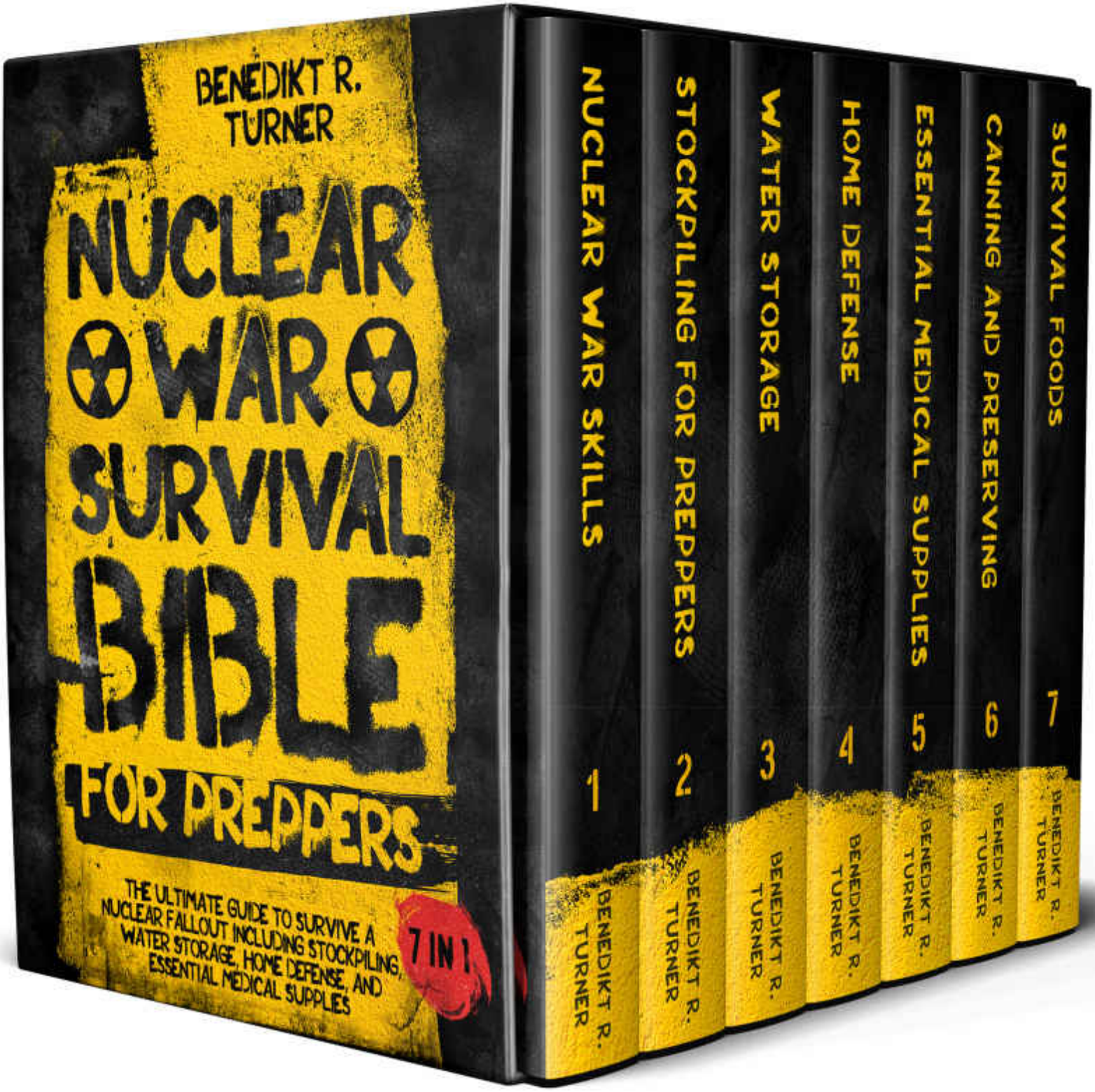
BENEDIKT R. TURNER
NUCLEAR WAR SURVIVAL BIBLE
FOR PREPPERS
THE ULTIMATE GUIDE TO SURVIVE A NUCLEAR FALLOUT INCLUDING STOCKPILING, WATER STORAGE, HOME DEFENSE, AND ESSENTIAL MEDICAL SUPPLIES
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THE NUCLEAR WAR SURVIVAL BIBLE

FOR PREPPERS

The Ultimate Guide to Survive a Nuclear Fallout Including Stockpiling, Water Storage, Home Defense, and Essential Medical Supplies

Benedikt R. Turner

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INTRODUCTION

There is quite a large percentage of people that consider themselves preppers from all around the world, and in the United States alone that number is said to be between 4-9 million Americans. Most of them engage in prepping activities, and the number only seems to grow with time.

Preppers are the people who believe a catastrophe or emergency varying from civil unrest to natural disaster is likely to occur in the near future, and they actively prepare for it. This often involves acquiring survival items, such as food, water, medical supplies, and alternative shelter.

Prepping may sound absurd to many, especially to those assured that the government will step in to save them in case of a disaster. However, if there is anything we have learned from the past, it's that the government isn't always quick to act. There are countless instances, in the past, where

governments from all over the world have left their people to fend for themselves in the face of a disaster or civil unrest.

The hard truth is that most governments, including the United States, are ill-equipped to take on massive rescue operations in the face of a large-scale disaster. As history has proven, despite their assurances, they have neither the supplies nor the manpower to carry out the operations. A perfect example of this would be how the United States government handled Hurricane Katrina. Reports indicate that the Hurricane caused over 1,800 casualties. The rescue operation was handled so poorly that most of the victims had to wait for days before any help reached them, and recent calamities have been met with the same reaction.

There are other people who believe that they are far from danger as their area of residence has never faced any disasters in the recent past. But the thing about catastrophes is that there is rarely a warning before they happen. It doesn't have to be a hurricane or an earthquake that calls for the need to prep, but in the case of civil unrest, there is no telling in how many ways you could get affected.

It's indisputable that disasters can happen, and the fact is that they often do. In the face of the inevitable, it's important to understand how you will deal with it when it does occur. Most people don't really prepare for disasters as the preppers do but it's important to have at least a survival kit, and this book will come in handy.

Prepping can sound taxing when you think of all that goes into getting the supplies, looking for alternative sheltering, and other things that come into play. In some cases, it calls for skills that most people don't have, but prepping is not always about preparing for the end of the world. The idea has been exaggerated by the media to seem like most of the preppers are preparing for a post-apocalyptic era, and while some events are highly destructive, most disasters are not long-term. The media's portrayal of what prepping is about has been glamorized and this has seen people get discouraged and disillusioned from seeking to create this safeguard for themselves.

Despite the exaggerations of the entertainment media, there is no such thing as a standard prepper with an amenity checklist as everyone has different issues to deal with. However, there is a point of preparedness someone can get to for them to consider themselves well-equipped to deal with an emergency when it arises.

There are a few factors that stop people from embracing the idea of prepping and some of them range from finances, skills, an overwhelming amount of information, knowledge, and the lack of positive reinforcement. While different emergencies call for different strategies, there is one calamity that is possible for everyone regardless of where they live—and that is the potential of a nuclear attack.

Nuclear attacks have brought the world to a standstill and are one of the cataclysms that carry long-term side effects. We have seen them take place in the past, and with the current political climate, there is no telling *if* a nuclear attack will take place in the future; it's just a matter of *when*.

The most important step to becoming a prepper is understanding the need to be prepared in the face of an emergency. Acceptance is the first step and then comes the rest, and, in this book, we are going to explore ways you can address the rest.

BOOK 1:
Nuclear War Skills

Overview

A nuclear weapon is a device that creates an explosion by using a nuclear reaction. The weapons can be in form of missiles or bombs and they give four types of energy: radiation, blast waves, heat, and intense light.

A nuclear weapon explosion creates a large fireball where everything inside vaporizes and is carried upward, creating a mushroom-shaped cloud. This material in the cloud condenses into dust-like particles and drops back down as fallout, which can be carried by wind to locations far from the explosion. Fallout particles are radioactive and can contaminate anything they land on.

The impacts of a nuclear weapon range from destruction, injury, and in most cases, death. The injuries and deaths are from the blast wave and heat, but the people who manage to survive are at risk of getting exposed to radiation sickness caused by the nuclear radiation.

People further from the blast but in the path of the fallout are at a risk of experiencing health complications caused by radiation sickness and irradiated food and water sources.
While the blast wave lasts a little over a minute, the immediate destruction does not. In some cases, the blast can cause a firestorm like what happened to Hamburg during World War II, where the chemicals from the bombing resulted in a firestorm that claimed over 45,000 lives. Perhaps a better example of this is the most infamous bombing of Hiroshima and Nagasaki, which also resulted in a firestorm that claimed countless lives and affected many in the aftermath.

All this is in the case of a single nuclear explosion, but in the case of a nuclear war, with unprecedented explosions, the consequences would be devastating. There are arms reduction treaties in place but with thousands of nuclear weapons in the world arsenals, there is no telling what will happen in the future, and it is very important to prepare in the case of a nuclear attack.

With those facts, the idea of a nuclear attack seems farfetched, but just to put things into perspective, it wouldn't take a hostile government to attack another country. At least not when terrorists from all over the world have access to radioactive materials and bomb-making components and are not afraid to use them. Nuclear experts have voiced concerns as avenues of attaining radioactive materials grow and the inadequacy with which countries with nuclear materials guard them.

According to a homeland security report, there have been cases of radioactive materials theft from various medical facilities in the United States. The probability of getting past intelligence and law enforcement to detonate a nuclear device seems to grow every single day.

Without considering all the other factors, the threat in itself lies in the existence of nuclear capabilities of any given country. A radiation explosion, as seen in the bombing of Hiroshima and Nagasaki, can be deadly and long-term.

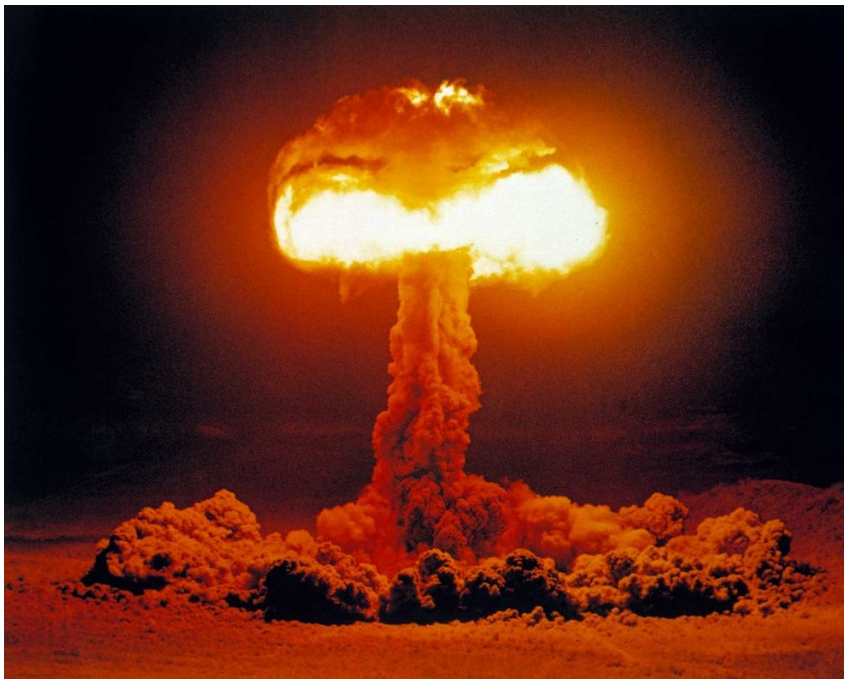
An all-out war has the potential of destroying a nation's existence. It would destroy materials necessary for survival. The stocks of food would be gone and contaminated water unfit for consumption will render people dehydrated. Whatever supplies would be left would only serve to support a smaller population and even that wouldn't last long.

Contact with fallout would expose the surviving population to high radiation levels with low rates of recovery.

As mentioned earlier, the first step to prepping is acceptance. Coming to terms that disaster is always looming and that you are the only one with your best interest at heart is the beginning. In the case of a nuclear attack, it's important to understand the effects it would cause.

It's not a question of if, but of when.

The Dangers Of Nuclear Weapons: Myths And Facts



A nuclear war would cause incomprehensible damage to the world but it would not be the end of human life on earth; far from it actually. This is not to say that nuclear weapons are similar to other weapons—they are not; however, the information about them has been exaggerated.

Many people from all over the world fail to learn survival skills because they don't see the purpose behind it. They are under the assumption that in the case of a nuclear war or attack, the human race will be wiped off from the face of the earth. The ideas sold to us about nuclear weapons are what shape this mindset, and you need to be able to discern facts from myths.

There are many ideas of what a nuclear attack would look like. Some of the opinions are based on past events, but for the most part, the entertainment industry has worked to shape an apocalyptic image in our minds in the case of a nuclear war. Most of this information is exaggerated and nonfactual.

To address this, below are some myths and facts that are necessary to learn before delving into survival skills necessary in the case of a nuclear war.

Nuclear Weapons Do Not Pose Any Real Threats

This is a myth.
The fact is that there exist about 26,000 nuclear weapons worldwide, some of which are ready to be launched in a moment's notice. They pose a great threat to global security as a single bomb dropped in a city could kill millions of people. Unless we suddenly decide to get rid of nuclear weapons, which is unlikely to happen, then they will be used again. Whether this will happen intentionally or by accident, the effect will still be devastating.

Nuclear Weapons Can Be Used Legitimately

Another myth to this is that there is any legitimate use for a weapon that has the potential to wipe out an entire population of a given place.

The fact is that nuclear weapons kill indiscriminately. Their long-term effects are widespread and not just to the human race but pose a danger to the environment, as well.

Nuclear Weapons Pose A Threat To Terrorists

This is a myth as most people are under the assumption that terrorists are rational human beings.

The fact is that a nuclear weapon is not a deterrent to terrorists and cannot be used as a counterthreat without harming more than its intended target.

No Leader Would Be Crazy Enough To Actually Use A Nuclear Weapon

This is a myth as, historically, leaders of nuclear-armed countries have stated and used nuclear weapons before. It would be quite naïve to assume

that they have developed a change of heart in recent years.

For instance, the US leaders used nuclear weapons in World War II against Japanese cities. The US leaders are considered to be highly rational, but this was a decision that caused tremendous devastation on the affected population, who are still dealing with the aftermath of an incident that took place decades ago.

There are policies in place to keep this from happening again, but given the opportunity, most leaders would use nuclear weapons and many have come close to doing just that.

Nuclear Weapons Make A Country Safer

This is a myth and couldn't be further from the truth. There are many people that believe that nuclear weapons protect a country by deterring potential threats by threatening massive nuclear retaliation.

The fact is that nuclear weapons provide a false sense of security. The truth is that there are no guarantees that a threat of retaliation will actually succeed in preventing an attack. There are many factors that stand in the way of this and some of them include irrational leaders, faulty communications that could lead to misunderstandings, and accidents. Any of these factors pose a threat and it wouldn't matter whether or not you have the nuclear weapons to retaliate. Not to mention the fact that nuclear weapons enhance the risk of terrorism.

Fallout Radiation Would Kill Everyone

The myth around this is that in the case of a nuclear war, fallout radiation would poison the air and all parts of the environment and wipe out all living things.

The fact is that in the event of a nuclear weapon explosion, some fallout particles reach the ground at the location of the explosion while others are carried away by the winds for tens of thousands of miles. The fallout particles that fall to the ground in high concentrations will take a few hours

to be completely deposited. In the case of the other particles that are carried by the wind, the fallout particles small enough to be inhaled into the lungs and invisible to the naked eye would remain airborne for weeks to years before eventually reaching the ground. This will allow for a widespread dispersal and the radioactive decay will make them much less dangerous.

What this ensures is that the danger from fallout radiation reduces with time, posing less of a danger for all living things.

Fallout Radiation Penetrates Everything

The myth surrounding this statement is that there is no escaping the deadly effects of fallout radiation as it penetrates everything.

The fact is that some gamma radiation from the fallout could potentially penetrate shielding materials and reach its occupants. However, the radiation dose that would penetrate the shelters has been compared to a smaller dose of what an average American receives from radiation exposures such as X-rays in the course of their lifetime.

In the case of a nuclear explosion, for a well-sheltered individual with concrete of about 2.4 inches protecting them, the shielding barrier would be efficacious and the effects will not be as deadly as compared to someone in direct contact of the fallout.

A Heavy Nuclear Attack Would Exhaust Oxygen From The Air

The myth around this is that a nuclear attack would set everything on fire, leading to massive “firestorms” which would exhaust the oxygen in the air and kill all sheltered occupants.

The fact is that heat radiation travels at the speed of light, and on a clear day, an air burst would set fire to easily ignitable materials and cause second-degree burns to exposed people as far as ten miles. In case the weather is dry, a larger area will be in danger catching fire, but on a cloudy day, the fallout particles in the air would be absorbed and scatter much of

the heat radiation; thus, the area damaged by a fireball would be less than the actual area of the blast.

Evidently, firestorms occur when the concentration of combustible materials is high. For instance, fallout shelters in rural and suburban locations are less likely to experience dangerous firestorms.

Everyone Was Killed In The Hiroshima And Nagasaki Nuclear Attack

The myth surrounding this is that everyone was killed either by the blast, consequent radiation, or fire from the nuclear attack.

The fact, however, is that some of the people who survived uninjured were inside tunnel shelters. These tunnels were built for protection against potential air raids and were located as close as one-third mile from ground zero, which is the point directly below the explosion.
There were many family shelters that were earth-covered that ended up undamaged in areas where all the buildings were destroyed by the blast and fires. The blast-resistant shelters carry great life-saving potential that has been confirmed by blast tests and proven in war.

People Will Starve To Death After All The Food And Water Has Been Irradiated

The myth surrounding this is that food and water will be poisoned by fallout, leading people to starve to death.

The fact is that while the fallout particles could mix up with food and water and make it harmful for consumption, any food and water in air-tight containers will not be contaminated by fallout radiation and will be safe for consumption. You could get rid of fallout particles by peeling fruits and vegetables and getting rid of the uppermost grain in storage where the fallout particles may have settled.

In the case of water, deep wells, covered tanks, containers, and other reservoirs would not be contaminated.

Unborn Children Of People Exposed To Radiation Will Be Genetically Damaged

Many believe that people exposed to radiation from nuclear explosions will have children or grandchildren that are genetically damaged. These unborn children are considered delayed victims of nuclear war.

This is a topic of debate as getting subjected to high doses of radiation has the potential to genetically affect the fetuses. However, most of the fears on the damage caused by the radiation to future generations has been exaggerated and most of the claims are not supported by scientific findings.

Taking into consideration the most infamous nuclear attack, a study conducted by the National Academy of Sciences, published in 1977, concluded that the incidence of abnormalities among children conceived by parents exposed to radiation is no higher than that of children conceived by non-exposed parents of Hiroshima and Nagasaki nuclear attack.

Increased Cases Of Blindness And Cancer For Survivors

The myth here lies under the assumption that in the case of a nuclear attack, much of the protective ozone would be destroyed, allowing too much ultraviolet light to reach the earth's surface and thus, blinding all insects and birds. This would result in people having to work from indoors and wear protective gear to protect themselves from sunburn every time they went out.

There would also be a massive reduction in food production as plants would also be affected by this.

The fact is that while large nuclear explosions release huge amounts of nitrogen oxides into the atmosphere, the percentage of stratospheric ozone

that would be destroyed by a given amount of nitrogen oxides has been greatly overestimated. Theoretical calculations and models have stated a considerable reduction of the total ozone, but empirical data indicates that there is either no reduction or a much smaller one than the estimated percentage.

While nuclear explosions cause considerable risk to the environment and the health of its inhabitant, the effects can get exaggerated.

Nuclear Winter

The theory is that if 100 megatons, which is less than one percent of all nuclear weapons, are used, then the world will be frozen and become enveloped in smoke and darkness from fires and dust that will prevent the sunlight from reaching the earth's surface. This will inevitably lead to worldwide famine as a result of frozen crops and half of mankind will perish.

The fact is that the "unsurvivable" nuclear winter theory has been discredited on numerous occasions. The aim of the theory is to campaign against nuclear weapons as it disapproves of the chances of survival for everyone. What it does, instead, is frighten people into believing that looking for alternative survival means is useless and a waste of effort and resources.

That said, the serious climatic effects of a nuclear war are not to be taken lightly. However, in the case of a nuclear war, the millions of people that could die from starvation caused by disastrous shortages of essentials is far greater than possible deaths from uncertain climatic effects.

Nuclear Weapons Are Well-Protected

You would expect that countries have learned from the past and got rid of weapons with the potential to kill millions of people or, at the very least, guard them well, but this couldn't be further from the truth.

Many people have such undiluted trust in the government and believe that they are well-protected. However, in recent years, we've seen a large

number of terrorists manage to infiltrate government facilities and access nuclear weapons. A coup in a country could also lead the people coming into power to get careless with these destructive instruments.

The fact is, the more nuclear weapons and nuclear-armed countries there are in the world, the greater the possibility of mishandled nuclear attacks, some of which will fall into the hands of terrorists.

Psychological Preparations

As nations rise into power, the threat of a nuclear war only seems to grow, and this creates a deep sense of anxiety in a lot of people. These feelings are valid as the impacts of a nuclear attack would be catastrophic.

It is important to understand the dangers that come from nuclear weapons and how you would react in such an event for a better chance of surviving. Most people freeze in the face of danger and this could result in unexpected hazards.

You are more likely to survive a nuclear attack when you learn in advance all the necessary survival skills and the facts that lie behind the event, but first, it's important to recognize the emotions that accompany that.

Feeling fearful or anxious at the thought of a possible nuclear attack and the consequences of that is quite normal. As mentioned previously, the existence of nuclear weapons in itself is a threat and the effect is almost inconceivable; so much so that fear is warranted.

However, terror is a destructive emotion in most cases; yet, it can also be a lifesaving emotion. We tend to increase our ability to work harder and longer when we believe death is close at hand. Trembling hands and legs do not necessarily mean that you become ineffective, especially when the threat of death feels so imminent. It is also fine to be afraid of getting trapped in a blast shelter as much as you are of an actual nuclear attack, but you can deal with fear by building two escape openings.

There are two stages of reaction to terror and the first is apathy. This is the point where people become indifferent to their own safety and find it hard to save themselves or even their families. The second stage is compulsion and here, they are forced to act. It is in your best interest to understand human traits and behaviors to effectively cope in the case of a nuclear attack.

Other than fear and terror, the most common reaction to danger is emotional paralysis. This is the numbing emotion that overwhelms one in the face of danger. An advantage to this reaction, however, is that it allows a person to avoid being overwhelmed by compassionate emotions and think clearly.

Fear and terror are gripping emotions that can have affected people degenerate into the anarchy of an every-man-for-himself struggle. People are capable of displaying self-sacrificing strengths in the face of a catastrophe like risking radiation and other dangers to save people trapped in debris or feed others who are starving.

An essential part of psychological preparation to surviving a modern war lies in a strong society. It is founded on the assurance that in the case of a great catastrophe, many citizens will be willing to work together and help each other with little regard for loss or the danger that lies there within.

Beliefs, Feelings, And Actions Regarding Nuclear War

There is a huge contrast between the reaction of a survivalist and the average citizen in the face of a nuclear war.

Typically, there is a consistent line in people's beliefs, feelings, and actions, and this enables a psychological equilibrium. However, in the context of a nuclear war, the discrepancies between an ordinary person's beliefs and how they feel and act begin to show.

In recent years, psychologists have anticipated people's fear of nuclear weapons with an aim to figure out a way to assuage their fears by

promoting public trust in atomic experts. Their research led them to believe that there are fewer people that are actually worried about nuclear wars than they anticipated. The emotion exhibited by the public is one of indifference when confronted by the dangers of nuclear weapons.

This reaction is viewed as fear suppression, denial, psychological numbing, and apathy, which is in great contrast to the reaction of a survivalist. The discrepancy between people's nuclear understanding and their emotional and behavioral concerns juxtapose greatly. This indifference is attributed to people's feelings of helplessness and incompetence.

Warning And Communications

A nuclear explosion can occur within a few minutes of warning. The fallout is most dangerous in the first few hours after an explosion as this is when it gives off the highest level of radiation. It takes at least fifteen minutes for fallout to arrive back to ground level, at least in areas outside the immediate blast radius.

It is important to make sure you are safe when the initial blast happens and during the fallout to protect yourself from heat and radiation. For this to happen, you need to pay attention to warnings and communications and immediately seek shelter in the nearest building when an alarm is sounded.

Once you are safe indoors, make sure to stay away from the windows, and in case you are sheltering people who are not a part of your household, be sure to wear a mask and maintain at least a distance of six feet between you.

In the case that there is no alarm sounded and you find yourself outside when the blast happens, take cover behind something that might offer protection and lie face down to protect the exposed skin from flying debris

and heat. You should also avoid touching your eyes, nose, or mouth. Once the shock waves have passed, you have less than ten minutes to find adequate shelter to protect yourself from the fallout. The important thing is that you are inside when the fallout occurs as this is the point where it has the highest level of radiation.

It is important to stay tuned to be privy to instructions from emergency response officials as they are the ones who will offer information on routes, procedures, and available shelters for survivors.

Warning The Public Of Nuclear War

There have been debates where people question who should warn them of a nuclear attack. Who will the people believe?

There is a short warning time as most of it is measured in minutes. There is a high chance that the warning will not get to people on time. We rely on computers to automate the warning process and control communications, but how reliable are they?

Can you depend on the computer to offer the correct data? On June 3rd 1980, the display system at a command post of the Strategic Air Command in Nebraska, indicated two ballistic missiles headed toward the United States and the number increased eighteen seconds later. Personnel at the Strategic Air Command called the North American Aerospace Defense Command only to learn that it was a false alarm, and after a period, the screens cleared. However, this was not the last of it.

So, the question remains: Who is supposed to alert the people in the case of a nuclear attack? Another instance of a false alert happened in Hawaii in 2018, but unlike the first case, the missile alert was sounded to the public.

This alert was sent out by a worker in the state of emergency. The alert was sent to people's smartphones and it warned of the ballistic missile threat.

The message read, "Seek immediate shelter. This is not a drill." The message was sent by mistake but it caused a lot of chaos with the citizens

going into a panic. However, there was a large percentage of the population that completely ignored the message.

Despite the panic and lack of it in some people, what this error revealed was that it's not clear who is supposed to warn people of a potential nuclear attack.

Alerts are often sent by agencies with Integrated Alert and Warning systems that send emergency alerts to all digital media. The people responsible for sending these alerts are federal, state, and local agencies. However, federal officials claim that it's not their role to warn the public of missiles.

Importance Of Adequate Warning

Timely warning saves lives. It gives people ample time to find shelter. When the nuclear weapons exploded in Hiroshima and Nagasaki, it caught them by surprise. There was no warning sounded as it was the first of the nuclear weapons to ever be used in war. However, the majority of the survivors were those who were already inside their raid shelters.

Having a shelter wouldn't mean much if the warning isn't sounded early enough to give you time to heed the warning and get to them.

Types Of Warnings

The major types of warnings are strategic and tactical.

Strategic Warning

This involves observing the enemy's actions and anticipating them. Say for instance a country with a nuclear weapon threatens massive nuclear destruction on another. This should act as a warning to other countries with daily coverage and discussions on the matter. If the Russian army began to use tactical nuclear weapons against a country in western Europe, with strategic warning Americans can receive a warning to either evacuate or have more time to build or improve shelters. This offers a better chance of survival in the case of an attack.

Tactical Warning

This is where a country would receive a warning of a nuclear attack a few minutes after it has been launched. They would detect this via radar, satellites, or other sophisticated means. This information would have to be first re-evaluated by top-level officials before being transmitted to the rest of the country.

This would allow for a short time for people to react. Fifteen to forty minutes of time-lapse in the tactical warning is not adequate for people to react as compared to a strategic warning.

Warning System

Warning systems are designed to give civilians timely warnings. The means differ depending on the country. The most common systems are siren signals, radio, and television announcements. However, in the United States, the National Warning System provides attack information to other official warning points nationwide that are responsible for sounding the local sirens and initiating TV and emergency broadcasts. The information from National Warning System is provided by the military and then forwarded to the right channels so that the message gets to the civilians on time.

Siren Warnings

In the case of an immediate attack, this warning signal is often sounded. It is a loud wavering wailing sound that lasts three to five minutes before pausing briefly and staring all over again.

The signal is a call for protective action and when sounded, it is very important to seek the nearest available shelter. A federal policy indicates that the attack warning signal will not be sounded unless an attack on the United States has been detected, so it is important to take the sirens seriously. It is also important to ensure that the information you get after you are sheltered comes directly from official sources.

Limitations of Siren Warnings
In the modern age, with urban development, there is no guarantee that the siren will get to all the citizens. When the system was founded, the city systems were nothing like they are today. Only a small fraction of urban Americans would hear the sirens in the first place.

As proven in the past, people will not believe a threat of danger until it is right in front of their faces. Take for instance what happened in Hawaii in 2018. Despite the alert being sounded, albeit false, there were people who were not bothered by the danger that lay therein. Some people who hear the siren may not recognize it for the warning it is supposed to be.

A well-coordinated attack has the potential of knocking out public power, which is crucial for sounding the alarm. This would be possible when submarine-launched ballistic missiles are denoted at high altitudes producing electromagnet pulse effects intended to disrupt military communications and potentially knock out the power. This would not only affect the siren but also cut off broadcasting stations.

Radio Warnings

The warning sounded on the radio would be broadcasted by the Emergency Broadcast System.
This broadcasting system uses AM as the primary means but FM and TV stations are included as backup.

If the Emergency Broadcast System is not put off by the Electromagnet Pulse effect or other effects from the explosion, it will give information to those areas the siren could not reach.

Warning Given By The Attack Itself

In the case of a nuclear attack, the majority of the people would not be injured by the first explosion. In an all-out nuclear attack, the first explosion

will offer a warning for people to immediately seek shelter before the next missile hits.

For the majority of people who have no idea how the other warning systems work or are not exactly sure of the seriousness of the issues, an explosion would be all the signal they need to get moving.

How To Respond To Unexpected Attack Warnings

Learning how to respond to unexpected warnings is crucial for your survival.
In the case of extremely bright light, the human reaction is to capture and record the dazzling bright light. If the light is close enough for you to see it, then it means you are close to danger and need to seek immediate shelter. In clear weather, the light alone has the potential to damage the viewer's eyes even with an explosion as far as a hundred miles, not to mention the damage the heat would cause.

The first reaction, before taking your phone and recording the moment, is to look down and away from the probable source or get behind something to shield you away from the thermal pulsar's light and burning heat. This heat and light last for several seconds—44 seconds if from a 20-megatron surface burst and 11 seconds if the thermal pulse is from a 1-megatron surface burst.

If you are inside the house when this happens, stay out of rooms with windows. You can run to your basement or if you already have a shelter close to your residence, this would be the time to get you and your family inside. If the shelter is not close, it's important to stay inside and not leave the cover of your home immediately. At least wait two or three minutes after seeing the light before going out.

You can estimate the distance between yourself and an explosion from its light's intensity, so you need to be in cover for at least two minutes before looking up. The cover is important not only to offer protection from the

light but also to protect you from the blast wave as it travels faster than the speed of sound (about 1 mile in 5 seconds).

If the blast and sound don't reach you within two minutes after seeing the light, then it's possible the explosion was over 25 miles away and you can safely leave the cover and seek alternative shelter. Despite the distance, it is very important to stay away from the windows. You may not feel the blast but you need to stay away as windows can be shattered by explosions from a hundred miles away.

If the electric power goes off, effectively cutting off broadcast communication, a battery-powered radio could come in handy to find a station still broadcasting.

