JOURNAL OF

Civil DEFENSE

VOLUME 44 ISSUE 1, 2011

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IN THIS ISSUE

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PRESIDENT'S MESSAGE

We can learn a valuable lesson from the recent problems with the earthquakes in Japan and the near panic that was created in this country due to lack of preparations and lack of knowledge of nuclear issues. The entire world watched in horror as plumes of steam and smoke emanated from the crippled nuclear reactor and occasional explosions rocked the facility. Many people in this country were concerned about possible contamination in this country and were desperate to obtain supplies and radiation detection equipment.

I contrast those feelings of fear with the reaction of those that I know that understand the threats from radiation and have quietly and thoroughly prepared for such an event. They watched the same events with empathy for the Japanese people but with an understanding that the actual threat to anyone living in the US was very remote and that even if there happened to be a similar problem in this country it could be managed without fear and panic or a rush to obtain needed supplies.

We can and should be prepared to meet any natural or man made disaster with an understanding of the actual threat and a reasonable amount of preparations that would significantly improve our chances of survival. That creates feelings of confidence and peace and a feeling of security in those that depend on us for protection and direction.

I encourage you continue to learn and prepare and help others to do the same so that they can have the same feelings of peace in an uncertain world.

Jay R. Whimpey
TACDA President

Watch the TACDA website for information about our upcoming Annual Membership Meeting and Conference.

FROM THE EDITOR

It has been a pleasure working with the TACDA board and staff as editor of our *Journal of Civil Defense*. This has been a temporary assignment, and other TACDA supporters will now have the opportunity to serve in this position.

I will continue to serve TACDA in other capacities, but no longer as an employee. Please feel free to continue to email me with your civil defense concerns and questions. We often put your letters in the Journal, and especially enjoy hearing your first hand experiences as you deal with local emergencies.

We have published several articles in this Journal concerning the care for our emergency supplies. There is a great need for alternative power. Many people purchase a generator but do not maintain it properly. It is not an item you can store and not use until it is needed. Please carefully read the article on the maintenance and care of this valuable resource.

We need to be vigilant, also, in caring for and rotating our food supplies. The enlightening article on botulism should be read and the concepts diligently taught to friends and family.

Vacations will bring many families into areas of the country that are new to them. Take note of local threats, such as tornados and floods, in the area through which you are traveling. We have published two articles on tornados that may help you better understand and deal with this threat.

This has been an eventful spring. The disasters have been wide spread and varied. Major earthquakes, tsunamis, tornadoes and volcanic eruptions have taken their awful toll in human lives and suffering. Never has there been a greater need for emergency preparations.

Our prayers and love are sent to all of you, and in particular to those of you who have suffered losses in these terrible recent disasters.

Best Regards,

Sharon Packer
Editor, *Journal of Civil Defense*

A Review of Tornado Safety Issues

By TACDA Staff

Many parts of our country have been plagued with tornadoes this spring. Most people living in areas prone to tornados are well versed in tornado safety issues; but if you are traveling through, or new to these areas, be sure to review these principals with your family.

FACTS ABOUT TORNADOS:
Tornados may strike quickly, with little or no warning.

They may appear nearly transparent until dust and debris are picked up or a cloud forms in the funnel.

The average tornado moves Southwest to Northeast, but they have been known to move in any direction.

The average forward speed of a tornado is 30 MPH, but may vary from stationary to 70 MPH.

Tornadoes often accompany tropical storms and hurricanes.

Waterspouts are tornadoes that form over water.

Tornadoes are most frequently reported east of the Rocky Mountains during the spring and summer months. Peak tornado season in the southern states is from March through May; in the northern states, it is late spring through early summer.

Tornadoes are most likely to occur between 3 p.m. and 9 p.m., but can occur at any time.

FAMILIARIZE YOURSELF WITH THESE TERMS TO HELP IDENTIFY A TORNADO HAZARD:

Tornado Watch
Tornadoes are possible. Remain alert for approaching storms. Watch the sky and stay tuned to NOAA Weather Radio, commercial radio, or television for information. Before a tornado hits, the wind may die down and the air may become very still. A cloud of debris can mark the location of a tornado even if a funnel is not visible. Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

Tornado Warning
A tornado has been sighted or indicated by weather radar. Take shelter immediately.

Guidelines and instructions for building a safe room:
Safe rooms built below ground level provide the greatest protection, but a safe room built in a first-floor interior room may also provide the necessary protection. Below ground safe rooms must be designed to avoid accumulating water during the heavy rains that often accompany severe windstorms.

A safe room must be built to withstand high winds (F-5 tornadoes can reach velocities of 318 mph) and flying debris, even if the rest of the residence is severely damaged or destroyed. Consider the following when building a safe room:

Above ground safe rooms must be adequately anchored to resist overturning and uplift.

The connections between all parts of the safe room must be strong enough to resist high wind velocities and penetration by windborne objects and falling debris.

Walls and ceilings of the safe room must be structurally independent from the structure of the residence so that damage to the residence will not compromise the safe room.

Before a Disaster:
- Make a plan.
- Identify your nearest shelter.
- Prepare a 72-hour kit.
- Identify at least two family contacts and have all family members memorize their telephone numbers.

What to do during a Tornado Watch:
Be alert to changing weather conditions.

WHAT TO DO DURING A TORNADO WARNING:
Seek shelter immediately!
Go to a pre-designated shelter area such as a safe room, basement or storm shelter. Grocery store coolers and bank vaults make good expedient shelters.

If there is no basement, go to the center of an interior room on the lowest level (closet, interior hallway) away from corners, windows, doors, and outside walls. Put as many walls as possible between you and the outside. Get under a sturdy table and use your arms to protect your head and neck. Do not open windows.

If you are in a vehicle, trailer, or mobile home, leave immediately and seek shelter. If in an urban or congested area, never try to outrun the tornado in your vehicle.

If you are outside and cannot reach shelter, lie flat in a nearby ditch or depression and cover your head with your hands. Be aware of the potential for flooding. Do not seek shelter under an overpass or bridge. You are safer in a low, flat location.

Continues on page 11

Is There a KILLER Lurking In Your Food Storage?

Jonathan B. and Kylene Anne Jones

As we prepare for an uncertain future, there is a steep learning curve with mountains of information to assimilate. We try our very best to get the job done with the knowledge we have acquired, usually making a few mistakes along the way. Some mistakes are simple and easy to correct, others might be deadly. It is just as important to store food safely, as it is to store food. One significant consideration is the nasty bacteria botulism and its deadly toxins. This article will focus on food-borne botulism which may be found in your home food stores unless you are careful.

What is Botulism?

Botulism is a rare, deadly poisoning which is caused from toxins produced by bacteria known as Clostridium botulinum. It is found in soil and water throughout the world. High-moisture, low-salt, low-acid environments without oxygen or refrigeration are conditions which favor its growth. Clostridium botulinum produces spores which produce a toxin that may be found in improperly canned or preserved food. Botulism may potentially cause death and is considered a medical emergency. There are three common types of botulism:

Infant botulism usually occurs between two and six months when bacterial spores grow inside the baby's intestinal tract. Bacteria may be introduced by eating honey but more likely from exposure to contaminated soil.

