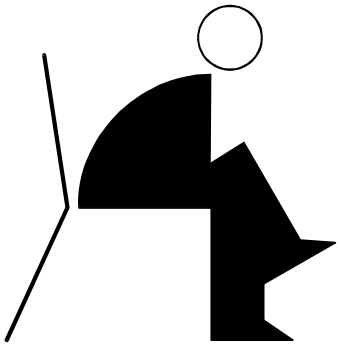
# Emergency Sanitation

After a disaster, water and sewage lines may be disrupted, and you may need to improvise emergency sanitation facilities.

## Supplies

Always have basic sanitation supplies on hand.



- Medium-sized plastic bucket with tight lid
- Plastic garbage bags and ties (heavy duty)
- Household chlorine bleach
- Soap, liquid detergent
- Toilet paper
- Towelettes

## Sanitation

### To build a makeshift toilet…

If sewage lines are broken but the toilet bowl is usable, place a garbage bag inside the bowl. If the toilet is completely backed up, make your own. Line a medium-sized bucket with a garbage bag, and make a toilet seat out of two boards placed parallel to each other across the bucket. An old toilet seat will also work.

### To sanitize waste…

After each use, pour a disinfectant (see Disinfectants) such as bleach into the container. This will help avoid infection and stop the spread of disease. Cover the container tightly when not in use.

### To dispose of waste…

Bury garbage and human waste to avoid the spread of disease by rats and insects. Dig a pit 2 to 3 feet deep and at least 50 feet downhill or away from any well, spring or water supply.

If the garbage cannot be buried immediately, strain any liquids into the emergency toilet. Wrap the residue in several layers of newspapers and store it in a large can with a tight-fitting lid. Place the can outside until it can be buried.

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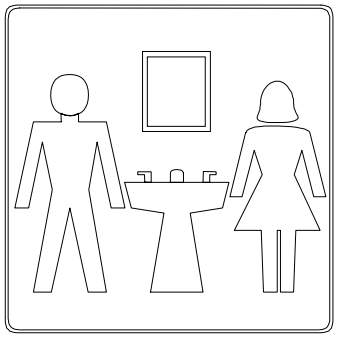
Adapted by UF/IFAS from: Federal Emergency Management Agency (FEMA)



## Water Substitutes for Cleansing

Keeping clean is essential to good health. Because water is so precious and should be reserved for drinking purposes, consider other ways to wash the body.

- Rubbing alcohol
- Lotions containing alcohol
- Shaving lotion
- Face creams and lotions
- Towelettes
- Wet wash cloth—Use a wet wash cloth to clean teeth, wash face, comb hair, and wash body.
- Makeshift shower—Use a spray bottle to shower.

## Disinfectants

The best choice is a solution of 1 part liquid chlorine bleach to 10 parts water. Other commercial disinfectants include HTH, or calcium hypochlorite, which is available at swimming pool supply stores, and powdered, chlorinated lime, which is available at building supply stores.

## Intestinal Ailments

Consuming contaminated water and food can cause diarrhea, poisoning, and intestinal diseases. Protect against diseases.

- Keep body, hands, and cooking and eating utensils clean.
- Use proper plates or eat from the original food containers if water is not available for washing dishes.
- Wash and peel all fruits and vegetables.
- Keep all food in covered containers.
- Prepare only as much as will be eaten at each meal.

## Controlling Rodents and Insects

- Keep living area clear of debris, garbage, refuse and body wastes.
- When possible, repair holes to keep out rodents.
- Household insecticides will work in small and enclosed areas.

## Getting Everything Together

Commercial reuse of plastic buckets for food is illegal so supermarkets, restaurants and bakeries often give them away for free.

Donated buckets may lack lids but both buckets and lids are sold at hardware stories and online.

Buy toilet seats that fit buckets at camping stores or online.  Or adapt seats from home toilets to fit.

Handwashing is critical. Use of hand sanitizer and disposable gloves and wipes will help you conserve your emergency water supply for essential handwashing.

Keep toilet paper, soap, bottled water, disposable gloves, towels or wipes and starter bags of carbon material in a bucket. Include sanitary napkins or diapers, if needed. Nest in empty buckets that remain available for everyday cleaning chores.

## For More on Disaster Sanitation

See www.phlush.org and www.cloacina.org

For handwashing, make the Tap Up two-bucket hand sink. See directions in MDML's *Sewer Catastrophe Companion*.

