

Emergency Toilet Guidebook

By the Regional Disaster Preparedness Organization ([RDPO](#)) of the Portland Metro Region

After a major earthquake, we may need to live without running water and working toilets for days, weeks, or possibly months. To stay healthy, we will need water and good sanitation practices. Deadly diseases can spread when human feces (poo) are not handled and stored safely. This guidebook provides information about how to be prepared and stay safe.

Three Elements of Staying Healthy

There are three main elements of staying healthy when our sinks and toilets aren't working. We need water, good hand washing, and safe storage of poo.

#1 Water

Clean water may be our most important physical resource after a major earthquake. It is essential to staying healthy. Of course, we will need to drink it to stay alive. We will also need it to cook, wash ourselves, wash dishes, clean wounds, etc.

Make sure you have plenty of water stored for an emergency. For information about how to store and treat emergency water, visit the [Regional Water Providers Consortium](#) website.



#2 Hand Washing

Proper sanitation is essential. Think about how you will wash your hands and prevent the spread of germs when there's no water in your pipes. Include soap in your emergency kit, as well as some alcohol-based hand sanitizer (60%+ concentration). You may want to build a [Siphon Pump Hand Wash System](#), which will make it easier to stay clean.

#3 Safe Storage of Poo

You will need a way to safely store and dispose of human waste (poo). The method you should use depends on where you live and what resources you can access. Below, you will find information about three great emergency toilet methods: Twin Buckets, Latrines, and Septic Systems.

Method 1 - Twin Buckets

The Twin Bucket method separates pee and poo into two buckets. This lessens volume and odor, making bucket contents safer and easier to store and dispose of. This method is ideal for dense urban areas with limited open space and a high water table, which is common in the Portland Metro Region.

The Twin Bucket system was developed in Christchurch, New Zealand after earthquakes in February 2011. The system is simple, effective, and inexpensive.

Materials:

- **Two sturdy plastic buckets.** Five or six gallon buckets work best. Label one PEE or #1 and the other POO or #2. You can print [bucket labels](#) and use packing tape to secure them to your buckets.
- **A toilet seat.** You can adapt a regular toilet seat or buy a seat that is designed for use with buckets (available online and at most camping or emergency supply stores). If you can, purchase two seats - many people prefer to sit when going pee. Do not use a pool noodle. If they develop any cracks or start to break down, they become impossible to fully clean, which increases the risk of spreading disease.
- **Layering material.** You will use this to create layers each time you use your poo bucket. A carbon-based material works best. It should be lightweight, dry, and organic. The goal is to absorb moisture, reduce odor, and deter flies. You'll need about a handful to cover each poo. Examples: sawdust, shredded paper, bark chips (avoid cedar), dry leaves, dry grass clippings, peat moss, toilet paper, hamster bedding, etc.
- **Heavy-duty plastic garbage bags.** 13-gallon size, 0.9 mil or thicker.



Caution!

It's very hard to keep surfaces clean without running water. When using emergency toilets, it's important not to touch human poo or let it touch other objects. Any surface that may come into contact with poo (such as a toilet seat) should be made of a non-porous, non-absorbent material that can be easily disinfected.

Using the Pee Bucket:

- Pee in the pee bucket, but put your toilet paper in the poo bucket.
- Dilute the pee with water (if possible). Spread it on a permeable surface, such as a lawn. Local governments may develop alternative urine collection sites in order to avoid water table contamination.

Using the Poo Bucket:

- Line your poo bucket with a heavy-duty trash bag.
- Poo in the poo bucket, and add your toilet paper.
- After each use, cover the surface of the poo with a layering material (see the materials list above). This will help reduce odors and deter flies.
 - Do not put an airtight lid on the bucket. Allowing some air flow will help the poo dry out and reduce in volume and weight.
 - Do not fill the bucket more than halfway full. You don't want the bag to become too heavy or difficult to close.
- When the bag is half full (or less), tie the top of the bag. Double-bag it to ensure contents don't leak.
- Store your poo bags safely away from food and water, kids, pets, flies, rats, etc. Consider talking with neighbors to create shared collection sites.
- Be careful when using the poo bucket, bagging the contents, and storing the bags. Afterwards, always wash your hands with soap and water or hand sanitizer.
- Look for instructions from public agencies on how to safely dispose of poo bags.
 - Never put poo bags in your regular garbage, yard debris, or recycling bins. Regular waste collection trucks are not designed to handle poo.
 - Never dig a hole and bury your poo bags.

