



**ALASKA DEPARTMENT OF ENVIRONMENTAL
CONSERVATION Division of Spill Prevention and Response
Prevention and Emergency Response Program**
EARTHQUAKE: Public Health and the Environment

Approximately 11 percent of the world's earthquakes occur in Alaska. Of the ten largest earthquakes in the world since 1904, three occurred in Alaska. The vast majority of the large earthquakes in Alaska occur along the Aleutian Islands, the Alaska Peninsula, and the Kenai Peninsula. This belt is known as the Alaska-Aleutian subduction zone. The earthquakes result from slipping along the contact zone of the Pacific and Alaska plates. These earthquakes typically cause strong shaking that can last for several minutes.

Persons and property at risk are dependent on the severity of the earthquake. The severity in part can be expressed in terms of both intensity and magnitude. Intensity is based on the observed effects of ground shaking on people, buildings, and natural features. This is measured with the Modified Mercalli Intensity Scale. Magnitude is related to the amount of seismic energy released at the epicenter of the earthquake. This is measured with the Richter Magnitude Scale.

The general effects of an earthquake can include structural damage to buildings, bridges, roads, port and harbor facilities, airport facilities, utilities, and communications systems. An earthquake of 6.0 to 8.0 on the Richter scale may be expected to result in additional natural/environmental emergencies such as large seismic seawaves or tsunamis, floods, avalanches, and landslides. In addition, industrial/technological emergencies such as fires, explosions, and hazardous materials incidents may occur along with the disruption of vital services such as water, sewer, power, gas and transportation.

The Alaska Department of Environmental Conservation (ADEC) is available to provide technical assistance on environmental issues associated with earthquakes.

The following is information and contacts that homeowners may find helpful in assessing their property during disaster recovery.

For additional information please contact the ADEC Disaster Coordination Team:

Steve Russell (*manager*)..... (907)262-3401

Megan Kohler (907) 269-7435

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Email us at: DECDisasterCoordinator@alaska.gov

Website: <http://dec.alaska.gov/spar/ppr/interagency.htm>

Drinking Water Supply

Did your water change color, does it smell different, has the flow rate changed, or do you have other concerns? If so, the following is a summary of considerations that should be taken; the paragraphs in the next section provide more details:

- Inspect your well for visible damage.
- Use an alternate water supply until you can confirm the water is safe.
- Boiling the water temporarily may be necessary.
- Let the cloudiness settle out or flush the well clean following the recommended procedures below.
- Test your water for potential contamination.
- Disinfect following the recommended procedures below.
- If there is prolonged cloudiness or it continues to be cloudy after flushing, changes below the surface may have occurred.
- Consult a groundwater professional (e.g., well contractor, professional engineer or hydrologist).

Drinking Water Supply System

Following an earthquake, private well owners may notice changes in the appearance of their water supplies, may have concerns about the quality of their water supply, or may have noticed a change in the supply rate. Well owners, especially those close to the epicenter, should inspect the structural integrity of their well and also the clarity of the water coming from the well. There is a possibility that the ground shaking of an earthquake can stir up sediments and cause your drinking water to be cloudy and discolored. This cloudy condition should clear itself up in a relatively short time (e.g., hours or days), once the sediments have a chance to settle.

If structural damage is noted, your well produces cloudy water for an extended period of time, or the well suddenly does not produce an adequate amount of water, you should have your well checked by a groundwater professional (i.e., well contractor, professional engineer, or hydrologist). ***Well contractor's information can be found on the DEC at: http://dec.alaska.gov/eh/dw/DWP/DWP_PrivateWells.html.***

Well owners who observe sediment in the water supply should **use an alternate source of water until the water supply is safe**. If in doubt regarding water quality, as a precaution, ADEC advises that water used for drinking, cooking, hand washing, or dish washing, should be boiled (rolling boil for at least 1 minute).

If the water has become cloudy, it may be cleared by either letting it settle for several hours or by flushing. Flushing can be accomplished by hooking up a garden hose and letting it drain at a low flow rate until it becomes clear. Caution should be given to where the water drains such as to an area that is clear of hazards and does not impact neighboring properties. For low flow wells, the draining should be low enough that the water in the well doesn't draw down too far and possibly cause excessive wear to the pump.

As a precaution for bacterial contamination once the water has cleared up (free of sediments) ADEC recommends that homeowners disinfect their well with chlorine bleach. **See the ADEC handout titled, “Disinfection of Wells and Distribution Lines in Small Water Systems” at: <http://dec.alaska.gov/eh/docs/dw/brochures/WhatsInTheWater-Disinfection%202014-07-07.pdf>.** During the disinfection procedure, the water will not be drinkable, therefore, a 24-hour supply of either bottled or boiled water should be on hand before the procedure is started. Plan to disinfect the well late at night or at other times when there is little need for water. After the disinfection procedure is completed, ADEC recommends to have your water tested for total coliform bacteria, to ensure that it is safe to drink. Additional sampling recommendations are for nitrate, and if you are in an area with naturally occurring deposits of arsenic, you may want to have your well tested for arsenic levels after an earthquake. **Contact Information for Certified Labs in Alaska can be found at: <http://dec.alaska.gov/applications/eh/ehllabreports/certmicrolabs.aspx>**

If you detect a fuel spill near your well, contact your local ADEC office to report the spill. You may want to have your well water tested to see if it may be contaminated with petroleum products that could pose a health risk to you and your family. For specific testing of your well water, ADEC recommends that you talk with an independent, state-certified laboratory about the problem you suspect and their recommendation for sampling analysis.

