

# Disaster Sanitation – What Can Water Utilities Do?

Friday, May 3, 2019



# Disaster sanitation should be on the radar for every drinking water utility.

Infectious disease transmission or outbreaks may be seen days, weeks or even months after the onset of the disaster.

The main causes of communicable diseases:

- Presence of pathogens
- Displacement of population
- Change in environment
- **Disruption of basic public utilities**
- Lack of basic health services
- Food shortage



# What's the risk?

- In the US, diarrheal illness was noted after Hurricanes Allison and Katrina
- Norovirus, *Salmonella*, and toxigenic and nontoxigenic *V. cholerae* were confirmed among Katrina evacuees.



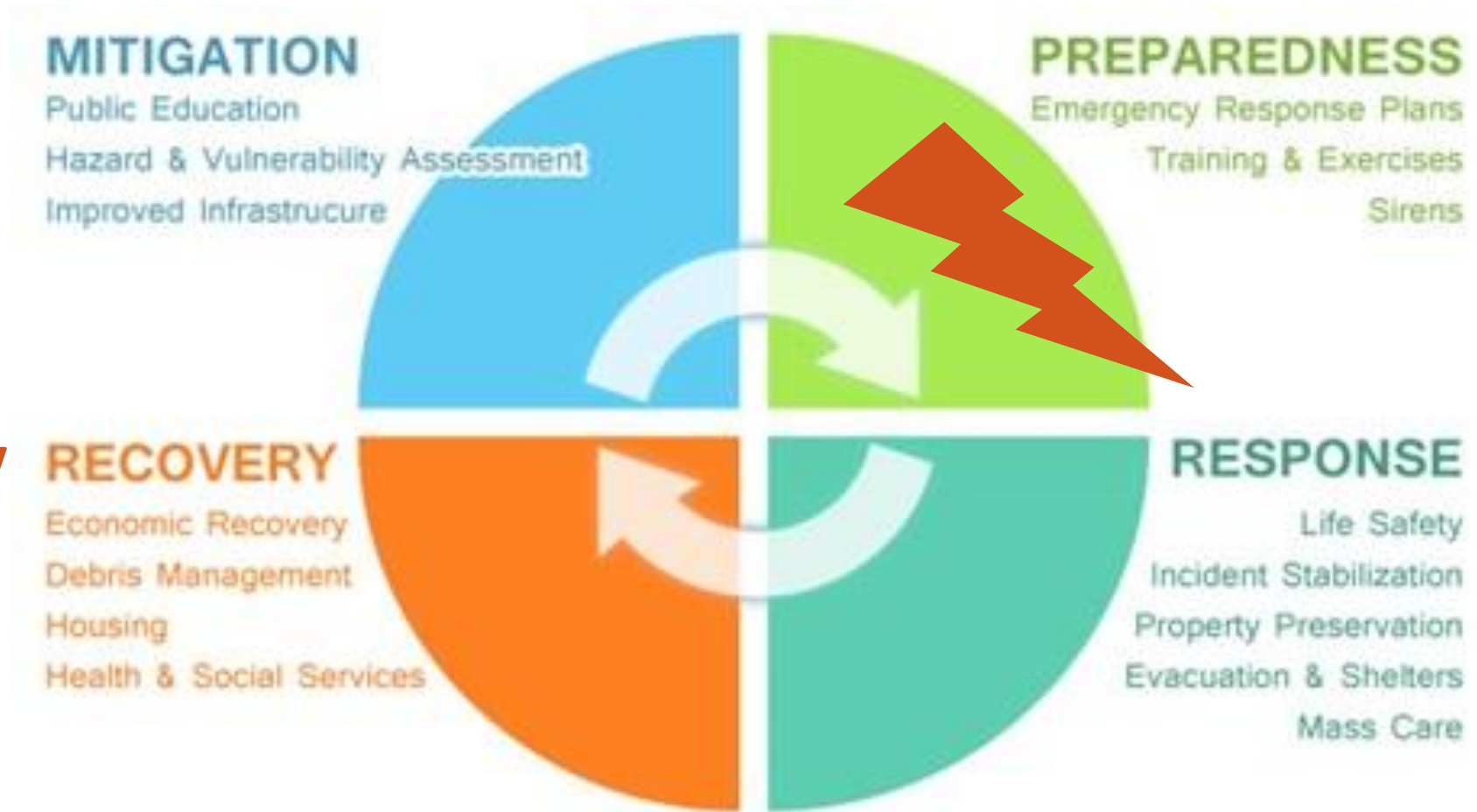
# What's the issue?

