

# Instructor Notes

**Lesson:** First-Aid and Safety

**Objectives:** In this lesson, the participants will:

- Utilize various critical thinking skills related to First-Aid and safety across the curriculum.
- Understand the importance of safety in everyday life.
- Learn concrete ways to implement safety measures into their daily home lives.

**Subjects:** Reading, writing, science, math, social studies and critical thinking

**Procedure:**

1. **Fire Prevention Week** is in October but anytime is a great time to discuss fire safety. Get the students talking and learning about the dangers of fire with some of the activities included.
2. **Poison Prevention Week:** March 21-27, 2004. Read the handout about poisons. Make a magnet for the refrigerator that gives the Poison Control Hotline number in case an accidental poisoning takes place. Cut the cards apart and glue a magnet on the back. Place it in a predominant spot on the refrigerator.
3. **Carbon Monoxide (CO)** is colorless and odorless. So how do you detect it and what are the symptoms of CO exposure? Read the handout to find out.
4. Make your own **First-Aid kit**. A donation request template is included is you would like to solicit donations from local pharmacies or discount stores. This is a great way to start a first aid discussion. The handout "*What do Bones have to do with it?*" provides practice in administering first aid. An activity using eggs is a fun way to show the importance of bones.
5. Read and discuss the storm safety rules (handout).
6. Read the "**Storms**" handout. Discuss the different types of storms. Discuss what a tornado is and how it is formed. Complete the tornado worksheet.
7. Distribute materials for "Twister in a Bottle" (handout) and make a tornado in your classroom. Follow the instructions on the handout and use the materials in the kit. The questions in the pages that follow will provide a starting point for discussion. There are also extension ideas that go across the curriculum.
8. **Internet safety** is a relatively new topic. With the increased use of the Internet in all aspects of life, it is very important to talk to students about being safe. Be sure to talk about current issues with using the Internet. Is there a case pending in your area concerning an Internet predator? Why hasn't legislation to regulate the Internet kept pace with the fast-paced changes of technology? This might be a good opportunity to review how a bill becomes a law or the three branches of government.
9. **Car safety** is a very important topic especially for parents. The new car seat law that went into effect on January 1, 2004 states that all children under the age of 9

10. What is a **safe** amount of **sun**? Complete the *Some Fun Sun Safety Activities* handout. It contains ideas that go across the curriculum. *There is a similar activity in the Home Visits Notes.*
11. What can students do to **stay safe**? Working in teams, have the students make a book with the ABC's of safety. Invite students to work in small groups to talk about things they can do. Challenge students to come up with an action they can take for each letter of the alphabet. For example, Stay **A**way from poison ivy.; wear helmets when **B**ike riding; **C**lose the gate behind you when you leave the pool area so no small children can get into the area unsupervised ...

## Fire!

*PROVIDENCE, R.I. (6/1/97) -- Children playing with matches appears to have been the cause of a fire that killed a 6-year-old boy in the home he shared with his mother and five siblings, authorities said Sunday.*

How many times have you read or heard a news story like that one? Each year, children set more than 100,000 fires, according to the United States Fire Administration (USFA). And children make up nearly a quarter of all fire-related deaths. About 40 percent of fires that kill children under 5 years old are set by children playing with fire.

### FIRE SAFETY FACTS

Each year, more than 4,500 Americans die and more than 30,000 are injured in fires. Many of those deaths and injuries could have been prevented if people had a better understanding of fire, USFA officials say.

- **Fire is fast!** In less than 30 seconds a small flame can get completely out of control and turn into a major fire. It takes only minutes for thick black smoke to fill a house.
- **Fire is hot!** A fire's heat alone can kill. Room temperatures in a fire can be 100 degrees at floor level and rise to 600 degrees at eye level. Inhaling this super hot air will scorch your lungs.
- **Fire is dark!** Fire starts bright, but quickly produces smoke and complete darkness. If you wake up to a fire, you may be blinded, disoriented, and unable to find your way around the home you've lived in for years.
- **Fire is deadly!** Smoke and toxic gases kill more people than flames do. Fire uses up the oxygen you need and produces smoke and poisonous gases that kill.

### FIRE SAFETY TIPS FROM USFA

In the event of a fire, remember that

- Time is the biggest enemy and every second counts! Escape first!
- Develop a home fire escape plan and practice it frequently.
- In your fire escape plan, designate a meeting place outside.
- Make sure everyone in your family knows two ways to escape from every room.
- Practice feeling your way out with your eyes closed.
- Never stand up in a fire, always crawl low under the smoke and try to keep your mouth covered.
- Never return to a burning building for *any* reason; it may cost you your life.
- Finally, having a working smoke detector dramatically increases your chances of surviving a fire.

## FIRE SAFETY ACTIVITIES

1. Read aloud the story *The Cow That Destroyed Chicago* (or "Why We Celebrate National Fire Prevention Week"). When you've finished reading the story, discuss the following questions:
  - a. In which city did this story take place? (Chicago)
  - b. In which month of the year did the Great Chicago Fire happen? (October)
  - c. What was the O'Leary's house made of? (wood)
  - d. When Mrs. O'Leary went out to the barn, what did she carry with her? ( a lantern)
  - e. How do many people think the fire started? (They think Mrs. O'Leary's cow kicked over the lantern.)
  - f. Why did the fire spread so quickly? (Everything was very dry because it hadn't rained much.)
  - g. How long did it take to stop the fire? (more than 24 hours; from about 9:00 p.m. Sunday until almost midnight Monday)
  - h. How much of the city of Chicago was destroyed by fire? (more than 2,000 acres, or about 3-1/2 square miles)
  - i. What finally happened to help firefighters get the fire under control? (It started to rain.)
  - j. Why is Fire Prevention Week held in October? (to remember one of the most destructive fires of all time)
2. Invite each student to count how many smoke detectors his/her family has in their home. Create a simple bar graph showing how many families have one, two, three, four, or five or more smoke detectors. Talk about where each smoke detector is located in the home and why the family chose to put a smoke detector there. Check with your local fire department to see if your students can get free smoke detectors from them. If the students are renters, discuss their rights as tenants to have a working smoke detector provided by their landlord. Practice writing a letter to request a smoke detector to be installed.
3. Invite a representative of the fire department to come into class to talk with your students. (Students might prepare questions for the firefighter in advance -- questions about fire safety and about fire fighting as a career.) Then students can use the information they gather to write a "news story" about the firefighter's visit.
4. Graph and chart reading. Use the Fire Facts sheet to answer the questions on the worksheet.

## **The Cow That Destroyed Chicago Or "Why We Celebrate National Fire Prevention Week"**

On October 8, 1871, a major disaster changed a lot of people's lives and taught us a lot about fire safety. The disaster left 900,000 people homeless, killed 300 people, and destroyed more than 2,000 acres -- or about 3-1/2 square miles -- of land in the center of Chicago.

That disaster was called the Great Chicago Fire. It was one of the most destructive fires ever seen in the United States. Each year, we remember the Great Chicago Fire by calling the week of October 8 National Fire Prevention Week.

What started the fire that caused such major destruction? No one knows for sure, but this is what many people think happened that day:

Back in October 1871 -- that's 126 years ago now -- Chicago was just beginning to grow into the big city that it is today. In the ten years before that date, the city's population had tripled in size. One Chicago family, the O'Leary family, lived in a small wooden cottage. Behind their house was a barn where they kept cows and other animals.

On Sunday night between 8:30 and 9:00 p.m., Mrs. O'Leary went out to the barn. No one is sure exactly why she went. Some people say she went to check on a sick cow. Others say she went to get fresh milk. She brought a kerosene lamp with her, which she placed on the floor of the barn. The cow kicked it over and set the wooden boards of the barn on fire. The flames spread quickly.