Remaining Inside Shelter

A few hours after the warning is sounded, whether or not the attack took place, people will be tempted to leave their shelters to assess the situation. If the explosion did take place, you need to remember that fallout takes time to settle on the ground, and the longer you stay inside, the more you reduce your chances of being affected.

In the event that the explosion did not go off, you need to wait for communication from the right channels before leaving the safety of your shelters. If your area has been flagged as probably a target for a nuclear attack, you can stay inside your shelters for two or three days until official communications are made.

The dangers of fallout are immense as they have the potential to cover most of the United States within twelve hours of the explosion. Weather conditions such as strong winds could cover even a larger area. It's important to take safety precautions, and if not forced by hunger or thirst, then you should stay within the safe confines of your shelter.

Evacuation

Every country has a national emergency response plan that is activated in the event of an attack. This plan would come into effect by including federal, state, and local agencies. However, you still need to have a personal plan to evacuate in case of an emergency. This plan would save you from fatal exposure to fallout radiation and blast and fire dangers.

In the event of a warning, there are situations that could call for you to remain where you are and others that require immediate evacuation as discussed below.

Highest Risk And High-Risk Areas

People in high-risk areas would be those in buildings likely to be destroyed by the blast or fire. Any area within 150 miles of the blast would be considered a high-risk area.

Additionally, a person in the open for at least two weeks after fallout deposition is at a high risk as they would receive a radiation dose of at least 10,000 R.

Surviving in high-risk areas would require you to stay within the walls of a good shelter for at least two weeks, after which, you can leave and drive to an area relatively free of fallout exposure.

An adequate fallout shelter to aid with this would be one that reduces the radiation dose to less than 1/200 of the dose you would have otherwise been exposed to if you were outside during the blast. Say for instance, the radiation you would have been exposed to had you been outside is a dosage of 20,000 R, an adequate shelter with great protective factor would reduce the dosage considerably. While a home basement is great for protection against the initial blast, it doesn't offer the same level of protection as a dedicated shelter would.

Areas where the two-week dose is between 5,000 and 10,000 R are also considered to be high risk and a fallout shelter would be essential.

While having a clear map of high-risk areas is advantageous in saving lives, the biggest drawback to this is that people who are marked outside the area often misinterpret it as a signal that they are safe. They often believe that they are safe from the fire, blast, and even worse, the deadly fallout just because they are marked out of the “hot spots.”

To Evacuate Or Not To Evacuate

Getting out of high-risk areas when a warning is sounded is key. In the past, the United States' capabilities of crisis evacuation, whether it was from a natural disaster or another cause, have all been approached in a very poor manner. Many lives have been lost due to this very reason.

Whether or not to evacuate in the face of danger is a personal decision as a compulsory evacuation during a war crisis is not part of any official American evacuation plan. In the event of a nuclear attack, the choice to leave or stay in a high-risk area and risk the lives of your family solely lies on you.

An added advantage of heeding a warning early on and evacuating even before the authorities recommend leaving is that you avoid a spontaneous evacuation. Imagine being in a position where everyone in the area is evacuating at the same time. The massive traffic jam that could last for hours to days, the panic, and other complications you are liable to face.

There are areas where local civil defense war-crisis evacuation plan is well developed and while this is great, people living in these high-risk areas would do well to have their own plan in motion for better chances of survival. You could achieve this by working out the directions and distances to localities least likely to be endangered by heavy fallout.

Favorable Factors For Evacuation

When you live in a high-risk area and you have transportation in the means of a car with enough gasoline, then it is favorable for you to evacuate to a lower-risk area.

Your health should also be a preponderate factor. You can evacuate when you are in fairly good health or there is someone capable of taking care of you.

Your responsibility to the community is another determining factor. If you work in public service as a policeman, fireman, or emergency telephone operator, then you have duties tying you to the area. In the Hawaii false missile alert, while some people were panicking and getting ready to hightail it out of town, people in public service carried on with their work.

When you have the tools to build or improve a fallout shelter and all the basic necessities like food and water for sustenance in the area you intend to go to, then evacuation is plausible.

Unfavorable Factors For Evacuation

When you live outside high-risk areas and can build an effective fallout shelter, then evacuation is not recommended.

If you have no means of transportation or believe the roads are blocked when you finally make the choice to evacuate, then evacuation should be delayed until the necessary means become available.

When you are sick or lack the will to try to survive in the face of danger, then evacuation poses a greater threat to your survival outside.

When, for whatever reason, you cannot leave your home area for a period of time without hurting others. An every-man-for-himself mentality is not a privilege afforded to all professions, especially not in times of crisis.

If you lack the tools and means necessary for a successful evacuation, then acquiring them should be prioritized before evacuation.

The Evacuation Checklist

When you are under pressure to make a decision with a looming threat, having a list of things you need to do will make the process easier for you

especially when it's your first time evacuating an area.

Items for building or improving a shelter should be key. To help with the process, categorizing your materials will help with ensuring you don't leave anything of importance and also help with loading them in your car.

Most Important Items To Take With You

Survival Guide. In the first category, you can have survival instructions such as a guide to shelter building, maps, a battery-powered radio with extra batteries, and a fallout meter.

Tools. In the second category, you can include tools, such as shovels, knives, pliers, work gloves, saws, and other building tools as seen in the shelter building guide.

Shelter-building components. The third category would contain rain-proofing materials to aid in shelter building. A homemade shelter-ventilating pump such as a KAP would also be included in this category.

Water. The fourth category would have small containers filled with water and water-purifying materials such as Clorox, or alternatively use small plastic bags and pillowcases.

Peacetime Valuables. These would include credit cards, money, valuable jewelry, checkbooks, and basically anything of importance you would consider negotiable security. Evacuations don't always hold the promise that you will find your residence as you left it, so it's important to take your important documents with you for safekeeping.

Light. Anything from candles to flashlights and cooking oil lamps fall into this category.

Clothing. Even though the evacuation happens in the summer, there is a need to take with you protective clothes such as raincoats. Cold-weather boots and warm outdoor clothing would fall in this category.

Sleeping gear. A blanket or two for each person or a compact sleeping bag.

Food. Convenience foods that require no cooking are better for this situation. For this, you can include a pound of salt, a bottle opener, a knife, at least 2 cooking pots with lids, and one eating utensil per person. Food for babies is a high priority and should be included in the list.

Sanitation items. Plastic bags or plastic containers to collect excrement. Toilet paper, diapers, soaps, and tampons should be given top priority.

Medical kit. Additional priority items include a first aid kit, antibiotics, spare eyeglasses, specially prescribed medicines, and potassium iodine to offer protection against radioactive iodine.

Additional Items When You Have Space Left In Your Car

Miscellaneous. An insect screen, insect repellents, or a mosquito net to add to your shelter in case there are insects in the area you move to. You could also take with you a book or two.

A tent, camps stove, and additional kitchen utensils.

Evacuating By Car

You can skillfully load your car for the trip by making room for supplies by taking out the back seat to create more space. On top of the car, you can load blankets, the tent, and a small rug and tie them under a ¼ inch of nylon rope. The two looped ropes would go over the load and around the top of the car, passing over the closed doors.

The major hazard to evacuation would be road blockage or traffic resulting from stalled vehicles. You can inspect the situation and decide whether there is an alternative routing or how you could help move the stalled cars.

Shelter

Evacuation is not an option for everyone. There are millions of Americans with homes in urban areas and not all of them would be subjected to the dangers from the blast and fires. For whatever reason, despite being in high-risk areas, many will opt to stay back.

In this case, the alternative would be to build earth-covered shelters near their homes and fill them up with life-support essentials. Shelters are not options limited to people living in high-risk areas only but also for people living at least five miles from the high-risk area.

Fallout shelters are designed to offer protection against radiation from fallout particles and although don't offer protection against the blast, there are better types that prevent occupants from getting killed by the blast effects in a situation where the chances of survival are minimal.

Adequate Shelter

Existing buildings may be able to offer protection from the blast and fire but they are not adequate in protecting you against fallout if the winds blow in your direction during deposition; hence the need for adequate sheltering that would offer protection against blast, fire, and fallout.

In order to improve your chances of survival, you need to have an adequate shelter fully equipped with all the basic necessities enough to last you for at least a couple of weeks. Blast tests have worked to prove that earth-covered expedient fallout shelters can survive blast effects severe enough to demolish a house. This gives you a better chance of survival.

The earth-covered shelters can be built in a matter of 48 hours or less to offer protection against fallout, and this is an added advantage, especially when you don't have time to evacuate. Special blast protection features, however, require more work, materials, and skills to create.

For a successful outcome, you need to work hard to successfully build the earth-covered expedient shelter without waiting on the country's highest officials to supply you with motivation or practical survival instructions.

Shelter Against Radiation

In building an earth-covered shelter, there are a few things you need to follow. For one, to avoid the manual work of cutting and digging through roots, you need to make sure the shelter is not close to any trees. You can use poles of about 150 feet and dig trenches at the spot you pick to build your shelter.

Ensuring the earth is firm and stable will enable the trenches to be dug in vertical walls but in the case that the earth is less stable, you can increase the width at the top of the trench from 3 to 5 feet. You can leave the trench as it is but if you have more time, you can cover it with walls to make sure you are more comfortable. To achieve this, you can use plastic garbage bags, bed sheets, and other pieces of cloth available to make wall coverings.

A 6-person shelter can be at least 3 feet wide, 4 feet high, and 16 feet long, and digging a small stand pole hole at one end so that each occupant can stand and stretch when they need to will be preferable.

The trench's entrance and emergency exit can be dug 22 inches apart to minimize radiation entering the shelter through these openings. Depending on the time you have to create the shelter, the trench can be enlarged to make a much more livable room without disturbing much of its completed roof and in this, the 9-foot roofing poles can be placed off-center, with the two extra feet resting on the ground to the right of the main room.

Expedient shelters need to be built in a way that they can be enlarged to make semi-permanent living quarters so that when it becomes safe to emerge, albeit for limited periods, the occupants can spend much of their time in at least a comfortable rainproof shelter with excellent protection against continuing radiation.
In the case of cold weather, living in this would be more comfortable as compared to living in a tent or shack.

Once the fallout radiation outside has decayed to at least 2 R per hour, you can enlarge the small vertical entrance and convert it into a steeply inclined stairway.

You can enlist the help of your family members to build the pole-covered trench with the use of hand tools. With their help, you can succeed in building an expedient earth-covered shelter in less than twenty-four hours.

A disadvantage, however, to this kind of shelter, is that gamma rays from fallout particles on leaves can reach and penetrate the shelter if it is situated under a tree.

An advantage to this, if you are not located directly under a tree, is that fallout particles on the ground would be scattered or absorbed by tree trunks, striking rocks and houses before reaching your ground shelter.

Types Of Shielding

The main purpose of the shelter is to provide protection against radiation and this is achieved by utilizing two types of shielding.

Barrier Shielding

In the event of fallout, this kind of shielding provides an effective barrier by absorbing about 99.9% of all the gamma rays from the fallout. Only one gamma out of a thousand would be able to penetrate the 3 feet of earth and strike the occupants in the trench. Rays from closer than 3 feet would be attenuated according to the thickness of the earth between the occupant in the trench and the fallout particles, and those farther away would be negligible.

This kind of barrier shielding would not protect the occupant from sky shine that is caused by gamma rays scattering after striking free atoms in the air. The occupant's head, which is just below ground level, would be exposed to many gamma rays as if it were 3 feet above the ground.

The open trench keeps the fallout out of the trench but exposes them to sky shine from heavy fallout, and this could deliver fatal radiation dosage from all directions. If the trench is deeper, then the occupants could escape more of the scattered radiation.

For better protection, you need coverage on all sides by including the overhead. This can be achieved by shoveling additional earth into a waterproof material that serves as a buried roof. These materials could be plastic and they would have to run off the sloping sides and away from the shelter.

Geometry Shielding

This shielding reduces the radiation dose by increasing the distance between the shelter occupants and the fallout particles and providing turns in the openings leading into the shelter.

This helps create a distance between the harmful light and radiation that would otherwise reach you. Say you were in the basement of your house, and the fallout particles fall on the roof of your house, you are likely to receive a much smaller radiation dose from particles and get exposed to gamma rays than the people on the floor above you.

It is important to note that fallout shelters do not offer additional protection against initial radiation emitted from fireballs of nuclear explosions. Additionally, initial nuclear radiation would be greatly reduced in passing through miles of air between the fireballs and the fallout shelters. If the explosion is small, a larger dose of initial nuclear radiation will be delivered at a given blast overpressure distance from ground zero.

Although several types of expedient shelters are built with yielding materials to withstand great pressures, you can use earth arching to strengthen the shelter. This is carried by shifting the roof to the overlying earth particles and arranging them in such a way that an arch is formed. This arch aids in carrying the load to surrounding supports adjacent to the earth that has not been disturbed. The yielding roof must be at least half the width of the roof between its supports.

Shelter Against Beta And Alpha Particles

Other than the light-like gamma rays a shelter offers protection from, you might also need protection from the two types of hazardous nuclear particles the fallout radiates. People in shelters would be least affected by these radiations when the fallout is deposited.

Beta Particles

These are high-speed electrons given off by some radioactive atoms in fallout. The highest energy beta particles can penetrate 1/8 inch of wood, water, or human tissue. If your shelter can keep out fallout particles, then you have a better chance of being protected from beta radiation.

A serious danger of this radiation comes from contaminated food, drinks, and burns from fresh fallout particles. Supposedly the fresh particles remain in contact with the skin for several minutes, then it will result in beta burns. Fresh particles are particularly dangerous as they are more radioactive compared to fallout particles that are no more than a few days old.

Beta burns could also result in the fresh fallout particles getting inside one's nose and ears along with dust and sand, especially during a dry windy weather. Washing them off will prevent beta burns, but if there is no water to aid with that, you can brush and rub the fallout particles out of the skin.

Ordinary glasses and clothing offer good protection to the skin against beta radiation. When exposed to the highest-energy beta radiation from fresh fallout particles, the irradiated clothing should be removed as soon as possible, or at the very least brushed off before entering a shelter room. It is important to note that days-old fallout particles will not cause beta burns unless large quantities have been on the body for hours.

When exposed to beta radiation, the skin will result in an itching and burning sensation after a time and then you will experience extreme discoloration a few days later. Beta burns can heal after a few weeks but they could also result in ulcers. Consuming food and water radiated with beta radiation could result in thyroid abnormalities.

On a dusty and windy day, you can filter out much dust by breathing through a dust mask or a piece of cloth to protect yourself from the dangers of inhaling dust-contaminated fallout.

Alpha Particles

These particles are given off by some radioactive atoms in fallout and are identical to the nuclei of the helium atoms. Unlike the beta particles, these have very little penetrating power and 1 to 3 inches of air can stop them.

Unless the skin is lacerated, it is highly unlikely for these particles to break through as they cannot even penetrate a thin fabric.

These particles are particularly hazardous if materials that emit radiation, such as the radioactive element plutonium, enter the body and into the bone tissue or other parts of the body.

Any shelter that protects you from fallout particles would be effective in protecting you against this radiation danger. The dangers associated with this radiation are low compared to beta and gamma as long as you don't get exposed to food and drinks contaminated with a large quantity of fallout.

Shelter Protection Against Other Nuclear Weapon Effects

Flash Burns

These are caused by intense rays of heat emitted by fireballs within the first minute of the explosion. The thermal radiation travels at the speed of light, burning exposed people and materials before the blast wave. In the case of rain or cloudy weather, this radiation is reduced considerably, but on a clear day, anyone exposed at least 25 miles from the explosion spot will receive severe burns.

People close enough to ground zero could be set on fire and their bodies will be severely burned if they don't seek an adequate shelter.

Fires

Fires resulting from the blast or as a result of thermal radiation could endanger the lives of the people seeking refuge in the flammable buildings. The dangers here lie in carbon monoxide poisoning, burns, and inhalation of toxic smoke.

Flash Blindness

This would be a result of being exposed to intense light from an explosion miles away. Depending on the distance, the blindness may be temporary and one can recover in a matter of seconds, minutes to hours.

One does not need to be staring directly at the explosion to be exposed to flash blindness; it can also result from scattered light, especially when the explosion happens at night.

Shelters with no openings would offer adequate protection against the light, but if you can't get to one in time, you can opt to protect yourself from retina burns by closing your eyes or getting behind something that casts a shadow.

Basement Shelters

In an all-out attack, most of the houses would be destroyed and, in this case, endangering the lives of their occupants. However, outside the blast and the fire hazard, seeking shelter inside a building would offer considerable security from fallout radiation and flash burns.

As much as earth-covered expedient shelters are the best option in the case of a nuclear explosion, there are factors that might make it impossible to work on one. For one, if the warning is sounded four minutes before the attack, that gives you hardly any time to work on the shelter. In any case, seeking shelter in a basement or in another existing structure is a better option for protection than being out in the open.

An added advantage to seeking shelter in a basement, other than the obvious protection it affords, would be the amenities available. Food, water, hygiene, and adequate ventilation and cooling would be available in the basement.

If there are windows in the basement, they all need to be boarded up and, adequate ventilation and cooling should be assured by use of a homemade air pump.

Public Shelters

Most attacks happen without much warning and in the event of an unexpected attack, it would be safe to seek refuge in a public shelter. This

way, you get protection from blasts, fire, and fresh fallout.

A large majority of officially surveyed and marked shelters offer better protection against radiation than most basements. If you are preparing to go to public shelters or you find yourself in one, you need to be well aware that many lack forced ventilation. and in case they do have them, they could be stopped by loss of electric power due to any effects caused by the nuclear explosion.

Food and water could also prove to be a challenge in public shelters. Bringing your own survival items would ensure better reception in the accommodation.

A huge disadvantage to this kind of sheltering is how unequipped it can be, worsened only by the fact that it would house a crowd of people.
Given the choice, it would work in your favor to build a small earth-covered shelter as opposed to seeking the accommodation of a public shelter as, of the two, the latter is less equipped to offer protection.

Advantages And Disadvantages Of Earth-Covered Expedient Fallout Family Shelters

Advantages

They offer better protection against the blast, fire, and heavy fallout than one would get from a building.

They take a considerably short time to make, especially when you enlist the help of men, women, and children.

Advanced preparation would allow you to get enough water and food for your family that would otherwise be scarce in a public shelter.

Crowded shelters mean having to deal with mass hysteria and exposure to infectious diseases. An earth-covered shelter limits that exposure as it’s just you and your family and hence easier to manage their emotions.

Disadvantages

The biggest issue with this is meeting the requirement in terms of space, material, and tools to work on the structure, especially under limited time.

The weather could also be a limiting factor as it would be hard to dig trenches during heavy rains and snow. If the ground is frozen then digging it will be a challenge.

It does not allow for large capacity, at least not like the public shelters that could easily house your entire family.

Lacking the right instruments and instructions could make the shelter dangerous. The last thing you want is for it to collapse while you are taking shelter under it, so it is important to ensure that you follow the right measurements and use all the right materials.

Advantages And Disadvantages To Public And Other Existing Shelters

Advantages

They are easier to access and don't require manual labor and supplies that would be needed in building an earth-covered expedient shelter.

They offer fair protection from getting exposed to fallout compared to those in the outdoors and to the people at home.

You can share food and water with those in the shelter who could not manage to bring any with them and the vice versa.

Disadvantages

Accessing most of them can be challenging especially if they are not close by the time the warning comes.

They don’t offer adequate protection against blast, fire, and carbon monoxide poisoning.

Food and water can be a challenge in these locations.

Lack of or unreliable air pumps that are responsible for maintaining durable conditions by supplying adequate ventilating cooling air, especially in shelters below ground.

Unreliable sanitary facilities and other basic survival equipment, and a lack of fallout meters or people who know how to use them.

Large crowds would also mean getting exposed to diseases, different personalities that are bound to crash, and panic is hard to control in a heavily crowded room.

Advantages And Disadvantages Of Expedient Blast Shelters

Advantages

Occupants in these shelters could survive uninjured in extensive blast areas and in cases where the fallout shelter cannot protect you against injury or death.

The blast shelters also offer protection from shockwaves, blast winds, burns, and dangerous overpressures caused by heated air. These shelters are tested in defense Nuclear Agency blast tests to ensure that they can indeed stand all these effects other forms of sheltering don’t protect against.

Disadvantages

They require a little bit more time, materials, skills, tools, and basically more work than a fallout shelter would need.

They also need to be situated far from buildings or other structures that would likely catch fire and produce large quantities of carbon monoxide and toxic smoke.

The ventilation system in blast shelters allows for more fallout particles if not set to filter them out.

Protection Against Fires And Carbon Monoxide

Fire ranks third as one of the main causes of high fatalities in the event of a nuclear explosion. Direct blast ranks first as it covers a large fraction of area in a matter of seconds and therefore kills many people. The fallout radiation ranks second as it has considerably fewer fatalities than the blast but more than firestorms.

Facts About Fire Hazards

Firestorms are very dangerous but fatalities related to them are very few. Those in danger of being killed by firestorms are the people who live in cities or areas where the buildings are so close to each other.

In the case of Hiroshima, a firestorm burned down almost all the buildings in the area as a result of being closely packed together. Some of the fires were caused by heat radiations and others were due to the blast. The fact

that some buildings contained combustible materials, such as wood, helped the fire spread even further. Strong winds also helped spread the fire.

Another fact is that lack of oxygen is not a hazard to those in tightly closed shelters or people near a burning building. The hazard, in this case, is the toxic smoke: high concertation of carbon monoxide and carbon dioxide exhaled by the occupants in the shelters that would kill them before they even suffered from a lack of oxygen.

Fires Ignited By Heat Radiation

This occurs when the blast wave and high-speed blast winds blow out house frames, fire smolders within some materials such as dry wood, and then eventually burst into flames before spreading. Heat radiation sets fire to ignitable materials such as dry leaves, dark fabrics, and dry newspapers before spreading to other buildings.

Fires started by heat radiation are not severe and can easily be reduced by removing flammable materials from places in and around your house where heat radiation would reach them and whitewashing the insides of window panes.

In the event of heat radiation after the blast, some occupants of the shelter can quickly put out the fire before fallout is deposited. Painting a thick coating of slaked lime over any exposed wood or combustible material would help protect earth-covered shelters from heat radiation.

Forest And Bush Fires

It is not so easy to start a forest fire unless the area is completely dry. In the case of a blast, it would be difficult to have scattered forest fires unless the blast happens in a forested area.

However, mass fires are dangerous, and building a shelter close to a tree could be dangerous in the rare case that it does catch fire. The tree could fall on the shelter as a result of the fire or even prove to be a smoke hazard.

Additionally, building a shelter close to a tree also exposes you to fallout on the leaves as previously mentioned.

Carbon Monoxide And Toxic Smoke

If a building catches fire, the chances of dying from carbon monoxide poisoning are just as high as dying from the actual fire. The toxic smoke and fiery hot air are the other factors that could kill the people inside.

Multiple tests have shown that even rubble-free fires produce a high concentrations of carbon monoxide and any shelter situated close to the burning structure is at risk of getting poisoned especially when the ventilation pipes or any openings to the shelter are placed close to the burning structure.

Studies have shown that a carbon monoxide concentration of 0.08% is hazardous as it would cause headaches, dizziness, nausea, and a total collapse 2 hours after exposure.

During the firebomb raids in Dresden, Germany, out of the over 25,000 casualties, most of them lost their lives by smoke poisoning, inhalation of hot gases, and carbon monoxide.

Carbon monoxide poisoning is a more certain death cause than fallout. In case one finds themselves trapped in a shelter letting in smoke, it's important to read the dose on the fallout radiation meter and determine whether it's safe to leave the shelter and make a run for a shelter with safer ventilation.

To avoid finding yourself in such a situation, however, there would be a need to build a shelter with better ventilation and as far from combustible materials as possible.

Most shelters might be unreliable when it comes to protecting you against the initial blast, but it needs to be able to protect you against fallout

radiation, blast light, fire, and with good ventilation, fire and smoke hazards.

Ventilation And Cooling Shelters

Most shelters lack adequate forced ventilation and, as discussed earlier, this can be a problem, especially when there are firestorms.

Even without the dangers of fire, without adequate forced ventilation, the shelters would become hot and humid and its occupants would collapse from the heat. When people are trapped in a shelter to avoid the deadly fallout, the heat and water vapor given off by the body can be dangerous. Especially if the room space is crowded with people.

Learning how to keep your shelter adequately ventilated is one of the most important nuclear war survival skills, and you can achieve this through homemade devices.

Maintaining Endurable Shelter Conditions In Hot Weather

Many Americans and people from other developed countries have grown so accustomed to air conditioning that they could learn a bit about means of keeping cool and healthy by skillfully using hot, humid outdoor air. These techniques could come in handy for when they need to seek shelter from a nuclear attack.

With a single pump, the condition of a belowground shelter can improve immensely even when there is a heatwave. Listed below are cooling ways of keeping basement shelters and above-ground shelters at livable temperatures in hot weather.

1. Supply enough air to carry away all the occupants' body heat without raising the effective temperature of air by more than two degrees Fahrenheit. The effective temperature a person is exposed to is equivalent to the temperature of the air at 100% relative humidity. What effective temperature does is that it combines the effects of the temperature of the air, its movement, and its relative humidity.

2. The second way is to move the air gently to avoid raising its temperature. Under extreme heat waves, having a hotter air supply inside the shelter than the outdoors could prove to be disastrous. Body heat raises the temperature by several additional degrees.

3. The third means would be to distribute the air evenly throughout the shelter. Unlike trench shelters where air is pumped in one end and flows out the other and thus assuring good distribution of air, larger shelters don't have that option. The air is moved from the air supply and straight to the exhaust opening; anyone out of the air stream will not be adequately cooled. By using a Kearns Air Pump (KAP), which is basically an air pump that can force air to move in the desired direction, fresh air can be distributed easily throughout the shelter, keeping the occupants well fanned.

4. The fourth means would be to provide the occupants with adequate drinking water and salt. One tablespoon of salt and at least four quarts of water per day for each person will help keep them cool in extremely hot weather.

5. Dressing in fewer clothes helps with effective cooling. Bare skin ensures air moves around and evaporates sweat, thus, providing a cooling effect. It also keeps bare skin drier making it less susceptible to heat rash and skin infections.

6. You need to pump about 40cfm of air per person both day and night through the shelter so that the occupants will remain cooled even at night.

Maintaining Adequate Ventilation In Cold Weather

A belowground shelter would be covered with damp earth air in the case of freezing weather, and this can make it considerably cold for its occupants.

Under such conditions, you still need to ensure the shelter is well-ventilated to avoid a dangerous buildup of carbon dioxide from exhaled breath.

Natural Ventilation

Having adequate natural ventilation for belowground shelters is as important as it would be for an above-the-ground shelter and here's why.

An aboveground shelter has large openings on opposite sides that would allow in breeze. However, in the belowground shelters, even with a light breeze, it would be difficult for the cool air to go down a vertical entry, make a right-angle turn, and then flow through the trench.

If a chimney-like opening is provided in the ceiling, the warmer and lighter air will flow upward and out of the shelter, and an open intake vent near the floor will ensure adequate air circulation.

The chimney-type natural ventilation is most effective when the air is cool but in the case of warm weather, it is inadequate as the indoor shelter air is no lighter than the outdoor air.

Shelter Ventilation Without Filters

As much as we want sufficient air circulation in the shelter, there lies the reason you are in the shelter in the first place. If careless, the air coming into the shelter could contain the fallout particles that are hazardous when breathed in.

While the dangers of inadequate ventilation are far greater than unfiltered ventilation., it is still important to take precaution to ensure that the air coming in is clear of fallout particles.

When it comes down to it, you can use whatever you have on hand to filter the air as inhaling fallout particles is way less dangerous than huddling in a room with inadequate ventilation. As mentioned previously, you can opt to use a mask or cover your nose with a piece of clothing to avoid breathing in the fallout particles.

The fallout deposited within the first few hours after the explosion is the most dangerous, but they are also so large and fast falling that it would make it impossible to be sucked into the air-intake pipes.

When To Stop And Restrict Shelter Ventilation

In the event you observe heavy fallout reading, this is the time you can make the decision on whether or not to restrict or entirely stop ventilation. Windy weather would blow the fallout particles to your shelter, especially one with large ventilation openings.

In this case, however, ventilation should not be restricted long enough to cause suffocation. It bears repeating that inhaling fallout is less harmful than inadequate ventilation.

Another reason you would feel the need to close the ventilation is when a structure close to your shelter is on fire, thus creating a risk for carbon monoxide and smoke poisoning.

Ventilation Of Permanent Shelters

For a permanent fallout shelter that was built before the crisis, a ventilation system that can supply adequate volumes of air should be set in place. The air is pumped through an air-intake pipe and out through an air-exhaust pipe.

It should also be designed to allow natural ventilation through its entryway and emergency exit just in case you need to stay in there for a couple of weeks. You can also use forced ventilation in the case of hot spells. The manual air pump will force large volumes of air through low-resistance openings without pacing much effort into it.

Additional Guidelines

If you cannot access a shelter in time, you need to cover your mouth and nose with whatever you have on hand until the fallout cloud has passed. If

you cannot access a face mask, any other material you have like a scarf or handkerchief works, too.

It is advisable that you seal all the doors and windows and even the ventilation system until the fallout cloud has passed.

It is important to stay inside until you receive communications from proper authority when it is safe to come out.

If you must leave your shelter, you need to ensure that your mouth and nose are covered with a damp towel.

Avoid fresh food or drinking water from open supplies. Stored food and water are better suited for consumption.

Fallout Radiation Meters

Fallout radiations are received from radioactive particles distributed from a nuclear explosion and distributed by the blast.

While fallout can be produced even from an explosion in the atmosphere, it is far greater if the explosion happens on the surface. The distribution depends crucially on the weather condition as a strong wind can distribute it as far as several hundred miles from the blast point.

The lethality of fallout decreases considerably with time as short-lived isotopes decay. You can tell this by using a dependable meter to measure the fallout radiation.

In the case where the blast can put most radio stations off air and therefore cut you off from the rest of the world, the decision to stay sheltered or leave solely depends on you making the right choice. You cannot tell the levels of fallout radiation just by looking, smelling, or feeling it.

An accurate dependable fallout meter should be able to aid you in being able to tell when it is safe to leave the shelter, and how safe you can stay out of your shelter for any given amount of time among other questions you would otherwise expect to hear from the local authority.

Gamma radiation is the most dangerous radiation given off by fallout particles, and they are like X-rays, only more harmful.

The unit used to measure gamma rays' exposure is the roentgen (R) and the radiation dose rates are given in roentgen per hour (R/hr).

The quantity or dose of radiation someone receives in a given period of time determines the injuries and is suffered as a result of the dose. In the event of a nuclear attack, half of the people who receive a dose of 350 roentgen end up dying. The doses are usually measured with dosimeters by directly reading the dose between the time at which the small instrument is charged to zero and the time of subsequent reading. By subtracting the dose between the two readings, you can get the radiation dose.

Alternatively, you can choose to use a dose rate meter as it is considered the most useful instrument because you can determine great radiation dangers in different places to reduce your exposure.

Consider this—you leave your fallout shelter and learn, through your dose rate meter, that you are being exposed to 30 R/hr, and if you stay out for another hour, then you will receive a dose of 30R. After reading your meter and going back inside, if you were out for just two minutes, then you will only have received a dose of 1R.

When To Buy Fallout Meters

When making the purchase, don't expect to receive information from the government on the best available radiation-measuring instrument. Some fallout meters will have different readings, some accurate and others not so much, so it will be up to you to decide what to go with.

Some instruments offer only a measure of milliroentgen-range dose, which is 1/1000 of a roentgen. The highest dosage these fallout meters can measure is 1 roentgen per hour which is considerably low to be of much use in the case of a nuclear explosion.

