Science Spectacular! © Earthquake Show Script

Developed by: Michelle Vanegas, Monica Barajas, and Nick Scruggs of the Education Department of the California Science Center

Directed by: Dr. Robert de Groot and Nick Rousseau of the Southern California Earthquake Center

A product of the Southern California Earthquake Center and the California Science Center

SCEC an NSF + USGS center

Southern California Earthquake Center

California ScienCenter

The introduction to the show is a mock earthquake. This can be shown any number of ways (i.e. video clips, audio clips, props, etc.)

LEAD

(*runs out on stage*) Oh, wow! This is so exciting, an earthquake, and such a big one, too! Is everyone okay? Did you all remember to drop, cover, and hold on?

ASSISTANT

(*Running out on stage*) Oh my goodness, LEAD, what just happened? I was in the back and the whole room started shaking!

LEAD

We just experienced an earthquake!

ASSISTANT

An earthquake? I've never been in an earthquake before! (*Addressing audience*) Have any of you ever been in an earthquake before? (*Wait for audience response*) I didn't know what to do! I was just running around and panicking!

LEAD

(*Interrupting ASSISTANT*) Wait, you were running around?

ASSISTANT

Yeah! Things were flying off the shelves, and one of them hit me in the head, it kind of hurt (*rubbing head*)!

LEAD

Well of course you got hurt, ASSISTANT. You shouldn't have been running around, that's very dangerous. The first thing you should do in an earthquake is drop, cover, and hold on!

ASSISTANT

Oh yeah! Drop, cover, and hold on! But wait a minute, LEAD. How could we have *possibly* had an earthquake today? I thought earthquakes only happened when the weather is hot and dry. (**In the event that the weather is hot and dry: ASSISTANT: You know LEAD, we should have expected this earthquake because it's hot and dry outside. It's earthquake weather!**

LEAD

Let's think about that. (*Addressing audience*) Do any of you think the weather has anything to do

with earthquakes? (*Wait for audience response*) Earthquakes actually happen underneath the earth's crust where the weather has no effect!

ASSISTANT

Earth's crust? You mean like the crust on your pizza (*pulls pizza out from pocket*)? Or what about the crust on your bread (*pulls bread out from pocket*)? Or what about…

LEAD

(*Confused*) No, ASSISTANT, not *that* kind of crust. Here, put those away, we're talking about the *earth's* crust! ASSISTANT, it sounds like you have a lot to learn about earthquakes and earthquake safety, and I just happen to be an earthquake expert! (*To audience*) My name is _____.

ASSISTANT

And my name is _____.

This portion of the script can be modified as needed to better suit the needs of the room/building/institution in which the show is being performed.

LEAD

(*To ASSISTANT*) Now, ASSISTANT, we need to make sure that next time there is a big earthquake, you are prepared for it. Let's start by talking about the crust…and not your lunch crust. (*To audience*) Scientists, what is underneath your feet right now (*carpet, ground, etc.*)? That's right, carpet! Underneath that, what do you think is there (building *material, ground, etc.*)? Good, there is wood, pipes, and other building materials. Underneath that, what do we see (*the first floor*)? Exactly! And underneath the first floor, what do you think is there (*the ground, the earth, dirt, soil, etc.*) That's right. Under the building and all the concrete you see outside is the earth's crust. Everyone say "earth's crust." Good! Underneath the earth's crust is a layer called the mantle. Everyone say "mantle." Great! All the way at the center of the earth is the core. Everyone say "core." Good! Now the earth's crust is made up of different layers of soil and dirt and rock. Inside the mantle, it gets so hot that the rock actually melts!

ASSISTANT

No way, LEAD, that's so cool!

LEAD

No, not cool, it's HOT! And this molten, melted rock is really thick.

ASSISTANT

Sort of like honey or maple syrup?

LEAD

Yeah, sort of like that!

ASSISTANT

Mmm…that sounds delicious.

LEAD

(*to audience*) let's think about honey and maple syrup. If you pour them, do they move really fast or really slowly? (*Audience responds*).

ASSISTANT

Everybody show me what it looks like when you move in s-l-o-w m-o-t-i-o-n.

LEAD

That's exactly how the mantle moves! Now underneath the mantle, the earth's core is broken up into two parts: outer and inner. The outer core is made of liquid metal, and the inner core is made of solid metal.

The explanation of the composition of the earth is meant to be as basic as possible in order to accommodate an audience with a diverse age range. More in-depth explanations of the lithosphere, asthenosphere, and mesosphere can also be added if desired.