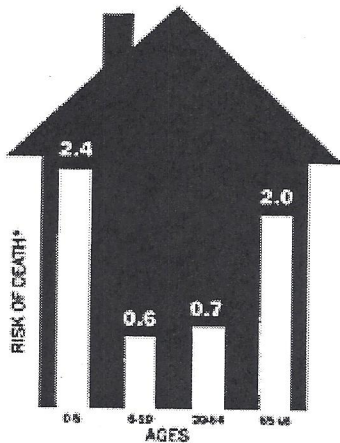
A neighbor pulled the nearest alarm, which was 3-1/2 blocks away, but it was broken. Meanwhile Mr. O'Leary and other neighbors tried to put out the fire themselves but they could not. The fire spread and soon the hay in the loft was in flames. A fire watchman who was in the tower of the Courthouse saw the flames and guessed where the fire was. Unfortunately, he was wrong and all but one of the fire engines went to the wrong location.

Because most of the buildings were made of wood and everything was dry because it hadn't rained, the fire spread from building to building quickly. Firefighters from as far away as New York were called upon to help put out the flames. But the fire continued to burn until almost midnight on Monday, more than 24 hours after the fire began. Then it began to rain. That helped the already tired firefighters get the fire under control.

*Source: National Safe Kids Campaign  
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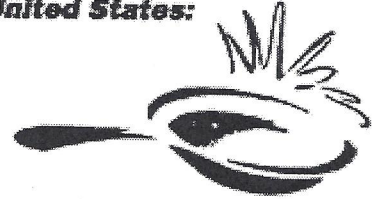
# Fire Facts

**Younger children and older adults have a higher risk of dying in a home fire.**



Source: 1993-93 NFIRS, NFPA survey, Census Bureau data since 1980  
\* Relative to overall average.

**In the United States:**



**Cooking is the leading cause of home fires - 101,000 per year.**

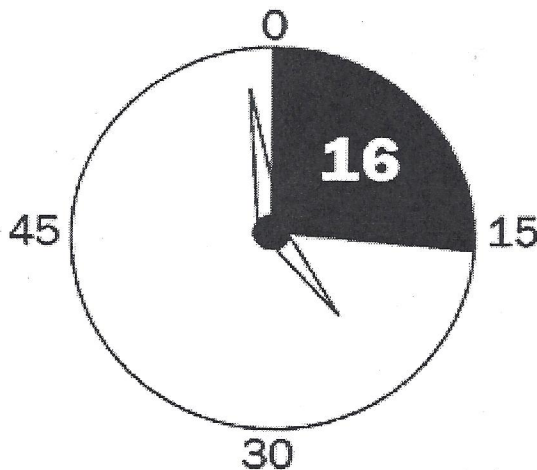
Source: 1990-1994 NFIRS, NFPA survey



**Smoking materials are the leading cause of home fire deaths - 840 per year.**

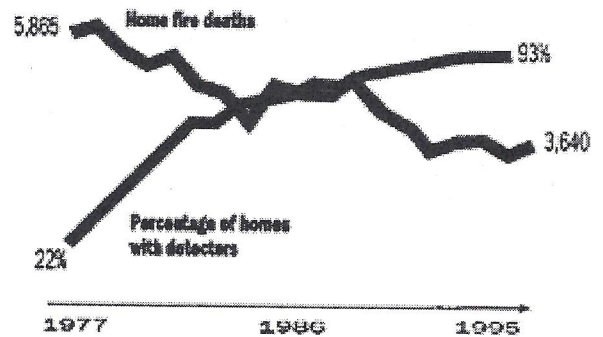
Source: 1990-1994 NFIRS, NFPA survey

**Every 16 seconds, a fire department responds to a fire somewhere in the United States.**



Source: NFPA survey

**During the past two decades, as the percentage of U.S. homes with smoke detectors has increased significantly, the number of home fire deaths has decreased dramatically.**



Source: NFPA survey, USFA and Prevention magazine data

Each of these statistics is included in NFPA's corresponding reports. The executive summaries from these reports are being offered to FPW kit users at no charge from the One-Stop Data Shop. Please contact Nancy Schwartz at 617-984-7450 or [osds@nfpa.org](mailto:osds@nfpa.org) to request a copy.

## Fire Facts Worksheet

Use the *Fire Facts* graphs to answer the following questions:

1. How many fires in the home are caused each year by cooking? \_\_\_\_\_
2. How often does a fire department somewhere in the United States respond of a fire? \_\_\_\_\_
3. Who is more at risk of dying in a home fire -- young children ages 0-5 or adults age 65 and older? \_\_\_\_\_
4. What is the leading cause of home fire deaths? \_\_\_\_\_
5. How many people died in home fire deaths in the United States in 1995?  
\_\_\_\_\_
6. In 1977, what percent of homes had smoke detectors in them? \_\_\_\_\_
7. In 1995, what percent of homes had smoke detectors in them? \_\_\_\_\_
8. How many more home fire deaths happened in 1977 than happened in 1995?  
\_\_\_\_\_
9. Why has the number of home fires decreased from almost 6,000 in 1977 to less than 4,000 in 1995? \_\_\_\_\_  
\_\_\_\_\_
10. Fire departments in the United States respond to about four fires every minute. Use that information to figure out the answers to these questions: How many fires do U.S. fire fighters respond to every hour? \_\_\_\_\_  
Every day? \_\_\_\_\_ Every month? \_\_\_\_\_  
Every year? \_\_\_\_\_

*Answer Key: 1. 101,000, 2. every 16 seconds, 3. young children, 4. smoking, 5. 3,640, 6. 22%, 7. 93%, 8. 2,225, 9. Accept reasoned responses, e.g., because the number of smoke detectors in homes has increased or because people know more about fire safety today than they did years ago., 10. every hour? about 240 Every day? about 5,760 Every month? about 172,800 Every year? about 2,102,400.*

## Poisons

**A poison** is any product or substance that can harm someone if it is used in the wrong way, by the wrong person, or in the wrong amount. Examples of possible poisons include some household products, chemicals at work or in the environment, drugs (prescription, over-the-counter, herbal, illegal or animal medicines), snake bites, spider bites, and scorpion stings.

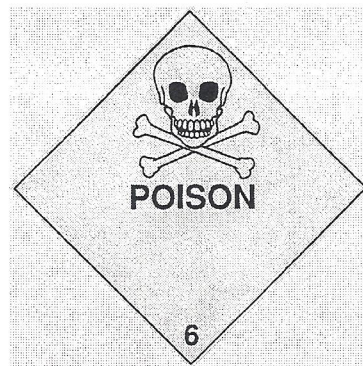
Poison control centers across the country get more than 2 million calls a year about potential exposure to poisons. Almost all of these exposures occur in the home and 80% of all poisonings are in children between the ages of one and four. Follow these guidelines to prevent poisoning in the home.

1. Install safety locks/childproof latches on all cabinets to restrict access to children.
2. Store potential poisons including detergents, medications, and chemical products (like pesticides and drain cleaners) out of reach and out of sight of children -- inside the house as well as in the garage or shed.
3. Store potential poisons in their original containers. Do not transfer them to food containers like milk jugs or coffee cans.
4. Keep food and potential poisons separate; store them in different cabinets. Children can mistake the identity of products that look alike to them.
5. Return all products to storage immediately after use. Keep the products and your children in sight during use.
6. Safely discard -- into a sealed, outdoor trash receptacle -- all household products and medications that are old or aren't used regularly.
7. Never mix products. For example, bleach and ammonia mixed together produce dangerous fumes.
8. Make sure medications are in child-resistant containers. Vitamins and supplements also should be out of reach of children.
9. Keep indoor plants out of reach of children. Some plants are extremely poisonous.
10. Stay away from areas that have been sprayed recently with pesticides or fertilizer.