- Disruption of basic public utilities—water and wastewater services.
- Disease is spread by direct contact or contamination of drinking water.
- Customers may need to live without a working toilet for weeks or months.
- In the meantime, what should they do with pee and poo?



Proactive or reactive?

**Health Services  
Needs to Start Here!**



**Health Services  
Starts in Recovery**



# What's the solution?

- The Regional Disaster Preparedness Organization (RDPO) developed a solution for what to do with pee and poo.
- The “twin bucket system”
- Two standard 5-gallon buckets with snap-on seats – one for pee and one for poo.
- Be prepared ahead of the disaster!



Photo credit: Columbia County Medical Reserve Corps

# What are the benefits?

- Developed in Christchurch, New Zealand after the February 2011 earthquake.
- Simple, cheap and effective.
- **The key: separates pee and poo.**
- Lessens volume and odor, making bucket contents safer and easier to store and dispose.
- Ideal for dense urban areas with limited open space and locations with a high water table.



<https://ajem.infoservices.com.au/items/AJEM-27-04-07>

# Who is the Regional Disaster Preparedness Organization (RDPO)?

**Mission:** build and maintain regional disaster preparedness capabilities in the Portland Metropolitan Region...

**Vision:** a secure and disaster-resilient region in which local agencies, organizations, and communities are coordinated and prepared to prevent, protect against, mitigate, respond to, and recover from threats and hazards of great risk to the Portland Metropolitan Region.