Food-borne botulism thrives in low-oxygen environments and pro-

If it looks spoiled, smells funny, or foams during heating, don't risk it. Throw it away.

duces dangerous toxins. When food containing the toxin is eaten it disrupts nerve function resulting in paralysis. The source of this form is often home-canned foods which are low in acid such as beets, corn or green beans. It has also occurred from a variety of sources including: fermented seafood, smoked or raw fish, cured pork and ham, sausage, honey, corn syrup, chili peppers, olives, soups, spinach, asparagus, potatoes, and oil infused with garlic.

Wound botulism can enter the site of a wound so small you might not notice you have it, such as a scratch. The bacteria can multiply resulting in a dangerous infection as it produces the toxin.

Symptoms and Treatment

Symptoms of food-borne botulism usually begin within 8-36 hours of exposure. Diagnosis may be challenging as botulism poisoning may resemble a variety of other illnesses at the onset. Early medical intervention increases the chance of survival. No fever is present with botulism poisoning. Symptoms may include difficulty speaking or swallowing, blurred or double vision, facial weakness on both sides of face, drooping eyelids, dry mouth, trouble breathing, nausea, vomiting, abdominal cramps and paralysis.

The most immediate danger is the inability to breathe. Clinical diagnosis is the usual form of diagnosis. Lab tests can confirm the diagnosis but they may take a few days to get the results. Immediate treatment is essential to save life. Some doctors may try to clear the digestive system by inducing vomiting and bowel movements. An antitoxin is available which is injected into the patient. It can attach itself to the toxins preventing further damage. It will not repair nerve damage which has already occurred. Patients may need to be on a ventilator for several weeks as the effects of the toxins gradually diminish.

Prevention

The saying, "An ounce of prevention is better than a pound of cure" is quite applicable here. The serious consequences of exposure to botulism make prevention critical. It might just be a sure death sentence to be exposed to this toxin when good medical care is scarce. The following is a list of suggestions to keep your food supply free from botulism toxins:

- Clean foods well before cooking or processing.
- Use proper techniques when canning foods at home to ensure all bacteria is destroyed. Sterilize home-canned foods by pressure cooking at 250° for 30 minutes. Follow up-to-date local extension agency guidelines making sure to adjust cooking times for high altitude areas.
- Never eat preserved foods if the container is bulging, leaking, moldy or if the food smells bad.
- If you wrap potatoes in foil before baking, eat them hot or store in the refrigerator, do not leave them out at room temperature.
- Consider boiling all home-canned vegetables and meats, without tasting, for 10 minutes. Boil spinach and corn for at least 20 minutes before consuming. Add one minute of boiling time for each 1000 feet above sea level. If it looks spoiled, smells funny, or foams during heating don't risk it. Throw it away.
- Store oils infused with herbs or garlic in the refrigerator.
- Long term storage items such as wheat, white rice, rolled oats, dry beans, etc. should have a moisture content of 10 percent or less. Storing moist items in a low-oxygen environment encourages microbial growth and may result in botulism poisoning.
- Granola, nuts, brown sugar, and dehydrated fruits and vegetables (unless they are dry enough to snap inside and out) should not be stored in reduced oxygen packaging (such as #10 cans or pouches with an oxygen absorber).
- Vacuum packaging will not prevent botulism in moist products. It is appropriate to use a vacuum sealer to prolong shelf-life of dry items (less than 10% moisture such as wheat, popcorn, dry beans, etc.) intended to be stored at room temperature or moist items kept in refrigerator or freezer only.

Botulism is rare in our society due to strict commercial food processing guidelines along with a good supply of clean water. But rare does not mean it can't happen to you or your loved ones. Take some time to evaluate your longer term storage items. Have you stored any moist items improperly in a reduced oxygen environment? If you have, dispose of them now! Home processed foods are great if you are following established up-to-date safe guidelines. Your local extension agency is a good resource and can answer specific questions for you. Don't take chances with the health you are preparing so hard to protect. We encourage safety first in all of your efforts. Keep up the great work building your family's food stores.

NUCLEAR REACTOR ACCIDENTS

By Sharon Packer

THE TERRIBLE DEVASTATION in Japan from the earthquake, tsunami and nuclear power plant failures, have aroused world wide sympathy for the victims of this disaster. Many people have called the TACDA office and expressed concern for their own personal health and safety because of the increased levels of radiation in the United States. There is a great deal of information that continues to circulate about radiation levels and the associated risks. Some of this information is accurate, and some is totally false. Much of the information has political undertones, and was designed to take advantage of the situation in order to spread fear about nuclear power.

We have not experienced a serious nuclear accident in the United States. Nuclear power is efficient and has a small environmental impact. It is the most economical of any form of power generation. We at TACDA, hope this accident will not destroy our ability to continue to build nuclear reactors.

TACDA's Statement

As stated on our TACDA web site: "In TACDA's opinion the United States is NOT currently at risk for significant increases in radiation exposure from the damaged reactors in Japan. Radioactive materials (both airborne and waterborne) released from the reactors must cross the Pacific Ocean and would be extremely diluted by the time they reach the U.S. mainland.

Nuclear events are classified on an International Nuclear and Radiological Event Scale (INES). Information on this rating can be found at www.iaea.org/Publications/Factsheets/English/ines.pdf.

On a scale of zero to seven, the Chernobyl meltdown in the Ukraine was rated as a seven and remains the worst nuclear accident in history. The crisis in Japan has also been rated by the INES, as of March 31, as a Level 7. TACDA Board Member Dr. Gary Sandquist, however, believes this rating is excessive, as the damage and adverse health effects from the reactor accident remain localized to Japan.

Chernobyl was a graphite-moderated reactor. The reactor underwent a prompt nuclear reaction that blew off the top of the building roof. The graphite ignited (and burned like charcoal), lofting large quantities of incinerated fuel high into the atmosphere, which caused widespread contamination. The Japanese reactors involved are boiling water reactors (BWR) and use water as the moderator. Should the cores of these reactors meltdown, it would not cause the same level of wide spread contamination that was seen in the Ukraine and Northern Europe. Meltdown of the fuel rods of a BWR typically results in the aerosolized release of Iodine 131 (131I), Cesium 137 (137Cs) and Strontium 90 (90Sr).

Containment buildings are designed to shield outside areas from the release of radiation. The Chernobyl reactor did not have a containment structure, which allowed the release of

radioactive debris directly into the environment. The very strong containment structures of the damaged Fukushima reactors have remained intact and are functioning as designed. While there has been some venting of radioactive gasses into the atmosphere from the spent fuel storage pools, the amounts of radioactive materials released are far below the level that threatens the health and well being of people outside of Japan."

Radioisotopes

There are three basic isotopes of concern after a BWR nuclear power plant accident: Cesium-137, Strontium-90 and Iodine-131.

Thyroid Blocking Agents (TBAs) protect the thyroid from radioactive iodine that has been ingested or absorbed by the lungs from the air we breathe. Taken as directed, TBAs, such as potassium iodate (KI03), supersaturate the body's fluids with non-radioactive iodine, which is then taken up by the thyroid (the only organ of the body that uses iodine). If subsequently exposed to I-131, the thyroid simply cannot absorb additional iodine and the radioactive Iodine is secreted from the body. TBAs do not (cannot) protect people from Cesium, Strontium or any other radioisotope. Please see the TACDA Academy lessons #6, #8 and #9 (found at www.tacda.org) for more details concerning protective actions against radioisotopes.

