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PRESIDENT'S MESSAGE



t seems like being prepared is becoming much more popular in recent times. I am all for that! Most everyone that is somewhat aware of world events can understand why we should prepare for a disaster. The world economy is teetering on collapse, radical elements seem to be gaining popularity in many countries with the leadership opening advocating conflict, and the production and distribution

systems for food and necessary drugs seems to be severely taxed and quite vulnerable. Indeed there is reason to be concerned and to prepare.

We invite you to share the information provided by TACDA with friends and family so that they may understand the potential threats to their safety and security and get motivated to prepare. Encourage them to use the information provided by TACDA to efficiently and effectively prepare their families for disaster and gain the peace of mind that only those that are prepared can understand. I'm sure that many of your friends and neighbors would be delighted to receive this information to guide them in their efforts to prepare.

Please do everything you can to let others know about the information provided by TACDA. Please make use of the information yourselves and be diligent in your own efforts to prepare.

I would also like to mention contributions of Kirk Paradise. He was a tremendous advocate of the preparedness philosophy and helped many others gain the vision and actually prepare themselves for disasters. He was an example of what we all should be doing to help and motivate others. We are saddened by his sudden and unexpected passing but also very grateful for his contributions.

Bless,

Rh

Jay R.Whimpey TACDA President

"A human being should be able to change a diaper, plan an invasion, butcher a hog, conn a ship, design a building, write a sonnet, balance accounts, build a wall, set a bone, comfort the dying, take orders, give orders, cooperate, act alone, solve equations, analyze a new problem, pitch manure, program a computer, cook a tasty meal, fight efficiently, die gallantly. Specialization is for insects."

- Robert Heinlein

FROM THE EDITOR

P lease note that this is a double issue of the journal. We want to apologize for its late arrival and appreciate your patience with us.

As with many of you, TACDA has been affected by these difficult economic times. In order to economize, we plan to do one more quarterly issue of the journal. We have plans to set up a blog where we will post information and articles weekly in an effort to continue giving our members pertinent information on an ongoing basis. We also hope it will be helpful in growing our organization. Then, once a year, we will print the best of the articles and send them to our members in journal format.

We wish to express our sincere sympathy to the family and loved ones of Kirk Paradise who recently passed away. He was a stalwart civil defense worker and will be greatly missed as a board member and vice president of TACDA. Please note his latest article in this journal.

Kirk was instrumental in the herculean effort of revitalizing fallout shelters and radiological monitoring training in Huntsville, Alabama. It remains the only county in America with civil defense in action. His efforts will be an example and inspiration to emergency managers throughout the nation for years to come.

Please note our upcoming TACDA conference for this October 12th and 13th in Salt Lake City. We look forward to seeing you there. The agenda will be available on the web site in a few weeks.

Best Regards,

Sharm Tacker

Sharon Packer Editor, Journal of Civil Defense



Dear Editor,

I am a huge history buff; my dad served in the SACO unit in WWII and again in Korea.

I was small during the Cuban Missile Crisis, but I remember the shelter he built in the basement. It remained there until we sold the house in 2003.

Anyway I seem to remember somehow he was involved in Civil Defense (we lived in Milwaukee, WI). Is this possible? Could he have been involved because of his military experience? Or am I dreaming it? Just wondering; I would love to know.

Thank you, Wendy

Dear Wendy,

I t depends on when and where your father was involved in Civil Defense as to whether or not it was an official government effort.

The responsibility for civil defense (protecting the American people on the homeland) was part of the Department of Defense (formerly War Department) mission until 1962. That organization had the familiar blue triangle logo with the "CD" in the middle at that time. The government designated buildings with at least a protection factor of 10 with the "Fallout Shelter" signs and even stocked some of them with food and other supplies. Since that time the government has made periodic efforts to do some civil defense work but it was never funded or organized very well. Some states have had programs to involve citizens in volunteer efforts since then. When the government adopted the "mutual assured destruction" (MAD) philosophy in the seventies, the civil defense effort became a problem since we were not supposed to prepare for a nuclear war because then it might look to our enemies, like we were trying to start a war. The population of the

United States officially became a hostage that guaranteed that we would not attack anyone with nuclear weapons. The government did, however, provide bomb shelters for our political leadership.

The American Civil Defense Association was started in 1963 as a private organization and they adopted the logo and have always encouraged individual preparedness for nuclear war or other disasters.

Thank you, Jay R. Whimpey, P.E. TACDA President

Dear Editor,

Y esterday, I was at the store purchasing emergency type preparation items. There was another customer there, a young agent from the Utah Department of Transportation (UDOT). As we waited for the clerk, we struck up a conversation. After a flurry of questions about my purchases, he got this cheesy grin and said "I love all these people who stockpile food. I have a lot of automatic weapons. I can get anything I need later!"

I responded "So, you don't really LOOK like a thief and murderer, but then, what does a thief and murderer look like?" His face was priceless. While he was re-thinking that whole concept, I stepped into his personal space and said, "You, a 'law-abiding person', and employee of the state, has now, without being under any duress, confessed your willingness to use your weapons to steal food from other Americans, murdering them if necessary during a national crisis. You need to have a conversation with yourself about your emergency plan."

He was pretty quiet for a while, as I finished tying down the hatches on the trailer. Before I left, I smoothed his feathers a little and helped him see that looting was a poor plan.

As we talked, it became obvious to me that he merely uses his automatic weapons as items of entertainment. He needs training and a responsible mindset. How will his wife and kids replace him when he doesn't come home from a day of looting? His PLAN should include having food, medicine, water, etc. on hand. Then he will not have to steal it from someone else when it is needed.

About once a year, I run into a gunshop commando who proudly proclaims his intent to loot in this way. I suspect most haven't thought this through or weighed the risk (to body and soul).

It isn't that they don't recognize the potential for a problem. They have just carelessly weighed the probabilities and consequences, and chosen the easy, macho way out. They don't seem so tough when confronted about it.

The point is that the biggest threat we have during a crisis is the unprepared masses. They are nicely-nice now, when the climate control systems, electrical grid, natural gas, and other utilities are working. They have food in their stomachs, and nice clothes on their backs. Take these away, with no immediate hope of getting them back, and you will see frantic, hungry mobs, willing to do most anything in order to survive. I encourage people daily to store up food and supplies against a possible disaster scenario. I support the right to bare arms and do so on a daily basis. I would suggest the same for everyone who can legally do so.

It just struck me so bluntly - that this well-dressed man, clean cut, and polite, could just casually admit that he is a closet murderer and thief. And no matter which level of personal preparedness we currently fit into, most of us don't realize (or try not to admit) what a precarious situation we may suddenly face in the future.

TACDA member

Improvised NUCLEAR DETONATION RESPONSE PLANNING

By Dr. Tammy P. Taylor Presented at the TACDA Annual Conference, September, 2011

ammy P. Taylor from Los Alamos National Laboratory presented an overview of current improvised nuclear detonation (IND) response planning activities within the federal government. Her presentation included an overview of federal efforts to increase science to support decision making that would be necessary if an IND were ever detonated. The presentation included background related to 2007 supplemental funds that Congress appropriated to the Department of Homeland Security (DHS) to initiate community planning efforts. Brooke Buddemeier of Lawrence Livermore National Laboratory served DHS as the leader of coordination activities in support of this effort. Buddemeier formed the Modeling and Analysis Coordination Working Group (MACWG) to:

- Establish scientific consensus (where possible) on the IND effects and issues
- Bound uncertainty and identify unknowns
- Deconflict recommended IND response actions.



Figure 3.1: Building as shielding – Numbers represent a dose reduction factor. A dose reduction factor of 10 indicates that a person in that area would receive 1/10th of the dose of a person in the open. A dose reduction factor of 200 indicates that a person in that area would receive 1/200th of the dose of a person out in the open. This working group is a coordination point for the Department of Homeland Security funded modeling and analysis work on IND response planning. Organizations with interest and expertise participate in the MACWG to encourage process transparency and collaboration.

Taylor's presentation included information regarding shelter and evacuation strategies, impact of weather on decision making, prompt effect damage zones, radiation exposure, fallout effects and lifesaving measures for surviving these effects, response strategies, and public communication recommendations. For more information about the materials presented, please go to https://responder.llnl.gov and access the training page. From the training page users can download the instructor or student guide.

Many of the details of her presentation can be found in the Office of Science and Technology and National Security Staff led effort entitled Planning Guidance for Response to a Nuclear Detonation, Second Edition, June 2010, cataloged for ready access at:

https://responder.llnl.gov/data/assets/docs/publications/Planning_Guidance_for_Response_to_a_Nuclear_Detonation-2nd_Edition_FINAL.pdf).



comparison.

Miles from ground-zero

Figure 1.3: Zone distances for 0.1, 1, and 10KT explosions are shown for size comparison.

Dear Members,

The only constant in life is change and The American Civil Defense Association is certainly not immune to change. We are always striving to help our membership and the public at large prepare for disasters in the most efficient and expedient way possible and the time has come to change the way we do things in order to make the organization better and more efficiently fulfill our mission.

We are planning to start delivering information to our members through a blog and hopefully we will be able to deliver information in a more timely fashion and encourage more input from our membership. We will continue to publish a printed version of The Journal of Civil Defense but we will do it less often in order to reduce our operating costs.

We would also like to ask our members to contribute to the organization if possible. The American Civil Defense Association is a 501(c)3 organization and therefore any donations to the organization are fully tax deductible. We are making efforts to contain costs but it seems like most everything we do costs more these days. I realize that there are many worthy causes that you might choose to support and we believe that The American Civil Defense Association does a great service for the public and is worthy of your consideration. If you can contribute to this organization to help us better fulfill our mission, your help would be greatly appreciated.

I would like to take this opportunity to thank Rex Estes who is being released from the TACDA Advisory Board. His contributions to the organization and the Journal will be missed.

We would also like to thank Tim Hooper and Paulette Wohnoutka for accepting an invitation to serve on the TACDA Advisory Board.

Thank you, Jay R. Whimpey, PE





Presented at the TACDA Annual Conference, September, 2011

he United States' federal government has, since 9-11, begun to rebuild our protective and response capabilities against a potential nuclear attack. Because of the 9-11 attack, and because the nuclear threat posed against the US today is very different from that posed during the cold war of 1945-1987 by the Soviet Union, the developing federal programs now have a different emphasis. The threat in 2012 is not from a massive nuclear strike by thousands of Soviet nuclear warheads and bombs but from one to perhaps a dozen actual or threatened detonations from terrorist groups or nations.

n recent years, and as exemplified by Dr. Tammy Taylor's presentation at this annual conference for The American Civil Defense Association (TACDA), the federal government has extensively outlined what such an attack may entail. The federal government has outlined the consequences of such an attack and identified resources needed to respond. Response hinges around two protective options: 'Evacuation' and 'Shelter in Place'. These two options remain the same from the cold war. The geopolitical face of the threat has changed but physics has not. The effects of a nuclear detonation remain the same: blast, shock, heat, initial and fallout radiation and electromagnetic pulse.

Since 9–11, the federal government has organized federal agencies for response from a terror strike not only from nuclear but also from biological and chemical weapons. Federal, state and local agencies across the entire US have been organized, equipped, trained, and exercised for these threats. While relations and coordination between state and local governments and the federal government continue to increase and improve, the vast bulk of response capabilities remain at the federal level and these are largely aimed at governments, not the public. At present, state and local governments - with one exception - have no organized public Fallout Shelter/Evacuation programs. The sole exception is Huntsville, AL. Huntsville, operating under a guideline set by the federal Metropolitan Medical Response System (MMRS) to protect key medical facilities and the public from the effects of a nuclear detonation, chose to revitalize its public fallout shelter program as well as to establish an option to evacuate the protection of its citizens. Agreements with building owners, some of which had been in effect since the 1960s and '70s for use of their buildings as shelters, were renewed enabling the use of more than 100 public shelters and 5 key medical facilities for this purpose. Two Fallout Shelter Management courses, one for staff at the medical facilities and one for public shelters, were developed and delivered from 2007-2009. Resources developed are on line at http://www.madisoncountyema.com/Fa llout.html. Huntsville's program remains unique today. The capability was developed only because there existed within the city's Emergency Management Agency an individual trained in Shelter Management and Radiological Defense during the cold war era, who retained those skills and was able to employ them. Those skills simply no longer exist in perhaps 95% of EMAs across the nation.

While such training and skills atrophied after the demise of the Soviet Union, several recent federal initiatives mean a new day is at hand in nuclear detonation preparedness. These are exemplified by several publications: Planning Guidance for Response to A Nuclear Detonation (published in 2009) and 2010 with Dr. Taylor as the lead); Emergency Management Planning for the aftermath of Radiological Emergencies and Nuclear Terrorism (draft published 2008; published as Comprehensive Planning Guide 402 in 2009) and Key Response Planning Factors for the Aftermath of Nuclear Terrorism (published in 2009). These initiatives are truly excellent and groundbreaking. They are thorough and comprehensive treatments of nuclear weapons effects and consequences. I applaud them, and they deserve to be widely read and studied. The concepts they embody should be translated into response capabilities and implemented at the federal, state and local levels.

o understand the totality of what a response entails to a threatened or actual nuclear detonation by terrorists, consider the following scenario. Suppose a terror group/nation announces, through the media, their promise to destroy several unnamed US cities within 48-hours unless specific demands are met. What would be the reaction across the US? The media and the public would ask: "Is this real? What cities? When? What is my government doing to protect me?"

While the federal government could be expected to say something like

"Everything possible is being done; remain calm while we work through this crisis" and that "the Department of Homeland Security, FDMA, the FBI and other agencies have been mobilized and are working with the states." We could also expect that instructions for evacuation or sheltering would be sparse and general. Few specific recommendations could be made today. These would center around instructions to individuals on the decision to evacuate or how to quickly identify a building that would offer protection from radiation and to shelter there. There would be a lack of information about which specific buildings in a locality are designated as Fallout Shelters, what supplies to take into the shelter and most importantly, how people in a shelter should be organized and lead in purposeful ways.