Preparing compost that is safe to use in gardening requires extra work.  The process is explained in *Sewer Catastrophe Companion* and on website of the New Zealand team. www.composttoilets.co.nz

PHLUSH (Public Hygiene Lets Us Stay Human) is an all-volunteer advocacy group based in Portland, Oregon. We receive support from the Old Town Chinatown Neighborhood Association and Neighbors West-Northwest.  PHLUSH is a member of the World Toilet Organization and a partner in the Sustainable Sanitation Alliance.

We are grateful to the New Zealand Permaculture Emergency Response Network for the practical elegance of their design.

The Portland Bureau of Emergency Management has reviewed the design and posted instructions at http://www.portlandoregon.gov/pbem

We are indebted to Molly Danielsson and Mathew Lippincott of MDML for their expertise and permission to use illustrations from their *Sewer Catastrophe Campanion.*


**P H L U S H**

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# The Twin-Bucket Emergency Toilet


## A Household Toilet for Oregon Emergency Kits

## Why do we need toilets in our emergency kits?

Giant earthquakes off the coast of Oregon have occurred 40 times over the last 10,000 years, or at about 250-year intervals. The Oregon Department of Geology and Mineral Industries states that last megaquake was a magnitude 9+ in 1700. The next Big One can happen at any time and will likely cause widespread damage to water and sewer systems, preventing our plumbed toilets from working properly.

After the earthquakes in Christchurch, New Zealand in 2011, people quickly built twin-bucket toilets appropriate for the emergency stage of the crisis. Sewer service has not yet been restored to all parts of the city so many residents continue to use these waterless toilets in their homes.


Guidelines on emergency preparedness usually fail to mention toilets as they are not compromised in most emergencies.

In the Pacific Northwest, some agencies recommend single-bucket camping toilets. These fill up fast. The assumption is that disruption of water or sewer service will be short term and that toilet contents will be buried, or bagged and trucked away. Such practices can lead to polluted groundwater and the spread of disease.

## The Solution

The Twin-Bucket Emergency Toilet adapted from the New Zealand design works even for high-rise apartment dwellers.

- Safe and manageable.
- Buckets, lids and a seat cost $20 or less.
- Supplies in nested bucket make a hygiene kit.
- Twin buckets separate urine from feces.

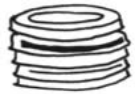
A day's worth of pee has 10 times the volume of poo. Pee is generally sterile while poo contains pathogens and requires special care.

Not mixing urine and feces is a proven principle of ecological sanitation. In separating pee and poo, the twin-bucket toilet reduces disease risks and odor and makes the contents of each bucket easier to handle.

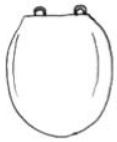
## Toilet Components

- Plastic buckets - 5 or 6 gal. size; 2 buckets for 3-4 people for 3 days; a dozen buckets for a month.

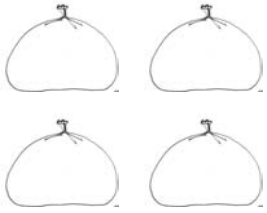
- Lids for buckets.



- A plastic seat that fits the buckets.



- Carbon material to cover the poo: A supply of sawdust, coffee husk chaff, finely shredded paper, or coir fiber. About a gallon bag per day.



## The No-Mix Principle

The great thing about pee is that it's clean (unless a household member has a kidney infection or blood in their urine). It poses almost no health risk. With extra buckets and lids, you can store pee until it can be sprinkled on land as a fertilizer. High-rise apartment dwelllers without access to land may have to dispose of pee in a functioning street drain.

The poo bucket contains most of the pathogens. Poo needs to be treated, or contained until treated. But, the great thing about poo is that it doesn't take up much space. Each of us produces only 4-10 oz daily. It takes a couple of weeks for 3 people to fill the bucket with poo and carbon material.

## Using the Twin-Bucket Toilet

1. Mark the twin buckets "pee" and "poo" (or #1 and #2, or urine and feces, or yellow and brown, etc).
2. Put buckets in a private space with carbon covering material nearby, along with a plastic scoop.
3. Decide if you need to use the pee bucket or the poo bucket. The seat can be moved from one to the other.
4. Try not to mix pee and poo. This is important although it's understandable that there will be mistakes. The pee is the component that produces the bad smell in toilets that mix the two.
5. After using the pee bucket, you can put the toilet paper in the poo bucket. Then remove the seat from the pee bucket and cover with a lid that closes well.
6. After using the poo bucket, sprinkle as much carbon material as needed to completely cover the surface of the poo. This eliminates odors and keeps flies away.
7. Put the toilet seat back down on the poo bucket so it doesn't invite pests.