ASSISTANT

Alright, LEAD, I understand the crust, mantle, and core, but I still don't understand how we get earthquakes from pizza crust and maple syrup.

LEAD

Well, ASSISTANT, earthquakes actually happen in the area between the crust and the mantle.

ASSISTANT

I get it! So since part of the mantle is melted rock, then the crust must be floating on top of it!

LEAD

That's right! But the earth's crust isn't one complete piece. It's broken up into these huge plates–

ASSISTANT

(*with some playfulness*) Plates? You mean these plates, right? Like the plates you eat off of? (*Said while tossing paper plates toward LEAD*).

LEAD

(*ducking for safety*) what? No, not the plates you eat off of! I'm talking about tectonic plates! Everyone say tectonic plates.

ASSISTANT

Wait, LEAD, I know all about tectonic plates! Wait here, I have something to show you!

LEAD

Awesome! ASSISTANT is going to teach us all about tectonic plates! (*Looking around*) Umm...where did he/she go?

ASSISTANT

(*ASSISTANT brings out globe and holds it up for audience*.) Do you all know what this is? (*Audience responds*).

LEAD

Oh yeah, this is my favorite globe that…someone drew all over?

ASSISTANT

(*very proud*) Yep! I did!

LEAD

Wait, what??

ASSISTANT

Yeah! It took me a long time to get it just right, but I have perfectly drawn all of the boundaries between the tectonic plates—who's the earthquake expert now?

LEAD

Oh, wow! You're right, ASSISTANT! This is awesome!

ASSISTANT

(*to audience)* Tectonic plates make up the continents and the bottom of the oceans. Does anyone want to come up and find where we are on this globe right now? (*Volunteer comes up and finds location*). Good job! Now what tectonic plate are we on? (*Pacific plate*). That's right and what big tectonic plate is right next to that one? (*North American Plate*). Great job!

LEAD

So scientists, since these tectonic plates are floating on thick, slow-moving mantle, do you think they might ever move, too? (*Audience answers*). That's right! We live near the San Andreas Fault, which is the boundary between the Pacific plate and the North American plate. These two plates move side-to-side, so let's demonstrate that movement with our hands. Everyone put your hands up. Let's pretend that one of your hands is the Pacific plate, and the other hand is the North American plate. Put your two tectonic plates together like this, and slide them back and forth. This is how these two plates are moving.

ASSISTANT

LEAD, I understand that these plates are moving, but where does all the shaking come from? Our hands are sliding pretty smoothly.

LEAD

Let's think about that! Does anyone remember what the tectonic plates are made of? (*Earth, dirt, rock*). Right! And are rocks smooth or are they rough? (*Rough*). Let's try this again, but instead, let's use our knuckles. Everyone make two fists; these are your tectonic plates. Now squeeze your knuckles together, and try to slide them past each other. Is that much harder to do? (*Audience responds*). This is what happens to the tectonic plates. They lock together, but are still trying to move past each other. Eventually the plates will slip, and release all of the energy that was stored up. That is what causes the shaking during an earthquake.

ASSISTANT

So earthquakes happen when tectonic plates move! But LEAD, how do we know when an earthquake will happen?

LEAD

We don't! Scientists aren't able to predict when an earthquake will happen. In fact, an earthquake could even happen right after I finish…this…sentence!

ASSISTANT

(*panics and drops to the floor. Realizes there's no earthquake, sheepishly stands back up*.) Oh…um…well I'm really glad an earthquake didn't happen just then! But if we can't predict earthquakes, how do we prepare for them?

LEAD

That's a great question, ASSISTANT. There are a lot of things we should to do prepare, but the most important thing we can do is make a disaster supply kit.

ASSISTANT

Oh! I have one of those! Let's see, it's around here somewhere…ah, here it is! (*ASSISTANT brings out cardboard box labeled "~~Holiday Lights~~ Disaster Kit*). My parents put it together, but I added some of my own things to it.

LEAD

Okay, let's see what you have in here. (*Pulls out bottled water*) Bottled water, that's good. (*Pulls out PB&J)* A peanut butter and jelly sandwich…maybe not so good. (*Pulls out a rubber chicken*) A rubber chicken?

ASSISTANT

Actually, it's a rooster.