We have had numerous requests for information about thyroid blocking agents. Do not take Thyroid Blocking Agents unless directed to do so by your local public health authorities and with the consent of your physician. TBAs can have adverse health effects. However, if we ever do experience a high level contamination of radioactive iodine, then a TBA becomes a life saving medicine, and the benefits far outweigh the risks of taking the TBA.

Chemically, Cesium mimics potassium and all living organisms need potassium. Cesium is water-soluble and if there is Cesium in the air, it can be distributed via natural precipitation as it falls on the grass and leafy vegetables.

SIEVERTS AND REMS
Accumulated dose (1 week)

DOSE (SIEVERTS)	DOSE (REMS)	SYMPTOMS	FEMA PENALTY CHART
0 – 0.25 Sv (0 – 250 mSv)	0-25 Rem	None	
0.25 – 1 Sv (250 – 1000 mSv):	25-100 Rem	Some people feel nausea and loss of appetite: bone marrow, lymph nodes, spleen damaged	Medical care not needed
1 – 3 Sv	100-300 Rem (1000 – 3000 mSv)	Mild to severe nausea, loss of appetite, infection; more severe bone marrow, lymph node, spleen damage: recovery probable, but not assured.	Some need medical care. Few if any deaths.
3 – 6 Sv (3000 – 6000 mSv)	300-600 Rem	Severe nausea, loss of appetite: hemorrhaging, infection, diarrhea, peeling of skin, sterility; death if untreated.	Most need medical care at 450 Rems. More than 50% deaths at 450 Rems. Most die at 600 Rems.
6 – 10 Sv (6000 – 10,000 mSv)	600-1,000 Rem	Above symptoms plus central nervous system impairment; death expected	100% deaths expected over 600 Rems.

DOSE (SIEVERTS)	DOSE (REMS)	SYMPTOMS	FEMA PENALTY CHART
Above 10 Sv (10,000 mSv)	1,000 Rem +	Incapacitation and death.	

FACTORS AFFECTING INDIVIDUAL OUTCOMES:
AGE: The very young and very old are most affected.
OVERALL HEALTH: The fewer impairments, the better the outcome. A positive attitude helps.
LENGTH OF EXPOSURE: A dose received over a few hours is worse than the same dose received over a few days. Damage to the body is cumulative. Good nutrition, adequate rest and medical care improve the outcome.

Roentgen ®, curie, rad, rem are conventional units
Gray (Gy), bequerel (Bq), and sievert (Sv) are SI Units

SIEVERT

1 rem = 10 mSv (millisievert = one thousandth of a sievert). 1 Gy air dose equivalent to 0.7 Sv tissue dose
1 microsievert = 0.0001 rem
1 millirem =0.001 rem
1 rem = 1,000 millirem
1 sievert = 100 rem
1 milli sievert (mSv) = 0.1 rem
1 rem = 0.01 Sv = 1- mSv
1 mrem = 0.01 mSv = 10 microSv

Cesium is tightly bound by clay, and is not taken up by the roots of the plant. It is, however, absorbed by the foliage (called foliar absorption). This is the main portal of entry into the food chain. During periods of active fallout, cows and other meat-producing animals eat the grass. Their meat and milk becomes contaminated with Cesium ingested from the foliage. Our drinking water and fish can also become contaminated with Cesium.

Strontium is in the same chemical group as calcium and mimics calcium in living organisms. The human body concentrates ingested strontium in the bones where it resides, essentially permanently, rather than being eliminated through common bodily functions.

Officials in some European nations are recommending that fresh milk and creamy cheeses should currently not be eaten. They have also cautioned against eating large leafy vegetables.

Sieverts and Roentgens

Much of the information we are receiving is showing radiation levels in Sieverts. European countries measure radiation in Sieverts. This term is not widely understood by people in America. For your convenience, we have prepared a comparative penalty chart showing Sierverts along with the more familiar Roentgens (R) and milliroentgens (mR) doses.

For all practical purposes, the standard units used in the USA for radiation measurement are equivalent: 1 Roentgen (R) = 1 RAD = 1 REM. Since 1 Sievert = 100 REMs (and 1 Gray = 100 RADs, this equivalency can be rewritten 1R = 1 RAD = 1 REM = .01 Sv = .01 Gray.

How, you may ask, do you pair off Grays & Sieverts with REMs & RADs? Sieverts & REMs are both measures of equivalency and both are spelled with an "e": REM and Sievert. RADs and Grays are measures of absorbed dose and are both spelled with an "a": RAD and Gray. The Roentgen, R, has no equivalent SI unit: radiation energy in the SI is expressed in coulombs/kilogram.

JOURNAL OF *Civil*DEFENSE

Readers Ask QUESTIONS

Paul Seyfried & Sharon Packer

Q&A

Q&A

QUESTION

Could you tell me where I can find a good web site for the purchase of radioactive fallout suits that would protect me from alpha and beta fallout and protect me from breathing radioactive particles?

John

ANSWER

Hi John,

Actually, a Tyvek painter's coverall with a hood and booties does a remarkable job keeping particles off of your body ... add a Swiss or other good gas mask and you have a good set up. We recommend taping the gap between the mask and the hood. Understand, however, that the humidity inside will build up quite rapidly and you will be basting in your own sauna the whole time you are in there. Comfort is a problem. We always keep a fold up raincoat and shower cap in our 72 hour kits in our car. Even a scarf or towel will help as an expedient solution.

Such suits are useful for beta/alpha protection (i.e., keeping radioactive particles off your skin) while transiting out of an affected zone, or while going to your shelter. You already know that gamma from fallout will pass right through. While in a good shelter, you can shed all that stuff and live like a normal human being...eating, sleeping, etc.

There is no need for this suit for the current problem in Japan, unless you are near the reactor. Crews working on the reactors can't stand to be in the suits for very long, and are rotated out within hours.

Hope this helps.

Paul Seyfried

QUESTION

I had a question from a customer that has a son in Japan. How can he filter the radioactive particles from his drinking water?

Paulette

ANSWER

Good filters have charcoal in their cores. In all likelihood, charcoal does grab most, if not all radio-nuclides floating around in the water. In any case, an earth filter as described in Nuclear War Survival Skills (available online) can be built on site with a five gallon bucket, some fine gravel, soil, and bath towels. Sandy soil does not work so well...you should use earth with some clay in it. The water emerging from the bottom of the earth filter will be clear, but will then need to be made biologically pure. Assuming Japan's water treatment systems are similar to those in the USA, however, any water coming from a tap (in an uncompromised system) is safe to drink.

Paul

QUESTION

Hello Sharon,

We are currently designing a concrete shelter built to a 15 psi standard. Could you tell us what the calculated movement of the shelter with respect to the ground would be at this blast level? We want to safeguard our pipe penetrations as much as possible and this information would be very helpful.

Jason

ANSWER

Dear Jason,

At 15 psi we would expect to see a 1.5 ft. displacement of the shelter, together with the surrounding ground, at a velocity of 1.5 ft./second. We would expect a 2- inch relative displacement between the shelter and the ground.