Frequently Asked Questions

Where can I buy buckets or get them for free?

Poo and pee buckets don't need to be food-grade. They do need to be sturdy enough to support your weight. Most hardware stores have buckets for a few dollars a piece. You can also find free ones by looking on local classifieds websites or requesting them from businesses that frequently dispose of them, such as restaurants, bakeries, food production facilities, paint stores, etc.

In Portland, you can get used, 5-gallon paint buckets from Metro (www.metro.gov). Their facility is located at 4825 N Basin Ave. Call 503-234-3000 to check on availability. These buckets are used and have dried paint on the inside and outside, but they work fine for containing pee and poo.

Do I need a toilet seat?

No, but you'll be much more comfortable if you have one. You could get creative with ways to make the top of a bucket more comfortable to sit on using everyday objects, but be mindful of the material. It should be smooth and easy to clean - not be absorbent.

Where can I get free carbon-based materials?

Be creative! Collect and crush fallen leaves or grass clippings and store them in a garbage bag. Ask a lumber yard or local furniture company for a bag of sawdust. Ask a business for a bag of shredded paper.

Wood pellets made for pellet stoves are not free, but they are affordable. If you mix about 1 cup of water with 2 cups of wood pellets, it creates about 6 cups of sawdust. Remember to store extra water if you plan to use pellets.

Do I have to use 13-gallon bags?

No, but make sure the bag is big enough to tie shut once your bucket is half full. And make sure it's a sturdy bag (heavy-duty, 0.9 mil or thicker) so it's less likely to tear.

If I pour pee in my garden, will it kill my plants?

Urine (pee) is relatively harmless unless you have kidney disease or another illness that causes your body to expel toxins in large quantities. Urine is mostly made up of water and nitrogen, which is a key component of fertilizer. If you dilute urine with water and pour it in a different place each time, your plants should be fine.

Why put poo in bags? Why not just store it in lidded buckets?

After a major earthquake, we could be without running water and flushing toilets for weeks - maybe even months. If you can't flush, it is better to contain poo elsewhere and keep your bathroom area clean.

If you poo directly into an unlined bucket, you will need to dispose of the poo once it fills so that you can keep using the bucket. If you pour the contents into another container, it will splash and create an unsafe mess. Even if you have multiple buckets, you will eventually need to pour that poo into another container. It's just not safe. Bagging poo allows you to store it when it gets full and keep using the bucket. It keeps the poo in one place - no transferring, no splashing.

It will take time for authorities to set up a poo collection process. Storing double-bagged, tightly sealed bags is the safest way to keep it on site until it can be removed.

Why not compost poo?

Poo can be composted, but it takes special knowledge, materials, and lots of time (1-2 years) to do it safely. It's not like composting kitchen scraps. If done incorrectly, it could create a major public health issue. Most people don't know how to safely compost poo, and after a major earthquake, most people won't have access to the internet to learn. Our recommendation is to contain poo in bags (or dig a latrine, when appropriate).

Where should I store my poo bags?

There's no one answer that works for everyone. Circumstances will vary. What's most important is that you store poo bags away from food and water, kids, pets, flies, rats, etc. And do not put them in the regular garbage, yard debris, or recycling carts that will eventually be emptied by garbage haulers. However, if you have another garbage can that won't be picked up by haulers, you could use that. Or you could find a spot in your shed, garage, or home. Keeping bags of poo in your home may sound strange, but it's better than creating a public health hazard. And if it's double bagged, it shouldn't smell.

Why shouldn't I put poo bags in garbage, yard debris, or recycling carts?

We don't currently have a way to collect poo bags from these carts. Garbage and recycling systems aren't designed to collect human waste. Garbage is compacted when it's transferred to the truck, at the transfer station, and at the landfill. At all these points, the bags will tear and the contents will get smeared around. This will create hazardous situations for all workers involved with moving garbage. Plus, trucks are not designed for liquid, so if a poo bag tears in a truck, it would leak onto city streets and potentially spread disease.

