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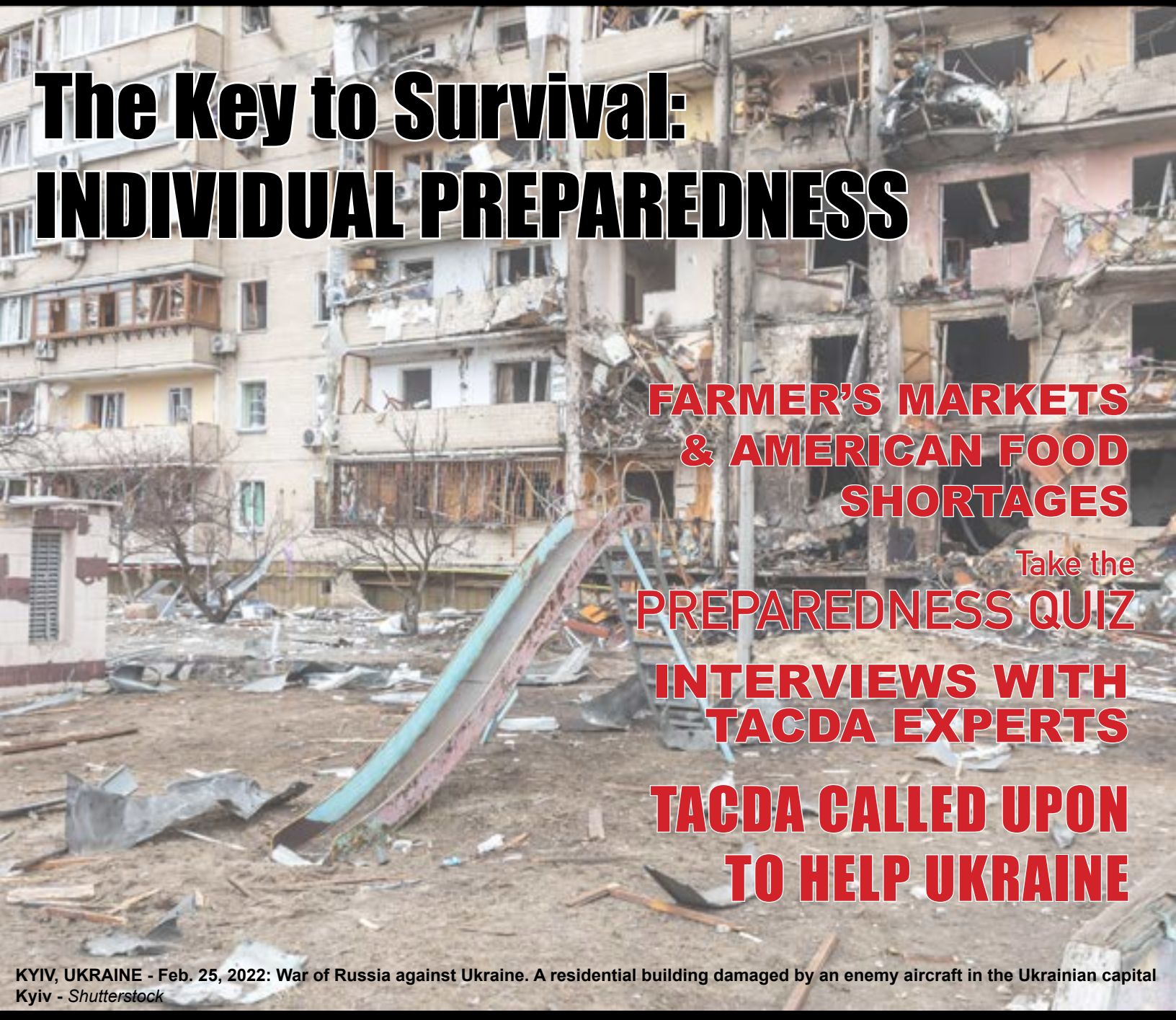

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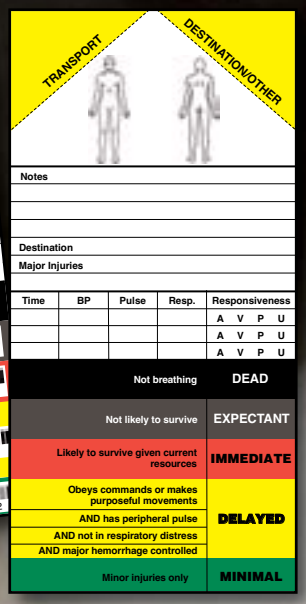

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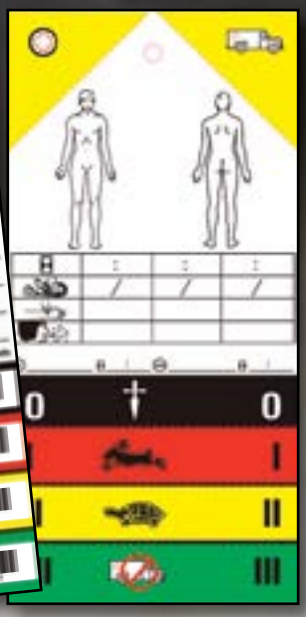

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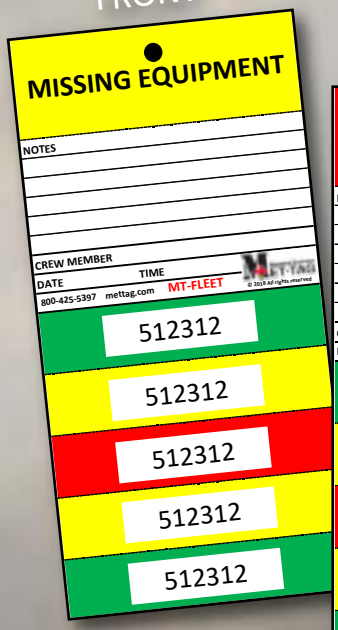

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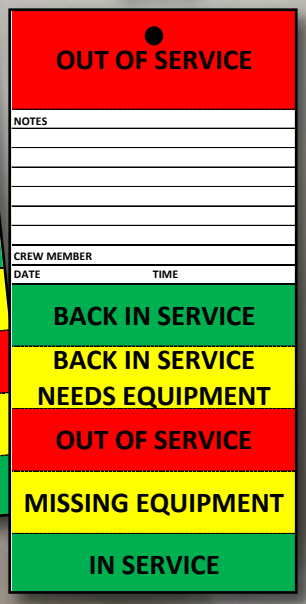

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Our United States government currently:

- Has NO Department of Civil Defense
- Does NOT educate our children about the effects of nuclear weapons
- Has NO fallout shelters for the general public
- Has NO directives on how to build hardened fallout shelters
- Has NO information for post-war survival
- Has NO government directed warning systems, sirens, evacuation plans, or general preparations for nuclear attack available for the general public

Here are three easy ways to find and contact your Senators:

1. **By Email**
   Go to https://www.senate.gov/general/contacting.htm, locate your state's senators with the provided links, and email them.
2. **By Telephone**
   Call the United States Capitol Switchboard at (202) 224-3121.
3. **By Postal Mail**
   You can direct postal correspondence to your senator or to other U.S. Senate offices at the following address:

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   Office of Senator (Name)
   United States Senate
   Washington, D.C. 20510

   For Correspondence to Senate Committees:
   (Name of Committee)
   United States Senate
   Washington, D.C. 20510

TACDA has prepared pre- and post-war survival information in the **TACDA Academy**.

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IN THIS ISSUE

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PRESIDENT'S MESSAGE

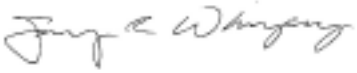
The world is becoming less stable. The conflict in Ukraine has majorly disrupted world food and fertilizer supplies. The readiness of the US military has been significantly degraded due to the amount of ordnance and equipment that has been sent to Ukraine already and the plans to continue to send even more. US debt is out of control, and there appears to be very little will in the US congress to seriously address the issue. There is also public distrust of governments at all levels due to hostility towards individuals and groups that support traditional Judeo-Christian values.

It now appears that some very significant disruptions to our society and overall security are likely, if not inevitable. How should we respond?

I would suggest that we prepare ourselves and our families for potential disruptions by storing food and supplies, developing skills that would help us survive in a crisis, and finding other individuals who have similar values and objectives and can be trusted to provide help in a catastrophe. I realize that it may be unpopular, but we should discuss these issues with our friends and families and make contingency plans to help each other should some disaster develop. There is more strength and more varied resources available with larger numbers of individuals.

I wish you well in your efforts to prepare.

Sincerely,



FROM THE EDITOR

Civil Defense Begins at Home

By Roseanne Hassett, Executive Director

In this issue of the Journal of Civil Defense, we will take a close look at what has happened abroad in the war between Russia and Ukraine. We have learned a great deal from interviews with journalists from INTER TV, the largest television network in Ukraine.

We discovered that most of the families in this region were unprepared in terms of food and long-term sustainability during a conflict, let alone a drawn-out war. Not only that, but many also do not know or understand the meaning of civil defense and its purpose. Unfortunately, the same goes for America and other countries of the world.

If you are reading this Journal, then you are steps above the average American. You are actively engaging in your own preparations and learning what it takes to prepare your family for hard times. Our government does not have an active civil defense program for the citizens of the United States. It's up to you. Begin now!

Store extra food and water in your homes. Gather supplies that will keep you warm in case of emergencies in winter months. Prepare a go bag for disasters that drive you out of your home. Get to know your neighbors and their specific skill sets so you can call upon one another in a crisis. Have a plan, be prepared, and remember that civil defense begins at home.

POLITICAL VIOLENCE

By John Farnam

Photo by ev on Unsplash

One of the chief guarantees of freedom under any government, no matter how popular and respected, is the right of the citizen to keep and bear arms... The right of the citizen to bear arms is a safeguard against tyranny, which now [1960] appears remote in America, but which historically has proved to be always possible."

Hubert Humphrey

Hubert was oh-so prophetic!

Here in America until recently, we smugly considered political violence (much like ubiquitous public beggars, ecumenical/unapologetic political corruption, squalor, filth, chaos/anarchy, lawlessness, open borders, etc.) something confined to third-world countries. Oh, that it were true!

HISTORY

Political violence/revenge was rampant and widespread during our Revolutionary War period in the late 1700s and again during and after the War Between the States, from the 1860s to the end of the nineteenth century.

In fact, in the 1700s many atrocities attributed to Indians were actually committed by European immigrants, all piously in the name of "The Crown" (French and English), with local Indians often being recruited or bribed to join-in, first on the side of the French against the British (and other Indian tribes), and later on the side of the British against the Colonists (and other Indian tribes).

Gangs of outlaws (some ostensibly "military," some purely private sector), claiming to represent one side or another of a hot political issue of the era, routinely committed murders of innocents (often neighbors, sometimes even family members) on a large scale.

The War of 1812 was actually just a continuation of the Revolutionary War, which never really ended, despite Yorktown and the subsequent "Treaty" of 1783. Bitter, lethal hostilities between Colonists and English loyalists were to continue well into the third decade of the nineteenth century!

Countless politically motivated raids and other murderous escapades took place in present-day KY, TN, OH, IN, and MO, which represented the "frontier" of the era. Thus many – probably most – among the murderers and the murdered remain unknown to this day!

A half-century later, our Civil War and aftermath witnessed the same thing all over again!