The air pressure creates a pressure wave in the ground similar to that of an earthquake. In hard ground, the velocities and deformations are smaller that they are in soft (unfavorable) ground.

The outside pipes may see the full 1.5 ft. displacement from the shelter. They should be kept as short, horizontally as possible, before going vertical. Use a thick walled pipe. Six-inch diameter air pipe, for instance, should be constructed from 6 inch schedule 40 steel pipe (1/4 inch thick).

Sharon

QUESTION

Hello Mr. Seyfried,

I am a 16 year old student (and film maker) in high school, and I was looking on your website about the fallout shelters. I am filming a movie this summer that requires a fallout shelter. Is their any way you can let me film inside one of yours?

The film takes place during a nuclear attack and focuses on a group of people who were taken to government shelters built by the U.S. military. The film starts three weeks after the people were sent to the shelters. The government is communicating with people in the shelters by radio, telling them that they will come to open the shelter doors when it is safe. But no one ever comes and the group in the shelter begins to panic and tries to break out. So with that in mind, would there be a way to remove the door to these shelters so that it would look like they broke out?

Thanks for responding to my email, and I will contact you later to see if my shooting schedule would work for you or for anyone in your circle of friends.

Cameron

ANSWER

Hi Cameron,

An interesting plot, to say the least. You seem to know the direction your life wants to go. A great thing for someone of your age.

Unfortunately, the United States Government (USG) has never funded, and thus never built any shelters for our military or civilian citizenry. Elaborate testing was done by the USG on various shelter designs under the direction of the Truman, and later Eisenhower administrations during atmospheric nuclear weapons tests. However, only a few hardened shelter facilities have been built –and those to house members of Congress, and a few thousand government authorities at the state and Federal level. The rest of us (you), including

our military, do not have shelters and are totally vulnerable to attack.

The Kennedy administration sought to build a national shelter program: but that program died in Dallas, in 1963 when JFK was assassinated. He had intended to unveil the new shelter program. But LBJ, the new president, scrapped the shelter program and went a totally different direction. The next president to try to revive a shelter program was Ronald Reagan. He proposed revving up our Civil Defense program to the tune of $7 billion per year (from a paltry 100 million, or 50 cents per person) and was savaged by Congress for trying. From there on out, Civil Defense was an orphan child, disdained by the military (it took funds away from new weapons programs) and ignored by everyone else. However, of the many shelters identified and marked during this period, many retain their Fallout Shelter sign (faded and worn though it is), and these buildings could still be used as Fallout Shelters.

Secretary of Defense Robert S. McNamara, who began his tenure in this position under Kennedy, forged the silly doctrine of Mutual Assured Destruction ... MAD. Under this doctrine, the United States would deliberately leave its entire civilian and military population totally vulnerable to attack from our nuclear-armed enemies (I'm NOT making this up!). The Soviets and Communist Chinese were delighted, and they pushed forward with huge shelter programs of their own. Russia designed, built, and operates the most extensive and well tested Anti Ballistic Missile (ABM) system in the world.

If there were an attack on our country, it would most likely be initiated by an Electro Magnetic Pulse (EMP) attack. Transportation would essentially cease, with the EMP strike, disabling about ten percent of the nation's vehicles (the ones that were running at the time of the attack), and most all electricity produced by solar systems and commercial power plants would be knocked out. It would be very difficult to reach distant public shelters in that event.

Much can be done to prepare individually, which I believe is a better solution than building large group shelters. Basement shelters can provide adequate protection from fallout (and light blast) in areas that are not downwind of military targets. It is also extremely important that you store food, water and other emergency supplies. I would suggest that you study the TACDA Academy lessons. You are welcome to use any of the material in your film.

You may want to come to visit us and see how nuclear shelters are designed and built. That might make a good movie in and of itself.

Good luck on your project, but you might do some more research on what our situation really is before launching the movie. There are no shelters for Americans per se. Switzerland, Sweden, Norway, Finland, North and South Korea, Russia, China, Yugoslavia, Czechoslovakia, Israel, UAE, Saudi Arabia, Qatar, and other countries have shelter programs. We do not. By the way, the Swiss are still building about 500 shelters each MONTH ... despite having avoided war for over 500 years, and the so-called "end of the Cold War." They know that peace time is the intermission between wars and a good time to get ready for the next one. I am siding with the Swiss.

A Review of Tornado Safety Issues, *continued from page 3*

WHAT TO DO AFTER A TORNADO:

Listen to a battery-operated radio or television for latest emergency information.

Use the telephone for emergency calls, only. Public phones will be functional before private phones.

Open cabinets cautiously. Beware of objects that can fall off shelves.

Stay away from damaged areas unless police, fire, or relief organizations have specifically requested your assistance. Return home only when authorities say it is safe.

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. Leave the area if you smell gas or fumes from chemicals.

Inspect the entire length of chimneys for damage. Unnoticed damage could lead to a fire. Inspect utilities. Check for gas leaks. If you smell gas or hear blowing or hissing noises, open a window and quickly leave the building. Turn off the gas at the outside main valve if it is safe to do so, and call the gas company from a neighbor's home. If you turn off the gas for any reason, do not turn it back on by yourself. Call for a gas company professional to turn it back on for you.

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. Don't stand in water or a wet floor while turning off electricity.

Check for sewage and water lines damage. If you suspect sewage lines are damaged, avoid using the toilets. If water pipes are damaged, contact the water company and avoid using water from the tap. Existing ice cubes are a safe source of drinking water.

Call your family contact, with your location and status, as soon as possible.

Tornado Preparedness Issues

By Kirk Paradise

Having endured the April 27 tornado outbreak in Alabama, I can pass on a few things I learned that may save you some grief. I say I endured the tornadoes, not survived. The closest track was nearly 15 miles from our home. I was not in immediate danger so it was a question of enduring rather than survival.

The outbreak was forecast several days in advance and was widely publicized by the National Weather Service and the media. When something of this magnitude is forecast, it's time to review your Family Plan. Talk it over and rehearse it with all family members. When it is time to take cover, everyone can move quickly and surely.

Have a plan to take cover and don't be afraid or embarrassed to use it. Our protective area was ready. Warnings issued by the National Weather Service were closely followed, as were media accounts of where tornadoes were and where they were headed. Cover was seconds away, if needed.

Later in the day, tornadoes destroyed the power transmission lines from two of the

Tennessee Valley Authority's power plants in northern Alabama that connected them to the gird. Three hundred thousand customers - homes, businesses, schools and churches, etc. across six counties were in the dark. Our NOAA Weather Alert Radio had a 9-volt battery so it continued to work, as did a portable AM/FM/Weather Radio. Everything with a plug on it - TV, radio and the internet failed. Battery powered devices were King.

Conventional Wisdom says, "Have a hard wired phone - it won't go down in a power outage." Well, our Knology landline phone went out soon after the power went out: so did my wife's cell phone service. My cell phone, from a different service provider - intentionally chosen for this possibility - stayed up and was the only link out for several days (although sporadic at first due to high demand).

Some cell phone service providers went down while others stayed up. Cell phone service, even for those that stayed up, was spotty. Some calls I made were dropped: others did not dial through. At times, I could not even send a text message.