As the crisis unfolds, we could expect governors and leaders of counties and cities to publicly repeat what the federal government has said while privately demanding from the federal government more specific information about the threat and how to protect their citizens. The public, spurred by media reporting, would demand protective action from their local government. But, sadly, there is no current response that has been prepared for this scenario.

Suppose further that the threat of a detonation turns into reality and a nuclear device detonates in a US city. What options then exist? For the sake of discussion at the TACDA conference, let's suppose the target city is Las Vegas, NV and that a plume of fallout is blown roughly NNE, covering Utah cities along the I-15 corridor between St. George (arriving in just 2.5 hours) and Salt Lake City (8.5 hours). In Las Vegas, we would expect the federal government along with the governor of Nevada and any surviving city leaders to do their utmost to minimize casualties, rescue and treat the injured, direct any possible evacuation, direct those who cannot evacuate to stopgap fallout shelters plus rescue persons trapped in the fallout zone. All of those actions would require the use of surviving local resources, as there would be no time to bring in outside help. And, speaking of the outside, what would the other states do? The terrorist had promised multiple detonations. The Governor of Utah would focus on saving his citizens from the fallout plume as it travels the most populous part of his state. The governors of other states, their citizens and the media would ask: where will the next one be? When? What resources are available there? The constraints that hobble responders in Nevada and Utah would bind the rest of the states in the anticipation of the next detonation(s). In simple terms, Nevada and Utah could expect little outside help. Not only would there be insufficient time to move resources, but most states would probably withhold resources in anticipation of their own potential local detonations. What to do?

ocal governments no longer train individuals in civil defense evacuation and sheltering skills. We are two generations past the time when these skills were widely taught and available. Most people today are uninformed or worse, misinformed, about threats. This information and training can, however, be quickly reinstituted thanks to modern technologies. Moreover, there are certain universal traits people exhibit when confronted with an emergency. Among these is the fact that most people respond to purposeful leadership. People will instinctively follow someone who they perceive as being able to save them. Second, disaster evokes the universal human desire to help or cooperate to save others and themselves. Before a disaster occurs, these traits lie dormant. After the disaster occurs, a short, transitory window of opportunity exists to engage people in self- rescue efforts. During this window the public must be informed about what action to take. If the 'Shelter in Place' option is to be used in a specific area, the public must be told where the Fallout Shelters are located and, once they arrive, organized into groups by a trained or at least willing Fallout Shelter Manager. Frightened, unsupervised individuals jammed into a fallout shelter will be unable to function as a group and will put others in peril. Even if the fallout outside the shelter is only present in sub-lethal levels (something the occupants could not know today without the proper training) they would be at greater risk of death and injury from panic than from radiation. When presented with purposeful leadership, people conform themselves and unite in organizing themselves to achieve a common goal. Those who would serve as Fallout Shelter Managers must be trained and supported by their local governments in order to offer this leadership role.

Local governments must be able to inform the public about the nature of the threat, shelter locations (or evacuation routes/safe zones), supplies needed and the deadline for either evacuating or entering a shelter. Public information must be readily available showing routes to safe zones. Alternate routes must be identified in the event that some routs are not passable. Fallout zone boundaries must be quickly identified and sufficient time given to evacuate.

When choosing between Evacuation or Sheltering in Place, calculations must be made to determine if individuals would receive a lesser dose by either sheltering or evacuating. This calculation must be made for specific areas (perhaps a square mile) within the fallout zone and include the variables of physical conditions, available time, available transportation and accessible routes plus the physical abilities of the people at risk.



Shelter Managers

f the shelter in place option is to be successful, Fallout Shelters, public or private, must be pre-identified. The time to begin the selection of shelters is not after a detonation or even the threat of a detonation. Confusion would be great and entry delayed, perhaps fatally so. "Just in time" selection bottlenecks the rapid use of shelters.

Once in the shelter, the people gathered there must recognize the authority and leadership of the Shelter Manager. Shelter Managers are the key to survival of sheltered populations. Every occupant must know that the Shelter Manager is in charge and they must agree to follow the Manager's leadership. Shelter Managers must exert assertive, purposeful leadership. Protective leadership is as important as the protection from radiation afforded by the shelters. An unorganized population will quickly become unruly, descend into chaos and panic and act out of unreasoning fear. Once fallout arrives, the Manager and everyone inside are temporarily cut off from the normal support of society. They must survive emotionally and physically, on their own, even if the shelter stay is just for a few hours. Local governments can only support Shelter Managers sheltered inside the fallout zone. The Shelter Manager must represent order and stability to the people in the shelter.

The Shelter Manager's tasks include: establish their authority in the eyes of the occupants, delegate authority, organize people into specialized task teams, identify needs, prioritize actions, identify best shelter areas (not all areas in a building offer the same or even adequate protection) and interface with local government, when possible. The task teams needed to perform essential functions including: Radiological Monitoring, Water Rationing, Food Rationing, Sanitation, Medical/First Aid, Sleep, Safety, Security, Rescue, and, Communications.

Fallout Shelter Management courses were once publicly and widely taught by the federal government and must be

Continues on page 16

VATER TREATMENT IN A

Jay Whimpey Presented at the TACDA Annual Conference September, 2011

Most drinking water in the United States is treated using a filtration process followed by disinfection with chlorine. A very common method for treating the effluent from sewage treatment plants is also disinfection with chlorine. It is likely that in a major disaster situation the normal processes for delivering clean safe water to your home will be affected. In fact, there are many minor problems that can affect your drinking water source on a more frequent basis such as a water line rupture or contamination of the local storage tanks. Warnings are posted quite often from local public utilities to boil your drinking water when problems like this occur.

We should be prepared to treat water to make it safe for drinking any time our drinking water supply is interrupted or contaminated. The preparations to do so are very simple and inexpensive and will be covered in this article. But first we will cover some basic information.

We should also store at least 10 gallons of drinking water per person for emergency situations. The storage will allow time to either evacuate the current area or to identify an alternate source of water in our local area.

Water Filtration and Clarification

Water that has a significant amount of solids is almost impossible to properly disinfect. The foreign materials in the water react with the chlorine requiring a significantly higher dose, and the solids normally have small cavities and pores that allow disease causing organisms to "hide" and not receive the full concentration of the disinfection agent. The most effective way to remove the solids is by filtration. I recommend filtering the water before it is disinfected.

All water should be filtered before disinfection even if it appears clear. I have collected water from a clear mountain stream that appeared perfectly clear and once it was placed in a white plastic bucket is was apparent that there were numerous dark particles in the water. Once the water was filtered it was surprising how much material was in the water. There are industrial filter socks available that can filter particles much smaller than you can see and can actually filter out a significant amount of certain types of bacteria.

A good food grade industrial filter bag, available through the TACDA website, will remove 99.5% of particles 1 micron or larger, These filter bags are recommended for drinking water filtration. These filters are used in many small town or remote site drinking water systems such as established Boy Scout camps. An alternate expedient filter is shown in "Nuclear War Survival Skills" but it would take time to construct this filter, and it would not be very portable. Fabric or coffee filters can be used in an emergency situation but are not as effective as the industrial filter bags.

> Another useful process is 'clarification', where the solids are allowed to settle out of the water and collect at the bottom of the container. This process can be done before or after filtration. It is advisable, however, to clarify the water before filtration if the source is significantly muddy because it will reduce the loading on the filter. If you are collecting water

from a muddy source, the clarification

ISSUES 3, 4, 2011 • - 9 step before filtration is advisable but if you are collecting water from a clear lake or pond it is largely unnecessary.

How Chlorine Works

Chlorine kills disease causing organisms, such as virus and bacteria, by chemically reacting with them. It forms a chemical bond with the outer layer of the organism and changes the character of that outer layer making it less protective. As more chlorine reacts with the organism the internal parts and enzymes are changed or destroyed making it non-viable and causing it to die. Various organisms have different resistance to chlorine and therefore the time for complete disinfection can vary.

The time for proper disinfection can also vary depending on the pH, temperature, concentration of the chlorine, and the amount and character of contaminants but if you follow the process outlined here it should be effective essentially all of the time as shown by the fact that this process is used so often to treat drinking water.

The disinfection time for various organisms is shown below based on a concentration of 1 ppm chlorine, at a pH of 7.5, and a temperature of 70 F.

Instructions

1. Install Gamma Seal lids and mark plastic buckets and store kit components in the buckets in a designated con-

ORGANISM	TIME FOR DISINFECTION
E. coli Hopotitis A Virus	1 Minute
Giardia Parasite Cryptosporidium	45 Minutes 7 Days

A RECOMMENDED WATER TREATMENT KIT

Kit Components with Approximate Costs:

Five-gallon plastic buckets(2)	\$6.00	each
Gamma Seal lids (2)	\$8.00	each
Large plastic funnel	\$3.00	10
Small plastic funnel	\$2.00	1 4 m
Filter sock	\$15.00	-20
Eye dropper and container with lid	\$3.00	· · ·
One-gallon 5% to 6% bleach	\$5.00	
(no scents or additives)	S. 8.	
Juice bottles	Free	

venient location. When the water treatment process is needed remove the kit contents from the buckets, being careful to keep the contents clean.

2. Scoop water from a ditch, stream, pond, or canal using one of the buckets in the kit and filter water through the filter bag into the second bucket using the large funnel

and filter bag. If the bag and funnel cannot easily be secured, request the help of another person to hold the funnel and bag. Rinse the second bucket a few times with filtered water to remove any particulate matter.

- 3. Once there is an adequate amount of water that has been filtered into the second bucket, pour the water into the two-liter juice containers using the small funnel. Note: Two-liter juice bottles are preferred because they hold a useful amount of water, they are usually shaped for easy handling, and the container walls are thicker and shaped for stress relief. This means that the containers will last much longer and tolerate freezing or pressure changes due to temperature changes. Soft drink bottles are much less convenient to use because they have a smaller spout and are more difficult to handle due to their shape. They tend to fatigue and crack in a short period of time with normal handling.
- 4. Pour a small amount of bleach into the small container from the eye dropper and then be sure to immediately close the large liquid bleach container. Be careful not to splash or spill the bleach because it can damage eyes, skin and clothing. The small container for the eye dropper can be any small plastic bottle that has a tight fitting lid with a gasket.
- 5. Place at least eight drops of bleach solution in each twoliter container full of filtered water and close the lid tightly. The container can be gently inverted to aid in proper mixing of the bleach. Wait at least thirty minutes after the bleach has been added before consuming the water. Wait longer if possible. If there is not a bleach smell when the container is opened, add an additional four drops of bleach to the bottle and wait an additional thirty minutes. Repeat until you can smell residual chlorine.
- 6. Once the disinfection process is complete the two-liter bottles can then be left open or the contents poured into another container with a large opening to help dissipate residual chlorine before consumption.
- 7. Hang the filter sock to air dry before placing it back in the storage containers to prevent mildew. Once the sock is dry it can be cleaned to remove dirt and debris that were filtered from the water. Keep the outside of the filter sock as clean as possible by storing in the clean bucket.
- 8. Stow water purification kit components back in the buckets and seal the lids. It is a good idea to store the filter sock in the clean container to help keep it clean. It is also good to store the bleach in the other container to protect the filter sock.

Making Bleach Solution from Dry Bleach Powder

The shelf life of a liquid bleach solution is limited. Each time the container is opened chlorine escapes into the air. After multiple uses the active chlorine concentration can decline leaving the bleach less potent. If you follow the directions above and have a reasonable sense of smell you should be able to adjust



Filter bag, 1 micron nominal rating.

powder or granules.

The bleach solution is made by mixing the dry powder or granules with a known quantity of clean water to create a 6%

solution by weight. The required information is the density of water, the density and concentration of the powder or granules, and the overall volume of bleach solution to be made. For the purposes of this example I will choose a one-gallon quantity of bleach solution. I will assume the density of water is 8 pounds per gallon. The density of the calcium hypochlorite powder is 0.5 pounds per cup. Most dry bleach powders should have roughly the same density. The amount of active chlorine available will be marked on the container. In this case, the amount of chlorine available is 68 percent so we add extra to make sure we have the desired chlorine concentration.

The calculation is as follows:

The amount of dry bleach powder to be added is equal to the desired concentration of chlorine (six percent or 0.06) multiplied by the density of water (8 pounds per gallon) and multiplied again by the amount of solution desired (1 gallon) then that is divided by the density of the dry bleach powder (0.50 pounds per cup) and divided by the concentration of the bleach powder (68% or 0.68). The answer is 1.4 cups of bleach powder must be added to one gallon of water to make a 6% chlorine solution.

The step by step instructions are detailed below:

1. Place one gallon of clean water in a clean plastic contain-

for lower concentrations by ensuring that there is a residual chlorine smell after the disinfection step.

The shelf life of powdered bleach such as calcium hypochlorite is much longer and much more concentrated so it is easier to store. The powdered bleach is also more hazardous and can cause chemical burns if it comes in contact with your skin, eyes, or mucous membranes. Care should be taken to wear protective eyewear and gloves while handling the dry

er. A jug previously used for a 6% bleach solution is ideal since it is already marked.

- 2. Pour one cup of water out of the container to make sure there is room for the dry bleach powder or granules in the container.
- **3.** Pour one and 2/5ths of a cup of bleach granules into the container, seal the container, and gently agitate to help the granules mix and dissolve in the water.
- 4. Allow the granules several hours to completely dissolve and then the bleach solution can be used to disinfect the water using instructions for 6% bleach solutions.
- 5. Smaller amounts of liquid bleach can be mixed by simply using the same ratio. For example, one quart of bleach solution can be prepared by using one quart of water and 0.35 cups of dry bleach powder. A one-third cup measure would work great. This does not have to be precise since there is a chance to add more to the water being disinfected in the final treatment step.

WARNING: *This is a concentrated bleach solution not to be consumed directly!*

Disinfecting Water Directly With Dry Bleach Powder or Granules

For long term disaster situations it might be more convenient to disinfect the water in a 55-gallon drum with dry bleach powder or granules. In that case, the drum is filled with at least 50 gallons of filtered water. One-half teaspoon of dry



powder or granules is added to the drum and then the drum is sealed and left for a least one day before consuming the water. The bleach will dissolve and mix if given adequate time.