## Activity # 2 (Page 2 of 3)

Learn the signs of potential poisoning, which can include:

- Difficulty breathing
- Difficulty speaking
- Dizziness
- Unconsciousness
- Foaming or burning of the mouth
- Cramps
- Nausea
- Vomiting



If someone has been exposed to poison, call the **National Poison Control Hotline at 1-800-222-1222**. You will be instructed what to do. Try to have this information when you call:

- Victim's condition
- Name of product consumed and ingredients
- How much of the product was consumed
- When the product was consumed
- Your name and phone number
- Age of victim
- Weight of victim

If the victim has swallowed something extremely toxic and fast-acting, you may need to administer first aid right away. To speed up this process, one person should call Poison Control, while another one takes the following precautions:

- If poison touches the skin, immediately wash the area with soap and warm water for 10-30 minutes. If there is blistering, take the victim to the doctor immediately.
- If a toxic substance gets in the eyes, flush eyes with warm water for 10 minutes.
- If poison is inhaled, take the victim outside for fresh air.
- **If the victim has stopped breathing or doesn't have a heartbeat, perform CPR and call 911 immediately.**
- **If the victim is unconscious or breathing is difficult or labored, call 911.**

**Note:** The American Academy of Pediatricians now recommends *against* using syrup of ipecac when children swallow a poisonous substance.

**POISON**  
**Heip**<sup>®</sup>  
**1-800-222-1222**



**POISON**  
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## Prevent Carbon Monoxide Poisoning

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During the cold weather, it is more important than ever to prevent carbon monoxide poisoning.

At the onset of cold weather, we begin operating appliances and equipment that can generate carbon monoxide gas. This includes ALL fuel-burning equipment and appliances – especially if they malfunction or are improperly ventilated. Every year, this results in hundreds of deaths and many thousands of illnesses.

Among the numerous potential sources of carbon monoxide are furnaces, water heaters, stoves, ovens, kerosene space heaters, wood and gas fireplaces, wood-burning stoves, portable generators, and automobile engines.

Carbon monoxide gas is deadly, even though it is colorless, odorless, and tasteless. It may kill quickly or slowly, and there are no warning signs specific to carbon monoxide. Even when it is not fatal, carbon monoxide can cause permanent damage to the brain and other parts of the nervous system. It affects people of all ages, but Infants and children are even more susceptible than adults.

Carbon monoxide poisoning is lethal and it takes people by surprise. Three things are important to prevent fatal carbon monoxide poisoning: prevention; detection; and rapid, appropriate treatment.

Take simple steps to **prevent carbon monoxide poisoning**.

- Have your furnace inspected and adjusted before every heating season.
- Have your chimney, fireplace, and wood stoves, and flues inspected before every heating season. Have chimneys and flues repaired as needed.
- Ventilate the room every time you use a kerosene space heater.
- Do not use charcoal grills indoors for cooking or heating.
- Do not use your oven for heating your home.
- Do not leave your car's engine running in an enclosed or attached garage.

Take a simple step to **detect carbon monoxide**: install a carbon monoxide alarm outside of every sleeping area in your home. Should the alarm sound, open the windows, be sure that everyone leaves the area, and call the

Activity # 3 (Page 2 of 2)

appropriate number in your area to determine the cause. Be sure that you do determine and eliminate the cause.

**Should carbon monoxide exposure occur, minimize the risks with rapid, appropriate treatment.** Health care providers and the public must have a high index of suspicion for carbon monoxide poisoning.

- Symptoms include aches, dizziness, headache, confusion, and other symptoms also found with flu and typical cold-weather viruses.
- Consider carbon monoxide poisoning when these symptoms occur in the winter, in enclosed spaces, and in multiple people at the same time.
- Local poison centers around the country will provide 24-hour assistance. They can help determine if carbon monoxide poisoning is a possibility, refer callers for appropriate medical attention, and work with health care providers as they assess and treat victims.

The American Association of Poison Control Centers is on record as supporting carbon monoxide alarms in residential dwellings and in or near sleeping quarters in places of public accommodation. Poison centers around the country are prepared to respond with information and treatment advice about carbon monoxide poisoning.

To reach your local poison center, anywhere in the country, call

**1-800-222-1222.**

## How to Make a First-Aid Kit

Almost everyone will need to use a first aid kit at some time. Take the time to prepare a kit to have available for your home. First aid kits may be basic or comprehensive. What you need depends on your medical training and how far you are from professional medical help. Ready-made first aid kits are commercially available from chain stores or outdoor retailers. But you can make a simple and inexpensive first aid kit yourself.

Try to keep your first aid kit small and simple. Stock it with multi-use items. Almost anything that provides good visibility of contents can be used for a household first aid kit. Make sure you know how to properly use all of the items in your kit, especially the medications. Train others in your family to use the kit. You may be the one who needs first aid! Pack and use barrier items such as latex gloves to protect you from bodily fluids of others. Check the kit twice a year and replace expired medications. The phone number for the National Poison Control Hotline is **1-800-222-1222**.

The best place to keep your first aid kit is in the kitchen. Most family activities take place here. The bathroom has too much humidity, which shortens the shelf life of items.

According to the First Aid Checklist found on the Johnson & Johnson website, the following items are necessary for a basic first aid kit:

- Hurt-Free antiseptic wash
- Anti-itch Products
- First Aid Antibiotic/Pain Relief ointment
- Adhesive bandages
- Butterfly closures
- Non-stick gauze pads
- Rolled gauze
- Ace Wrap Bandage
- Tweezers
- Scissors
- Cold Packs
- Sterile Eye Wash
- Thermometer
- Health Care Gloves
- Pain Relievers (Tylenol, Advil, etc.)
- Cotton Swabs
- 1/2 inch adhesive tape
- Popsicle sticks
- Safety Pins
- Cotton Balls

## PRINTED ON LETTERHEAD

February 16, 2004

Please consider our request for items found in a first aid kit. We hope to use them in an educational program for 300+ individuals pursuing their GED (high school equivalency) in the area. This program will use adult education classrooms to discuss awareness of first aid in conjunction with safety in the home and the workplace.

Since many of these individuals are parents or grandparents responsible for the overall health of children, we feel this program is of the utmost importance. This effort is part of a larger, yearlong health literacy program.

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- Hurt-Free antiseptic wash
- Anti-itch Products
- First Aid Antibiotic/Pain Relief ointment
- Adhesive bandages
- Butterfly closures
- Non-stick gauze pads
- Rolled gauze
- First Aid tape
- Tweezers & Scissors
- Cold Packs
- Sterile Eye Wash
- Thermometer
- Health Care Gloves
- Pain Relievers

Any of the above items or a gift cards to purchase the items would be greatly appreciated as we attempt to serve these 300+ individuals. If you would like additional information or would like to discuss our efforts further, please feel free to contact us at the above phone number or [sgoldam@siue.edu](mailto:sgoldam@siue.edu) or [copotte@siue.edu](mailto:copotte@siue.edu).

Thank you in advance for considering this request.

Sarah Goldammer

Colleen Potter

## What do Bones have to do with it?

Just as our bones protect us, it's important for us to protect them in return. Our bones are quietly shielding our vital organs) e.g. your skull protects your brain, ribs protect lungs and heart) so it is important that we don't take them for granted. Many athletes take this bone concept right into their sports. Helmets, chest protectors and shin guards are only a few of the examples of protective sports gear. Discuss the importance of protective gear with your similar to a skull bone.

