

by jok church

Dear Beakman,  
How do fireworks work?  
Amanda Considine  
Lexington, Minnesota

## experiment #1 Burning Metals

**WHAT YOU NEED:** Magnet - permission and help from a grown-up - the glowing, burning coals left over from a cookout - safety goggles

**WHAT TO DO:** Put on your safety glasses to protect your eyes. Drag the magnet around in the gutters of a paved street. Be very careful. Do not do this if cars are zooming around. Safety is the first reason why you need a grown-up to help. Save the fuzzy black stuff that sticks to the magnet until you have 1/4 to 1/2 teaspoon. Wash your hands.

### MORE STUFF:

When it's dark, ask your grown-up helper to sprinkle the black powder onto the glowing coals. Pay close attention. There will be a very short, bright white sparkle. *Note: The powder you burned is not good to handle. It's another grown-up-type thing.*

### WHAT IS GOING ON:

The sparkle comes from burning steel. A sparkler works something like this, only with a fuel that keeps burning the steel for a longer time.

**SO WHAT:** All fireworks work the same way – a metal or metal-salt for color and a fuel that gets incredibly hot to burn it up.

The black powder you got from the street is rather upsetting. It's really powdered car parts. As cars drive, they give off little shavings of metal. If you weren't able to find very much of it, you're lucky. It means your street is free of this kind of pollution.

July 1

The day Canada celebrates the nation's birthday.

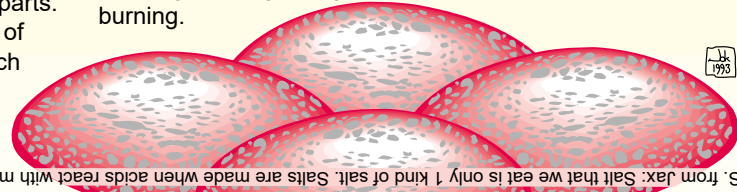
July 4

The day the U.S.A. celebrates the nation's birthday.



## picnics & fireworks

After your family cooks the mystery-meat hot dogs on the grill, the glowing coals can demonstrate metals burning.



Dear Amanda,  
Fireworks work because metal burns, and when metals and metal-salts burn, they give off different colors. We usually don't think of something like iron as burning. But it can burn – bright white.

Fireworks use intense heat to burn metals and metal-salts. The heat comes from gunpowder, which is mostly fine granules of charcoal with other chemicals added.

Experiments with fire are *not* a good idea because they are extremely dangerous. But there is an experiment your family can do to show you that metals can burn. Do not try this without help from a grown-up! Okay? Okay.

*Beakman*  
Beakman Place