



Joy Trauth | Special to The Sun

This photo shows common products that are petroleum derivatives.

Oil: It's everywhere

BY KYLE FULTON
SPECIAL TO THE SUN

It is common knowledge that the generation of electricity and transportation are fueled primarily by oil and its products, but many do not realize that many common products including plastics are also petroleum derivatives. Materials that contain no petroleum byproducts are almost impossible to find, and the health-care industry is no exception.

Every step in the process of providing health care is completely dependent on the use of at least one of the many compounds found in oil. To demonstrate that point, we can follow a patient through the process of receiving treatment for a heart attack.

When someone is experiencing chest pains, discomfort in the upper body, shortness of breath and a cold sweat, there are several things that people think to do. Many will call an ambulance, and they will make the call on a telephone that is made out of plastic, which is made from an oil byproduct. The person will be transported to the hospital by car, ambulance or helicopter, all of which depend on gasoline or diesel for fuel and have many parts made of plastic.

Once the patient gets to the hospital, a doctor will perform a physical exam: check pulse, breathing rate and blood pressure, and take a history. All of these activities are essentially independent of oil byproducts, but the results will likely be recorded in oil-based ink or typed into a plastic laptop computer. After the physical exam the doctor will order diagnostic tests to confirm or deny a heart attack.

An echocardiogram (ECG) is the first test normally ordered by a physician. Sensors called leads will be attached to the patient's chest with an adhesive that is petroleum based. Sometimes a chest X-ray will be ordered, and that image will be developed on special plastic X-ray film. A nurse will draw blood into plastic syringes for multiple blood tests. Afterwards, he or

she may place an adhesive bandage (one made from petroleum-based adhesive and plastic) on the puncture site.

The last diagnostic test is normally a cardiac catheterization. This uses an intravenous dye, made from an oil byproduct, to visualize any blocked heart blood vessels. The results from these tests tell the doctors what treatments are best for each patient.

Medications are the simplest treatment, and all of these are derived from hydrocarbons in petroleum and/or use a byproduct in a major step of production. Also many of the pills have a coating that is a form of plastic or paraffin wax.

Coronary angioplasty is another possible treatment. It uses a catheter with a balloon tip that is placed into the blocked cardiac vessel. Once the catheter is in place, the balloon inflates, opening the blockage.

The most complex treatment is coronary artery bypass surgery. During this procedure the blocked vessel(s) are bypassed using vessels harvested from another place in the body. The surgery requires numerous instruments and supplies derived from petroleum: anesthesia, soap, gloves, syringes, the packaging of all sterile equipment, oxygen mask, safety glasses and much plastic tubing.

Oil is a finite resource formed from the bodies of marine organisms through millions of years of heat and pressure. We should conserve this resource for life-sustaining uses and use other energy sources such as wind, solar and natural gas to generate electricity and power our vehicles.

For more information contact the Arkansas State University Department of Biological Sciences at biology@astate.edu.

Kyle Fulton received his bachelor's degree in biology from ASU in 2009. He was the Wilson Award recipient and is beginning his freshman year at the University of Arkansas for Medical Sciences. This article was written for Dr. Stan Trauth's senior seminar.