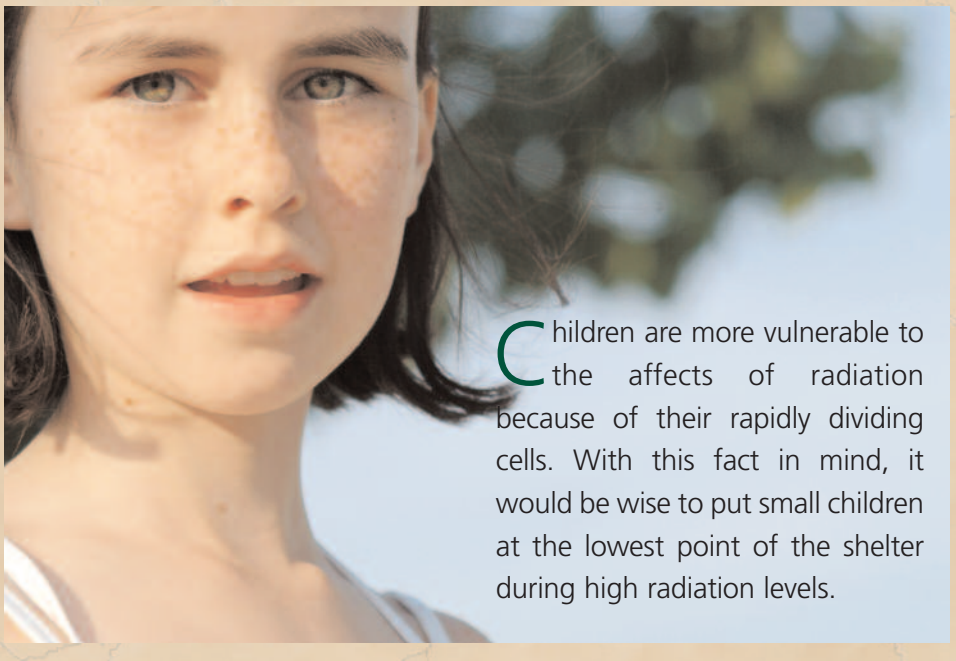


Gamma radiation will penetrate through the body and does pose an internal danger for two weeks after a nuclear detonation.

RADIATION continued from page 9



Children are more vulnerable to the affects of radiation because of their rapidly dividing cells. With this fact in mind, it would be wise to put small children at the lowest point of the shelter during high radiation levels.

longer considered to be a human hazard.

Measuring Radiation: When dealing with exposure levels from fallout, radiation is normally measured in roentgens (R). Radiation meters are used to monitor radiation exposure rates. Like the speedometer in a car, which tells how many miles per hour the car is traveling, a survey meter would tell how many roentgens per hour are being received. Dosimeters are used to measure the accumulation of radiation, just as your odometer would measure the accumulation of miles traveled in your car. Both instruments are very helpful in a radioactive environment.

Good metering devices are invaluable in a nuclear environment. Wartime rate meters must measure in roentgens up to a level of 500 R per hour, and wartime dosimeters must measure to a total accumulation of 200 R. Some meters and dosimeters measure only in milli-roentgens (MR). A milli-roentgen is 1,000th of a roentgen. These meters and dosimeters are useful in a post-war situation to monitor contamination of food and equipment. The most useful of these low-rate meters will have a 'wand' capable of reading beta contamination.

Fallout Protection Factors (PF): The fallout protection factor (PF) is a ratio of the fallout exposure rate that would be measured by a meter at a height of three feet above a surface, to the exposure rate that could be expected in a given location in an area below that surface. A PF 50 would indicate that the radiation level above the surface is fifty times the value of the radiation level below the surface.

Protection factors are a function of distance, geometry and shielding, but not of time.

Principals of Protection: The three basic principals, which give protection from radioactive fallout, are time, distance and shielding.

Time: All radiation decays with time. During the fission process in a nuclear detonation, many isotopes with different decay patterns are produced. It has been found that the average decay rate behaves exponentially and can be estimated with the *7* / 10 rule. Simply stated, this rule says that for every sevenfold increase in time after detonation, there is a tenfold decrease in the exposure rate. This rule can be used to roughly estimate the future exposure rates.

As an example, if the exposure rate were found to be 1000 R/hr. at one hour after the explosion, if there were no other explosions, the forecast for the future would be a rate of 100 R/hr after seven hours; 10 R/hr after 49 hours (roughly two days); and one R/hr after two weeks.

In all but the highest radiation levels, this decrease should allow for activities outside the shelter during much of the day. People should be taught to stay inside the best shelter that can be found for at least two weeks.

Distance: The dose rate of radiation falls off with increasing distance in air, even though attenuation by air is negligible. The inverse square law states that the dose is inversely proportional to the square of the distance in air from a point of a gamma-ray source. This law is not applicable to other than a point source. However, fallout does act as a point source in long, narrow entry ways.

Children are more vulnerable to the affects of radiation because of their rapidly dividing cells. Heavy people are somewhat protected by layers of fat. With this fact in mind, it would be wise to put small children and thin adults at the lowest point of the shelter during high radiation levels.

Shielding: The damaging effect of gamma rays comes from their ability to ionize. Shielding materials containing large numbers of electrons will filter (attenuate) gamma rays. The more massive the material, the greater will be the attenuation factor . It has been found that certain amounts of shield-

ing material will attenuate half the gamma radiation. This amount is referred to as the "half-value thickness" for that particular material. The material is said then to give a protection factor (PF) of two. The protection factors are multiplicative. Two half-value thicknesses will give a PF of four. Three half-value thicknesses will give a PF of eight. It takes ten half-value thicknesses to reach a protection factor (PF) of slightly greater than 1,000.

Good radiation shelters should have at least a PF of 1000. Ten half-value thicknesses of earth will give a PF of 1,000 and will require about 48 inches of earth cover.

Biological Effects: Large exposures to nuclear radiation can cause acute sickness or death, whereas small daily exposure may be tolerated without causing radiation sickness.

An exposure of 600 R will usually be lethal when received as a brief exposure. The same exposure accumulated over a number of years would have no recognizable effect. Doses occurring during a 24-hour period are considered 'acute' doses. If the exposure is over longer lengths of time, it is considered 'chronic' exposure.

Ionizing radiation may cause an increase of the permeability of the cell membrane, alter or destroy cells, inhibit the process of cell division (mitosis) and break chromosomes.

