

LESS IS BETTER

We can reduce air pollution and other harmful effects on the environment if we use less energy. Here are three energy conservation investigations to get you started.

MATERIALS: Smooth tissue paper (or other light-weight paper); scissors; long pencil; tape; two similar-sized pots, one with lid; water; measuring cup; stopwatch or watch which indicates seconds; stove.

A lot of energy is produced by burning fossil fuels, which is a major cause of air pollution. If we use less energy, if we "conserve", we will produce less pollution. We waste a great deal of energy. When you throw away two aluminum cans, you "throw away" all the energy that went into making the cans; a lot of energy will also be required to replace the cans. Instead of energy being put into making *two* new aluminum cans, the same amount of energy could be used to make *twenty* recycled cans. The amount of energy used to produce *one* sheet of new paper can instead be used to make *two* sheets of recycled paper. Conserving energy means being more efficient -- being smarter.

Think of ways you can conserve energy at home. For example, can you put on a sweater instead of putting up the heat? In colder climates, more than half the energy we use at home is for heat. And more than half of that may be wasted. Heat escapes under doors, around window frames, through the attic, up the chimney. If we conserve by plugging all the leaks, we can heat two homes with the amount of energy we now use for one. If you're leaving the room, does the light need to be on? To produce enough energy to power a 100 watt light bulb all day, every day for a year, you would need to burn about 400 kg of coal. The typical light bulb is also a big energy waster. 90% of the energy the bulb draws is lost as heat. There are light bulbs called "compact fluorescents" that can replace some regular bulbs; compact fluorescents use only 25% of the energy used by a regular bulb and can last 10 times longer. Are you opening the refrigerator more often than you need to? How long do you keep it open? The average refrigerator is opened 22 times a day; that's over 8,000 times a year. Every time you open the refrigerator and let warm air in, the refrigerator has to use more energy to cool itself back down again.

Topics: Resources; Energy.

DOING IT:

- 1. Draft Detection:** Try this on a cold, windy day. Cut a piece of tissue paper 15 cm x 13 cm. Tape the short end of the paper along the length of a pencil. Test the draft detector by opening the refrigerator *a little* and holding the detector at the opening. Does the detector wave in the breeze? Hold the detector near windows and doors (sides and bottom), fireplaces, or anywhere else you think there's a draft. Where there's a draft, there's a good chance that heat is escaping. How can the leaks be fixed?
- 2. Bulb Count:** How many light bulbs do you use in your home? Count all the light bulbs -- inside and out. Now imagine millions of homes using the same number of light bulbs. That's a lot of energy!
- 3. Water Test:** **This activity should be done with adult supervision.** Fill two pots with 500 ml of water each. Cover one pot and leave the other uncovered. Put both pots on the stove, on burners they cover completely (no sense wasting energy!). Start heating both pots at the same time; make sure the heat level is the same for both (e.g. "high" setting). Which pot boils first? Why? Which uses more energy?

North Americans use 2 billion batteries a year. It takes 50 times more energy to make a battery than the battery will ever provide. Batteries can contain very toxic materials such as cadmium, mercury, lead, and sulphuric acid. A lot of chemicals end up in the environment when batteries are made -- and when they are thrown away. Batteries should never be thrown into the regular garbage; they are considered "hazardous waste" and must be taken to a special site. Whenever you can, use things like solar calculators that don't need batteries. And, buy rechargeable batteries, which can be reused.

