

THE ELUCIDATOR

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UNITED STATES ARMY MEDICAL RESEARCH AND MATERIEL COMMAND

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January 2009 Newsletter

THE SSE ELUCIDATOR

"Elucidate: to give clarity through explanation and analysis."



How do you plan to celebrate the New Year? While champagne toasts and resolutions are probably high on your list, the Coalition on the Public Understanding of Science (COPUS) is preparing to shine the national spotlight on science in 2009 and beyond.

COPUS, a cooperative network of organizations, has launched a U.S.-oriented effort called the Year of Science 2009 (YoS09). The goal of this national, year-long celebration of science is "to engage the public and improve public understanding about how science works, why it matters, and who scientists are."

A general public with an understanding of the nature of science produces a skilled workforce able to compete in a knowledge-based global economy; individuals capable of making informed decisions about relative risks, such as medical treatments and other quality of life factors; and an electorate more prepared to engage in public policy discussions involving science. An insufficient understanding of science leads to exclusion from much of the discourse of modern society, an inability to distinguish science from non-science, and a vulnerability to special interests attempting to drive public perceptions of science in their favor.

Many in the scientific community see the need for a coordinated and sustained effort by scientists to engage the public directly. COPUS is a grassroots network - composed of hundreds of participating organizations representing universities, scientific societies, science centers and museums, government agencies, advocacy groups, media, educators, businesses, and industry - formed in response to recent concerns about national scientific literacy. U.S. agencies EPA and NOAA are among the sponsors.

2009 was chosen as the Year of Science because it

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coincides with the anniversary of a number of important events in the history of science, including the 150th anniversary of the publication of On the Origin of Species and the 200th anniversary of the birth of its author, Charles Darwin; the 200th anniversary of the birth of Abraham Lincoln, founder of the National Academy of Sciences; the 400th anniversary of the publication of Johannes Kepler's first two Laws of Planetary Motion; and the 400th anniversary of Galileo's first use of a telescope to study the skies. In addition, YoS09 was also chosen to coincide with the International Year of Astronomy - designed to encourage people to rediscover the universe through the sky and engage their personal sense of wonder and discovery; www.astronomy2009.org and the International Year of Planet Earth - fostering outreach and research activities to raise public and political awareness of the vast potential of Earth sciences for improving the quality of life and safeguarding the planet; www.yearofplanetearth.org.

COPUS participants are crossing traditional scientific disciplinary boundaries and partnering with others within their communities to develop activities, programs, and special events in support of YoS09. Activities being developed include:

- ◆ Free public lectures and programs at museums and science centers;

Reminder

For all accidents, no matter how minor, specific forms documenting the incident must be submitted to your Safety Office.

Military: DA Form 285-AB-4

Civilian: DOL Claims Forms CA-1 or CA-2

All employees requiring medical attention must visit your local Occupation Health Clinic as soon as possible post mishap.



- ◆ Opportunities to spend a day with a scientist or participate in a research project;
- ◆ Roundtable discussions about important local science issues;
- ◆ Connecting COPUS-affiliated scientists with the K-12 community;
- ◆ Radio spots, editorials, and on-line resources that highlight the nature and process of science;
- ◆ Creating local Science Cafés.

Science cafés are live events that involve a face-to-face conversation with a scientist about current science topics. They are open to everyone, and take place in casual settings like pubs and coffeehouses. Because a single café meeting rarely reaches more than 80 people, they engage everyone attending. To find a café, start a café, or to offer your services as a presenter visit <http://www.sciencecafes.org>.

COPUS has assigned a science theme – such as Energy Resources and Chemistry – to each month of the year. January's theme is Process and Nature of Science. This month COPUS will focus on how science really works – the nature and process of science – and how we can best communicate about science. In nearly every state, participants in the celebration will be demonstrating how we know about our natural world and why science continues to be so vitally important to our communities, our country, and the world.