Radiation Sickness: The symptoms of radiation sickness are nausea, vomiting, headache, dizziness, and a generalized feeling of illness.

There is an initial stage of these symptoms that lasts one to two days, followed by a latent stage with few if any symptoms that lasts between two and four weeks. The final phase is characterized by a recurrence of the symptoms noted during the initial phase, and in higher doses the individual may experience skin hemorrhages, diarrhea, loss of hair and seizures.

The final stage lasts between one to four weeks and results in either recovery or death. The symptoms of the initial phase are similar to symptoms of stress and fear. If you have been well shielded, do not assume radiation sickness to be the cause of these symptoms.

Penalty charts have been developed to show the consequences in expected number of deaths of radiation exposure. Most of these deaths will occur from the very young, the frail and the elderly. Survivors will see an increase in cancer deaths, as well as some mutations in progeny. In a full-scale attack, almost all areas of the country would be affected by high, medium or low levels of radiation.

Charts showing required protection factors show very little difference in the number of survivors in these three risk levels. Sheltering indoors in a one level home would provide a PF of about five. There would be no expected survivors in a medium or high fallout risk area with a PF of five, and very few in low risk areas.

Unexposed basements offer a protection factor between 16 and 20. These charts should impress us for the need of shelters throughout the entire nation with PFs of 500 to 1,000 and more. Acceptable peacetime levels of radiation are set by governing agencies to be less than one R per year. Why should we settle for any less during war-time, when the technology is there for our protection? We hope this brief introduction to the effects of radiation will be helpful to you in your preparations. ●

Protection Factor (PFI) Using Shelter	High Fallout RIsk Area	Medium Fallout Risk Area	Low Fallout Risk Area
PF 5	1200-3000	600-1200	600 R or less
PF 10	600-1500	300-600	300 R or less
PF 20	300-750	150-300	150 R or less
PF 30	200-500	100-200	100 R or less
PF 40	150-375	75-150	75 R or less
PF 60	100-250	80-100	50 R or less
PF 80	75-188	38-75	38 R or less
PF 100	60-100	30-60	30 R or less
PF 200	30-75	15-30	15 R or less
PF 500	12-30	6-12	6 R or less

Small ALTERNATIVE ENERGY System for Disaster Use

Winter 2006-2007

Sometimes small is better or at least as good. There is a tendency, when looking at alternative electrical energy systems, to try to support all of our current energy uses. This usually discourages a large number or people that investigate the subject because alternative energy systems that can support our every day energy needs are prohibitively expensive. The quest to use alternative energy must be accompanied by a quest to significantly curb our energy use.

There is a high probability that normal electrical service to our homes will be interrupted during a disaster and therefore our use of electrical equipment will be limited to the electricity that we can produce. In disaster situations we must choose only the equipment that we absolutely need and then design a system that will address those needs. If we trim down to only the needed equipment then the cost of the system will be much more

manageable.

Electrical power production equipment can be very critical in disaster situations, so we should also consider a redundant system for more reliability. Two less expensive systems may be preferable to a single more expensive system.

What are the REAL needs?

The basics for an alternative electrical system are lighting and communication. Both needs can be satisfied by a system capable of charging a 12-volt deep cycle battery and some of the smaller rechargeable batteries that are on the market today, such as AAA, AA, C, D, or 9-volt.

The following information should be helpful to anyone designing a small alternative power system. This information can and should be adapted to individual situations.

The design and specification of an alternative power system should, first of all, consider cost, portability, and redundancy while meeting minimum power requirements for required equipment.

Lighting equipment such as flashlights, personal headlamps and area lighting are critical in almost all situations. It is impossible to perform even the most basic functions without light. The current availability of light-emitting-diode (LED) lighting has drastically reduced the amount of energy needed for lighting and would be a very wise investment in order to reduce the size and cost of an alternative power system. LED lighting uses less than one percent of the power normally required for incandescent or fluorescent lighting.

A small personal headlamp using three AAA batteries can provide useful light for 50 hours for an individual. An entire room can be lighted for roughly the same amount of time using a battery powered LED lantern and four D cell batteries.

While a normal incandescent light bulb may use 60 watts of power, a comparable battery powered LED light would use 0.50 watts.

A small personal LED headlamp provides enough light to perform most any function using only about 0.10 watts. LED lights are now available from major retailers in the form of area lanterns, flashlights, and small personal headlamps and are designed to operate on rechargeable batteries.

Communication equipment would be next on the hierarchy list and should include a high quality shortwave AM/FM radio so that news and other information can be readily accessed. Many suitable radios are available through 'C. Crane Company' at www.ccrane.com or 1-800-522-8863. The radios will operate on less than two watts of power which can be supplied by rechargeable batteries.

A set of two-way radios in either citizens band (CB) or GMRS can be very useful for keeping groups together and staying in communication within a 10-mile radius. Such radios use up to five watts while broadcasting and less than two watts while listening and can operate many hours between replacing rechargeable batteries such as AA batteries.

A high-frequency HAM radio might also be useful for long-range two-way communication. High-frequency radios are not dependent upon repeaters and would still function in a mega national disaster. A very capable radio would use roughly 20 watts while broadcasting and less than five watts while receiving. Most small HAM radios can operate on a 12-volt DC source. All radio equipment should be protected in a faraday cage when not in use, in the event of an electro-magnetic pulse attack. If possible, purchase redundant communication equipment so that at least one radio is always in the faraday cage.

Other power requirements might include small power tools, refrigerators, or similar equipment. Some of these needs could be addressed using an inverter and a set of 12 volt batteries or a gasoline or diesel powered generator. It is suggested that the higher priority needs be addressed first and that the other less critical needs requiring larger power requirements be looked at carefully since generators require a substantial amount of fuel to operate for extended periods of time and the storage of large amounts of fuel is impractical for most individuals.

A larger power system involving a generator, large battery bank, and inverter to produce AC power from the batteries is expensive and usually is not needed during short term emergencies. For those wishing to learn more about such systems it is recommended that they subscribe to *Homepower Magazine* at www.homepower.com or 1-800-707-6585.

The following information for a typical situation will help you design an inexpensive, portable and redundant system.

