What is an earthquake?

A trembling or shaking of the ground caused by the sudden release of energy stored in the rocks below the surface, radiating from a fault along which movement has just taken place.

How long do earthquakes last?

Generally, only seconds. Strong ground shaking during a moderate to large earthquake typically lasts about 10 to 30 seconds. Readjustments in the earth cause more earthquakes (aftershocks) that can occur intermittently for weeks or months.

Is there an 'earthquake season' or 'earthquake weather'?

No. Earthquakes can occur at any time of the year and at any time of the day or night. Earthquakes occur under all weather conditions, sunny, wet, hot, or cold--without special tendency.

Where is the safest place to be in an earthquake?

In an open field, where nothing can fall on you. Earthquakes do not injure or kill people; buildings and falling objects do. If you are indoors, when you feel the ground start to shake, take cover immediately under a table or sturdy piece of furniture, placing a barrier between falling objects and yourself. Do not attempt to use the stairs or an elevator or run out of the building.

Will the ground open up during an earthquake?

The ground does not open up and swallow people (a commonly feared myth). Open ground cracks may form during an earthquake--related, for example, to landsliding or ground slumping. But such fissures are open gaps (they don't "swallow") that a person could stand in.

What is a seismometer, seismograph, and a seismogram?

A seismometer is a sensor placed in the ground to detect vibrations of the earth. A seismograph is an instrument that records these vibrations. A seismogram is the recording (usually paper or film) of the earth's vibrations made by a seismograph.

When was the seismograph invented?

In 1880. The earliest seismographs in the U.S. were installed in 1887, in California. (In 132 A.D. a Chinese scholar, Chang Heng, made a mechanical device to detect the first main impulse of ground shaking.)

What is the Richter Scale?

A scale for determining the size of an earthquake from the recording of earthquake waves made on a seismograph. The maximum height of the visible recording is adjusted for the distance from the instrument to the earthquake. This is not a physical scale (in other words, one cannot look at or hold the "Richter Scale"). Each 1-unit increase in the Richter Scale roughly corresponds to a 30-fold increase in energy release and a 10-fold increase in ground motion at any site.

Do many small earthquakes prevent larger earthquakes?

No. Observed numbers of small earthquakes are too few to equal the amount of energy released in one large earthquake. (It would take roughly 24 million earthquakes of magnitude 2 to release the same energy as one earthquake of magnitude 7.)

Can we predict earthquakes?

No. We cannot predict the precise time, location, and size of earthquakes. In order to predict earthquakes there has to be an adequate history of repeated earthquake cycles and/or extraordinary instrumental observations. Long-term forecasts (on scales of years or decades) are becoming common for well-studied earthquake zones. The Chinese have correctly predicted some earthquakes, evacuated cities and saved lives. They have also had large earthquakes occur with no predictions and have predicted earthquakes that never occurred.

What is liquefaction?

Water-saturated sands, silts, and other very loosely compacted soils, when subjected to earthquake motion, may be rearranged, thereby losing their supporting strength. When this occurs, buildings may partly sink into the ground and sand and silts may come to the surface to form sand flows. In effect, the soils behave as dense fluids when liquefied.

Do we need to worry only about large earthquakes causing damage?

No. A moderate-sized earthquake that occurs under an urbanized area can cause major damage.