# Pandemic Planning: Social Distancing


lds.org/callings/church-safety-and-health/safety-fact-sheets/pandemic-planning-social-distancing

*A pandemic occurs when a disease becomes widespread over a country or globally. This fact sheet provides information on how families can prepare and protect themselves in a flu pandemic.*

## Background

A severe pandemic (defined as a worldwide epidemic) in a vulnerable population, such as the 1918 flu pandemic, represents a worst-case scenario for pandemic planning and preparedness. Communities, individuals, employers, schools, and other organizations are being asked to plan for the use of interventions that will help limit the spread of disease. Pandemic concerns escalated due to spread of avian influenza (H5N1) virus, which has the potential to threaten human health, among animals in Asia, Africa, the Middle East, and Europe. In 2009 a pandemic occurred from a new influenza virus called H1N1 (referred to as “swine flu” early on). This virus is spreading from person to person worldwide. Health experts are predicting that we will see a continuation of the spread of the H1N1 influenza virus.

## What is the concept of social distancing?

Social distancing (SD), self-shielding, voluntary isolation, and reverse quarantine are all methods that attempt to limit close physical proximity between infected and healthy individuals. They provide individuals with some measure of personal control over their own exposure to a potential pandemic. SD can be instituted voluntarily by individuals or through actions taken by local, state, or government officials, including the closure of schools, discontinuance of public transportation, and restrictions on large gatherings or public venues. During the 1918 pandemic, leaders of the Church were supportive of SD efforts to curtail public meetings and other social functions sponsored by the Church. Some examples of their efforts were:

- Postponing the April 1919 sessions of general conference until June.
- Holding a non-public funeral for President Joseph F. Smith.
- Suspending local Church meetings in areas affected by the pandemic.
- Holding special fasts to help ease the pandemic.
- Publishing articles in Saturday editions of the *Deseret Evening News* to help fill the spiritual void left when Church services were suspended.

## Why social distancing?

Influenza is thought to be primarily spread through large respiratory droplets (droplet transmission) that directly contact the nose, mouth, or eyes. These droplets are produced when infected people cough, sneeze, or talk, sending the infectious droplets and very small sprays (aerosols) into the air and into contact with other people. Large droplets can only travel a limited distance; therefore, people should limit close contact (within six feet) with others when possible. To a lesser degree, human influenza is spread by touching objects contaminated with influenza viruses and then transferring the infected material from the hands to the nose, mouth, or eyes.

## What are the benefits of social distancing?

Adults may decrease their risk of infection by practicing SD and minimizing their nonessential social contacts and exposure to highly populated environments. Low-cost and sustainable SD practices can be adopted by individuals within their community (for example, going to the grocery store once a week rather than every other day and avoiding large public gatherings) and at their workplace (for example, spacing people farther apart in the workplace, telecommuting when feasible, and substituting teleconferences for meetings) for the duration of a community outbreak. Many factors make children especially important in the transmission of influenza. Compared with adults, children usually shed more influenza virus and for a longer period. They also are less skilled in handling their secretions and are in close proximity with many other children for most of the day at school. Schools, in particular, clearly serve as a means to transmit seasonal community influenza epidemics. Infected children and parents are also thought to play a major role in introducing and transmitting the influenza virus within their households.

Therefore, given the disproportionate contribution of children in spreading disease and viruses, targeting their social networks both within and outside of schools would be expected to help disrupt influenza spread. Given that children and teens are together at school for a significant portion of the day, dismissal of students from school could effectively disrupt a significant portion of influenza transmission within these age groups.

Mathematical modeling also suggests a reduction of overall disease, especially when schools are closed early in the outbreak. Parents may determine to keep their children at home, therefore providing a form of voluntary SD. During this period, parents would be encouraged to consider child care arrangements that do not result in large gatherings of children outside the school setting.