LIGHTING

Personal Headlamps (4)

- 0.10 watts
- 4 hrs/day
- 1.6 watt hr/day total

Area Lanterns (2)

- 0.50 watts o 4 hrs/day
- 4 watt hr/day total

COMMUNICATION

Shortwave Radio

- 2.0 watts
- 5 hrs/day
- 10 watt hr/day total

GMRSTwo-Way Radio

- 2.0 watts
- 1 hr/day
- 2 watt hr/day total

(Continues next page)

ENERGY continued from page 13

HAM Radio

- Receiving - 5 watts
- 2 hrs/day
- 10 watt hr/day

- Broadcasting - 20 watts
- 0.5 hrs/day
- 10 watt hr/day

MISCELLANEOUS

Power Tools

- 200 watts required
- 0.5 hrs/day
- 100 watt hr/day

TOTAL POWER REQUIREMENTS 137.6 WATT HR/DAY

The total power requirement for this typical case could be addressed by a 40 watt photovoltaic or "solar" panel exposed to the sun for roughly five hours per day thus producing 200 watt hours/day. The charging system should be at least 20 percent larger than our actual needs to allow for losses in efficiency in charging and using batteries. Photovoltaic panels cost roughly $5-8 per watt of capacity and can be expected to provide their rated amount of power for at least 20 years. Most panels are guaranteed for that long.

Another type of power generator that should be considered is a human powered generator (HPG).

An adult human can produce roughly 100 watts of power for an extended period of time using either arms or legs or a combination of both. The cost is similar to a solar panel and the generator could be expected to last for many years, similar to a solar panel or wind generator.

The human powered generator could be used in a shelter when it is impossible to use a solar panel or wind generator. A human powered generator can be obtained from Wind Stream Power for roughly $500.00 and can produce over 100 watts of power. The HPG would have to be operated roughly two hours per day in order to supply the needed energy in this typical situation.

Wind generators can also be very effective but they require significant materials and labor for setup and would be useful only when there is a fair amount of wind. The wind generator itself only costs about $2 per watt of generating capacity but the setup definitely adds to the cost. If there is a good amount of wind in your area you may wish to invest in a wind generating system. *Homepower Magazine* would be a good source of information for such systems. Please be advised that wind and fuel driven generators may draw attention to your location and cause a security risk.

The alternative power system normally requires a deep cycle battery to store collected power and help stabilize the voltage for power generating equipment. A suitable battery or batteries can be obtained locally for roughly $100.00 for a 50 amp-hour battery. Absorbed-glass-matt (AGM) or gel batteries are preferable in these applications because they resist sulfation and normally last longer than flooded-cell lead-acid batteries. Be advised that regular car batteries are not suitable for these applications because they do not last very long in deep cycle applications.

Batteries that are designed for golf carts or electric floor scrubbers are much better for alternative power applications. Lead-acid batteries perform better if the amount of discharge between recharge cycles is kept low, and if the batteries remain charged most of the time. The sulfation reaction that causes lead-acid batteries to lose capacity only occurs if the batteries go below 12.4 volts. If the batteries are deeply discharged it is better to bring them back to a full state of charge (12.8 volts) before another discharge cycle.

A charge controller is also required to prevent over charging of the battery bank and discharging of the battery when the generating equipment is inactive. A suitable charge controller is available from Atkinson Electronics, Inc. (1-800-261-3602) that can handle up to 150 watts of 12-volt charging current. Charge controllers should also be used on solar panels.

A required piece of equipment is a battery charger for charging rechargeable AAA, AA, C, D, or 9-volt batteries. These small batteries are used to power the lighting and smaller radio equipment. Most battery chargers on the market for this purpose require a 120-volt AC source (normal household electricity). The AccuManager 20 battery charger from www.accupower-usa.com is a very good battery charger and has the ability to charge these smaller batteries from a 120-volt AC source as well as the larger 12-volt deep cycle battery system, which is a rather rare but very useful feature. It also charges much faster than most other charges.

A small inverter is also very useful for powering miscellaneous 120-volt AC appliances such as battery operated hand tools. The cost of such devices is largely dependent on the

Enough batteries should be purchased to power the selected equipment plus a few extras because batteries can fail, also.

capacity but an inverter with a 400 watt capacity can be purchased from many major retailers for roughly $200.00. The inverter uses a 12-volt DC source and converts it into 120-volt AC which is the most common for household appliances.

Make a survey of the household appliances you may need during an emergency and decide how large of an inverter would be required. Try to be prudent in your plan and only prepare for appliances that would be needed in a disaster situation.

A small battery organizer tray that is normally sold with a battery tester would also be very useful for organizing the small AAA, AA, C, D, or nine-volt batteries.

Again, a little bit of preplanning can help a great amount when selecting the lighting and communication equipment to be used. The equipment can be specified so that only one or two sizes of batteries will have to be stored thus reducing the number of batteries that will need to be purchased.

The lighting and communication equipment should be purchased and then tested to ensure that it is in working order before a disaster strikes. It is also a good idea to purchase backup lighting and communication in case the primary equipment fails.

Enough batteries should be purchased to power the selected equipment plus a few extras because batteries can fail also.

There are also decisions to be made regarding what type of rechargeable batteries to purchase. Nickel metal-hydride (NiMH) are preferable in these applications because they can store more energy, have less of a tendency to develop a capacity limiting memory, and can be charged more cycles than comparable nickel cadmium (NiCd) batteries. NiMH batteries are normally rated for at least 1000 recharge cycles and can and should be nearly completely discharged each cycle for better battery health and to reduce the amount of recharge cycles. Lithium batteries are also just coming onto the market and promise to be even better in many aspects but they are not commonly available at this time.