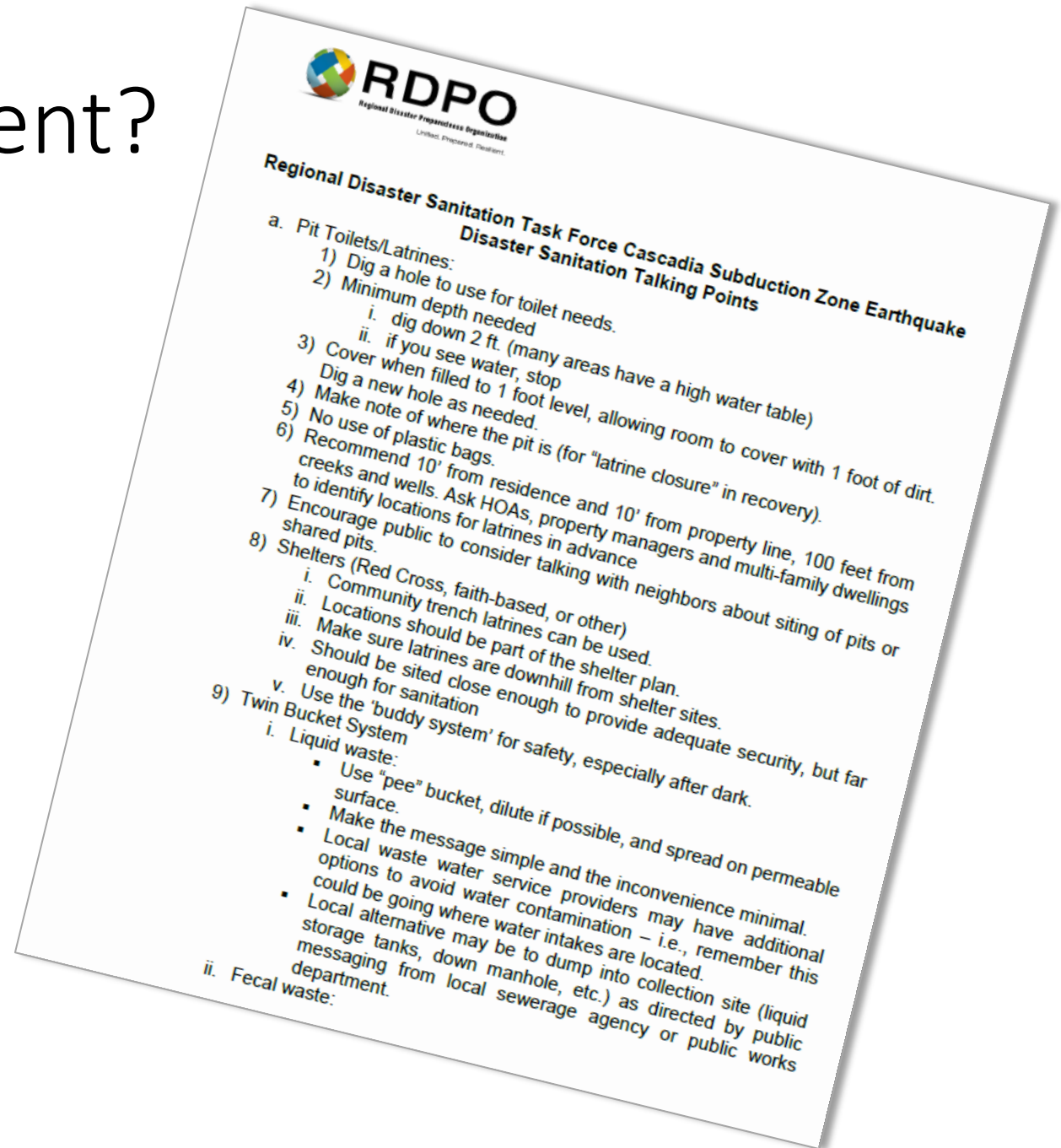


**RDPO**  
Regional Disaster Preparedness Organization



# Who created the content?

- RDPO's **Regional Disaster Sanitation Task Force** to develop guidelines.
- **Regional Disaster Preparedness Messaging Task Force** developed materials.
- Urban Areas Security Initiative (UASI) grant



## Regional Disaster Sanitation Task Force

- Sue Mohnkern, Washington County Public Health

## Regional Disaster Preparedness Messaging Task Force

- Felicia Heaton (now with Portland Water Bureau)
- Cynthia Valdivia, Washington County Dept. of Health and Human Services
- Denise Barrett, Director, Regional Disaster Preparedness Organization (RDPO)
- Adrienne Schmidt, RDPO
- Jamie Hays, Clackamas County Disaster Management
- Eric Frank, Clark Regional Emergency Services Agency (Vancouver)
- Alice Busch, Multnomah County Emergency Management
- Kendall Martin, Metro
- Renate Garrison, City of Beaverton
- Katy Wolf, Portland Bureau of Emergency Management

# What were the Regional Disaster Sanitation Task Force assumptions?

- The number of portable toilets required far outreaches the initial availability.
- Sewage systems will be partially or fully out of service for many months.
- Methods for handling sanitation must be simple, cheap, and effectively limit exposure to the waste.
- Buckets in use for the first 2-4 weeks.
- Within 30 days of the initial disaster, local governments should be in a position to provide further messaging and instructions regarding human waste.

# What were the project goals?

1. **Build awareness** and understanding
2. **Get people prepared** to take care of their needs
3. **Develop materials** that engage people of all backgrounds, cultures, literacy levels and ADA requirements.
4. **Consider barriers** to understanding and participation.
5. **Create a variety of outreach tools** and methods that can be sustainably implemented by regional organizations.

# Emergency Toilet – Protect Your Family’s Health

After a strong earthquake you may need to live without a working toilet for weeks or months. Disease is spread when human waste – POO – is not handled and stored safely.



# PEE

## Twin Bucket System

*Separating PEE lessens volume and odor, making bucket contents safer and easier to store and dispose.*

### Liquid waste – PEE

- Use **PEE** bucket.
- Place toilet paper in **POO** bucket.
- Add water to contents if possible.
- Pour on lawn, garden or ground.

### Fecal waste – POO

- Line bucket with heavy duty 13-gallon garbage bag.
- Use **POO** bucket.
- Cover each use with bark chips, etc. to help dry the waste.
- Fill bucket no more than half full of waste.
- Double-bag and store the waste separate from other garbage and away from food and water.
- Secure waste from pets, flies, rats, etc.