A filter canister can be made for filling the

drum through the filter sock by cutting a hole in the bottom of a 5-gallon water cooler container and placing the filter sock in the container with the plastic ring protruding outside the hole. The neck of the water cooler container fits inside the 2" bung hole in the drum and the container stays in place quite well. The raw water is poured through the plastic ring at the top of the sock and the water penetrates the filter and is collected in the inverted filter container and funneled into the drum.

I hope this information will be useful to you. We encourage you to make an effort on a daily basis to become better prepared so that you will minimize the impact to you, your families and friends when disaster strikes.



LIVING A SHELTERED LIFE

I am in the beginning process of building a barn with a small 16 x 12 safe room in the basement. The walls will be poured concrete, 12" thick and faced with 9" of stone. The ceiling is an 8" slab. I was hoping that you could help me with the door and NBC system, as well as suggest what steps need to be taken to ensure I have properly planned for both the installations. Can you help me with this situation?

Thank you, James

Hi James,



Sounds like a neat project! If you site your safe room in the corner away from the outside wall and next to solid earth (all the way to the top), the walls will likely be okay. My concern is the thickness of

the ceiling. In Switzerland, bomb shelters are a Federal building code - everybody must have them. There are one million surplus shelter spaces there, and they are still building 500 shelters each month. Swiss shelter code is very explicit and well engineered for fallout protection and blast to three atmospheres (45 psi overpressure). Their ceilings are anywhere from 30 inches to a meter thick, heavily reinforced with lots of rebar. Depends on what other structure will be built on top, or how much additional earth will be added on top. Most communal shelters feature a meter of concrete and a meter of earth. I have lots of video we shot in Switzerland that show this. We also have the Swiss building code on a PDF that you can purchase from TACDA.

Vertical, walk in type doors let in a great deal of radiation. The Swiss use armored doors, which feature an eight-inch thick concrete door leaf. This door must be cast into the wall - retrofits are possible, but difficult.

Your emergency escape tunnel hatch should be made of solid steel and sit horizontally on the ground. DO NOT compromise your ceiling thickness with a hatch.....run a tunnel out twelve feet or so, and then go vertical for the hatch.

The Swiss concrete shelters with 36 inches of concrete in the ceiling (though good for fallout and blast) WILL NOT defeat initial radiation, which is present within 7500 feet of a nuclear detonation. At 3 atmospheres (45 psi), initial radiation could be a problem. But those Swiss shelters that have a meter of concrete over them, plus a meter of earth, will fare well.

An eight-inch concrete ceiling will provide a protection factor (PF) of only around ten. This will reduce your exposure to outside fallout type (gamma) radiation by only a factor of 11. My personal minimum is PF-250, which will require a 24 inch ceiling and/or wall between you and the radiation source. If the earth-side wall is completely below grade, then that wall

LIVING A SHELTERED LIFE

only has to be ten inches thick. You can play around with the formula by using 2.7 inches of concrete for a halving thickness. Each 2.7 inches doubles the protection factor. Ten halving thicknesses provide a PF of 1,000. That's 27 inches. PF1000 makes for a nice shelter that will provide a margin of safety if you get a rainout, that is, all the fallout that was jettisoned into the air by a local ground burst is scavenged from the atmosphere and returned to the ground instead of drifting hundreds of miles downwind. This can raise your exposure level outside the shelter from 1000 rads/hour to as high as 10,000 rads/hour. A PF250 shelter will probably not be enough in this scenario.

Best regards, Paul Seyfried



I would like to put a gen set into my shelter that is large enough to run both the house and the shelter. How would you suggest that I do it?

Best regards, Michael

Hi Michael,

Our batteries are recharged with solar panels, and/or small gasoline generators. Our power requirements are very small, so a large, fuel guzzling diesel generator is unnecessary. A 2000 watt Honda generator (that can be stored inside the shelter when not being used) is all the power you will need to re-charge the batteries. If you live near a stream, a water turbine can be placed into the stream for continuous power generation. Any fixed generator facility must not be connected to the living shelter. A fire, explosion, or carbon monoxide leak may endanger the occupants. If a manway is built to connect to the generator shelter, an airlock with concrete blast doors must be included between the shelter and the generator room. This adds significant costs and time to the project. It is far less of a burden to use a small generator that is stored inside the shelter and deployed when necessary to replenish batteries.

As you design your shelter, consider that perfect is the enemy of good. The more spacious you make your shelter, the more air volume you will have to manage, hence the larger your air handler capacity must be and the more difficult it will be for a small number of people to manage. Take a good hard look at what you really need. Super-sized shelters need supersized air handling equipment, and therefore super-sized energy requirements.

Best regards, Paul Seyfried



Can you tell me how you solve the sewage problem in the shelter?

Thanks Bob

Hi Bob,

A

The chemical toilet is the most reliable and simple method of handling sewage, as the shelter is buried far, far below the depth that most sewer lines are. I do know of one man that connected his shelter to a sewer

line, and was rewarded with about four feet of raw sewage in his shelter. His shelter is no longer connected to the sewer.

The chemical toilet is often placed in the main entrance near the stairs. Shelter exhaust air is routed right past this location on its way up the stairs and out of the exhaust explosion protection valve located right under the hatch. This provides the most efficient rinse of the shelter atmosphere and does a good job of controlling toileting odors.

Another option is walling off the last three feet of the shelter deck next to the entrance and using the chemical toilet there, or installing a grinder toilet, which can pump waste through a 3/4" PVC line all the way up to near the hatch, and through a larger sleeve leading to a septic tank outside. This sewage line should be placed about two feet below grade and drain down to the septic tank. Remember, this is not a permanent home, it's a combat shelter.

While the grinder toilet is more easy and friendly to use, it is much more complicated and subject to failure, like all electro-mechanical appliances are. In war time, you cannot, or you might not, want to go outside. Even if you elect to use a grinder toilet, we still recommend that you purchase a chemical toilet. Waste is easily carried in the sealed holding tank topside where it can be disposed of and returned to service. It should provide service for at least three or four days before requiring a trip outside, which by then should be safe enough to go outside for a few minutes.

In the two days following a nuclear attack, 99% of the gamma radiation should have decayed. So instead of perhaps 1,000 rads per hour (possible radiation dose rate just after a nuclear blast in your area) you will likely see about 10 rads per hour, or less. If one remains outside the shelter for five minutes, they would receive less than one rad as a penalty. I don't have a grinder toilet in my personal shelter, maybe I will someday. But I will still have those chemical toilets handy.

Hope that helps answer your question. Paul Seyfried ●



By Dean Still & Jim Kness

The reprint of the following information is by permission from the Aprovecho Research Center http://www.aprovecho.org



Larry Winiarski's low mass Rocket stove has proven itself to be the most efficient cooking stove that we have used so far. It is far more

efficient than high mass cooking stoves like the Lorena. We use Rocket type stoves now to cook, bake, heat water, warm houses, etc.

The Rocket stoves are based on an ingenious combination of principles:

The combustion chamber is insulated in order to keep the fire hot (above 1,100 F.) to burn the wood more completely, reducing smoke, which is uncombusted fuel.

The cooking stoves are low mass, robbing less heat from the pot.

An insulated chimney creates a very strong draft, which helps the wood to burn fiercely. It also makes the stove easier to light and to use. An insulated chimney has significantly more; draft than an un-insulated chimney.

The wood is burned at the tips and is shoved in towards the fire which controls the rate of burn, reducing smoke.

The air/fuel mixture is regulated. A small opening is provided for incoming air. Too much air just cools the fire.

The incoming air is preheated, especially in a downdraft stove, which helps to keep the fire above 1,100 F. for complete combustion.

A skirt surrounds the pot on all sides. A small gap between the skirt and the pot allows hot flue gases to rise up near the pot, greatly increasing heat transfer.

The flame hits the sides of the pot as well as the bottom.

An insulated skirt reduces heat loss.

Since the stove operates at very high temperatures, there is almost no smoke and it is possible to cook directly on top of the chimney. The flame, in contact with the pot, assures efficient heat transfer.

The "Guatamalan" Rocket stove is made up of six parts. Two of them are cut out of any five-gallon metal container. This makes the external body of the stove. We've used soy sauce containers, paint buckets, etc. A short chimney (10"-12" is optimal) is made, in this example, from stovepipe. It's also possible to make the chimney from tin cans or more sturdy scrap metal. A longer chimney will smoke less and may be preferable for that reason.

How to Make the Stove

ake off the lid of the 5-gallon can with a can opener.

Cut a 4" round hole in the middle of the lid and a 4" round hole in the lower front side of the can, about 1" up from the bottom of the 5 gallon can.

A 4" stovepipe elbow at 90 degrees is placed inside the can with the larger end protruding out the hole cut in front of the can.

Two parallel cuts, 1/2" apart, are made in this protruding section of elbow, on the lowest side of the pipe. This section is folded down, creating a lip so the elbow can't fall back into the container.

A straight section of 4" chimney pipe is then fitted to the other end of the elbow as a chimney. It is cut off 1" below the top of the can. (Remember that a short chimney is more efficient. A long chimney will keep the flame from hitting the pot. Conversely, a taller chimney will produce less smoke.) The lid, with a hole in the middle, is fitted over the straight section of chimney pipe, after the space between the chimney and stove body is filled with lightweight insulation. Insulation is small, trapped pockets of air. It is this air that slows down heat transfer. Sand, brick, earth, cement, etc. do not contain many trapped pockets of air and are poor insulators.

Examples of good insulation include: pumice rock, vermiculite, perlite, wood ash, dead coral and aluminum foil, if it traps air.

Usually, we use wood ash. As long as it stays dry, wood ash is a great insulator and it is found near fires.

To finish the stove make a pot support, similar to a grill, out of heavy gauge fencing or wire and place it on top of the container. Alternatively, it's possible to rest the pot on top of the container itself. In this case, it's necessary to cut large holes in the top of the container so the air can flow unimpeded past the bottom of the pot. These holes should have the same cross sectional area as the chimney and firebox, in this case 4" in diameter.

Then, make the flat shelf that fits inside the fire chamber and helps to separate the sticks. The shelf can be made out of a flattened tin can and slides into the combustion chamber. The stove will be much more efficient if used with a skirt around the pot. The skirt is simply a sheet of metal that is as high as the pot. The skirt surrounds the pot, leaving an even gap of about 1/4" between the skirt and the pot, so the hot flue gases are directed to contact the pot sides. The skirt gap is equal to the cross sectional area of the chimney. An insulated skirt is double walled with insulation between the walls.

We use the Rocket stove at Aprovecho and we recommend it. It's much easier to use than an open fire and uses less firewood.

Continues on page 39

Practical Emergency COOKING METHODS

By Sid Ogden Presented at the TACDA Annual Conference, September, 2011

ajor disasters almost always result in loss of power, which could extend to many days or even weeks. Heating our homes

and cooking becomes a challenge. Refrigerated and frozen foods need to be consumed or lost. Unprocessed foods

need to be prepared and cooked. Fuel will be scarce. We will be forced to capture heat from any source possible.

Rocket Stoves offer a great advantage during times of crisis. Cooking on a rocket stove occurs at the top of the chimney, where the fire is hottest, instead of at the bottom of the chimney over an open fire.

Rocket stoves provide controlled use of fuel, complete combustion of

volatiles, and efficient use of the resultant heat. They have become popular in many third-world countries for heating homes, cooking and boiling water.

The main components are:

Fuel magazine: Horizontal area where unburned fuel is placed. The fuel is pushed horizontally, through a small door near the bottom of the stove.

Combustion chamber: The area at the end of the magazine where the fuel is burned.

Chimney: A vertical area above the combustion chamber, which provides the updraft needed to maintain a hot fire.

Heat exchanger: The heat from the chimney is transferred to either a pot for cooking, or to a conductive reflector for heating a room.

The fuel magazine can be horizontal where additional fuel will be added manually, or the fuel can be added from above through another door in the chimney. As the fuel burns within the combustion chamber, convection draws new air into the combustion chamber from the door below, ensuring that any

smoke from smoldering wood near to the fire is also drawn into the fire and up the chimney. The chimney can be insulated to maximize the temperature and improve combustion. This will increase the efficiency of the stove by 2% or more.

The design of the stove allows it to operate on small diameter sticks and takes about half as much fuel as a traditional open fire.

Learn more about this amazing stove, as well as other cooking and heating sources by visiting the internet web site: http://www.aprovecho.org. From there, go to "Publication & Media", then to "Publications", and then to "Capturing Heat". If you want to build your own stove, check out the Youtube info on "Capturing Heat" by Dean Still and Jim Kness. We suggest that you study the site, and make a copy of the information.

Rocket Stoves can be purchased commercially. I recommend the site http://www.stovetec.net.



SHELTER MANAGEMENT FOR 21ST CENTURY THREATS Continued from page 8

taught again. Because of today's technologies, such courses can be widely available both now and in the event of a crisis. Web based options include FEMA Independent Study course or a You Tube video for an instructional visual presentation. Such information may be placed on FEMA, state, and local EMA web sites. They could also be broadcast by local TV stations or national cable/satellite service providers. Printed materials could back up web based information and PDF documents. For hands-on training, a Fallout Shelter Management course could become a component of the Community Emergency Response Team (CERT) program. CERT has been established for several years and has proven to be an effective way to teach survival skills to the public.

To build a truly viable nuclear detonation response capability for the nation, we can build on the excellent foundation recently established by Huntsville, AL. The federal and state governments should accelerate the plans, actions and resources needed to protect the public, specifically in the ability to Evacuate or to Shelter in Place from nuclear weapons effects. The federal government should move to engage state and local governments, to educate and inform leaders, the public and the media, to pre-identify Fallout Shelters and to train Fallout Shelter Managers. DHS and FEMA already have the chain of federal-to-local Emergency Management Agencies needed to do this. The EMAs should be empowered to move ahead with these programs.