Alabama law makes every traffic light an all-way stop if power fails. Stopping at dead traffic lights is an acquired skill. I (and many other drivers) drove right through a dead light on occasion even though I'd just stopped for one a quarter mile before. Somehow, a dead traffic light just doesn't register and evoke the same response as a live traffic light. Even though you travel the same road and stop at the same traffic signals, stopping for them when they are dead requires a high degree of attention and concentration - this is no time for distractions like conversations with passengers or on cell phones or even listening to the radio. The whole character of driving changes. Drivers become unpredictable and must constantly watch what others are doing. The driver behind you may not notice you are stopping at a dead light and could easily rear end you.

Primarily because of the lack of traffic signals and also because so few stores were open, county officials imposed dusk to dawn curfews. It was no idle threat: dozens of drivers and people in public places were arrested for curfew violations. A very few were arrested for looting.

County and municipal leaders plus EMA, utility, medical and school officials held daily briefings which were aired by TV and radio media. The briefings served to inform the public of the status of the recovery and to quell rumors or misinformation. The value of a good public information effort cannot be overstated. Officials clearly and frequently informed the public of details, which affected their lives. This added a great sense of calm and cohesion.

When stores began to reopen, I apprehensively used a debit card. No problem: it went through every time I used it. While I had some emergency cash on hand (some of which I used), I preferred a debit card. Some businesses initially accepted only cash: they were running on generators but their uplinks were down so they could not process credit or debit transactions. I bank at a credit union whose service area is just a few counties away, all of which had no power. All credit union branches and ATMs were closed and without power for several days. Yet, every transaction that I made went through. Somewhere, the credit union, to their "credit" had planned for a massive power outage. This was a tremendous service to their customers.

The F5 tornado in north Alabama left a track 132 miles long through 6 counties and killed dozens and dozens of people

The best shelter is underground. Many of north Alabama's tornadoes were F4 and F5 intensity. Many homes in their paths did not survive. Many of the 250 confirmed fatalities (as this is written, there are still several more missing and unaccounted for) died taking cover. They were not taken by surprise: the protection afforded by the place they took cover was insufficient. One family suffered five fatalities among eight family members. They took cover together in a small interior room, as they had been taught. The tornado was strong enough to demolish their entire home, including their refuge. Every home should have, at least, a "Safe Room" built to FEMA specs, an underground shelter is better. An F5 tornado is strong enough to reduce homes - including those with Safe Rooms - to bare slabs and even scour the asphalt off the street in front. While it's true that only about 2% of tornadoes are F5s, they make up the lack of numbers with fierce energy and longevity. The F5 tornado in north Alabama left a track 132 miles long through six counties and killed dozens and dozens of people. The protective area in our home is a crawl space underneath a set of stairs. In the new house we are building, we have designed a reinforced, underground concrete shelter, just in case.

Paper, Plastic, or... Cloth?

It took a few times to get used to not depositing the wipes into the toilet facility, but with practice and a few reminders the system works.

Survivalblog.com

By Jim Rawles

A couple of years ago I was watching a commercial on television that showed two young men as they stood in a check-out line at a grocery store with a six pack of beer, a bag of chips and a package of toilet paper … when the young men found that they had only enough money for two of the three items, they chose the six pack of beer and the chips. When asked by checker, "paper or plastic?" the decision was unanimous, "paper!"

This stark reality of such a simple decision led me on a journey that would involve many years and begin my search for the answer to the question of how much is enough toilet paper and where do I store it. I never really understood just how important TP was and the impact that it could have on our daily lives until that commercial was played out. Oh sure, like many deer hunters and fishermen or any outdoor type, we all have had our moment where our lack of preparedness has caused us great concern and given us an opportunity to experience the humility of mother nature without TP and all that it encompasses.

The necessity of toilet paper and the amount of storage room necessary for a one to two years supply and the quest to keep it dry, even in our homes, is sometimes a task that has caused me great concern and some sleepless nights to say the least. With a family of seven (who will most probably come home in an emergency) and no way to transport two years of their own TP supply plus their family and their gear, I had to find a way to simplify this dilemma. The one thing that I have learned in the past 28 years is that the simplest ideas most always end up being the best…with that being said, I find myself writing about one of the simplest ideas that my wife has produced for our family, and has ended my search for the perfect ending to the mystery.

Just a short piece of history, first:

About five years ago, we were on a two-week camp out when a sudden and unforeseen four days of rain descended upon our group of 18 families, who were camped in a narrow canyon with rest room facilities about 1/2 mile from our camp. Even though we have our own toilet facilities, we decided to use the rest room facilities provided even though we knew we would have to plan our walks for the sake of nature very carefully. We found that in this situation of being away from these very useful luxuries (our portable outhouses), the trek of 1/2 mile in wet and cold conditions early in the morning or late at night, with a roll of TP tucked under our jackets was sometimes a daring adventure. I lost count of the times a roll of TP was dropped onto the wet ground or in a puddle of water making it completely useless, and of the nature walks that ended half way to the desired destination. Not to mention the rolls of TP that were found early in the morning, standing silently alone atop the picnic table, dripping wet, after someone forgot that TP and rain don't mix.

The use of toilet paper in very damp conditions led many of our group to wonder out loud about ways to solve this problem. The storage of large amounts of TP seemed to be a major concern for the whole group. Keeping it dry usually came up as well - the room necessary to store such was vast, to say the least, when you consider a one or two year supply of this basic luxury. I know that many folks on other blogs and survival sites are stacking phone books to use, or they are storing boxes and boxes of TP and to be quite honest, a phone book or a catalog is not quite the best choice of clean wipe tissue if you have ever tried it, and as my wife discovered, the cost of baby wipes was out of the question and our tries at making our own baby wipes (with environmentally safe soap) were discouraging simply because we knew that eventually we would run out of paper towels. We needed a solution to a problem that everyone will face someday - paper, plastic, a leaf, or well … let's just say any port in the storm, whatever it came to, we still had a choice: find a solution or suffer someday.

They say that every problem is nothing more than a solution in waiting. Being born in the 1950's, I remembered what many of you may not - it was called the diaper pal and was as common as toothpaste for families with babies. A closed plastic container would hold about 10-15 dirty diapers and, if kept clean (which my mother and other moms demanded), would wait patiently until Saturday morning when the pal was drained into the toilet and the cotton diapers were placed in the washing machine, to be cleaned with bleach and Tied and hung on the clothes line to be sun dried and returned to the diaper basket where, once again, the cycle would continue.

The solution to my problem was as simple as looking to the past for an answer to the future. Why not use cotton diaper material, cut into 4 x 9 inch sections, and then sown around the edges of the material with a zig-zag stitch to prevent the edges from unraveling? My wife and some of her friends chose a Saturday afternoon, had the men load their sewing machines into the truck and carted them over to a local church where an assembly line soon formed: men setting up sewing machines, women cutting material, and other women sewing the edges, after which we men would then package them in bundles of 50 - a finished product that every man and woman took special care not to lose. We all enjoyed the Saturday, we have a product that we are comfortable with now, and we have no fear of it being destroyed by rain or muddy puddles, left outside in the morning dew, or blown off of a table top. We can store 5,000 reusable sheets in a medium cardboard box.