Why shouldn't I bury my poo bags?

It is fine to bury your poo without plastic bags - in a pit latrine. However, burying the plastic bags causes a problem. The bags take a very long time to degrade, and this will prevent the poo from breaking down safely.

Where should I put used feminine hygiene products and diapers?

Put feminine hygiene products in the poo bucket if you are using the Twin Bucket system. Otherwise, dispose of feminine products in your regular garbage bin. Diapers should always go in regular garbage.

What if I can't easily separate my pee and poo - or get my kids to.

Do your best! That's all we can do in an emergency. If pee gets in your poo bucket, add a little extra layering material to help it dry out.

What are we going to do with all those plastic poo bags?

The solution will vary depending on where you live. The RDPO Disaster Sanitation Task Force created basic planning guidance for the Portland Metro Region. It identifies numerous methods for public agencies to collect, transport, and dispose of bagged poo after a major earthquake. After an incident, jurisdictions will assess their damage and select the collection, transportation, and disposal methods that make the most sense for their circumstances. They will communicate instructions to community members at that time. This is why it's so important that everyone knows how to [stay informed](#) after a disaster.

Method 2 - Latrines

A latrine (or a pit toilet) is a hole in the ground that collects human waste (poo and pee) in an emergency. This method is also simple, cheap and effective. It's ideal for more rural areas with wide open spaces. It can still be used in urban areas, as long as location guidelines (see below) are followed.

Before a Disaster:

1. Learn where your underground utilities are located. You may not be able to contact your utility company after a major earthquake.
2. Home Owners Associations (HOAs), property managers, and multi-family dwellings should pre-identify locations for latrines.

Instructions:

1. To minimize the number of holes you need to dig, talk with your neighbors about using shared pits. Make sure everyone agrees about the location of pits.
2. Dig a hole, and save the soil that you removed.
 - a. Location: It should be at least 10 feet from your residence, 10 feet from your property line, and 100 feet from creeks and wells.
 - b. Depth: Dig down at least two feet. Four feet is optimal, but many areas have a high water table. If you see water, stop and find another location or use the Twin Bucket Method.
 - c. Width: The hole should be about two feet wide.
3. After each use, cover your poo and pee with dirt.
4. When filled to the one-foot level, consider the latrine full. Allow space to cover it with at least an additional foot of dirt.
5. Mark the location of each latrine so they can be treated during disaster recovery.
6. Dig a new hole as needed.
7. Used toilet paper goes into the latrine, but nothing else. Do not bury plastic bags, diapers, feminine hygiene products, or anything else.

Frequently Asked Questions

What supplies do I need?

You just need a shovel to dig a hole. If you are unable to squat above the hole, you may need additional supplies to provide physical support, such as a plastic lawn chair with a hole in it. Just make sure whatever you use is kept clean.

Do I need a separate latrine for pee and poo?

No, poo and pee can be mixed together for this method.

Method 3 - Septic Systems

If you have a septic system and it survives the shaking, you'll be all set for safely using the toilet! But you should know where your system is and what it consists of before an emergency occurs. It's a good idea to know this anyway for maintenance purposes. Counties often have a record of where septic systems were installed. Visit the Oregon DEQ website to locate a contact in your county (deq.state.or.us/wq/onsite/onsite.htm).

Signs Your System is Working:

- Your water supply is functioning.
- You have electricity (some systems require power for a pump).
- Toilets flush and sinks drain properly.

Signs Your System is Not Working:

- The earth has moved around your septic system.
- There are abnormal wet or soft spots in your yard.
- You smell sewage odors.
- Water or sewage is backing up in the downstairs bathroom or floor drains.

If the level in your septic tank is high, then sewage might not be leaving the tank. If the level is low, then the tank itself may have been compromised or the piping between the house and tank may be damaged. You can usually easily examine the tank level when there is access to the ground-level inspection point. Unless there is a pump, all tanks have an inlet and outlet pipe, and the normal sewage level is at the outlet pipe level. Most of the time you can see this pipe when you open the access to the tank. DO NOT go into the tank.