Dose rate meters and dosimeters are likely to be inaccurate when used. If the instrument has not passed government quality tests, then it will be unreliable in the case of an explosion.

The Kfm: A Homemade Dose Rate Meter

The Kearny Fallout Meter is a do-it-yourself meter that is competent in its craft. This instrument has been scientifically tested to prove its accuracy and dependability. It can be built by an untrained person with common materials found in most households.

A KFM is considered to be more accurate than other factory-made radiation-measuring civil defense instruments.

Light

In the event of a nuclear explosion, chances are, there will be no electric power, and the prospect of living in darkness for extended periods of time can be frightening. In war time conditions, having even the dimmest of lighting set up in your shelter could make all the difference.

When it comes to deciding the best means to light your shelter in the absence of power, you also need to take into consideration the fact that some forms of lighting have the potential to compromise your shelter.

You have options of bringing flashlights with you and other electrically charged lighting, but if you are going to be trapped in a shelter for days or weeks on end, the electric charge won't do you much good in the long term, especially in the case of a blackout flashlights could run out of battery, so here are a few more options you could use.

Electric Lights

As mentioned previously, power can fail in the occasion of a nuclear attack. This could be a result of the initial blast that knocked off the power lines, fire, or even fallout.

In most likely of cases, however, a power blackout would be a result of electromagnetic pulse effects produced by the nuclear explosion.

Official centers do not provide emergency lights and if you are trapped inside for days on end, then it's very likely that the backup flashlight and candles you brought with you will be dead and used up.

An excellent source of low-level continuous light is a low-amperage light bulb used with a large car battery. A small 12-volt bulb in the instrument panel of a cat with 12-volt batteries will give enough light for at least ten days.
An efficient battery-powered lighting system is the best option for your shelter, but there are a few things you need to remember when using this

method of lighting.

The first is to use a bulb with the same voltage as the battery.

Use a small high-resistance wire with a car battery. An option for this would be a bell wire.

After the improvised light circuit has been circulated, you can then connect the battery.

In case of weak light, you can use reflective materials such as mirrors, aluminum foil, and whiteboards to concentrate it.

Candles And Commercial Lamps

You can bring, with you candles and matchboxes in a waterproof container to the shelter. However, lighted candles or any other form of fires should be placed near the opening through which the air leaves the shelter. This is done to avoid build-up of carbon monoxide, however slight. In case the ventilation is closed or restricted, then all forms of fire in the shelter, including the candle, need to be extinguished.

Kerosene and gasoline lamps are not an option for taking with you to the shelter as they produce dangerous gases that could cause headaches and, in some cases, even death. They also have a high potential of causing fire within the shelter when knocked over.

Safe Expedient Lamps For Shelter

These lamps are safe, long-lasting, dependable, and can be quickly made with common household materials.

Advantages Of Expedient Lamps

These lamps are safer than kerosene and gasoline lamps. The flame is so small that it will immediately extinguish when slightly knocked over. In most cases, the fuel burned is the cooking oil commonly used in the kitchen and the lamp wick is not larger than 1/16 inch in diameter.

It is unlikely to set fire to clothes or be blown out by the breeze because the flame is inside of a jar.

With the use of a small wick and flame, the lamp would only burn about 1 ounce of edible oil in about eight hours.

The small flame allows for enough light that you can use it even for reading if you managed to bring a book with you.

It can also work as an excellent trap for mosquitos and you can make this work by attaching aluminum foil. The glittering light will attract them to it before eventually falling into the oil.

The biggest advantage is you can make two of these lamps in less than an hour once you have all the material assembled. Oil exposed to air will deteriorate, so if you do make them before the crisis arises and store them, it’s best to leave them empty until you must use them.

Shelter Sanitation And Preventive Measures

Safety is key and should be prioritized in the case of a nuclear attack. However, sanitation is important if you are going to be sheltered for weeks.

One of the things you do before going inside the shelter is to ensure you remove the outer layer of contaminated clothing to eliminate fallout and radiation exposure, and if possible, take a shower to remove the fallout from your skin and hair, as well. If you cannot wash, you can use a wet clean cloth to wipe your skin and hair, but do not use disinfectant wipes on your skin.

There are additional measures that you need to take to ensure you maintain a sanitary environment. Below mentioned are measures you may take.

Clean Water And Food

To have clean water, you can disinfect it by boiling it for at least 10 minutes, or you could treat it with iodine or chlorine.

When you store your water, you need to first disinfect it by adding one teaspoon of ordinary household bleach for every 10 gallons of water.

When you have stored water, you can avoid contaminating it by using a medium-sized container to fetch the water from the larger container before pouring it into individual cups. This is to ensure that the cups the occupants use do not come into contact with your main source and end up contaminating it.

When it comes to food, it is hard to store it in a sanitary way, especially in an expedient shelter. However, covering the food with paper or plastic will help keep out fallout particles. This isn’t a soundproof idea, though, as there are chances that the shelter’s dampness, ants, roaches, and weevils can

cause breakage in the paper. Suspending your food bags from the ceiling of the entryway can help with bug issues and protection against moisture for a couple of weeks, but you need to make sure that this form of storage does not get in the way of the airflow.

Metal and plastic containers with tight lids are another option you could use to protect the food.

In preparation and serving of food, you need to ensure that all the cooked food is eaten promptly. Preferably half an hour after it has been prepared and canned food consumed shortly after opening. For proper hygiene, the cleaning and disinfecting of utensils should be done promptly to reduce the risks of bacteria and attracting rodents into your shelter.

To make cereals, you can add sugar to avoid spilling. Feeding infants and toddlers over a small piece of plastic will avoid spillage.

Cleaning can also prove to be a challenge depending on the shelter you decide to use, so serving food in plastic dishes ensures they can be licked clean before getting disinfected in chlorine bleach solution containing a tablespoon of Clorox-type bleach to a quart of water or in boiling water.

To make it easier to disinfect the dishes, you need to cook your food without cooking oil or fat. The cereals and sugar are also easy to wash off without using soap; this helps preserve the water.

Insect Control

Spraying insecticide in a shelter is more likely to cause you more problems than the ones presented by the insects. It can be poisonous, especially in spaces where the airflow is limited. Using insect repellent on your skin and clothing is a more helpful solution to this problem, but it's not a long-term answer as it can run out.

To control mosquitos and other larger insects, you can bring a netting with you into the shelter to cover the ventilation opening. This will be helpful in

keeping them out and protecting you from possible diseases they may carry.

You can expect the fly population to increase. In the case of a nuclear attack, the explosion would kill very many people and animals. The flies, unfortunately, would only increase as they would breed in the dead bodies and multiply. They are harmful as they can bring diseases into your shelter; to keep them out of the shelters, you can use mosquito netting or fly bait to kill them.

Ants are other insects that could literally have you running out of the shelter and risking exposure to fallout. They can make living unbearable, especially in an expedient shelter, and you need to consider this when building your shelter. Make sure it is not close to an ant shelter and be careful when storing food so that you don't attract them in.

Ticks are found in grass and low bushes and one way they would be in your shelter is if you carried them in with you. Like ants, they could make living in the shelter uncomfortable. To avoid this, make sure you don't bring grass or dead leaves into your shelter if you intend to use that as bedding. An alternative to this is cutting leafy branches and making sure they don't carry insects in them.

Personal Possessions

Each person needs to have their own personal bowl, drinking cup, and spoon. You also do not need to boil or disinfect toothbrushes after usage as everyone develops considerable resistance to their own infective organisms.

Skin Disease Prevention

Skin diseases can be a serious problem, especially in a hot and crowded environment. It is important to learn how to take care of your skin from heat rashes and fungal infection in these conditions.

Humid heat and heat rash increase the chances of getting skin diseases, so there is a need to make sure the shelter is well-ventilated and there, if possible, allows sufficient outdoor air in.

Another way to maintain proper skin hygiene in these conditions is to wash off the sweat and dead skin as it can start flaking decay. Bathing several times a day with soap is not effective, even if it was an option under the conditions as skin diseases are caused by the rapid loss of normal skin oils.

Rubbing your skin gently with a piece of cloth or rinsing off with just a cup of water each day will help keep your skin fairly clean. You need to do this while standing in order to dispose of the dirty water afterwards.

To use the water, you need to start by rinsing your face and neck, gently rubbing a washcloth at your armpits, stomach, groin, buttocks, and feet. Proceed to sterilize the washcloth in boiling water for a few minutes every day after use.

You should sleep bare to stay cool and keep your skin dry to prevent moisture from accumulating.

If you find yourself in a public shelter, if possible, avoid sharing bedding with other families and only use the bedding available for your family only.

To avoid infections from toilet seats, disinfect them with a strong chlorine solution, rise, and then cover them with paper before sitting down. If you don't have any of these options, avoid sitting down on them.

Disinfect clothing, especially underwear and socks, by dipping them into boiling water, but if there is plenty of water for use, then you can wash them. Do not use chlorine bleach solution to disinfect them.
To prevent feet fungal infection, wear shoes or sandals when walking.

Disposal Of Human Waste

In most shelters without a toilet or special chemicals for the treatment of excrement, human waste needs to be removed before it can produce much gas. A bucket covered with a plastic lid or a garbage cannot hold

pressurized gas by rotting excrement, so below are ways you can approach this.
Use a bucket or whatever large container you can find to use as a toilet to hold the urine and excrement. You need to keep it covered and use it near at the air-exhaust end of the shelter. You can tie the piece of plastic over the top to reduce odor and keep insects out, and when full, take them outside the shelters with the lid still tightly covered to keep the flies out.

You can bring a toilet seat from home, especially when you have people who are sick or elderly in your company to help them sit down.

In the case that there is only one container for use and is almost filled, you need to take it out and dump the waste periodically unless fresh fallout is still being deposited.

While digging for your shelter, it is important to dig a waste-disposal pit, especially if you don't have sufficient waste containers in the shelter to last you weeks. The pit needs to be located at least 3 feet from the shelter, surrounded by a ring of mounded packed earth of about 6 inches high to keep heavy rains from running into it, and situated in the down-wind direction.

The process of dumping waste outside is not hazardous as we previously mentioned that if you are out for two minutes at best, you will only be exposed to 1R dose, and under war conditions, this is not something of concern. To avoid tracking fallout particles back into the shelter, you can tie plastic around your shoes on the way out and dump them before coming back into the shelter.

For better sanitary conditions, the occupants can urinate in the bucket as it contains few harmful organisms and can be safely dumped outside. Also, try defecating in a piece of plastic; tie the plastic with a string or piece of cloth and gently toss out each day's collection. This will no doubt attract flies, but because of the plastic, the flies will not be able to lay eggs. You can still use the fly bait to keep the pesky pests away.

You can also use a hose-vented bucket with a heavy plastic bag. The hose vent runs through the top of the bucket and extends outside the shelter. It needs to be at least 6 inches above the ground to prevent water from running in. What the hose vent would do is provide an outlet for the foul gases.

You also need to keep additional plastic bags for vomiting irrespective of the shelter you decide to go with.

Disposal Of Dead Bodies

These are not favorable conditions for anyone and there are chances of someone in the shelter to pass away, especially in large shelters with people who came in injured by the blast, fire, or radiation.

The sight and stink of a decaying body are not conducive and can be very disturbing to anyone. It has been theorized that the best way to take care of a dead body is to seal it in a plastic bag and wait until the fallout dose rate goes down, at least enough for you to bury the person. However, this idea was later disproven as gas pressures can make the bag burst to make it very unpleasant for the occupants.

A way to go about this would be to put the corpse outside as soon as possible; you can put it in a plastic trash bag, but make sure to pin a few holes before taking it out.

Respiratory Diseases

Crowded spaces can spread all kinds of illnesses and it is quite easy to transmit a respiratory disease. Unlike with the skin condition where you can bleach your way out of an infection, a simple cough and sneeze can spread the illnesses, especially in a room without proper ventilation.

Adequate ventilation is key in disease prevention, and the person with the ailment can stand close to the opening to the air exhaust to avoid infecting others.

Surviving Without Doctors

An all-out nuclear attack would destroy hospital facilities, but even if that is not the case, you would still need to leave your shelter and risk fires and fallout to reach the medical facilities. Chances are, you will be unable to gain access to a doctor or even medical supplies for periods ranging from days to months.

The thought of life without modern medicine sounds unbearable, but this is one of the things you will need to learn to deal with. Learning the basic information on first aid, hygiene precautions, and gaining knowledge of how to effectively use different skills you learn will come in handy.

However, as much as we would like to have a doctor to attend to some of our concerns, the first thing you need to know is that the first twenty-four hours after the blast are the most critical. Fresh fallout is very dangerous and you need to take preventive measures to take care.

Fast Response

The human body has remarkable capabilities of healing itself in some situations. However, you need to make sure you don't put yourself in a condition that even the body cannot fight.

Below are ways on how you can respond to the first twenty-four hours without a doctor to ensure you are safe after the attack.

The First 30 Minutes

When the nuclear bomb explodes, it sets off a flash of light moments before a giant orange mushroom cloud of fire breaks into the sky. This is very dangerous for your eyes and you need to avert your eyes as it could lead to temporary blindness even on a clear day.

You also need to drop to the ground with your face down and hands tucked under your body to protect yourself from flying debris and heat that could burn your skin. If you have a mask or a piece of cloth, use it to cover your nose and mouth.

You also need to keep your mouth open so that your eardrums don't burst from the pressure.

After the explosion, you have 15 minutes before radioactive particles reach the ground. Getting exposed to fresh fallout can result in radiation poison, which is fatal.

The Next 45 Minutes

By this time, you need to be locked indoors and away from the windows. The shelter you seek should be the opposite of a fallen building and away from the direction of the wind to avoid fire and fallout particles getting carried in your direction.

If possible, you should seek a shelter without windows if you don't already have an emergency shelter in place.

Stay indoors for as long as you can to avoid getting exposed to fallout.

The First 24 Hours

The first 24 hours after the blast are the most critical, and staying indoors ensures you are at a lower risk of getting exposed to the radioactive particles.

You need to rinse off in the shower or use a wet cloth to wipe the exposed skin in case you were exposed to fallout. Make sure you use warm water and soap, but apply it gently as scrubbing too hard will cause your skin to break. Any cuts and abrasions need to be covered up during the rinse.

Do not use body lotion, face cream, or even conditioner after getting exposed to a nuclear blast as these products bind to radioactive particles and trap them in your skin.

In the case of radiation damage, you can treat it with potassium iodide but there are certain dose levels that cannot be treated.

Once you are safely inside, blow your nose and wipe your ears and eyelids with a clean cloth to get rid of any debris. Any material used to clean yourself should be sealed in a plastic bag and thrown away.

Avoid fresh foods and any uncovered foods if possible, and take only those in sealed containers such as bottles, cans, and other forms of packaging. You can also use the items in your pantry or refrigerator.

Stay inside until you receive communication from the proper authorities.

How To Attend To Situations Without A Doctor

Wounds

In the event you receive a cut during the blast from flying glass, unless an artery has been sliced, you can apply a pressure dressing to stop the

bleeding. Loosen it every 15 minutes to allow enough blood to reach the flesh and keep it alive. The pressure will allow for blood clotting and stop blood loss before it becomes fatal.

Infected Wounds

Use an antibiotic ointment on the infected wound and make sure to keep it bandaged and clean.

Pieces Of Glass Deeply Embedded In The Flesh

If you don't have first-aid experience, do not probe the flesh with tweezers or even a knife to try and get the shards out. Most of the glasses come out themselves when the wound discharges pus. You could risk getting the wound infected if you attempt to treat yourself without proper training.

Burns

First, remove the clothing and any debris from the burned area and then cover it with a clean, moist, and sterile piece of cloth if you don't have any dressing and keep it that way. The dressing should be kept cool and moist to provide continued pain relief.

Again, without proper training, do not apply anything to the burned area.

Broken Bones

In case of a broken bone, apply simple splints to make sure the bones stay in place and don't move. And especially do not attempt traction setting on your broken bones.
There may be deformities but a doctor can fix them later.

Heat Prostration

Give or take adequate fluids and slightly salty water to prevent passing out from dehydration.

Childbirth

Keep your hands away from the mother until she has given birth to avoid infecting the mother. Do not tie and cut the cord unless there is a potent disinfectant available. Instead, you can wrap the cord and placenta around the infant until they dry and then urge the mother to work to expel it.

Shock

The person in shock needs to be kept warm using blankets or other insulation materials. But not so many that they sweat too much. Give them plenty of slightly salted water.

Toothache

A toothache is painful but rarely fatal. Do not attempt to pull out an aching tooth. If it is decaying, then it will abscess and fall out by itself; the process will be painful but hardly fatal.

Radiation Sickness

Acute doses of about 100 R to 200 R have a low chance of making you sick and should recover from the effects. However, there are people who will die from getting acute doses after getting infectious diseases as their resistance is reduced.

The human body can usually heal itself from the damage done by radiation if the daily doses are few.

There are high chances of recovering from a dosage of less than 350 R without medical treatment, and almost everyone that receives doses of over 600 R will die within a few weeks unless doctors, all the equipment, and drugs survive the blast.

The first symptom of radiation sickness is nausea, vomiting, dizziness, headache, and a general feeling of being sick. They begin several hours after exposure to acute doses and less than thirty minutes after a fatal dose.

The symptoms will end in a day or two only to be followed by the latent phase of radiation sickness that will last as long as two weeks if the dosage received was acute. In the final stage, however, victims of fatal radiation sickness start to suffer from diarrhoea, loss of hair, and hemorrhage of the skin and mouth from reduced body resistance. This stage will last a month or two, and if there are any antibiotics, they should be reserved for this stage.

For fatal doses of 1000 R to 5000 R, the initial symptoms will start to show thirty minutes after exposure and unlike the two months in the previous dose, the final phase will occur in less than a day and death will result between two days to two weeks.
A dose of over 5000 R will result in a hard death within 48 hours as the radiation will have damaged the central nervous system.

Unlike a burn or cut wound, the most effective way to reduce the chances of radiation sickness is to avoid excessive exposure to radiation. Seeking adequate shelter as soon as possible simply increases your chances of not getting radiation sickness, and if you do encounter fallout, make sure you get it off you as soon as you can. Take off all the clothes with the fallout and clean yourself up.

To recover from a small dose of radiation, you need to receive a well-balanced diet, rest, no stress, and clean surroundings. However, in such conditions, many people exposed to acute radiation will survive even without all these. Even people exposed to 5000 R have a chance to survive as proven by the thousands who survived the Hiroshima and Nagasaki bombing.

Attending to someone suffering from radiation sickness will not put you at risk, and it is okay to nurse them if you are able to do so.

Improvised Clothing And Protective Layers

Heavy clothing helps protect the skin from damage from alpha and beta radiation. Dealing with gamma radiation is a little more complicated as it involves high energy plutons that can penetrate the body even from a great distance and damage the stem cells.

In the event of a nuclear explosion, you will be forced to use whatever clothes you have in your home and skillfully put them to use for better protection.

However, when you do find yourself safely tucked in a shelter, you also need to make sure the choice of clothing is right so that you don't get a heat stroke or freeze over.

Basic Principles Of Cold Weather Clothing

Trap Dead Air

Covering your body with a thick layer of clothing will help keep you warm by trapping dead air: a material that breaks and separates air into 1/8-inch spaces as efficient cells of dead air. When this air "sticks" to the surface in the space, it is considered trapped, and when it moves outward, it carries heat away from the body at a slow rate and thus minimizes the loss of heat by convection.

Windbreaker Materials

A windbreaker material permits very little air to pass through them while effectively allowing water vapor to escape. This way, the underlying body insulations remain dry.

Preventive Excessive Heat Losses By Conduction

Body heat is lost by the conduction of heat into a colder material. For instance, you can lose your body head rapidly by lying or standing on a cold

surface if the soles of your shoes are poor insulators.

Insulating The Body

It can get extremely cold at night, and to prevent frozen earth from melting into icy mud, you can adjust your ventilation so that the inside temperature remains a few degrees below freezing.

You can wrap yourself with whatever clothes you can find, including the bedsheet, and if you are going to sleep on cold or frozen ground, then you need to place newspapers or other insulation on top so that drying air can circulate under the bedding.

Additionally, the head and neck have many blood vessels close to the skin surface that need protection from the cold. Heat loss from these parts cannot be sensed as the blood and vessels do not automatically contract to reduce heat loss as they do in other parts of the body. When you feel yourself getting cold and warm your body, it's important to pay attention to your head and neck. You can use towels covered with brown paper to insulate the head and neck.

Improvised Winter Footwear

You need to have footwear that is warmer than the common winter boots, and you can make them yourself. This footwear can be used to protect you from the snow and even keep your feet warm inside the shelter, and here is how you can go about creating it.

How To Craft Improvised Winter Footwear

First, place the sole of your foot on 10 newspaper sheets and then fold the sheets over the top of your foot.

Using a strip of cloth about 5 feet long, tie the paper around your ankle with a single knot, and with the same string, tie another knot over the tendon behind your ankle and finally a bow knot in front of your ankle.

Finally, cover the insulation later with a burlap sack or other tough fabrics that are waterproof.

Keeping Warm Without Fire

Having a fire in the shelter is obviously not an option; however, you can keep warm by lying close together if protective clothing is unavailable.

Placing insulating material between your body and the old ground will also help you stay warm, especially if the ground is damp.

Get warm before you start to feel cold. The blood vessels in your hands and feet will contract once you lose your body heat and it will be hard to get them to return to normal.

Do not attempt to jump around to keep warm. Rapid body movement can cause wind-chill air movement, so, if possible, lie down and cover up to maintain your body's heat.

When you do intend to exercise, take off your clothes so you don't dampen your source of warmth by sweating all over it.

Don't smoke when cold as nicotine causes blood vessels to constrict, reducing the flow of blood to hands and feet.

Alcoholic beverages also cause increased blood flow to the surface and this result in rapid loss of body heat.

Minimum Pre-Crisis Preparations

For higher chances of surviving a nuclear attack, you need to have at least the most basic information on how to handle the situation when it happens.

With rogue nuclear states like North Korea, and regional nuclear stand-offs loaded with tension, there is no telling when a nuclear attack is going to happen and where, so it's important to be ready.

Shelter

It is best to identify the best shelter location in places you spend a lot of time in. Whether it's at your school, work, or at home, if a nuclear attack was to take place this very second, where would you head to first to get protection from the blast and fallout? If there is an underground room in a safe building, then that's the safest option.

If your plan is to build a shelter, then keep the shelter-building tools and essential survival instruments in a safe and convenient place.

Not that vehicles and mobile homes do not provide adequate shelter, but an underground safe haven is your best bet.

Ventilation

Make sure the place you seek shelter in has proper ventilation, and it helps if you have a ready-made shelter ventilating pump for the shelter you intend to build.

Water

You need to have water containers ready for use, a tube-like garden hose for siphoning, and sodium hypochlorite bleach for disinfecting water.

Fallout Meter

You can make one or two of your own KFM and then learn how to use them.

Food

You need to have a two-week supply of compact nonperishable food in storage. Include milk powder, vegetable oil, and sugar if you have babies and small children.
Babies born during the crisis should still be breastfed as it would greatly simplify their care.

Sanitation

Have a hose-vented 5-gallon can for use as a toilet, heavy plastic bags for liner, tissue paper, and tampons.
Use mosquito netting and fly bait to keep out insects.

Medicine

Bring with you any special medication needed by family members.

Have a first-aid kit loaded with potassium iodide for radiation treatment, a tube of antibiotic cream, a 2 oz bottle, and a medicine dropper for prophylactic protection of the thyroid gland against radioactive iodine.

Light

Flashlight with extra batteries.
Use long-burning candles.
Have an expedient lamp with extra wicks, cotton string, and cooking oil.

Radio

Have a transistor radio in a protective metal box, with extra batteries.

Survival Strategy And Planning

When preparing for an emergency, you need to have a strategy in which you go about these things. Your level of preparation in the case of a nuclear attack is very important, and there are steps that you need to follow to achieve a level of caution.

Understand What To Expect

The first thing you need to understand about nuclear weapons is their existence; the fact that there are thousands of them all over the world, most of which are under unstable hands, is concerning.

The second is the dangers associated with nuclear weapons. All you need is to dig into the annals of history for a better understanding of what's at stake. Learning the political climate of your country and the threat hostile countries pose to yours is also important.

The other is how the government would respond in the face of a nuclear attack by looking at how it has responded to past conflicts and disasters.

Prepping Categories

You need to remember the main categories associated with prepping as they are important for your survival and they include shelter, food, water, light, first aid, hygiene, communication, and tactical protection.

When you have these categories in mind, it's easier to act in times of crisis.

Have A Plan In Place

As discussed earlier, you need to have an idea of what you will do if an unexpected attack occurs when you are far from your shelter. Say you are at work when the warning is sounded, do you have time to get your family to the shelter? Are there any places you can go to wait out the fallout?

You need to have answers to these questions for when it happens.

Stay Connected

As much as attacks can occur unexpectedly, most of them are not surprising. Staying up-to-date with the political climate of your country and alerts will help you act when a crisis arises.

Have Supplies Ready

You don't need to keep all the items but having a few things stored away in case of a nuclear attack will come in handy as everyone else struggles to find the supplies.

Having the supplies ready to go will also come in handy when you get asked to evacuate. You can just grab your things and your family and set off by the time others figure out what they need to bring with them, and this way, you can avoid traffic on the way out.

Prepare Your Home

Having a shelter or a safe room in your home will make it easier for you when the nuclear warning is sounded, all you'll need to do is load your family into the shelter already filled with all the necessary supplies.

Plan For Blackout

As previously discussed, the blast can create a power outage that could last for several weeks or months, and you need to have a backup for when this happens.
Having a power outage kit will come in handy for when this happens.

Food And Emergency Supplies

Stocking your home storage with nonperishable foods will be useful when the nuclear blast happens and your movements outside of your home are limited.

In the case of a nuclear attack, you need to stay inside to avoid the fallout, and having food inside the house will make it easier to survive as you might find yourself staying indoors for months.

Develop Self-Reliant Skills

You need to learn some skills such as building a shelter and creating plus applying a first aid kit. This will come in handy in the event of a nuclear attack. Knowing how to build a shelter will ensure you build it faster and get your family tucked in with enough supplies just in time.

Developing medic skills will help nurse others and yourself in case of an injury during the attack.

BOOK 2:
Stockpiling

Overview

Experts recommend having a week's supply of food and water in your home, but all Americans should have at least three days' supplies stored for emergencies.

If there is anything the 2020 Corona Virus pandemic proved to us is that a crisis can happen to anyone at any given time. During the pandemic, people were asked to stay indoors to avoid contracting the deadly virus for extended periods of time, and for quite a while, people were convinced that this would be their new "normal" and they learned to adapt to it.

However, many people had the option of ordering whatever they needed online and it was delivered to their doors. Such luxury would not be afforded in the event of a nuclear attack. There would be no lodging on the couch and waiting for the crisis to take care of itself.

What would happen instead is that people would be locked in their homes or shelters with no means to communicate with the outside world. The electricity will be out, and water in the taps, if any, will be littered with fallout particles or debris and unsafe for consumption. You would not be able to access food from outside as going outside will mean getting exposed to radiation.

Unlike with Covid-19, where people could recover inside the comforts of their homes, the conditions of dealing with or healing from radiation exposure will not be easy. However, learning what needs to be done and gathering the essentials to deal with doomsday will at least up your chances of survival.

Weapons

The idea of having weapons means you would have to use them, and very few people like the thought of that, but it's a necessity in some situations. A nuclear bomb will not turn people into zombies as the entertainment industry has led people to believe; at least history has shown us that much.

What a nuclear attack—what war does really—is make people desperate; desperate to get what they do not have, and in this case, it's the amenities you possess under these conditions.

During this time, you will spend a lot of time feeling some degree of anxiety at the thought of someone coming and taking away what you have, but having weapons at hand will help alleviate some of that anxiety.

It is also worth noting that most of the security features you currently have will not be effective in the event of a home invasion. There will be no police to come and arrest any intruders, and it will be up to you to ensure that your home is well-guarded. (More of this is discussed in Book 4 under home defense.)

OPSEC is a survival jargon for *Operation Security,* and it all boils down to keeping your mouth shut and not revealing anything about your prepping activity. Still, if you do plan to build a shelter and receive large packages on your doorstep labeled "emergency gear," your neighbors are bound to notice. While it's easier to keep prepping to yourself, it's similarly easier for your activities to be discovered, and you will be the first person they come to in the case of an emergency, and many will not ask, at least not when the other option is to keep it all to themselves.

Depending on the country and the laws that govern them, there may be strict rules in place that would prohibit you from having so many weapons under your residence, and you need to study your country's gun laws before stocking up.

However, in countries like the United States, where gun ownership is protected by the law, to protect your family and your shelter, you will need to stockpile weapons. Below are some options for defensive weapons you can stockpile.

Defensive Weapons

Weapons are tools used for achieving a goal, and in this case, your goal is to protect your family and your resources from people looking to help themselves to it. It is human nature to be revolted by the idea of using a deadly weapon on another person; unfortunately for you, there are other people out there who wouldn't think twice before using the same deadly weapon on you when it means they get to keep your hard-earned stuff.

However, there is a sense of maturity you need, to be able to know when to use a firearm and when not to. With a simple warning, many people would back away, and you need to understand what a threat looks like before hurting or potentially killing someone.

If you are lucky, you won't have to use your defensive weapons to protect yourself, and the mere fact that you have them will scare off any potential threat.

There are three types of firearms well-suited for defense and they include handguns, short guns, and long rifles.

Handguns

These come in two types: semi-automatic and revolver; each have its own pros and cons. For one, a revolver is the easier of the two to use, especially if you are new to using firearms, but it won't carry as much ammunition as the semi-automatic.

This boils down to your personal preference; the experience you carry with handling firearms and how much money you are willing to spend on the

said firearm.

Handguns do, however, have limited range, and it requires immense experience to be able to shoot with precise accuracy at a distance.

Shotguns

These guns are brutally effective at close range and would be the best option if you have little to no experience with guns, that is, if you are aiming to hit your mark, there is a high chance that you will.
This gun is not light but with little practice, you should be able to carry it with ease.

Rifles

Unlike handgun and shotguns, this is for distance shooting. Equipped with a scope, you can get on your roof and be able to stop people from approaching your property. This has maximum effect and can be quite lethal to a target of over 200 yards.

Non-Firearm Weapons

Is there such a thing as too many weapons? The truth is yes. Yes, you can have too many weapons than you would know what to do with. The goal of

stockpiling weapons is to get you armed with defense mechanisms and not get you addicted to collecting guns.

Just like there are too many firearms, there are also not enough, and this would mean not to owning any. If you are uncomfortable using a firearm, there are other weapons you can opt to use for protection.

For one, a sharp, quality knife is a good option for this. By this, we don't mean a kitchen knife. Kitchen knives can cause significant harm but, in this case, you need something better. A quality defense knife needs to have a blade of around six inches in length and be made of high-carbon steel to give you good penetration. It needs to be comfortable in your hand and the handle should be made of a material that will make sure you retain your grip even when your hand is wet from either blood or rain. You also need to have a sheath that will be comfortable to wear for an extended period of time.

Survival Kit

Being prepared for a nuclear attack means having an emergency survival kit packed and ready to go to face any of the disasters that are associated with it. For this, you need to have a checklist to ensure that when the four-minute warning is sounded, all you need to do is grab your stuff and go.

Nuclear Survival Kit Checklist

It's important to have your survival kit ready to go and not wait until you get a warning to start scrambling around.

To increase your odds of surviving a nuclear attack, below is a checklist created to protect you from fallout and aid you in staying alive while hunkering down.