My cost in time and material was around 20 cents per sheet if we figured $10 per man-hour to complete the task. Then again this was five years ago, but the benefits have outweighed our investment ten to one! The material was purchased at a local box store but as many of our women discovered, their mothers had a lot of diaper material stored in boxes in their basements and were grateful to have it put to good use. We have found that it took a few times to get use to not depositing the wipes into the toilet facility, but with practice and a few reminders the system works.

The results of our efforts became a very useful item that we now carry in all of our backpacks or bug out packs, stored in freezer bags (but we don't care if they get wet, as they are still usable) and stacked neatly in our portable toilet's cabinets in plastic containers right next to our regular TP that we still use while we can.

I have been able to find diaper pails at yard sales and in some stores, and I have found some that would have really made my mom sit up and take notice: they have two-way entries and are very insect proof. We have found that this cotton TP also serves as a wound dressing when two are sown together with a famine napkin in between, as a washcloth, a sweat rag, as a feminine pad (also when sown together with a sponge material in between) in an emergency situation, and other ways that we are finding each and every trip into the wilderness and around our home. As a student of outdoor survival and family preparedness for 28 years, I have found that each and every bit of information received, is another thread of the tapestry that will assist us in the days of uncertainty that lie ahead, and that will greatly add to our chances of survival in the world in which we will soon find ourselves.

Note from TACDA:
Microfiber material may be an option to cotton. It dries quickly, and is very absorbent.

Generator Maintenance

By David Horne

There are some good guidelines for keeping generators operational and fuel viable over extended periods. The guidelines are different for gasoline powered engines and diesel engines. Gasoline specifications state specifically that the use or consumption of the gasoline is expected to be within thirty days from the sale to the ultimate customer.

The primary reason for the short life of gasoline is that the lighter and smaller molecules in the fuel mixture tend to evaporate relatively quickly and that affects the cold starting properties of gasoline. During cold weather, gasoline is formulated with higher vapor pressure components to increase the overall vapor pressure and aid in cold weather starting.

Another reason is that most gasoline contains "cracked" molecules that have remaining reactive sites. These cracked molecules are pieces of larger, more complicated molecules that have been ripped apart in a "cracking tower" at a high temperature with the purpose of reducing their size and thereby reducing the boiling point and viscosity while increasing their vaporization qualities. The fuel becomes much easier to ignite if the molecules are smaller.

The reactive sites on the gasoline molecules can react with each other, forming larger molecules, and eventually become sticky varnishes that can clog fuel filters, fuel lines, and carburetor jets. Thus, if one has a tank of gasoline that is not used in a reasonable length of time, the gasoline will cause problems with the fuel delivery system and prevent proper operation of the engine. Sometimes, by spraying ether or other highly volatile and easily combustible compounds into the air intake, the engine will start and appear to work okay. However, when trying to start the engine the next time it will either have the same problem, or possibly worse. An engine serviceman would have to take the carburetor apart and dissolve the gums and varnish with an aggressive solvent so the engine will operate well again. I don't know of any other technique to restore a gasoline engine than dissolving the gums and varnish. I suppose one could replace the carburetor, but that could be much more expensive.

Some people encounter that same kind of problem with lawn mower engines that will not start in the spring after being dormant over the winter. If you have a gasoline powered standby generator I recommend that when you are going to use it for any reason, you fill the tank with only the amount of fuel you expect to use and then let it run out of gas, thus preventing the gasoline from clogging the fuel system and carburetor. If the generator is running on a large tank, the fuel system can be shut-off at the tank and the delivery system and carburetor can be cleared of all fuel by operating the generator until it stops due to fuel starvation. This removes most of the fuel from the lines, filters, and carburetor and eliminates most of this type of problem.

Another preventive method is to mix some fuel stabilizing material to inhibit the reforming process and to reduce possible microbial growth. The reactive sites of the fuel can be blocked or passivated by the fuel stabilizer. Microbes can exist in petroleum fuels and can cause similar clogging problems as the varnishes. Microbial growth does require some water but most fuel tanks have water due to leakage or condensation.

Filtration of the fuel, immediately before use, can also help prevent problems. If the fuel is stored in a large tank then it can be filtered through an effective filtration system removing any varnishes and microbial colonies before placing the fuel in the generator tank. The cold starting capabilities will not be restored, but the fuels will run properly once the engine is warm.

Diesel engine powered generators are not without problems but the gumming or varnish problems are, apparently, not so severe. There have been instances where diesel fuel has been stored for decades and still found to be useable with adequate filtration. The Diesel fuel was tested to determine its condition and determined to be perfectly good.

Diesel engines should not be starved for fuel in order to reduce the problems of fuel deterioration. Starving a diesel engine for fuel can cause damage to the fuel injection system that is lubricated by the fuel, and it can also be very difficult to re-prime the high pressure pump in the injector system.

The best solution for storing diesel is to use fuel stabilizer recommended for diesel fuels to reduce varnish formation and microbial growth and also provide for an extra filtration step for fuel that has been in storage for an extended period.

A major problem with long term storage of a generator, besides the fuel deterioration, is corrosion of the engine bearings and probably the generator bearings when the lubricating oil becomes stagnant around the bearings, and the oxygen level is lower in the contact areas than the rest of the bearing. The lower oxygen level in a localized area causes preferential corrosion in that area. This effect was quite visible in some older pick-up truck beds that were a two-piece construction. Corrosion invariably started at the seam where two pieces of metal came in contact. Both pieces of metal were coated with paint but the corrosion always started at the contact area. The military's fix for this problem was a mandatory operation of the standby generators every thirty days to cause the lubricating oil to get mixed up and the bearing surfaces coated with oil. I thought that every month was a little much, but for highly essential power plants that was a cheap fix. I try to operate my standby generator about every 90 days.

It is also a good idea to operate the engine until is reaches normal operating temperatures. Water is created during the combustion process and if a generator is started and then shut down while the engine is still cold, the moisture remains in the cylinder and valve areas, promoting corrosion. If the engine is warm when it is shut down, most of the moisture evaporates before the engine cools down.

Consider using fuel additives like STP (might be other brands) to help clean the varnish from the carburetor and fuel tanks. However, some additives should not be used with plastic fuel tanks. If you are not using the engine for a while, there is a material called "Stabil" for preventing the formation of varnishes and to prevent formation of bio colonies.

