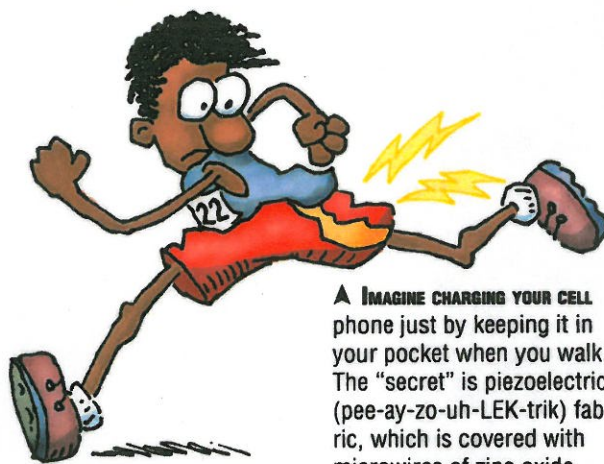


## At the Cutting Edge

Whether it's new sources of energy, new medicines, new types of medical supplies, or improved foods, chemistry is at the cutting edge of planning for today, tomorrow, and decades to come. Here are a few of the many examples.



▲ **IMAGINE CHARGING YOUR CELL** phone just by keeping it in your pocket when you walk. The "secret" is piezoelectric (pee-ay-zo-uh-LEK-trik) fabric, which is covered with microwires of zinc oxide, a compound of zinc and oxygen. When you walk, your movement causes the microwires to rub together, converting the mechanical energy of motion into electrical energy.

◀ **JUST BECAUSE YOU CAN'T SEE** blood doesn't mean it's not there. Many criminologists use luminol, a powdery mix of chemicals, to discover unseen bloodstains. Investigators spray a solution of luminol, hydrogen peroxide, and other chemicals where they suspect the presence of blood. If their suspicions are right, a light bright enough to be seen in a dark room will glow. The light is given off when the solution reacts with the iron in red blood cells. While luminol was first manufactured over 100 years ago, chemists continue to make improvements in the duration and brightness of the image it reveals.

▼ **THINK OF THE LAST TIME YOU** or someone you know had to get stitches. Changing the bandages and keeping the wound clean were essential for avoiding infection. Now there's extra help from the stitches themselves. The newest "thread" for stitching up wounds contains an antibiotic.



## Green Chemistry

Green chemistry is an approach to chemistry that prevents waste, uses fewer resources, and saves energy. As a result, products are developed and manufactured so that they are safer and greener. In all cases, green chemistry requires that the processes and products minimize harm to human health and the environment.

### Green Chemistry at Work



◀ **IN TROPICAL REGIONS, MOSQUITOES** can carry deadly diseases. The pesticide spinosad (SPIN-oh-said), derived from a naturally occurring soil-dwelling bacterium, works well on land to control the insect. But mosquitoes breed in water. Unfortunately, spinosad dissolves too quickly in water to be effective. Until recently, other pesticides were used to control water-borne mosquitoes.