Bottled Water

In the event of a nuclear attack, all the open water sources around you will be compromised for a very long time. Having your own bottled water will help sustain you for the duration.

Non-Perishable Food

Just like with water, food will be hard to acquire during a nuclear attack, and with the power gone, all the fresh foods you have stored will go bad, and there will be few options left unless you have your own stash of non-perishable food.

Designated Shelter

Just a roof over your head will not be adequate to protect you from all the effects of a nuclear blast. You need to design a shelter to aid you not just from fallout but from the fire and blast effects, as well. Not to mention the radiation.

Emergency Radio

Communication will be cut after a blast and the best way to remain appraised on what is going on with the rest of the world and receive proper guidelines will be through a battery-powered emergency radio.

Blackout Kit

The chances are very high that the power will be affected by the blast and it's important to have a kit filled with all your options for lighting for when the power goes out.

Emergency Heating

You need to ensure you have a source of heating in your shelter so that you don't fall ill with cold as you wait to leave the shelter.

Emergency Toilet

This is an important tool to have in handy for when you find yourself having to seek shelter where defecation facilities are not available.

Hazmat Suit

This would protect you from radiation. If practical, you can include it in your survival kit.

Fallout Meter (Geiger Counter)

This will help you know when it is safe to leave your shelter and calculate how much radiation you have been exposed to.

Emergency Mask

Having a mask ready and packed away will come in handy and protect you from breathing in dangerous fallout particles.

Change Of Clothes

In case your clothes get contaminated, at least you will have spare outfits waiting by to change into.

Gloves

This is for handling contaminated items to avoid getting exposed to fallout particles.

Sealable Bags

To keep contaminated items. It would be unwise to leave them in the open as they still have the fallout particles in them.

First-Aid Kit

Having a well-loaded first aid kit will come in handy when you or someone else needs help in the absence of a doctor.

Potassium Iodine Tablets

This is a salt that, when taken, floods the thyroid and prevents the gland from absorbing radioactive iodine. It will protect you from getting thyroid cancer or other thyroid illnesses after you come into contact with the fallout.

Although they will not prevent the rest of your body from absorbing radiation, they will protect the thyroid, and it is important to include them in your survival kit.

First Aid

Learning first aid is important when you need to survive without a doctor as previously discussed. There exists good first aid kits that could come in handy in the event of a nuclear attack.

In this case, you need something more than the purchased first aid kit that can be found in a department store and tends to just a few pumps and bruises. You need a medic kit with over a hundred individual articles designed for heavy use. Most of these DIY kits have everything from pain relievers to CPR masks.

On most occasions, you will need to customize your first aid kit to meet your needs by including your prescribed medication, if any. Add allergy medication if anyone in your family is allergic to something. Imagine someone having an allergic reaction in the shelter with no means to go out. Even when you don't believe there is a chance of that happening, it still needs to be included.

Having your own means of storage will also come in handy. Your kit does not have to be a little box; you can have a duffel bag to ensure everything you need fits in there and none of the important stuff is left out. You also need to ensure that all the medication is regularly checked to ensure you are not keeping expired items that could prove to be useless later.

Medical Training

A medical kit won't be of much use to you if you don't know how to use it properly. You obviously don't need or have the time to enroll in a seven-year course at a medical school to learn the basics of first aid. There are many institutions that offer training on emergency response and you can enroll in any of those. A few months of training could go a long way in saving yours and someone else's life by teaching you the basic skills of first aid.

Medical Supplies

You will need tools to work with when you have the right training, and this is where the first aid kit comes in.

To best understand what tool is required, you need to understand the injury or illness you are working with. For instance, most of the injuries from a nuclear attack would result from the blast and fires, and in this case, you will be dealing with lacerations and contusions. Learning how to attend to the wounds will help put the tools you have on-hand to use.

Hygiene won't be the best under these conditions and you will have to figure out the best way to make use of the medic kit you to have without risking another problem.

Tools

Tools are very important items to have with you in the event of a nuclear attack. They may not fall under the same level as food and water but they will make your work easier, and in the long run, they play a big role in your survival.

It's important to make a list of the tools you will need and cross-check the list with the tools you already have. It helps when the tools you get are of great quality. Most people are tempted to walk to the dollar stores for their tools and don't care for their quality as long as it does the job, but the last thing you need is a shovel that cannot shovel out dirt.

Demolition Tools

You might be curious about what would be left to demolish after the nuclear blast and fire have done their job, but let's say you are in your home when the attack happens and a tree falls on your house, effectively trapping you inside; the fact is, you would have to get yourself out as everyone else will be so busy panicking.

If you have the demolition tools in your house, you can get the job done by yourself. Chances of getting trapped in a shelter are high considering all the factors that come into play, and you may need to break yourself out.

For instance, a framing hammer, which is very different from a standard hammer, would come in handy in places you would otherwise need to use your fists. Another example of a helpful tool would be a wire rope hand ratchet puller that would help move large debris, and a saw would also help cut off a tree or anything else preventing you from getting to your shelter.

Other examples of demolition tools can include pry bars, strong ropes, wheelbarrows, rakes, buckets, tarps, and shovels.

Cleaning Tools

You are going to need these if you intend to maintain a hygienic and sanitary environment, and no, just a mop and a bucket won't do. In case you must clean up after demolition, you are going to need more than a mop and a bucket, but it's a good place to start.

The conditions won't probably have you thinking of leaving the place sparkling, but it is important to have tools that will help you maintain a level of hygiene.

Some of the tools to aid in cleaning can include a cleaning solution, rags, bleach, vinegar, and a carpet sweeper if you manage to get one into your shelter. Having a broom and a dustpan will help get rid of some of the dust from the initial blast that manages to make its way into your shelter.
A shovel and a bucket would also come in handy if you need to clean up debris.

Gardening Tools

In the event of a nuclear attack, the last thing on your mind will be the vegetables you just planted. Having gardening tools will come in handy when it comes to digging an earth-covered expedient family shelter. When you don't have too much time and the stores are crowded, the garden tools can aid in your work.

Having at least a hard rake, shovel, wheelbarrow, and other gardening tools might also come in handy when you need to get rid of debris that may be obstructing your path. Having a manual sod cutter as part of your gardening tools could also be useful when you need to break the ground—easier to use than a shovel.

Additional garden tools that would be helpful include knee padding, a garden cart, garbage bags, a hoe, a hand trowel, tape measure, small clippers, a shovel, brooms, and dustpans.

Lighting Tools

It's important to have light tools for when the electric power goes off. Picking the right tools here is important depending on your shelter. Some shelters can handle having oil lamps and others cannot when that would pose a huge risk to have anything that would remotely place them in the path of carbon monoxide poisoning.

A candle or better yet, a battery-powered flashlight would be the best option in providing light, but they, too, could run out. There are other options available that could last longer and carry very minimal risks as previously discussed in Book One.

Protective Gear

If you intend to do some heavy-weight work, it would get careless to walk in without protective gear. For instance, when tasked with the job of cleaning out debris after an explosion, it would be in your best interest to use protective gear such as gloves to reduce the risks of getting injured on the job.

No matter how much experienced you are at handling tools, whatever they may be, you need to wear protective gear. More so when you are under pressure of looming danger. You want to prepare a sanctuary for your family, but it would be impossible to do so if you lose an eye because you forgot to use the safety glasses while chopping down a tree.

Some protective gear to have would include heavy-duty work gloves, safety glasses, dust masks, ear protection, knee pads, and steel-toe work boots.

Communication Tools

When you are locked away from the rest of the world, communication is vital. You need instruments that will aid you in receiving communication from the proper authority to understand the complexity of the issue. How long you are going to be stuck inside if you need to watch your food ratio among other things?

These tools, however, require power, and you need to make sure you stock up on batteries that could last for months.

Examples of such communication tools can include the two-way radio, which would be great for keeping in touch with your family and neighbors during the period. The problem with these is that their range is often affected by obstructions like buildings and trees.

Another great communication tool would be the shortwave radio whose transmissions can travel the world and this would play a huge part in understanding the climate your country is in. The communication you receive from outside may be unbiased compared to what you will be receiving from your own officials.

BOOK 3:
Water

Overview

Water is the most precious resource and it can sustain you a little longer than food would. However, it is dangerously impacted by pollutants and in the event of a nuclear attack, accessing clean water for consumption would be near impossible as water sources would be contaminated by fallout and debris.

In this book, we are going to discuss water plans in the case of a nuclear attack. How to acquire, purify, and store water for consumption and the risks you would face from not having water at a time of crisis.

Understanding Dehydration

Dehydration can be dangerous, and it occurs when you lose more fluids than you take in. It's hard for your body to carry out its functions when it doesn't have enough water and other fluids.

This condition occurs in any age group if they don't drink enough water, but it is especially dangerous for young children and the elderly. In young children, it can cause severe diarrhea and vomiting.

Symptoms

Most people assume that thirst is the only indication that your body needs water but most people don't particularly feel thirsty until they are already dehydrated.

Symptoms of dehydration differ with age group but since most young children cannot communicate when dehydrated, here are some of the common signs to look for: dry mouth and tongue, sunken eyes and cheeks, a soft sunken spot-on top of the skull, irritability, no tears when crying, and dry diaper for three hours.

For the adults, the symptoms will range from fatigue, dizziness, extreme thirst, and confusion to less frequent urination, and in other cases, dark-colored urine.

Causes

The simple reason would be a lack of water. However, there are other factors that could cause dehydration listed below.

Diarrhea

This could cause a tremendous loss of water and electrolytes in a short time. The electrolytes help carry signals from cell to cell and when they are out of balance, it can lead to seizures.

Fever

High fiver puts you at risk of getting dehydrated.

Excessive Sweating

Engaging in hard activity without replacing the fluids you lose through sweating can lead to dehydration. Humid weather can also cause dehydration. You may also be at risk of heat injury which would range from mild heat cramps to life-threatening heatstroke.

Increased Urination

If you have an undiagnosed condition, such as diabetes, you may find yourself urinating a lot. Additionally, some medication you may be taking might aid in this as well, and when you don't replace the fluids you are losing, you could be at risk of dehydration and experiencing kidney problems.

Toxins In Municipal Water

Millions of people depend on the city and municipal water for their daily usage. They expect the water treatment plants to help filter the water, but there are countless microscopic contaminants that cannot be filtered.

For one, the cost involved in this is high and the chemicals (like chlorine) used to treat water contain dangerous byproducts known as disinfection byproducts or DBP. Research has linked the DBPs to cancer, including other reproductive and developmental issues.

Some of the common contaminants found in municipal water include:

Disinfection Byproducts (Dbps)

These have been linked to cancer and developmental complications.

Chlorine And Chloramines

These are chemicals used to treat water and they cause complications to the respiratory system and can irritate the skin.

Volatile Organic Compounds

These have been known to damage the nervous system.

Trihalomethanes

This a group of chemicals that can be formed when chlorine used to treat water reacts with natural organic matter, and they have been linked to cancer.

Perchlorates

Water contaminated with this can cause thyroid and developmental problems.

Additional Contaminants

These would include petroleum products, pesticides, herbicides, and hormone mimickers.

Toxins In Clear Water

Most of the clean water in your homes comes from a well that has direct access to an aquifer without relying on municipal treatment. This, however, does not mean that it is any safer than municipal water.

While soil does a good job at filtering out toxins, there are still many other contaminants such as pesticides and pharmaceuticals that make it to the water supply.

These contaminants carry the same effects as those mentioned in municipal water without proper purification.

Water-Related Diseases

Water-related diseases are one of the leading causes of death in children.

These illnesses occur as a result of drinking dirty contaminated water, which causes various diseases such as cholera, typhoid, diarrhea, and dysentery among others.

Some of the water-related diseases can result from not drinking water at all, as previously discussed, and other results from poor sanitation where bacteria, viruses, and parasitic organisms contaminate the water.

Types Of Water-Related Diseases

Waterborne Diseases

These are spread when people drink water or consume food prepared with contaminated water.
Illnesses associated with this include typhoid, cholera, hepatitis, gastroenteritis, and dysentery.
Most waterborne diseases are caused by parasites that can cause symptoms such as fever, muscle cramps, nausea, severe diarrhea, dehydration, and eventual weight loss.

Typhoid and Cholera are caused by bacteria and their symptoms can be fatal, especially to people with low immunity.

Water-Washed Diseases

These are caused by poor hygiene, and some common diseases associated with these are shigella and trachoma. Shigella is a skin infection and the latter is an eye infection that is highly contagious through skin-to-skin contact.

Water-Based Diseases

These are diseases transmitted by aquatic hosts as they penetrate the skin while you are bathing in contaminated water.

For instance, a water-based parasite worm can cause a schistosomiasis infection that damages the lungs, liver, intestines, and bladder.

Some hosts can enter your body through drinking water and cause typhoid.

Water-Related Insect Vector Diseases

These are diseases spread by insects breeding in stagnant water, and in this way, the diseases aren't as directly related to water as the others.

Diseases related to this can include malaria, yellow fever, river blindness, and filariasis.

Malaria is the most common, and in the most severe cases, it can lead to comas and kidney failure, which will result in death.

How To Avoid Water-Related Illnesses

1. Boiling, filtering, and disinfecting water can help purify the water you use.
2. Washing hands properly and following sanitation practices.
3. Carry a portable filter to avoid drinking unfiltered water.
4. Stored water should be cleaned using chlorine disinfectants.
5. Adding a few drops of antiseptic liquid to bathing water to kill harmful bacteria.
6. Washing all food with iodine and thoroughly cooking before consumption.
7. Get immunized for protection against vaccine-preventable diseases.
8. Use insect-repellent cream.

Water Storage

There is quite a lot that goes into storing water. For one, you need to figure out where you are going to put the water and then how you are going to carry it to that point. Water is heavy and moving it from one point to another can prove to be taxing, especially when you are dealing with gallons of water. It also takes up a lot of space, but it is one of the most important things to have in your shelter, and the fact is, you will need a lot of it.

A gallon of water weighs around eight pounds and while that may sound light enough to most people, you are going to need more than just one. Before you think of how you are going to store your water in a given space, portability is something you need to consider first.

To ease the movement, you need to have a portable container. You can't be dragging a barrel of water to your shelter while everyone else is racing past you during an attack and hence the need to invest in a portable container. They come in different sizes and shapes and it's important to pick one that would alleviate your movement and won't prove to be a challenge when it comes to lifting it.

This could come in a food-safe plastic container such as the Aqua-Tainer jug which would help ease your movement as it has a handle and can hold up to seven gallons of water. It weighs around thirty-five pounds and handling it would be much easier than handling a barrel. Sure, you could use a barrel to store water, you just need to make sure it's empty first before moving it to your storage. You can use a portable container to fill it up once it's there.

Once you have your portable container handled, it is important to not store too much of it, at least not initially. You can store your water for up to two years, but it is recommended to change it at least every six months so that it doesn't go rancid. Water is the one thing around your household that you

are going to always need and you can use the storage water before replacing it with fresh water.

When it comes to the water you intend to store, you need to pay mind to its source. As previously discussed, municipal water already carries additives in it, and would be a bad idea to add more to it. You could, instead, add a few drops of non-scented bleach before shutting your container tightly. You could also buy several cases of bottled water which would give you more alternatives for drinking water, but it is also considerably easy to move around.

There are people who have thought of swimming pools as a means of storing water. To be fair, in the event of a nuclear attack where resources such as water are scarce, you may be tempted to use the swimming pool water. For one, it has chlorine in it, which is also present in municipal water, as well. The only difference, however, is that pool water has additional chemicals called stabilizers that can be harmful when you consume the water.

The stabilizers serve to keep the chlorine working longer. However, this doesn't mean that this water can't be used for something else. When you don't have any other source, this could be great storage for water used for washing clothes and flushing toilets among other roles. An advantage to having this option is it gives space for water to be used for drinking and cooking.

Another storage option is the well. This water is admittedly better than municipal water but not as easily accessible and even when you can access a well, you still need to pump the water out. Pumping needs electricity and as previously discussed, electricity is not an option in the case of a nuclear attack. The other option for pumping water would be the use of a manual pump, but they can be expensive. This is still an option open for storing water.

Acquiring Water

In the event of a nuclear attack, there are high chances that your water sources will all be shut down. Pipes may burst from the explosion, cutting off water and their sources compromised. The water flowing will be littered with either debris or fallout particles. Both are very dangerous, and it is important to understand the options open for you in case this happens.
There are two major ways of acquiring water and they include the rainwater catchment systems and the wild water systems.

Rainwater Catchment Systems

Gutters are important in collecting water and it's important to have them installed. While this process is not cheap, depending on where you live, it is one of the few ways to effectively collect rainwater.

Gutters have the potential to collect up to three hundred gallons of water from just half an inch of rainfall. You can even set up your water containers in a way that once one fills up, the water goes to the next one in line. Once all the barrels are filled up you need to use a tight-fitting lid to prevent debris, insects, and leaves from getting into our water. Once you've done this, you could make this accessible by connecting a garden hose to a spigot to make your water accessible to whatever spot you're at.

You can use any barrel you want to collect the water, but there are rain barrels readily made for use. Whatever barrel you chose to go with needs to be thoroughly cleaned before use to get rid of any toxic chemicals it may contain.

If you don't want to have your rain barrels in open sight, you have the option of keeping them inside your garage or shed and collecting water while they are still there. To achieve this, you need to purchase a device installed to divert the water into a hose that runs into your barrel. You can make a small hole in your wall to connect the hose to your rain barrel, but make sure to cover this hole to prevent insects from getting through it.

Rainwater is a great way of acquiring water especially when you find yourself locked out of other choices. The process is easier when you already have the right equipment stocked away.

Wild Water Sources

These sources include rivers, streams, lakes, and ponds. Unlike the rainwater option, you don't have a choice but to share these natural resources.

In the event you have your own barrels of water in your shed, then it means the water is exclusively yours, but wild water sources, unless they are on private property, can be accessed by anyone.
However, this is a source of water at a time when the conditions don't exactly offer many options. You also need to understand the limitations that come with using wild water. In the event of a nuclear attack, the fallout would settle on all open surfaces and the wild water sources will not be spared from this, making the water dangerous for consumption.

If you do manage to get to the water before the fallout, then you will need to filter it. It doesn't matter if the water is clear, if it is from a river, stream, lake, or pond, then it is dirty and littered with waterborne pathogens, most of which are microscopic and cannot be seen.

Wild water also needs to be transported from the source and to your shelter. This could be taxing but could be made easier by the use of portable containers. You could carry many of those at once with a wheelbarrow to your shelter so that you don't have to go on so many trips to get the water you need. Another limitation of these sources is that most of them are located in terrains that are not exactly easy to navigate, and this could make it harder to transport them.

An advantage to wild water such as streams and rivers is that it's flowing water, which, in essence, makes it much safer than standing water. Standing water carries algae and it's a breeding ground for many insects such as

mosquitoes and will need a lot of material to filter it out before it is pure enough for use.

Water Purification

Stored water will need to be purified before it can be stored, and this involves filtering and disinfecting it first. Any water meant for cooking and drinking needs to be treated before it can be safe for use. As previously mentioned, there are numerous illnesses associated with water that makes it hazardous to ignore these two steps.

Filtering means removing debris and parasite while disinfecting means killing off harmful organisms. You can take further steps to purify the water like boiling it, but these two are important in ensuring that your water is safe for consumption.

Filtrations

When you get water littered with debris, of course, you are going to have to filter it first before boiling it. You can do this by building your own water filtration method.

One of the most common and easier-to-follow methods involves getting a two-liter plastic bottle and cutting off the bottom to make it look like a big funnel. The next step is to lay a coffee filter in a threaded spout and then layer in a couple of inches of activated charcoal before adding fine-grain sand on top of the charcoal. Add a layer of pea gravel on top as the final step. You can test how effective this is by using colored water, it should come clear from the bottom.

If you don't want to make your own filter, you could always purchase a manufactured filtration system, but it needs to be one of good quality as most of them will not only filter the water but also disinfect it. Additionally, it works great when you are dealing with a large quantity of water.

Disinfection

This involves killing off harmful organisms and can be achieved through the following methods.

Boiling

A common way of doing this is by boiling the water. This is a reliable method of disinfecting your water as it kills off any organisms that may be swimming in the water. While there have been discussions in the past on whether water needs to be hard boiled to be safe for consumption, it doesn't hurt to boil it for several minutes.
Before disinfecting the water, it's important to ensure that it is well-filtered first.

Ultraviolet Rays

Another option available for disinfecting water would be the use of ultraviolet rays, and this can be achieved using two methods.
The first method is solar disinfection. This is a passive method of using ultraviolet rays. It improves the quality of drinking water by using sunlight to deactivate pathogens. In this, contaminated water is filled into a plastic bottle—a clear plastic bottle—and exposed to the sun for six hours.

The sunlight works to disinfect the water through two effects. One is through increased heat temperature and the other is through radiation in the spectrum of ultraviolet rays of wavelength 320 – 400 mm. In case the water temperature rises above 50 degrees Celsius, the disinfection process will only require one hour of solar exposure.

The second method and the more active of the two is by using a portable UV disinfection device. There are devices that are battery-powered and others that are crank-powered. Any of these is sufficient to do the job and quite effective when you are dealing with a large quantity of water.

It is worth noting that this treatment can be used to remove most forms of microbiological contamination but it does not remove other contaminations such as heavy metals, salt, chlorine, pharmaceuticals, petroleum products, and other man-made substances.

Chlorine

Using non-scented chlorine bleach is a common method of disinfecting water. It does, however, have a shelf life of six months after usage before its effectiveness begins to fade.
To use chlorine, you need to add a quarter teaspoon to a gallon of water and then mix thoroughly before letting it sit for an hour. You should smell the faint scent of chlorine after you are done.
You can double the amount if the water is very cold.

Calcium Hypochlorite

This is another method of disinfecting water. It is important that the product you purchase is 100 percent hypochlorite to avoid getting something with more toxic chemicals in it. A single pound of calcium hypochlorite can disinfect about ten thousand gallons and it's great for long-term use.

This method involves two steps. First, you add one teaspoon to two gallons of water before mixing with a wooden spoon. The spoon has to be wooden as metal could corrode with the solution. This step produces a bleach of sorts.
In the second, add the solution, to your water in a ratio of 1:100 parts which essentially is adding one pint of the solution to twelve- and one-half gallons of water.

It is important to keep it away from any metal or flammable sources.

Testing Water

You can effectively test water at home without taking it to the lab, but before determining what test to take, you first need to identify the source of the water in consideration. If the water you want to test is municipal water, then there is a basic kit that would help you identify the common contaminants such as chlorine and lead.

However, well water would present a challenging situation as it would call for a more comprehensive test. The easy-to-use test strips detect nine common contaminants and overall pH, and the pesticides in your well water is not one of them.

Water Test Strips

These are the most common method of testing water at home and also the most affordable option.

The water quality test kits are intended for one-time use and give a range of results rather than a specific number.

Instructions may vary from one water test kit to the other but most of them would involve filling up a test container with the water sample, dipping the test strips, and swirling the container before letting the test strip rest in the water for a few minutes. To read the results, you would have to take the strip out of the water and compare the color change against a test strip to the color chart included in the kit.

The strip will indicate the type of contaminant and its level of concentration in the water. This method is not precise compared to other methods but it gives you a range to understand what you are dealing with.

When carrying out the tests, it’s important to use cold water for the test and ensure that you don’t open the strips until you are ready to use them. Essentially, every kit comes with its own directions and it’s important to follow them for better results.

Powder Kits For Bacteria

Unlike the water strip, this involves adding a few drops of water to a container with powder and shaking it before comparing the colors with a chart until you find a match.

This kit has better accuracy for certain types of contaminants such as bacteria.

What test you would like to use will be up to you, but it's important to note that different water sources have certain kinds of contaminants that may not be detectable by the test kit. You need to invest in a quality water test to ensure you get as many details from the test as possible.
In the event of a nuclear attack where having your water tested in a lab will be nigh impossible, having your test kits and learning how to use them will come in handy. It's useful to understand more about the pH levels in your water and general hardness to counter quality issues like smell and taste.

Emergency Sources Of Water

After surviving a nuclear attack, most of the options for acquiring water will not be available and if you run out of water in storage, you need to come up with new means to replace that water.

One of the most important things you need to note is that water littered with fallout particles cannot be filtered out and the dissolved radioactive elements cannot be removed by boiling or disinfecting the water. This eliminates the option of using wild water sources, and if you run out of storage, you will have to think of another source of water.

The main water sources safe for consumption in this case are listed below.

Wells And Water Reserves

Water from deep wells and other covered reservoirs would not be contaminated by fallout particles, making it safe to use. Spring water can be safe; however, most of it is not. Some spring water has underground channels and the water may be contaminated by radioactive material.

Deep Lakes

This water would be less contaminated by dissolved radioactive material than water in shallow ponds if both had the same amount of fallout per square foot of surface area deposited in them. In deep lakes, the fallout would settle to the bottom more rapidly than it would in shallow ponds.

Seepage Pits And Hand-Dug Wells

This water is safe if fallout has been prevented from entering using waterproofing to keep water from running down outside the good casing. This is a safe way of getting water, and if the earth is not sandy or too porous, then earth filtration will be effective.

Contaminated Water

Water from shallow ponds, streams, and open sources would be contaminated with fallout, but it's still water.

Additionally, collecting rainwater from fallout-contaminated roofs or from melted snow is very dangerous as there is more fallout in these areas than an actual water source.

BOOK 4:
Home Defense

Overview

Security should be your chief concern for better chances of survival. As previously mentioned, in the face of a crisis, everyone will be scrambling for whatever resources they can get their hands on, and most people will not ask. During this time, there will be no order or law and you will be your first and last line of defense. The systems designed to alert authorities in case of a break-in or other crimes will not be functional during these times.

Looting has been seen to happen more in emergency situations than not, and this is a result of system interference. There is no one to maintain order during such events; it's everyone for themselves.

In order to ensure you are safe not only from nuclear radiation but other complementary factors, you must develop a solid defense and security system. To achieve this, there are several components that need to come into play.

For one, you need to be aware of the possible security dangers a situation such as a nuclear attack could put you in. Months of stocking up will not go unnoticed by your neighbors and you would be their first target in the event of a crisis. Once you are aware of the situation, the other element in this would be acquiring defensive weapons, alarm devices, and most important of them all, hardening your structure.

One of the biggest misconceptions is that, in the event of a nuclear attack, most people would stay locked in their shelters, so there would be no need to work on protecting it from intruders. However, very few people prepare for a crisis, and when it happens, they don't have the right equipment to help them through it. Most people would rather risk getting exposed to radiation than starve to death in their shelters. Especially not when they know where they can get relief from.

In this book, we are going to look into the four elements of defense and security and how to go about them to ensure your shelter is safe.

Security Planning

In order to defend your family in the event of a nuclear attack, you need to have a plan for physical defense and operational security, and this goes beyond having a gun or two on the premises.

One-way intruders could pose a challenge if they made their way into your shelter in gangs. People like these tend to be irrational and ruthless in their means. They will not think to take only what would suit their needs but they seek to destroy whatever remains so you are left with nothing. In the face of a crisis, people will be fueled by hunger and will not hesitate to use their weapons on you.

You need a proper defense plan to help protect you from intruders and help take control of a situation that would have otherwise left you helpless. Having a security plan involves addressing the operation security and physical defense as discussed below.

Opsec

This is a security and risk management strategy that protects sensitive information and prevents it from getting into the wrong hands. It's a survivalist jargon for 'Operations Security' and it simply means keeping your mouth shut.

This has been a topic of debate in the prepping community as some recommend keeping your prepping activities a secret while others suggest being more open to spread awareness. However, unless you are open to people coming for you for handouts, then it's important to involve as few people as possible in your activities.

A survivalist who follows OPSEC is viewed as the "gray man" and bragging about your projects is considered a clear violation of operational security. Even if you don't brag, it's hard to keep your activities from that neighbor who is always mowing for some reason. Neighbors tend to notice

things and if you suddenly receive several packages for days on end, then they are bound to notice it, and even worse, remember.

For someone looking to apply this method, a better solution would involve having your equipment shipped to an alternative location, such as your workplace, or not placing your shipment dates so close together. It is also important to work with companies who ship in unmarked boxes if you intend to keep your content a secret.

Leaving your preps in the open even within your home can expose you to the people who visit. The electrician should not be exposed to your storage if not necessary. You can keep your preps wrapped up and stored in an area that gets little use.

In the aftermath of a nuclear explosion, say two months after the major event, you don't want to be gaining weight while everyone is starving. The essence of being the "gray man," whether it is before, during, or after the nuclear attack, is blending in. A generally disheveled appearance is a typical look for someone who just faced a nuclear attack, and the last thing you want is for the people around you to notice your perfectly full cheeks and neatly trimmed hair. It would only make them curious to find out why your situation seems different from theirs.

The idea of being OPSEC is not about being selfish as most people argue. The thought that your neighbor with whom you occasionally share a beer or two on the porch could do you any harm may sound obscene now, but in times of crises, it's the people you know best that would pull the first trigger.

Being the gray man ensures that while your neighbors are scrounging for their next meal, they don't start to believe that you have something they do not, because they will come for it and, in most cases, will not take no for an answer.

Physical Defense

When you find yourself in a situation where people already know of your prepping activity, having a defense weapon would be your best chance of survival.

A weapon is a tool. One that stands between you and the person seeking to harm you or your loved ones. Most people view defense weapons as something that is coherently evil but the fact is that weapons cannot operate on their own. A firearm, for instance, lacks the capacities of thought or intent and thus cannot be considered evil. A shotgun is not going to tell the difference between the noise your son makes when he's sneaking in at midnight or a home invader.

As previously mentioned, the thought of using a deadly weapon on another human being is disturbing and that is a normal reaction to have. It means that you are human as no one with a sane mind relishes hurting other people. However, when it comes down to it, you'll need to decide between the well-being of your family and your principles. This is a sacrifice no one should ever have to make but unfortunately, one you will be forced to. That being the case, you need to invest in defensive weapons. As much as a knife would cause a great deal of damage, it would be pointless in the face of a gun. Unless you are experienced in throwing knives, then your best option here would be to get a firearm designed for defense. Examples of these include shotguns, handguns, and long rifles. A carbine is also a good option for defense weapons.

The biggest concern here would be whether to shoot or not to shoot. Most people turn away in the face of danger. A single threat of retaliation is enough to have them back away and, in these cases, having the weapon in itself is enough. However, in the case where it calls for you to shoot, you need to be confident and sure of your target. The thing about firearms is that they can be deadly. Well, all kinds of defense weapons including a baseball bat have the potential to kill someone, but in the case of a firearm, one misfire could end up costing the life of a family member or the intruder, that is, if your intentions were just to threaten them.

Another area of concern is the absence of law and order in the event of a crisis. Many people would take this opportunity to harm others. However, the thing about a crisis is that it eventually ends, after which, everyone who was affected during the crisis will have to be accounted for, and in some cases, you'll have to answer to the law and tell your side of the story in case you hurt someone.

Structural Defense

Having a solid structure is important to protect you from fallout and blast by nuclear attack. However, one of the key details most people forget lies in how much security the structure provides.

The key to this is taking notes of weaknesses in your shelter and the dangers they pose. Discussed below are means by which you can work on structural defense.

Maintain Mobility

Having a single entrance and boxing yourself in a room creates a high-security risk. Building a shelter of whatever kind with a single entry or exit point can be a death trap. If someone were to walk into the room, then you wouldn't have an alternative escape route and would have to fight them. If they have a weapon and you don't, then you'll find yourself in a very difficult situation.

This applies to safe rooms and bunkers, as well. One misconception people have is that safe rooms are impenetrable from the outside. Depending on how they are designed, they may come with many weaknesses that could be exploited and unless you have the option of mobility, essentially, you are trapping yourself in a room with no way out.