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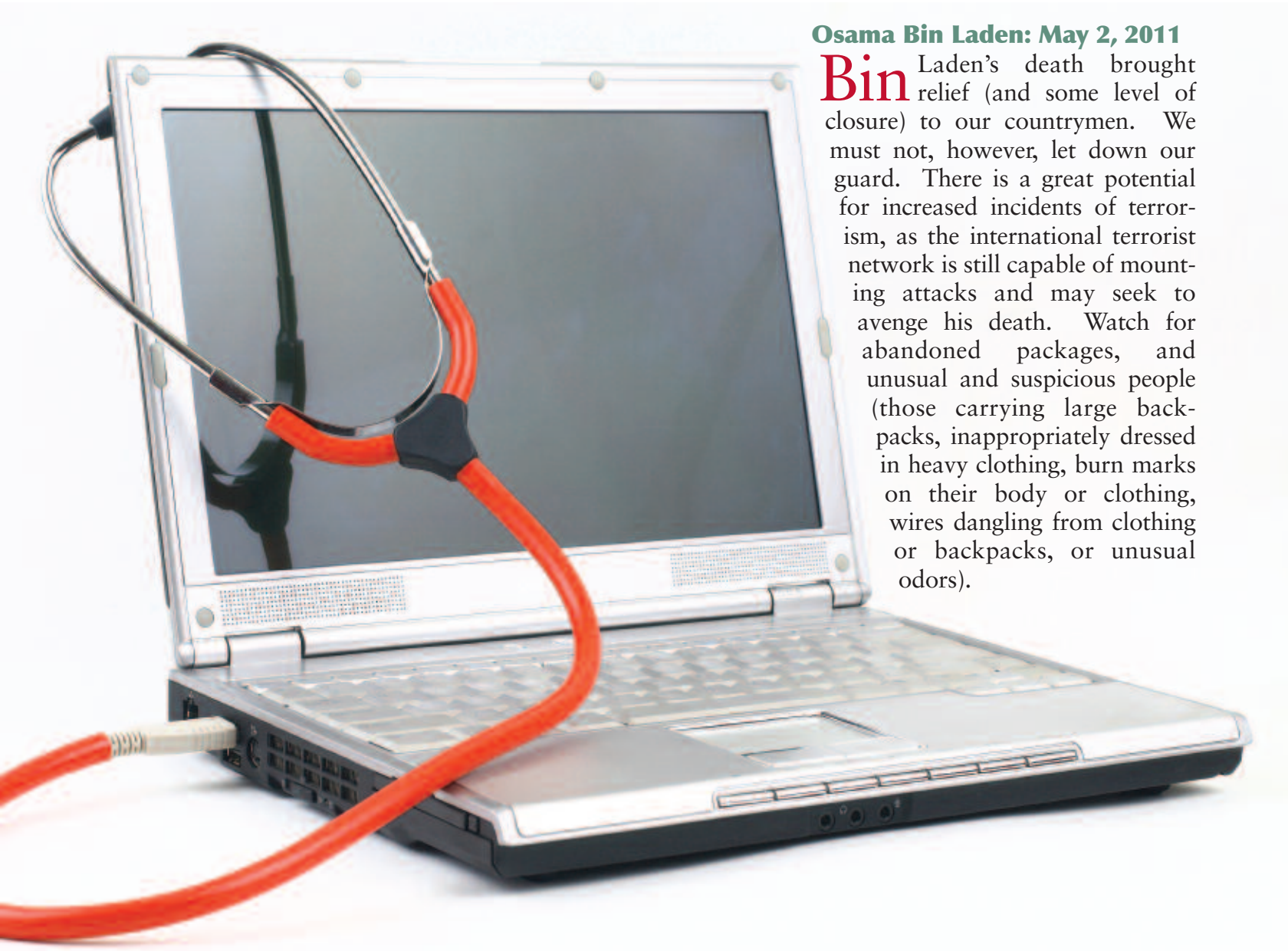
Current Events & Things of Interest

By TACDA Staff



Osama Bin Laden: May 2, 2011

Bin Laden's death brought relief (and some level of closure) to our countrymen. We must not, however, let down our guard. There is a great potential for increased incidents of terrorism, as the international terrorist network is still capable of mounting attacks and may seek to avenge his death. Watch for abandoned packages, and unusual and suspicious people (those carrying large backpacks, inappropriately dressed in heavy clothing, burn marks on their body or clothing, wires dangling from clothing or backpacks, or unusual odors).

U.S. representative, Gary Ackerman, stated, "We've cut the head off the worm, but they may grow another head." The death of Bin Laden may have unforeseen diplomatic implications. Pakistani officials had repeatedly denied that Bin Laden was in their country. Many officials here, including Senator Carl Levin (D-Mich) and John Brennan (chief counterterrorism advisor to U.S. President Obama) find it inconceivable that Bin Laden did not have an official support system within Pakistan. Some Pakistani officials argue that this attack was a violation of international law and suggest that this was an illegal act of aggression against their sovereign nation. Further complicating matters, Pakistan's nuclear arsenal is controlled by an extremely unstable government.

Biological Warfare

Little has been heard lately, about biological terrorist warfare but the U.S. Defense Threat Reduction Agency still considers it to be a viable threat. It was announced by the University of Illinois in Chicago, that the agency is set to fund the preparation of antibiotics against anthrax, plague and tularemia at a cost of $13.8 million. Many doctors recommend storing supplies of Doxycycline. If intending to do so, ask your personal physician about dosages and storage requirements.

Tornados and Floods

There was a record-breaking outbreak of tornados in April of this year. Storms, tornados and floods have affected most all of us, either personally or through family or close associates. Some of our TACDA board members live within the area of tornado damage and were without power for many days. Kirk Paradise reported that there were 250 confirmed fatalities from tornadoes in his home state of Alabama and thousands of homes and businesses (plus hospitals, schools, and a county courthouse) were destroyed or heavily damaged.

According to the National Climatic Data Center, tornadoes have been documented in every continent except Antarctica. The United States leads the world with over 1,000 tornadoes a year on average, and tornadoes have been documented in every state in the U.S. Each year, spring marks the beginning of tornado season. Although tornadoes can form any time of year, they tend to peak between April and June. We should all be alert and prepare against this threat to our families by identifying shelter and storing food and water in a safe place (underground if possible).

Thyroid Cancer

From a Reader:

Dr. Oz recently had a show on the fastest growing cancer in women—thyroid cancer. It was a very interesting program and he mentioned that the increase could possibly be related to the use of dental x-rays and mammograms. He demonstrated that on the apron the dentist puts on you for your dental x-rays there is a little flap that can be lifted up and wrapped around your neck. Many dentists don't bother to use it. Also, there is something called a "thyroid guard" for use during mammograms. By coincidence, I had my yearly mammogram yesterday. I felt a little silly, but I asked about the guard and sure enough, the technician had one in a drawer. I asked why it wasn't routinely used. His answer: "I don't know. You have to ask for it." Well, if I hadn't seen the show, I wouldn't have known to ask.

Health Records

FEMA US dispatches (3/24/11)

Being prepared with an organized personal health record (PHR) can offer you and your family greater security and peace of mind during the hurricane season and many benefits in an emergency or as a medical resource at any time.

A PHR is any organized system you maintain for documenting you and your family members' personal information, health conditions, medicines, health care providers, medical procedures, medical test results and special needs. This can require some work but there are free forms and guidelines available and other products for purchase that can make it easier.

The two basic types of personal health records are paper documents and files that are best maintained in waterproof and transportable containers, and electronic personal health records (ePHR).

Six reasons to prefer an ePHR:

Anywhere Access - Authorized individuals can access an ePHR any place at any time if you choose an internet ePHR.

Access Control - You control access to part or all of your ePHR information.

One Place Location- An ePHR means your health information is located in one place for easy availability.

Continuous Record Regardless of Change - An ePHR can follow you over a lifetime regardless of changes in physicians, residences, insurance plans, etc.

Electronic Information Exchange - An ePHR may enable you to electronically transfer information between other health information systems and professionals as authorized.

Portability - ePHR health information can be downloaded onto a CD or flash drive to take with you in the event of evacuation during a disaster.

Making Correct Decisions

John Farnam Quips

A bar patron, without a word, had precipitously produced a 38 Special snubby revolver and immediately fired a single shot at the bartender.