JOURNAL OF *Civil*DEFENSE



JUST IN TIME TRUCKING

By Mac Slavo Taken from http://www.shtfplan.com

ost Americans take for granted the intricate systems that make it possible for us to engage in seemingly mundane day to day tasks like filling up our gas tanks, loading up our shopping carts at the local grocery store, obtaining necessary medications, and even pouring ourselves a clean glass of water. When we wake up each morning we just expect that all of these things will work today the same way they worked yesterday. Very few have considered the complexity involved in the underlying infrastructure that keeps goods, services and commerce in America flowing. Fewer still have ever spent the time to contemplate the fragility of these systems or the consequences on food, water, health care, the financial system, and the economy if they are interrupted.

A report prepared for legislators and business leaders by the American Trucking Associations highlights just how critical our just-in-time inventory and delivery systems are, and assesses the impact on the general population in the event of an emergency or incident of national significance that disrupts the truck transportation systems which are responsible for carrying some ten billion tons of commodities and supplies across the United States each year.

A shut down of truck operations as a result of elevated threat levels, terrorist attacks, or pandemics would, according to the report, have "a swift and devastating impact on the food, healthcare, transportation, waste removal, retail, manufacturing, and financial sectors."

So too would events such as an EMP attack or a coordinated cyberattack that could shut down global positioning systems and the com-

for

puters responsible inventory control. Another potential scenario that is more likely now than ever before is liquidity problems within the financial system stemming from currency crisis or hyperinflation. All of our just-in-time delivery systems are built upon the unhindered transfer of money and credit, but

when credit flow becomes restricted or money becomes worthless, no one will be able to pay for their goods. Likewise, no one will trust the credit worthiness of anyone else. This is exactly the scenario playing out in Greece right now and the consequences on the health care industry in that country have left many without life saving drugs. When there's no money, no one will be transporting anything.

The effects of a transportation shutdown for any reason would be immediate (in some cases, within hours) and absolutely catastrophic.

(Excerpted from the American

Truckers Associations report):

Food

- Significant shortages will occur in as little as three days, especially for perishable items following a national emergency and a ban on truck traffic.
- Consumer fear and panic will exacerbate shortages. News of a truck stoppage-whether on the local level, state or regional level, or nationwide-will spur hoarding and drastic increases in consumer purchases of essential goods. Shortages will materialize quickly and could lead to civil unrest (we're seeing this "http://www.shtfplan.com/headline-news/total-chaos-in-the-ukas-gas-stations-run-dry-efforts-tostop-panic-buying-have-led-tomore-panic-buying_03292012" in the UK right now).

Water

effects of a transportation shutdown for any reason would be immediate and absolutely catastrophic.

The

Supplies of clean drinking water will run dry in two to four weeks. For safety and security reasons, most water supply plants maintain a larger inventory of supplies than the typical business. However, the amount of chemical storage varies significantly and is

site specific. According to the Chlorine Institute, most water treatment facilities receive chlorine in cylinders that are delivered by motor carriers. On average, trucks deliver purification chemicals to water supply plants every seven to 14 days. Without these chemicals, water cannot be purified and made safe for drinking.

Health Care

Without truck transportation, patient care within the truck stoppage zone will be immediately jeopardized. According to Cook, many hospitals have moved to a just-in-time inventory system. In fact, some work from a low-unitof-measure system. This means that essential basic supplies, such as syringes and catheters, are not ordered until the supplies are depleted. These systems depend on trucks to deliver needed supplies within hours of order placement. Internal redistribution of supplies in hospitals could forestall a crisis for a short time; however, in a matter of hours, hospitals would be unable to supply critical patient care.

- If an incident of national significance produces mass injuries, truck transportation is the key to delivering urgently needed medical supplies necessary to save lives.
- Hospitals and nursing homes will exhaust food supplies in as little as 24 hours
- Pharmacy stocks of prescription drugs will be depleted quickly. According to the National Association of Chain Drug Stores, most of the nation's 55,000 drug stores receive daily merchandise deliveries by truck.

Transportation

- Service station fuel supplies will start to run out in just one to two days. An average service station requires a delivery every 2-4 days. Based on these statistics, the busiest service stations could run out of fuel within hours of a truck stoppage, with the remaining stations following within one to two davs.
- Air, rail and maritime transportation will be disrupted.
- A fuel shortage will create secondary effects. Without access to automobile travel, people will be unable to get to work causing labor shortages and increased economic damage. Without cars, many people cannot access grocery stores, banks, doctors, and other daily needs. Public bus systems will cease to operate as well, preventing many disabled and eld-

erly people from accessing these necessities. Without fuel, police, fire, rescue and other public service vehicles will be paralyzed, further jeopardizing public safety.

Waste Removal

- Within days of a truck stoppage, Americans will be literally buried in garbage with serious health and environmental consequences. Further, without fuel deliveries, many waste processing facilities will be unable to operate equipment such as backhoes and incinerators.
- Uncollected and deteriorating waste products create rich breeding grounds for microorganisms, insects, and other vermin. Hazardous materials and medical waste will introduce toxins as well as infectious diseases into living environments. Urban areas will, of course, be significantly impacted within just a couple of days.

Retail / Manufacturing / Economy

- Replenishment of goods will be disrupted. Many of the nation's leading retailers rely on just-intime delivery to keep inventory levels as low as possible. Similar to the low-unit-of-measure hospital inventory system, these stores rely on frequent deliveries to replenish basic goods. Often, delivery of a shipment is not triggered until the current inventory is nearly depleted. Without truck deliveries, retailers will be unable to restock goods, including consumer basics such as bottled water, canned goods, and paper products.
- Emergencies triple the rate of inventory turn-over. Since many large retail outlets typically keep inventories as lean as possible, problems often arise quickly during truck transportation slow-downs that occur from crises such as hurricanes.
- Shut down assembly lines within hours. Major American manufacturers, ranging from computer manufacturers such as Dell and

Compaq to major automakers such as GM and Ford, rely on just-in-time manufacturing. Without truck deliveries, component shortages and manufacturing delays will develop within hours

Financial Sector

- ATM and branch bank cash resources will be exhausted quickly. In today's fast paced, high-technology economy, consumers access cash 24/7 from 370,000 ATMs nationwide. JP Morgan Chase, the nation's second largest consumer bank, replenishes its 6,600 ATMs via armored truck delivery every two to three days. Given the increase in ATM activity that occurs before and after any type of crisis, ATMs would run out of cash much sooner.
- Small and medium-size businesses will lose access to cash.
- Regular bank functions will cease.

While an event that disrupts truck transportation systems may be unlikely, recent history suggests it is fully plausible and the blowback can be devastating. A day after Hurricane Katrina ravaged New Orleans, panicked government officials stopped all transportation flow into the region, forcing hundreds of trucks loaded with emergency supplies like food and water to wait for permission before they could enter the area. As a result, thousands of residents of the city were left without items essential for survival. It took days before truck routes were re-opened and supplies were allowed to flow. Government officials acting on limited information, lack of knowledge and personal politics were responsible for restricting the flow of goods into New Orleans, potentially killing hundreds of people in the process.

What this incident demonstrated is that when the trucks in America stop, all commerce and delivery stops with it.

Now consider what may happen if the emergency is more widespread, affecting not just a city, but the population of an entire region or the United States in its entirety.



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(An Eaton Filtration product)

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QUIPS BY FARNAM



Being Prepared Can Save Lives

By John Farnam

Hero in Action

t was Christmas Eve and a colleague who conducts training similar to mine, found himself confronting a lifethreatening situation as he was driving on an icy road in a mountainous area of Utah. The car in front of him skidded out of control and wound-up in a river, upside down. Water was thigh-deep and moving rapidly. The driver of the wrecked vehicle got out, but his car, under pressure from rushing water, then moved and blocked the driver's-side door he had come out of. Trapped in the car remained three small children, and the driver, their father, was unable to open any of the other doors and extract them. The cab-portion of the car quickly filled up with water!

Several other motorists stopped and rushed into the icy water in a effort to help, but all windows were now under water, and doors remained locked. My colleague, seeing the urgency of the situation, drew his G23, stuck it under water and, angling it toward the river bottom, fired a single round into the corner of a side-window. The window shattered.

Two of the three children, by this time, were unconscious and, in the darkened interior, my friend could not find seatbelt releases. So, without delay, he drew and deployed his folding knife (brand unknown), cut all belts loose, and extracted the children, one by one. Seat-belts are notoriously tough, but my friend's blade was razor-sharp and sliced effortlessly through the belts.

All three children were hypothermic, but recovered quick-

ly and have been subsequently released from the hospital.

As noted, there were several other well-meaning citizens present, who bravely endured the freezing waters, but only my friend was prepared! He had necessary tools at hand, and the boldness to act.

Those two critical attributes (1) through preparation and (2) boldness, saved the day, snatching victory from the jaws of disaster. My friend unhesitatingly took unilateral, dicey, audacious action, not waiting around for someone else to do something.

We should all be similarly prepared, and similarly courageous.

One final note: Friends at Glock do not recommend firing any Glock pistol under water. However, in this case the G23 in question functioned normally, and is now back in my friend's holster, none the worse for wear.

Low Profile

ecently, a tourist from TN was in NYC visiting the 911 Memorial. She couldn't help but notice all the "No Weapons Allowed" signs. She was carrying a concealed pistol at the time, being appropriately licensed to do so in her home state of TN. She naively approached a security guard and asked him if there was someplace she could "check her pistol," so she could proceed into the Memorial sight. He referred her to a nearby uniformed NYPD Patrolman, and she politely repeated her request to him.

He asked her if she had her pistol on her, and she replied

in the affirmative.

She was immediately arrested and subsequently charged with a violation of one of NYC's multitudinous, incomprehensible gun laws and now faces criminal sanctions, including fines and even jail-time. The case is still pending.

The lesson for all of us is this, and it doesn't just apply to NYC:

- 1) Don't approach police officers other than to report a crime or an emergency.
- 2) When you do talk with police, be brief and get to the point immediately. Don't chit-chat. Don't volunteer irrelevant, personal information about yourself. Don't answer questions that weren't asked.
- 3) When you're near police officers, don't talk about guns.

 When carrying, always be discreet, polite, inconspicuous, invisible. Keep that aspect of your life a closely-guarded secret

There are risks associated with carrying guns, whether the practice is technically "legal," or not. There are also risks associated with not carrying guns!

The hodgepodge "permit" system now in place is impossible for

anyone to keep track of, and many mayors (such as in NYC) have anti-gun agendas anyway, and instruct their police to enforce them, even when there is no basis in law. None of this confusion/mendacity is likely to be settled, in any comprehensible way, during our lifetimes.

In the interim, the "Stealth Existence" still represents the best personal policy, unless of course, you relish the thought of being the central figure in a "test case!"

There are risks associated with carrying guns, whether the practice is technically "legal," or not. There are also risks associated with not carrying guns!

You don't get a risk-free world, nor a risk-free life. Using sound logic, and the best information available, make decisions, and then don't look back.

When you do elect to go armed, take heedful note of the foregoing!

Concealment

here are three levels of concealment: casual, rigorous, and total. A pistol in a waistband holster, covered by an outer-garment, is an example of "casual" concealment, and that, or something similar, is the preference of most of us who carry daily.

However, with the current spike of interest in personalprotection pistols, many, who heretofore never even thought about owning a gun, much less carrying one, are now seriously, even desperately, investigating ways to have pistol on them, concealed, and yet continue dressing as they always have.

This is the realm of "rigorous" concealment, often used

by Operators fo back-up guns, but now used by many neophytes for carrying their one, and only, gun.

One method I've used is concealing the pistol in an elastic band around my torso, sandwiched between the T-shirt and the dress shirt. Concealment this way requires no vest, nor an outer-garment of any kind, nor does it involve a belt, or the waistband at all. Your shirt can be tucked-in normally.

Two products I use, and like best in this regard, are the Kangaroo Carry, and the CCW Shirt. In the former case, a thin shoulder-strap keeps the elastic band from sagging. In the later case, the pistol is well supported within a jersey-type undershirt.

Both products are best suited to small, flat, single-column pistols in 9mm and 380 auto and small revolvers in 38Spl. Most of these pistols can be comfortably carried this way with

> minimal "printing." Fullsized pistols can b thus carried too, but are more likely to generate a printing issue, depending on your size, shape, and the way you move.

> Printing is minimized, in either case, when you wear an outer shirt with a light pattern. A solid-color shirt will cast stark shadows when in direct

sunlight. A pattern in the shirt will camouflage such shadows, breaking-up the outline, and making the pistol underneath far less obvious.

With either the CCW Shirt or the Kangaroo Carry, you're going to have to reach through the front opening in your outer shirt in order to draw the pistol. Thus, you'll probably have to leave at least one button unbuttoned Some shirts from 511, and others, have snaps (masquerading as buttons) that greatly facilitate this process.

In either case, your draw will be "one-way." That is, you won't be able to reholster quickly. Getting the pistol back into its holster is slow and requires both hands. So, when you need to get your drawn pistol out-of-sight promptly, it will probably have to go into a pocket or handbag. This maneuver, along with the rest of your repertoire, needs to be exercised during range training.

Currently, sales of small 9mm and 380auto pistols is brisk, to say the least! As noted above, for many, such a small, limited-capacity pistol will represent their main, indeed only, defense, and most of these folks will be carrying concealed for the first time in their lives. Many seasoned Operators consider them all to be "Johnny-come-lately" to our party, finally emerging from self-imposed denial. Probably true, but they still need solid guidance and encouragement, and we need their support in opposing anti-gun legislation.

They need reminding that "concealment is an attitude." They need to get over it, used to it!

"Late" converts are still converts!



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he subject of radio communications as it relates to Prepping is an often misunderstood topic. Understanding radio communications issues can also be confusing, complicated, and daunting for the newcomer. There is a lot to know about the subject, and speaking as one that has spent a good part of his life experimenting with

radio communications, it seems that the more I learn about radio communications, the more I learn how much I have to learn!



The effective range of MURS radios is similar to FRS radios and depending upon terrain, will typically range from 1 to 5 miles for hand held units. In urban areas this may be decreased due to the types and number of structures in the area.

n this article I would like to share much of the information that I have gleaned about radio communications technology and its applications. I will attempt to present this article in a way that the reader can glean real world applications, and in a way that it is easy to understand for the novice.