Here is an activity that will demonstrate the importance of bones. Conduct an egg drop experiment. Divide the students into teams and have them design and build a "structure" that will protect a raw egg when dropped from a height of approximately 10 feet. They may use any material they believe will adequately protect the egg from "breaking" such as bubble wrap, cardboard, tissue, rubber bands, etc. The structure should not measure any more than 5 inches on any given side. This structure represents protective covering (helmets, bones) used by humans to guard vital organs.

Once dropped, open the structure to see which containers worked. Analyze why some worked and how models could be improved to be successful at even greater heights. How does this activity relate to broken bones?

**Extension:** Practice making a splint or sling for a family member. Are you able to locate the necessary materials at home to help those around you if the need arises? Create a plan of action with your family members so that everyone understands how to help each other in the event of an emergency.

### Materials:

- Cloth (approx. 40" square such as a pillow case, cut sheet, large scarf, etc.)
- Strips of cloth
- Newspaper, magazine, or heavy cloth

### Procedures:

#### Sling

- Cut or fold the square diagonally to make a triangle.
- Slip one end of the bandage under the arm and over the shoulder.

- Bring the other end of the bandage over the other shoulder, creating a cradle for the arm.
- Tie both ends of the bandage behind the neck. The arm should rest at the natural bend of the elbow, provided with support from the sling.

### **Splint**

- For a lower arm or wrist fracture, carefully place a folded newspaper, magazine, or heavy piece of cloth under the arm.
- Tie it in place with pieces of cloth.
- A lower leg or ankle fracture can be splinted similarly with a bulky garment or blanket wrapped and secured around the limb.
- A person with a hip or pelvis fracture should not be moved. If the person must be moved, the legs should be strapped together (with a towel or blanket in between them) and the person gently placed on a board, as for a back injury.

# Safety Rules

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Source: U.S. Dept. of Commerce NOAA Publications

## TORNADOES

### **DON'T TOUCH THE WINDOWS!**

Opening a window, once thought to be a way to minimize damage by allowing inside and outside atmospheric pressures to equalize, is NOT recommended. If a tornado gets close enough for a pressure drop to occur, the strong tornado wind probably already will have caused significant damage and opening the wrong window can actually INCREASE damage.

### **IN A CAR OR MOBILE HOME, GET OUT AND SEEK SHELTER IN A BUILDING OR LIE FLAT IN A NEARBY DITCH OR RAVINE.**

While chances of avoiding a tornado by driving away in a vehicle may be better in open country than metropolitan areas, vehicles (and mobile homes) are still dangerous because they can easily be lifted or rolled by high wind.

### **IN A HOME OR BUILDING, GET TO THE LOWEST LEVEL.**

Storm cellars or well constructed basements offer the greatest protection. If neither is available, the lowest floor is the best alternative. In high-rise buildings, occupants should move as far down as possible and take shelter in interior, small rooms or stairwells. Most tornado injuries and deaths result from flying debris. Small rooms, such as closets or bathrooms in the center of a home, offer protection from flying objects. If time permits, seek shelter under a heavy basement bench, table or stairwell to protect yourself from falling debris, rather than being positioned in an exposed corner.

### **IN SCHOOLS, SEEK SHELTER IN AN INSIDE HALLWAY AWAY FROM CLASSROOM WINDOWS.**

## THUNDERSTORMS

A severe thunderstorm may contain winds of 92 km/hr (57 mph) or higher and hail about 2 cm (3/4") or more in diameter.

### **STAY INSIDE A HOME, LARGE BUILDING OR AN ALL METAL (not convertible) AUTOMOBILE.**

### **DON'T USE THE TELEPHONE, EXCEPT FOR EMERGENCIES.**

### **IF OUTSIDE, DON'T STAND UNDERNEATH A TALL, ISOLATED TREE OR TELEPHONE POLE.**

Avoid projecting above the surrounding landscape. For example, don't stand on a hilltop. In a forest, seek shelter in a low area under a thick growth of small trees. In open areas, go to a lower place, such as a ravine or valley. Get off or away from open water and metal equipment such as tractors, motorcycles, bicycles and golf carts. Put down

golf clubs and take off golf shoes. Stay away from wire fences, clotheslines, metal pipes and rails.

#### LIGHTNING MAY STRIKE MILES FROM THE PARENT CLOUD

Precautions should be taken even though the thunderstorm is not directly overhead. If your hair stands on end and/or skin tingles, lightning may be about to strike. Drop to your knees, putting your hands on your knees. Do not run or lie flat on the ground.

#### PERSONS STRUCK BY LIGHTNING MAY RECEIVE A SEVERE SHOCK OR BURN, BUT THEY CARRY NO ELECTRICAL CHARGE AND CAN BE HANDLED.

The *American Red Cross* says if a victim is not breathing, immediately begin mouth-to-mouth resuscitation, once every 5 seconds to adults and once every 3 seconds to children, until medical help arrives. If both pulse and breathing are absent, cardiopulmonary resuscitation (a combination of mouth to mouth resuscitation and external cardiac compression) should be administered only by persons with proper training. A *Red Cross First Aid Course* provides excellent instruction.

#### HURRICANES

Hurricanes are tropical cyclones in which winds reach constant speeds of 120 km/hr (74 mph) or more.

BE ALERT to information about hurricanes. A HURRICANE WATCH means "possible" hurricane within 24 to 36 hours. A HURRICANE WARNING means a hurricane *is expected* within 24 hours or less.

#### **What to do if a hurricane is eminent:**

MOOR BOATS securely or move them to safe shelter.

SECURE OUTDOOR OBJECTS or bring them indoors.

PROTECT WINDOWS WITH BOARDS, SHUTTERS, OR TAPE.

FUEL YOUR CAR.

DRAW WATER to last several days.

BRING PETS INDOORS.

LEAVE LOW-LYING OR COASTAL AREAS AND OFF-SHORE ISLANDS, AS WELL AS MOBILE HOMES FOR MORE SUBSTANTIAL SHELTER. The "storm surge", a dome of water that comes across the coast, is the most dangerous part of the storm. Tides can be 5 to 25 feet above normal. Nine out of ten hurricane deaths occur in the storm surge.

LISTEN CAREFULLY TO LOCAL OFFICIALS ON TELEVISION, RADIO OR NOAA WEATHER RADIO AND EVACUATE IF TOLD TO DO SO.

**Finally, beware of the deceptively calm eye of the hurricane. These clear skies and light winds are bordered by winds and rain of maximum force that blow from the opposite direction. Don't venture out.**

# STORMS

## Thunderstorms

At any given moment there are about two thousand thunderstorms rumbling across the surface of the earth. Rising air cools to form water droplets on tiny particles. Clouds form in a region of rising air. The first step in the development of a thunderstorm is a harmless cumulus cloud. If air continues to rise, the cumulus cloud continues to grow. As a major weather system approaches, it may force the air to rise even more, and the cumulus cloud grows even larger, becoming a thunderstorm with heavy rain, lightning and thunder.

Ice crystals that split apart produce a charge in the cloud. Charges are either negative or positive, and opposites attract. If a cloud has negative charges and the earth's surface has positive charges, an attraction occurs between the cloud and the tallest object on the earth's surface. The build-up of charges eventually triggers **lightning**, a discharge of electricity built-up within a storm. Sometimes though, lightning strikes from cloud to cloud. **Thunder** is created when particles in the air expand and contract violently. This occurs when lightning passes through the air, heating the air in a split second. This causes the air particles to expand. Then, as the air cools again, those particles rapidly contract, producing thunder.