In conjunction with the January 2009 launch of YoS activities, a new Web resource – Understanding Science, <http://undsci.berkeley.edu> – that introduces a new way to talk about science and its contributions to society. Understanding Science is a freely accessible web-based resource that provides a new approach for teaching the nature of science. Its goals are to (1) improve teacher understanding of the scientific enterprise and (2) provide materials and tools that enable K-16 teachers to incorporate the true nature and process of science throughout their teaching. Highlights include:

- ◆ A dynamic representation of the real process of science
- ◆ Science stories stressing key nature-of-science concepts across disciplines

- ◆ Scientist profiles interlinked with information on how science works
- ◆ Cartoons illustrating key concepts
- ◆ Regularly updated stories on science in the news
- ◆ Activities for direct use by students
- ◆ A database of vetted lesson plans
- ◆ Teaching tips and strategies
- ◆ Clarification of misconceptions
- ◆ Friendly but comprehensive background material

In addition to the highlights above, the website offers a resource library that includes frequently asked questions, teaching resources, correcting misconceptions, and science in action. Coming soon the resource library will include advanced side trips, an image library, and new research profiles.

YoS09 events all over the country can be found on <http://www.yearofscience2009.org>. The website offers a feature that allows users to engage in science in their community by simply searching for your state for planned events. COPUS Regional Hubs are locally-based communities of COPUS participants and science stakeholders that work together within a designated geographic region to promote the public understanding of science. There are a total of 18 Regional Hubs located throughout the U.S.

It is easy to participate. Simply register your organization, your application will be reviewed by the COPUS Steering Committee and you will be contacted regarding next steps. If you have any questions, contact spotter@copusproject.org.

Year of Science 2009

Monthly Scientific Themes

- ◆ January - Process and Nature of Science; Communicating Science
- ◆ February - Evolution
- ◆ March - Physics and Technology
- ◆ April - Energy Resources
- ◆ May - Sustainability and the Environment
- ◆ June - Oceans and Water
- ◆ July - Astronomy
- ◆ August - Weather and Climate
- ◆ September - Biodiversity and Conservation
- ◆ October - Geosciences and Planet Earth
- ◆ November - Chemistry
- ◆ December - Science and Health

THE SSE ELUCIDATOR'S MONTHLY CARELESS CALAMITIES

Welcome to the latest edition of the SSE Elucidator's Monthly Careless Calamities, a.k.a. Bleeder's Digest.

1. An E-4 airframes mechanic at a Marine fighter-attack squadron had a spot of preventive maintenance to do on the flightline, just prior to launch. He ducked into the wheelwell of the left main landing gear and promptly got his head caught amongst some hydraulic tubing and clamps and whatnot. The pilot was starting up the aircraft, which produced what the report called "a rocking motion (forward and aft) that jarred the Marine's head in an unnatural motion/direction." He managed to free himself. At this point, most of us would have exited the wheelwell, breathed a sigh of relief, done a couple fist pumps, and congratulated ourselves on dodging another bullet. However, the Marine was made of sterner stuff. He went back to work, air-bleeding the aircraft. When he finished and walked away, his neck was sore so he told his supervisor what had happened. Next stop was base medical where the diagnosis was neck strain and a possible pinched nerve. He spent a day SIQ. Incidentally, none of the other Marines working on the flightline at the time had noticed anything amiss during this incident, for which they were rewarded with a unit-wide safety stand-down.

2. "Wrestling with his wife"---that's another of those telltale phrases in the mishap summaries that do not bode well. From the male point of view, there doesn't seem to be much potential in this pastime. If you win, you're a bully, and if you lose, you're a wuss. Nevertheless, an E-3 from an aviation squadron decided to give it a shot. The match was halted when he tripped, fell onto the corner of an end table and cracked a rib. Spent a day in a hospital and a month on light duty. Come to think about it, that's gotta count as a loss.

3. Then there was the AT2 in Oklahoma who wasn't wrestling with his wife, he was arguing with her, in an extremely heated manner and in the family car. She stormed out and got into another car. He slammed the original car into reverse, stomped the

gas, and yanked the wheel to the right. These decisive and dramatic actions had the effect of flipping the car onto its left side, shattering the driver's window, and crushing the Sailor's hand. He crawled out the passenger side door, probably no longer in the mood to argue, en route to six days of light duty. Chalk this one up as a loss also, and not just the \$3K in property damage to the PMV.