## What are the basics of social distancing?

Social distancing may be a viable alternative for the general public to avoid the pandemic influenza infection until a vaccine becomes available. Below, in order of potential effectiveness, are various aspects of SD suggestions:

1. Limit exposure to other people within six feet.

2. Minimize exposure to enclosed spaces containing crowds, such as movie theaters, grocery stores, gas stations, schools, malls, and so on.
3. Use personal protective equipment, such as N95 masks, if you must get within six feet of anyone outside your immediate family (or other individuals where you have intimate knowledge of their health conditions) or if you must go into an enclosed space containing crowds. It should be noted that there is limited information on the use of surgical masks for the control of a pandemic in settings where there is no identified source of infection.
4. Wash hands after touching any item that may have been touched by others, or use disposable gloves. Studies have shown that the influenza virus can survive on environmental surfaces and can infect a person for 2 to 8 hours after being deposited on the surface.

## Potential Impacts of Social Distancing

Closure of office buildings, stores, schools, and public transportation systems may be feasible community containment measures during a pandemic and are considered forms of forced SD. All of these have significant impact on the community and workforce. Careful consideration should be focused on their potential effectiveness and how to maintain critical supplies and infrastructure while limiting community interaction. For example, when public transportation is cancelled, other modes of transportation must be provided for emergency medical services and medical evaluation. The mandatory closure of public venues will have a direct and significant impact on worship services, as well as proselytizing efforts by missionaries.

## Quarantine Room - How to set up a quarantine room or camp

Setting up a quarantine room is a necessary and vital step in prepping; though it isn't as much fun as creating your first responder kit.

Here's how to construct an isolation room to help you manage contagion like avian flu, Ebola, Spanish flu, swine flu or another pandemic in crisis...

How to set up a Quarantine Room

The topic of setting up quarantine room is something rarely discussed in prepper forums, though it did come up during the Ebola scare. While it's an unpleasant thought, it may be necessary, as in a pandemic situation, to restrict the movement people who seem healthy, but may have been exposed to a communicable disease.

Here are the steps to setting up your quarantine:

Step one: pick a room or other location. Designate a location for your quarantine area. In setting up a quarantine room, the first thing to realize is that a quarantine room is not the same thing as a safe room! The main purpose of setting up a quarantine, or sick ward, is to prevent deadly germs, parasites, diseases or plagues from infecting and killing the rest of your group. Know in advance which room you will designate for quarantine. Just pick a room or a other location, such as an R.V., a garage or even a tent.

The location of your quarantine room or camp is important. Ideally, a slightly off-premise cabin or Recreational Vehicle is an ideal solution for quarantine, as is a garage. If the quarantine area is a room is in your home, make sure to have fast access from entryway to the room as with a back door as you risk exposure to your family or group the moment the quarantined person enters your home.

Step two: gather necessary supplies. Basic supplies for setting up a quarantine room need not be expensive, but there are a few necessary items to have. You can store all the items in a five gallon bucket.

Supplies for setting up your quarantine room.

Bleach (or better yet, Steramine tablets). One bottle of Steramine is enough to make 150 gallons of sanitizer. Commercial in strength Steramine also makes an economical household sanitizer that's ideal also food contact surfaces. Most preppers aren't aware of these odor-free, non-corrosive tablets. They do not irritate the skin and you can apply with a clean cloth or sponge. You can spray them on food processing equipment, sinks, countertops, cabinets, refrigerators, stovetops, cutting boards, and all other non-porous articles and surfaces.

Drop cloth and duct tape: You'll need enough drop cloth to cover the access to the room in curtain layers. Hang two layers. One to enter the room, and then hang another curtain barrier with three feet of space between trap contagion. You may also like to cover the windows to keep the contagion from spreading. Remember the duct tape which has infinite survival uses!

Chemical suits and protection. Isolation gowns, exam gloves, bufount caps (hair covers) and foot coversN-95 masks and goggles.

Antiviral tissues.

Antibacterial wipes. Look also to natural anti-bacterials.

Emesis bags (for vomit). Pictured in blue, right, an emesis bag a convenient and hygienic way to limit the contagion.

With a wide mouth receptacle, the bag also can seal immediately following use. A zip-lock bag is a poor man's emesis bag, but you may find it a mess. Emesis bags are also useful for cancer patients.

Step three: set up a sanitation station. The sick can't do their business where everyone else does or they will spread the contagion. In addition to the sanitation supplies listed above, you need to set up a commode.