Whenever there is lightning, there is also thunder. The light and the noise are made at the same time, but you do not always see and hear them at the same time. Light travels faster through the air than sound does. When a storm is close, the lightning and thunder may seem to take place at the same time, but when the storm is far away, the flash of the lightning is seen first and then the thunder is heard. You can estimate how many kilometers away a storm is by counting the number of seconds between the flash and the sound, and multiplying the number of seconds by 330 meters.

In the United States, lightning kills about 100 people every year and injures hundreds more. Most lightning victims are outdoors on golf courses, under tall trees, or on metal machinery.



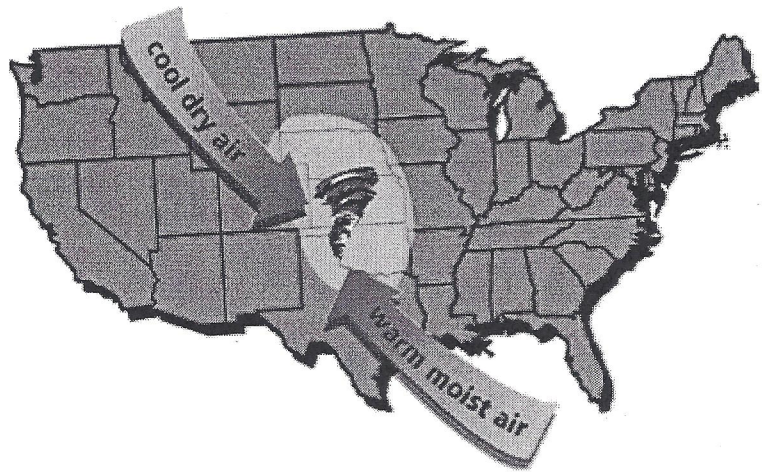
## The Most Ferocious Storm

To this day scientists try to make sense of the phenomenon we call a tornado. Where do these spinning winds originate? What powers them? And how can we protect ourselves?

Tornadoes are produced inside severe thunderstorms. Several intense thunderstorms begin to rotate and produce a spiraling funnel. The cool dry air and the warm moist air of the thunderstorm meet and the two air masses push against one another to start the air under the thunderstorm twisting. That gives us a clue to the major source of their energy: the latent heat contained in the warm, moist air mass.

A **tornado** is a rapidly rotating column of air in touch with the ground. Wind speeds in a tornado can range from 160-180 km per hour (100-300 mph). Tornadoes last as little as 10 minutes or may endure for several hours. Texas, Oklahoma, Kansas, Nebraska, Arkansas, and Missouri are collectively known as "Tornado Alley". More tornadoes occur in these states than anywhere else in the world, particularly during the spring months. Tornadoes are also relatively common in Alabama, Florida, Georgia, Illinois, Indiana, Iowa, Louisiana, Mississippi, and South Dakota.

The conditions that produce a "tornadic thunderstorm" (a storm that produces a tornado) exist when moist, warm air gets trapped beneath a stable layer of cold, dry air by an intervening layer of warm, dry air. This stratified sandwich of air is called an inversion.



If the cap is disturbed by a front or disturbances in the upper atmosphere, the warm, moist air can rise and punch through the stable air that was holding it down. The warm air will start to spiral upward, as latent heat is released when the moisture it holds condenses. Aided by different winds at different levels of the atmosphere, the rotating updraft gains velocity. That, much simplified, is the origin of a tornado.

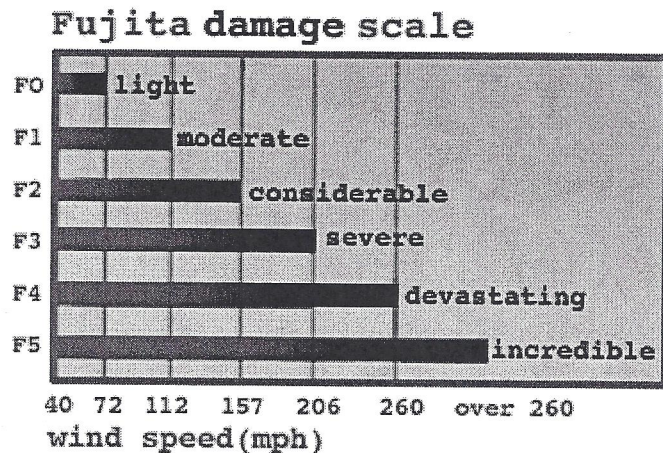
### **Winds Too Quick to Meter**

Although tornadoes occur throughout the world, including India and Bangladesh, they are most intense and devastating in the United States. Tornadoes can strike at any time of day, but they are much more frequent in the afternoon and evening, after the heat of the day has produced the hot air that is a requirement of a tornadic thunderstorm.

On average, the United States experiences 100,000 thunderstorms each year, causing about 1,000 tornadoes. The National Weather Service says an average of 42 people are killed by tornadoes annually.

Tornadoes are so common in "Tornado Alley" because of mountains to the west and the Gulf of Mexico to the south. In spring a strong westerly jet stream flows across the Alley,

creating instability and a trough of low pressure that draws in warm, moist air from the Gulf. Conditions for the supercells [large, powerful thunderstorms] that spawn tornadoes require strong vertical wind shear [changes in wind speed and direction with height] and lots of instability. That's what happens in Tornado Alley.



The Fujita scale shows the range of violence of tornadoes. An F-5 tornado produces the most violent winds on earth, approaching speeds of 300 miles per hour. (In the Fujita scale, the wind speed is inferred by analyzing the damage, it's not measured directly.)

Tornadoes range in width (as measured by the damage path) from less than 150 feet to more than a mile. Tornadoes can last from a few minutes to more than an hour. A tornado can travel along the ground between a few hundred feet to more than 100 miles. The land speed (speed the tornado moves along the ground) of tornados ranges from 0 to 60 mph.

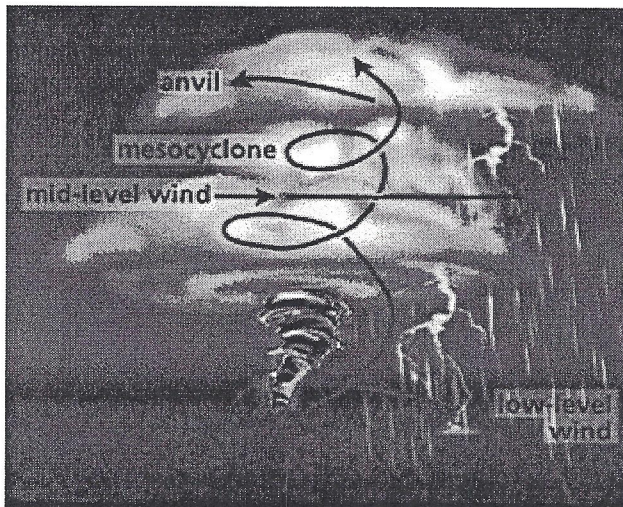
### Other Peculiar Winds

Tornadic thunderstorms produce a couple of other bizarre kinds of wind.

- A waterspout is a weak (usually) tornado over water. They are most common along the Gulf Coast and southeastern states. In the western United States, they occur with cold fall or late winter storms, when you would least expect a tornado to develop.
- A downburst is a downward blowing wind that sometimes comes blasting out of a thunderstorm. The damage looks like tornado damage, since the wind can be as strong as an F2 tornado, but debris is blown straight away from a point on the ground. It's not lofted into the air and transported downwind.