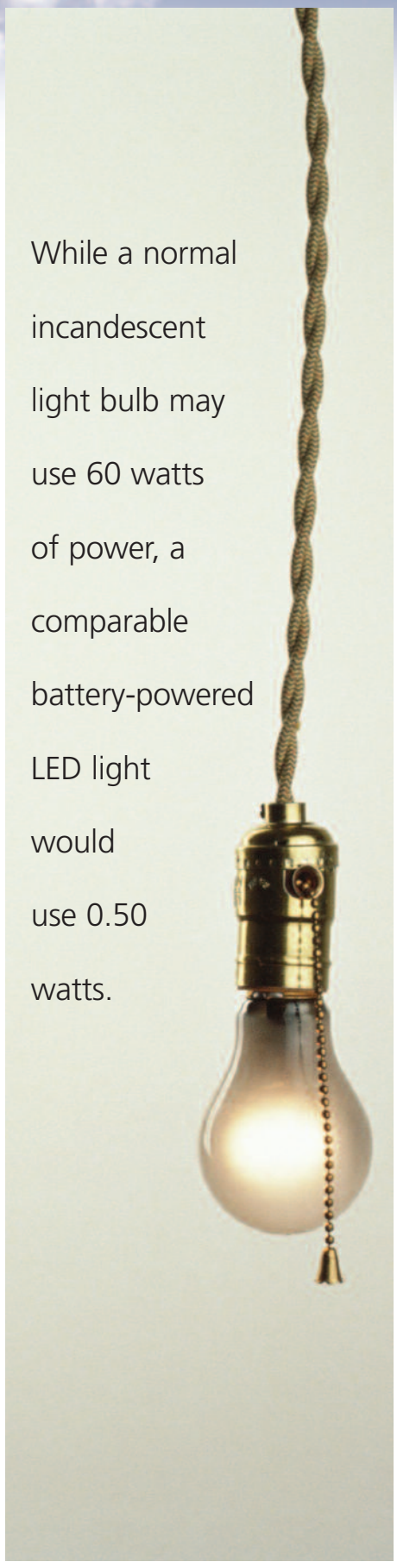
Small rechargeable batteries are manufactured with various power ratings and you should expect to pay a little more for higher rated batteries. They are rated in the number or milli or thousandths of an Amp-hour, normally abbreviated as mAh. A AAA battery might be rated at 800 mAh, a AA battery rated at 2500 mAh, and a "D" battery rated at 8500 mAh. The increased power ratings are due to the increased size of the batteries.

In summary, a very capable alternative power system with total redundancy can be purchased for less that $1500.00. This system would provide power for critical needs during a disaster situation and would also be useful in camping or vacation applications. The price may seem a little steep, but the investment would be well worth it in the even of an emergency situation.

EQUIPMENT LIST

- 1 - 40-watt photovoltaic (solar) panel $250.00
- 1 - 100-watt human powered generator $500.00
- 2 - 12-volt charge controllers $120.00
- 2 - 50 amp-hour deep cycle batteries $200.00
- 2 - Accumanager 20 battery chargers $100.00
- 2 - 400-watt inverters $200.00
- 16 - AA 2500 mAh batteries $40.00
- 8 - D 8500 mAh batteries $40.00

TOTAL $1350.00 ●



Before, during & after an

EARTH QUAKE

Fall 2006

Most of this material has been taken from the FEMA website, www.fema.gov /index.shtm.

What to do Before an Earthquake

Earthquakes strike suddenly, violently and without warning. Identifying potential hazards ahead of time and advance planning can reduce the dangers of serious injury or loss of life from an earthquake. Repairing deep plaster cracks in ceilings and foundations, anchoring overhead lighting fixtures to the ceiling, and following local seismic building standards, will help reduce the impact of earthquakes.

Six Ways to Plan Ahead

1. Check for Hazards in the Home

- Fasten shelves securely to walls.
- Place large or heavy objects on lower shelves.
- Store breakable items such as bottled foods, glass, and china in low, closed cabinets with latches.
- Hang heavy items such as pictures and mirrors away from beds, couches, and anywhere people sit.
- Brace overhead light fixtures.
- Repair defective electrical wiring and leaky gas connections. These are potential fire risks.

Secure a water heater by strapping it to the wall studs and bolting it to the floor. Repair any deep cracks in ceilings or foundations. Get expert advice if there are signs of structural defects.

- Store weed killers, pesticides, and flammable products securely in closed cabinets with latches and on bottom shelves.

2. Identify Safe Places Indoors and Outdoors

- Under sturdy furniture such as a heavy desk or table.
- Against an inside wall.
- Away from where glass could shatter around windows, mirrors, pictures, or where heavy bookcases or other heavy furniture could fall over.
- In the open, away from buildings, trees, telephone and electrical lines, overpasses, or elevated expressways.

3. Educate Your Family Members

- Study Lesson 7 on Natural Disasters in the TACDA Academy.
- Contact your local emergency management office or American Red Cross chapter for more information on earthquakes. Read the "How-To Series" for information on how to protect your property from earthquakes.
- Teach children how and when to call 9-1-1, police, or fire department and which radio station to tune to for emergency information. Teach all family members how and when to turn off gas, electricity, and water.

4. Have Supplies on Hand
Flashlight and extra batteries.

- Portable battery-operated radio and extra batteries.
- First aid kit and manual
- Emergency food and water.
- Non-electric can opener.
- Essential medicines.
- Cash and credit cards.
- Cash and credit cards.
  Sturdy shoes.

5. Develop an Emergency Communication Plan

- In case family members are separated from one another during an earthquake (a real possibility during the day when adults are at work and children are at school), develop a plan for reuniting after the disaster.
- Ask an out-of-state relative or friend to serve as the "family contact." After a disaster, it's often easier to call long distance. Make sure everyone in the family knows the name, address, and phone number of the contact person.

6. Prepare an Expedient Shelter

- Store camping tent and supplies near an outside door.
- Prepare an alternate site, such as an underground shelter or camping trailer. Keep these areas supplied with emergency foods and equipment. Prepare this shelter as if it could become your temporary home.

What to do During an Earthquake

Stay as safe as possible during an earthquake. Be aware that some earthquakes are actually foreshocks and a larger earthquake might occur. Minimize your movements to a few steps to a nearby safe place and stay indoors until the shaking has stopped and you are sure exiting is safe.

If Indoors

- DROP to the ground; take COVER by getting under a sturdy table or other piece of furniture; and HOLD ON until the shaking stops. If there isn't a table or desk near you, cover your face and head with your arms and crouch in an inside corner of the building.
- Stay away from glass, windows, outside doors and walls, and anything that could fall, such as lighting fixtures or furniture.
- Stay in bed if you are there when the earthquake strikes. Hold on and protect your head with a pillow, unless you are under a heavy light fixture that could fall. In that case, move to the nearest safe place. Stay inside until shaking stops and it is safe to go outside. Research has shown that most injuries occur when people inside buildings attempt to move to a different location inside the building or try to leave.
- Be aware that the electricity may go out or the sprinkler systems or fire alarms may turn on.
- DO NOT use the elevators.
- Follow the Triangle of Life posture if you are in a non-reinforced brick or concrete building. Curl into a crouching position near a heavy object such as a bed or couch.