Make an emergency toilet from a five-gallon bucket as a do-it-yourself project. The bucket could have any of the following:

- biohazard bags for disposal
- toilet paper
- disposable gloves
- hand sanitizer
- soap
- towelette wipes
- kitty litter to help contain the sewage

Step four: laundry. Doing the laundry is an issue during a pandemic event. Don't necessarily assume that you'll have time to do the laundry or even want to, but have a plan in place for the following:

Cleaning the laundry: You don't want to mix laundry of the sick person with everyone else's laundry. Have a simple method to wash the most basic items if you are able to salvage them. In the case of Ebola, for example, you will not bother sanitizing the laundry, but instead you'll need to dispose of the contagion as biohazard, sometimes you may just have to burn the contagion.

Right is a simple laundry set you can make yourself using a five gallon bucket. Indeed it's a convenient ready made survival kit in itself.

Burning the laundry: Your quarantine plan eventually will require a place to burn contaminated and/ or launder these items. Anyone who ever read the Velveteen Rabbit as a child will remember that the little boy's family burned his prized velveteen rabbit after he got deadly sick.

As quarantined guests enter your facility, you must confiscate their possessions and place them in bio-safe bags for destruction or storage. The option of storage will be a difficult decision as the materials must be stowed away from the others until the germs have died.

Clean the person in quarantine. Before bringing possibly infected individuals to your home or camp, the quarantined person must be scrubbed and rinsed. An ordinary garden hose will do the trick (along with a scrub brush and sanitizing solution, such as GoJo, pictured right). Be sure the quarantined person scrubs under fingernails and carefully bathes.

Stock a mini kitchen. You'll need a minimum of two weeks to a month of food for each patient(s), such as Mountain House bucket, pictured right; electrolyte drinks ; emergency water and a means to boil it. Medicines: Diarrheal medication and fever reducers, are of top importance for a quarantine room. See the complete list of prepper medicines to consider, including elderberry syrup and Oscillococcinum.

Sanitation: Set up a wash basin with soap and water, hand sanitizers. Make sure you have trash bags, a portable toilet with disposable bags, and toilet paper; and, of course bleach. Extra clothes are also important for people who may have soiled their clothing during the course of their stay in quarantine.

Kitchen Cleanliness. As aforementioned, Steramine tablets can help you keep your kitchen clean. Cleanliness is important in all aspects of preventing infectious diseases. Typhoid fever, for example, spreads after ingesting food or water contaminated by a human carrier, which makes it extremely

important for the cook in your family or group to take extra measures to wash hands before preparing food or serving beverages. Likewise, the quarantined should eat only from disposable utensils, plates and cups to minimize exposure.

Steramine Tablets: Steramine Quaternary Sanitizing Tablets are highly important. Just one Steramine sanitizing tablet per gallon of water, makes 150 gallons of cleaning solution.

Fresh clothing: Keep pajamas or fresh clothing available for quarantined persons

Biohazard removal: Infected individuals need to Are you prepared if the quarantined person dies or otherwise excretes fluids? Be sure to have a biohazard kit on hand to remove fluids and minimize possible exposure to others to include biozhard bags, emesis bags, and disinfectants.

Bloodborne Pathogen Bodily Spill Kit. Specifically designed to protect the user during biohazard clean-up, the Bloodborne Pathogen Bodily Spill Kit, pictured below is a 24-piece kit that includes a complete head-to-toe defense package for fluid pick-up necessities and to protect against bio-hazardous contaminants. This kit meets with federal OSHA recommendations and contains an ample supply of garment disposal and biohazard bags. Products are contained in a sturdy, reusable plastic case that can be easily carried or mounted on a wall.

Cavicide Disinfectant. CaviCide is a convenient, ready-to-use, intermediate-level surface disinfectant which is effective against TB, HBV, HCV, viruses (hydrophilic and lipophilic), bacteria (including MRSA and VRE) and fungi. It is safe for all areas of the facility including NICU, operating rooms, isolation rooms, patient care areas and laboratories. When used as directed, it will also effectively clean and decontaminate critical and semi-critical instrumentation. CaviCide is safe for use on non-porous surfaces. It is perfect for cleaning and decontamination of environmental and medical device surfaces. See also CaviCide disinfectant wipes.

Biohazard bags. A biohazard bag provides a high density isolation liner to provide maximum film strength for tough applications. They also feature star seal bottoms which allow equal weight distribution and leak resistance. Additionally, bags are red to indicate use for infectious waste or hazardous waste to warn others. Don't skimp and use ordinary trash bags.