## The Nuts and Bolts of a Whirlwind

1. A large, thermally stratified situation develops in the atmosphere, with plenty of hot, humid air trapped beneath cold, dry air.
2. For some reason, the "cap," (the stable layer of air between the hot and cold air) is disturbed. The disturbance can be caused by an upper-level air disturbance, or the arrival of a front.
3. As the lower-level air rises, it expands in the reduced air pressure aloft (air pressure drops as altitude increases), and it cools. Eventually, the cooling causes the moisture to condense.
4. Condensation releases latent heat, warming the air, making it bouyant, and causing it to rise quickly (at speeds up to 150 mph). By now, the cloud has formed into a thunderstorm. Upper-level winds tilt the thunderhead to create the anvil at the top.



5. The thunderstorm may die out in intense rain and/or hail. Or it may spawn a tornado.
6. Interactions between air at various altitudes, humidities and temperatures causes rain, lightning, air circulation and an intensification of the rotating updraft, called a "mesocyclone." Low-level wind helps cause this rotation, which is almost always counter-clockwise (seen from above) in the Northern Hemisphere.
7. A tornado may form below the mesocyclone. As the spinning column of air narrows, it rotates

faster and extends higher into the storm.

## Spinning Like a Dynamo

**Energy** is the ability to do work. Energy comes in many forms, including chemical, kinetic, potential and thermal. Energy can change forms, and in fact its transformations help drive the furious winds.

Where do tornadoes get all that energy?

- Latent heat of condensation (a form of potential energy) is released when the warm air rises and water vapor condenses into liquid water. This latent heat is the energy that liquid water took in when it evaporated to form the water vapor. Latent heat is the biggest single source of energy in a thunderstorm. When the released latent heat warms the rising air parcel, the resulting difference in density can push the air up at the extreme velocities needed to create the tornado.
- The release of latent heat helps cause differences in pressure, which are another form of potential energy. This potential energy is transformed into kinetic energy

as increased wind speed. The ultimate source of this wind (kinetic energy) is the sun. In other words, radiation energy was converted to thermal energy, which evaporated water from the oceans. This water contained latent heat energy, which eventually was converted to kinetic energy in the thunderstorm.

- Thermal energy is transferred between various air bodies within the thunderstorm.
- Finally, electric energy is released by accumulations of positive and negative charges, causing lightning within the clouds, and from the clouds to the ground. Electric energy is not important to the tornado, but it does attract attention!

Tornadoes release lots of energy. A tornado with wind speeds of 200 mph will release kinetic energy at the rate of 1 billion watts -- about equal to the electricity output of a pair of large nuclear reactors. However the large thunderstorms that spawn tornadoes are immensely more powerful, releasing latent heat at the rate of 40 trillion watts -- 40,000 times as powerful as the twister.

## Hurricanes

In the fall, meteorologists watch the oceans for larger storm called a **hurricane**. The hurricane is a rotating storm that forms over warm water with wind speeds of 120 km/hr (74 mph) or higher. The average hurricane (550 km or 340 miles in diameter) is much larger than a typical tornado (100-600 meters OR 320-1920 feet). Intense hurricanes resemble the shape of a doughnut, with a nearly calm "eye" in the center of the cyclone. The eye can be 10-20 miles wide. Hurricanes rapidly lose their strength once they move from warm waters onto drier land.

## Tornado Worksheet

1. List 2 types of energy. \_\_\_\_\_  
\_\_\_\_\_
2. When are tornados most common? \_\_\_\_\_
3. What states comprise "Tornado Alley"? \_\_\_\_\_  
\_\_\_\_\_
4. Using the Fujita damage scale, how would you classify a tornado with winds of 158 mph? \_\_\_\_\_
5. What is an inversion? \_\_\_\_\_
6. Summarize what a tornado is in your own words. What sights and sounds would you encounter if you could get close to a tornado? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. Explain why tornado hunters risk their lives to get close enough to study them? \_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
8. In a tornado, what is an anvil? What is another definition for an anvil? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
9. How many 75 watt lightbulbs would glow with the energy found in a 200 mph tornado? \_\_\_\_\_  
\_\_\_\_\_

**Social Studies Extension:**

- Using a U.S. map, color and label the states in “Tornado Alley”. Then label the other states where tornados are common and color them a different color. Add the state capital to each state.
- Create the official flag for each of these states. Use markers, colored pencils, paint, construction paper, etc. Be creative!

**Math Extension:**

- Have the students do metric conversions. For example: measure the room in feet and inches and convert it to meters and centimeters.
- Calculate the distance between two cities in Tornado Alley. For example, how far is it from Dallas, Texas to Lincoln, Nebraska?

**Language Arts Reading Extension:**

- Most people have heard the story of Benjamin Franklin’s electricity experiment, which involved flying a kite in a thunderstorm in Philadelphia. Read a story about this legendary American. Explain what you think happened during this experiment and discuss how it helped him understand more about lightning.

**Language Arts Writing Extensions:**

- You live in “Tornado Alley” and you’re riding in the car for a family trip. Suddenly, to your horror, you see a tornado in the distance. You’re near a highway overpass, a drainage ditch with a large concrete pipe running under the highway, and an abandoned tool shed. Which would you pick for shelter (or would you stay in your car)? Explain your choice.
- Write a poem about tornados. Acrostic (the letters of the word written vertically) is probably the easiest but students can write a Haiku or a diamond poem too.
- Imagine you are making a movie about tornados. Explain how you would show the effects of a tornado without putting anyone in danger. Would you choose to build a model or draw a picture?
- Think about the last time you were in a thunderstorm. What memories do you have of it? Discuss how lightning makes you feel when you see it flash.

**Science Extensions:** Just a few ideas--

- Meteorology
- Atmosphere (could include ozone and the greenhouse effect)
- Naturally occurring phenomenon such as volcanoes and earthquakes.
- Design a bridge that could withstand an earthquake. Construct it out of craft (Popsicle) sticks. Test the bridge design by adding weights until it breaks. Conclude why the bridge that holds the most weight is the best.

## Twister in a Bottle

A tornado is the most violent type of storm there is. Its winds can whirl at speeds of more than 200 miles (320 kilometers) per hour and tear up trees by their roots, fling cars around like toys, and flatten buildings. Often tornadoes wind speeds are twice as fast as the winds in a hurricane! You can make a model of a tornado in a bottle to observe how its winds swirl.

### What You Need:

1. Two plastic 2 liter soda bottles or two 20 ounce plastic soda bottles
2. Plastic tube connector
3. Food coloring (optional)
4. Glitter or small items to show water action
5. Water

### What You Do:

1. Fill one of the bottles three-quarters full with water. Add the glitter or small items to the bottle. Add a few drops of food coloring. (optional)
2. Screw one end of the plastic tube connector on to the bottle containing the water. Then turn the empty bottle upside down and screw it into the other end of the connector. **NOTE:** *Alternate directions if you do not have a plastic tube connector—Pull off a strip of duct tape about 10 cm (4 inches) long. Make sure the necks of the bottles are very dry. Put the empty bottle on top of the full one, neck-to-neck, and tape them together so that they stay together and they're straight. Now, wrap them with a long length of duct tape. The more neatly you wrap, the better it will work.*
3. Turn your tornado twister upside down, and give it a swirl. Watch the tornado form as the water passes from one bottle to the other.
4. Try it again—this time without giving it a twist.

### What's Happening?

Gravity pulls the water down into the empty bottle. However, the empty one is not really empty. It's full of air. When the water swirls through the necks of the bottles, an open space forms in the middle. It's a whirlpool. The air in the lower bottle can flow up through the open center of the whirlpool into the upper bottle. The spinning water holds a steady shape. Without the whirlpool to let the air go by, the water bubbles its way through. The flow is not smooth and it's often much slower than the whirlpool's flow.