Communications is yet another area where rule 6-P applies; that is, "Proper Prior Planning Prevents Poor Performance." Proper planning is absolutely crucial to accomplishing your communications related goals.

Although there are plenty of arguments pro and con in the "preparedness" world about this, I would advise anyone that is serious about establishing a crisis communications system to consider becoming a licensed amateur radio operator. Communications equipment is like any other preparedness related equipment. If it is purchased and then left in a box until needed, it will not work as intended at the moment of truth. Becoming a skillful radio technician and communicator is an on-going process. This is true whether you go down the amateur radio road or not. You must know the strengths, weaknesses, and limitations of your equipment. If you don't, then you can't reasonably expect to know how to use the equipment under less than ideal circumstances.

The first radios I will discuss are those that can be purchased and used by anyone. These radios use only pre-programmed, non-tunable channels. They are designed to be used by untrained, unlicensed individuals, and they are designed in a way that will limit their effective range so as to prevent harmful interference to other untrained, unlicensed users. Amateur radio on the other hand is just the opposite. It is flexible by nature, and for many reasons.

FRS RADIO SERVICE

he first option I will discuss is a system known as the Family Radio Service. It consists of fourteen Ultra High Frequency. FRS radios are

limited to an output power of 0.5 watt, and can be purchased at a low price from many retailers. The low power output means that the range of these radios is limited. One advantage is that FRS radios use FM modulation as opposed to AM. This means that FRS frequencies are not as susceptible to noise or interference from power lines, as can be seen with handheld Citizens Band radios, which will be discussed later. Another possible advantage to FRS radios and UHF signals in general is that they often perform better in urban environments. This is because signals in the UHF frequency range penetrate buildings better than signals in other frequency bands. FRS channels 1 through 7 are shared with the General Mobile Radio Service, channels 8 through 14 are for FRS use only and channels 15 to 22 are for GMRS use only. This is why most FRS radios are pre-programmed with 22 channels. The GMRS only channels should not be used unless you possess a GMRS license.

There are many practical uses for FRS, and it can be used in situations where one needs non-secure voice communications over an area of five miles or less. You should only expect FRS to work reliably for approximately one to two miles. The range will depend greatlv upon the surrounding terrain, because propagation of radio waves in the UHF frequency range is limited to line of sight. This means that the radio wave will only travel as far as the horizon. I will discuss line of sight in depth later in this article.

One drawback to FRS is that it is a very popular system, and there will be many other people sharing a very limited pool of frequencies. Many manufactures of FRS radios will tout "privacy" features on their radios. Do not misunderstand what they are talking about here. The "privacy" features do not encrypt or make your communications secure in any way. These features utilize a combination of Digital Coded Squelch and Continuous Tone Coded Squelch System techniques. I know that sounds very technical, but think of it in this way. If you activate DCS or CTCSS, then the only time the squelch of your radio will open (this means you will hear audio coming from the speaker), is when the radio transmitting the signal is transmitting the same code that you have programmed your radio to receive. Because of this, there may be someone else operating on your frequency, but if they do not have the proper transmit tone programmed, then you will not hear them. DCS or CTCSS do not change the fact that FM receivers by their design will always "capture" the strongest signal. This is known as the "capture effect". This means that the strongest of any two or more signals will override weaker signals in the receiver. DCS or CTCSS allows you to reduce the amount of frivolous traffic that you will hear on the radio, but it in no way makes your communications secure or private. Anyone with a programmable scanner receiver or an FRS radio will be able to eaves drop on your communications.

Also, remember that is always possible that organized adversaries may utilize FRS radio equipment to coordinate their attacks, assaults, and other activities. In the event of a crisis, it would be of great value to have the ability to constantly monitor the FRS channels for this type of activity. Obtaining this communications intelligence (COMINT) could keep you and your family safe and could give you the early warning you need to prepare for an imminent assault. For reference the FRS frequency table is as follows, expressed in Megahertz (MHz):

CH 1 462.5625 (Shared with GMRS) CH 2 462.5875 (Shared with GMRS) CH 3 462.6125 (Shared with GMRS) CH 4 462.6375 (Shared with GMRS) CH 5 462.6625 (Shared with GMRS) CH 6 462.6875 (Shared with GMRS) CH 7 462.7125 (Shared with GMRS) CH 8 467.5625 (FRS only) CH 9 467.5875 (FRS only) CH10 467.6125 (FRS only) CH11 467.6375 (FRS only) CH 12 467.6625 (FRS only) CH 13 467.6875 (FRS only) CH 14 467.7125 (FRS only) CH 15 462.550 (GMRS only) CH 16 462.575 (GMRS only) CH 17 462.600 (GMRS only) CH 18 462.625 (GMRS only) CH 19 462.650 (GMRS only) CH 20 462.675 (GMRS only) CH 21 462.700 (GMRS only) CH 22 462.725 (GMRS only)

MURS RADIO SERVICE:

The Multiple Use Radio Service is another communications system that can be used by individuals and which requires no license to operate. MURS is similar to FRS in operation but MURS frequencies are in the Very High Frequency band. MURS radios operate at a maximum output power of 2 watts. This is slightly higher than FRS radios which are limited to 0.5 watts. MURS radios can be purchased through many different on line retailers and communication equipment suppliers. This is because VHF signals don't penetrate buildings and structures as well as UHF signals. MURS range may be increased in some rural areas because signals in the VHF frequency range tend to propagate better over open, flat terrain.

It should be noted that VHF signals from MURS radios are subject to the same limitation as UHF signals from FRS and GMRS, in that they are line of sight, and the signals will only travel as far as the antenna can see. One advantage to MURS is that you are allowed to use external gain antennas with MURS frequencies. An externally mounted, elevated antenna will improve the performance and range of most any radio because of the "line of sight" principle. Logic dictates that the higher the antenna is, the further it can "see". The legal antenna height for MURS is limited to no more than 60 feet above ground, or no more than 20 feet above the structure that it is mounted on. An external gain antenna is of great benefit to the performance of most types of transmitters and receivers, not just MURS radios. (A transmitter is any radio that sends out or "transmits" a signal and a receiver is any radio that "receives" or picks up a signal.) Also, "antenna gain" is a term that describes how well an antenna performs. The higher the gain, the better the performance.

It should also be noted that some driveway monitors, including those made by "Dakota Alert" use MURS frequencies. The advantage to this arrangement is that you can carry a MURS portable radio on your person while you are out working around your retreat, and you can receive alerts from the driveway alarm. Some of these MURS based driveway alarms include a push to talk (PTT) base station for your home, which means that not only can the indoor base receive the driveway alerts, but a person inside the house can transmit from the base station and have communications with another person carrying a MURS portable radio. As with FRS, possible adversaries may use MURS equipment to coordinate their activities, so it is worthwhile to monitor these frequencies for COMINT. The MURS frequency table is as follows, expressed in Megahertz (MHz):

- 151.820 (FM narrow mode)
- 151.880 (FM narrow mode)
- 151.940 (FM narrow mode)
- 154.570 (FM wide mode, shared with business band)

154.600 (FM wide mode, shared with business band)

CB RADIO

• itizen's Band (CB) radio has been in existence since the late 1950s, and now consists of 40 pre-programmed channels in the 27 MHz band. CB radio has some limitations that, in the opinion of the author, make it a poor choice as a survival related communications tool. CB radio has many things that work against it. CB is limited to 4 watts of output power. CBs also operate in the Amplitude Modulation (AM) mode. AM modulation, in conjunction with CB's place at the top end of the High Frequency (HF) radio spectrum, makes it very susceptible to interference from power lines and other sources.

Try a real world test to prove this point: The next time you are driving underneath high voltage power lines, tune the AM radio in your car to an unoccupied frequency. You will hear a great deal of noise that comes over the speakers of your car radio. Now tune it over to a vacant FM frequency. You will not hear the line noise. This same phenomenon affects CB radio and greatly limits its utility, especially in cities, towns, and urban areas where high voltage lines are present. The low transmit output power also severely limits the distance that a CB signal will travel. Some CB radios utilize "side-band" technology. This means that the radio takes a standard AM signal and divides it into two halves - upper and lower sideband. This allows slightly more power to be used to create the voice signal. The single sideband (SSB) mode can be selected by a knob on properly equipped CBs, tuning to either Upper Side band (USB) or Lower Side band (LSB). Sideband technology does increase the output power of a CB, but only to about 12 watts peak envelope power (PEP).

A decent antenna will improve CB performance whether it is installed in a vehicle as a mobile installation, or as a base station inside a structure with which you can utilize external gain

antennas. CB can work well in "point to point" simplex applications (such as one retreat communicating with another on a direct frequency), but there are better solutions for "base to base" communications to be found in the realm of amateur radio. One advan-

tage to CB is that the radios typically operate on 12- volts DC, which makes it more practical to provide back up power. A deep cycle battery or other 12volt DC system can provide this power.

You can easily install a CB base station at your retreat by connecting a mobile CB radio to a 12-volt DC power supply. The key to effective CB base station installation is to get the antenna up in the air as high as possible. Most of the time, radio waves in the 27 MHz, propagate effectively as ground waves. This means that once again, the waves travel "line of sight". At some points in the 11 year solar cycle, the Maximum Usable Frequency of the Ionosphere will increase to the point where to 27 MHz signals can propagate across the country and even across the world while using very low power levels. This can be fun to "shoot skip" as the CB'ers say, but in reality the 27 MHz skywave is not very reliable, so 27 MHz signals can only be depended on to function "line of sight" with regular reliability.

Another advantage to CB use is that it is very widespread and having CB radio capability promotes interoperability with others. This could be very useful during a bug out when traveling on roadways and you are in need of infor-As most red-blooded mation. Americans know, CB is widely used in the trucking industry and those trucks can be a treasure trove of useful information. For that reason, even though I don't rely solely upon CB for my crisis communications plan, I do always have CB equipment available for use if needed. As with the other equipment mentioned earlier, CB is easily monitored

Another advantage to CB use is that it is very widespread and having CB radio capability promotes interoperability with others. This could be very useful during a bug out when traveling on roadways and you are in need of information.

> and intercepted. This means your communications are not secure and an adversary using CB radio could use it against your retreat.

Also note that there are several CB channels available for "remote control" purposes. These channels are intended to be used for radio controlled aircraft and cars, etc. Under normal circumstances I would certainly obey these restrictions, but if needed, and if the user had the proper equipment, these channels could provide the user with

less congested frequencies to conduct voice communications. CB frequencies can also be monitored by some programmable scanner receivers. The CB frequency table is included below for your reference, expressed in MHz:

CH 1 26.965 CH 2 26.975 CH 3 26.985 CH 4 27.005 CH 5 27.015 CH 6 27.025 CH 7 27.035 CH 8 27.055 CH 9 27.065 CH 10 27.075 CH 11 27.085 CH 12 27.105 CH 13 27.115 CH 14 27.125 CH 15 27.135 CH 16 27.155 CH 17 27.165 CH 18 27.175 CH 19 27.185 CH 20 27.205 CH 21 27.215 CH 22 27.225 CH 23 27.255 CH 24 27.235 CH 25 27.245 CH 26 27.265 CH 27 27.275 CH 28 27.285 CH 29 27.295 CH 30 27.305 CH 31 27.315 CH 32 27.325 CH 33 27.335 CH 34 27.345 CH 35 27.355 CH 36 27.365 CH 37 27.375 CH 38 27.385 CH 39 27.395 CH 40 27.405

CB Remote Control Channels 26.995 27.045 27.095

27.145 27.195

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COMMUNICATIONS PLANNING FOR THE PREPPER, PART 2

Amateur radio is the most viable form of communications for a crisis.

by Hammer

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mateur radio is, in the opinion of the author, the most viable form of communications for a crisis. I say this

because all of the communications systems discussed up to this point are fixed in nature and are not designed to be flexible.

Amateur radio (otherwise known as ham radio) has been around for almost 100 years and consists of many different frequency bands ranging from 1.8 MHz to 1240 MHz. Amateur radio operators are licensed in the United States by the Federal Communications Commission (FCC). To be an amateur radio operator, one must pass a written

multiple choice test which consists of different elements such as operating rules, electronic theory, radio frequency energy (RF) safety, antenna theory, and others. There are three levels of amateur radio licenses in the U.S., and they are Technician Class (the entry level license), General Class (an intermediate license), and Extra Class (the highest level of license). Many folks I have spoken with over the years have told me that they didn't want to get involved with amateur radio because they didn't want to learn Morse code. The reality is that Morse code proficiency is no longer required to obtain an amateur radio license and hasn't been for several years.

Obtaining an amateur radio license

has never been easier. License exams are administered by volunteers with an FCC approved Volunteer Examiner Coordinator (VEC). Most communities are within an easy car trip of a testing location. The cost is very low and once you obtain the license, you renew it every 10 years at no cost. The American Radio Relay League (ARRL) is the America's national association for amateur radio and you can explore their web informational site at www.ARRL.org. The questions and answers to the tests are published in pools that are updated every three years. As such it is very easy to study for these tests because you already have access to all of the possible questions and answers before the test. The VECs must select questions from only this pool, so it is not a subjective test. There is ample study material available at http://www.hamradiolicenseexam.com/, as well as on other internet sources, including study manuals and study software. I'm not giving anybody a plug here, but I can tell you that the Gordon West study manuals that are available at that web site are great material to use and they helped me pass my exams more easily.

FIND a local amateur to help you out. We are a helpful bunch and will bend over backwards to get someone into the hobby and look forward to "Elmering" (mentoring) someone.

Amateur radio equipment can be found at reasonable prices on the Internet (such as eBay), from other amateurs, or at local "Hamfests", which are swap meets for amateur radio gear. Find a local amateur to help you out. We are a helpful bunch and will bend over backwards to get someone into the hobby and look forward to "Elmering" (mentoring) someone.