To address this, you could build multiple hidden escape routes to allow an escape undetected. Windows and doorways can prove to be a limitation and may place you in a vulnerable situation.

Design Structure

You need to ensure that the design of your structure does not offer an advantage to the person you need to escape from, and by this, we mean making use of most of your materials.

Make use of materials such as earthbag, stones, concrete, and containers that are highly resistant to small firearms and will protect you from the

dangers of fires not just from the firestorms but from the people who decide to open fire on you.

Leveraging the inherent defensive factors of your building materials will come in handy when mobility is not an option or at the very least, gives you time to think of an escape plan. You could implement this during the design and construction phase by engineering your shelter in a way that would enable it to absorb kinetic damage way better than a traditional construction would.

Another option for designing your shelter would be taking into consideration the height factor. In this, you can stack containers to form a structure that would serve to act as a border of sorts. This would provide a height advantage as people seeking to get into your structure would have to either climb it or find a way around it.

Camouflaging your shelter could also work to provide security, especially when it is an earth-covered expedient shelter. Having an earthen roof and mature vegetation could help hide it from danger.

Compensate Shelter Vulnerabilities

This is by assessing good situational awareness and how to respond to threats. You can achieve this by installing defensive works such as security doors, cameras, drains, and escape tunnels.
Identifying the weak points of your shelter is an important step to working on your structural defense. You could address this by replacing hinge screws in your doors with screws that are long enough to penetrate through frame and adding deadbolts, as well. If your shelter has windows, you could consider barricading them with plywood.

You also need to ensure that the location you choose to situate your shelter in has good terrain or at least something you are familiar with. Avoid using terrains in the open that could expose you to danger.

If your shelter is in exposed terrain, you could address this weakness by having a perimeter. This refers to an area extended outward from the walls of your shelter. This, of course, would require space and the right firearm such as the rifle, which has the ability to hit a target accurately at a distance.

Setting Up Traps And Funneling

Funneling and traps are great ways of keeping intruders out. Funneling involves directing an intruder to an area where they offer a better target for you. This involves having them follow an obvious path they think leads to your shelter or rather, deviate from the course that could lead to your shelter.

For traps, you can choose to have them visible to serve as a warning or hidden. A trap can come in the form of a shallow ditch, a few inches deep, covered with plywood and grass or leaves. This is a great security measure that would work to keep intruders away.

Bunker Option

Having a bunker as a protective measure is a great idea. They come in all shapes and sizes to meet different needs. They can offer shelter from natural disasters, such as floods, fires, and storms, among others. In the face of civil unrest, bunkers also come in handy as they offer protection from rioters and looters.

In this case, however, we are dealing with a nuclear attack which would make normal living accommodations no longer safe due to fallout, blasts, firestorms, and radiation.
Having the foresight to obtain a bunker would come in handy in the case of a nuclear attack. So, what do you need to consider before getting one?

Location

Like all the other forms of shelter we've discussed previously, a bunker can be located close to your living area. You have the option of keeping it far away but it's better if it's close. Nuclear attacks rarely come with a warning, and even when they do, it's barely enough time to evacuate.
Additionally, you can choose to turn a basement or an underground storage room into a bunker by adding proper shielding and ventilation to the room.

For protection against fallout, you can create shielding by using lead of at least 4 inches, 10 inches of steel, 24 inches of concrete, 36 inches of packed dirt, 72 inches of water, and 110 inches of wood. These materials would be effective in creating a shielding system against the initial fallout.

Bunker Design

There are key things that need to be present in a bunker for adequate protection during a nuclear attack. For one, having a sturdy door would not cut it. You need a blast door for protection against the nuclear blast.

While some bunkers are designed to cater to most disasters, this kind of design will not work for nuclear attacks. The air filtration system is one of the key details that need to be looked at. Unlike civil unrest, the air coming

into the bunker during a nuclear crisis is littered with radioactive particles that are very hazardous. Your bunker could be filled with all kinds of healthy foods, clean water, and the best medical supplies you could get, but if the ventilation system is inadequate, you might as well be facing the same danger as someone who is outside a shelter.

Items To Consider While Getting A Bunker

It needs to be secure with a defensible entrance and unobstructed emergency exit.
Different sleeping quarters for the children and adults to promote privacy.
Exercise area to promote physical and mental wellbeing.
A kitchen area with proper ventilation and adequate spaces for food preparations.
If possible, it can include an eating area separate from the kitchen.
Utility room with controls for water purification and distribution, air conditioning and filtration, and heating.
Communication system to keep up with the rest of the world. You can use shortwave radio to monitor what is going outside or even the Family Radio Service to keep in touch with your family members who had to leave the bunker for whatever reason.
Multiple sources of power and waste removal.
Adequate shielding against radiation
Sanitation area for cleaning clothes and doing the dishes.

Bunker Defense System

The defense system for a bunker is no different from any other form of shelter defense. You'll need firearms such as rifles and shotguns with plenty of ammunition and other non-lethal weapons. You also need to ensure that you include the equipment necessary for maintaining your weapons.

Armory

As we have already established, having a collection of weapons gives you an upper hand in the event of a nuclear attack. Possessing basic necessities not afforded in times of crises makes you a target for people who don't have such a luxury, and this is where the weapons come in.
We've previously looked into the defensive firearms you can acquire that best suit your needs and experiences.
However, for those uncomfortable or inexperienced with using firearms, there are other options you can explore. Let's have a look.

Prepper's Defensive Weapons

Bows And Arrows

Many preppers learn archery, and this skill has been classified as part of a prepper's lifestyle. Bows and arrows are often used for hunting if the food is not enough, but in the case of a nuclear attack, hunting will not be an option as most of the animals around will have been killed, as well.

However, a bow and arrow can be used as defensive weapons and can inflict considerable harm on an intruder.

Paintball Tactical Set

Paintball can easily hurt an attacker by bruising them, and this would be enough for them to back away. Preppers use this method to force invaders to retreat and make the threat known.

Flare Gun

A flare gun is used to signal for rescue, but it can double down as a weapon. This could seriously hurt someone if used as a defensive weapon.

Spear Gun

This is a fishing spear and it has a sharp tip for harpooning large fish. It lodges in the flesh quite easily and is a very deadly weapon when used on a

human being.

Broomstick Spear

This involves duct-taping a knife to a broomstick to create a spear that can tear through flesh.

Insect Spray

This is a product you already have in hand and can be used against an intruder. Unlike other weapons, insect spray does not require one to have a license to acquire, so it's easy to stock up on it to use later as a weapon.

Tactical Flashlight

One way you can disarm someone trying to come at you is by blinding them with light. This would be by aiming intense light directly at their eyes. Of course, the effect is temporary, but that will give you enough time to disarm them if you can or run away if you can't.

You could also use the flashlight on their nose or eyes and it could cause considerable hurt. A bezel flashlight would be effective for this.

Fire Extinguisher

Having one of these would come in handy when there is a fire. However, it's just as effective when it comes to disarming or subduing an intruder.

Improvised Weapons

Creating an improvised weapon doesn't require skill or even complicated tools. The mere essence of this is using what you have on hand. Some of these tools would require minor modifications but, for the most part, are effortless to make.

The goal of an improvised weapon is to disarm an attacker. Other weapons go above and beyond that as they have a risk of inflicting serious injuries.

Improvising on a weapon may not require you to have complicated skills or tools, but you need to be creative with your method.

Listed below are examples of improvised weapons you can use to protect yourself. Most of them are enough to disarm an attacker but not enough to decapitate him. In the face of an assailant with a gun, these weapons would not be very helpful. However, it still doesn't hurt to keep them as an option.

Weapons On Your Person

You can turn something as simple as a sock into a weapon. You would achieve this by filling it up with rocks, heavy coins, or even a brick before swinging it to the attacker. Anything ranging from a dog leash to a belt could be used against an assailant with a knife. You could wrap the belt around your wrist and swing the metal part in defense.

Of course, most of these improvised weapons would not work for people at a far range, but you don't exactly have many options present; it's important to get creative.

Weapons On The Street

Striking the assailant with stones, bricks, and blocks of wood can chase them off of your property.
Collecting blocks and stocking them up may sound like a crazy idea, but when faced with someone trying to trespass, you could lodge the bricks on them. It is important to keep a safe distance from the assailant and stay sheltered in case they decide to use the same technique on you.

Weapons In Your Shelter

Having a fire poker in your shelter can act as a defense weapon. A fireplace poker can inflict considerable damage at close range and you could use it to protect yourself from intruders.

A baseball bat has been known to do a lot of damage to people and to make it even more dangerous, you can opt to include nail heads in it. This would

create some sort of mace that would inflict even more damage.

A frying pan and a rolling pin could also prove to be effective defense weapons in the case of an invasion.

Other Types Of Defense And Tips

Avoidance is another important defense mechanism. There are many ways to warn people off your property without having to resort to any form of violence. Let's discuss means you can go about it.

Foreboding Sign

A bio-hazard sign has been very effective in keeping people out of certain areas and you could create such a sign. In your case, it would be a warning that any trespassers would be met with violence. This is a layer of defense that will have people think twice before coming in.

An example of such a sign would be one warning of a dog such as "Beware of dogs" or "Guard dog on duty." This way, they'll know what to expect if they do trespass.

Another sign that could be effective would be one that points to the intruders that you don't have qualms about using deadly weapons. A "Nothing inside is worth dying for" sign would send a clear message about the risks they expose themselves to by walking in.

Guard Dog

Having a sign is simply not enough. Sometimes you need to leave evidence that you do indeed have a guard dog and that the sign is not simply a ploy to keep off trespassers.

Even if you don't have a dog, you can still leave evidence of there being one. Having a large bone in the yard or even a bowl of water for a non-existent guard dog would have people thinking twice.

Door Jams

Installing a door jam would be a great way of delaying an intruder. Alternatively, you could slide a stick in a sliding door and this would be an effective deterrence. Installing a security striker plate would also be effective in holding out unwanted company.

Anti-climb spikes

You could seek professional help with this. Anti-climb spikes would be effective in reducing access to your shelter. They would make it hard for people on the outside to access it.

You could also do this yourself by creating a bed of nails by driving them into a piece of plywood.

This could be used in traps where they'd be covered up with leaves in a way that the intruder wouldn't be able to tell where they are specifically, and thus, avoiding them.

Barbed Wire

A traditional fence can be effective in keeping out intruders, but you can place the barbed wire on top of these fences for extra measure. You don't need to use it around your property but you can secure it around your shelter to hold off whatever objects looters or trespassers throw at it.

Sandbags

Sandbags don't only create a solid foundation but you can push them against your door to make it harder for people to push it open off the chance they can break the lock.

You can just get sandbags and fill them later with either gravel or dirt and they would be able to hold off bullets and other weapons launched at you.

Charity Kit

In the case of a nuclear explosion, you may find it hard to turn away people in need. During this time, most people will be in bad shape, and it can be

hard to watch them suffer when you know you have what they need for survival.

As much as this would be a situation that calls for an everyman-for-himself strategy, it doesn't hurt to put aside a charity survival kit. In this kit, you could include a couple of cans of food, water, emergency blankets, directions to the nearest shelter, and a few pieces of warm clothes.

The items in the kit can be covered in a plastic garbage bag or a small backpack and stashed somewhere outside your shelter. This way, instead of shooting a half-starved man seeking to feed his family, you can direct them to the survival kit and make it clear that this is the only help they'll get.

This is a great security measure as it doesn't result in violence unless the person comes back for more.

This would be a great way of dealing with intruders, especially those desperate for help, by not only providing them with necessities but also offering them guidance to a location that will be open to taking them in.

BOOK 5:
Essential Medical Supplies

Overview

Having a medical supply as part of your prepping tools is very important as previously discussed. However, it is important to learn how to use items you already have for medicinal factors, and by this, we mean, natural medicines.

In the event of a nuclear explosion, a lot of the systems would cease to work and one of these would be the medical facilities. This way, you would be forced to come up with your own means of treatment. We've discussed how you could approach different illnesses associated with a nuclear event. However, for this book, we are going to explore medicinal herbs and how you can use them for not only healing but also for prevention, as well.

Most of these herbs interact differently with other herbs, supplements, foods, and other medicines. Herbs are natural but this doesn't always equal safe, and it is important to understand them better before using them.

Apothecary At Home

Having an apothecary at home filled with medicinal herbs, infusions, and tinctures is very important. It can take considerable time to work on one, but it comes in handy.

So, what exactly is a home apothecary?

In a traditional sense, the term "apothecary" means "pharmacy," and long before drug stores existed, this was a place people would go to get potions, lotions, teas, and medicines of all kinds.

This is a little different from the medicine cabinet you have at home. Instead of synthetic drugs and pharmaceuticals, the items stored in a home apothecary range from dried herbs in jars to herbal tonics and medical salves, most of which can be mixed inside your home.

As much as an apothecary differs from your typical medical cabinet, it doesn't mean that you need to build a shed to plant and store your herbs, as you could do so easily by purchasing a custom-made home apothecary cabinet and storing a few mason jars of your herbs in it.

What To Stock In A Home Apothecary

If you intend to make your own herbs from scratch, you can stock up on a wide variety of homemade medicines and cosmetics.

Your apothecary can be as small as a medicine cabinet or as large as a home pantry depending on what you intend to put inside. Installing a custom-made apothecary cabinet into your shelter and filling it with a few of the herbs would come in handy in times of crisis.

You have the option of purchasing the items you want in your home apothecary or gathering them yourself. Discussed below are the items that need to be in your home apothecary.

Dried Herbs, Spices, Flowers, And Teas

You can grow your own herbs and spices at home or you could purchase dried medicinal herbs. While the latter is not the best choice as you have no idea how long they've been sitting there, it's still an option if you lack the skill and knowledge to grow your own. Herbs that have been sitting for a long time lose their potency and medicinal properties over time. Another disadvantage to storing herbs is that there is no guarantee that they are organically grown herbs.

However, it is still important to invest in herbs and if you can't grow your own, then you should consider purchasing them.

The list of herbs you can grow is endless, but here are some of the common ones you can decide to include: basil, calendula, catnip, comfrey, dandelion roots, dried chili peppers, astragalus, cannabis, cinnamon, cloves, chamomile, ginger, lavender, herbal teas, lemon balm, peppermint, oregano, rosemary, dried citrus peels, sage, stinging nettles, rosehips, echinacea, elderberries, thyme, turmeric, yarrow, and black or green tea.
You need to be aware of the laws in your area as some of the herbs are restricted in certain states.

Solvents

These are ingredients that aid in medicinal preparations at home. Apart from the herbs, you'll need to include solvents if you intend to make the medicine yourself.

Some of these ingredients include a variety of liquid solvents that are used to make herbal infusions like liniments, tinctures, and elixirs.

A list of such solvents includes distilled water, unpasteurized honey, alcohol, coconut oil, maple syrup, olive oil, rosewater, apple cider vinegar, and glycerin.

To prepare some herbs, such as yarrow, holy basil, or echinacea, you can use tinctures, which is the most popular type of herbal medicinal preparation. For example, you can make a basil medicinal tincture by covering the dried herbs with vodka and letting it sit and infuse for several weeks after which you strain the herb out. The liquid extract or tincture is then stored for medicinal use.

An alternative to alcohol would be glycerite. This is prepared with vegetable glycerin in the same way as a tincture and it's a great option for kids.

Essential Oils

These can be used in one form or another and just like with the herbs, the list is endless. It's important to include them in your apothecary as they could come in handy when you are stuck in a shelter for months on end.
Their uses are also wide and can be crafted into cosmetics, such as salves and lotions, cleaning products, candles, room sprays, and medication.
While the list of essential oils you can have is endless, some of the oils you can get for starters include peppermint, lemon, eucalyptus, lavender, orange, rosemary, and spruce.

Fresh Ingredients

These are easy to acquire and they too carry medicinal properties, most of which you already have, but unlike most herbs, these are used best when they are fresh. Some of the fresh ingredients include garlic, ginger, onion, and horseradish.

Other Apothecary Ingredients

More ingredients that could be useful in preparing your own natural medicine include sea salt, bee pollen, Epsom salts, beeswax for making balms and salves, sugar, and lye for soap making.

Apothecary Tools And Equipment

Your apothecary needs to carry tools and equipment to help with the creation of these natural medicines. Some of these tools are discussed in the following section.

A pestle and motor to help grind up spices, fresh ingredients, and dried herbs to make pastes and poultices. You could get a set made of marble or even molcajetes, which is a traditional set made of lava stone.

Other tools such as funnel, measuring cups, candy thermometers, scissors, and kitchen scale are also important to have.

For melting down salves and balms, you could include a double boiler that can also be used to make candles.

The tools help in preparation, but after you are done, you need to have some place to store them. For this, you can use well-labeled glass jars and bottles. You can keep some herbs, spices, and teas in mason jars and make syrups, salves, sprays, and tinctures in glass amber bottles.

Books And Journals

You have nothing if not time in a shelter. You may not have the knowledge or the time to learn how to use some of the herbs, so it’s important to include books and journals in your apothecary. Some of the books contain detailed lists of herbs and their uses. The journals carry in-depth research on how to go about growing your herbs, how to harvest them, use and store them.

Herbal Glossary

Herbal medication can include the use of either whole plants or their extracts in different forms. This includes foods, teas, liquid extracts, powdered herbs, smudges, incense, and skin preparations.
Herbalism includes a variety of names as each product carries unique uses. To best understand this, below are some of the terms used in herbalism and the categories under which the herbs fall.

Adaptogen

These are herbs that promote well-being by providing a means for the body to adapt to stress. They regulate the system functions on a broad basis.
Examples of such herbs include holy basil, turmeric, Ashwagandha, maca roots and rhodiola rosea, also known as the golden root, among others.

Adjuvant

These are herbs that enhance how a body responds to a remedy by aiding in assimilation or energy balance. They catalyze the overall response.
Examples of these herbs would be ginger and licorice.

Anodynes

These herbs are used to relieve pain.
Examples of herbs used in this include meadows, butterfly pea, white willow, hops and devil's claw, among others.

Antiemetics

These are herbs used to prevent or relieve nausea.
The zingiberaceae herbs can be classified under this.

Aperient

These herbs are used as laxatives and can help encourage appetite or digestion.

Some herbs that could be used to aid in this include: dandelions, artichoke leaves, yellow dock, and psyllium seeds, among others.

Balsamic

These herbs help soothe and mitigate inflammation.

Carminative

Volatile oils in carminative plants support digestion.
Examples of herbs that aid in this include peppermint, cloves, sage, thyme, allspice, basil, cinnamon, garlic, ginger, nutmeg, lemon, and anise, among others.

Emetics

These are herbs that induce vomiting.
Herbs with emetic properties include bayberry, bloodroot, yucca, vervain, chaparral, and blessed thistle, among others.

Emmenagogue

These are herbs that help in the regulation and stimulation of menstrual flow and help in normalizing hormonal levels.
Some of these herbs include safflower, rue, mugwort, yarrow, angelica, scotch broom, tansy, and wormwood, among others.

Expectorant

These herbs help in loosening mucus so that it can be coughed up and expelled.
Herbs such as elecampane, hyssop, licorice, white horehound, and thyme carry properties of an expectorant.

Hypnotics

These are herbs that help with sleep.
Examples of herbs that aid in sleep and relaxation include valerian root, chamomile, lavender, and passionflower, among others.

Compress

This is a cloth or gauze soaked in herbal preparation and then applied externally to the skin.

Maceration

This means chopping or grinding herb, mixing it up with a solvent, and letting it sit for a month in a jar before straining it out. The liquid that is extracted is the tincture.

Salve

This is a semi-solid fatty herbal mixture typically made by infusing oil with herbs and melted beeswax. It is meant to be applied externally.

Tincture

This is the liquid extracted from strained plant material after soaking them in alcohol, vinegar, or other liquids for weeks.

Decoction

This is the extracted water as a result of boiling plant material, such as roots, seeds, berries, and mushrooms. The resulting water is more concentrated than infusion, which is made by pouring water over fresh or dried herbs.

Infusion

A remedy made by soaking plant material, such as flowers or leaves, in liquid (usually hot water). This helps to extract volatile oils, vitamins, and enzymes from the plant.

Common Medicinal Herbs

As previously mentioned, natural does not always equal safe. Products, even the natural ones, react differently in a person, and some factors like age can affect how an herb would react to your body.

Discussed below is a guide to common medicinal herbs and their uses.

Chamomile

The flower is the part used and it's considered to be a cure-all. It is used for wound healing and to reduce swelling and inflammation. It is used in tea to help with anxiety or applied as a compress to help with swelling.
This herb is considered safe by the FDA but has been known to interfere with the way body uses some medicines. It can also increase drowsiness caused by other medicines.
It is also typically used to treat skin irritation caused by radiation cancer treatments and its capsules control nausea during chemotherapy.

Echinacea

The roots, stalks, and leaves are the parts of the herb used to treat colds, infections, and wounds. It can be used to prevent colds but it's important to consult with a healthcare provider as this herb can interact differently depending on the person.
It is also advised that people allergic to plants such as marigold and daisies, which belong to the daisy family, need to be careful with this herb as they are most likely to get an allergic reaction to it.

Feverfew

The leaf part is used to treat fevers. It also aids in the prevention of migraines and also treats arthritis.
The side effect to using this herb would be mouth ulcers if the leaves are chewed. It can also cause digestive irritation, and if you were taking it for the migraine and stop, then the headache will return.
This herb does not react well with nonsteroidal anti-inflammatory medicines or other anticoagulant medicines as they affect how the herb works in the body.

Garlic

The clover and roots of garlic are said to contain antimicrobial, cardioprotective, anticancer, and anti-inflammatory properties and, for this

reason, are believed to help lower cholesterol and blood pressure.
This herb, although considered safe by the FDA, can increase the risk of bleeding. It should not be used with warfarin, a blood thinner.

Ginger

The root is used and it helps in easing nausea and motion sickness. It has also been said to contain anticancer, anti-inflammatory, and antioxidative agents.
The side effects associated with this herb include heartburn, bloating, and nausea in some cases.

Gingko

A leaf extract used to treat medical conditions: asthma, fatigue, bronchitis, and tinnitus. This herb is also used in the prevention of dementia and other cognitive disorders.
The seeds of the herb contain toxins that can cause seizure and death when used in large amounts. This herb also increases the risk of bleeding and should not be used with anticoagulants, anticonvulsant medicines, nonsteroidal anti-inflammatories, or tricyclic antidepressants.

Ginseng

The roots of the herb are used and it is considered a cure-all. The herb is used as a tonic and an aphrodisiac, and the side effects associated with it are high blood pressure and tachycardia.
While the herb is considered safe by FDA, it should not be used with heparin, nonsteroidal anti-inflammatory medicines, warfarin, estrogens, digoxin, or corticosteroids. People with diabetes are also discouraged from using the herb.

Goldenseal

The roots and rhizome of the herb are used. The herb contains berberine, which is a plant alkaloid with history in traditional Chinese medicine.
The herb is said to treat diarrhea and eye and skin irritations. It can also be used as an antiseptic.

The side effect associated with the herb are skin, mouth, throat, and gastric irritation. People have been discouraged from using this herb as it can be poisonous in high doses.

Milk Thistle

The fruit of the herb is used to treat liver conditions and high cholesterol. It is also said to reduce the growth of cancerous cells.

Saint John's Wort

The flower and leaf of the herb is used to create antidepressants. However, large consumption of the herb can cause a sensitivity to light and has been said to cause very serious health risks when they interact with other medication, hence the need to consult the expert advice of a healthcare provider before consumption.

Valerian

The root of the herb is used and it treats sleeplessness and reduces anxiety. The herb is often used for flavoring some foods and even root beer.
As is with all herbs, it's important to consult the advice of a healthcare provider before consumption.

Herbal Preparations

Herbs can be prepared in various ways depending on their usage. Discussed below are ways you can go about preparing the herbs.

Water-Based Preparations

Herbs that require water-based preparations can be steeped in boiling water, and this is considered infusion. The herbs can either be dry or fresh.
Another method for preparing herbs is decoction, which involves boiling water for 20 to 30 minutes. This is often for harder plant materials such as roots and stalks.
Incorporating herbs into a thick sweet liquid creates a syrup that makes it easy to consume. This is especially for hard and bitter herbs.

Herbs can also be delivered into a smooth liquid through infusion or decoction to create a lotion to be used externally.
The herbs can also be prepared by dipping a piece of cloth into a hot or cold infusion or decoction and applying to the body as a compressor.

Additional Preparations

Alcohol-based preparations referred to as tinctures and other non-alcoholic alternatives, such as vinegar and glycerites, are taken in the same way.
Oil-based preparations with infused oils and ointments are used externally.
Herbs prepared in powder can be used externally or internally in form of capsules.
Other herbs are prepared in juices, creams, gargles, baths, and even for steam inhalation.

Essential Oils

These are unique aromatic compounds extracted from plants through distillation either through water and steam or other methods like cold pressing. Essential oils are extracted from flowers, leaves, and seeds.

How these oils are made is considered to be very important as oils obtained through chemical processes are not considered to be true essential oils. These oils are concentrated plant extracts and need to retain their “essence,” which lies in their natural smell and flavor.

Essential oils are commonly used in aromatherapy where they are inhaled and interact with the body in different ways. Inhaling the essential oils can stimulate areas of your brain that influence your emotions, behavior, memory, and sense of smell.

They can also be diluted and used on the skin where the plant chemicals are absorbed.
So, what are the popular types of essential oils and their uses?

Popular Types

The list of essential oils is endless and every one of them has their own potential health benefits and unique factors, but there are some which are commonly known.
Peppermint is a common plant used to extract essential oils that are used to boost energy.
Another common plant is lavender and it's used to relieve stress.
Sandalwood is used to help with nerves and focus.
As is with lavender, bergamot also helps reduce stress and improves skin conditions like eczema.
Rose helps with anxiety and improves mood.
Chamomile aids in relaxation and mood improvement.
Ylang-Ylang is commonly used to treat headaches, nausea, and skin conditions.
Jasmine is a common plant and its extracts help with depression and childbirth.
Lemon aids in mood, headaches, and digestion.

How To Choose The Right Essential Oils.

There are many companies that will claim to produce "pure" essential oils, but in most cases, this is not true.
It's hard to determine whether the products you are getting are of quality or their composition is really what they claim it is. When it comes to choosing the right essential oil for yourself, here are some of the tips you can follow.

Purity

A tip for telling the difference between products is to look at the listing. Most pure oils indicate the botanic name of the plant used rather than the term. For instance, the labeling could indicate "Salvia Rosmarinus" instead of simply indicating, "essential oil for rosemary."
You need to find an oil that contains only aromatic compounds without additives and synthetic oils.

Quality

The quality of the essential oil is determined by how much of the plant extract has been retained during the extraction process. The quality goes down when chemicals are added to it for the extraction or with synthetic fragrances. The essential oils should be extracted through distillation and mechanical cold pressing.

Reputation

Brands that produce high-quality products have a great reputation, and this can guide you when making a purchase.

Safety And Side Effects

Natural doesn't always mean safe. Herbal products contain bioactive compounds that could harm your body. However, since most essential oils are either inhaled or combined with base oils to be used on the skin, most of them are considered safe. Even so, you need to be conscious of the environment you choose to use them as some could pose a danger to children, pregnant women, and even pets.

Side effects to using essential oils could range from rashes, headaches, asthma attacks, and you could even have an allergic reaction to some oils.

Some common essential oils that have been reported to have adverse reactions are peppermint, tea tree, lavender, and ylang-ylang.

Essential oils made from cinnamon extract are high in phenols which can cause skin irritation, especially when used without an oil base.

Essential oils made from citrus fruits and used on the skin increase its reaction to the sun and may cause sunburn.

It's also important to remember that swallowing essential oils or directly ingested can be dangerous and even fatal. The only intake allowed is through inhalation.

Essential Oils For Inflammation

Essential oils can be used in different ways to treat inflammation.

The first way to go about this would be diffusion. You could easily purchase an essential oil diffuser from Walmart, and this will allow for the

essential oil particles to disperse directly into the air. If your inflammation is stress-related, then inhaling the scent will help you relax and help with it.
The second way to address inflammation using essential oils is by massage. This is a common method where the oil is directly applied to the affected areas and massaged gently to help with swelling and pain.
The third way to go about this, although uncommon, would be gargling. While essential oils are not meant to be ingested directly, research has found that essential oil mouthwash aids in reducing gum inflammation caused by gingivitis. It is important to consult with an expert before trying this method.
An important detail to note is that undiluted essential oil should never be applied directly to the skin. It needs an oil base, such as coconut, and it needs to be one ounce of the base oil to every dozen drops of the undiluted essential oil.
It is also important to do a skin patch test on your arm to see how your skin reacts to the essential oil. Leave it for twenty-four hours, and if you don't experience any irritation or inflammation on the spot, then it's safe to use.
Essential oils for inflammation should not be your first line of treatment unless you have no other choice. It's important to consult with your doctor before resorting to this, as the last thing you want is to mask an underlying condition.

Essential Oils For Your Skin

Other inflammation and mood-stabilizing essential oils are commonly used for the effect they have on the skin. They can be used to treat dry skin, oily skin, and other skin conditions that may result from being locked in a shelter for a long time.
Below is a list of common essential oils and how they affect the skin.

Lavender

The most common use for this is sleep and relaxation, but it can be used to moisturize your skin. It has anti-inflammatory agents and is a natural hydrator that would help in repairing dry skin.

Chamomile

This contains azulene, which is known for increasing moisture and reducing inflammation. If you have ragweed allergies, then chamomile oil can trigger a reaction.

Sandalwood

This essential oil also contains anti-inflammatory compounds that promote moisture on the skin.

Clary Sage

This contains acetate and geranyl, which are active compounds that control excess sebum and, in this way, control acne. It also reduces the appearance of wrinkles on mature skin.

Rosemary

Oils extracted from rosemary carry anti-inflammatory, stimulating and analgesic properties. They not only control excess sebum but also help with greasy hair and dandruff.

Lemon Grass

This has natural astringent properties that help fight skin breakage by acting as an antimicrobial while removing excess dead skin cells.

Cinnamon

Thanks to its antioxidant compounds, it is considered a powerful anti-inflammatory and will help in treating acne symptoms like nodules, cysts, and pustules.

Tea Tree

This is one of the most notable antiseptics in alternative medicine and it helps with inflammation and fighting bacteria that contribute to acne breakouts.

Eucalyptus

This is known for its pain-relieving qualities and, additionally, provides moisture to painful skin rashes.

Patchouli

This also contains anti-inflammatory agents and reduces pain. It is also helpful in treating eczema rashes.

First Aid Herbal Kit

In the event of a nuclear attack, there might be barely any time for you to pack up your mason jars to carry with you. Your herbal medicine collection may not even seem like the most important thing to take with you, hence the need for an herbal kit.

We've previously discussed what to include in a first aid kit, but in case you want to prepare an herbal one, as well, then there are a few ways you could go about this.

Remedies And Herbs To Include In The Natural First Aid Kit.

Listed below are some of the natural remedies you can include in your herbal first aid kit.

Activated Charcoal

This would come in handy when there is a case of food poisoning. Symptoms such as vomiting, diarrhea, and intestinal illness could be subdued by the consumption of activated charcoal.

Arnica

This is a topical cream used for injuries, bruises, or muscle pain. It is typically used right after an injury and reduces healing time. It is also very effective in relieving sore muscles.

It is for external use only and should not be used on open cuts.

Cayenne Powder

This helps stop bleeding rapidly. While it is an ingredient that is often used in food, it also comes in capsules for medicinal purposes.

Researchers have indicated that it can be taken internally during heart attacks to increase blood flow and clear blockage.

Chamomile

This has a calming effect and can be used as a relaxer when brewed as a tea. The dried flowers can also be made into poultices with some gauze to help with pink eye.
Chamomile can also be added to a bath as it promotes relaxation and is great for the skin.