Tornadoes work the same way. When huge air masses move across the ground, they start to roll like a carpet. If one rolling air mass runs into another rising warm one, the rolling mass gets tipped on end and the rising warm air rushes up through the whirling middle.

Activity # 8



Information for both new and advanced Web users to find information on using the Internet wisely:

1. Keep your passwords private, even from your best friend! Your online service will never ask for them, so neither should anyone else.
2. Use only your Log-in Name and/or e-mail address when chatting or sending e-mail. Never give out personal information like your name, address, or phone number.
3. Always delete unknown e-mail attachments. They can contain destructive viruses.
4. Remember that nothing you write on the Web is completely private -- including e-mail. So be careful and think about what you type and who you tell.
5. People are not always as nice, cute, or funny as they may sound online. Never make plans to meet an online "friend" in person.

Some online resources for more safety information:

1. Surf Swell Island - Adventure in Internet safety with Mickey and friends.
2. Disney's Doug - Safety Tips from "Doug's Adventure Online."
3. "Safe and Sound" - An Internet safety article from FamilyFun.com.
4. Safe Surfing for Kids - An Internet safety article from FamilyFun Magazine.

## Stay Safe in Your Car

### *WebMD Medical Reference*

Motor vehicle crashes are the leading cause of death among children. Many of these deaths could be prevented with child safety seats -- and using them properly.

Child safety seats reduce the risk of death by about 70% for babies and 55% for toddlers ages 1 to 4. Yet half of the children under 5 who were killed in motor vehicle crashes in 2000 were riding unrestrained. Take every possible precaution to keep your child safe in your car.

- **All children 12 and younger should ride in the back seat.** That's the safest part of a car during a crash and keeps kids from being injured by airbags.
- Choose a child safety seat that is appropriate for each child's weight and age; never use one that is too big or too small:
  - **Infant-only car seats** should face the rear of the vehicle and recline at a 45-degree angle to keep baby's head from falling forward. These seats fit newborns best. They should be used for babies until they are 1 year old and weigh at least 20-22 pounds.

Many infant car seats are detachable from the base, which remains in the vehicle. This allows the seat to double as an infant carrier as well.

Make sure the harness clips are position across baby's chest at shoulder level, not the abdomen. Harness straps should be relatively straight without sagging or twisting. Many infant-only

- **Convertible seats** are bigger and heavier than infant-only seats, can face the rear or the front, and can be used longer and for larger children -- especially if babies outgrow infant-only seats before they are 1. These seats should still recline and face the rear until babies are at least 1 and weight at least 20-22 pounds.

Convertible seats can face forward for toddlers over 1 year old and who weigh more than 20-22 pounds. Some seats also have height limits before they can face forward; follow the manufacturer's instructions.

Again, make sure the harness clips are position across baby's chest, not the abdomen. Harness straps should be relatively straight without sagging or twisting.

- **Booster seats** face forward and should be used for children over 4 and who weigh more than 40 pounds. The seat and child are restrained by the vehicle's regular lap and shoulder seatbelt.

Make sure the lap belt fits low and tight across the lap/upper thigh area and

the shoulder belt fits snugly across the chest and shoulder (not under the neck) to avoid abdominal injuries.

- A child may graduate to a vehicle's regular restraint system when he or she is at least 8 years old or 4'9" tall. The lap belt should fit snugly and sit low over the upper thighs. Shoulder straps should fit snugly across the chest, not under the neck or behind the back.
- Make sure the safety seat is properly installed. Follow the manufacturer's directions and check the installation regularly. Local authorities often host car-seat inspections at firehouses and police stations. Take advantage of these when they occur.
- Never buy a used car seat.
- Absolutely never carry a child in your lap while you ride in a car or allow a child to ride unrestrained.
- If you use a blanket over your infant, never put it between the child and the harness straps, or underneath or behind the baby. Lay the blanket across the child after he or she is strapped in.
- Let your child play with only soft toys in the car. Hard toys can become dangerous projectiles in crashes.
- Adults should always use a seatbelt as well.

NOTE: Newer cars and newer car seats have a system called LATCH (lower anchors and tethers for children) that makes car seats easier to use. All vehicles and most child safety seats made after September 2002 come with LATCH, which uses built-in anchors rather than seatbelts for attaching car seats.

While there are numerous car safety seats on the market, there is no one that is the safest or the best. The best one for your child is one that fits his or her size and weight and can be installed correctly in your car. And remember a higher price doesn't necessarily mean better quality. A pricier model might just have added features that have nothing to do with safety.

Reviewed by Charlotte E. Grayson, MD.

Published January 2004.

*SOURCES: CDC. WebMD Medical Reference from Healthwise. WebMD Medical Reference provided in collaboration with The Cleveland Clinic. National Highway Traffic Safety Administration. American Academy of Pediatrics.*

## Educational extensions for “Stay Safe in Your Car”

1. Ask students to read this article as a reading lesson. Then provide a forum for discussion - ask why these points are important or do they disagree with any of these laws.
2. Have students write a paragraph on what they think are the most important points to remember or “what I wish I had known about car seats before I had children.”
3. Divide up the class into two groups and debate car seat usage.
4. Relate car seat laws to our U.S. Constitution. How does this law “fit” within a citizen’s right to freedoms? Why can a law such as this be passed?
5. Have students do some research into car seat laws and car injury rates. Do they make a difference? Ask them to chart and graph the statistics they find. What states have the highest car accident rates/deaths? Where are these states in relation to your class? Why do you think these states have the highest rates?
6. Use the graph, “How Speeding Affects Car Crashes” to teach a math lesson. Percentages, fractions, adding and subtraction are all areas that can be covered.
7. Design a poster urging citizens to use car seats and to buckle up. What ways can you use to persuade people to follow your way of thinking?
8. For those who do not agree with the law (and can’t be swayed), discuss what you do as a citizen when you don’t agree with a law. Practice writing letters to congressmen. **MAKE SURE THEY UNDERSTAND THEY MUST COMPLY WITH THE LAW FOR THE SAFETY OF THEIR CHILDREN EVEN IF THEY DON’T AGREE WITH IT!**
9. Have a fireman come out to inspect car seat usage.

# How speeding affects car crashes

It's harder to stop at high speeds. A look at speed-related statistics:

## How far it takes these vehicles to stop at 70 mph:

SUV: Ford Explorer, 4,556 pounds



Midsize: Toyota Camry SE (V6), 3,487 pounds



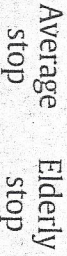
Compact: Toyota Corolla LE (4 cylinder), 2,575 pounds



Source: Car and Driver magazine

## Elderly drivers take more time to stop

Traveling 70 mph



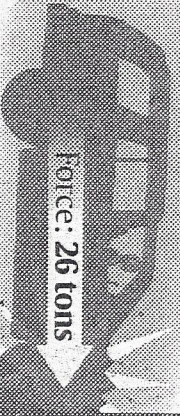
## Braking distance for a truck at 70 mph:

Calculation, not road test, for tractor pulling one standard loaded trailer (approximate weight not exceeding 80,000 pounds).