If Outdoors

- Stay there.
- Move away from buildings, streetlights, and utility wires.
- Once in the open, stay there until the shaking stops. The greatest danger exists directly outside buildings, at exits, and alongside exterior walls. Many of the 120 fatalities from the 1933 Long Beach earthquake occurred when people ran outside of buildings only to be killed by falling debris from collapsing walls. Most earthquake-related casualties result from collapsing walls, flying glass, and falling objects. *(Continues next page)*

EARTHQUAKE continued from page 17

If in a Moving Vehicle

- Stop as quickly as safety permits and stay in the vehicle (unless under an overpass). Avoid stopping near or under buildings, trees, overpasses, and utility wires.
- Proceed cautiously once the earthquake has stopped. Avoid roads, bridges, or ramps that might have been damaged by the earthquake.

If Trapped Under Debris

- Do not light a match, as there could danger of explosion from gas leaks.
- Do not move about or kick up dust.
- Cover your mouth with a handkerchief or clothing.
- Tap on a pipe or wall so rescuers can locate you. Use a whistle if one is available. Shout only as a last resort. Shouting can cause you to inhale dangerous amounts of dust.

What to Do After an Earthquake

Expect aftershocks. These secondary shockwaves are usually less violent than the main quake but can be strong enough to do additional damage to weakened structures and can occur in the first hours, days, weeks, or even months after the quake.

- Listen to a battery-operated radio or television. Listen for the latest emergency information.
- Use the telephone only for emergency calls. Open cabinets cautiously. Beware of objects that can fall off shelves. Stay away from damaged areas.
- Stay away unless police, fire, or relief organizations have specifically requested your assistance. Return home only when authorities say it is safe.
- Be aware of possible tsunamis if you live in coastal areas. These are also known as seismic sea waves (mistakenly called "tidal waves"). When local authorities issue a tsunami warning, assume that a series of dangerous waves is on the way. Stay away from the beach.
- Help injured or trapped persons. Remember to help your neighbors who may require special assistance such as infants, the elderly, and people with disabilities. Give first aid where appropriate. Do not move seriously injured persons unless they are in immediate danger of further injury. Call for help.
- Clean up spilled medicines, bleaches, gasoline or other flammable liquids immediately. Leave the area if you smell gas or fumes from other chemicals.
- Inspect chimneys for damage. Unnoticed damage could lead to a fire.
- Check for gas leaks. If you smell gas or hear blowing or hissing noise, open a window and quickly leave the building. Turn off the gas at the outside main valve if you can and call the gas company from a neighbor's home. Professionals only should turn it back on.
- Look for electrical system damage. If you see sparks or broken or frayed wires, or if you smell hot insulation, turn off the electricity at the main fuse box or circuit breaker. If you have to step in water to get to the fuse box or circuit breaker, call an electrician first for advice.
- Check for sewage and water lines damage. If you suspect sewage lines are damaged, avoid using the toilets and call a plumber. If water pipes are damaged, contact the water company and avoid using water from the tap. You can obtain safe water by melting ice cubes. ●

MAJOR CHANGES

in CPR Guidelines

Spring 2007

More than a year ago, the American Heart Association revised CPR guidelines to put more emphasis on chest presses, recommending 30 instead of 15 for every two breaths.

"Basically, the more times someone pushes on the chest, the better off the patient is," said Dr. Michael Sayre, an Ohio State University emergency medicine professor who helped develop the guidelines. "We have made things simpler," he said. "Push hard on the person's chest and push fast."

LAY RESCUER CPR

Listed below are a few of the major changes in the 2005 guidelines recommendations for lay rescuer CPR:

If alone with an unresponsive infant or child, give about 5 cycles of compressions and ventilations (about two minutes) before leaving the child to phone 911.

Use the head tilt-chin lift for all victims.

Take five to ten seconds (no more than ten seconds) to check for normal breathing in an unresponsive adult or for presence or absence of breathing in the unresponsive infant or child. Take a normal (not a deep) breath before giving a rescue breath to a victim.

Give each breath over one second. Each breath should make the chest rise.

If the victim's chest does not rise when the first rescue breath is delivered, perform the head tilt-chin lift again before giving the second breath.

After delivery of two rescue breaths, immediately begin chest compressions (and cycles of compressions and rescue breaths). Do not stop to check for signs of circulation before beginning chest compressions.

Use the same 30:2 compression-to-ventilation ratio for all victims.

For children, use one or two hands to perform chest compressions and compress at the nipple line; for infants, compress with two fingers on the breastbone just below the nipple line.

The full, new CPR recommendations can be downloaded in a pdf format from:

http://www.americanheart.org/presenter ●

FOOD STORAGE Recommendations

The following rations would sustain an average adult for one year:

Grains:	300 lbs. (including wheat, flour, rice, pasta)
Legumes:	60 lbs. (including dry beans, lima beans, soy beans, lentils)
Sugars:	60 lbs.(including honey, white sugar, brown sugar, jams)
Fats and oils:	25 lbs.(including shortening, vegetable oil, peanut butter)
Milk:	75 lbs. (including dry and evaporated)
Cooking essentials:	baking powder, baking soda, yeast, salt, vinegar
Water:	14 gallons (provides one gallon per day for two weeks)
Bleach:	1 gallon

(www.survivalring.org)

It is also recommended by Dr. Art Robinson of the TADCA Board of Directors, that you have 1 kg. of vitamin C (only in the form of crystalline ascorbic acid).

UNREADY

For This Attack

May/June 2005

Chairman of the Senate Judiciary Subcommittee on Terrorism, Technology and Homeland Security April 16, 2005

Recently a Senate Judiciary subcommittee of which I am chairman held a hearing on a major threat to the American people, one that could come not only from terrorist organizations such as al Qaeda but from rogue nations such as Iran and North Korea.

An electromagnetic pulse (EMP) attack on the American homeland, said one of the distinguished scientists who testified at the hearing, is one of only a few ways that the United States could be defeated by its enemies – terrorist or otherwise. And it is probably the easiest. A single Scud missile, carrying a single nuclear weapon, detonated at the appropriate altitude, would interact with the Earth's atmosphere, producing an electromagnetic pulse radiating down to the surface at the speed of light. Depending on the location and size of the blast, the effect would be to knock out already stressed power grids and other electrical systems across much or even all of the continental United States, for months if not years.