*Stay informed – watch for instructions from public agencies on how to get rid of waste.*

## Three steps to stay healthy

1



**Clean  
drinking  
water**

2








**Hand  
washing**

3



**Safe  
storage  
of POO**

## Important Supplies

-  5-gallon buckets (2) and seats
-  Heavy duty 13-gallon plastic garbage bags (.9 mil or thicker)
-  Bark chips or sawdust, leaves, grass clippings, shredded paper, etc.
-  Toilet tissue
-  Soap or alcohol-based hand sanitizer (60%+ concentration)

Learn more at



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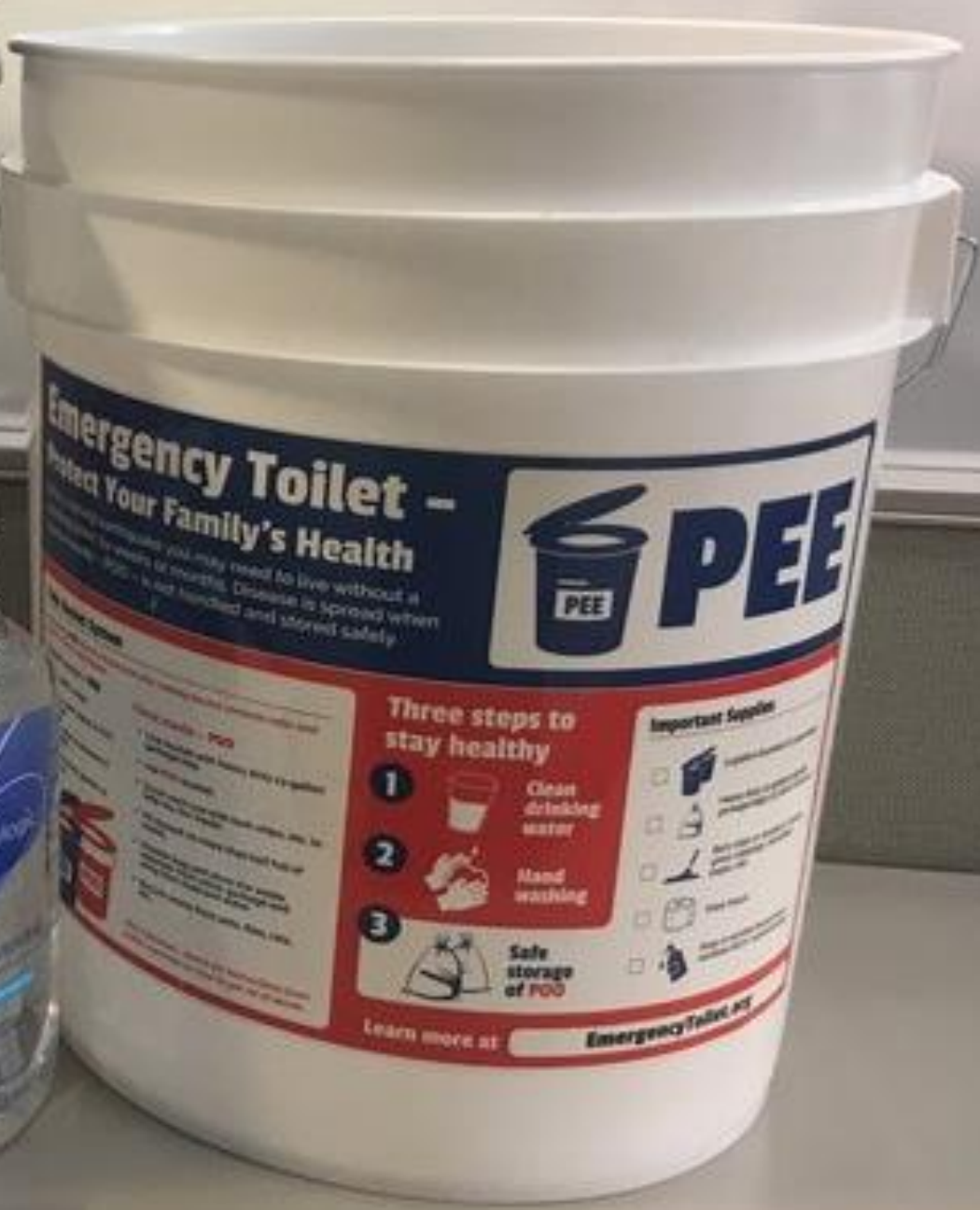
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# Why red and blue?