Learning about Quarantines from the past:

Ships from foreign lands. In the not so distant past, around the seventeenth century, ships required isolation for "forty days and forty nights" after spread of the black plague. If after the alotted time, no one died or showed signs of disease, the crew was permitted to set foot on land.

Typhoid Mary: Even with quarantine, a person can be asymptomatic and yet infect others. This was the case with Typhoid Mary, an immigrant named Mary Mallon from Cookstown Ireland who came to New York in 1900 and allegedly spread Typhoid Fever without herself being affected. Hired as a domestic cook (and later a laundress), she may have infected as many as 49 people, with three deaths resulting. She spent nearly three decades in isolation enforced by public health authorities at the time.

Learning about Quarantine from television and movies:

Doomsday Preppers: Setting up a quarantine room or facility is rarely discussed on other prepper sites and forums. One episode of Doomsday Preppers featured a woman concerned about the Bird Flu and she illustrated her plans of quarantine using her son as an example. In another episode of Doomsday preppers on pandemic prepping, a woman ensures hundreds in her area has the proper information and tools regarding pandemics.

The Colony: In the movie, The Colony, illness was not tolerated. Anyone showing signs would face immediate quarantine and without improvement would have two options: walk into the blizzard or be shot. The option of "walk" was eventually removed as the condemned would eventually wander back to the colony and risk infecting others.

Contagion: "No one is immune to fear:" such was a line in advertising for the movie Contagion, starring Matt Damon, Gwyneth Paltrow, Jude Law and Kate Winslet. The movie follows the rapid progress of a lethal airborne virus.

Step ten: post your signage .Have professional signage well before a collapse. A foreboding sign, like the orange one posted top right, will tell everyone to keep out. It could also come in handy in other scenarios where no one is actually ill. Why would looters risk a deadly infection? They will keep out of your fake quarantine zone when you have a professional sign. You can make your own quarantine sign, but it looks like the CDC or a team of health professionals have visited your hone if you post a real sign. Have fun with your prepping! Use this sign as entertainment for your Halloween trick or treaters!

How to set up a sick room

Here's what Dr. Bones has to say about setting up a sick room...

https://www.youtube.com/watch?v=dLmw_nHp63g

Questions you may have about a quarantine

How long should someone remain in quarantine? In setting up a quarantine room or camp, survivors wait to see if the new members become ill before exposing the potential hazard to the other survivors. The length of time of a quarantine depends on the type of communicable disease.

Why set up a quarantine?

The purpose of setting up a quarantine is to isolate individuals who have been granted access to a community or a home. After news of a pandemic, all potential members of a community after a total collapse of society should be placed in quarantine to ward off potential illnesses and to ensure they are not carrying diseases or parasites which the could spread to your group.

Diseases with fleas, rats, mosquitoes or other vectors as carriers:

- Avian Flu
- Dengue.
- Ebola
- Enterovirus
- MERS
- Measles
- Plague
- Powassan
- Swine Flu  (H1N1)
- West Nile Virus
- Zika Virus

Set up a quarantine, even if you live in the countryside...Preppers who live on farms away from big cities may think they are at low risk (and therefore may not bother to set up a quarantine), but ironically it's the rural locations in which the infected will be drawn towards in an effort to escape pathogens they may already carry. For these reasons, every prepper must take action now to get a quarantine plan in place.

Happy endings...

Having a preparedness plan in place to include quarantining will be a valuable asset to your community for survival.

PRODUCTS:

Orange Quarantine Sign

12-16 Gallon 24-Inch by 32-Inch Case of 250

Infection Protection Kit

Steramine Quaternary Sanitizing Tablets

Plastic drop cloth

Emesis Bags 24

Portable toilet set

Laundry Bucket System

Solar Shower

Disposable Bouffant Caps

20 Pandemic Masks

Cavicide Disinfectant Cleaner Gallon

Disinfecting Towelettes Case

Boiron Oscillococcinum

144 Disposable toothbrushes

Potassium Iodide Tablets for radiation emergency

Pelican Medical Case

Sanitizing Lotion Soap

Double Doodie bags

Luggable Loo

Pandemic QuickKits - Set of 3

Pandemic Flu Kit

Biohazard Fluid Clean Up Kit

Tactical Trauma Kit