Few if any people would die right away. But the loss of power would have a cascading effect on all aspects of U.S. society. Communication would be largely impossible. Lack of refrigeration would leave food rotting in warehouses, exacerbated by a lack of transportation as those vehicles still working simply ran out of gas (which is pumped with electricity). The inability to sanitize and distribute water would quickly threaten public health, not to mention the safety of anyone in the path of the inevitable fires, which would rage unchecked. And as we have seen in areas of natural and other disasters, such circumstances often result in a fairly rapid breakdown of social order.

American society has grown so dependent on computer and other electrical systems that we have created our own Achilles' heel of vulnerability, ironically much greater than those of other, less developed nations. When deprived of power, we are in many ways helpless, as the New York City blackout made clear. In that case, power was restored quickly because adjacent areas could provide help. But a large-scale burnout caused by a broad EMP attack would create a much more difficult situation. Not only would there be nobody nearby to help, it could take years to replace destroyed equipment.

Transformers for regional substations, for example, are massive pieces of equipment that are no longer manufactured in the United States and typically take more than a year to build. In the words of another witness at the hearing, "The longer the basic outage, the more problematic and uncertain the recovery of any [infrastructure system] will be. It is possible, indeed, seemingly likely, for sufficiently severe functional outages to become mutually reinforcing, until a point at which the degradation … could have irreversible effects on the country's ability to support any large fraction of its present human population." Those who survived, he said, would find themselves transported back to the United States of the 1880s.

This threat may sound straight out of Hollywood, but it is very real. CIA Director Porter Goss recently testified before Congress about nuclear material missing from storage sites in Russia that may have found its way into terrorist hands, and FBI Director Robert Mueller has confirmed new intelligence that suggests al Qaeda is trying to acquire and use weapons of mass destruction. Iran has surprised intelligence analysts by describing the mid-flight detonations of missiles fired from ships on the Caspian Sea as "successful" tests. North Korea exports missile technology around the world; Scuds can eas-

ily be purchased on the open market for about $100,000 each.

A terrorist organization might have trouble putting a nuclear warhead "on target" with a Scud, but it would be much easier to simply launch and detonate it in the atmosphere. No need for the risk and difficulty of trying to smuggle a nuclear weapon over the border or hit a particular city. Just launch a cheap missile from a freighter in international waters, al Qaeda is believed to own about 80 such vessels, and make sure to get it a few miles in the air.

Fortunately, hardening key infrastructure systems and procuring vital backup equipment such as transformers is both feasible and, compared with the threat, relatively inexpensive, according to a comprehensive report on the EMP threat by a commission of prominent experts. But it will take leadership by the Department of Homeland Security, the Defense Department, and other federal agencies, along with support from Congress, all of which have yet to materialize.

The Sept. 11 commission report stated that our biggest failure was one of "imagination." No one imagined that terrorists would do what they did on Sept. 11. Today few Americans can conceive of the possibility that terrorists could bring our society to its knees by destroying everything we rely on that runs on electricity. But this time we've been warned, and we'd better be prepared to respond. ●

Practical
EMP PROTECTIVE MEASURES

May/June 2005

The electromagnetic pulse (EMP) is a strong electrical field, associated with all high explosives. These induced currents and voltages cause malfunctions of electrical equipment. Nuclear explosions of all types are accompanied by an EMP, the intensity and duration of which are dictated by the height of the detonation.

The energy from an EMP is collected in any long runs of wire, exposed cable runs, piping or conduit, large antennas, power and telephone lines, or long runs of electrical wiring in buildings and can be of the order of 60,000 volts per meter.

The collectors act to magnify the weak EMP just as a magnifying glass does to sunlight. The longer the collector, the greater the amount of energy collected. The energy collected is sufficient to cause damage to attached electrical and electronic equipment.

All unprotected solid-state electronics systems are vulnerable. It is possible that some of the computerized ignitions in our vehicles would fail. Most relay stations required by 2-meter amateur radios and mobile phones would cease to function. It is likely that a large yield, high-altitude EMP weapon would be detonated during the first minutes of a nuclear attack. It could affect an area of several thousand miles in diameter. This type of weapon could be deployed on a ballistic missile or by satellite. Neither blast nor radiation damage would be associated with a high altitude electro magnetic pulse (HEMP).

It is also possible that a smaller range EMP attack could come via terrorists. Several rogue nations and terrorist groups have or will soon have this capability.

Listed below are seven anti-EMP actions that should be considered:

1. Maintain a supply of spare parts for radios and automobile computerized ignitions.

(Continues next page)

EMP continued from page 21

2. Always keep ham radio base stations completely disconnected from their power source when not in use.
3. Purchase several inexpensive CB and short wave radios and store your radios and other sensitive equipment in a faraday cage such as an old microwave oven or a metal drum with a tightly fitting lid. These radios can be purchased from your local electronics store or on the Internet for as low as $20.00, depending on the capabilities and features desired.
4. In an escalating crises, shift to emergency power at the earliest possible time.
5. If radio communication is essential during threat period, use only one system at a time. Disconnect all other systems from antennas, cables and power.
6. Purchase 40 to 80 meter amateur radios. These frequencies do not rely on relay stations and will continue to function properly when protected in a faraday cage.
7. Protect your generators by placing chicken wire fencing under and around the generator. Keep the cords wound and inside the wire cage. If you do not have a generator, you can purchase one from most home supply company's such as The Home Depot or Lowes, or from numerous suppliers on the Internet. Generators generally range in price from a few hundred dollars up to several thousands of dollars, depending on features and power output capabilities.

Build a simple faraday cage from a small metal garbage can and lid. The lid must fit snugly over the can. If the lid does not make perfect metal-to-metal contact, the open area will act as a 'slot antennae' and allow EMP to damage your equipment.

To further protect your equipment, purchase a metal screen about 6 inches wide and as long as the circumference of the can. Fold the metal screen in half-length wise and place it around and over the lip of the garbage can. The lid should then fit snugly against the screen and can, protecting all equipment contained inside the can.

Any metal can will act as a faraday cage. However, good metal-to-metal contact is imperative. If the can has been painted, make sure to remove the painted area around the lid with sand paper.

EMP can act as an early warning system. Commercial power is likely to be lost, so every instance of power failure should be suspected as a possible attack warning. Certain simple tests will quickly reveal an EMP.