The "frontier," now most particularly represented by KS, TX, MO, and IL, hosted countless massacres of innocents, both during and after the war. Even after the war officially ended in May of 1865, bands of outlaws (including many teenagers who had been too young to fight but were now anxious for violent revenge) participated in murderous atrocities, victims of which usually had little to do with any particular political issue.

The innocent and defenseless are always the easiest to find and murder, and always with the least risk. Most of these outlaws were eventually hunted down and/or captured. The vast majority were gunned down or hanged.

The lesson here is that bitter, national, political divi-

sions can quickly get out of hand, and America is not immune!

We thus have to be alert and ready for any eventuality, even ones that seemed so unlikely a short time ago!

"There are things that you cannot imagine, but there is nothing that may not happen!"

CIA Axiom

John Farnam, police officer and decorated veteran of the Vietnam War, is one of the top defensive firearms instructors in the nation. He has personally trained thousands of federal, state and local law enforcement agency personnel, many private security agencies, foreign governments, and hundreds of civilians in safe gun handling and the tactical use of defensive firearms. He has authored dozens of magazine articles, five books, written several handgun manuals, produced numerous training videos, and has written a model Use of Force Policy. His books, The Farnam Method of Defensive Handgunning, Second Edition, The Farnam Method of Defensive Rifle and Shotgun Shooting, Second Edition, and Guns and Warriors, Volume One have become the standard texts on the subjects. John is a Senior Board Member of the Armed Citizens legal Defense Network and the Association of Defensive Shooting Instructors. In June of 1996, he was selected by his peers to receive the renowned "Tactical Advocate of the Year" award from the National Tactical Association. In April of 2009, he was inducted into Black Belt Magazine's "Living Legends." In November of 2011, he was elevated to the rank of Kyoshi Sensei within the American Marital Arts Association. In November of 2019, John was elevated to the rank of Sensei, Shodan 1st Degree Black Belt in Hojutsu-Ryu by its founder, Jeffrey Hall.

TACDA CALLED UPON TO HELP THE PEOPLE OF *UKRAINE*

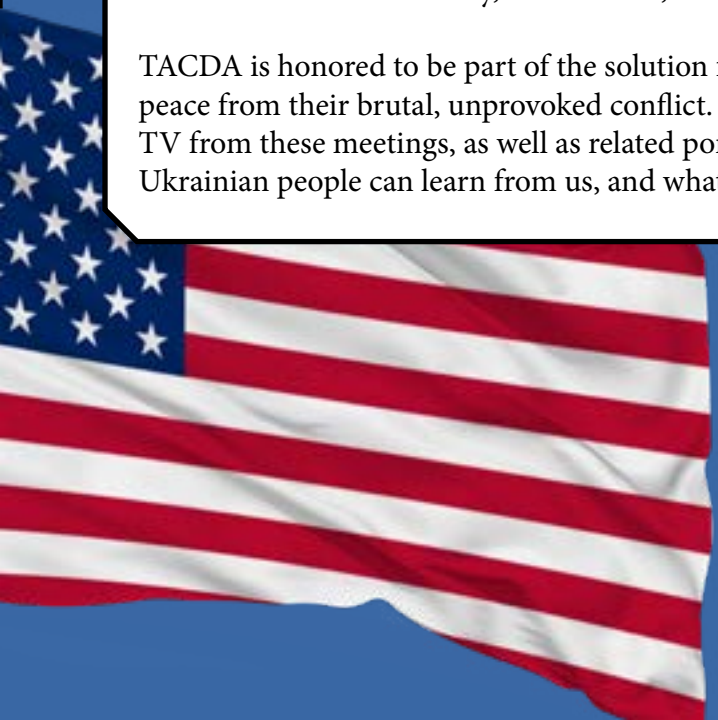
Recently, The American Civil Defense Association was contacted by a producer from INTER TV channel, the largest and most popular Ukrainian national broadcaster serving 20 million Ukrainian viewers, to assist them in teaching their people a variety of emergency preparedness tactics.

Abroad, the channel's signal reaches every continent. INTER TV channel is the leader of the information market in Ukraine and is constantly expanding its activity both in Ukraine and in the world, providing the viewer with a deep and comprehensive understanding of local and international events.

INTER TV channel began to film a series of special reports about how countries around the world implement successful examples of civil defense or, conversely, what problems and dangers were most prevalent. Assistance was requested from TACDA in the form of interviews by four TACDA experts to answer questions about a variety of civil defense topics they currently struggle with, including:

- Water and food supplies
- Heating
- Dam failure
- Nuclear power plants
- Petrol shortage
- Evacuation
- Camps for displaced persons
- Metros, train stations, and other crowded places under threat
- State and private bunkers
- Terrorist threats
- Protection of the elderly, the disabled, and children

TACDA is honored to be part of the solution for millions of Ukrainians seeking safety, sustenance, and peace from their brutal, unprovoked conflict. The following pages represent articles produced by INTER TV from these meetings, as well as related portions of dictated interviews that will demonstrate what the Ukrainian people can learn from us, and what we, as Americans, can learn from them!



INTERVIEWS WITH:

Jay Whimpey, TACDA President
Jonathan Jones, TACDA Advisory Board Member
Gary Sandquist, Ph.D, TACDA Nuclear Security Expert
Paul Seyfried, TACDA Advisory Board Member

CIVIL DEFENSE: HOW THE U.S. PREPARES FOR AN

By Olga Zhydetska, INTER TV, Ukraine

Photo by Jake Espedido on Unsplash

According to American experts, the key to successfully overcoming a crisis is interaction.

But can other countries repeat the feat of the Ukrainians in the confrontation with Russia? Will they last as long as us? And most importantly, will they be able to survive under missile strikes, without light, water, and heat? Many countries have now thought about this question.

The American Civil Defense Association, for example, advises Americans to act now so that they could survive in the event of an emergency. Olga Zhydetska spoke with the experts of the Association. So, let's see what advice they give.

The war in Ukraine has become a tough test of survival for millions - those who lost their homes, who found themselves under occupation, who have to put up with emergency and stabilization blackouts every day and live under the threat of missiles and drones. The American Civil Defense Association looks at the Ukrainian experience with sympathy and admiration.

Jonathan Jones, Advisory Board Member for the American Civil Defense Association (TACDA):

"Here in the United States, many people don't want to think about that kind of thing. I hope that the war in Ukraine made many people understand that this can happen. We live in a rather spoiled world, and often don't notice much that is happening around us."

The Association notes that the government of any country cannot cope with a crisis of such scale as a war. Therefore, they promote the idea that survival is primarily a personal matter for everyone.

Jay Whimpey, President of the American Civil Defense Association (TACDA):

"We must prepare in advance for emergency situations. The best thing for each individual family is to have a supply of food, medicine, water, and filters for cleaning polluted water. This makes such crisis situations more or less manageable. It is difficult for the government to deal with problems when transportation or communication systems are disrupted."

Experts of the Association criticize the US authorities for not providing an adequate number of bomb shelters for their citizens. According to their calculations, the construction of underground shelters for each American will cost the state about 50 billion dollars. And under the condition of established logistics and industrial production of building modules, it will take seven years. Therefore, they advise their supporters not to wait, but to transform their own residences into a fortress themselves, and if possible,

build bunkers.

Jonathan Jones:

"We recommend that people have a three-month supply of everyday food. This does not mean it needs to be done all at once but can be formed gradually. There should also be long-term supplies such as rice or beans."

Jay Whimpey:

"In our region, thanks to the influence of the Church of Jesus Christ of Latter-Day Saints, many families have a year's supply of food. There are companies that deal with such supplies. It is not difficult, even in an apartment, to store several buckets of grain per person. I can't imagine anything worse than if my children are hungry and I have nothing to feed them."

Another painful issue is heating our homes. American experts have the following suggestions to keep warm.

Jonathan Jones:

"Some of the practical tips are setting up something like a tent in your home, it creates a microclimate and allows you to stay warm. We also recommend heating only one room. It requires less resources than heating the whole house."

Jay Whimpey:

"If there are problems with heating, or if all utilities will be turned off, as they are now in Ukraine, we suggest using insulated clothing [shown online]. It's made of polyurethane and coated with nylon, so it's warm to the touch, you'll feel it when you put it to your cheek. There were cases of people living with very little heat in mobile homes who were able to survive the winter. All thanks to the fact that they had the right clothing."

The key to successfully overcoming the crisis situation, American experts believe, is the interaction between the government (which carries out strategic planning and helps where the state cannot) and the citizens themselves.

Jonathan Jones:

"In times of crisis, many people gather because strength is in unity, strength is in mutual assistance. It's built on community, where we know our neighbors, where we care and help each other. It helps during peace time, and it will also help you during a crisis. This is the beautiful side of this situation."

At the same time, the Association is sure that survival in an emergency situation is primarily the result of knowing and understanding what to do. That is why everyone is urged to think of an action plan in advance in case of power outages, fuel shortages, and even war.

(Originally published Dec. 2022, here.)

FULL INTERVIEW EXCERPT: Jay Whimpey, TACDA President & Jonathan Jones, TACDA Advisory Board Member

Olga Zhydetska, INTER TV, Ukraine:

A 5th of Ukrainian territories remains under Russian occupation. The invaders are violent and do what they want, and the situation in the war zones is approaching a humanitarian disaster. The infrastructure for supplying water, gas, heating and electricity has been destroyed, and there is not enough food and medicine for the people. How can we overcome such crisis situations?

Jay Whimpey, TACDA President:

With most emergencies we must prepare in advance for the emergency. There are some things that can be used to mitigate the situation at this time, but the best way is for each individual family to store food, medicine and water. They should optimally have water purification capabilities so that they can gather surface water and treat it and make it safe to drink. They should store food in their homes in advance. This is what makes these emergencies much more manageable. The government can't really manage the problems when the transportation and communication systems are challenged.

Olga Zhydetska:

What survival strategy should the government follow in such conditions and what basic rules should the population follow in this situation?

Jonathan Jones, TACDA Advisory Board Member:

Some of the practical things that we talk about are things like setting up a tent in your home, which allows you to stay war-

mer. There is another layer that's providing insulation to protect you. Things like sealing up the cracks in the doors or windows to keep the cold out and the warmth in. If you do have some heat, you want to focus that on one smaller area. Instead of trying to heat the whole house, you heat one smaller area where you can really make a difference. Those who have wood burning stoves or coal burning stoves could invite their neighbors to share those resources. We very much believe in community and people working together - checking on the elderly and those who are disabled.

Olga Zhydetska:

Can you tell me about the experience of your country during emergency situations? Specifically, when do you announce the need for evacuation, and how do the authorities act when some regions are in trouble?

Jay Whimpey:

Evacuation is very difficult because there are so many large resources required. We have seen some situations like in Florida where they are anticipating a hurricane and they have a few days to prepare. If it is coordinated and communicated appropriately then they can make arrangements for individuals to stage their evacuation so that they do not clog the roads. They also use public resources such as school buses and such to help evacuate the masses.

Olga Zhydetska:

How should any country in general prepare for the fact that large amounts of people could have nothing to eat or drink, and they may not have electricity or heating in an emergency?

Jay Whimpey:

I'm not sure if you're familiar with the Swiss civil defense system, but the Swiss people have an underground shelter program for all their population that is largely bomb proof. And those shelters are already stocked with food and supplies and water necessary for survival for a substantial amount of time. Any country that decides to do that must have the proper resources. Time is the ultimate resource, and at this point you are out of time.