If You Have Problems:

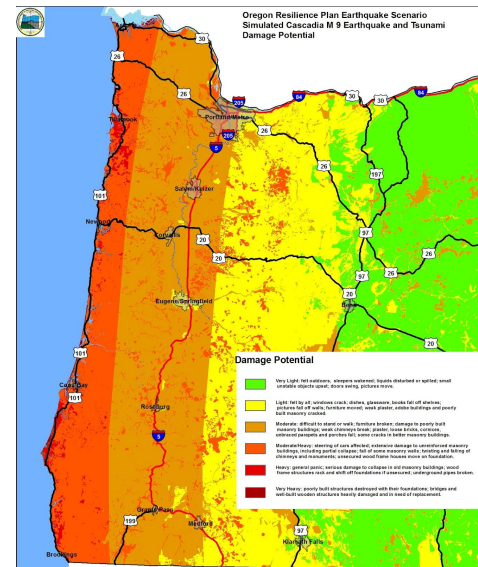
If sewage is staying below ground and is not backing up, continued use should be okay. Avoid scenarios where exposure to or contact with the waste could occur. If any of these apply, your system could be damaged and may not function properly.

- Limit use of water in your home and use Twin Buckets or a Latrine until repairs are made.
- Keep people and pets away from your septic system until it is back in service.
- Only use a licensed professional to repair/replace your septic system.

About This Project

Background

Recent disasters in the United States have damaged parts of water and wastewater systems, leaving people without access to clean water and flushable toilets for long periods. This has exposed the need for U.S. cities to improve post-disaster sanitation management plans and educate communities on how best to manage human waste. The need is even greater for those of us living in the Pacific Northwest. The [Cascadia Subduction Zone earthquake](#) will create a regional disaster unlike anything the U.S. has ever experienced. It will take time for outside assistance to arrive.



In 2016, the Regional Disaster Preparedness Organization ([RDPO.org](#)) created a task force of subject matter experts from the Portland Metropolitan Region to work on sanitation planning and public education. The Disaster Sanitation Task Force consisted of experts in public health, sewage, waste removal, environmental sustainability, and emergency management. This document outlines their recommendations. Additional materials are at [EmergencyToilet.org](#).

Assumptions

These recommendations are only for the first 2-4 weeks following a major earthquake. They are based on the following assumptions:

- Sewage collection and treatment systems will be partially or fully out of service for many months following a large earthquake.
- Methods for handling sanitation must be simple and cheap. They must effectively protect public health by limiting exposure to human waste.
- No single sanitation method is right for every situation – there must be several options to handle a variety of situations.
- Portable toilets work well during smaller events, but the number required for this scenario is far greater than what will be available. Additionally, they require frequent cleaning and emptying, which would be very challenging.
- Within 30 days of the initial disaster, local governments should be able to provide further messaging and instructions regarding human waste.

Caution Regarding PLUSH Recommendations

[Public Hygiene Lets Us Stay Human](#) (PHLUSH) is a wonderful Portland-area organization that provides education and advocacy for equitable public restroom availability and preparation for a pipe-breaking seismic event. Their website provides a great deal of information about disaster sanitation. The RDPO recognizes the quality work they have done but provides a few warnings.

- Composting poo is a long-term process that needs electricity and/or a lot of time (1-2 years). It needs to be done very carefully to avoid spreading disease. If you are interested in learning about this process, please do it before a major earthquake to ensure you have access to robust information and resources.
- If you place your poo bags in garbage or recycling carts for temporary storage, they should not be left out for regular garbage/recycling pickup when services resume. Stay tuned to emergency radio broadcasts for further info from local agencies about what to do with your poo bags, and always handle them with extreme care.

Outreach Materials

If you would like to share emergency toilet information with your community, visit [EmergencyToilet.org](#). There, you will find printable outreach materials, including instructions you can print and tape to your buckets. If you are in the Portland Metro Region, contact your [county Emergency Management office](#) to request glossy bucket stickers.

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Questions?

If you have questions about this guidebook, contact the Regional Disaster Preparedness Organization at rdpo@portlandoregon.gov.