NOTE: Chlorine disinfection will not eliminate fuel contamination in your well water.

Household Water Usage in the Event of Possible Well Contamination

- Use only bottled or purified water for drinking, diluting fruit juices, making formula, all other food preparation and for tooth brushing.
- Dispose of ice cubes and do not use ice from a household automatic icemaker until the supply is determined safe.
- Disinfect dishes and other food contact surfaces by immersion for at least one minute in water that contains one teaspoon of unscented household bleach per gallon of water.
- Water used for bathing does not generally need to be boiled; however, close supervision of children is necessary to make sure that it is not ingested.
- Do not depend on water treatment devices to adequately purify contaminated water.

For more information regarding water disinfection procedures, or where to have your water tested, call your local ADEC office.

Onsite Wastewater Disposal System (Septic System)

Onsite wastewater systems are buried in the ground and can become damaged during an earthquake. If the earth moves enough, this can damage the system enough to make it malfunction. After an earthquake, perform an inspection of your system by looking for:

Inside the home:

- Unusually sluggish draining of sinks, toilets, tubs and showers
- New sewer odors in the home
- Water backing up in downstairs tubs

Outside the home:

- Heaves or depressions in ground above your septic tank or drainfield
- Signs of sewage on the ground or odors
- Assure vent tube caps are still on
- Assure tank access lids are on and bolted or locked in place
- Soft, wet or defrosted areas near septic tank or drainfield

If any of these conditions are present, you should contact a licensed professional engineer, a certified installer (*list available on [website listed below](#)*), or a septic professional in your area. If you suspect your system is damaged, you should limit use of water in the home until the system is inspected and keep people and pets away from the system until it is inspected. ***For additional information and local contact information:*** http://dec.alaska.gov/water/wwdp/onsite/buying_a_home.htm

Food Safety & Sanitation

Food is essential to everyone! It is important that you know how to keep your food safe to avoid foodborne illness, you need to make sure that you safely store an emergency food supply and handle food safely after an emergency.

Emergency Food Supply

There are many helpful resources online to assist you in putting together an emergency food supply. From a food safety point of view, it is important to have food on hand that does not require refrigeration during storage.

After an Emergency

There are many concerns during any emergency, but from a food safety perspective, loss of power and flood waters are the enemies of safe food. Although food that is in your refrigerator or freezer is at risk during a power outage, the loss of power doesn't always mean you must throw out all of the food.

Refrigerator

As a general rule, if the power is only out for a few hours and you keep the doors closed tightly, the temperature of the refrigerator will probably not rise into the food “danger zone” (above 40° F). Once refrigerated food temperatures rise above 40° F, they are typically only safe for about 2 hours. You cannot rely on a food's appearance or odor to tell whether the food can make you sick.

Freezer

For food in freezers, food that is in a full free-standing freezer is safe for about 2 days if the temperature is kept at about 0° F. If the freezer is only half full, the time is reduced to 1 day.

A few tips to keep your frozen food frozen during a power loss:

- If the freezer isn't full, group packages together to form an igloo-type shape.
- Place meat, poultry, and fish on a tray so that juices won't make a mess or contaminate other foods if the foods do thaw.
- Try to minimize opening the freezer door during an outage.

Storing Food Outside

In many parts of Alaska, outdoor temperatures may be cold enough to store food outside. If that is an option, make sure you keep food out of direct sunlight (even on cold days) and protect the food from contamination and animals.

There are wonderful resources online with publications that you can print and keep handy with your emergency food supply for easy reference. **DEC's Food Safety & Sanitation program has links to those resources at its website:** www.dec.alaska.gov/eh/fss

Oil & Hazardous Substance Spills

If a release of fuel, oil, or other hazardous substance is discovered please report the spill to ADEC:

Area	Phone	FAX
Central (Anchorage)	(907) 269-3063	269-7648
Northern (Fairbanks)	(907) 451-2121	451-2362
Southeast (Juneau)	(907) 465-5340	465-5245
After Hours (All Regions)	1-800-478-9300	

For more information: <http://dec.alaska.gov/spar/spillreport.htm>

Propane and heating oil tank owners should inspect their tanks and fuel lines. The tank may have shifted which can cause fuel lines to kink, weaken, strain or there may be loosened or damaged fittings that may be unsafe. If damage is suspected the homeowner should contact their heating oil or propane suppliers to have the system inspected professionally. If damage is suspected turn supply valves off and keep them closed until the supplier inspects the system. **For additional information and inspection checklists visit:** <http://dec.alaska.gov/spar/ppr/hho.htm>

If you have a buried fuel tank, there may be some damage to the tank and/or the fuel lines connected to it. While more difficult to detect damage of underground tanks you should look for diesel odor around your tank or house or your furnace or boiler acting up. If you suspect there may be damage contact your fuel supplier for further inspection.