Olga Zhydetska:

Are there any protocols anywhere in the world that describe what to do with less mobile population groups such as children, or elderly when they are involved in a warzone?

Jonathan Jones:

I'm not aware of any standards throughout the world, but there are more vulnerable people that need our attention and our help. I think this is one place that the government should put their resources to make sure those people are safe. This could happen to any country, and that was the main reason The American Civil Defense Association began. The founders saw the threats. Their purpose is to educate people and provide help and resources to take care of all citizens, including the most vulnerable. Now, whether people take that advice is a different matter. We need to prepare both as governments and as individual citizens.

Photo by Jared Murray on Unsplash

Olga Zhydetska:

If a country wants to develop a civil defense infrastructure, what should be the first steps?

Jay Whimpey:

I would say the first step is to moderate or at least be honest about what the government can do for the people. In a true crisis, governments simply do not have the resources to take care of every individual. They first need to openly communicate the threat and that individuals must be prepared to function on their own for many weeks to months. Hopefully, the government will then start to build shelters and structures.

There are lots of things that an individual can do to make themselves more capable of surviving on their own and providing for themselves. That includes heat and food and such, and most people think that that's a daunting task, and in fact borders on impossibility. But it is very practical and **that's what our organization, the American Civil Defense**

Association, has been trying to promote: individual preparedness for disaster situations. We suggest that people obtain the book, "Nuclear War Survival Skills". It talks a lot about building underground shelters, making expedient cold weather clothing, expedient wheat grinders, and anything you need to do to prepare for nuclear war. We also suggest maintaining some fuel for cooking. There are many types of equipment these days with small, portable, power generation systems that use solar panels and an internal battery and inverter to produce the type of electricity needed to run most appliances and to provide electricity for communications and lighting.

Photo by Jackery Power Station on Unsplash

Olga Zhydetska

Are you studying the experience of Ukraine? And have you formed any conclusions about how others should prepare if this should happen to them?

Jonathan Jones:

Yes, I've been watching this for the better part of a year now. It comes back to a combined effort of governments and citizens. These kinds of things are too big for any government to handle. The problem here is we don't have something like an earthquake or a flood where it affects a small area and resources can pour in and help fix it. We're talking about most of the country that's been damaged and trying to deal with all that. So, this must be a combined effort. The citizens of a country need to realize that these things can happen, and they can take steps such as having a little bit of food stored and having some fuel on hand. This buys people time. If you have these resources to help you get by for a while, then you can figure out how to take the next step. It also helps the government because there's not as much need.

Olga Zhydetska:

What survival strategy should the Ukraine government follow when a very large group of people is at risk?

Jay Whimpey:

I would give them the same advice that I just gave you. I would let the people know that the government cannot take care of all of them and suggest they take steps and work with local, state, and national Emergency Management people. **Emergencies are not easy to manage by their very nature, and therefore, each individual has to be prepared to manage the crisis on their own.** That's the only way it really can be managed. I'm very disappointed in our own government for not having a civil defense program.

They have talked about creating a civil defense program and underground shelters for the people, and if you go back and look at the journals of Civil Defense in the 60s and 70s, it was mainly focused on the political debate and struggle to motivate the government to actually do something about protecting the population. However, the government adopted the doctrine of mutual assured destruction: they were going to build a nuclear arsenal that would prevent any other country from attacking us because they would face significant destruction as well. However, in the late 1980s the US government stopped building nuclear warheads. The warheads that we have now are well beyond the design life they were originally specified for. And they also quit testing nuclear weapons. Right now, we don't know if they will even work. **We do have shelters for many of the political leadership, but citizens are left on their own, which I also object to.**

Olga Zhydetska:

Can you see any movements of your government as they observed the situation in Ukraine to do something? Maybe to check the infrastructure or to make it better to prepare for this kind of situation?

Jonathan Jones:

Here in the United States, water treatment systems and sewer treatment systems and a lot of these kinds of infrastructure are designed with some redundancy in mind. They're designed with the concern that something could happen. What if we have a longer-term power outage? In many cases, we're only talking about being prepared for a week or two of disruption. I'm not aware of any country that could go for a year or two without these resources. There's not the ability to put infrastructure in place to cover all these eventualities.

RADIATION PROTECTION: HOW TO PREPARE FOR A NUCLEAR THREAT

By Olga Zhydetska, INTER TV, Ukraine

Photo by Lukas Lehotsky on Unsplash

The occupation of the Zaporizhzhia NPP and nuclear threats from Moscow brought the issue of radiation protection to the fore. Olga Zhydetska spoke with experts of the American Civil Defense Association, among whom there are, in particular, specialists in nuclear safety. They shared the advice they give to members of their association and what they think about the situation in Ukraine.

Residents of the Zaporizhzhia region have been living in a powder keg, or rather even worse, in a nuclear vat, for nine months. The city of Enerhodar, which serves Europe's largest nuclear power plant, has been under occupation since March 5, [2022]. The situation in the city is tense and alarming.

Tatyana, an employee of ZNPP:

"Cold, intermittent shelling. Often. And it's audible at night, now even the windows are closed and it's audible at night. We are worried about the atomic one, a lot of people have fled. Everything is destroyed."

The occupiers seized the ZNPP and replaced the management with Russian workers. At the same time, there is periodic shelling of the station's buildings. However, several times it remained cut off from the power grid, which put the object on the verge of a nuclear disaster. This situation worries the whole world, because not only Ukraine will feel its consequences. However, retired University of Utah professor and specialist in nuclear reactors and safety, Gary Sandquist, believes that due to military actions at the ZNPP, an accident similar in scale to Chernobyl is unlikely to occur. After all, the station is well designed and has a sufficient reserve of power.

Gary Sandquist, Ph.D, a nuclear security expert and Board Member at the American Civil Defense Association (TACDA):

"In the event of an attack on the primary control system or storage of radioactive materials, these materials can get into the water. In this case, a cloud of radioactive water dust appears. And this can be dangerous."

He approves the actions of the Ukrainian authorities, which provided residents of controlled territories with iodine preparations. Gary Sandquist also emphasizes that communication with the population is important in the event of an emergency. If an evacuation is announced, then the risks are really serious. Instead, he insists rescue in the event of a disaster is in the hands of the people themselves, who should take a closer look at preparations and sheltering in advance.

Gary Sandquist:

"The most important thing, of course, is to have a supply of food and water. You should cover canned goods or other long-storage products. You have to prevent them from becoming contaminated if radioactive emissions are released into the atmosphere. Store water inside in bottles or closed containers."

The same advice applies to a potential nuclear war. The most important thing is to prevent radionuclides from entering the body - that's why water and food must be clean. After some time, external radiation is actually not that dangerous.

Gary Sandquist:

"If a nuclear device explodes on the ground, you need to stay in a shelter for about two weeks. The main mass of radioactive particles from the earth's surface will dissipate quite quickly. People, particularly in the United States, build bunkers based on these calculations in order to have enough food, water, and heating fuel for that time."

The American Civil Defense Association recommends that in the event of a nuclear war, US citizens cannot rely on the government to provide bomb shelters, because there are so few of them. They should build their own bunkers or at least set up shelters in accessible places, including basements. We should proceed from the principle that if you are ready for a nuclear war, you are ready for anything. And there is a good chance of survival.

Jay Whimpey, President of the American Civil Defense Association (TACDA):

"We advise people to read 'Nuclear War Survival Skills' by Cresson H. Kearny. It can be downloaded for free online [to purchase a hard copy, see page 19]. It talks about the effects of nuclear weapons, as well as the construction of underground shelters, the creation of adequate protection against the cold, and the use of improvised materials to create conditions for survival in emergency situations."

Gary Sandquist:

"In the case of a targeted nuclear attack, if you are outside the range of the damage radius, you can survive. People tend to exaggerate the dangers of radiation. During the testing of nuclear weapons at the Nevada test site, many people in the United States were exposed to 10 times the radiation limit, and they survived it well."

For now, according to the International Atomic Energy Agency's statement, the situation at the Zaporizhzhia nuclear power plant remains unstable and potentially dangerous, however, the agency hopes that a protective zone at the ZNPP will be agreed upon and implemented in the near future. Meanwhile, Petro Kotin, president of Energoatom, the largest nuclear power producer in Ukraine, said two weeks ago that he sees signs that the occupiers may be preparing to leave the plant.

(Originally published Dec. 2022, here.)

FULL INTERVIEW EXCERPT: Gary Sandquist, Ph.D, TACDA Board Member, Nuclear Security Expert

Olga Zhydetska, INTER TV, Ukraine:

The Russians captured the Zaporizhzhia nuclear power plant, its territories are being shelled, and it's in danger of becoming a warzone. What are the risks of this situation?

Gary Sandquist, Ph.D, TACDA Board Member, Nuclear Security Expert:

I don't think that any of the weapons that Putin is using in Ukraine will really endanger the reactor in its release. What they could do, however, is shut it down. There are some storage tanks which hold radioactive materials which could be ruptured, spilling the contents. It's certainly a concern, but it will not be a Chernobyl event. There are other things to be worried about. To be honest, people should just take care and, hopefully, we can keep the reactor up and running. I'm concerned they'd be very cold without electrical power. They're suffering terribly, so I would keep Zaporizhzhia online as long as possible. If the Kremlin has it controlled, they may turn it off and let the people freeze. That's part of the unfortunate use of resources to carry out a war.

Photo by Jonathan Chng on Unsplash

Olga Zhydetska:

What should residents of the area around the nuclear power plant know, and what should they be aware of to be ready for some emergency situations?

Gary Sandquist:

The most important thing of course is to have food and water. Without water you can't go more than a few days. You can go longer without food, but what they should do is cover up whatever they can store and put some food in closets or other areas so if there is a potential release into the atmosphere, it would not contaminate their food. **Anything that's covered will be safe to eat, and as long as they've got water in bottles or containers, it will be safe to drink as well, but anything that's left outside should not be consumed.**

I hope they have sufficient radiation monitoring equipment operating now in Ukraine. I would think the United Nations

might be providing some support.

Olga Zhydetska:

How can and what should the state do to protect the civilian population in the event of a nuclear disaster?

Gary Sandquist:

The disaster would probably be something like Chernobyl but at a much lower level. When the Kremlin was operating the Chernobyl reactor, they did things that internally disrupted the reactor and tore it apart. It turned into a steam bomb, and it just blew the top off. This will not happen with Zaporizhzhia. I don't think anything the Russians have to attack the reactor would assault the primary system. It may, however, damage storage areas or such where radioactive materials are contained in water. That could produce a cloud of radioactive moisture which might move across the atmosphere, so people should remain inside. That's the reason I said they can ride it out in time, but they've got to have food and water sources. As long as food and water are in containers so that they don't access the atmosphere, they would be useable. They also ought to provide some capabilities if they can for lighting and other things. I'm not sure how they're going to prepare their food. Is natural gas available to the people in Zaporizhzhia?

Olga Zhydetska:

I'm not sure. I think now it's available, but if the town or village is in a rural area, their infrastructure might be damaged. Are you studying the experience of Ukraine in overcoming the crisis, and if so, what conclusions have you made?

Gary Sandquist:

I don't think there will be a nuclear event associated with this. It is possible Putin could damage not only the Zaporizhzhia reactor but also create some contamination from the Chernobyl site. However, it would take a lot to try and distribute it over the air. The big concern on my part is if there's some kind of eruption in Chernobyl, it could spread the radioactive materials again because they're on the landscape.