## **Red:**

**An “attention-grabbing” color**

**Energetic and vivid**

**Creates emotions: alarm, hazard, danger—as well as love**



## **Blue:**

**An “official” color**

**People have a positive association with blue**

**Peaceful, tranquil, secure, calm and orderly**

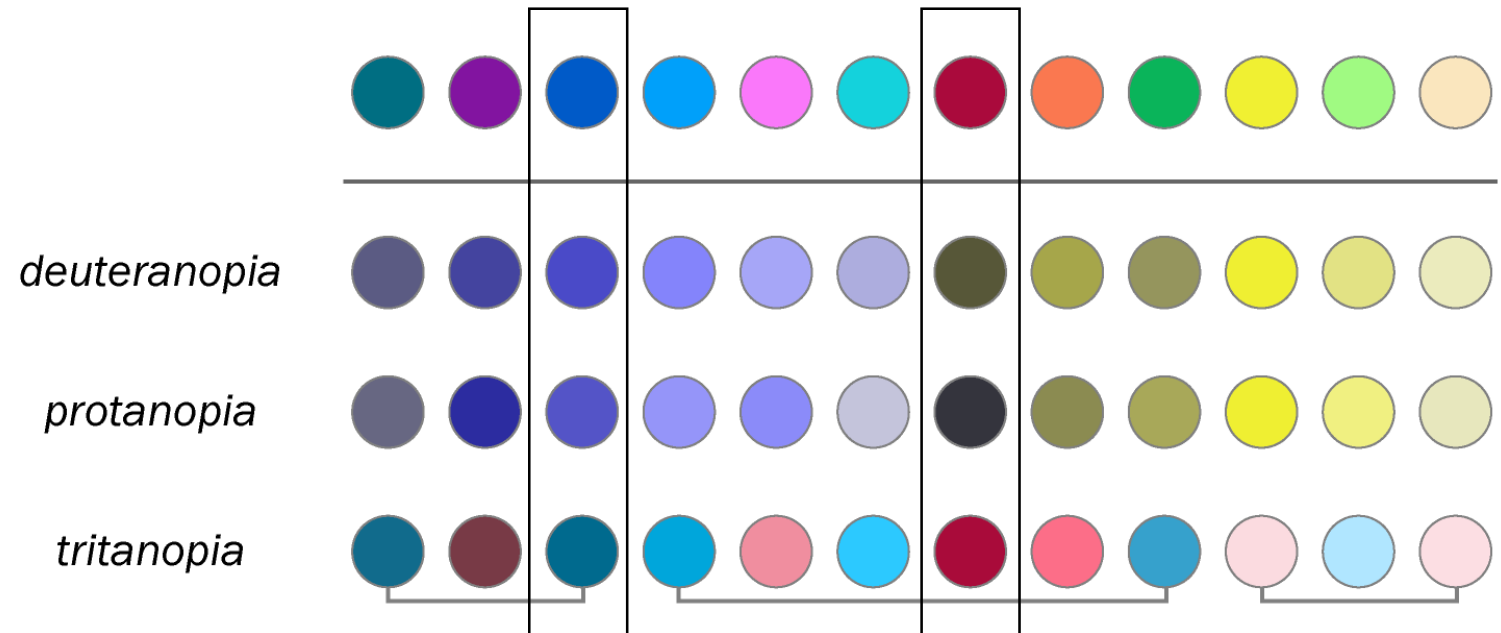
**Associated with reliability and loyalty**