LEAD

Well, ASSISTANT, there is one big issue with your disaster kit: it's in this ratty, old cardboard (*LEAD lifts box, contents fall out onto stage*)…box. (*LEAD looks at audience through hole in box*.) ASSISTANT, your kit should be in a watertight container, like this one (*LEAD brings out watertight tub*.) I think we need a volunteer to help us sort out this mess. (*Choose volunteer*) Alright, volunteer, you are going to sort out ASSISTANT's kit and the audience will help you. You are going to hold up one item at a time, and audience, if you think that item should stay in ASSISTANT's kit, give our volunteer thumbs up and say, "Keep it!" If you think it doesn't belong, give our volunteer thumbs down and say, "Lose it!" For all the items that we keep, put them in the watertight tub, and for the items we

lose, put them in this discard box. Let's start with the first item! (*Allow volunteer and audience to go through each item.*) Great job, everyone!

The results of the sorting exercise may vary slightly. This portion of the script can be as flexible as necessary to accommodate the results.

ASSISTANT

(*observing changes made*) LEAD, why did we replace my soda with water? If I wanted water, couldn't I just get it from the sink?

LEAD

Unfortunately, ASSISTANT, a big earthquake could cause the pipes that bring water to our homes to break, and they could be broken for weeks…even months. So it's important to have a supply of clean water in your kit.

ASSISTANT

Good to know. What is this, canned food? Gross! I'd much rather eat my peanut butter and jelly sandwich.

LEAD

(*picks up sandwich, disgusted*) Umm…ASSISTANT, how long has this been in here?

ASSISTANT

Ummm…hmmm…

LEAD

Would you rather eat *this*, or canned food?

ASSISTANT

I guess anything is better than a moldy sandwich.

LEAD

Remember, you want to pack food in your kit that doesn't expire right away, like canned food or dehydrated food.

ASSISTANT

(*searching further into kit*) LEAD, why do I need a flashlight in my kit? Haven't you ever heard of Thomas Edison? We *do* have electricity in our homes.

LEAD

Don't you remember when the lights went out earlier? A big earthquake could knock down power lines, and we could be without electricity for days or even weeks.

ASSISTANT

Well if we won't have electricity, how am I supposed to use this radio?

LEAD

Well this radio is different; it doesn't need to be plugged into to work. When you spin this handle, it generates electricity to power it. Having a radio is helpful because you can use it to listen for an emergency broadcast.

This portion of the script is also dependent on the results of the sorting activity.

[Stuffed Animal]

If placed in watertight container – LEAD: Everyone decided to keep ASSISTANT's stuffed animal in the supply kit. It's okay to keep a stuffed animal if it will help you feel better after a natural disaster.

[Video Games]

If placed in watertight container – LEAD: Everyone decided to keep ASSISTANT's video games in the supply kit. Video games are great for keeping you busy after a disaster, but remember you might not have electricity to charge your game player. And if it runs on batteries, it would be better to save them for a flashlight instead!

ASSISTANT

Oh, neat! Well, I guess I'm not very good at putting together a disaster supply kit.

LEAD

Aw, come on, it wasn't that bad! You did have some things in your kit that (*picking up rubber chicken*) you didn't need, but there was one very important thing you did have, and that's a first aid kit! Remember scientists, you want to have first aid in your supply kit. And if you or someone in your family needs special medication, be sure to put some of that in as well.

ASSISTANT

Thanks for helping me sort my supply kit, everyone! I'm glad I know how to prepare for an earthquake, but what about *during* an earthquake. Earlier, I didn't have time to run under a doorway, and I ended up getting hurt!

LEAD

Well ASSISTANT, that's actually a myth about earthquake safety. The doorways in a building are no safer than any other place. The best place for you to be during an earthquake is under a sturdy desk or table.

ASSISTANT

Oh, yeah! Drop, cover, and hold on! We talked about that! (*To audience*) Have any of you ever participated in The Great Shakeout or an earthquake drill at school? (*Audience responds*). Great! Who wants to come up and show us what to do during an earthquake? (*Volunteer demonstrates drop, cover, and hold on*.) Good job! Remember, you always want to cover your head and hold on to the table until the shaking stops. (*Volunteer returns to their seat*.) If an earthquake happened right now, the best thing for you scientists to do would be to remain seated, protect your head and neck, and wait for the shaking to stop.

LEAD

Great job, ASSISTANT! So next time there is an earthquake, are you going to run around in circles?

ASSISTANT

No way, I'm going to drop, cover, and… (*with hand to ear*. *Audience should respond "Hold on!"*)

LEAD

That's great! If you plan ahead, make a disaster supply kit, and know what to do during an earthquake, you'll increase your chances of staying safe. There are a lot of things we didn't cover in our presentation, so to learn more about what you can to do prepare for an earthquake, visit www.Shakeout.org. Thank you and have a great day!