Zaporizhzhia Nuclear Power Plant by Ralf1969

Olga Zhydetska:

How do you see the future of nuclear energy in the world since some countries have decided not to use their nuclear power plants? Now we see that if you depend on one source of energy, it's bad to do because you can be blackmailed.

Gary Sandquist:

I agree, but I'm very biased. You've got to recognize I'm a nuclear scientist, but I think of all the energy sources, nuclear is the best option. There's a little potential for radiation, the background radiation might increase a factor of one or two or three… there's that much variation across the world, so nuclear is really a wonderful option for energy. Germany, because of the some of the accidents there, decided to close down their nuclear plants. Now, with the cut off of natural gas from Russia, those German plants would have kept up with demand. I understand that the German government is considering temporarily bringing their nuclear plants back online. It's a political issue, you see. They're very sensitive. I think that if they need to, they will do it. I think there'll be enough pressure from citizens. They think, if I've got people freezing in their homes, should I decide to try, regardless of my attitude about nuclear? If you really need it and it's an essential resource, do it.

Olga Zhydetska:

How is the security of the United States power plants organized?

Gary Sandquist:

They of course have barriers and fences and such, and they have additional safety systems in place. The concern is if the reactor is poorly designed. And that's what happened with the Chernobyl reactor. It's technical. They had a positive temperature coefficient, and as the temperature went up, the reactor power went up instead of down. That's what blew the top off the Chernobyl reactor. All US reactors and most in the free world have negatives so if temperatures go up, the reactor

shuts down. I think in Zaporizhzhia that would not happen. There are other nuclear plants too, but I would think hopefully you can keep them online. But unless you have the transmission capability in the form of power lines and such, you can't get the power to the people. They're in a tough situation.

I don't know if the International Atomic Energy Agency (IAEA) is helping at all? I understand that several of the officials from the IAEA have gone to visit Ukraine and advise Zelenskyy as to how to respond. They're very competent people, and Zelenskyy will provide that information to your people. Apparently, he has the confidence of the people in Ukraine, so in Kiev he's got their support.

If there is a nuclear attack, your government and the Ukrainian people have enough access to communications, they will know what to do. So then hunker down. The assumption is that if they actually used a nuclear device and it exploded on the ground, you've got about two weeks that you must stay inside because the great, massive surge of radioactivity over the land decays rather quickly. The large levels associated with radiation exposure will have passed by then. It dies off very fast, but again, I don't think they're going to bomb or shell the Zaporizhzhia reactor. It wouldn't make sense. They're going to have more troubles with that than otherwise.

Olga Zhydetska:

What should the state do to provide the people with medicine in case of nuclear radiation?

TACDA: We tell our TACDA members to store KIO_3 pills which will protect their thyroid from absorbing the radioactive iodine.

Potassium Iodate (KIO_3), 170 mg

See page 21

Gary Sandquist:

You don't want to put radiation in your body. That's why water and food should be clean, but external radiation will probably be pretty negligible. I ran a nuclear reactor at the University of Utah, where I previously taught, and my students understood the threat. They knew you don't eat your lunch when you are working with radioactive materials, and you don't breathe the air that comes off the reactor because it might have some contamination.

I think Putin will try to knock out the infrastructure around the Zaporizhzhia reactor so it can't deliver electrical power to keep people warm and cook their food and do other things. What is the situation in Ukraine? Is it unlivable and unbearable? I get the feeling that there's no light, there's no food, no heat?

Olga Zhydetska:

Yes, in some places it is a humanitarian disaster. One more question. If a power plant can't produce electricity, and the lines are cut, is it a dangerous situation?

Gary Sandquist:

No, not really. I think the plant can be shut down and not be dangerous. What's attractive about the nuclear plant is it already has its fuel within the reactor. It can operate for several years on the fuel it contains within the reactor. For example, if it were coal or natural gas, and that gets cut off, you can't produce the power. The big problem with the nuclear plant in Zaporizhzhia is the ability to transmit power away from the plant to the people in the area. Hopefully some infrastructure survives even if your reactors are attacked. I think what Putin will try to do is simply shut down the Zaporizhzhia reactor so it cannot provide power and energy to the people. **He's using winter and weather and relying on nature to freeze them out and cause lots of problems.**

Olga Zhydetska:

Thank you very much. There must be a positive outlook on the war. This has made Ukraine as a nation. Now we are a real nation, and no one can say that Ukraine is a higher state because you can see that the people are united. They act all together. **They are united with one idea, which is to win, and to get our freedom, and to build a new Ukraine, more beautiful, and better.**

CIVIL DEFENSE: THE AMERICAN VIEW OF THE WAR IN UKRAINE

By Dmytry Anopchenko, INTER TV, Ukraine

Photo by Jordy Meow on Unsplash

Americans have come to understand - you must be able to defend yourself.

In conditions where air raids, power outages, and the need to stockpile "just in case" have become commonplace for Ukrainians, it is all the more interesting to find out how similar threats are treated in other countries, how they organize what is called "civil defense". And today in our column is a story about the United States where there have always been people who turned their houses into bunkers.

Now they are drawing new conclusions from observing the war on the Ukrainian front and the consequences of shelling peaceful cities. The American view of the problem is presented in the following material of our Special Corps Dmytry Anopchenko.

Jay Blevins and his family are what people call "preppers" in the States. That is, people who strive to be ready every minute for the worst: from natural disasters to a terrorist attack. For self-defense, they have a lot of firearms - from revolvers to automatic weapons. And down in the basement, there's enough food to last for months. Jay's wife, Holly, is used to buying something at the grocery store not "for lunch" but "for a rainy day."

"I go to the grocery store regularly. And if I happen to see a gallon of water on sale for 59 cents, I buy six gallons. Being ready is always in my memory, always in my thoughts."

From the outside, Jay Blevins' house looks like any other here in the small town of Berryville, Virginia. But inside, everything is ready to turn this house into a bunker at any point.

"We even have boards ready to cover up the windows and protect the house in case marauders appear during an extraordinary adventure."

There aren't that many people like Jay and Holly in the States. Since there is no state program of civil protection in the States, citizens are expected to prepare at their own expense. But after recent large-scale disasters - the terrorist attacks of September 11, Superstorm Sandy, and now the war in Ukraine - more and more Americans stop living lightly one day at a time.

Special Corps Dmytry Anopchenko interviewed Paul Seyfried, an expert from The American Civil Defense Association (TACDA). Paul reports that:

"A very small fraction of the population – less than half of 1% – are doing anything like that. A lot of Americans – maybe now, after enduring the pandemic, I would say that number has risen to maybe 5 or 6% – are storing food, addressing where they would get a sustainable supply of water, and taking those kinds of measures. Shelters are very expensive, and they're beyond the reach of the average American, middle-class worker. Most Americans can't go out and spend $150,000 on a usable, credible shelter, so it's not happening like it should."

Paul Seyfried continues,

"I was convinced from the very beginning that the invasion would occur, but even the American, retired consultants for news outlets were convinced that Vladimir Putin was just bluffing and was trying to extract concessions from the West on NATO posturing and so forth...Your people have just been phenomenal in resisting and fighting back. Everyone thought this was all going to be over in a week. Obviously, as we see, it wasn't. My hat is off to the courage of the Ukrainian people in all of this."

That's how the Americans came to understand that you have to be able to defend yourself. It doesn't matter if you are a man or a woman to know how to use a weapon or have at least minimal survival skills.

Patrick Troy, Emergency Preparedness Trainer:

"Most of the time, we don't want to think about the bad. We avoid even thinking - 'God, tomorrow I might not be able to go to the grocery store and buy milk.' But then a tragic event happens and we are forced to deal with this reality that our world is actually fragile."

But being prepared for the worst doesn't mean living in fear, and Patrick makes sure his principles don't interfere with the family's everyday life, so that the desire to constantly "be ready" does not suddenly overshadow the happy days.

"I think there's a pretty fine line between preparation and paranoia. I don't want to cross it. We have a normal family life, our kids play soccer, we go on vacation to Disneyland. So we have our normal life. But at the same time there is some insurance. If we ever need it, we will use it."

How to survive in difficult times - Patrick even published a book about it.

Paul Seyfried, Advisory Board Member for the American Civil Defense Association (TACDA):

"The first tip I give is to buy as many non-perishable products as possible. Having rice, beans, wheat, corn at home is something that can lie for decades and still be usable. And the next critical thing is water. Know where there are natural sources of water, if you can get to them. American experts, for example, estimated that 60 to 70 million Americans would die from the effects of nuclear weapons if there was an explosion, but about 200 million (!) would die of starvation! So if war comes to the United States or any other country, supply chains disappear. People will have to feed themselves. They will have to have their own modest supply of transport, fuel, food and water. And if you don't have those things, you're in big trouble."

It would seem that there, in the other hemisphere, the States are far from the threats facing Europe. But there are certain estimates, are already capable of reaching American territory. The threat of terrorist attacks is constant. Therefore, in prosperous America, it turns out that they also think about the threat of power outages, and about the need to survive if it will not be available for days.

Paul Seyfried:

"Solar batteries are the best solution because they do not break down and do not consume gasoline. You do not depend on the availability of fuel! And this will give you the energy you need to purify the water. You know, many Americans who live in rural areas are already seriously thinking about having their own electricity supply, drilling their own well or using an alternative water supply system... But if you live in a big city, it's more difficult for you."

And the half-forgotten term of the Cold War - civil defense - is now becoming a reality for Americans. Because there is an example, Ukraine, and what she is going through now.

(Originally published Dec. 2022, here.)

Photo by Yohan Marion on Unsplash

FULL INTERVIEW EXCERPT: Paul Seyfried, TACDA Advisor

Dmitry Anopchenko, INTER TV, Ukraine:

How do you prepare yourself for something like we're seeing in Ukraine? Could you first describe how it's organized in America? What do people do? What's your advice? What's your vision?

Paul Seyfried, TACDA Advisor:

Well, unfortunately, Americans have no formal organized civil defense. After World War II, American physicists began experimenting with different ways of protecting civilian populations from nuclear weapons effects. We did a lot of testing at the Nevada test site with nuclear weapons and different shelter designs. We learned a lot about that subject; however, American politicians and military officials became hostile to civil defense programs because they competed with weapons programs for money. The decision was made in the Johnson administration to scrap civil defense…and rely solely on deterrence – which is, in my view, a very short-sighted approach. Americans are basically on their own. They have no reliable government source to go to for accurate information on sustaining themselves through an attack [or] crisis. They have no information on shelter construction principles. There is no accurate information available from the government office concerning nuclear weapons effects, so basically, we're on our own.

Fortunately, my friends [and I have known] nuclear weapons physicists from the National Laboratories for about 15 years who gave generously of their time and expertise. They taught us all about weapons effects, shelter design, command and control of nuclear forces, behaviors of buried structures under blast insult – all sorts of things that were well within their area of expertise. There're only a handful of people who pay close attention to all this, and we've been trying to share what we know with as many people as possible. I imagine that the Ukrainian people can teach Americans a great deal about how people cope with shattered infrastructure, shattered supply chains, and constant bombardment. It's my understanding – especially from watching recent news reports – that Ukraine built a lot of shelters under their large apartment buildings and in other places during the Soviet era, and that has served you well.