Comfrey

This herb is used externally and it promotes healing. A poultice made from comfrey and placed on a wound reduces the healing time greatly and prevents infection. It can aid in healing from something like bug bites and bruises to broken bones.

Essential Oils

The advantages of having essential oils are many. Some help with relaxation, and others inflammation, and also protection of the skin. Depending on the one that works well for your skin, you can include it in your kit.

Ginger Capsules

Ginger has many medicinal values that range from stomach troubles to reflux and nausea. They help soothe the stomach after food poisoning or digestive illness and it helps to include them in your kit.

Peppermint

This can be made into tea and it is great for digestion. It also helps with upset stomachs and digestive illnesses.

Plantain

Considered to be a weed most of the time, when made into a poultice, this herb is great for dealing with bites, stings, cuts, poison ivy, and infections. It offers instant relief on bruises.

Apple Cider Vinegar

This natural remedy aids in digestive troubles and food poisoning and can be taken in a dose of one teaspoon for every eight ounces of water every hour.

Aloe Vera

This natural product helps in healing burns and blisters.

Epsom Salt

Dissolved in water, it is great for removing splinters and helps relieve sore muscles when taking a bath.

Hydrogen Peroxide

This is perfect for cleaning small cuts and disinfection.

Witch Hazel

This herb can be used for cuts, scrapes, and for maintaining a good skin tone, as well.

Gelatin

This has a range of health benefits, and it's important to include it to your first aid kit. Natural gelatin is made from bones and tissue in homemade chicken soup. You can also get it in food, homemade jello, smoothies, and hot teas. It provides nourishment during an illness.

Baking Soda

Helps in severe heartburn and urinary tack infections. ¼ teaspoon of baking soda would aid in alleviating heartburn fast.

Coconut Oil

This would serve as a skin salve and even an antifungal treatment. It also helps with dry skin and it's overall an important item to include in your kit.

Patch Bandages

It’s important to include patch bandages made from organic bamboo and enriched with coconut oil.

Additional Supplies To Include In The Natural First Aid Kit

In your kit, you could include a hot water bottle, an enema kit, gauze, some cutoff sleeves to serve as bandages, super glue, a bulb syringe to help with congestion, and strips of sterilized muslin cloth for wrapping wounds.
Additionally, you could include a homemade ice pack which you could craft by rubbing alcohol in a double-bagged zip-lock bag or freezing liquid dish soap.

BOOK 6:
Canning and Preservation

Overview

Canned foods are very popular and many people prefer them as they save time spent preparing dishes from scratch. However, this method of food preservation is met by different reactions.

They are often thought to be less nutritious than fresh or frozen foods and believed to contain harmful ingredients. Other people believe they are just as nutritious as fresh foods, so which is it?
Canning is a method of preserving food by packing them in air-tight containers. This method was first developed in the 18th century for the purpose of providing a stable food source for sailors and soldiers at war.

This method of preservation involves three processes that allow for the food to be shelved for one to five years and even longer.

The first process to preservation is processing, where the food is peeled, sliced, chopped, boned, pitted, shelled, or cooked. The second process involves sealing the processed food in cans. The last process is heating the cans to kill harmful bacteria and prevent spoilage.

So, the question lies in whether canned foods are less nutritious than fresh or frozen foods. Research has shown that this isn't always true. Canning, does, in fact, preserve most of the food's nutrients. Carbs, proteins, fats, and most minerals are unaffected by the canning process. Fat-soluble vitamins, such as A, D, E, and K, are also retained in canned foods.

That said, some canning that typically involves high heat can damage water-soluble vitamins like C and B. However, these vitamins are sensitive to heat in general and can be lost even during normal processing, cooking, and storage methods used at home.

As much as the canning process damages certain vitamins, it can cause others to increase. For instance, corn and tomatoes release more

antioxidants when heated making canned foods an even better source of antioxidants.

A convenience offered exclusively by canned foods is their affordability compared to fresh foods, convenience, and their long shelf-life.

A notable concern over canned foods is that they may contain traces of BPA (Bisphenol A), which is a chemical often used in food packaging. Studies have shown that this chemical can migrate to the food from the can's lining. Canned food has been linked to the leading cause of BPA exposure. Health risks associated with this have been said to cause heart disease and type-2 diabetes. Canned foods that have not been processed properly may contain a dangerous bacteria known as clostridium botulinum, but the risks of contamination are very low.
Salt, sugar, and preservatives are added to some canned foods to improve their flavor, texture, and appearance.

To make the right choice when it comes to picking canned food, you need to make sure you've read the label and ingredient list. If you are concerned about sugar or salt, then you can go for the "no salt added" or choose the "low sodium" option, and to avoid sugar, go for juice or fruits canned in water instead of syrup.

The bottom line is, canned foods can be a source of nutrition when fresh foods are not available. In the event of a nuclear attack, fresh foods will be near impossible to get, and even harder will be trying to increase their shelf life without canning them first.

Importance Of Acidity In Foods

Acid is a very important component of many foods as it contributes to the safety of food as well as the flavor. Food with low-acid is at high risk for botulism.

As mentioned previously canned foods that are not processed properly may contain clostridium botulinum, hence the need for severe preservation processes. New and well-established preservation processes need to be evaluated in the context of a target food's pH.

pH is a measure of acidity and the lower the value of pH, the more acid the food contains.
High-acid foods with a pH of below 4.6 are often pasteurized and thus kill vegetative pathogens. However, some spores and spoilage microbes may survive giving them a short life span, hence the need to refrigerate them. Foods may have a low pH either because of indigenous acids or added acids.

Fermented foods and most fruits, such as citrus fruits, have edible acids, so their pH is well below 4.6. Foods whose natural pH is below 4.6 is considered acid food and under the FDA regulations, products and foods derived predominantly from them do not require their processes to be filed with the FDA.

Acid foods contain enough acid to block the growth of bacteria or destroy them faster when heated. A common way to acidify foods is by adding vinegar, citric acid, or lemon juice, whose active acid is acetic.
So how does the level of pH in food products affect the food beyond the safety concerns?

Appearance

Food is often judged by appearance and the molecules in food that contribute to its color are often affected by the pH levels.

A great example of this would be fresh and canned green beans. Canned green beans lose their natural acids to the water in the can, so they end up sitting in mildly acidic solution, hence their brown color.

Foods such as red cabbage contain natural pH indicator pigments that will appear purple in neutral pH but turn green in alkaline conditions and red in acidic conditions.

Texture

The feel of the food in the mouth affects how you view the food, and it is also affected by the food's pH.

Take milk products for instance. When rennet is added to milk that is more acidic, the product it gives is springy and less chewy, and this is a clear indication that to obtain the desired result, getting the pH level right is key.

When cheese is exposed to acidic conditions, the hardness reduces and it becomes crumbly.
The pH also affects the water-holding capacity of foods, such as meat products, and it's for this reason that meat tenderness improves in acidic solutions.

Taste

The taste in foods and drinks are greatly influenced by the pH. Wine is one of the drinks that are closely monitored for change in pH as they usually sit between a pH of 2.8 and 3.8, giving a dry product.

Increased pH has been found to decrease the sour tastes.

Production

While pH does affect the production time, specifications, and yield, it also affects certain processes. For instance, during the renneting stage of cheese production, the pH in milk changes the amount of fat lost to the whey and in this way, changes the overall yield.

Aging in wine and the fermentation is influenced by pH, hence the reason it is closely monitored; the wrong pH level can cause bacteria to attack the wine, causing it to spoil.
Milk pH of 6.7 changes the texture of yogurt, creating a gel stiffness.

Food Safety

Possibly the biggest role pH in food plays lies in how it influences the growth of bacteria in foods. Some sauces like mayonnaise have a prolonged shelf life as they are made slightly acidic by vinegar or lemon juice.

Preserved products need the right level of acidity to prevent bacterial growth and the formation of toxins that cause botulism. The heating process in canning is used as an additional preventative measure to the pH for better protection against the growth of bacteria.

Basic Canning Tools

The best thing about canning is the fact that you can do it yourself. With the knowledge and the right canning tools, you can create your own preserved foods and can them yourself.

Canning is a great skill to have as you can make anything you like in surplus. To start, you need to understand the tools that are required for this skill.

Canning Jars And Lids

Lids and jars come in different shapes and sizes and it's important to pick the right one for the kind of food you intend to preserve in it.

Some cans have a one-piece lid while others have a band solution. You also need to ensure that the cans you pick can be reused over and that the lid is the right size for the canning jar as that would determine the food's shelf life.

A Cooker Or Canner

You can do your canning in a large pot with the addition of a canning rack or you could use a canner specifically made for home canning.

Canners come in different sizes and some with canning racks while others without. There are canners that are sold as kits with all the tools you need for canning included in the kit.

For beginners, the water bath canners are the better option as the pressure canners are for more advanced canning. If you are pickling highly acidic foods, a water bath canner is enough for that, and it is also cheaper than the pressure canner.

Canning Book

Having a book or a guide on-hand is great for not only teaching you how to use the canning tools but also because it offers detailed recipes you can follow on different types of foods.

Food Strainer

This is used to grind or purée food for canning. You could replace this with blenders or food processors.

Canning Jar Lifter

This is specifically designed to ease the job of moving hot jars in and out of boiling water. You could use tongs for this but they can be slippery and fall, and you could get hurt in the process.

Jar Funnel

This is designed to fit regular and wide-mouth jars. It makes work easier in ways that a standard kitchen funnel cannot.
By using the latter, you fall at risk of hurting yourself or even spilling, which is a waste of food.

Kitchen Scale

Canning recipes call for large amounts of food that require measurements. The assumption most people have is that you just need one ingredient for the canning process, but there is quite a lot that goes into it.
You are going to need a kitchen scale to measure all the ingredients to use in canning.

Canning Label

You need to label all your cans or lids, and you can use a dissolvable pen, one which can easily be removed by soaking it in water.

Choose The Right Jar

Selecting the right jar is a very critical part of the canning process. You need to understand your needs and make the right choice. Your needs vary with the type of food you intend to can and how you plan on storing it.

If your plan is to store them on shelves, then you are going to need jars with shouldered sides, but if you plan to keep your food in the freezer, you'll need to use jars with straight or tapered sides.

The type of food you intend to can will also determine the jar's mouth size you need. For one, regular mouths work best for pourable foods, such as pie fillings, salsas, jellies, and jams, while whole fruits and vegetables require wide-mouth jars to allow you to fit more items into the jar.

You need to refer to the recipe to properly understand the optimal jar shape and mouth opening that best fits your needs as this can vary depending on the number of servings your recipe calls for.

There are two major types of jars in terms of design and each is designed to meet specific needs.

Regular Mouth

This canning jar is tapered at both the top and the bottom and is made so so that it's narrower at the mouth than the rest of the jar. The tapered neck of the jar helps certain foods stay beneath the pickling liquid and at the same allows for more adequate pouring.

A regular mouth-sized jar is not used for freezing as the tapered lids don't provide adequate space to allow for liquids to expand as it freezes.

Jelly Jars (4oz)

The four-ounce regular-mouth jelly jar is ideal for jellies, jams, spices, small dipping sauces, and sometimes even baby food.

A regular mouth-sized jelly jar is smaller than a wide-mouth jelly, and this makes it a perfect choice for small helpings of canning recipes.

Pint Jar (16oz)

A regular mouth 16-ounce pint jar has a tapered opening and is made for foods that need to be poured.
It's best used to store relish, pie fillings, and salsas but can also hold smaller cut fruits and vegetables as larger foods may not fit through the opening of the jar.

Quart (32oz)

A regular mouth 32-ounce quart jar is great for pickles, sliced fruits, vegetables, and tomato sauces. Smaller vegetables, such as carrots and asparagus, can be canned in this jar as they are small enough to fit through the smaller, regular mouth opening.

Wide Mouth

These mason jars are the same width from the lid to the bottom of the jar. Unlike the regular mouth jars, the wide mouth jar is not tapered at the top, so they have an opening big enough for larger fruits and vegetables to fit through.
This large opening makes it easier to remove vegetables after they are done pickling and provide a large space for liquids to expand if you plan on freezing the canned food.

Jelly Jars (8oz)

A wide mouth 8-ounce jelly jar is ideal for sauces, syrups, and even candles.
The half-pint jars may allow for some smaller vegetables to fit and can hold small batches of jellies, jams, and preservatives.

Pint Jar (16oz)

A wide-mouth 16-ounce pint jar is great for testing new recipes and perfect for home canning recipes. It is suitable for salsa, fruit butter, and relishes.
This is the ideal jar for preserving recipes.

Quart (32oz)

A wide mouth 32-ounce quart jar is more versatile than the regular mouth jar and can fit larger fruits and vegetables without the limit of the tapered top. They work best for the whole or halved vegetables and fruits.
They are also great for large chunks of fruit and pickles.

Home Canning Planning Guide

Food Acidity And Processing Methods

Determining whether to process food in a boiling-water canner or a pressure canner to control botulinum bacteria depends on the acidity of the food.

As previously discussed, acidity can be present naturally in most fruits or be added to pickled food. If the canned food has low acid, then it cannot prevent the growth of bacteria.

Tomatoes are considered an acid food but some are known to have a pH value slightly over 4.6, and so is the case with figs, therefore, if they are to be canned as acid fruits, then they must be acidified to a lower pH with citric acid or lemon juice after which they can be safely processed in a boiling-water canner.

It is important to note that botulinum spores are very hard to destroy at boiling-water temperatures and they need higher canner temperatures for that to happen. This way, all low-acid foods need to be sterilized at room temperatures of 240° to 250°F, which is only attainable in a pressure canner operated at 10 to 15 pounds per square inch of pressure (PSIG). At these

temperatures, you'll need 20 to 100 minutes to destroy bacteria in low-acid canned food.

The exact time will depend on the kind of food being canned and the way it is meant to be packed into a jar. Time needed to safely process foods with low pH in boiling water canners can range from five to 85 minutes, and the time needed to process low-acids foods will range from seven to 11 hours.

Ensuring High-Quality Canned Foods

To ensure high-quality canned foods, you need to make sure that the fresh foods are of great quality. The quality of fruits and vegetables varies, but it's important to check your products for molds, small diseased lesions, or spots on the food.

To make sure you get produce of better quality, you can opt to grow your own fruits and vegetables or purchase them from producers during the harvest period. Most of the fruits are in their best quality a day or two between harvest and canning.

Fresh home-made red meat and poultry needs to be chilled and canned immediately. It is important to ensure that the meat you can is fresh and not from a diseased animal. The same goes for iced fish and sea foods: they all need to be canned within two days of harvest.

Maintaining Color And Flavor In Canned Food

To achieve this, you need to remove oxygen from food tissues and jars, destroy the food enzymes, and use high jar vacuums and airtight jar seals.

To retain its optimum colors and flavors during processing and storage, you need to use only food of the highest quality that are at the proper maturity and free of blemishes and diseases.

The second way to go about this is use hot-pack method, especially when processing acid foods in boiling water.

Make sure you can them as soon as possible and don't expose the prepared food to air.
To prevent discoloration in fruits, keep peeled, sliced, halved, and diced apricots, apples, peaches, pears, and nectarines in a solution of three grams ascorbic acid to one gallon of cold water while preparing the jars.

You need to fill hot foods into jars and adjust headspace as specified in recipes.
Make sure the screw bands are secured
Process and cool jars and then store in a relatively cool, dark place preferably between 50° and 70°F.
Do not can more food than you intend to use within a year.

Jar And Lids

You can choose to can your foods in a glass jar or metal container. However, metal containers can only be used once as they require special sealing equipment and can be quite costly.
The regular and wide mouth mason-type jars with self-sealing lids are considered to be the best option, and they comes in different sizes. When handled carefully, a mason jar can be reused multiple times with few lid replacements with time.
Before use, the jars need to be washed in hot water with detergent and rinsed by hand or washed in a dishwasher. When the jars are not rinsed properly the detergent residue can cause unnatural colors and flavors.

Jars need to be kept hot until ready to fill with food, and to do this, you need to submerge the clean empty jars in water in a boiling water canner and bring the water to a simmer (180°F). Keep the jar in the water until it's ready to be filled with food.

You can use a dishwasher to preheat jars after they are washed and dried on a complete regular cycle. You need to keep them there until the filing is ready.

Washing and preheating is not enough to sterilize the jars, especially for those with white film on the exterior surface caused by mineral deposits. The hard water film on jars can easily be removed by soaking the jars in a solution containing one cup of vinegar per gallon of water prior to washing and preheating them.

Jars used for vegetables, meat, and fruits to be processed in pressure canner do not need to be presterilized. The same can apply to foods that are to be processed for ten minutes or longer in a boiling canner. Pickled products and fruits that take less than ten minutes to be processed need to use presterilized jars.

Once you have processed the jar, do not retighten it because, as the jars cool, the contents contract, pulling the self-sealing lid firmly against the jar to form a vacuum. If you are worried that the rings are too loose, then you can easily tell as liquid will escape from the jar during processing, making the seal fail.

In the case that the ring is too tight, it'll prevent air from venting during processing causing the food to discolor during storage. The jar could also break if the lid is too tight especially with raw, packed, pressure-processed foods.

Storing Canned Foods

Once the lids are tightly vacuum sealed on the cooling jars, you can remove the screw bands and then wash the lid and jar to remove food residue.

The next step would be labeling and dating the jars before storing them in a clean, cool, dark, dry place.

The food will spoil when jars are stored above 95°F or near a furnace, hot pipes, under the sink, or in direct sun light.

Dampness can also corrode with metal lids, break seals, and contaminate the food, making it unsafe for consumption. Freezing canned foods should

not cause spoilage unless the jars become unsealed, but it will soften the food.

If jars have to store in a freezing area, cover them with newspaper, place them in heavy cartons, and cover in more newspapers.

Identifying And Handling Spoiled Canned Food

You can detect spoilage in jars stored without screw bands as the growth of bacteria and yeast produces gas which pressurizes the food and swells the lid, causing the jar to break.

Each jar is selected for specific use, and you can examine the lid for tightness and vacuum. If the lid has a concave center, then they have a good seal.

Another way you can check for spoilage is by holding the jar upright at eye level, rotating it, and examining its surface for streaks of dried food; look for rising bubbles and unnatural color.

If the food is spoiled when opening the jar, there will be an unnatural odor and cotton-like mold growth. The mold can be white, black, blue, or even green and it will stick to the food surface and underside of the lid.

Spoiled low acid foods exhibit different kinds of spoilage evidence, and sometimes it’s even hard to tell if the foods are spoiled or not; for this reason, if you suspect the container of low acid foods is spoiled, then it should be treated as having produced botulinum toxin.

These cans can be handled in two ways. One of them is to place the swollen metal can or suspect glass jar in a heavy garbage can and dispose them in a nearby landfill. If the glass jar is unsealed or leaking, it needs to be detoxified before disposal.

Detoxifying Process

For this process, you need to wear heavy plastic gloves, place the suspect container and lids on their side in a boiling water canner or a large stock pot and then add water to the pot. You need to pour slowly to avoid splashing. Boil the water for 30 minutes to detoxify the food and the container. Once cool, discard the container, the lid, and the food in the trash. Wash your hands thoroughly after this.

Contact with botulinum toxin can be fatal so it's important to ensure your skin doesn't come in direct contact with the suspect food or liquid.
Wear rubber gloves when handling the jars and cleaning the contaminated surface. To treat the work surface and equipment, use a fresh solution of one part of unscented household bleach to five parts clean water.

50 Canning And Preserving Recipes

Jams And Marmalades

1. Strawberry Jam

Prep time: 20 minutes
Cook time: 20 minutes
Yield: 5 cups
Servings: 40

Ingredients:

- 2 pounds of fresh strawberries, hulled
- ¼ cup lemon juice
- 4 cups white sugar

Directions

1. Crush strawberries in batches in a large bowl until you have four cups of mashed berries.
2. Combine the mashed berries, lemon juice, and sugar in a heavy saucepan and stir over low heat until the sugar is dissolved. Stir often and boil until the mixture reaches 220-degree Fahrenheit.
3. Check for doneness every 10 to 15 minutes by dropping a small spoonful of jam into a frozen plate and if the jam gels, then it is ready. Cook jam until it is thin and runny.
4. Transfer the jam into hot sterile jars and fill it within ¼th inch of the top.
5. Top with lid and screw ring.
6. In a stock pot half filled with water, place a rack and bring to a boil. Lower the jars at least 2 inches apart into boiling water using a holder. Pour more boiling water to cover another inch. Bring to a boil, cover, and process for 10 minutes and then remove the jars from the stockpot and leave to rest for 12 to 24 hours.
7. Store in a cool and dark area.

2. Blackberry Jam

Prep time: 10 minutes
Cook time: 20 minutes
Yield: 2 cups
Servings: 16

Ingredients:

- 4 cups of blackberries
- 2 tablespoons cornstarch
- ½ teaspoon lemon juice
- ¼ teaspoon ground allspice
- ¼ teaspoon ground cinnamon

Directions

1. Mash berries in a saucepan and stir in sugar until juice consistency.
2. Place about 1 tablespoon of blackberry juice in a small bowl and stir in cornstarch, then pour the cornstarch mixture in the saucepan.
3. Bring berries to a boil, stirring often for about 15 minutes until the jam thickens.
4. Stir in cinnamon and allspice.
5. Remove from heat and allow to cool, then transfer to bowl, cover, and refrigerate until chilled.
6. Stir in lemon juice.

3. Apricot Jam

Prep time: 20 minutes
Cook time: 20 minutes
Yield: 5 pints
Servings: 50

Ingredients:

- 8 cups of fresh apricots (peeled, pitted, and crushed)
- 6 cups white sugar
- ½ cup lemon juice

Directions

1. Mix lemon juice and apricot in a large pot over medium heat, add sugar, and slowly bring to a boil. Stir until the sugar dissolves and continue to cook for about 25 minutes until the apricot mixture thickens. Remove from heat.
2. Ladle hot apricot jam into hot sterilized jars, leaving ¼ inch of space on top, and run a knife around the inside of the jar to remove any air bubbles.
3. Wipe the rims of the jars.
4. In a stock pot half filled with water, place a rack, and bring to a boil. Lower the jars at least 2 inches apart into boiling water using a holder. Pour more boiling water to cover another inch. Bring to a boil, cover, and process for 10 minutes and then remove the jars from the stockpot and leave to rest for 12 to 24 hours.
5. Remove jars from the stockpot to cool. Press a finger on the top of every lid to ensure the seal is tight and lid does not move up or down, and then store in a cool and dark area.

4. Raspberry Habanero Jam

Prep time: 20 minutes
Cook time: 10 minutes
Yield: 5 pints
Servings: 80

Ingredients:

- 12 oz frozen raspberries
- 1 green bell pepper, halved and seeded
- 1 ½ cups white vinegar
- 6 cups white sugar
- 3 tablespoons powdered pectin
- 5 1-pint canning jar with lids and rings

Directions

1. Process green bell pepper and habanero together in a blender until smooth, then transfer the mixture to a large stockpot.

2. Add raspberries, sugar, and pectin to the stockpot and bring the mixture to a boil. Cook and stir for about 5 minutes or until jam is smooth and sugar is dissolved.
3. Pack jam in hot sterilized jars, filling to ¼ inch of the top and run a knife around the inside of the jar to remove any air bubbles.
4. Wipe rims of the jars to remove any food residue.
5. In a stock pot half filled with water, place a rack, and bring to a boil. Lower the jars at least 2 inches apart into boiling water using a holder. Pour more boiling water to cover another inch. Bring to a boil, cover, and process for 10 minutes, and then remove the jars from the stockpot and leave to rest for 12 to 24 hours.
6. Remove jars from stockpot to cool. Press a finger on the top of every lid to ensure the seal is tight and lid does not move up or down, and then store in cool dark area.

5. Peach Jam

Prep time: 10 minutes
Cook time: 25 minutes
Yield: 8 cups
Servings: 64

Ingredients:

- 4 ½ cups fresh peaches (pilled, pitted, and chopped)
- ¼ cup finely chopped crystallized ginger
- ½ teaspoon butter
- 6 cups white sugar
- 1.75 oz powdered fruit pectin

Directions

1. Bring ginger, peaches, and pectin to a boil in a large saucepan over medium heat and then stir in sugar and butter. Cook and stir until the sugar has dissolved and return to boil, stirring constantly for more than a minute.

2. Remove from heat and skim off the foam with a spoon.
3. Pack peach jam in hot sterilized jars, filling to ¼ inch of the top and run a knife around the inside of the jar to remove any air bubbles.
4. Wipe rims of the jars to remove any food residue.
5. In a stock pot half filled with water, place a rack, and bring to a boil. Lower the jars at least 2 inches apart into boiling water using a holder. Pour more boiling water to cover another inch. Bring to a boil, cover, and process for 10 minutes and then remove the jars from the stockpot and leave to rest for 12 to 24 hours.
6. Remove jars from stockpot to cool. Press a finger on the top of every lid to ensure the seal is tight and lid does not move up or down, and then store in a cool and dark area.

6. Fig Jam

Prep time: 10 minutes
Cook time: 30 minutes
Yield: 2 cups
Servings: 16

Ingredients:

- 1 ½ pounds ripe figs (chopped)
- 1 cinnamon stick
- ¼ cup coconut sugar
- ½ lemon, juiced
- ⅛ teaspoon ground allspice
- ⅛ teaspoon freshly ground mixed peppercorns
- ⅓ cup water
- 25-ounce packet agar-agar powder

Directions

1. Bring water, fig, sugar, cinnamon, allspice, and peppercorns to a boil in saucepan over medium heat. Boil for 10 minutes until the fig starts to liquefy after which you reduce the heat and simmer, stirring frequently for about 15 minutes more until jam is slightly thickened.

2. While jam is simmering, whisk the lemon juice and agar-agar together and set the gel aside.
3. Take jam off heat and remove the cinnamon stick. Add the lemon mixture and mix well, then cool slightly.
4. Pour jam into a point jar with a hermetic seal and allow to cool before refrigerating.

7. Clove-Spiced Plum Jam

Prep time: 30 minutes
Cook time: 10 minutes
Yield: 9 jars
Servings: 72

Ingredients:

- 8 cups pitted and quartered plums
- 5 whole cloves
- 8 cups white sugar
- 8 tablespoons water
- 8 tablespoons lemon juice
- 1.75-ounce package powdered fruit pectin

Directions

1. Wrap cloves in spice sack and set aside.
2. Combine plums, water, lemon juice and pectin in a large saucepan, and over low heat, bring to a boil.
3. Add cloves and sugar to the saucepan mixture. Cook, stirring until for three to five minutes until sugar dissolves and mixture reaches 220 degrees Fahrenheit.
4. Remove and discard cloves.
5. Ladle the clove-spiced plum jam into sterilized jars and add lid. Place on damp towel to cool and self-seal.

8. Mango Jam

Prep time: 15 minutes

Cook time: 30 minutes
Yield: 3 cups
Servings: 24

Ingredients:

- 2 pounds ripe mangoes
- 1 ½ cups white sugar
- ¾ cup water
- 3 saffron threads (optional)

Directions

1. Make 5 slits in mangoes and microwave on high for 1 or 2 minutes until soft. Once cool, remove the peel and seed and place the mango pulp in a bowl then smash the pulp with a fork.
2. Stir sugar and water together in a large sauce pan over low heat and bring to a boil, then increase heat to medium high. Continue boiling until fine, soft threads form.
3. Stir in mango pulp, add saffron threads, and boil the mixture of about 5 minutes until it thickens.
4. Ladle cooked mango jam into sterilized jars and seal.

9. Pineapple Coconut Jam

Prep time: 5 minutes
Cook time: 25 minutes
Servings: 24

Ingredients:

- 20 oz pineapple chunks, drained, liquid reserved
- ½ cup finely grated coconut
- ½ cup brown sugar

Directions

1. Grind pineapple chunks in food processor.
2. Stir pineapple liquid and brown sugar together in a saucepan and bring to a boil. Let it simmer for about 20 minutes in low heat until

the sugar dissolves and mixture thickens.
3. Stir coconut into pineapple mixture and cook for about 5 minutes more until flavors blend.
4. Store in sealable jar.

10. Blueberry Jam

Prep time: 5 minutes
Cook time: 30 minutes
Yield: 1 cup
Servings: 16

Ingredients:

- 4 cups fresh blueberries
- 1 tablespoon fresh lemon juice
- 1 cup white sugar
- 1 pinch ground cinnamon (optional)

Directions

1. Mix blueberries, lemon juice, sugar, and cinnamon in a saucepan. Cook, stirring constantly for about thirty minutes over medium heat until thickened.
2. Pour blueberry jam into sterilized jars and add lid. Place on damp towel to cool and self-seal.

11. Apple Jelly

Prep time: 20 minutes
Cook time: 40 minutes
Servings: 100

Ingredients:

- 3 ½ pounds apples (cored and diced)
- 7 ½ cups white sugar
- 2-ounce package powdered fruit pectin
- ½ teaspoon butter
- 3 cups water

Directions

1. Place apples in a large pot and cover with water. Bring to a boil and under low heat, let it simmer for about 5 minutes until the apples are slightly tender. Crush cooked apples and allow it to simmer for 5 more minutes.
2. Drain the crushed apples into a bowl and collect the juice. Measure 5 cups of apple juice, adding water if necessary and stir sugar into the juice. Add butter to reduce foaming.
3. Bring juice mixture to a boil, stirring constantly. Stir in pectin and boil for exactly 1 minute to dissolve pectin. Remove from heat and with a metal spoon, skim off excess foam.
4. Ladle hot apple jelly into hot sterilized jars, leaving ¼ inch of space on top and run a knife around the inside of the jar to remove any air bubbles.
5. Wipe rims of the jars to remove any food residue.
6. In a stock pot half filled with water, place a rack, and bring to a boil. Lower the jars at least 2 inches apart into boiling water using a holder. Pour more boiling water to cover another inch. Bring to a boil, cover, and process for 10 minutes and then remove the jars from the stockpot and leave to rest for 12 to 24 hours.
7. Remove jars from stockpot to cool. Press a finger on the top of every lid to ensure the seal is tight and lid does not move up or down, and then store in cool dark area.

12. Pear Jam

Prep time: 20 minutes
Cook time: 20 minutes
Yield: 8 half-pint jars
Servings: 64

Ingredients:

- 4 ½ cups mashed ripe pears
- 1 teaspoon ground cinnamon
- 7 ½ cups white sugar
- ½ teaspoon ground cloves
- ½ teaspoon ground allspice
- ½ teaspoon ground nutmeg
- ¼ cup lemon juice
- 1 teaspoon butter
- 3 tablespoons powdered fruit pectin

Directions

1. Mix pears, cinnamon, cloves, allspice, nutmeg, lemon juice, and fruit pectin in a large saucepan. Bring to a boil, stirring constantly. Add sugar at once, stir, and bring to a boil for 1 minute. Mix in butter to settle foam.
2. Pack pear jelly into hot, sterilized jars, leaving ¼ inch of space on top and run a knife around the inside of the jar to remove any air bubbles.
3. Wipe rims of the jars to remove any food residue.
4. In a stock pot half filled with water, place a rack, and bring to a boil. Lower the jars at least 2 inches apart into boiling water using a holder. Pour more boiling water to cover another inch. Bring to a boil, cover, and process for 10 minutes, and then remove the jars from the stockpot and leave to rest for 12 to 24 hours.
5. Remove jars from stockpot to cool. Press a finger on the top of every lid to ensure the seal is tight and lid does not move up or down, and then store in cool and dark area.

