



## TRAVELING SCIENCE SHOWS

### Sensory Alerts Information

The Traveling Science Shows presented by The Franklin Institute are uniquely designed to present complex science topics in fun and entertaining ways. Traveling Science Shows primarily involve science demonstrations done by our Franklin Institute Traveling Scientists. Some demonstrations result in a flash of light, colored light, fire, a loud concussive sound, or a puff of smoke. We are aware that these reactions can sometimes cause distress to those who have sensory sensitivity, and have created a list of sensory alerts that may take place during each show.

#### Chemistry:

Flash! Fizz! Kaboom! Watch and learn as we differentiate between physical and chemical properties through fun, engaging demonstrations. The chemistry show explores everything from everyday chemistry to the chemical "detective" work performed by laboratory scientists.

This show may contain:

- flashes of controlled fire and colored fire
- popping of a balloons (with a candle resulting in fire)
- other loud noises
- volunteers will be asked to participate (to hold a glass or water, or a rope)

#### Electricity:

Your students' hair will stand on end as we unravel the mysteries of electricity. Explore static and current electricity. Watch as electricity travels through the air to power fluorescent light bulbs — turning students into a human "circuit".

This show may contain:

- flashes of lights from a variety of light bulbs
- a loud "cracking" sound resulting from the generator
- controlled "lightning"
- volunteers may be asked to participate

#### Energy:

What is energy, and how is it used to power everything from power plants to your body? We'll demonstrate how different kinds of energy can be transformed from one to another including kinetic, thermal, electrical, chemical, potential and stored. The dynamic, interactive demonstrations will have you on the edge of your seat!

This show may contain:

- loud noises
- music at varying volumes (music box or a tuning fork)
- flashes of controlled fire (flash paper) (flame tests with changing fire color)
- electromagnetic motor spinning very quickly
- laser lights (not pointed at audiences)
- flashes of colored lights (laser + balloon) and light bulbs
- popping balloons
- soda bottle rocket propelled upwards and makes a startling, loud concussive sound
- volunteers may be asked to participate

#### Flight:

From Leonardo da Vinci to the space shuttle, explore the exciting history of flight. Investigate the Bernoulli principle, and learn how airplane wings provide lift. Mechanical birds, hot air balloons, gliders and even a rocket launch are used to demonstrate the forces of flight.

This show may contain:

- controlled fire (propane stove)

- popping balloons (with a candle, sometimes resulting in combustion and a loud sound)
- soda bottle rocket propelled upwards and makes a loud concussive sound
- flying objects with unpredictable flight paths (ornithopter, hot air balloon, glider, toy propeller plane, remote-controlled helicopter toy, soda bottle rocket)
- volunteers may be asked to participate

#### Hot and Cold:

Turn your students into molecules as we explore the three states of matter. Make balloons shrink, bubbles freeze and a rubber ball shatter by using liquid nitrogen (N<sub>2</sub>). Students learn the everyday application of N<sub>2</sub> in manufacturing, food production and medicine.

This show may contain:

- loud concussive sounds
- tea kettle whistle
- clouds of water vapor resulting from the temperature of N<sub>2</sub> when it meets room temp
- popping balloons
- objects flying over into the audience
- volunteers may be asked to participate

#### Human Body:

Come with us on a wild journey through The Human Body. We'll discover how nutrients in the food we eat are digested and converted into the energy that keeps us on the move. We'll learn how our muscles work, and what our blood actually accomplishes as it flows through our veins and arteries. Plus there will be a special tribute to that duo that protects us from debilitating illness: skin and mucous!

This show may contain:

- flashing lights
- buzzing electric device used to light a light bulb
- volunteers will be asked to participate
  - o volunteers may be sprayed with water while wearing a rain coat
  - o volunteers may be subjected to a small electric shock ( like static shock in the winter)
- simulated "mucus" "intestines" and other model bodily organs or simulated bodily secretions

#### Life in Space:

The show begins with a bang as a rocket launches your students into space! Once there, students enter "astronaut training" to explore the challenges of living and working in space. Students become "satellites" to communicate findings back to earth.

This show may contain:

- loud concussive sounds
- popping balloon (sound is minimized but still present)
- flashing lights
- flashes of controlled fire (rocket launch, fireball, flash paper, propane torch)
- a bottle rocket launch (loud, startling noise with uncontrolled/unpredictable flight path)
- discussion of bodily functions
- volunteers will be asked to participate
  - o one volunteer must be able to swing a baseball bat, while balancing on an unsteady surface
  - o one volunteer will be chosen to wear the world's cheapest space suit including: Leaf blower, extension cord, coveralls, tubing, binder clips, diaper, helmet, sunglasses, backpack, large battery, toy microphone, water bottle, balloon, laundry basket. It may be best to have an adult be this volunteer, please tell your volunteer preference to the presenter for this demonstration prior to the show

### Motion and Machines:

Roll, slide and spin! Investigate the basic physics of motion in this interactive show. We'll use rubber balls, bricks and wooden blocks to introduce Newton's Laws of Motion. Then witness these laws in action in a lever, pulley, and student-driven hover car.

This show may contain:

- loud concussive sounds ( "rocket car", leaf blower, falling objects)
- volunteers must be able to swing a baseball bat, obtain good balance, and be able to lift at least 10 lbs. (if you think it would be best for your staff to be volunteers please notify the presenter pre-show)
- "rocket car" propelled by compressed gas that can produce a loud, startling noise and unpredictable movement
- volunteers will be asked to participate

### Weather:

Lightning, twisters and hail — oh my! This new show reveals the science of weather ... to the extreme. Where does our weather come from, and what factors make it a sunny day or a blustery one? We'll make a cloud, explore thunder and lightning, and even create snow. We promise a stormy ending to this show as we demonstrate the power of a tornado.

This show may contain:

- loud concussive noises
- simulated "lighting"
- controlled fire
- clouds of water vapor resulting from the liquid nitrogen (-346°) meeting room temperature (about 70°)
- popping balloons (with a candle, sometimes resulting in combustion)(Hydrogen balloon vs. Helium balloon)
- volunteers will be asked to participate (some may be subjected to a leaf blower and or spritzes of water from a spray bottle)