To get started in amateur radio, the first test you need to take is the Technician Class test. This test consists of 35 multiple choice questions. After passing this test, and after you receive your first "call sign" from the FCC, you will have operating privileges on all amateur radio bands from 6 Meters (50 MHz) and up. This will provide you with access to the entire VHF and UHF amateur frequency bands. The propagation characteristics (meaning how radio waves travel) of these frequency bands can allow you to communicate both locally and regionally (out to about 50

miles, depending on system configuration). Frequency bands differ from "channels" in that "channels" (as applied to FRS, GMRS, MURS, CB) are pre-set and synthesized meaning that you can't change the frequency. This means that you will have a lot of stations competing for a very limited amount of radio spectrum. With amateur radio however, the user selects the operating frequency and there is much more spectrum space available to carry out interference free communications. The two most commonly used bands available to Technician Class licensees are the 2 Meter band (144 to 148 MHz) and the 70 cm band (420-450 MHz). The Technician Class will also give you limited voice operating privileges on the 10 Meter HF band from 28.300 to 28.500 MHz. The 10 Meter band is at the highest portion of the High F r e q u e n c y ("http://www.survivalblog.com/glossary.html" \l "HF" \t "_blank" HF) amateur bands. This means you will get a taste of what HF radio is all about. 10 Meters propagates very similar to CB radio so you will only be able to communicate over long distances beyond line of sight when propagation conditions are favorable.

The second license available is the General Class license. This test also consists of 35 multiple choice questions. There are many advantages to pursuing the General class upgrade after you pass the Technician test. Amateur radio licenses build on one another, so when you upgrade to the next license class, you retain all of the privileges that you have previously earned and then receive more. The biggest advantage to the General class license is that it gives you much broader access to the High Frequency (HF) bands. The General class license will give you operating privileges on every amateur band, whereas the Technician license limits your activities as an incentive for you to upgrade vour license. The HF bands allow you to communicate locally, regionally, nationally, and even worldwide when the geomagnetic, ionospheric conditions are favorable. (More on

those conditions later.)

The third and final class of amateur radio license is the Extra Class license. This test consists of 50 multiple choice questions. The Extra Class is the highest level of amateur radio license issued by the FCC. The only advantage to earning the Extra Class license is that it gives additional access to some of the HF bands. I know many amateurs who have been a General for many years and they have seen no need to upgrade. I have met others who challenged and took all three license exams, and passed all of them on the same day! [JWR Adds: The \$15 day's test fee covers all of the tests that you take on that day.] So it really depends on one's personal motivations as to whether one pursues this goal.

BAND ALLOCATION

will now provide a description of each of the most commonly utilized amateur radio bands and equipment and how they can be utilized in communications planning. Before talking about the bands, it's important to have a grasp of a few basic concepts and terms. First, the designation "meter" as it applies to the description of radio bands is the measurement in meters between the peaks of the radio waves at a given frequency. Think of it this way. Radio waves, if they could be seen with the naked eye, would appear much as waves in the ocean do. They have peaks and lulls at timed intervals. The "meter band" measurement is the measurement between the middle of the peak of one wave and the middle of the peak of the following (or preceding) wave. The bands are measured in meters (or centimeters in some cases) at a given freauency.

The second concept one must understand is antenna resonance. When an antenna is resonant, that means that the antenna absorbs and thereby radiates most all of the radio frequency (RF) energy that is applied to it. If the antenna is not resonant, it will reflect a given portion of the power back to the transmitter. The amount of reflected power will be proportional to just how far out of resonance the antenna is. The amount of power reflected back, as compared to the amount of forward power applied, is known as the Standing Wave Ratio (SWR). Typically, an SWR of greater than 2:1 indicates antenna inefficiency and the reflected power may damage your transmitter. An antenna analyzer is very helpful in attaining antenna resonance but is a very costly piece of equipment and is out of the price range of most amateurs. Theories of inductance and capacitance, as they effect antenna tuning, are way beyond the scope of a small article. A good rule of thumb to remember is that the lower one goes in operating frequency, the larger the antennas become. But fear not, there are many things you can do to get a good signal on the air, which will also be discussed later.

The third concept one must understand is the concept of radio wave propagation. Propagation is simply the method by which a radio wave travels from point A to Point B. There are two major ways that radio waves propagate. The first is by

"line of sight" as discussed earlier. Line of sight means that the radio wave will only travel as far as the antenna can electrically "see". This is typically the distance to the visual horizon plus about 15%.

The second mode of propagation is by "Skywave." This concept is a bit more complex but with time and experience, one can get a pretty good grasp as to how Skywave will behave on certain bands, at certain times of the year, and at certain times in the sunspot cycle. Skywave involves HF radio waves (which are frequencies of 3 to 30 MHz) being sent up and then reflected back to the earth's surface by the ionosphere at distances of hundreds or thousands of miles away. Skywave propagation is made possible thanks to the ionosphere. The ionosphere has several layers of electrically charged parti-



cles that range from about 30 to 600 miles above the earth's surface. It is comprised of several layers including D, E, F, F1 and F2. The D layer ranges from about 35 to 55 miles above the surface. The D layer is an enemy to Skywave propagation but fortunately it is only in existence during the day and it vanishes at night. The D layer does nothing to reflect signals, but it will absorb and attenuate daytime signals, especially in the 160, 80, 75, 60, and 40 Meter amateur bands. It is often known to amateurs as "That Dang D". The E layer ranges from 55 to 75 miles above the surface. The E layer is an occasional player in Skywave propagation and can reflect signals back to earth at distances of several thousand miles under proper conditions. E layer Skywave propagation is often sporadic in nature, and can affect frequencies that are well

above the HF part of the spectrum. The F1 and F2 layers exist only in the daytime (like the D layer). At night, the F1 and F2 layer combine to form the F layer. The F layer, in its various forms, ranges from 125 to 300 miles above the surface. The F layer is responsible for most reliable Skywave communications.

The ionosphere is "ionized" by ultraviolet (UV) rays and x-ray radiation from the sun. The sun goes through stages of activity and inactivity that waxes and wanes over an 11 year period. This means that the amount of radiation from the sun goes up and down, and that in turn affects the ionosphere. The rule of thumb is that as more sunspots, (which are dark and comparatively cool areas) develop on the visible surface of the sun, the more ionizing radiation the sun emits. This means that Skywave propagation is usually enhanced due to increased ionization in the ionosphere. Increased solar activity is a double edged sword however, and during solar flares, which are sudden, large emissions of solar then averaged. The K index is generally updated at three-hour increments. The rule of thumb is that the higher the A and K indices are, the more disturbed the magnetic field is. This means that HF communications may be degraded,

A good understanding of ionospheric and geomagnetic activity is a must for any serious user of HF radio. The term geomagnetic refers to the relationship between the earth and its magnetic field, which is mostly concentrated at the poles.

radiation, HF communications can be adversely affected to the point where HF radio is blacked out and unusable. This occurs because of disruptions in the ionosphere as well as in the earth's magnetic field, which also plays a role in Skywave propagation. As most Preppers know, severe solar flares could cause severe damage leading to power outages that in worst case scenario could last for years, such as the Carrington Event of 1859.

A good understanding of ionospheric and geomagnetic activity is a must for any serious user of HF radio. The term geomagnetic refers to the relationship between the earth and its magnetic field, which is mostly concentrated at the poles. There is ample information available to HF radio users that can allow one to reasonably predict what Skywave propagation will be doing at a given frequency at a given time. There are four measurements that can be used to make this estimation. These measurements are the A index, the K index, the Solar Flux Index (SFI) and the Sunspot number. The A index is a general measurement of activity in the earth's magnetic field over the past 24 hours and indicates an average trend of geomagnetic activity. The K index indicates the nearly real time level of disturbance in the earth's magnetic field, as observed at observatories around the globe and

being emitted from the sun. This usually means that HF communications will be enhanced, because the ionosphere is receiving more ionizing radiation. The last measurement is the sunspot number. The more sunspots that are visible, the more ionizing radiation the sun emits.

What does it all mean? It means that you want to see a low A index, a low K index, a high Solar Flux Index and a high sunspot number for good HF propagation. If the A and K index are high, HF communications may be disrupted. If the SFI and sunspot numbers are low, it means that most of the higher HF frequencies will not be usable for Skywave. These current indices can be found at www.solarham.com.

This all brings me to the next concept that one must understand about HF radio and radio waves in general. It is the concept of Maximum Usable Frequency (MUF). MUF is the maximum frequency at which, at any given time, the ionosphere will refract a radio wave back to the earth's surface. The MUF will change with the seasons, the time of day, and the point of the sunspot cycle. The vast majority of the time, the MUF is 30 MHz or below. This is why VHF and UHF radio waves are line of sight. Any VHF or UHF waves that get transmitted up into the ionosphere are not reflected back to

want to have access to transmit on frequencies that will reliably propagate over long distances (greater than about 50 miles most cases), you will need to have an HF radio station. There are especially at higher exceptions to this but it usually involves latitudes and over Sporadic E layer propagation as menthe poles. The tioned above, which is an unstable and Solar Flux Index is fleeting form of propagation. It can be a measurement of fun to work this type of propagation radio energy that during normal times but don't count on is being emitted it to work as a part of your crisis comfrom the sun at munications plan. There are also other 2800 MHz (10.7 amateur radio systems other than HF cm wavelength). that you can use to communicate over The higher the long distances (such as EchoLink), but solar flux, the these typically rely on the internet infrastructure, which most Preppers are at pains not to do.

earth, and they pass into space. If you

160-METER BAND

he first individual band to be discussed is the 160 Meter band or commonly known as "Top Band" to amateurs. This band ranges from 1.8 to 2.0 MHz (the lowest amateur band) and is in the MF (Medium Frequency) part of the electromagnetic spectrum. The typical operating mode for 160 Meters is Lower Side Band (LSB). The propagation characteristics of the 160 Meter band are usually similar to what you would expect from a broadcast AM radio station. Note that the 160 Meter amateur band is located just above the AM broadcast band, which runs from about 510 KHz to 1.710 MHz. The 160 Meter band is not utilized by most amateurs because the antennas for 160 Meters are typically very large by reason of antenna resonance described above. Like most amateur bands, 160 Meters has quirky propagation characteristics at times, and it changes with the seasons and sunspot cycle. 160 Meters is greatly affected by D layer absorption and is nearly unusable during the daytime hours during the summer, but can propagate great distances at night during the winter. 160 meters also suffers from a high atmospheric noise level at times. Another great rule of thumb to remember is that the lower one goes in operating frequency, the

75 AND 80-METER BANDS

become unusable due to static crashes.

he next band is the 75 and 780 meter bands. Those two terms are sometimes used interchangeably. The 75/80 Meter band ranges from 3.5 to 4.0 MHz and the default voice communications mode is Lower Side Band. This band will be of potentially great use to the Prepper. 75/80 Meters has the ability to communicate regionally, beyond the range of typical VHF and UHF systems, which will be discussed later. 75/80 fills a unique gap in HF coverage, and can provide statewide communications. This is where most statewide emergency communications "nets" take place. Groups such as the amateur radio Emergency Service (ARES) and state Emergency Operations Centers (EOCs) conduct most statewide HF operations in this band. It has been said that most disasters are local and regional in nature. This makes 75/80 very useful because of its propagation characteristics.

The best propagation mode for the Prepper on this band is to use Near Vertical Incidence Skywave (NVIS). This involves the counter intuitive placement of an antenna that is very close the ground, within about 8 feet or so. It needs to be just high enough that people or animals cannot touch it. This proximity to the ground causes the radiated energy to ascend towards the ionosphere at a very steep angle. This means that when the waves are reflected back to earth, they are also returned at a very steep angle. This makes the coverage pattern of an NVIS antenna to be much closer to the transmitting station, typically within a range of 25 to 300 miles. This makes it the perfect choice for a Prepper that wants regional communications. There is information later in the article about how to build an easy and inexpensive dipole antenna for 75/80 that can be configured for NVIS. 75/80 typically covers out to about 200 miles during the day, but can extend out several thousand miles at night when the D layer and its associated absorption disappears. 75/80 is very susceptible to D layer absorption during local daylight hours. 75/80 also suffers from higher noise levels during the day, especially during the summer months.

60-METERS

he next band is 60 Meters. This band is unique in that it is the only amateur band that is channelized. The center frequencies for 60 Meters are 5332, 5348, 5368, 5358.5, 5373, and 5405 kHz. These are center frequencies and not the dial frequency that will be displayed on the display of an HF radio. The corresponding dial frequencies are 5330.5, 5346.5, 5357.0, 5371.5, and 5403.5 kHz. The channel width is limited to 2.8 kHz in the Upper Side Band mode. This band is allocated to the amateur radio service on a secondary basis only, and the primary users are typically federal government users. Secondary users must always yield to Primary users. Power on this band is currently limited to 100 watts Peak Envelope Power (PEP) into a half wave dipole antenna (whose construction is described later in this article). Most amateur radios do not have the ability to transmit in this band without modifications. 60 Meters is useful in that it fills a propagation gap between the 75/80 Meter and the 40 Meter bands. 60 Meters does not suffer from as much atmospheric noise as 75/80 Meters but 60 Meters is still susceptible to D layer absorption. NVIS antennas may also be used effectively on 60 Meters, and it is useful for communications within the same state and with surrounding states. The main problem is that not very many amateurs are on the air on 60 Meters.

40-METER BAND

he next band is the 40 Meter band, which covers 7.0 to 7.3 MHz. The default voice operating mode is Lower Side Band. 40 meters is typically the highest frequency amateur band that can be used effectively for regional communications. 40 Meters differs from 75/80 Meters and 60 Meters in that its regional range usually extends from about 200 to 500 miles during the day and extends to several thousand miles at night. 40 Meters is typically better than 75/80 Meters for communications with states in the same general region of the country. This makes 40 Meters a good regional band but not necessarily a good band for statewide communications. A disadvantage to 40 Meters is that it is still shared with international broadcast stations in some parts of the world, especially above 7.2 MHz. The international stations don't usually cause a problem during the day due to the D layer but they are the bane of 40 Meter operations at night.