1. You may see an unusually bright light, which lasts longer than lightning. If this light is associated with a power failure, it should be considered as a possible EMP detonation. Do not look directly at the light, as it may damage your eyes. Not all areas of the United States would see the light, depending on their physical distance away from the location where the blast occurs.
2. Check the telephone for a dial tone. A telephone usually does not fail in a simple power failure, but it would most probably fail in an EMP. However, some phones do fail regularly and test #3 should be used to confirm this failure.
3. Only five percent of the radio stations in the nation have been hardened against EMP. After an EMP most of the radio stations would lose transmission. Whenever there is a power drop, a battery-powered radio should be used to check for loss of transmission. A simple lightning strike could take out one station, but only an EMP would take out a large number of the radio stations. This transmission failure would be a good indication that an attack is eminent. Keep a small transistor radio wrapped in aluminum foil for this purpose.

The flight time of a missile from a submarine varies with the distance from the coast. Washington D.C. may only have a two minute warning. Mid-continent states would receive about eight minutes warning time before the first submarine launched ballistic missiles (SLBMs) could arrive. The ICBMs would arrive in that area about 25 minutes later. These few minutes should be used to find expedient sheltering if away from home, or to quickly access a permanent shelter.

If time permits, gas lines to the home should be turned off and curtains or drapes closed to protect against the thermal pulse. Since the end of the cold war, indications are that the Soviet submarines are no longer at close range and the SLBM's would have a flight time similar to the ICBM's. However, all haste should be made to reach shelter as quickly as possible.

If the EMP occurs during the night, it would be difficult to observe. A simple power drop alarm can be constructed from a battery and horn to awaken those who are sleeping. Look for directions for constructing this EMP alarm online. ●

American Civil Defense Association (TACDA) Executive Director, Sharon Packer.

A Well-Stocked

EMERGENCY FIRST-AID KIT

Spring 2007

The contents of a home/office/auto first aid kit tend to become scattered if they aren't stored in a dedicated location. Select a container that is lightweight, and if possible, water resistant. Ammo boxes, tool boxes, tackle boxes, and suitable soft packs make fine containers. Additional waterproof wrapping is suggested to protect valuable items inside in case of severe conditions.

Triangular bandages (3)
Roller bandages (2x1", 2x3")
Sterile gauze dressings (10x 4X4s, 2 large abdominal, 5x2x2's)
Band Aids (variety of shapes)
Eye patch bandages (2)
Cotton balls
Cotton-tipped applicators (Q-Tips)
Sanitary pads (typical and wound use)
Scissors
Knife/razor blades
Tweezers
Thermometer
Small measuring cup(s)
Flashlight (non-battery)
Waterproof matches
Needles
Safety pins (many uses)
Plastic spoon
Can/bottle opener
Ziploc bags (quart & gallon sizes)
Wash and dry towelettes
First aid book
Notebook/pencil
Insect repellent (DEET)
Splints (Sam and/or rigid types)
Rubber gloves
Chemical cold packs (2) soft-tissue injuries
Tongue depressors (typical and splint use)
Adhesive/silk tape
List of emergency numbers
Money for emergency use, telephone, etc.

The following in small, waterproof containers:
Baking soda
Table salt
Calamine/Benadryl-type lotions (antihistamine)
Rubbing alcohol /wipes
Ammonia inhalants
Syrup of Ipecac (for poisoning. Call Poison Control first)
Activated charcoal syrup (for poisoning)
Tylenol/Aspirin/Motrin (use with care)
Sunscreen (SPF)
Antibiotic ointment (Neosporin, Triple antibiotic, etc.)
Antacid tablets/liquid (Malox, Milk of Magnesia, etc.)
Diarrhea remedy (Kaopectate, etc.)
Hydrogen Peroxide (for small cuts, scrapes only)
Soap (liquid/bar)
Constipation remedy (Fletcher's Castoria, etc.)
Petroleum Jelly
Rash Remedy (Desitin, Hydrocortizone, etc.)
Colic tablets (if needed)
Burn ointment (Burn Free, etc.)
Bulb syringe (eye, wound rinsing)
Antiseptic/analgesic spray
Sterile eye wash

Recommended but not typically required:
Elastic bandages (Ace type, soft-tissue injuries)
Steri-strips/butterfly dressings
Constriction band (tourniquet, seldom used)
"The Extractor" (by Sawyer for bites/stings)
Providone iodine swabs
Boric acid solution (eye wash)
Duct tape (blister prevention, etc.)
Chemical heat pads

Extra items to expand your kit-require additional skills:

• Survival Blankets/bags • Hemostats (Kelly forceps) • Sphygmomanometer • Cervical Collar • Suture Kit • Anaphylasis Kit (Epi-Pen,Ana-Kit) • Emergency O.B. Kit (sheet, towels, Chux Pads, bulb syringe, scissors, Hemostats, soap, etc.)

Don't forget to include immediate access to medications and devices specific to special medical needs (diabetic, age-related, recent prescriptions, eyeglasses, heart medications, etc.)

The New HAM ADVISOR

Spring 2006

This article has been written to help you with your selection of a radio, antenna and power supply, and to guide you with the requirements for installation and proper operating procedures.

CHOOSING YOUR RADIO

There are many good ham radios from which to choose. New hams would be well advised to choose from a time-proven name brand such as Alinco, Icom, Kenwood or Yaesu. A hand-held transceiver (HT) is very convenient for use during field operations.They are inexpensive and light-weight.

For vehicle use of an HT, we recommend that a 1/4th or 5/8ths wave magnetic antenna be mounted to the outside of the vehicle. The HT radios are normally in the frequency range of two-meter or two-meter/440 and operate in the very high frequency (VHF)range. The drawbacks to these radios are that they have limited power out-put, and the batteries must be recharged on a regular basis.

HIGH FREQUENCY RADIOS

If your intention is to use the radio during a nuclear event, choose a high frequency (HF) radio in the 40- to 80-meter range. HF radios do not require lay stations (repeaters) for their use. The electro-magnetic pulse (EMP) associated with high-attitude nuclear weapons would leave most all relay stations non-functional.

Radios not in use should be stored in Faraday cages(areas completely surrounded by metal)to protect them from the EMP. Metal garbage cans, ammo cans, and old microwave ovens make good faraday cages. You may wish to purchase an inexpensive CB for "line-of-site" communications after a nuclear event. CBs will function much the same as a two-meter HT or mobile, and are much less expensive.

HF radios and antennas are quite expensive if purchased new, but they are the only dependable source of communications over long distances after a nuclear event. HF radios are very powerful and can be powered by either A/C or D/C power sources.