Dmitry Anopchenko:

Don't you think that the Ukrainian story and Ukrainian events might be a lesson for America and for the world? No one was ready, no one was prepared.

Paul Seyfried:

I watched the month leading up to the invasion, and Ukrainians seemed very unconcerned. Even your leadership was unconcerned and downplayed the intelligence that was being provided to them with the troop buildups and the staging of armored vehicles and aircrafts around your borders. I was convinced from the very beginning that the invasion would occur, but even the American retired consultants for news outlets were convinced that Vladimir Putin was just bluffing and was trying to extract concessions from the West on NATO posturing and so forth.

Ukrainians have just been phenomenal in resisting and fighting back. Everyone thought this was all going to be over in a week. Obviously, as we see, it wasn't. My hat is off to the courage of the Ukrainian people in all this.

Photo by Gayatri Malhotra on Unsplash

Dmitry Anopchenko:

Thank you very much, sir, I really appreciate your words. I have seen, in American media, reportages of some people who were preparing and transferring their residential buildings into some kind of shelter or bunker. They are storing water, and they are storing food. How often does this happen? Is this just an exception for Americans?

Paul Seyfried:

Prior to the COVID pandemic, I would say less than 1% of the US population was doing anything seriously to prepare for war or social or civil breakdown or supply chain failure. A lot of folks in the prepper community are concerned

about an electromagnetic pulse attack from either North Korea or any of the other nuclear armed adversaries. But the number of Americans who actually built shelters was very small.

Most Americans can't go out and spend $150,000 on a usable, credible shelter, so it's not happening like it should. **What America needs is a Swiss-style, civil defense program where the government subsidizes the cost of the shelters in residences and any building intended for human habitation.** In Switzerland, they have blast-hardened shelters with certified, air handling systems capable of full nuclear-biological-chemical (NBC) operations. I toured Swiss shelters for two weeks in 1999, and every place we went to, from the watch shop to the grocery store, movie theaters, churches, homes, businesses…they all had hardened shelters on the premises. I was very impressed with the Swiss commitment to protecting their civil population. Sweden, Switzerland, Norway, South Korea, and Yugoslavia all have a large civil defense program that's similar, and Russia has rebuilt their shelter program in recent years. That demonstrates to me a commitment to protecting the civil population we just don't have.

Dmitry Anopchenko:

How would you explain why the American government is avoiding decisions like that? Was it their understanding that war would not happen anymore? Why after all this preparation and effort did we not see something like this in 2020?

Paul Seyfried:

I think that it will take a massive loss of life to change the American mindset on this. American officials tell people that the shelters don't work, but they're building lavish shelters for government officials, so obviously they know the shelters work because they spend considerable sums on protecting government leadership. Perhaps the rest of us are all expendable. That all hails back to a doctrine called mutual assured destruction that was created by Defense Secretary Robert McNamara. His idea was that we avoid war by deliberately leaving our civil and military population completely vulnerable to nuclear attack to prove our sincerity that we would never attack anyone else. Of course, that assumes that that our enemies are of a similar mindset, that they want to avoid war...But America has not fought a war on its own soil since the American Civil War in 1865, so **we kind of live in a state of denial here in the United States.**


Photo by Jake Charles on Unsplash

Dmitry Anopchenko:

What would you advise the average American to do to protect themselves and their family? Would you advise them to create a shelter? Would you advise them to procure supplies?

Paul Seyfried:

The first advice I give is to acquire as much basic, non-perishable food as they can practically store. Rice, beans, wheat, corn, those kinds of things that store well for many decades and still remain usable. The next critical thing is to be able to purify water from natural sources. The experts at the National Laboratories estimate that about 60 to 70 million Americans would perish from nuclear weapons effects, either prompt or delayed, but about 200 million would perish from starvation. If war comes to the United States or any other country, the first thing that will fall apart is the supply chain. People will have to feed themselves. They will have to have their own modest reserve of transportation fuel, food, and water. And if you don't have those things, you're in big trouble. So, food, water, all those kinds of things, and the ability to shelter your family from the elements.

Dmitry Anopchenko:

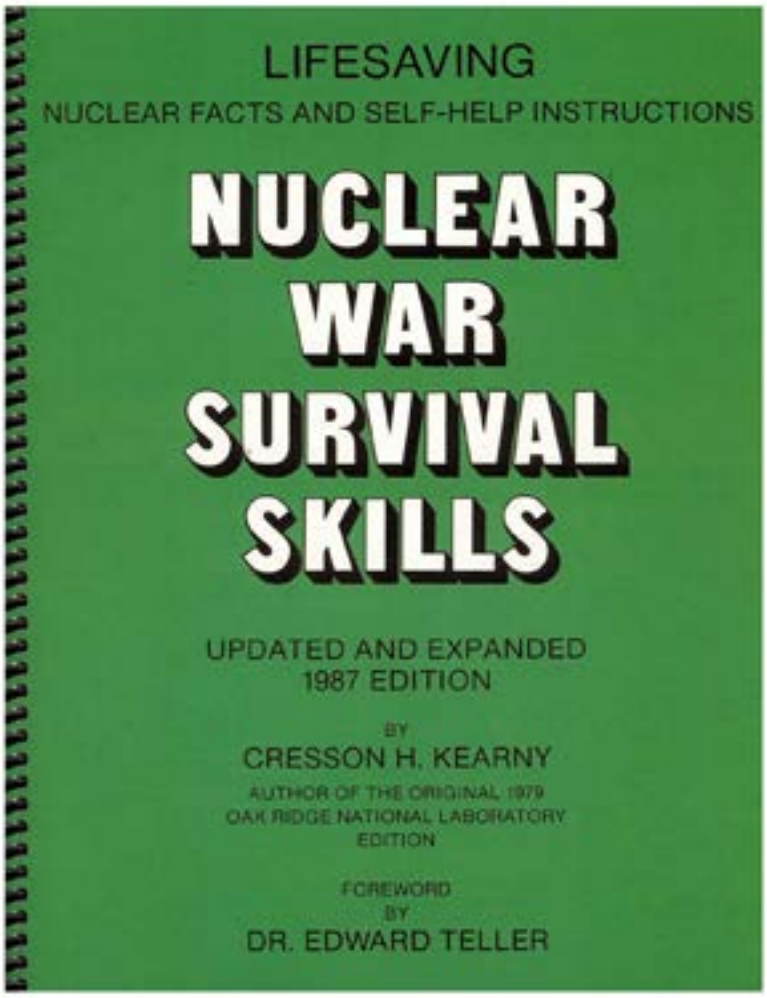
What about energy? Looking at Ukraine, Russia started bombing energy facilities, so now my family and friends are telling me they get electricity for 2-3 hours per day. So, without electricity, they are without water and heat.

Paul Seyfried:

I'm glad you brought up energy because that's a critical component for sure. I advocate for micro, solar power systems because without electricity, heat, and water, you can die in a few days. You need a self-sustaining, modest power supply, and solar seems to be the best option because it doesn't break, and it doesn't consume petrol fuels.

Looking for self-help civil defense?

Learn how to survive a nuclear war by preparing a fallout shelter. **Nuclear war is survivable!**



This updated and expanded edition of *Nuclear War Survival Skills* gives instructions that have enabled untrained Americans to make high-protection-factor expedient shelters, efficient air pumps to ventilate and cool shelters, the only home-make-able fallout radiation meter that is accurate and dependable, and other life-support equipment.

These instructions were developed by Oak Ridge National Laboratory civil defense researchers and others, and have been field tested repeatedly under simulated crisis conditions. You and your family can improve your chances of surviving during and after a nuclear attack by learning the nuclear facts and following the self-help instructions given in this book.

Available in the TACDA Survival Store!

How will you handle the next disaster?
Take the

PREPAREDNESS QUIZ

1. If the power went out during the evening, I would:

__ A. Sit in the dark, waiting for the power to come back.
__ B. Light candles.
__ C. Search the kitchen drawers for flashlight batteries; they've got to be in there somewhere.
__ D. Know exactly where to find flashlights, battery-powered lanterns and fresh batteries.

2. If our home were without water for a day or two, we would:

__ A. Drink soda or juice and wash up at school or the office.
__ B. Visit relatives or friends where we could take showers and use the bathroom.
__ C. Check the bottled water on the basement shelf and try to remember how old it is.
__ D. Drink and wash from a supply of bottled water that we replace every few months.

3. Our important papers and records are:

__ A. Misplaced; we have no idea where they are.
__ B. Scattered in various locations throughout the house.
__ C. Filed in the home office.
__ D. Secured in a water and fireproof box.

4. We've made the following arrangements for our pets:

__ A. We have no plans. Why do we need them? They go wherever we go.
__ B. We'd leave them at home with plenty of food and water.
__ C. We'd take them with us, hoping we could find a shelter or hotel that will accept.
__ D. We've made plans with family, friends and our vet to take them at a moment's notice.

5. In case of emergency, our children know:

__ A. To trust us to take care of them. We don't want them disturbed by thinking about the bad things that can happen.
__ B. How to call 911 and how to call us.
__ C. That a list of emergency contacts is posted on the refrigerator.
__ D. Our family disaster plan, which includes someone to call if we're separated, meeting places and a home escape route.

6. During an emergency, I would depend on the following for information:

__ A. My neighbors.
__ B. The television.
__ C. The Internet.
__ D. A battery-powered radio.

7. If I suddenly had to leave my home for five days, I would:

__ A. Hang out at the mall and wait to hear how long before we could return.
__ B. Throw some clothes and necessities in a suit case and take an impromptu vacation.
__ C. Leave; then coordinate with family members or friends about what to do.
__ D. Grab my emergency kit and follow the steps in our family preparedness plan.

8. My emergency kit is:

__ A. We don't have one.
__ B. A drawer with flashlights and batteries, bottled water in the basement and a first-aid kit in the bathroom.
__ C. A bin with flashlights and batteries, bottled water, canned foods and a first-aid kit.
__ D. Water to last three days, a battery-powered radio and flashlights with extra batteries;

canned foods; a first-aid kit; extra medications; and a portable "go" kit in the car.

9. If local authorities told me to evacuate, I would:

__ A. Refuse to leave. Most "emergencies" don't turn out to be a big deal.
__ B. Wait to see if the situation worsened, then decide.
__ C. Wait for word from the Governor; he's the only one who can order an evacuation.
__ D. Follow the advice of local responders to ensure my safety and theirs.

10. I've made the following plans for my elderly parents:

__ A. Nothing specific. The authorities will take care of them.
__ B. I would call them and together we'd decide what to do as the situation unfolds.
__ C. We've agreed that they would call the nearest relative to come and get them.
__ D. I've helped them assemble their own emergency kit, and we have an extended family plan for relocating them if they need to leave.

Photo by Carlos de Toro on Unsplash

ANSWER KEY

"D" is the best answer to all these questions. If you answered "D," you are as prepared as you can reasonably be.

If you answered "C" to most questions, you're on the right track, but still not prepared enough.

If you answered "A" or "B" to most questions, you and your family face serious problems if an emergency occurs.

Quiz credit: Harford County Health Department

EMERGENCY COMMUNICATIONS

Part 4: Power Supplies, Radio Equipment, and Antennae

By Dr. Randall Smith

Photo by Israa Ali on Unsplash

This is the fourth communications article in a series of articles that are being published in the Journal of Civil Defense (JCD). If you have not studied parts 1 through 3 of this article, please refer to the previous three issues of the JCD. After we complete all six of the communication articles, the entire series will be available to you in the TACDA Academy on our TACDA web site.