This from a friend and student in Colorado:

"Just one week ago, I was casually seated at a table with my date at a local, upscale restaurant when I felt (more than heard) a jarring, concussive blast coming from behind me. It was close. The blast was immediately followed by screams and commotion.

I was pretty sure it was a gunshot but with my ears still ringing I did not even turn to look. Per my training, I just put my arm around my date's waist and quickly pushed her past a paralyzed gaggle of people standing in front of us into the main part of the restaurant, then through the kitchen, and ultimately out the back door.

During our hasty exit I heard two more shots, along with more screaming.

Only when there were several layers of brick between us and the excitement did we pause.

Astonishingly, no one else followed behind us! I fully expected that we would be at the head of a flood of other frightened patrons. Not so.

Instead, we walked briskly past dozens of catatonic diners, who were grotesquely looking up with blank, quizzical expressions on their faces. I didn't see even one stand up.

An ashen-faced waitress finally ran out behind us. She related that a bar-patron, without a word, had precipitously produced a 38 Special snubby revolver and immediately fired a single shot at the bartender, who saved himself by diving out of the way! He then fired a second shot, again at the bartender. That shot missed also. After a brief pause, the shooter placed the pistol to his own head and simultaneously fired a third shot. He was DRT – dead right there.

No one else was hurt (we learned those details the following day).

Two other couples did eventually come out the back door. All remaining restaurant and bar patrons stayed in the restaurant, most still in their seats, during the entire event. When police arrived, nearly all were still there, having never even moved."

Comment from John Farnam (defensive firearms instructor): When you've never thought about emergency exits, never even thought about emergencies, when you don't have a plan, it is unlikely you'll act decisively when you need to.

Any time you enter a restaurant, or any building, scout-out eligible exits, objects that can be used for cover, and escape routes. Have a plan for getting out of there quickly, or fighting it out from a strong position when necessary.

In light of recent crucial historical events, Mumbai-style attacks are now more likely than ever before, anywhere they can be organized and carried out.

We all need to immediately reassess our security routines and remain ever prepared (including going armed), and ever vigilant for the next 'big events', whatever form they may take.

Many and probably most, will remain clueless (by choice), like the restaurant patrons described above. That is their personal option, and they will have to accept logical consequences of their own foolishness.

Don't be one of them, and don't hang out with them.

"We are all in a race for dear life. That is to say, we are fugitives from death." - Theodor Reik

. . . and only temporary ones at that.

You don't need a disaster to love

THERMAL COOKERS

By Jay Whimpey

A thermal cooker is an essential key to being able to cook food when there is a limited access to fuel. A thermal cooker is a thermos or contraption that so efficiently retains the heat of an already boiling pot of cooking food - it continues to cook the food without any further heat source. What this means is that with just a handful of fuel (if you have some sort of fuel-efficient stove) you can bring a pot of food to a boil in just a few minutes, and then you can stick that pot of food into your thermal cooker and continue to cook the food until it's done.

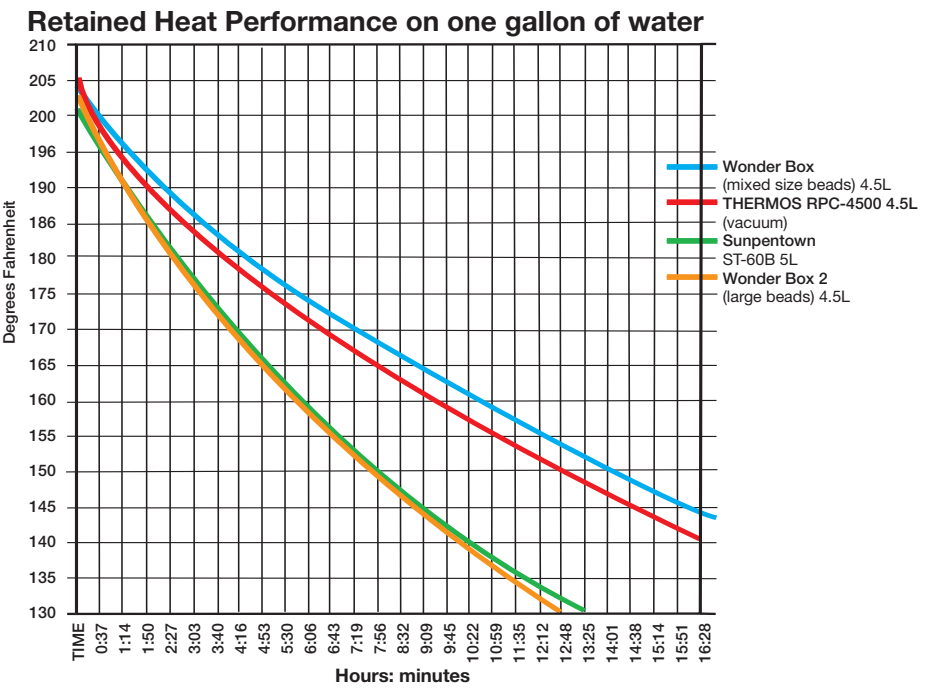
For vegetable soups, this might only take another 15 - 30 minutes. For stews with meat in them you might need to keep it cooking in the thermal cooker longer, for brown rice even longer, and for something with dry legumes in it (like dry pinto beans or kidney beans, etc.) you might need to have it cooking for two to four hours (and that is if you intelligently soaked the beans in water overnight). Think how much fuel it would take to cook any of these things, let alone the one with beans in it, without a thermal cooker! Unless you live in the country and have access to an endless supply of wood or fuel, this would spell t-r-o-u-b-l-e. And in a disaster, where everyone needs fuel and travel might be limited or impossible, even living in the country might not fix it.

During a disaster, or even in a time of severe financial need, you will be glad to have a thermal cooker. Fuel is one of the hardest things to store enough of, and a lot of our food storage and winter food needs to be cooked. So store what fuel you can now, have a fuel-efficient stove on hand that requires very little fuel to cook your food, and then also have a thermal cooker to save you even more fuel.

Thermal cookers are a great item to have right now. We don't need a disaster to love and use them. Not only are they wonderful for camping, but they're great anytime. Do you ever feel nervous leaving food cooking in your crock pot while you're gone? Use your thermal cooker instead. It's impossible to start a fire with one, and they use *zero* energy and thus are free to use as well. Cook your rice while you are away at church. You can't burn anything in it either, and it will still be hot tomorrow! Put your ice cream in it to take to the picnic or to the relatives. Leave the thermal cooker with the ice cream in it in your hot car in July while you play in the park with your kids for two hours, and then eat the hard and cold ice cream when you're ready for it. It works that well!

Which thermal cooker is the best? You decide which is best for you. In general, food needs to be kept at or above 175° F in order to cook (this varies with altitude).

Below is a chart on how these four thermal cookers did when we tested them. Results can vary, depending on the conditions. If you're cooking outside in freezing weather, the results for these will drop about an additional 8° over six hours from the results below. I have the Thermos brand 4.5 liter model, and I have kept the original box it came in with the Styrofoam top and bottom and then have further lined the sides of the box with Styrofoam. Whenever I use mine, I put it back into the box with the Styrofoam packing to increase the efficiency as much as possible. If I were using this outside in the bitter cold, this would be an important factor and would improve the efficiency.



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