VERY HIGH FREQUENCY RADIOS

Radios in the very high frequency(VHF) range require the use of relay stations. HF radios function in the two-meter range. They are relatively inexpensive and are an excellent choice for new Hams. VHF radios become "line-of-site" only, if the relay stations become non-functional.

MOBILE RADIOS

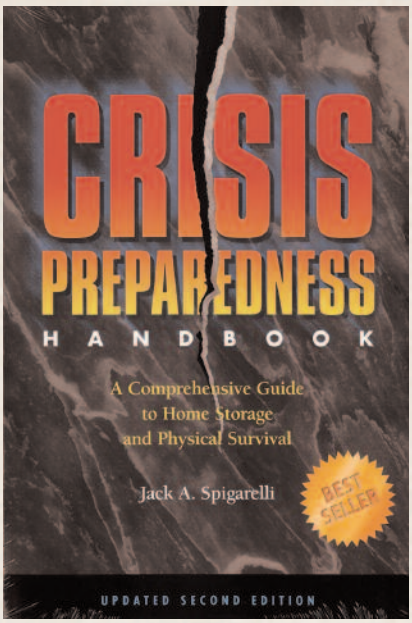
Mobile HF radios can be permanently mounted in a vehicle for use on a daily basis. The mobile HF radio receives its power from the car battery. The cables from the radio should run directly to the battery for best performance. Other advantages are that the hand microphone is easy to use and the mobile radios have much more power than HT radios. "Noise" from the vehicle electronics sometimes becomes a problem, but can be resolved with a commercially made filter.

BASE STATIONS

Base stations offer the convenience of both A/C and D/C 12-volt back-up power. Many new Hams choose to use a two-meter VHF mobile radio for their home-based station. The 12- volt backup battery is essential for emergency use. For two-meter radios, a 12-20 amp filtered supply should do very well. HF radios may require a larger power supply.

SUMMARY

A five-watt VHF hand-held radio is a good starter radio for Hams on the go and on a budget. If you wish to operate from your home most of the time, a two-meter VHF mobile used as a base is a good inexpensive choice. If you are planning to use your radio after a nuclear event, consider purchasing an HF radio for your Base Station and keep it in a Faraday cage when not in use. ●



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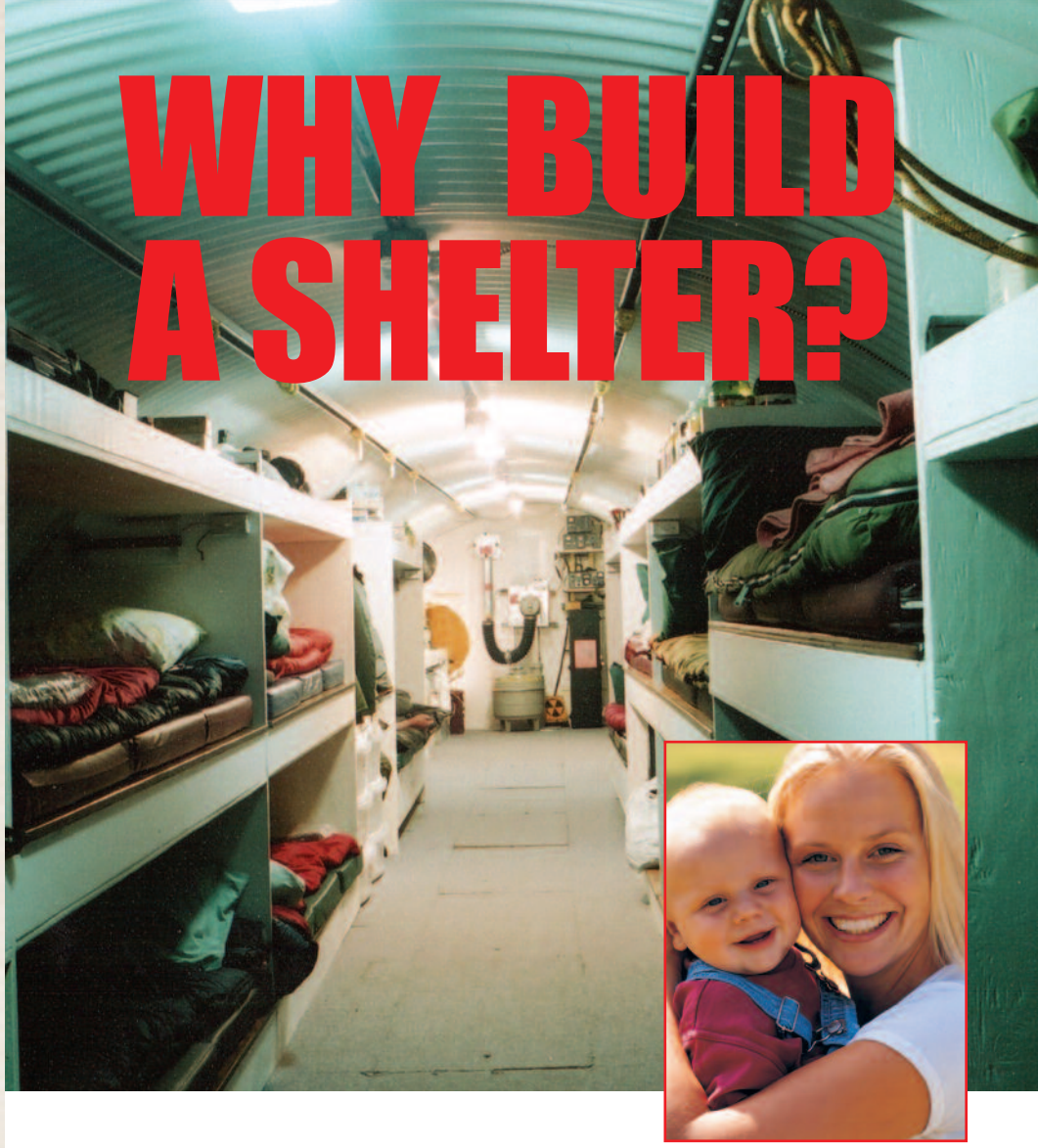

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YOUR FAMILY

IS YOUR HIGHEST PRIORITY!

Our website is designed to help you find protection from the all-too-real threats that exist in America today and, most importantly, what you, your family and friends can do to protect yourselves from these disasters.

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