30-METER BAND

he next band is the 30 Meter band, which ranges from 10.1 to 10.15 MHz. 30 Meters is different from the previously mentioned bands in that it is limited to the use of digital communications modes only. PEP is limited to 200 watts. Voice communications are not allowed on this band. Digital communications can be as simple as the old stand by Morse code, and as advanced as modern software suites which allow users to interconnect radios with computers and then send and receive data packets over the air. There are many digital modes that can be used on amateur radio bands. The advantage to digital modes is that you can send and receive large amounts of data faster than it can be relayed by voice. Digital modes are also very useful in situations where signals are very weak and voice communications cannot be established.

There are many inexpensive digital interfaces available to connect radios to computers, and most of the software is freeware or available at a very reasonable cost. Digital modes are not restricted to just 30 meters and they can be used on the other amateur bands as well. Another advantage to digital modes is that while they are not consid-

COMMUNICATIONS PLANNING, continued

Always have a plan to establish simple communications with your family, friends, and your retreat.

ered encryption (because of open, public source protocols), they can defeat the very casual listener that doesn't have the proper receive equipment. 30 Meters can propagate regionally, nationally and world wide depending upon the propagation conditions.

20-METER BAND

he 20 meter band ranges from 14.0 to 14.35 MHz. The default voice operating mode is Upper Side Band. 20 Meters is what some amateurs refer to as the "work horse band" because of its useful propagation qualities. There are many types of operations that take place on this band, including a great deal of "nets". Nets are formal, on the air gatherings of amateurs for different purposes. 20 Meters is generally open year round and typically only closes down at night due to de-ionization of the ionosphere. 20 Meter propagation is generally nation wide in nature, but it will occasionally propagate regionally on shorter Skywave hops. Depending on how far away the station is for which you need to establish communications, 20 Meters may be a good bet. I know amateurs that maintain 20 meter contact schedules with other stations that are located on opposite ends of the country. 20 Meters does not suffer from D layer absorption (as the lower bands do), and atmospheric noise levels on 20 are typically low except during thunderstorms. This makes 20 Meters an all around good band for talking with friends across the country.

Here are the other HF bands:

17 Meters (from 18.068 to 18.168 MHz)

15 Meters (from 21.0 to 21.450 MHz) 12 Meters (from 24.890 to 24.990 MHz)

10 Meters (from 28.0 to 29.7 MHz)

These bands are useful for nation wide and world wide propagation depending upon the solar and geomagnetic conditions. The default voice operating mode for these bands is Upper Side Band. I would point out that 10 Meters is a very large band and it is the power lines. 10 Meter FM would be a decent choice for "point to point" simplex communications between retreats. 10 Meter ground wave propagation behaves very similar to Citizens Band propagation because the frequencies in which they operate are very close together. This is also an advantage because some CB antennas can be retuned for use on the 10 Meter band. Digital modes are also allowed on these bands.

HF ANTENNA

ere's great HF radio hands on skill. You can build a simple HF wire dipole antenna at very low cost and with just a few parts. You will need some copper antenna wire (preferably with a steel core for strength), and three insulators (which can be made from ceramic, plastic, glass or even wood). The insulators need to be at least 3 inches in length. You will also need a length of 50 Ohm coaxial cable (such as RG8) with the appropriate connector for your radio. This is typically a type PL-259 in most amateur radio applications. You will also need some rope to support the antenna, as well as a soldering iron and electronics solder to make all of the connections permanent.

The instructions for building the antenna can be found at http://www.ehow.com/how_6002278_b uild-dipole-antenna-hf.html/.

6 METER BAND

he next band is the 6 Meter band, from 50 to 54 MHz. As a Technician Class licensee, a new ham would have full access to this band and all others above it. 6 Meters propagates mostly ground wave and there are many FM repeaters in this band. More on repeater operations in the 2 Meter and 70 cm band descriptions. SSB is widely used on 6 Meters, and it occasionally will propagate on Skywave via the E layer of the ionosphere.

Skywave on 6 Meters is not reliable but is an interesting mode to work distant or "DX" stations on. 6 Meters is in the VHF low part of the spectrum, and signals in this frequency range tend to propagate further via ground wave than other frequencies that are above or below it. It is no coincidence that many state police agencies have used VHF Low for the last 60 years. It is because VHF Low signals propagate better over large, rural areas than VHF High or UHF frequencies do. If you wanted to communicate via simplex ground wave with another retreat, this would be the most ideal band.

2 METER BAND

he next band is the 2 Meter band from 144 to 148 MHz. 2 Meters is quite possibly the most popular and widely used band, and FM is the most common mode. There are many repeaters in the 2 Meter band. A repeater is a station that is installed at an elevated point, typically on a large communications tower or on top of a building or mountain. A repeater uses two frequencies simultaneously. The repeater receives on an input frequency, amplifies the signal to higher power, and retransmits it from the elevated antenna on an output frequency. This allows two stations that would otherwise be unable to communicate due to Line of Sight problems to establish communications. Other communications options on 2 Meters are the use of "simplex" frequencies. This just means transmitting directly from one station to another on the same frequency without use of repeaters. It's the same principle as voice operations on the bands that don't allow use of repeaters.

There are also SSB operations on 2 meters, and digital operations are allowed at higher throughput rates. This means you can send more data faster. This is because the band is larger and there is more spectrum available. There are thousands of 2 Meter repeaters in operation across the country. Some of them have back up power sources, some do not. It is the recommendation of the author that you not rely on repeaters in your crisis communications plan. This is because the repeaters may become congested with radio traffic or their power may fail in a crisis situation. Always have a plan to establish simplex communications with your family, friends, and your retreat, without relying on a repeater if at all possible.

70 CM BAND

• he next band is the 70 cm band from 420 to 450 MHz. The most common operating mode is FM, but there are extensive digital and amateur Television (ATV) operations in this band. Yes, you can actually transmit "Ham TV!" There are many repeaters on the air in this band, especially in urban areas. 70 cm performs well in urban areas because UHF radio waves tend to penetrate buildings and structures better than frequencies in other ranges. Simplex operations are also common on 70 cm. 70cm is widely used as a "backbone" band for linked repeaters. Some repeater operators have linked their systems together so that in some cases, one can communicate statewide on a VHF or UHF repeater. 70 cm is often used to relay this link data. Both 2 Meters an 70 cm are often

used in amateur satellite operations.

There are several satellites in earth orbit that have amateur radio repeaters on board. While this is fun to play with and is a tool for your communications tool belt, satellites have limited utility for consistent, reliable communications with other specific stations. This is because most of the satellites are in a Low Earth Orbit and the orbit is circular in nature. This means that the satellite circles the earth about once every ninety minutes. When combined with the rotation of the earth, this means that passes over a given location are limited in occurrence and short in scope. Satellites are also heavily used and it can be difficult to establish contact on them. For this reason they should not be relied upon to provide time sensitive communications for the Prepper.

33 CM & 23 CM BANDS

he other two commonly used bands I will lump together. They are the 33 cm band from 902 to 928 MHz and the 23 cm band from 1240 to 1300 MHz. These bands are great for the digital or ATV operator. They provide ample bandwidth for data throughput and the antennas for these bands are very small. Voice and repeaters are also used on these bands. There is not a lot of activity on these bands in the rural areas of the country, but they are more active in the urban areas. They are also outside the range of most cheap scanners, which provides some protection from the casual listener. Again, encryption is not allowed on any of the amateur bands but the squeaks and squawks of digital are meaningless to the untrained and unequipped listener.

BACK UP POWER

he next area that must be addressed for a reliable crisis communications system is back up power. This can be accomplished in many ways. The good news is that most amateur radio systems and other related communications equipment operate from 12-Volts DC negative ground.



This means you can connect this equipment to a car battery or preferably (if using a battery), to a marine deep cycle battery. Maintenance free lead acid batteries make good back up power sources for radio. Of course, you need to have a back up plan to recharge the batteries without the grid. This can be done using a variety of systems including solar panels, wind generators, or hydro generators connected to a battery charging conditioner to prevent damage to the battery or to the charging system. One can also use a standard gasoline, diesel, or natural gas powered generator to power a 120 Volts Alternating Current (VAC) to a 12 VDC power supply for the radios. These 120 VAC to 12 VDC power supplies are commonly used to power amateur radio equipment from the grid under normal conditions. Do not rely on grid power at any point in your crisis communications plan.

In my situation, I utilize HF radio on 80 through 10 Meters for back up long haul communications, as well as 2 Meter and 70 cm simplex for local use. I use the repeaters regularly, but I don't rely on them. Our local 2 Meter repeater also has a limited back up power source. I work about 10 miles from my home and I have 2 Meter radios installed in all of our vehicles, including my work vehicle. I have a very understanding employer. I have 2 Meters and 70 cm installed at my home and I can communicate with my family regardless of grid condition. I have utilized this before when a disaster struck our town and cellular phone communications were out for hours. The only communications I had with home were by amateur radio. The cell network was overloaded and damaged, and it was good to know that even when bad things happened, I could inform my family of my status. It was a huge relief to my wife because she had been very concerned about my well being, and all of her phone calls to me got the familiar, "We're sorry, all circuits are busy now. Please try your call again later," or something to that effect. She knew what to do in order to contact me due to rule 6-P.

Another area of great interest to the Prepper is utility monitoring. This a complex subject, but it boils down to listening to all different types of frequencies and modes to figure out what's happening in the world. Engage in and learn about this activity and you would be surprised at what you will hear. I advise you not to do anything that is illegal. In some states, it is unlawful to possess a police scanner in a vehicle, so make sure that you know your local laws. Consider installing a wideband scanner receiver, and a high gain external base antenna at your retreat. The author recommends the Uniden Bearcat BC9000XLT or equivalent and the Antenna craft ST-2 antenna. They make a great pair.

You can monitor local public safety entities as well as other government entities. Many of these entities encrypt their radio traffic so you cannot listen to them. It is unlawful to decipher these communications. Most of them use a very secure protocol and most attempts at decryption would be moot for most people anyway. It is also unlawful to intercept cellular telephone or other encrypted communications, so don't do it. Also, some entities utilize a P25 digital modulation protocol, and if that's the case where you live, then you will need to acquire a P-25 digital trunking scanner to receive them.

SHORTWAVE BROADCAST

hortwave broadcast, while somewhat on the decline from some parts of the world, is still alive and well. You will receive interesting news and content that the regular lap dog media will not report. This includes a great deal of alternative and Christian media that would be snubbed, defamed and marginalized by the politically correct main stream media. The author's favorite shortwave broadcast station is WWCR out of Nashville, Tennessee. They operate on the frequencies of 3.215, 4.840, 5.935, 7.465, 7.490, 9.350, 9.985, 15.825, 12.160, and 13.845 kHz AM. There are also many broadcasters from around the world still on shortwave. This could prove to

be a vital news source in the event of an information blackout here in the U.S.

Amateur HF radios have wide band receivers, so an HF station doubles as a shortwave receiver. There is also a great deal of military and government traffic on the HF bands. Military monitoring is also a popular pastime that could have utility in a crisis. It is still considered lawful in the U.S., for now anyway. (Many countries have outlawed it). A decent scanner receiver (like the BC 9000XLT) will cover the 225 to 406 MHz range where most UHF military operations take place. With an outdoor antenna, you can hear military aircraft operating hundreds of miles away in the AM, non-encrypted mode. Most scanners will also allow you to monitor amateur frequencies; weather broadcast stations (which are a great source for civil emergency alerts), civilian aircraft, taxi cabs, busses, railroads, transportation departments, and utility companies. A great source for local radio frequency information for your area is http://www.nationalradiodata.com/scan ner-frequencies-home.jsp. There are also many other web sources for the frequencies for your area.

Engaging in utility monitoring will remind you of how important it is to utilize Communications Security (COMSEC). It will remind you to be mindful of what information you transmit in the open. Also remember that in a collapse scenario, do not transmit from your retreat unless absolutely necessary. If it is necessary, keep your transmissions very brief, and consider using a modular addition encryption protocol. Line of sight transmissions can be DF'd. That means an adversary can use Direction Finding techniques to locate your retreat. Skywaves are much more difficult to DF but it can be done, so keep your HF transmissions short as well. Spend most of your time listening and use COMINT to your advantage.

Another thing to remember is to not completely discount grid based communications systems as a part of your plan. I'm not saying that you should rely on these systems. You absolutely should not. But many of these systems, if they are operating in some capacity, may have utility to you even if they are compromised and not reliable. Landline phone companies for example are required to maintain battery and generator back up power for their network switches. Remember that the landline network providers still provide the backbone that interconnects telephone voice circuits to cellular sites. Also consider installing a landline phone in your home for this reason, if it fits into your budget. It does in my home because it is a part of my DSL internet package. Landline phones, as long as they are not the cordless type, will typically continue to work during a short-term power outage because the phone is powered by telephone company equipment and not by the power to your home. Cordless phones require AC power to your home or back up power supply to operate.

You can purchase battery back up units for cordless phones that provide several hours of talk time during a power outage. I picked one of these units up at a Hamfest for \$5. Also consider installing Skype on your computer which provides free IP-based video chat capability if you have a web cam, microphone, speakers, and a broadband internet connection for your computer. Also remember to use e-mail and text message capability if you have it. Text messages or e-mails can sometimes get through to members of your family and friends who do not have a crisis communications system even if the voice circuits are overloaded and unavailable. You may need these methods to communicate with folks that didn't prepare ahead of time.

A lot of folks also don't know that most cell phone carriers have e-mail gateways into their text messaging system. This means you can send an e-mail and it will be delivered to the recipient's cell phone as a text message. Text message charges apply.

www.hamradiolicenseexam.com www.nationalradiodata.com/scannerfrequencies-home.jsp

In Memoriam

KIRK E. PARADISE March 10, 1949 - May 22, 2012

KIRK EMERSON PARADISE was the oldest of the five children of Charles and Virginia Paradise. He was

born in Tucson, Arizona, on March 10, 1949. As a military brat he spent his childhood moving from Tucson to Tampa, Florida. Omaha, Nebraska, Lompoc, California, Madrid, Spain and Langley, Virginia. He moved with his family to Huntsville in 1966 where he attended Huntsville High School. After graduation in 1967, Kirk attended

Kirk attended Virginia Polytechnic Institute in Blacksburg where he majored in forestry. While at VPI, Kirk was a member of ROTC. After serving in the US Air Force in Del Rio, Texas, as a First Lieutenant, Kirk moved to Birmingham and obtained an MBA from UAB.