# Is red/blue is a good combo for people with color blindness?

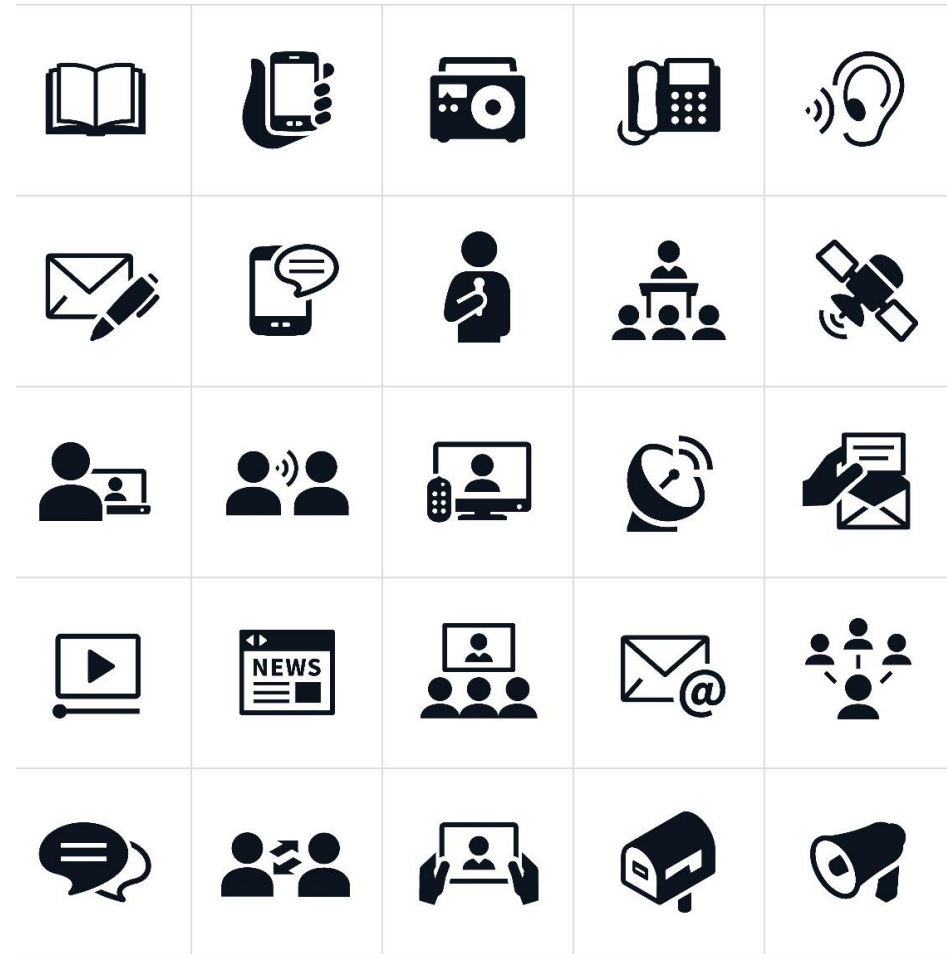
## Color Combos to Avoid

- Green & Red
- Green & Brown
- Blue & Purple
- Green & Blue
- Light Green & Yellow
- Blue & Grey
- Green & Grey
- Green & Black



# What communication tools can be used?

- Social media
- Website
- Television, radio ads
- Newspaper ads
- News releases
- Stickers, posters, postcards, brochures
- Interactive activities
- Giveaways





## **Protect Your Family's Health**

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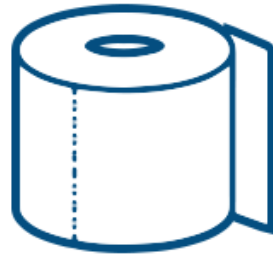
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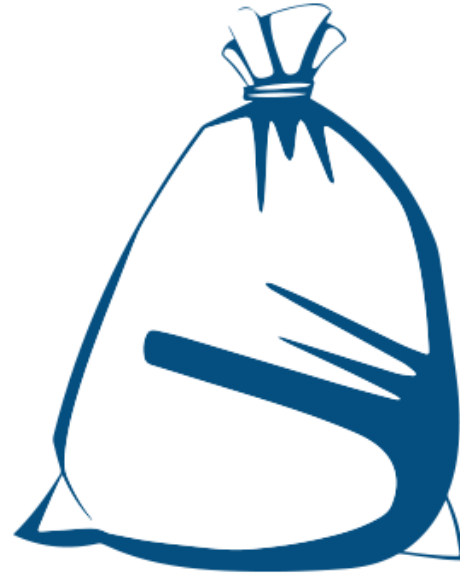
## Important Supplies





# Twin Bucket System

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(.9 mil or thicker)