POWER SUPPLIES

A power supply is an electronic device found either on the inside of a transceiver or as a separate piece of equipment that provides the voltages required for the proper operation of radio equipment. As previously discussed, this is typically 12 VDC (or 13.8 VDC). In addition to providing the correct voltage, a power supply must be able to provide a sufficient amount of current to operate the equipment or "load" to which it is attached.

A power supply's output power or capacity is expressed in amperes or "amps". If a given transceiver requires 20 amperes of power when transmitting, a power supply capable of providing in excess of 20 amperes should be connected to it. Invariably, amateur radio stations have several other pieces of accessory equipment attached to the 12-volt power supply. In this example, a power supply providing 12 or 13.8 VDC at 30 to 40 amperes should be sufficient. The greatest amount of power is required when "transmitting". Power requirements when "receiving" communications are typically much less.

Batteries, Solar Panels, Wind Turbines:

Power supplies can assume many types and forms. For example, batteries are a common source of power. So-called "deep cycle" batteries are a wise choice. Deep cycle batteries are designed to provide relatively low amounts of power over an extended period of time (unlike automotive batteries which are constructed to provide a great deal of energy for a short period of time as when starting an engine). Many large batteries (automotive, deep cycle) contain sulfuric acid. During the "charging" process, these batteries emit highly toxic and explosive sulfur dioxide and hydrogen gasses which, aside from their flammable - even explosive - properties, easily damage living tissue. Hence, these batteries, if used, should be stored in a well-ventilated area to protect against the accumulation of dangerous fumes. A variant of lead-acid batteries is the "gel-cell". These are available as deep-cycle batteries with components that are sealed. There are no passages through which the gelatinized acid and fumes can leak into the surrounding environment. Gel cells are designed to withstand repeated discharge and re-charge cycles. Automotive batteries are not. Naturally, a battery charger will be required to replenish the batteries used to power radio equipment. There are a large variety of automatic charges available which provide a greater charge initially, then taper the amount of their charge as the battery reaches its design voltage.

Batteries can be re-charged by electrical energy produced by solar panels, wind turbines or generators. In the case of solar and wind generated electricity, weather plays an important role in recharging capability. For each of these re-charging devices, "regulators" are available to prevent overcharging the batteries. Solar panels with a

charging value of at least 15 watts are required to maintain back-up batteries for emergency communications purposes.

Generators:

Some people, both amateur and non-amateur radio operators, elect to use a gasoline- or diesel-powered generator to provide electricity to their homes and/or radio station in the event of a power outage. Generators require a plentiful supply of fuel which may become scarce and not readily available during a disaster. Generators are typically powered by gasoline, diesel fuel, propane, or natural gas. Also, fuel must be maintained while it is being stored. Diesel fuel tends to thicken as temperature decreases making starting diesel engines more difficult during cold weather or in cold climates. There are limits to how long gasoline can be stored and remain usable. Given the lack of availability of fuel during an emergency situation, most authorities recommend running the engine for the least number of hours and days necessary in order to conserve fuel supplies.

Voltage Inverters:

A voltage inverter is designed to change DC voltages of 12 (or 24 or 48) into 120 volt, AC current, which is the same type of power provided by your utility company. Twelve-volt batteries can be used to power the voltage inverters. Many of the better voltage inverters also contain electronic circuitry to monitor the state of your batteries and recharge them safely when power once again becomes available. Some inverters do not produce an exact replica of the power provided by electric companies. These inverters are called "modified sine wave" inverters. An oscilloscopic picture of their wave form shows a stair-step pattern, whereas a "pure sine wave" inverter generates a wave form that rises and falls smoothly and gently and is a replica of the waveform transmitted by electric utilities. One problem with modified wave form inverters is their tendency to generate unwanted noise along with the signal you are transmitting. Pure sine wave inverters lack this detrimental handicap.

ANTENNAE

The subject of radio antennae is a truly vast one and, taken as a whole, is outside the scope of the present lesson. However, most antennae are variations of certain basic designs. These fundamental designs will be presented here.

Radio antennae have two basic functions in radio communications: (1) to transmit a signal of a given frequency, and (2) to receive signals of one or more frequencies. As a general rule, the physical properties of antennae are critical for satisfactory performance when "transmitting"; less so for "receiving". That is, the length of the antenna must bear a relationship to the frequency of the radio signal that it is being fed by the transceiver or linear amplifier. Anyone who has played or listened closely to a pipe organ knows that the lowest frequency sounds (e.g., the bass pedals) emanate from the largest pipes. Notes with higher frequencies speak from smaller pipes. The same holds true for chimes, pianos, and all other musical instruments. The relationship is an inverse one. As the frequency of vibration decreases, the physical size of its resonator increases. In the case of radio signals, antenna size increases as frequency decreases; the converse is also true. As an example, police cars with antennae of approximately 16" in height are likely operating in the 150 MHz band. Those with antennae of about 6" in height probably communicate with their dispatcher or other units on about 450 MHz. Years ago, sheriffs' and state police or highway patrol vehicles were equipped with antennae slightly less than 8' tall. They operated in the 30 MHz band, which was not line of sight, but which did take advantage of ionospheric reflection and therefore provided more reliable communication over greater distances (e.g., county- or state-wide).

A transceiver acts on a minute electrical signal from the microphone by amplifying it and raising its frequency to the desired transmit frequency. The voice signal (intelligence) is sent to the antenna where it is conducted either via the atmosphere or a satellite. In turn, the weak electro-magnetic wave is intercepted by the receiver's antenna. The receiver amplifies this minute signal and lowers its frequencies into the human audible range. This amplified signal is applied to the radio's speaker or headphones where it is perceived by the listener as (hopefully) clear and intelligible sound.

A transmitting antenna operates best when its physical dimensions are related to the frequency it receives from the transceiver - just as a pipe organ builder designs pipes to produce specific frequencies which we perceive as pitches. When the mathematical relationship between the length of the antenna is proportional to its intended frequency of operation, that antenna is said to be resonant. It will perform best at its design frequency - less well as the frequency being sent to it moves away from its design frequency.

The same principal of resonance applies equally to receiving antennae, though the electrical consequences of using a non-resonant antenna for receiving do not exert the same overall deleterious effect on equipment performance as attempting to transmit using a non-resonant antenna.

The antennae to be described are included herein because they are easy to build and erect. They tend to be more portable than other types of antennae and therefore more suited to situations in which travel is required while maintaining communications capabilities.

Dipole Antennae:

As a general rule, the higher that an antenna is mounted, the better it will perform.

As you know, the prefix "di" can mean "two". A dipole antenna resembles the letter, "T" (Figure 1). The two horizontal halves are composed of solid or stranded wire. The two center ends of the dipole antenna are connected to an insulator to which the coaxial cable will eventually be attached. Consistent with the principle of resonance, the lengths of each horizontal member of the "T" are equal. Their length is inversely proportional to the frequency for which the antenna is intended. Again, the length for higher frequencies (e.g., 28.0 MHz) is shorter than it is for lower frequencies (e.g., 7.0 MHz). To determine the correct length of a dipole antenna, one needs to divide the constant 468 by the antenna's design frequency. The quotient is expressed as feet in decimal format. For example, if an antenna is intended to radiate a 28 MHz signal, the overall length of is equal to 468/28=16.7 feet (16' plus 7/10th of a foot). Seven tenths (or 70%) of 12 inches equals 8 1/2", so the length of the horizontal dipole would be 16' 8.5". The vertical portion of the "T" simply represents the coaxial cable used to connect the antenna to the transceiver or linear amplifier. The outer braid of the coaxial cable is attached to one horizontal leg of the antenna (on one side of the center insulator); the inner conductor to the opposite horizontal leg. This antenna can be said to be resonant at a frequency of 28.0 MHz. It is important to remember that dipole antennae produce strongest signals perpendicular to the plane of the two dipole elements. Radiation off of the nodes (i.e., the points where the end insulators attach to supporting structures) is nil.

Figure 1: Dipole Antenna

Inverted "V" Antennae:

The construction of an inverted "V" antenna is very similar to that of a dipole antenna. Whereas both ends of a dipole antenna are elevated as much as possible, only the center of an inverted "V" antenna is elevated (Figure 2). A benefit of this design is that only one tall support is required (at the apex of the inverted "V"). The ends of an inverted "V" antenna are attached to stakes anywhere from a few inches to a few feet from the ground. As mentioned in the case of the dipole antenna, the coaxial cable from the transceiver or linear amplifier is attached to each downward sloping leg of the inverted "V" antenna via a center insulator. Inverted "V" antennae tend to radiate fairly uniformly in all directions rather than at right angles to the legs of the antenna as is the case with dipole antennae.

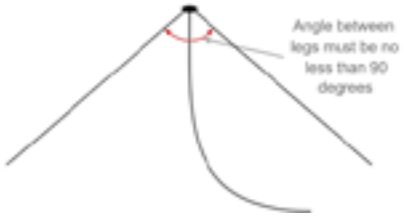


Figure 2: Inverted "V" Antenna

Vertical Antennae:

Credit for invention of the horizontal antenna is ascribed to Heinrich Hertz. Discovery of the vertical antenna goes to the Italian scientist and engineer, Guglielmo Marconi, hence vertical antennae are occasionally referred to as "Marconi antennae". A vertical antenna, as its name implies, is an electrical conductor that is vertical with respect to the horizon (Figure 3). These are the most common types of antennae used in commercial broadcasting (AM, FM, TV) and cellular towers. The concepts for achieving resonance with a vertical antenna are generally the same as with the Hertzian or horizontal dipole antenna with one major exception. The value of the constant (the dividend) is reduced by one-half, from 468 to 234. The reason for this reduction is that, in the case of a vertical antenna, the earth provides the "missing half" of the horizontal dipole antenna. The same holds true for vehicular, aircraft and marine antennae. Note that the radiation pattern for vertical antennae is omni-directional.

In the case of the vertical antenna, the center conductor of the coaxial cable is attached to the vertical radiator. The outer braid is attached to an earth ground. This can be as simple as a 6' or 8' electrical grounding rod driven into the ground, to an elaborate array of radial wires radiating out and insulated from the base of the vertical

segment. In general, the better the ground system, the better the performance of a vertical antenna.

Figure 3: Vertical Antenna

NVIS Antennae:

The next type of antenna is a relative newcomer to amateur radio circles. However, it has been well known and used by the armed forces for decades principally for tactical, short- and medium-distance communications. NVIS stands for Near Vertical Incidence Skywave. Do not be intimidated by this antenna's name. It obeys all of the principles discussed with respect to other antenna designs, and several more which are beyond the scope of this lesson. Should you decide to study for your amateur radio "ticket", you will understand the theory and practice that lies behind NVIS antenna construction and performance. An NVIS antenna takes advantage of ionospheric reflection of electro-magnetic waves. This is not a "long haul" antenna. However, particularly for disaster preparedness and response purposes, it has its place and deserves mention here.

Basically, an NVIS antenna uses high angle radiation to send signals almost straight up to be reflected back to Earth for very effective short- to medium-distance communications. This mode of operation makes it ideal for in-state communications during disasters or other emergency situations. NVIS antennae only work from 2 MHz to 10 MHz. For amateur radio and emergency communications operators, this means that lower radio frequencies amateur bands, such as 3.5-4.0 MHz and 7.0-7.3 MHz are ideal for use with an NVIS antenna.