Kirk returned to Huntsville and went to work for Huntsville Madison County Emergency Management where he worked for thirty plus years. He was on the board for the Metropolitan Medical Response System and for The American Civil Defense Association. Kirk loved his work there and was most comfortable behind the scenes helping to make operations run smoothly.

Kirk was a lifelong member of the NRA and was an able marksman and sportsman. As a boy he was a member of the Boy Scouts and attained the level of Eagle Scout. It was here he developed his lifelong passion for service.

Kirk was a devoted member of the Church of Jesus Christ of Latter Day Saints. He was a High Priest in the church, and was involved in a variety of church callings. There he developed lifelong friendships and was always

available to help lift those in need of his support with his inimitable sense of humor.

Kirk was married on July 3, 1987 to his beloved wife Diana Lynn Paradise in the Atlanta, Georgia, temple of the Church. Kirk had three sons, Charles Bradley Paradise, Eric Andrew Paradise and Michael Acker of whom he was extremely proud. He was espe-

cially proud of his grandchildren Jack Emerson Paradise, and Maleelah and Aedan Acker. Kirk was a loving son who regularly visited and participated in the care of his mother in her later years.

After retiring from Emergency Management, Kirk and Diana moved from their home in Huntsville to a 60 acre farm in Giles County, Tennessee. Together they built their dream home and were happily devoted to farm life.

Kirk leaves his wife Diana Paradise, mother Virginia Paradise, sons Charles Bradley Paradise, Eric Andrew Paradise (Elizabeth), Michael Acker (Marissa), brother George Scott Paradise (Rebecca), sisters Dianne Sammons (Calame), Linda James, Susan Marie Wolf (Jeff), and numerous nieces and nephews. He loved spending time with his grandchildren Jack Paradise, Maleelah and Aedan Acker.

Funeral Services were held at the Maple Hill Cemetery, Huntsville, Alabama.



Introducing DR. TAMMY TAYLOR

TACDA'S NEWEST BOARD MEMBER

AMMY TAYLOR serves the Nonproliferation Division as Division Leader. She joined the division office in June of 2010 following three and a half years of service at the Office of Science and Technology in the Executive Office of the President where she led the nuclear portfolio for the President's Science Advisor in the Bush and Obama administrations. Previously, she was Group Leader of the Safeguards Security Systems Group (N-4), in the Nonproliferation Division. Her technical training is in Civil and Environmental Engineering; she received her B.A. in Civil Engineering at New Mexico State University, and her Masters and Ph.D. in Environmental Engineering at the Georgia Institute of Technology. She is a licensed Professional Engineer in the state of New Mexico. She spent two years as a Director's Postdoctoral Fellow at LANL. Taylor's research interests include topics related to radiological/ nuclear threat reduction, disaster preparedness, emergency response preparedness, and environmental restoration. She continues to participate on projects related to radiological dispersal device decontamination, emergency responder preparedness, and consequence management of radiological and nuclear terrorism.

AMATEUR RADIO

The Answer to Your Communication Needs

By Tim Hooper-NZ7O TACDA Board Advisor

he subject of personal survival and self-protection has hit an all time high in the public's eye. TV shows promoting *prepping*, as well as various postapocalyptic scenarios, have become very popular in the last few years. This *piqued interest* is being manifested in the rise of hundreds of survival sites on the internet. Interest in self-reliance has also been piqued by events of natural disaster, economic issues, scientific discoveries and government issues. Simply put, for many people, the thinking man's prudence has come to the fore.

Placed in any emergency scenario, even if you are well prepared, in order to glean the most accurate information about the situation and form the wisest plan of action, you must be able to reach out farther than you can see with your own eyes.

In almost all types of emergencies, a well-maintained and protected civilianowned amateur radio (ham radio) is the best answer to your intelligence problems. Many ham radios have the added ability to receive all the local and International Broadcast radio stations as well. I have personally heard a local police chief; realizing the government's communication weaknesses, indicate that in the event of a long-term power outage, he plans to utilize ham radio operator volunteers for the city's communication needs.

H_A_M is not an acronym for anything, by the way. It is just a 1920's opinion of those who liked to dominate the band with their chatter. Ham licensing is relative easy. There are no age requirements and there is no longer a Morse Code requirement. You must pass a 35 question test for Technician and General Class license, respectively, and a 50 question test for Amateur Extra Class licensing. On the 35 question tests you can miss as many as nine questions, and on the Extra exam, you can miss 15 questions and still pass. You will pay \$14 to take any of the tests, as of this writing. If you pass, that fee also pays for your license fee for the next ten years.

In addition to the obvious advantages of emergency communications, you can participate in many other Ham activities. These include clubs, net-meetings and Field Days, to name a few, all of which are designed to hone your skills, so you will feel confident and experienced when the need comes to deploy your abilities.

The most used mode of Ham communication is 'Simplex' transmission (I talk, then you talk), using a microphone. There are digital modes available, too. Much like instant messaging, you can just type in your message and wait for a response. PSK-31 is now very popular for this mode of communications. Slow and Fast Scan TV, using a digital still picture, or a live digital camera feed, can be wirelessly transmitted down the street, or if you wish, half way around the world. Morse Code (CW), a previous barrier to many "wannabe" Hams, is now gaining popularity among younger amateur radio enthusiasts. Hams even have their own satellites orbiting the earth. These satellites are used as repeaters, or as "Store and Drop" messengers, and can deliver data to a calculated location at any time in any part of the globe.

Whether amateur radio is for emergency use only, or just enjoying a nice chat with another Ham in Swaziland, ham radio has been, and will always be a hobby of useful practicality, and will never lose its mystery, or intrigue.



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Shield your thyroid and prevent it from absorbing radioactive iodine during a nuclear emergency. Potassium Iodate Anti-Radiation Pills (KIO3) is for use when radiation is not immediately lethal.

Should I buy KIO3?

If a nuclear event occurs and you don't have your own supply, you may have to rely on the government to make them available to you in time. Each bottle contains 90 tablets of 85 mg.

AS LOW AS

1-800-425-5397 VISIT OUR STORE AT www.tacda.org

For use during a nuclear emergency ONLY. Follow the recommendations of civil defense authorities for specific dosage and duration.

PREPARING FOR DISASTER:

(OVER THE COUNTER) MEDS

By Dr. Bob Olson Hollister, MO

Most preppers think regularly of the basics: water, food, ammo - in that order. Once you get beyond the basics of survival, it helps to think of actually being able to tolerate a disaster. The over the counter medication recommendations are pretty self-explanatory, as most people can read directions and also have some knowledge of these meds already in their occasional use during their everyday lives.

The medications listed below are my recommendations to have on the storage shelves, not in your regular medicine cabinets and cupboards. Having these stored specifically for disaster means that they will be there and will also be stored at ideal, or near ideal, conditions. *Please* consider buying a good quantity of the medications listed based on your family or group's need. All medication should be stored as properly as possible even in a disaster; which means a cool, dry, dark place. Usually wherever your food is stored, your medicine should be also.

Diphenhydramine (Benadryl) is an antihistamine that works for allergic

conditions and reactions, and can also substitute for a sedative in the right environment. Tablets are more stable long-term, but capsules do seem to work faster for relief in my patients' experience. My recommendation is to have a good supply of both, but rotate them out with your existing supplies as regular society exists. When you are out "upstairs" in the household, take the front bottle from your stores after you buy a replacement which will then rotate in the back of your "downstairs" supply. This works for all the meds that you will run out of on the list, but make sure you only take what you replace! Don't take with the intention of replacing - that never seems to really work out in the real world. For those with seasonal allergies, Benadryl stands heads and shoulders above the others as a favorite. Make certain that you have enough on hand to meet your needs.

Acetaminophen (Tylenol) is a great medication that helps aches, pains, fevers, and mild headaches. It is better for stomachs compared to other NSAIDS (non-steroidal anti-inflammatories). It can be taken with other NSAIDS for more severe pain and

makes both medications more likely to control pain. In my experience for the non-hippy human, 2 Tylenol and 2 of either: Motrin, Advil or Aleve taken together are as effective as a narcotic, and there are some good medical studies that show the same results. Keeping any prescription pain medications around after a disaster will be nothing but dangerous in my opinion. Drug seekers will be eager and willing to cause you and yours harm if there is *any* hint that you have the drugs they like to consume. My advice is very simple: don't keep any controlled substances in your home that are not currently in use. Once they are not needed, dispose of them immediately.

Naproxen is Aleve and ibuprofen is Motrin and Advil. They are cousins and should not be married in the same stomach. They both work about the same, one is longer acting than the other and the cost is also more for the longer acting medicine. Pick your favorite; you don't need both really, especially if you don't use them much. In a larger family or group, you will want to have both as most people usually have a preference in their NSAID choice. If you are a single family or small group, choose the one that you actually use now and stick with it. Our family goes through ibuprofen in the quantity of about 750-1000 per year for the five of us, so we need a lot on the shelves for any disaster lasting any length of time. We also assume much more tolerance of minor aches, pains, and discomforts.

Aspirin is magical and has some qualities that the other NSAIDS don't, so everyone should have some on their survival/disaster shelves. It is like a second cousin - no marriage, but maybe dating. Aspirin, or ASA as it is commonly abbreviated, is great for old dudes that need to worry about their hearts and as a substitute for blood thinners that won't be readily available after a crisis. Anyone you think may be having a heart attack should get ASA as soon as possible, as it could actually help them live. They should also get it now to help survival too, come to think of it. Aspirin is usually much cheaper than the other NSAIDS too, so a good supply of aspirin and acetaminophen (Tylenol) would be enough if you wanted to truly minimize confusion and keep costs low.

RID is for lice and Nix is for scabies; be certain that you know which affliction you have before using/wasting these products since the medications are not cross effective. Lice live in the hair while Scabies are an affliction of the skin. Both are considered to be contact diseases and when one person in a group is infected it is likely that others are as well. Given the cost of the medication and the complexity of diagnosing the problem it is not suggested that individuals stock the medications unless they are trained in the diagnosis of the problems. The most effective way to treat lice is to simply cut the hair (or completely shave it - have razors on hand), which in some cases can include eyebrows and lashes.

Vitamin C is a great idea to stock in your foodstores in great volumes. Candy will be gone, or severely limited in any crisis, and these can be a treat for the kids while preventing immune problems and scurvy long-term. We recommend eating one a week if you have them, and daily if you are sick with fever or general crud symptoms. Luckily they are cheap and don't take up much space - you won't need as much if you are eating fruits and veggies; even canned ones, but plan accordingly for the future in a prolonged disaster. Chewables are available in rolls often in cases at your local club warehouse store.

A multivitamin is also a good idea to have available for a prolonged crisis, but definitely not for daily use. Weekly is fine in an extended disaster, and the cheap brands are just as good as the expensive stuff. Surviving, not thriving, infection when using anything that was in your mouth on your skin if it is already open. If you can get both tooth gel and topical skin gel that is best. Individual persons will swear by one or the other, but your own experience is best here, buy what you know.

After some nasty rashes both personally and professionally, my family strongly recommends having some Gold Bond medicated powder on the disaster shelves. It works great on the general chaffing rashes that are common with sweat and work that one may not be used to. t also dries up and treats some of the uncomfortable foot rashes that can come from long and wet hiking. Both these situations will be much more common for all of us in crisis situations.



remember. My recommendation based on cost and vitamin effectiveness is NatureMade Complete Multivitamin. If you want to get the best, go nuts, but don't forget to have a multi on the shelf of some sort. Multivitamins in the short term serve no real purpose, but the longer regular fresh foods are missing from your diet, the more you need to have a weekly multivitamin.

Topical medicines like tooth gel may be the blessing you need some day, and some of them can help skin topically too, but you do have to worry about We recommend one large bottle of Gold Bond per person per year for stockpiling.

Planning ahead is the key to living well; whether it's for finances, weddings, or disasters. Spending a small amount of time and money on your disaster shelves with OTC meds may really pay off in spades someday. Head to your local "Megalomart" and pick up some or all of the recommended meds above so that you and yours will be better prepared for the future, bright or cloudy.

BUILDING A ROCKET STOVE, continued from page 15





The ROCKET Cooking Stove

Rocket stoves are based on the following combination of principles:

Insulate Around the Fire:

A hot fires will burn more of the combustible gases released from the wood

Insulate Around the Chimney:

Creates more draft which helps the wood burn fiercely and keeps the fire going

Don't Use High Mass Materials:

High mass materials rob heat from the fire. We want the heat to go into the food, not the stove

Burn the Wood at the Tip:

Lessons the smoke. Smoke is uncombusted fuel

Preheat the Air/Regulate the Air and Fuel Mixture:

Too much air only cools the fire

Make a Skirt Around the Pot:

Allows the heat to contact the sides as well as the bottom of the pot. With a cover it is even more efficient.

Cook on Top of the Chimney:

Since "Rocket" stoves burn most of the smoke, cooking on top of the chimney is possible.

The fire chamber and chimney can be made out of tin cans if desired. The tin cans will last about three months. The cans can be covered by as thin as possible a covereing of clay/sand/straw mixture which will become a fired chimney.



REPLACE LID



INSERT SHELF

$\mathbf{MT-137}$

The MT-137 provides first responders and rescue personnel with standard triaging features. This enables them to perform prompt and accurate assessments of a Mass Casualty Incident (MCI) victim's injuries and to easily record the data. The Original MT-137 Medical Emergency Triage Tag is constructed of a high-density damage resistant synthetic material. It is printed using a special thermal printing process which allows for use in harsh and demanding field situations.



RECOGNIZED AS THE **STANDARD** IN THE INDUSTRY

- Preferred by FD, **EMS & Military**
- Symbols ONLY
- Water Proof
- **Damage Resistant**
- Synthetic Material

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