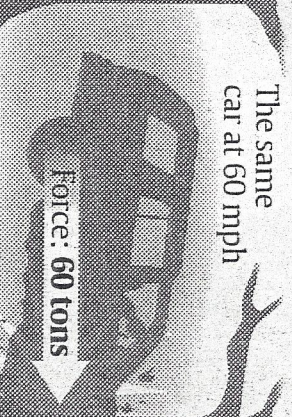


## Higher speeds mean greater crash forces ...

A 4,000-pound vehicle traveling 40 mph

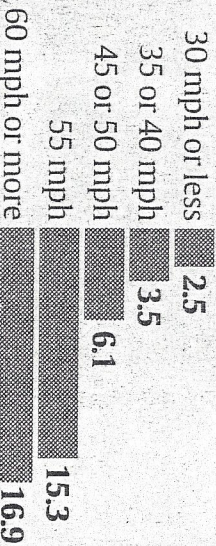


The same car at 60 mph



## ... and you're more likely to die

Fatality rates per 1,000 crashes:



## Speed-related crashes in 2000 caused an estimated:

- ▶ 12,350 deaths.
- ▶ 690,000 injuries.
- ▶ 2.3 million vehicles damaged (in property-damage-only crashes).
- ▶ \$40.4 billion in economic impact.

## Crash tests

To find ratings on how well your car fares in crash tests, go to these Internet sites:

**Insurance Institute for Highway Safety:**  
www.iihs.org (click on vehicle ratings).

**National Highway Traffic Safety Administration:**  
www.safercar.gov (click on your type of vehicle).

Sources: National Highway Traffic Safety Administration's Traffic Safety Facts 2002, National Safety Council's Professional Truck Driving Program and USA TODAY research.

Reporting by April Umringler; graphic by Frank Pompa, USA TODAY

USA Today 2/23/04

## **Skin Protection Guide for Everyone under The Sun**

Dermatologist Dr. Jon Starr says: "I tell parents they need to religiously protect their children from sunburn. Put sunscreen on them every day. It should be a routine, just like insisting that children brush their teeth or wash their hands."

With just a few basics, you can start building healthy habits to keep your kids safe. Whenever they're outdoors, always remember to: SLIP! on a shirt, SLOP! on a sunscreen of 15+, SLAP! on a hat, WRAP! on sunglasses. Look for shade in the middle of the day. Helpful hints: Keep a bottle of sunscreen in the car.

### **Having Fun in the Sun**

#### **Take Care Of your Kids Inside and Out**

Making sure your children eat right and get enough sleep takes care of their inside. But their outside needs special care, too. It's important to protect their skin from the damaging effects of the sun. No matter what they're doing, or what time of the year it is, if they're outside, they need to be protected.

As a parent, it's up to you to set a good example. Building safe sun habits into your family's daily routine is easier than you think. Children will respond better when they understand why skin protection is important. Begin by teaching them the American Cancer Society's easy safe sun habits.

#### **Keep your kids sun safe, every day!**

Sun facts- Research shows a link between sunburns in children and an increased risk of melanoma and skin cancer later in life.

Protecting skin from the sun during childhood and adolescence is very important in reducing the risk of skin cancer in adulthood.

About 80% of skin cancers could be prevented by protecting skin from the sun's rays.

#### **Play in the shade.**

The sun's rays are generally strongest from 10 A.M. to 4 P.M. Whenever possible, plan outdoor activities so as not to be in the sun during the middle of the day. When your kids are outdoors, be sure their skin is protected. UV rays reflect off water, sand, snow, and any light colored surface, like concrete. UV rays also reach below the water's surface.

### **Cover up with hats and shirts.**

Have fun choosing hats and shirts with your kids. Hats should shade their faces, necks and ears. When it comes to clothes, choose shirts and slacks made of tightly woven fabrics that you can't see through when held up to light.

### **Use sunscreen every day.**

Apply sunscreen every day on skin that is not protected by clothing or a hat. Choose a sunscreen with a Sun Protection Factor (SPF) of 15 or higher. Important: Sunscreen is not recommended for children less than 6 months old. Protect them with clothing and keep them in the shade.

### **The finishing touch.**

Sunglasses protect eyes and the tender skin around them from harmful UV rays.

### **Avoid Tanning booths.**

No matter how much your teenager may beg, a sunlamp or tanning booth is not a good idea. Sunlamps damage the skin and don't help, or protect it.

### **The American Cancer Society Recommends:**

1. Wear protective clothing when out in the sun.
2. Wear a hat that shades your face, neck, and ears.
3. Wear a sunscreen with an SPF of 15 or higher.
4. Plan outdoor activities to avoid the midday sun.

Keep Your Family Sun Safe. Start Today. Whenever you're outdoors, always remember to: Look for shade in the middle of the day and SLIP! on a shirt, SLOP! on a sunscreen of 15+, SLAP! on a hat, WRAP! on sunglasses.

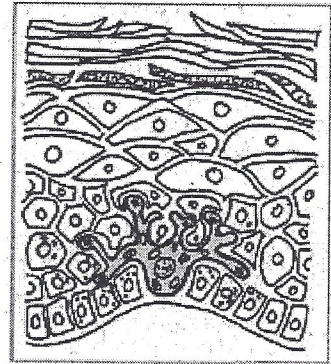
## Some Fun Sun Activities

Dr. Patrick Hybarger is worried. He's seeing more skin cancers in younger people than he's ever seen before.

Hybarger says that although few children develop skin cancer, many children get heavy exposure to the sun. Just one or two blistering sunburns during those years can increase the likelihood of developing the most deadly form of skin cancer later in life, he adds.

### Exercises:

1. Skin is the body's largest and heaviest organ. Discuss why we need it? What does it do for us? How does your skin fight infection? What products do people put on skin and why? Which products protect skin? What's in them? Have students bring in skin products and discuss the ingredients.
2. Ask students to clip newspaper and magazine articles about ozone research over the last several years. Discuss the progress of research and regulation. What questions do scientists hope to answer?
3. UV rays can penetrate skin cells below the surface without you even knowing it. Set up a simple demonstration to observe the damaging effects of sunlight. Cut designs out of paper, and clip them to sheets of dark-colored construction paper. Set the sheets in sunny locations: on a windowsill, outdoors in full light, beneath waxed paper (or other materials), and so on. After a few days, lift the designs. Compare the sun's damage to the construction paper with undamaged paper. Did windows filter the sun's rays? How about other materials? Did anything block the rays completely?
4. Have the students access their own personal skin risk profile. Go to the American Academy of Dermatology website <http://www.aad.org/skinrisk.html> Analyze the results in class. Which skin type is most common in your classroom? How many hours per week does the average student spend in the sun? How many use sunscreens? Sunblocks? Which students have a higher risk for sunburn and skin cancer? Graph the results.
5. Have the students write a short essay on the attitudes of their parents, grandparents or guardians toward tanning and sun protection when they were adolescents. How have attitudes changed?
6. What words, messages, and images do companies use to "sell" their sun lotion products? Have students design and draw a new and improved bottle, including a label, for a sun lotion product. The goal is to clearly state what the product does while convincing a consumer to buy it.



7. What SPF number would students use? Why? Create math problems in which students calculate how much longer various SPF sunscreens allow them to stay in the sun.
8. Ask students to predict where in the world melanoma rates are climbing fastest. Prompt them to give logical reasons for their predictions. What do Australia, New Zealand, Scotland, North America and northern Europe have in common that might explain rising melanoma rates? Now, imagine that you're a scientist who studies the ways that diseases affect people in geographic areas. What do the people who live in these areas have in common that might lead to melanoma? What might these people do to protect themselves against skin cancer?
9. Why do some people ignore safety measures to protect themselves from cancer? What might convince frequent sunbathers to change their habits? One of the biggest risk factors for skin cancer is overexposure to the sun during childhood. Discuss movies and TV shows that encourage sun-tanning among teenagers.
10. Read the handout *Sun Protection for Everyone Under the Sun*. Divide the students into teams and have them design sun safety posters. Display the posters around the room.

*Source: American Academy of Dermatology*