13. Gooseberry Jam

Prep time: 20 minutes
Cook time: 10 minutes
Yield: 10 half-pint jars
Servings: 80

Ingredients:

- 2 quarts fresh gooseberries
- 6 cups white sugar
- 6 fluid-ounce pectin

Direction

1. Remove blossom and stem end from gooseberries. Force berries through food mill and measure 4 cups of the mash into a large saucepan. Stir in sugar and bring the mixture to a boil over high heat for 1 minute, stirring constantly.
2. Remove from heat and stir in pectin at once. Skim off any form with a large metal spoon.
3. Take turns with skimming foam and stirring the berry mixture for 5 minutes to let it cool slightly, then ladle into hot sterilized jars, leaving ¼ inch headspace.
4. Process in boiling water bath for 10 minutes.

14. Damson Plum Cardamom Jam

Cook time: 5 hours 30 minutes
Yield: 12 pints
Servings: 100

Ingredients:

- 5 pounds fresh Damson or Damask plums
- 12 whole cardamom pods
- 4 cups white sugar
- 1 cup water
- ¼ teaspoon butter

Directions

1. Rinse and destem the plums in a sink full of cold water. Place them in a saucepan, add water and cardamom pods, and over low-medium heat, bring to a boil. Turn heat low for a simmer and allow the fruit to cook for 1 ½ hours uncovered. Allow plums to cool.
2. Strain the cooled plums with colander and collect the juice in a large bowl. Squeeze the plum pulp and skin gently into the syrup and discard the pits.
3. Put plum into the original saucepan and add sugar and butter. Cook at a very low simmer for about 4 hours until the mixture begins to thicken.
4. To test for adequate development, drop a spoonful of jam on a plate and refrigerate for a few minutes. The mixture should be soft set and not runny.
5. Ladle the hot jam into sterilized jars and wipe rims clean before placing a sterile lid on and tightening the screw caps.
6. Allow jars to cool to room temperature.

15. Green Tomato Jam

Prep time: 45 minutes
Cook time: 50 minutes
Yield: 5 cups
Servings: 40

Ingredients:

- 3 pounds green tomatoes, cut into chunks
- 2 tablespoons finely chopped fresh ginger
- 2 teaspoons grated orange zest
- 3 tablespoons fresh lemon juice, divided
- 2 tablespoons fresh orange juice
- 2 teaspoons lemon zest
- 3 ¾ cups white sugar
- 1 teaspoon kosher salt

Direction

1. Pulse tomatoes and ginger in a food processor until finely chopped in 3 to 4 batches.
2. Place finely chopped tomatoes and ginger in a large Dutch oven and stir in sugar, 2 tablespoons of lemon juice, orange juice, orange zest, lemon zest, and salt until thoroughly combined. Over medium–high heat, bring the mixture to a boil, cook for 45 minutes to 1 hour and stir occasionally until mixture reaches 215 degrees Fahrenheit.
3. Remove jam from heat and stir in the remaining tablespoon of lemon juice.
4. Let it cool before canning.

16. White Grape And Fig Jam

Prep time: 20 minutes
Cook time: 5 minutes
Yield: 5 cups
Servings: 40

Ingredients:

- 1 ¾ pounds chopped seedless green grapes
- 8 ounces fresh figs, sliced into 3/4-inch slices
- 3 cups sugar
- 1.75-ounce packaged fruit pectin

Direction

1. Place chopped grapes in a large sauce pan and slowly heat until it begins to juice. Coarsely mash with an immersion blender and add sliced figs.
2. Stir in pectin and slowly bring the mixture to a boil. Add sugar and stir until it dissolves then boil on high heat for exactly 1 minute, stirring constantly. Skim off foam with a large spoon.
3. Ladle the grape jam into hot sterilized jars, leaving ¼ inch of space on top and run a knife around the inside of the jar to remove any air bubbles.

4. Wipe rims of the jars to remove any food residue.
5. In a stock pot half filled with water, place a rack, and bring to a boil. Lower the jars at least 2 inches apart into boiling water using a holder. Pour more boiling water to cover another inch. Bring to a boil, cover, and process for 10 minutes.
6. Remove jars from stockpot to cool. Press a finger on the top of every lid to ensure the seal is tight and lid does not move up or down, and then store in a cool and dark area.

17. Strawberry Rhubarb Jelly

Prep time: 30 minutes
Cook time: 40 minutes
Yield: 7 ½ pints

Ingredients:

- 1 ½ pound red stalks of rhubarb
- 48 ounces ripe strawberries
- ½ tsp butter or margarine
- 6 cups sugar
- 6 oz liquid pectin

Directions

1. Wash and cut rhubarb into 1-inch cuts and blend.
2. Wash stem and crush strawberries into a saucepan and then leave to cool.
3. Place both fruits into a jelly bag and gently squeeze out the juice.
4. Measure 3 ½ cups of the juice into a large saucepan, add butter and sugar, mix thoroughly. Over high heat, bring the mixture to a boil, stirring constantly. Stir in pectin and bring to a full boil for 1 minute.
5. Remove from heat and skim off the foam before filling in hot, sterilized jars, leaving ¼ inch headspace.
6. Wipe the jar rims with a clean paper towel, adjust the lids and process.

18. Blood Orange Marmalade

Prep time: 30 minutes
Cook time: 1 hour 25 minutes
Yield: 2 ½ cups
Servings: 40

Ingredients:

- 5 large blood oranges
- 2 teaspoons fresh lemon juice
- ½ cup cold water
- 1 ¾ cups white sugar

Direction

1. Wash orange and use a peeler to remove all the zest in long strips.
2. Transfer the peels to a saucepan, add 6 cups of cold water and bring to a simmer over high heat. Reduce heat to medium low and simmer for 45 minutes to 1 hour until the peels are soft and tender.
3. Cut oranges in half and juice them into a large measuring cup and pour ½ cup cold water. Set aside.
4. Remove peels from heat and drain the water. Once cool, transfer them to a cutting board and slice the zest into thin strips. Transfer into blood orange juice.
5. Pour zest juice mixture, lemon juice, and sugar into saucepan and bring to a simmer. Reduce the heat to medium low and cook for 30 to 40 minutes, stirring occasionally until 225 degrees Fahrenheit and the mixture reduces and thickens slightly.
6. Pour jam into sterilized jars and let it cool at room temperature.

19. Ginger Marmalade

Prep time: 20 minutes
Cook time: 15 minutes
Yield: 5 ½ pint jars
Servings: 30

Ingredients:

- 3 ½ cups peeled fresh ginger
- 5 cups white sugar
- 3-ounce pouched liquid pectin
- 5 half-pint canning jars with lids and rings

Direction

1. Divide ginger in half and chop one into cubes, shred the other half with a box grater. Place the ginger into a large saucepan with water and bring to a boil over medium heat. Reduce the heat, cover the pot, and let it simmer for about 1 hour and 15 minutes until tender.
2. Strain the cooked ginger but retain ½ cup of the ginger-flavored water. Place cooked ginger in a bowl with the retained liquid and cool for at least 4 hours.
3. Once cooled, place the ginger in a large saucepan and stir in sugar until it dissolves. Over medium heat, bring the mixture to a boil for 1 minute, stirring constantly.
4. Stir in the liquid pectin and reduce heat to a simmer. Cook for an additional 7 minutes, skimming foam from the top with a large spoon.
5. Pack the marmalade into hot, sterilized jars, leaving ¼ inch of space on top and run a thin spatula around the inside of the jar to remove any air bubbles.
6. Wipe rims of the jars to remove any food residue.
7. In a stock pot half filled with water, place a rack, and bring to a boil. Lower the jars at least 2 inches apart into boiling water using a holder. Pour more boiling water to cover another inch. Bring to a boil, cover, and process for 15 minutes.
8. Remove jars from stockpot to cool. Press a finger on the top of every lid to ensure the seal is tight and lid does not move up or down and then store in a cool and dark area.

20. Honey Orange Marmalade

Prep time: 30 minutes

Cook time: 15 minutes
Servings: 52

Ingredients:

- 4 oranges – peeled and white pith removed
- 1 grapefruit – peeled and white pith removed
- 1 cup orange juice
- 1 cup water
- ¾ cup honey
- 1 ¼ cups white sugar, divided
- 3 tablespoons low-sugar pectin

Direction

1. Pulse the oranges and grapefruit in a food processor.
2. Transfer the fruit to a sauce pan and ¼ cup white sugar and pectin. Stir in orange juice and water, bring the mixture to a boil. Reduce heat and simmer for 8 minutes then stir in honey and the remaining 1 cup of sugar and let it boil for one minute.
3. Pack marmalade into hot, sterilized jar, leaving ¼ inch of space on top and run a spatula around the inside of the jar to remove any air bubbles.
4. Wipe rims of the jars to remove any food residue.
5. In a stock pot half filled with water, place a rack, and bring to a boil. Lower the jars at least 2 inches apart into boiling water using a holder. Pour more boiling water to cover another inch. Bring to a boil, cover, and process for 15 minutes.
6. Remove jars from stockpot to cool. Press a finger on the top of every lid to ensure the seal is tight and lid does not move up or down and then store in a cool and dark area.

Fruits And Tomatoes

21. Canned Apple Pie Filling

Prep time: 30 minutes
Cook time: 10 minutes
Yield: 7 quarts
Servings: 56

Ingredients:

- 6 pounds apples
- 3 tablespoons lemon juice
- 2 teaspoons ground cinnamon
- 4 ½ cups white sugar
- 1 cup cornstarch
- ¼ teaspoon ground nutmeg
- 2 teaspoons salt
- 2 drops yellow food coloring
- 10 cups water

Directions

1. Mix the sugar, cinnamon, cornstarch, and nutmeg in a large sauce pan. Add water and salt and mix well, then bring the mixture to a boil and cook until thick and bubbly.
2. Remove mixture from heat and add lemon juice and coloring.
3. Peel, core, and slice apples and pack the slices into hot sterilized canning jars, leaving a ½ inch of headspace.
4. Fill jars with hot syrup and remove air bubbles with knife.
5. Put lid on and process in a water bath canner for about 20 minutes.

22. Peaches

Prep time: 30 minutes
Cook time: 40 minutes
Yield: 5 quarts
Servings: 40

Ingredients:

- 4 pounds fresh peaches (blanched and peeled)
- 4 cups white sugar

- 1 cup white vinegar
- 1 cup water
- 2 tablespoons whole cloves
- 5 cinnamon sticks

Directions

1. Combine vinegar, sugar, and water in a large saucepan and bring to a boil for 5 minutes until syrupy.
2. While the mixture is boiling, press 1 or 2 cloves into each peach and place them into the boiling syrup. Boil for about 20 minutes until tender.
3. Spoon peaches into hot, sterilized jars and add the liquid, filling to ½ inch of the rim.
4. Insert a cinnamon stick in each jar and wipe the rims with a dry cloth.
5. Put lid on and process in a water bath canner for about 15 minutes.

23. Canned Whole-Peeled Tomatoes

Prep time: 45 minutes
Cook time: 45 minutes
Yield: 6 quarts
Servings: 48

Ingredients:

- 15 pounds ripe whole tomatoes
- ¾ cup bottled lemon juice
- Ice water

Directions:

1. Wash your tomatoes and cut a small “x” in the bottom of each tomato.
2. Bring a large pot of water to a boil and prepare a large bowl of ice and set it near the water.
3. Once the water is boiling, add tomatoes and cook them for about a minute and with a slotted spoon, transfer them to the ice water.
4. Skin the cooled tomatoes using a sharp paring knife. The skin should fall right off.

5. Put 2 tablespoon bottled lemon juice in each jar and add the tomatoes evenly, leaving ½ inch of headspace. Cover the tomatoes with boiling water if desired, leaving ½ inch of headspace.
6. Wipe jar rims and apply lids. Process for 10 minutes.

24. Spiced Crab Apples

Prep time: 30 minutes
Yield: 9 pints

Ingredients:

- 5 pounds crab apples
- 4 ½ cups apple cider vinegar
- 3 ¾ cups water
- 7 ½ cups sugar
- 4 tsp whole cloves
- 4 sticks cinnamon
- Six ½ inch cubes of fresh ginger root

Directions

1. Remove blossom petals, wash the apple, and puncture the skin of each apple with a toothpick.
2. Combine water, sugar, and vinegar in a saucepan and bring them to a boil. Add spices into the mixture and stir.
3. Using a sieve, immerse 1/3 of the apples at a time into the boiling mixture for 2 minutes.
4. Place cooked apples and spice bag in a clean 2-gallon crock and add the hot syrup. Cover and let it sit overnight.
5. Remove the spice bag, drain the syrup into a saucepan and reheat to boiling before filling up hot pint jars with the apples and hot syrup.
6. Wipe jar rims and apply lids. Process for 10 minutes.

25. Sweet And Sour Whole Cherries

Prep time: 30 minutes
Yield: 9 pints

Direction:

7. Stem and wash cherries and remove the pits. If pitted, place the cherries in water containing ascorbic acid to prevent discoloration.
8. Cherries may be canned in apple juice, water, white grape juice or syrup if desired.

For a hot pack:

1. Add ½ cup of water, juice, or syrup for each drained fruit, in a saucepan and bring to a boil.
2. Fill the hot jars with cherries and add the cooking liquid, leaving ½ inch headspace.

For a raw pack:

1. Add ½ cup of hot water, juice, or syrup to each jar and fill the hot jars with drained cherries, shaking down gently as you fill.
2. Add more hot liquid, leaving ½ inch headspace.
3. Remove any air bubble. Wipe jar rims with a clean dampened towel and apply lids. Process for 10 minutes.

26. Whole Grape

Prep time: 30 minutes
Yield: 7 pints

Direction:

1. Stem, wash and drain the grapes.
2. Prepare a light syrup.

For a hot pack:

1. Blanch grapes in boiling water for 30 seconds, drain and then proceed for raw pack.

For Raw pack:

1. Fill hot jars with the grapes and hot syrup, leaving 1 inch headspace.
2. Remove any air bubbles and adjust headspace if needed.
3. Wipe jar rims with a clean dampened towel and apply lids. Process for 10 minutes.

27. Pineapple

Prep time: 30 minutes
Yield: 7 quarts for an average 21 pounds

Direction:

1. Wash pineapple, peel it, remove the eyes, and tough fiber.
2. Slice or cube.
3. In a large saucepan, add pineapple to water, syrup, apple juice or white grape juice, and simmer for 10 minutes.
4. Fill the hot jars with the hot pineapple pieces and add cooking liquid, leaving ½ inch headspace.
5. Remove any air bubbles and adjust headspace if needed.
6. Wipe jar rims and apply lids. Process for 10 minutes.

28. Apple (Sliced)

Prep time: 30 minutes

Ingredients:

- 6 pounds apples
- 3 tablespoons lemon juice
- 10 cups water

Direction:

1. Wash, peel, and core apples.
2. To prevent discoloration, slice apples in water containing ascorbic acid.
3. Drain the slices and place them in a large saucepan. Add 1 pint water per 5 pounds of sliced apples and boil for 5 minutes, stirring occasionally.
4. Add the hot slices to the hot sterilized jar and add hot water, leaving ½ inch headspace.
5. Remove any air bubbles, wipe the rim of the jars, adjust the lids, and process.

29. Saskatoon Berry Pie Filling

Prep time: 10 minutes
Cook time: 25 minutes
Yield: 4 quarts

Servings: 24
Ingredients:

- 4 cups water
- ¾ cup lemon juice
- 12 cups fresh service berries
- 3 cups white sugar
- 1 cup cornstarch

Direction:

1. Bring lemon juice and water to a boil in a large pot, stir in berries into the mixture. Add cornstarch and sugar into the mixture and stir for about 3 minutes until the sauce is clear.
2. Pack the pie filling in hot sterilized jars, leaving ¼ inch of headspace.
3. Remove any air bubbles, wipe the rim of the jars, adjust the lids, and process.

30. Canned Tomato Salsa

Prep time: 10 minutes
Cook time: 30 minutes
Servings: 8

Ingredients:

- 28 ounces crushed tomatoes
- 1 small onion, diced
- 2 jalapeno peppers, seeded and diced
- ¼ cup white distilled vinegar
- ¼ cup water
- 2 teaspoons sea salt
- 2 teaspoons minced garlic
- ½ teaspoon ground cumin
- ½ cup chopped fresh cilantro
- 1 tablespoon lime juice

Direction:

1. Combine onions, jalapeno peppers, tomatoes, vinegar, water, garlic, sea salt and cumin in an instant pot. Close the lid and set the timer for 15 minutes to allow pressure to build.
2. Release pressure carefully about 1 minute, according to the manufacturer's instruction, then unlock and remove the lid.
3. Pull the pot out and let it cool for five minutes, then stir in the cilantro and lime juice.
4. Add the tomato salsa in a hot sterilized jar, leaving ½ inch headspace.
5. Remove any air bubbles, wipe the rim of the jars, adjust the lids, and process.

Pickles

31. Spicy Pickled Green Beans

Prep time: 20 minutes
Cook time: 20 minutes
Yield: 3-pint jars
Servings: 24

Ingredients:

- 2 pounds fresh green beans, trimmed
- 3 teaspoons dill seed
- 2 cups water
- 6 cloves garlic, crushed
- 2 tablespoons whole cloves
- 2 cups apple cider vinegar
- 2 tablespoons pickling salt
- 1 ½ teaspoons crushed red pepper
- ¾ teaspoon cayenne pepper

Directions

1. Combine water, vinegar, and pickling salt in a sauce pan. Bring to a boil.

2. Working on one jar at a time, add 1/3 of crushed red and cayenne peppers to each.
3. Pack green beans into jars, leaving ½ inch for headspace. Slowly pour hot brine over the beans, leaving ½ headspace, then use a wooden stick to work the bubbles out of the jar.
4. Slip in more beans if there is space, wipe jar rims, and apply lids. Then process.

32. Lemony Pickled Cauliflower

Prep time: 20 minutes
Cook time: 20 minutes
Yield: 3-pint jars
Servings: 10

Ingredients:

- 2 cups distilled white vinegar
- 2 cups water
- 2 tablespoons pickling salt
- 6 slices lemon
- 3 cloves garlic
- 1 ½ teaspoons mustard seed
- 1 ½ teaspoons whole black peppercorns
- 5 cups small cauliflower florets

Directions

1. Combine water, vinegar, and pickling salt in a sauce pan. Bring to a boil.
2. Working on one jar at a time, add a lemon slice and 1/3 of the garlic, mustard seed, and peppercorn to each. Reserve the remaining slices to use for topping.
3. Pack cauliflower into jars, leaving ½ inch for headspace. Slowly pour the hot brine over the cauliflower, leaving ½ inch for headspace.
4. Slip in veggies if there is space and add a slice of the remaining lemon to the top of each jar, wipe jar rims, and apply lids. Then process.

33. Gingerly Pickled Carrot Coins

Prep time: 20 minutes
Cook time: 20 minutes
Yield: 3-pint jars
Servings: 24

Ingredients:

- 2 cups cider vinegar
- 2 cups water
- ¼ cup honey
- 2 tablespoons pickling salt
- 1 (2-inch) piece fresh ginger, peeled and sliced
- 2 pounds carrots, cut diagonally into ½ inch slices

Directions

1. Combine water, vinegar, honey, and pickling salt in a sauce pan. Bring to a boil. Working on one jar at a time, add 1/3 of the garlic.
2. Pack carrots into jars, leaving ½ inch for headspace. Slowly pour the hot brine over the carrots, leaving ½ inch for headspace.
3. Slip in additional carrots if there is space, wipe jar rims and apply lids. Process for 10 minutes.

34. Pickled Bell Peppers

Prep time: 20 minutes
Cook time: 20 minutes
Yield: 9-pint jars

Ingredients:

- 7 pounds firm bell peppers
- 3 ½ cups sugar
- 3 cups vinegar
- 3 cups water
- 9 cloves garlic
- 4 ½ tsp canning or pickling salt

Directions

1. Wash peppers, remove cores and seeds, and slice the peppers in strips.
2. Boil sugar, vinegar, and water in a saucepan for one minute. Add peppers and bring to a boil.
3. Place ½ clove of garlic and ¼ teaspoon salt to each sterilized jar.
4. Add pepper strips and cover with the hot brine, leaving a ½ inch headspace. Use a wooden stick to work the bubbles out of the jar.
5. Wipe jar rims with a clean dampened towel and apply lids. Process for 10 minutes.

35. Pickled Dilled Okra

Prep time: 20 minutes
Cook time: 20 minutes
Yield: 8- to 9-pint jars

Ingredients:

- 7 pounds small okra pods
- 6 small hot peppers
- 4 tsp dill seed
- 8 to 9 garlic cloves
- 2/3 cup canning or pickling salt
- 6 cups water
- 6 cups vinegar

Directions

1. Wash and trim okra.
2. Pack whole okra into hot sterilized jars, leaving ½ inch headspace. Place a garlic in each jar.
3. Combine salt, hot peppers, dill seeds, and vinegar in a sauce pan. Bring to a boil.
4. Pour the hot brine over the okra, leaving a ½ inch headspace. Use a wooden stick to work the bubbles out of the jar.
5. Wipe jar rims with a clean dampened towel and apply lids. Process for 10 minutes.

36. Bread And Butter Pickled Jicama

Prep time: 20 minutes
Cook time: 20 minutes
Yield: 6-pint jars

Ingredients:

- 14 cups cubed jicama
- 3 cups thinly sliced onion
- 1 cup chopped red bell pepper
- 4 cups white vinegar
- 4 ½ cups sugar
- 2 tbsp mustard seed
- 1 tbsp celery seed
- 1 tsp ground turmeric

Directions

1. Combine vinegar, sugar, and spices in a sauce pan. Stir and bring to a boil.
2. Stir in onion slices, jicama, red bell peppers and return to a boil, stirring occasionally.
3. Fill the hot solids into hot sterilized pint jars leaving a ½ inch headspace.
4. Cover with boiling cooking liquid, leaving ½ inch headspace. Use a wooden stick to work the bubbles out of the jar.
5. Wipe jar rims with a clean dampened towel and adjust lids. Process for 10 minutes.

37. Pickled Yellow Pepper Rings

Prep time: 20 minutes
Yield: 4-pint jars

Ingredients:

- 3 pounds yellow peppers
- 2 tbsp celery seed
- 4 tbsp mustard seed
- 5 cups cider vinegar

- 1 ¼ cups water
- 5 tsp canning salt

Directions:

1. Wash peppers well and remove stem end, then slice the pepper into ¼ inch thick rings.
2. Place ½ tablespoon celery seed and 1 tablespoon mustard seed in the bottom of each hot sterilized jar.
3. Fill pepper rings into jars, leaving ½ inch headspace.
4. Combine cider vinegar, salt, and water in a sauce pan. Stir and bring to a boil.
5. Cover the pepper rings with the boiling pickling liquid, leaving ½ inch headspace. Use a wooden stick to work the bubbles out of the jar.
6. Wipe jar rims with a clean dampened towel and adjust lids. Process for 10 minutes.

38. Pickled Dilled Beans

Prep time: 20 minutes
Yield: 8-pint jars

Ingredients:

- 4 punds fresh tender green or yellow beans
- 8 to 16 heads fresh dill
- 8 cloves garlic
- ½ cup canning or pickling salt
- 4 cups white vinegar
- 4 cups water
- 1 tsp hot red pepper flakes

Directions:

1. Wash and trim ends from beans and then cut them into 4-inch length.
2. Place 1 or 2 drill heads into each hot sterilized jar. Add 1 clove of garlic.
3. Place whole beans upright in each jar, leaving ½ inch headspace.

4. Combine vinegar, pepper flakes, and water in a sauce pan. Stir and bring to a boil.
5. Add the solution to the beans, leaving ½ inch headspace. Use a wooden stick to work the bubbles out of the jar.
6. Wipe jar rims with a clean dampened towel and adjust lids. Process for 10 minutes

39. Pickled Asparagus

Prep time: 20 minutes
Yield: 6 wide-mouth pint jars
Ingredients:

- 10 pounds asparagus
- 6 large garlic cloves
- 4 ½ cups water
- 4 ½ cups white distilled vinegar
- 6 small hot peppers
- ½ cup canning salt
- 3 tsp dill seed

Directions:

1. Wash asparagus gently, then cut stems from the bottom to leave spears with tips in the canning jar.
2. Peel and wash the garlic cloves. Place them at the bottom of each jar. Tightly pack the asparagus into hot jars with blunt ends down, leaving ½ inch headspace.
3. Combine vinegar, hot peppers, and water in a sauce pan. Stir and bring to a boil.
4. Place one hot pepper in each jar over the asparagus (if needed).
5. Pour the boiling pickling brine over the spears, leaving ½ inch headspace. Use a wooden stick to work the bubbles out of the jar.
6. Wipe jar rims with a clean dampened towel and adjust lids. Process for 10 minutes.

40. Pickled Three-Bean Salad

Yield: 6-pint jars

Ingredients:

- 1 ½ cups cut and blanched green or yellow beans
- 1 ½ cups canned, drained, red kidney beans
- 1 cup canned, drained garbanzo beans
- ½ cup peeled and thinly sliced onion
- ½ cup trimmed and thinly sliced celery
- ½ cup sliced green peppers
- ½ cup white vinegar
- ¼ cup bottled lemon juice
- ¾ cup sugar
- ¼ cup oil
- ½ tsp canning or pickling salt
- 1 ¼ cups water

Directions:

1. Wash and snap the ends of fresh bean into 1 to 2-inch pieces. Blanch for 3 minutes and cool immediately.
2. Rinse kidney beans with tap water and drain them. Prepare and measure the other vegetables.
3. Combine vinegar, sugar, water, and lemon juice in sauce pan and bring to a boil. Add oil and salt, mix well.
4. Add onions, celery, beans, and green pepper to the solution and bring to a simmer.
5. Remove from heat and marinate in the refrigerator for 12-14 hours.
6. Heat the mixture to a boil.
7. Fill the hot jars with the solids first and then add the hot liquids, leaving ½ inch headspace. Use a wooden stick to work the bubbles out of the jar.
8. Wipe jar rims with a clean dampened towel and adjust lids. Process for 10 minutes.

Meat

41. Chicken Or Rabbit

Directions:

1. Choose a freshly killed and dressed, healthy chicken.
2. Dressed chicken should be chilled for 6 to 12 hours before canning and rabbit soaked for 1 hour in water containing 1 tablespoon of salt per quart.
3. Remove excess fat
4. Cut the meat into suitable sizes for canning. You can keep the bones or leave them.
5. Use a hot pack for liquid cover and quality during storage as natural poultry fat and juices are not usually enough to cover the meat in raw packs.

For a hot pack:

1. Steam, boil, or bake meat until two thirds of it is done.
2. Add 1 teaspoon salt per quart to the jar and then add the pieces and hot broth in, leaving 1 ¼ inch headspace.
3. Remove water bubbles and adjust the headspace if needed.

For a raw pack:

1. Add 1 teaspoon salt per quart.
2. Fill hot jars with raw meat pieces, leaving 1 ¼ inch headspace.
3. Do not add liquid to the raw pack.
4. Wipe rims of jars, adjust the lids, and process.

42. Beef, Lamb, Pork, Bear (In Chunks, Cubes And Stripes)

Direction:

1. Choose high-quality meat and remove excess fat.
2. Soak strong-flavored wild meat for 1 hour in brine water containing 1 teaspoon of salt per quart, then rinse and remove large bones.

For a hot pack:

4. Precook meat until rare by either roasting or stewing.
5. Add 1 teaspoon of salt per quart to the jar
6. Fill hot jars with pieces of meat and add boiling broth, water, meat drippings, or tomato juice, leaving a 1-inch head space. Remove air bubbles and adjust the lid.

For raw pack:

1. Add 1 teaspoon salt per quart.
2. Fill hot jars with raw meat pieces, leaving 1 ¼ inch headspace.
3. Do not add liquid to the raw pack.
4. Wipe rims of jars, adjust the lids, and process.

43. Meat Stock

Directions:

1. Saw fresh-trimmed beef bones with meat removed.
2. Rinse bones and place in large stock pot filled with water. Place cover on the pot and leave it to simmer for 3 to 4 hours.
3. Remove bones and cool broth, skim the excess fat with a large spoon, and if desire, you can add tiny bits of meat still clinging to the bones, to the broth.
4. Reheat the broth and fill jars, leaving 1 inch headspace.
5. Wipe the rims of the jar, adjust lids and process.

44. Chicken And Turkey

Directions:

1. Place large carcass bones in a large stockpot and add enough water to cover the bones.
2. Cover pot and let it simmer 30 to 45 minutes until all the tidbits of meat clinging to the bones fall of.
3. Remove bones and cool the broth. Discard the excess fat.
4. Add the tiny meat back into the broth then reheat it before filling the jars, leaving 1 inch headspace.
5. Wipe the rims of the jar, adjust lids, and process.

45. Clams (Whole Or Minced)

Directions:

1. Keep clams alive on ice until ready to can.
2. Scrub shells thoroughly and rinse well before steaming them for 5 minutes.
3. Remove clam meat, collect, and save the juice.
4. Wash the clam meat in water containing 1 teaspoon of salt per quart.
5. Rinse clam meat with boiling water containing 1 teaspoon of citric acid per gallon, boil and drain.
6. To make mincemeat, grind the clam in a meat grinder and add the pieces to jars, then add in hot clam juice, leaving 1 inch headspace.
7. Remove air if needed, wipe the rims of the jar, adjust lids, and process.

46. Oysters

Directions:

1. Keep live oysters on ice until ready to can.
2. Wash shells and heat in preheated oven at 400 degrees Fahrenheit for about 5 to 7 minutes.
3. Cool briefly ice water, drain, open shell, and remove meat.
4. Wash meat in a water containing ½ cup salt per gallon, then drain.
5. Add the drained oysters in hot pint jars and cover with fresh boiling water, leaving 1 inch headspace.
6. Remove air if needed, wipe the rims of the jar, adjust lids, and process.

47. Chile Con Carne

Yield: 9 pints
Ingredients:

- 3 pounds ground beef
- 1 tsp black pepper
- 2 quarts crushed or whole tomatoes
- 3 cups dried pinto or red kidney beans
- 5 ½ cups water
- 5 tsp salt
- 1 ½ cups chopped onions
- 1 cup chopped peppers
- 3 to 6 tbsp chili powder

Directions

1. Wash beans and place them in a saucepan. Add cold water to a level of 2 inches above the beans and soak them for 12 to 18 hours. Drain and discard the water.
2. Combine beans with 2 teaspoons salt and 5 ½ cups of fresh water and bring to a boil. Let it simmer for 30 minutes under medium low heat. Drain and discard the water.

3. Brown ground beef, chopped onions and peppers in a skillet. Add 3 teaspoons of salt, pepper, chili powder, tomatoes, and drained cooked beans and let it simmer for 5 minutes.
4. Fill hot jars, leaving 1 inch headspace, and remove air bubbles.
5. Wipe the rims of the jar, adjust lids, and process.

48. King And Dungeness Crab Meat

Frozen crab meat is often recommended over canned for better quality. Canned crab meat is likely to have an acidic flavor.

Directions:

1. Wash crabs thoroughly in cold water making several changes.
2. Simmer crabs for 20 minutes water containing 2 tablespoons of salt per gallon and lemon juice.
3. Cool in cold water, drain, and remove back shell.
4. Remove meat from body and claws and soak in cold water containing 2 cups of lemon and 2 tablespoons of salt per gallon, for 2 minutes.
5. Drain and squeeze crab meat to remove the excess moisture.
6. Add the crab meat into pint jars, leaving 1 inch headspace
7. Add 4 tablespoons of lemon juice to each pint jar and cover with fresh boiling water, leaving 1 inch headspace.
8. Remove air if needed, wipe the rims of the jar, adjust lids, and process.

49. Fish In Pint Jars

Trout, steelhead, salmon, mackerel, and other fatty fish except tuna.

You need to bleed and eviscerate fish immediately after catching it and never more than 2 hours after. Clean the fish and then ice it until it's ready to be canned.