Generally, the NVIS antenna is used to make reliable HF radio contacts to a range of approximately 600 miles depending upon terrain and obstacles. The signal radiation effect is analogous to taking a garden hose, pointing the nozzle straight upward and setting the flow to a fine mist. The water coming back down gives an omni-directional pattern without dead spots. Since the antenna is omni-directional, the orientation of the legs of the two dipoles is inconsequential. Radio waves are typically radiated from the antenna at an angle of 70 degrees or higher, long-distance radio contacts.

An NVIS antenna is mounted on a fiberglass, PVC, or other insulated center mast approximately 15 feet in height. The antenna itself consists of two dipoles which join at the top of the mast with their ends lowered and attached to tent poles (Figure 4). A top view of the antenna reveals that the two dipoles do not cross at a 90 degree angle. Instead, they cross to form an "X" pattern. Each portion of the antenna consists of two legs – two of one length and two of another. This facilitates coverage of a range of frequencies between 2 and 10 MHz. A coaxial cable is attached to the centers of the two dipoles in much the same manner described for dipole and inverted "V" antennae. The coaxial cable is routed to a device called an "antenna tuner". An antenna tuner is a device which matches the electrical characteristics of the antenna to those of your transceiver or linear amplifier to ensure the maximum transfer of electro-magnetic energy between the two, both when transmitting and receiving. The internet is replete with discussions and diagrams of NVIS antennae, as are several American Radio Relay League (ARRL) publications. A firm called "DX Engineering" offers an NVIS antenna kit which includes all of the parts required for construction.

Figure 4: One type of NVIS Antenna

In our coming fall 2023 issue of the JCD, Dr. Randall Smith will present the 5th lesson on communications. This lesson will cover Repeaters, Citizen's Band Radios (CBs), Family Radio Service (FRS), General Mobile Radio Service (GMRS), Multi-Use Radio Service (MURS), and Software Defined Radios (SDRs).

Dr. Randall Smith has held an FCC license since 1984. He has served as a radio operator in the U.S. Army's Military Affiliate Radio System, and with the IBM Corporation first as a field engineer, then as a systems engineer and finally as a marketing representative. He participated in the construction of the emergency communications portion of the St. Louis Civil Defense Agency's underground emergency command center.

TACDA ACADEMY

A ***lesson manual*** written by a collaboration of civil defense experts, scholars, military personnel, and other professionals to teach the basics of survival in easy-to-understand formats.

The manual consists of 17 chapters covering Civil Defense basics such as:

- Psychology of Civil Defense
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- Natural Disasters
- Food Storage
- Water Purification
- Sanitation
- Cold Weather Survival
- Evacuation & 72-Hour Kits
- Communications
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- Medical Preparedness
- Triage & First Response
- Post Event Survival

Download FREE or purchase hard copy online at tacda.org

FARMER'S MARKETS:
SOLUTION TO AMERICAN FOOD SHORTAGES

By Bruce Curley, TACDA Vice President

Photo by Peter Wendt on Unsplash

Never did I think American mothers would not be able to get formula for their babies. But that happened in 2022.

This was the result of a manmade disaster. Overzealous federal government regulators closed baby formula factory production lines down. The result was a catastrophic formula shortage.

This is a disaster on one vector, but when a manmade disaster hits, as with the current food shortages and hyperinflation, natural disasters and other secondary disasters do not stop. They just get more difficult. You need to prepare yourself and your family for these realities.

Even if you can find the food your family needs, the hyperinflation means you may not be able to afford it. Studies show that over 60 percent of Americans now live paycheck to paycheck. That leaves little margin for extras, let alone basics like nutritious food.

But there is hope.

Get to Know your Local Farm Market Now

Do not wait for disasters to multiply. Get to know your local farmer's market NOW so you can use it wisely to mitigate food shortages.

Farmer's markets offer fresh, highly nutritious, healthy, hearty food at a price that is usually less than grocery stores, big box stores, and certainly convenience stores. Identify your nearest farm market. Fortunately, the Spring Valley Farm Market (https://springvalleyfarmandorchard.square.site/) is down the road from us. They are a small, family-owned farm that produces a large amount of food. Fresh food from the farm available in your farmers market is good for your health and immunity. Processed food from the factory is usually not.

Impact of the War on Fossil Fuels and Farmers

Be aware that, due to the war on fossil fuels, food shortages will only get worse. As proof, I offer the example of my brother-in-law and his orchard. He owns a small, family-run orchard. Multiply his experience by millions of other farmers impacted by the war on fossil fuels, and you will have an idea of the scale of this disaster.

He could not afford fertilizer this year as the cost quadrupled, or sprays as the cost tripled, or diesel fuels as the cost doubled. All these inputs are necessary for him to produce apples, peaches, cherries, plums, corn, potatoes, asparagus, and other foods that feed non-farming Americans.

And with only around 1% of Americans farming in 2022, you depend on his productivity to make sure your family has food.

He and his family will be fine since they grow all they need on their orchard. As he says, "The government can collapse, and all it means to me is I pay less taxes." But you will not be fine. You will pay far more for what he and other farmers grow. And you will pay even more for what is passed through the middleman to the grocery, big box, and convenience store.

Study history. The Great Depression in the United

States hit farmers 10 years before it hit the rest of the American people. And the time span for the impacts from his and other farms, orchards, and ranches on your family is far shorter these days due to just-in-time delivery supply lines. For this reason, I moved to West Virginia from Maryland to be within one to five miles of food for my family.

From my house, I can now buy eggs from five farms; fruits, and vegetables from four farm markets; and meats, chicken, milk and more from the multiple farms, many of which are owned by generational Mennonite and Amish farmers.

If you are in a rural area like me, there are farmer's markets everywhere. If you are in the suburbs, you should be within driving distance of farmer's markets. Even in the cities, there are usually nearby markets.

How TACDA Can Help

Search our Journal of Civil Defense to gain deep civil defense knowledge to survive these food and other natural and manmade disasters. Tacda.org has so many resources. For example, see how products like Water-Bricks and EMP-hardened thumb drives (in our Survival Store) can help your family survive and triumph during these challenges.

Use our 60 years of knowledge, skills, and experience to develop the skills that will be necessary to make sure your family will survive and prosper.

As always, remember the fundamentals:

1. Grow your own food if you can.
2. Get to know neighbors and tradesmen you might need to survive in the future.
3. Stay close to your family and friends as you will need them.

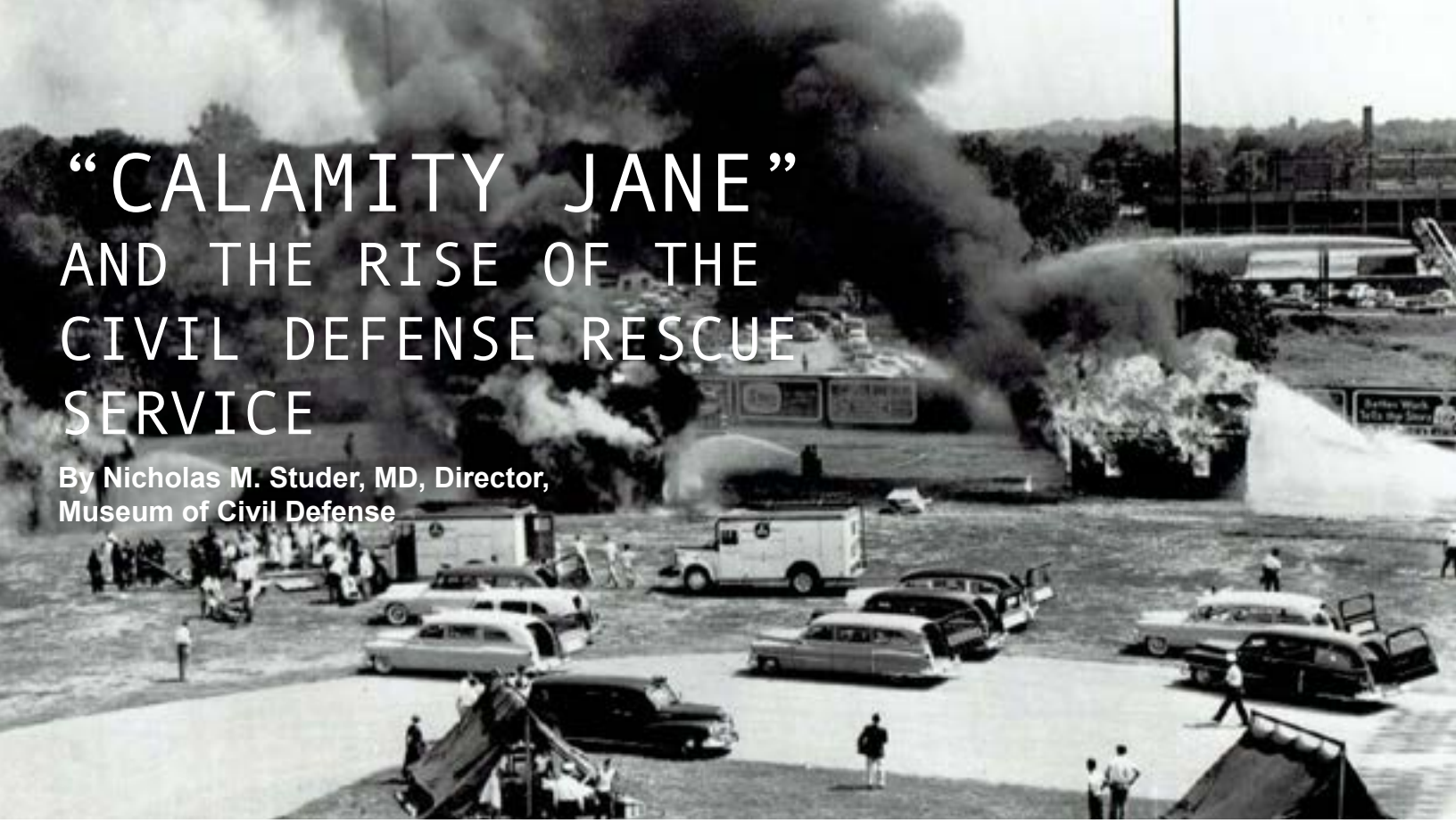
And pray always.

Since 2007, Bruce Curley has been a member of the Board of Directors, now Vice President, of The American Civil Defense Association (TACDA). Through the TACDA Civil Defense Journal and his analysis on his civil defense blog for 20 years, he creates, teaches, shares and implements civil defense strategies. Bruce is a member of the Carroll County, MD, Community Emergency Response Team and is NIMS 101/102 certified. He wrote the Emergency Response Plan for his hometown of Mt. Airy, MD. He is a member of the Safety and Security Committee at his church where he has helped write the Emergency Response Plan and taught staff how to deal with the threat matrix. More of his articles can be found at https://poetslife.blogspot.com.

Douglass Loop Farmer's Market - Louisville, KY

Federal Way Farmer's Market, WA

Santa Barbara Farmer's Market, CA



"CALAMITY JANE" AND THE RISE OF THE CIVIL DEFENSE RESCUE SERVICE

By Nicholas M. Studer, MD, Director, Museum of Civil Defense

"Calamity Jane" trucks featured in a demonstration in Knoxville, TN on 10 September 1955.