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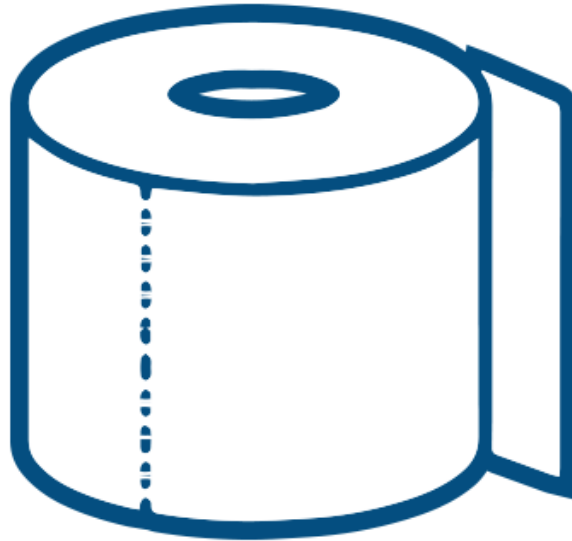


Bark chips or sawdust, leaves,  
grass clippings, shredded paper, etc.



# Twin Bucket System

## Important Supplies



Toilet tissue





# Twin Bucket System

## Important Supplies



5-gallon buckets (2) and seats



# Twin Bucket System

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[Learn more](#)

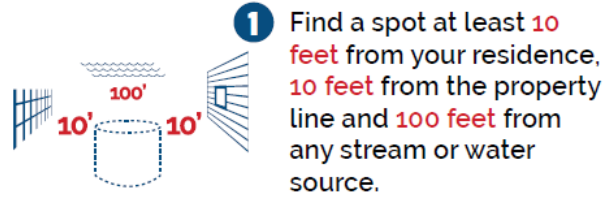
# What’s a Latrine?

A latrine (or pit toilet) is a hole in the ground that collects human waste in an emergency.

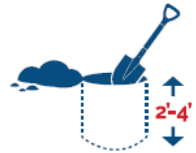


After an earthquake you may need to live without a working toilet. The best option is a twin bucket system (see reverse). If that’s not possible, an emergency alternative is a latrine.

## “How-to” Instructions



- 1 Find a spot at least **10 feet** from your residence, **10 feet** from the property line and **100 feet** from any stream or water source.



- 2 Dig down **2 to 4 feet**. The hole should be about **2 feet** in diameter. *If you hit water, stop – then dig at another location.* Save the soil you remove.



- 3 Cover waste with soil after each use.



- 4 Dig a new hole as needed. Fill the former latrine and mark the location.



- 5 Used toilet paper goes into the latrine. Do not use plastic bags.

# Septic System Tips



After a strong earthquake you may need to live without a working toilet for weeks or months. On-site septic systems are buried underground and can become damaged.

## Is your system working?

Your septic system may still be working if:

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

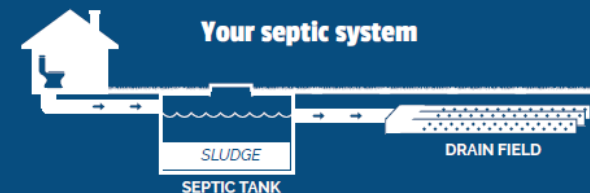
## Signs it is not working

After an earthquake, inspect your septic system to look for these signs of problems:

- ✔ The earth has moved around your septic system
- ✔ Abnormal wet or soft spots in yard
- ✔ Sewage odors
- ✔ Water or sewage backing up in downstairs bath or floor drain

## If you have problems

- 1 Limit use of water in your home and use a twin bucket system until repairs are made (see reverse).
- 2 Keep people and pets away from your septic system until it is back in service.
- 3 Only use licensed professionals to repair/replace your septic system.



## Protect Your Family's Health

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Learn more at

# Where can you get these materials? [rdpo.net/emergency-toilet](http://rdpo.net/emergency-toilet)



Read the Emergency Toilet Guidebook to learn more about how to stay healthy after a disaster.

## EMERGENCY TOILET GUIDEBOOK

After a strong earthquake, we may need to know how to live without running water and working toilets for weeks or months. Diseases like cholera can spread when human feces (poo) are not handled and stored safely. Read our guidebook to learn about safe post-disaster toileting options.

- [Emergency Toilet Guidebook](#)

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