Canned salmon can cause glass-like crystals of struvite or magnesium ammonium phosphate to form, and while there is no way to prevent this from happening, you can easily dissolve them in heat, making it safe to eat.

Directions:

1. Thaw frozen fish in refrigerator, then rinse in cold water. To help remove the slime you can add 2 tablespoons of vinegar to the water.
2. Remove head, tail, fins, and scales but you can leave the bones as they often soften and are a good source for calcium.
3. Wash and remove all blood.
4. Refrigerate all fish until you are ready to pack in jars.
5. Split fish lengthwise into 3 ½-inch lengths.
6. Pack the fish into hot pint jars, leaving 1 inch headspace. Add 1 teaspoon of salt per pint.
7. Do not add any liquids.
8. Clean the rims of the jar with a damp paper towel to remove any fish oil, adjust the lids, and process.

50. Smoked Fish

Lightly smoked fish is recommended for canning as the smoked flavor becomes stronger and the flesh drier after processing.

Directions

1. Use a 16- to 22-quart pressure canner for this procedure as safe processing times have not been determined.
2. Do not use jars larger than one pint for better quality after processing.
3. Thaw frozen smoked fish in the refrigerator until all ice crystals are gone before canning.
4. Cut vertical pieces that will fit into the pint, leaving 1 inch of headspace between the meat and the top rim of the jar.
5. The fish can be packed either loosely or tightly.
6. Do not add any liquids.
7. Clean the rims of the jar with a damp paper towel, adjust the lids, and process.

BOOK 7:
Survival Foods

Overview

One of the best ways to deal with the anxiety that comes with a looming disaster is to be prepared. The Corona Virus pandemic was a clear indicator of just how much a crisis can affect people; how a single crisis can affect people's way of living and strip them of even the most basic amenities.
Natural disasters cut off food and water supplies and cause shortages, and a nuclear attack will be no different.

Experts suggest that everyone should at least have a 2-week food supply for every member for most emergency situations. By getting food supplies, we don't mean just gathering staples like canned foods, pasta, and peanut butter, although those will keep you going for quite a while.
If you are to be stuck in a shelter for months on end, then you are going to think about nourishment as well. There are a number of brands that sell emergency food kits, and you don't have to think about what you need to get as it's all planned for you. Even so, you still need to ensure that the food you are getting is the right food to get you through a crisis.
In this book, we are going to offer a detailed guide on the essential foods necessary for survival and other factors related to them.

Essential Foods To Store For Survival

Following a nuclear disaster, there will be power outages that could last anywhere between several weeks to months. It is important to consider storing foods that do not require refrigeration, cooking, water, or even special preparation. Canned foods, dry mixes, and other staples are the best options to have in your stock.

There are things you need to consider before putting together an emergency supply. For one, the foods need to be non-perishables and ones that your family can eat. If there is anyone in the family with special dietary requirements, you also need to keep their needs in mind.

List Of Emergency Food Supplies

A list of foods you can make sure to include in your emergency food kit.
High energy foods.
Ready-to-eat canned meats, vegetables, fruits, and a can opener.
Dry cereal.
Peanut butter.
Canned juices.

Dried fruits.
Non-perishable pasteurized milk.
Granola.
Comfort or stress foods.
Food for infants.

Food Safety And Sanitation

Without a cold source for storage, most foods become unsafe for consumption as bacteria in foods grows rapidly.

It is important to keep food in covered containers and the utensils clean. Any food that encounters contaminated water from fallout needs to be thrown away. In addition, foods that have been under room temperature for more than two hours also need to be thrown away. You can tell when food has gone bad by the odor, texture, and the color.

When it comes to feeding babies, you need to use ready-to-feed formulae, but if you must mix the formula, then ensure you use boiled water or bottled water. Most water sources will be littered with debris and fallout, making it dangerous for consumption.

Swollen or dented cans needs to be thrown away even when the food inside looks safe to eat. Another food safety issue is letting garbage accumulate in your shelter. You need to make an effort to get rid of it so that it doesn't grow and attract insects or rodents as those will even be harder to deal with.

Managing Food Without Power

In the event of a nuclear disaster, the power will be out as previously mentioned. So how would you go about this especially when you already had food in your refrigerator.

First, you need to keep your refrigerator and freezer doors closed as much as possible as they will keep the food cold for about four hours.

You can use a refrigerator thermometer to check the temperature and monitor your food.

Refrigerated foods need to be kept at 40 degrees Fahrenheit or below for proper food storage. However, after four hours or more have passed, you need to discard foods, such as meat, poultry, eggs, fish, and any other leftover you had stored in your refrigerator.

When it comes to using dry ice, you need to have it before a power outage as a twenty-five pound ice pack will keep a 10-cubic-foot freezer below freezing for about three or four days.
If you do use dry ice to keep your food cold, then you need to ensure that it does not come in direct contact with the food. It is also important to handle dry ice using dry heavy gloves to avoid getting injured.

Emergency Food Kit

When it comes to preparing or purchasing an emergency kit, the first question you need to address is just how much of it you need. This will vary with the number of people you intend to take with you to your shelter and the amount of space available for storage.

With this is mind, you need to start taking stock of everyone in your family, pets included, and their recommended daily caloric intake. For this, you can consult a nutritionist to get advice on the nutritional requirements that need to be met to maintain the overall health of every individual in the shelter.

With this information on hand, proceed next to finding a kit that best suits your needs and tastes. Typically, emergency kits include dense comfort foods like mac and cheese, casseroles, chili, and hearty soups, with some including a breakfast option of cereal or granola, drinks, and dessert.

There are other brands that offer sides of fruits and veggies, but you need to realize that not all brands offer the same things, hence the need for research before making the purchase.

In addition to the food that comes in your kit, you can add nutritionally dense food to your stash. Some of the canned fruits, pickles, and meats can be made in your own kitchen and added to the food kit.

It is important to include an emergency water source as you'll require it for not just consumption but for preparing some foods and for maintaining sanitation, as well.

The shelf life for emergency kits varies with the brand; although some last for ten years or less, there are others that are said to have a lifespan of 20 to 30 years.
The packaging and the preservatives are the main determinant for the shelf life of the foods in the emergency kit. Storage is also important as the kits

need to be kept in dry and dark places with temperatures of between 55- and 70-degrees Fahrenheit.

Once you know what you want, the next part comes with choosing a brand that best suits your needs. There is no standard price for the emergency kit as every brand will charge differently depending on what they offer. There are other brands that cater for special diets and you can request a custom-made emergency food kit with quality products of your choosing and there are others that are budget friendly if that is what you need. The size will also determine the price of the food kit.

To best understand what to expect in a food kit, you can view an example of one of the highly rated emergency food kits in the market.
Brand name: AUGASON FARMS
Augason Farms 30-day Emergency Food Supply
Price: $144 (not standard)
Key Specifications
Number of Servings: 307
Shelf life: Up to 25 years
Weight: 24 pounds
Dimensions: 18.3 x 13.5 x 12.4 inches

The food emergency kit carries enough food to last one adult 30 days. With 307 servings, it can last about three weeks if feeding a family. It also covers three meals per day, plus snacks and drinks.

For the breakfast option, there is a maple brown sugar oatmeal. Also included in the kit are mac and cheese, hearty vegetable chicken soup, potato soup, cheesy broccoli rice, chicken-flavored rice, and instant potatoes. There is a milk option and also potassium-packed banana chips.
This kit can be purchased on Amazon, and it has an average of 4.7 stars from more than 3,000 reviewers.

20 Foods That Can Last Decades

Survivalists stock up on food and utilities that last for years. Sometimes you don't need to get a ready-made kit but can opt instead to keep foods with a long-shelf life in your house so that when disaster does strike, you already have food that could last you anywhere between three months to a couple of years.

When the Corona Virus pandemic happened, many people did not expect to stay locked in their homes for close to two years. Many companies were closed and production went down, which was not conducive for many people as life still needed to go on, causing a shortage.

In the event of a nuclear disaster, things would be way worse than the Corona Pandemic. There would be no power to preserve food, no food delivery services and a scarcity of the resources. So, what are the foods that you can keep in your shelter without worry of them going bad? At least not for a couple years.

1. Canned Fruits, Vegetables, And Beans

How long it lasts: Up to six years
How to store: Keep Canned in a dry area.
Canned goods can last some time even after their expiratory date, but they their taste will not be best after that. Those that are past their date are often considered safe to eat compared to a dented or swollen can. If the can is dented, then the food is no longer safe for consumption and should be thrown out.

2. Corn Starch

How long it lasts: Indefinitely
How to store: Keep away from moisture and store in its original container.
Corn starch is stored in cool and dark places and away from moisture as it dissolves as soon as it comes in contact with water. However, as long as it's kept dry, it can last forever, hence the need to stock up on the natural thickening agent.

3. Dark Chocolate

How long it lasts: Two years

How to store: Keep in original packaging and at room temperature.
If you do open the wrapper, then make sure to wrap it back tightly for a longer shelf life. Unlike white chocolate, which has a shelf life of less than a year, dark chocolate has an extended shelf life as long as it's kept under room temperature and under tight wrap.

4. Dried Beans, Lentils, And Legumes

How long it lasts: Indefinitely
How to store: Keep in sealed container.
Dried legumes harden with time. Still, this doesn't mean that they are unsafe for consumption. It's just an indication that they'll take longer to cook. Dried legumes can still be consumed after their expiry date.

5. Dried Fruits

How long it lasts: A year
How to store: Keep in sealed container.
Dried fruits can have an extended shelf life by six months when you pop them into the freezer. They need to stay in their sealed packages, but if you made them yourself, then ensure to store them in a tightly sealed container.

6. Dried Pasta

How long it lasts: Up to three years
How to store: Keep it sealed in airtight container.
Pasta can be stored in the sealed plastic bag it comes in, but if it comes in a cardboard box or has already been opened, then you need to transfer it to an airtight sealed container to increase its shelf life.

7. Instant Coffee

How long it lasts: Up to 25 years
How to store: Keep it sealed in original container or in an airtight container.
For coffee addicts, you don't have to go without your caffeine fix just because there is a nuclear attack going on. As long as the coffee is kept in an airtight container, then it can go up to 25 years, longer if it is kept in the freezer.

8. Jams And Jellies

How long it lasts: Two years
How to store: Keep in sealed jars.
Jams and jellies can last up to two years unopened, but once you do, their shelf life reduces to six months.

9. Jerky

How long it lasts: Two years
How to store: Keep it sealed and in a dark pantry.
While store-bought beef jerky can last a long time, homemade jerky will only last a few weeks. To make the beef jerky last longer, you need to ensure that the protein-packed snack remains sealed.

10. Liquor

How long it lasts: Indefinitely
How to store: Store at room temperature.
The high concentration of alcohol in hard liquors, such as whiskey, rum, vodka, gin and tequila, ward off bacteria making their shelf life indefinite.

11. Maple Syrup

How long it lasts: Indefinitely
How to store: Store in sealed containers.
An unopened bottle of syrup has indefinite shelf life but has a shorter lifespan when opened. You can extend the shelf life of an opened syrup bottle by keeping it refrigerated.

12. Oats

How long it lasts: Up to two years
How to store: Store in sealed airtight containers.
Oats last more than a year when kept in airtight containers in a dry area.

13. Oils

How long it lasts: Up to two years
How to store: Store in dry area out of the reach of direct sunlight and heat.
Cooking oils when sealed can last a few years in a dark place. Oils such as vegetable oils, olive oil, canola and peanut oil have a long shelf life but will

last only a few months when opened. Cooking oil in spray form can last up to two years.

14. Tuna

How long it lasts: Five years
How to store: Keep sealed in packets.
Tuna lovers can stock up with the packaged tuna for up to five years. It can last for at least three years if the package is left closed and stored well in the pantry.

15. Pickles

How long it lasts: Four years
How to store: Keep in tightly sealed jars.
Unopened jars of pickles can last up to two years but are still edible past their 'best by' dates. When opened, they need to be kept in a fridge or eaten right away.

16. Powdered Milk

How long it lasts: 20 years
How to store: Keep in airtight containers with moisture-absorbing packet.
Powdered milk last for many years as long as it is kept in a cool and dark place in an airtight container. This must-have grocery item adds richness to cookies, breads, and other baked goods.

17. Ramen Noodles

How long it lasts: Two years
How to store: Keep them in their package at room temperature.
Packaged ramen noodles are always great to have on hand as they don't require much maintenance as long as you don't open their packaging.

18. Rice

How long it lasts: 30 years
How to store: Store in an airtight container in a cool dry place.
White rice has low oil content and this makes their shelf-life indefinite. Brown rice has a shorter shelf life compared to white rice as it spoils faster

due to its high oil content. Even so, brown rice still has longer shelf life than most foods.

19. Tomato Sauce

How long it lasts: 2 years
How to store: Keep in sealed jars.
Canned or jarred tomato can last up to two years as long as they remain sealed in their jars and containers.

20. Whole Spices And Herbs

How long it lasts: 4 years
How to store: Store in an airtight container in a cool and dry place away from direct sunlight.
Dry spices can last up to four years whole but less if they are ground. Using these herbs and spices after their shelf life will not harm you, but herbs tend to lose their potency over time.

List Of Food That Can Be Eaten Past Their Expiration Date

The expiry date printed on some packaged foods doesn't always mean that the food is unsafe for consumption.

The "best if used by" dates often indicate when the product is at its highest level of quality. The infant formula is one of the only items in the US with a federally regulated expiration date. Most packaged items have the printed date more like a guideline than a rule.

Some of the products you can use past their expiration date include:
Boxed pasta, which can be used one or two years past it's printed date.
Cereals can last six to eight months past their date on the box. When opened, it can stay up to four months.
Cheese lasts beyond its expiration date and even when it grows mold, you can simply cut off the affected part. If the mold is colored orange, blue or green, then it makes the cheese inedible, but a brighter mold is okay.
Condiments such as ketchup and mustard can go a good year or two past their printed date when the bottles are left unopened.

Raw honey is another product with indefinite shelf life and goes bad only when introduced to moisture.

Powdered Food

Powdered is one of the most effective ways of storing food with nutrients and calories. This also ensures that they have a longer shelf life.

You can either prepare your own powdered food by using a food processor or get bulk items from local stores When stored properly, these foods can last for a very long time without going bad.

1. Eggs

They contain vitamins and minerals, and are one of the easiest sources of nutrition, carbohydrates, and essential fats. Powdered eggs are a very important addition to your stock.

2. Peanut butter

It's a great source of protein and fiber. It can be a bit tricky to make a peanut butter powder at home due to its high fat content but you can easily get it at stores. If you do get it at stores, be sure to check the fat content as peanut butter powder with high fat content spoils faster.

3. Milk

Powdered milk is one of the products that have a long shelf life. It is a great source of nutrition and can be used on many recipes.

4. Cocoa

This is a product rich in polyphenols, which have been said to reduce inflammation, increase blood flow, lower blood pressure, and improve blood sugar levels and cholesterol. It is quite rare to get a pure cocoa product, and if you do get it from the store, you need to make sure it has not been overly heat-treated as this reduces its natural occurring antioxidant properties.

5. Cinnamon

Other than the fact that it adds flavor to the food, it is a great source of antioxidants and it also boosts anti-fungal properties. You can also add powdered cinnamon to other foods to increase their shelf life.

6. Pancake Powder

You can make your own pancake powder or get it from the store. Either way, it's a valuable addition to your stockpile.

7. Potatoes

Powdered potatoes are an excellent vegetable to have in your dried produce, and it can stand alone as a carb or be used as a thickening agent.

8. Powdered Gravy

This can be used on everything from potato flakes to freeze dried meats. It also helps that it's delicious, especially for the picky eaters.

9. Cornstarch

This comes in handy as a thickening agent in foods, such as gravies, sauces, and soups. It can also be used in natural deodorants like dry shampoo.

10. Meat

Powdered meat is a great source of protein and can be used to create soups when cooking rice and vegetables.

11. Fruit

Powdering fruits is a great way of storing whole fruits that would otherwise be bulky. Fruit powders can be used to make smoothies, flavored water, and even in cereal.

12. Tea And Coffee

You can stock up on coffee and tea powder to get your caffeine fix when you are locked out from the rest of the world. It doesn't hurt that they both have a long shelf life.

13. Yoghurt

Powdered yoghurt is a great source of protein and calcium. Probiotics are also preserved in the flash-freezing process, not to mention that it's a more

delicious alternative to soups and sauces.

It is important to store your powdered food in vacuum-sealed mylar bags with silica gel packs to ensure no moisture can spoil your food and an oxygen absorber to ensure that oxygen doesn't oxidize your spoils.

You can also store multiple bags in a large plastic container to keep safe from pests and for better storage, especially in limited spaces.

Powdered foods will last a long time with proper storage. Items like flour, salt, and sugar also have a long shelf life and should be included in your stock.

Best Strategies To Stockpile Food

Learning how to stockpile will help save you considerable time. You need an easy guide on how to go about this in order to start working on your emergency food stockpile.

Examine Your Storage Capabilities

Non-perishable foods need to be stored at room temperature for a longer shelf life. They need to be protected from extreme temperatures, water, and critters.

Storing them in the attic or in rooms without regulated temperatures can reduce their shelf life and even make them unsafe for consumption. You can keep then in a cupboard or a storage bin for your stockpile. You also need to ensure that your shelter is big enough to accommodate your stockpile.

Figure Out How Much Food You Need

You may be tempted to hoard your local grocery store for foods you'll probably never use. This will be a waste of money and resources.

To go about this, you need to figure out how much food your family consumes on a normal day. Make a list of their typical daily meals and amounts, note down their dietary restrictions, and then study the food you have in the house.

Calculate how much food you would need to feed your family for at least two weeks without running out. By calculating the number of servings consumed in a day for each item, you'll be able to tell how long the stock will last. It's important to note how many servings are in one particular container so that you can calculate how it would last when divided among the people in your family.

It is also important to determine your servings not by how many cans or jars you have, but by how servings can be drawn from one single jar.

You can also choose to start stocking by replacing the perishables in your house with non-perishable substitutes.

Decide What Food To Store

This boils down to your taste but it's important to take the nutritional value into consideration. Foods with high salt content are not the best as they make you thirsty, and this is a time where you need to use your resources cautiously.

It is important to stock only nonperishable items in cans, sealed boxes, jars, and bottles.
If you are to indulge in a comfort or stress food, then have every family member pick a single time to add to the stock.

Remember to take into account your family's dietary restrictions before making any purchase.
The best survival foods to include in your kit can include bottled water, powdered milk, canned meat, beef jerky, canned fruit juice, canned vegetables, protein bars, granola bars, peanut butter, dried fruit, dry cereal, unsalted nuts, and white rice.

For the comfort foods, you can include cookies, instant coffee mix, instant hot cocoa mix, instant tea mix, fruit juice, fruit snacks, and crackers.

Purchase Only A Few Items At A Time

This is one of the ways to achieve OPSEC. You don't need to get everything at once. As previously mentioned, you can start by trading some of the items in your home with non-perishables and slowly build up your stockpile.

Alternatively, you can buy one or two items during your regular grocery trips to add to your pile.

Organize Your Food Stockpile

It is important to organize your items as it does not only create order but it also helps to reserve space that can be used for another item. When you keep your things in order, it also helps you keep stock on them.

Organizing them also sorts out the items by the time they are expected to expire so that you can replace them.

Organize Your Pantry

Over the last couple of years, people are shopping less and buying things in bulk to last them longer. Pre-packaged and canned foods don't go bad fast and for this reason can be forgotten or easily lost in the pantry. This kind of system creates disorder, and this way, even the foods with a short shelf life end up getting wasted, as well.

Cleaning and organizing your pantry are very important whether or not you are prepping for an emergency. For one, organizing saves you money in the long run and it reduces the stress of trying to figure out where everything is.

In order to be efficient when a crisis does happen, it is important to plan your pantry and the listed below are ways you can go about it.

Don't Buy Too Much

Most foods in the pantry have a long shelf life but that doesn't mean you need to pile them up. There is no point of buying foods you know that you won't even consume for the sole purpose of stocking them.

It's important to stick with the foods that you can actually eat and not buy more than you need for those that you actually can.

Plan Carefully

When purchasing the foods to add to your pantry, it's important to make a list of their nutritious values. Ingredients like black beans and lentils are often overlooked even when they are filling, tasty, and loaded with important nutrients.

While dried beans are amazing sources of nutrition, they need hours to cook and can be very discouraging. So, if you decide to make a purchase on a food item, you could consider thinking of alternative means you could get the food in. For instance, canned beans can be cooked up in a few minutes, so you can plan on stocking up on them instead of buying dried beans and not using them because of how long they take to cook.

Group Items Together

Once you have all the items you need for your pantry, group the products by category. You can group them in categories of baking, pastas, and snacks so that you know where everything is.
This will also help you create a list of the items missing in a specific category. It also helps you keep stock of items that are running out and those close to their expiration date.

Adopt A First-In-First-Out Storage

This is a sure way to make sure that your items don't run past their expiry date. This means that the oldest products get used first before they can spoil.

This system applies in the shelter, as well. The products that were bought first are the first out, and by organizing them, you are able to keep track of that.

Label And Date

Most items come with their use-by dates but it's important to add your own if you need a reminder of when you made the purchase. Large packed items like flour need to be dated so that you can be reminded of when you need to use them.

Conduct Check-In

Most items in the pantry can stay forgotten for a long time. It is important to have a designated time every few weeks to check on your items and their expiry dates. Confirm what needs to be replaced and what you are close to running out of.

These checkups would take only a few minutes, but it's important to make it a habit.

Use Technology

You can use an app to help you organize your pantry. The app can create an inventory of your pantry, match products in stock to your favorite recipes, create a shopping list for you, and send expiry date notification on the purchases you make.

Alternatively, you can note this down on a notepad to use for when the app is not an option.

The Importance Of Rotating Food

It's important to have enough food stocked away to feed your family, however, if you don't know how to manage it, then it'll end up going to waste before the crisis is over. It doesn't make sense to stock up on years' worth of food and just leave it.

It's important to stock up on food, and even though some of them can last years, it's important to remember that some foods lose their nutritional value with time.
Stocking up and leaving the food stashed in your pantry is not enough. You need to rotate it frequently.

Tips To Help Properly Rotate Your Emergency Storage

First In, First Out

This is the most important rule to food rotation. You need to take out your oldest food first and the newest last. When you restock your pantry of food stock, then it has to go directly to the back of the shelf.

You can achieve this by having a system for stocking where you store your food according to type and date to make it easier to access the older items.

Stock What You Eat, Eat What You Stock

As previously mentioned, one of the things you should avoid is stocking up on something just because it can last long. Whatever item you add to your stock needs to be something that either you or your family can consume. If no one wants it then it will end up spoiling and be a waste to not only your resources but also the space that could have been used for storing something else.

Rotate Older Food Items Into Your Pantry

If you have a different storage for your emergency food, then you can rotate the items in your pantry with those in your emergency stock. When you buy new items in your everyday pantry, you can trade them for the older items in your emergency stash.

You can do this every few weeks to ensure that the food in your emergency is always fresh.
Some foods with a longer shelf life do not need to be rotate; however, it's still important to make it habit to do so in case you don't miss out on an item that is close to its expiring date.

Inspect Your Food Storage For Spoilage

Carrying out regular inspections will allow you to view items in your storage that are bulging, rusted, moldy, spoiled, and even those with dented cans. Just because an item is non-perishable does not mean it will remain so when exposed to certain conditions.

In the event of an emergency, you need to be sure that the food in your storage is safe for consumption and that you'll not end up poisoning your family.

Inspect Your Food Storage For Pests

There are many factors that could compromise your food and there aren't many bigger problems than a pest infestation. Mice, rats, ants, and cockroaches are very good at finding weak points in your walls if what they want is behind it. They can chew through durable bags and containers and contaminate your food.

These pests don't have a system to how they approach your storage and if you don't inspect it regularly and curb the issue immediately, then you'll find they've sampled everything you have in your emergency stockpile, and you'll end up replacing everything.

Perform Regular Inventory

When you stock a lot of items, it can be hard to keep track of what you have, when you got it, and where exactly you've stored it.
To help with this, you need to keep a detailed inventory of everything and organize them in a way that nothing goes to waste.

Label Your Food And Shelving

When it comes to stockpiling, you'll find yourself getting a lot of items, and in order to keep stock of them, you need to make sure they are well-labeled.

While most of the store-bought items already have their best-by dates printed on the packages, you need to label the items you make and package yourself.

Shelf labeling is also a great organization skill and it would make it easy to enlist someone else to help with restocking.

Store Similar Items Together

A pantry should be organized to operate like a grocery store where similar items are stored and shelved together. This makes it easier to access them when you need to. For instance, you can store the condiments together, canned meats together, dried grains together, and spices together.

Store Heaviest Items On The Bottom

It goes without saying that the heaviest items go at the bottom and lightest on top. However, this is something that is often overlooked especially when there isn't already a system in place.

If an item were to tip over and fall, there would be more damage on the heavier item and more waste as a result than a lighter item.

Pet Food Supplies

During an emergency, you'll need to take your pets with you and it will be as hard for them as it will be for you to adopt to the new situation. Just like you have your emergency kit, it's important to build one for your pet.

This can feel overwhelming as there is already much you need to figure out for yourself, but everything comes naturally when you know what is required of you. For example, when you buy dog food, you could buy two instead of one. One of them can go to the emergency stockpile you've set aside for your pet.

To make the process easy for not just you but your pet, as well, discussed below are items you can include in your pet's emergency kit.

Items To Prepare For Your Pet For An Emergency

Food

The most important thing to stock up on is food, and while you could share the canned food with your pet, this is an option you can explore when you haven't set up an emergency food source for them. You can stock the food your pets normally eat and rotate it as you would your own stock.

Water

Depending on the size of your pet, it needs daily 1 ounce of water per pound. A 60-pound dog would need about half a gallon of water a day, so you'll need about 4 gallons every week for your dog. This could be affected by a lot of factors, one of them being the stress of being trapped in an unfamiliar situation and the weather, but it's important to have an estimate.
You also need to remember to include a food bowl and a water bowl for your pet or have one that could serve as both.

Medication

You should consider storing a few days' worth on medication if your pet is under treatment. You also need to include flea and tick medication in the supply kit. Just like you would with food, make regular checks to make sure the medication in the supply kit has not expired.

First Aid Kit

You need to create a special first aid kit for your pet or you could add items to your main kit. Some of the issues you'll need to attend to during crises aren't that much different from yours, but it's important to learn how to handle it. Different pets require different attention, and you'll have to carry some research or consult with your vet on how to deal with cuts, abrasions, poisoning, allergic reactions, and sprained or broken limbs.

Carrier

This can provide shelter during a disaster and also safely transport your pet from one point to the other, especially when you need to evacuate. The carrier, whether in form of a bird cage or kennel, needs to have sufficient

room for them to stand, sit, turn around, and lie down. It should also be able to hold a litter tray or other materials to allow your pet to use as a bathroom.

An Anti-Anxiety Vest Or Wrap

During such a stressful situation, a wrap can help calm your pet. Most pets enjoy going outside and this is the one thing they will be unable to access during a nuclear disaster. If you can't access an anti-anxiety vest, then you can improvise by using a scarf to make it appear like a vest.
Self-sticking wrap bandages can also replace the wrap if there is nothing else on hand. You could just tie one end and make general wrapping patterns to make it look like a wrap.

Collar And Leash

These are for cats and dogs; when you replace a collar, instead of throwing the old one away, you could instead stash it in the emergency, that is, if it's still in good condition. Cats especially will hate the leash and harness but it's necessary if you are going to allow them out of the carrier. You can't have your pet bolting out and into radiation and putting you both in danger when you rush out after it.

Muzzle

This is another item that your pet will not like, but even if your dog is harmless to you and strangers, stressful situations can make them react in ways they usually wouldn't and end up hurting you or another animal.

Litter Tray

Since movements will be limited, you'll need to have a litter for your cat to use and a poop bag for your dogs. For the latter, you could add small plastic bags to your kit for this purpose.

Bedding

You could improvise here by using car blanket, bath rugs, or towels for them to use in the kennel.

Toys And Treats

Including these to your pet's emergency kit would come in handy in helping them cope with stress. They can cling to that normalcy as you wait for the crisis to pass.

Records To Put In Your Kit

It's hard to tell how long a crisis will last and when it will end. Even harder is knowing if returning back to your home is an option. It's advisable to take your important documents with you and not leave them behind when you evacuate, and you need to do the same for your pet.

In the kit, you can add the vet records of your pet's breed, weight, coloring, and other important details; add a recent photo of your pet, one where there is an item behind to determine how tall or heavy your pet is, adoption papers, and proof of ownership.

You also have the option to go paperless by saving the copies to access them later when you can you finally gain access to electricity and the internet.

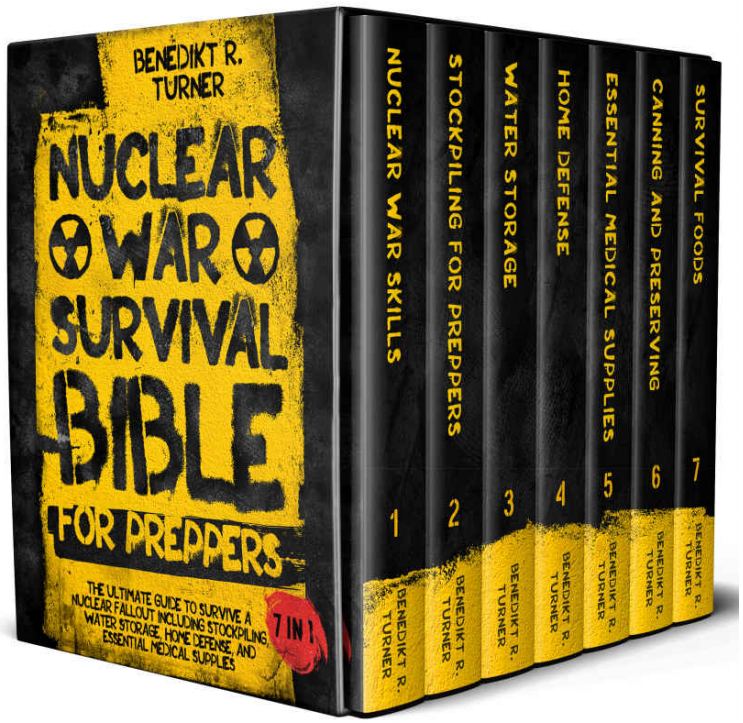
CONCLUSION

One of humanity's biggest threats lies in our reliance on big corporations. We rely too much on the government and large corporations for everything. So much so that we forget to look at the bigger picture. There is very little these institutions would do for you in times of crisis, and not just of the nuclear kind. Just look at how they respond to natural disasters, inflation, fuel costs, and droughts. Unless people are prepared to deal with crises when it happens, then surviving will prove to be challenging.

In order to understand the need for self-reliance, you need to note that the biggest threat to the human species is not from surface issues like climate change. The danger is much more intrinsic. Despite the existence of thousands of active nuclear bombs, these destruction tools are just that: tools. They remain harmless unless someone decides to use them and, in most cases, these are the same people we've grown to rely on for our well-being.

An all-out nuclear war would have drastic effects on society. The political climate will be nothing compared to the economic turmoil. Barely anyone will care about who’s right and wrong. At least not when they are scrambling to find their next meal or a means of breathing clean air. For a long time, survivalists have been viewed as paranoid people with unfounded fears, but people are starting to adopt this mindset. The last couple of years have seen humanity fight a pandemic and deal with leaders in hostile countries, and with the current political climate, a nuclear war feels imminent.
It's hardly a matter of *if* it will happen, but only of *when*.
And when it does, you must be prepared for it.

NOTES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