By December 1950, stunning losses for American expeditionary forces in Korea had spurred the Government to action on years of indecisiveness regarding civil defense. Signed into law by President Truman in January 1951, the Federal Civil Defense Act (FCDA) of 1950 enabled a new civil defense agency to develop a nationwide effort to prepare for potential enemy attack. The crisis in Korea was not the first event to spur "crash program" efforts for emergency preparedness (similar had occurred during World War II and even during World War I), and it certainly would not be the last. In January 1951, the new Federal Civil Defense Administration feared the effects of strategic bombing upon American cities - Europe was still rebuilding from the devastating bombing raids upon cities by both sides. While fission weapons were known to be available to the Soviet Union, they numbered relatively few. Planners expected a potential World War III to appear similar to World War II, with bombing using high-explosive and incendiary bombs. Lessons learned for FCDA primarily stemmed from the British civil defense organizations of World War II, and their experience during the "Blitz". They had demonstrated that firefighting and rescue capabilities were critical to save lives in damaged and collapsed structures, and FCDA planners believed increasing American resources in this arena should be a primary focus of funds and efforts.[1]

ORIGINS OF THE RESCUE SERVICE

In May 1951, FCDA published an administrative guide on the formation of what it called the "Rescue Service." The Rescue Service was separate from the Fire Service, as FCDA believed that separate efforts were required due to the massive scale of thousands of trapped persons. FCDA suggested "equipment operators, welders, riggers, etc." be the trades from where these auxiliary volunteers would be drawn from. By the end of 1951, four rescue vehicles were procured for demonstration purposes by FCDA, and at least 100 orders were placed for matching funds support by the states. These rescue vehicles had been designed from scratch by FCDA staffers over the past year, with the intent to carry an eight-man rescue team and all necessary equipment to the area of damage. Simultaneously, FCDA developed curricula for a Basic Rescue Course and planned to build so-called "rescue streets" at the FCDA school sites: facilities that simulated a bombed-out urban environment. One was built at Olney, MD, which became FCDA's Rescue Training School and began conducting courses in 1952.[2]

"CALAMITY JANE ARRIVE TO THE SCENE

Under FCDA Standard Item Specification VIII-140, Swift Body Company and Boyertown Body Company initially provided the heavy rescue trucks for FCDA orders, using REO Motors chassis (Figure 1).[3] With an impres-

Figure 1: Detroit, MI civil defense personnel inspect their "Calamity Jane" and equipment with the Civil Defense Director, 03 January 1955.

ssive stock list that seemingly thought of everything, the vehicle had been ingeniously designed to hold each item in a slot, compartment, or mount either inside or outside the truck. Interior cabinets generally held support items for the team such as helmets, coveralls, and water. Exterior compartments held a generator, floodlights, Mine Safety Appliances "Chem-Ox" oxygen breathing apparatus (self-contained breathing apparatus had yet to be popularized), and a dizzying array of tools, ropes, and attachments designed to extricate victims from the rubble of collapsed structures. Ladders and longer tools were stored on the roof, which had reinforced walkways and a ladder for access. Each vehicle was standardized, to allow crews to work from any vehicle and know where items could be found. Each item's location was generally labeled, to assist with identification by the volunteer crews who would not be expected to work with the vehicle every day (Figure 2). Visibly, vehicles were marked with standardized blue and white paint schemes with the civil defense logo displayed - regardless of how local authorities otherwise marked their vehicles.

As vehicles were delivered, they soon began to be known colloquially as "Calamity Janes" after the moniker for Martha Jane Cannery, a frontierswoman who had led a colorful and adventurous life at the end of the "Old West" period. Cannery was even associated with "Wild Bill" Hickok in Deadwood, South Dakota. She claimed she had been coined "Calamity Jane, the heroine of the plains" while serving as a Scout for the U.S. Army, by an Army Captain after rescuing him during an ambush by Native Americans. Others disputed her claim and suggested it was due to the belief that angering her was to "court calamity." Cannery performed in "Buffalo Bill's Wild West" show and the 1903 Pan-American exposition as a storyteller.[3] It is unclear who was first to coin this term for the FCDA's rescue trucks, or exactly when the name first appeared. While the character of "Calamity Jane" had appeared in several films over the years, 1953's "Calamity Jane" seems to correspond with the delivery of many of the vehicles. In 1954, REO Motors produced a Civil Defense film entitled "Rescue Street", which FCDA touted as one of the first two "industry-supported" civil defense films. While repeating FCDA messaging, it was essentially an advertisement for their vehicles. Footage of the Olney, MD school's vehicle showed it had been marked as "Calamity Jane" on the front doors.[4] Within their 1955 Annual Report, FCDA unceremoniously identified these vehicles by this nickname – by then seemingly an official title.[5]

DECLINE OF RESCUE EMPHASIS

In the 1955 FCDA Annual Report, FCDA explained that changes in projected modern warfare required a new approach to the Rescue Service. Increasing numbers of deliverable Soviet fission weapons over the years had now been accompanied by the development and increasing deployment of fusion weapons by the Soviets. The "H-bomb" not only promised a much larger detonation for the Rescue Service to respond to, but also converted the "A-Bomb's" minimal threat from residual "fallout" radiation to a primary hazard. FCDA expected more destruction and casualties from the increased direct effects, which would also be expected to make roads difficult or impossible for "Calamity Jane" to make it to where it was needed. Time for rescue would be even more limited than

Figure 2: Northampton County, PA rescue personnel conduct training with their vehicle, likely 1960s.

before, as dangerous levels of gamma radiation from fallout would be expected in the areas that experienced the direct weapons effects. This spurred FCDA to split into "Heavy Rescue" and "Light Rescue" team concepts, with the latter emphasized due to lower cost, more nimble operation, and expected improved mobility. A new specification for a smaller, four-wheel-drive vehicle intended to traverse cross-country was developed (Figure 3). By this point, however, FCDA reported that more than 500 "Calamity Jane" units had been procured, and the Light Rescue trucks would be a supplement to these newly designated Heavy Rescue vehicles.

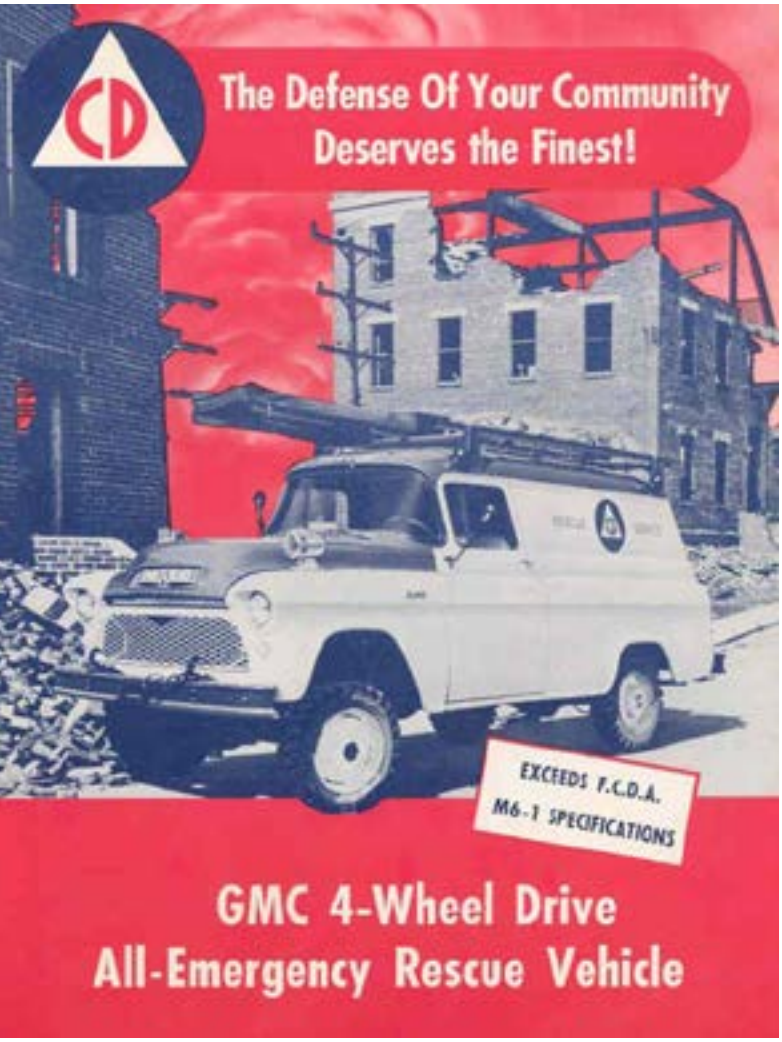


Figure 3: Brochure cover for GMC Light Rescue Truck meeting FCDA specifications, 1957.

In July 1961, President Kennedy ordered the transfer of most civil defense authorities to the Department of Defense, with a new Office of Civil Defense that primarily had been tasked with the massive effort of a national public fallout shelter program. Support and activities of the Rescue Service weren't even mentioned in that new agency's 1962 Annual Report.[6] In 1967, the Department of the Army - Office of Civil Defense (OCD) published revised specifications that referenced "Calamity Jane" again and introduced a new Medium Duty specification. While OCD continued to list the familiar blue and white paint scheme, they also authorized the local agency's color scheme to be used. OCD required a minimum stock list, but no longer demanded a standardized design for the vehicle. The era of the "Calamity Jane" was over.

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Dr. Studer is a practicing Emergency Medicine physician and the founding Director of the National Museum of Civil Defense, the only 501(c)(3) nonprofit museum dedicated to the historical preservation and interpretation of the United States Civil Defense program. The terrorist attacks of 9/11 first catalyzed Dr. Studer's interest in the history of our Nation's Civil Defense program, which grew into a desire to share his research with others. He volunteered for the Brevard County (FL) Office of Emergency Management during the early 2000s, and later served at the Florida Department of Health - Bureau of Radiation Control's Radiological Instrument Maintenance & Calibration Laboratory prior to attending medical school at the University of South Florida. Dr. Studer's primary interests within Civil Defense history include the Chemical/Biological Warfare, Radiological Defense, and Packaged Disaster Hospital programs.

Introducing...

GATLIN WILDS

as our

TACDA Youth Representative!

We'd like to welcome Gatlin Wilds in his new role as our TACDA Youth Representative! As a member of The American Civil Defense Association, Gatlin has demonstrated remarkable interest and fortitude in the expansion of the awareness of civil defense in his community and among his peers.

By his own initiative and through his own expense, Gatlin has shown devotion to emergency preparedness. He has educated his schoolmates and teachers through presentations and home-made flyers and cards that he's passed out at school and in his community. Gatlin is concerned about the lack of understanding of civil defense in our country and stays in close contact with the directors at TACDA by sending regular reports of his efforts and achievements.

We at TACDA have been impressed by his natural ability to excite and create interest in a topic which many show apathy for and/or don't understand. We are especially grateful for Gatlin's ability to reach the youth in his community. The youth in this country will be our future leaders, and they need to be prepared for the conflicts and issues that lie ahead in the years to come.

Gatlin's energy and commitment to disaster preparedness is contagious, and he has been a fearless advocate. He has studied our materials on civil defense, including TACDA Academy, and the Journal of Civil Defense. He has attended our monthly live presentations and is learning what it takes to be prepared for emergencies and disasters.

We have no doubt that Gatlin will work hard in this role and show his passion for emergency preparedness and his commitment to saving lives through education and awareness.

Congratulations Gatlin!

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