4. On the smiley face end of the spectrum as opposed to the frowny face end, there was an AG2 in San Diego. He didn't even have a wife, just a girlfriend, and he wasn't fighting with her, he was carrying her on his back, en route to his car. Unsure what the rationale was, perhaps just some fun and games until he tripped, fell, and broke two bones in his right forearm. Two days in a hospital, three weeks off work. Stumbling around in a parking lot and dropping valuable cargo: not a win.

5. This next woman wasn't involved in a couples spat and she sure didn't walk away with just a couple of minor injuries. An OS3 from a Norfolk ship was blasting along an interstate at 90 miles per hour. Strike one. It was 0155. Strike two. Her BAC was 0.14. Strike three. She lost control and slammed into the center divider. Her car flipped over it, landing upside down in the HOV lane. Then it finished illustrating the phrase "crash and burn." A passerby pulled her from the vehicle. She was treated at a hospital for burns. She was either in the hospital, away from work and/or on light duty for a total of three months. "Human errors: lost control," the report said. The plural "errors" is exactly right. She lost control of her good judgment when she lost control of her drinking, therefore losing control of her car.

That's all for this month, folks. Until we meet again, try an affectionate hug instead of a hammerlock. Try taking a deep breath and a walk around the block when the steam starts coming out of your ears. Try walking hand in hand instead of carrying someone. And oh yeah, NEVER DRINK AND DRIVE.

GREEN NEW YEAR'S RESOLUTION: RECYCLE

Yes, recycling is something you should be doing in your home. No matter how much recycling you do in your home, take it one step further this year. If you're one to simply take in your plastic bottles and soda cans for a refund, consider adding bins for paper and glass to your home. If you already do that, try taking stock of just how much you throw in the trash in a given week. You may be appalled to see how much you're actually sending to a landfill.

Also, start looking around your home for the things you keep around that maybe you've been avoiding throwing away because you hate the idea of sending it to a landfill. In this case, the Internet is your best friend. Start researching organizations or facilities in your area that take in these unwanted items - from old electronics to paint from your last renovation job. Some simple research may reveal alternative methods of disposing of many of these items in an earth-friendly way. For example, EPA launched one of the first government Web sites tailored specifically for cell phones and other small-screen handheld Web devices, <http://m.epa.gov>. The United States Postal Service has started a Mail Back program for everything from your iPod to old printer cartridges. Customers can pick up mailing envelopes at any of the 1,500 participating post offices and as an added incentive, it is absolutely free to participate in the program, from the packing materials to the mailing itself. Only you can determine how involved you want to get with recycling, but here are the top 10 reasons why you definitely should recycle:

1. Good For Our Economy - American companies rely on recycling programs to provide the raw materials they need to make new products.
2. Creates Jobs - Recycling in the U.S. is a \$236 billion a year industry. More than 56,000 recycling and reuse enterprises employ 1.1 million workers nationwide.



3. Reduces Waste - The average American discards seven and a half pounds of garbage every day. Most of this garbage goes into landfills, where it's compacted and buried.

4. Good For The Environment- Recycling requires far less energy, uses fewer natural resources, and keeps waste from piling up in landfills.

5. Saves Energy - Recycling offers significant energy savings over manufacturing with virgin materials. (Manufacturing with recycled aluminum cans uses 95% less energy.)

6. Preserves Landfill Space - No one wants to live next door to a landfill. Recycling preserves existing landfill space.

7. Prevents Global Warming - In 2000, recycling of solid waste prevented the release of 32.9 million metric tons of carbon equivalent (MMTCE, the unit of measure for greenhouse gases) into the air.

8. Reduces Water Pollution - Making goods from recycled materials generates far less water pollution than manufacturing from virgin materials.

9. Protects Wildlife - Using recycled materials reduces the need to damage forests, wetlands, rivers and other places essential to wildlife.

10. Creates New Demand - Recycling and buying recycled products creates demand for more recycled products, decreasing waste and helping our econ-

Top 10 Items You Should Start Recycling

1. Aluminum
2. PET Plastic Bottles
3. Newspaper
4. Corrugated Cardboard
5. Steel Cans
6. HDPE Plastic Bottles
7. Glass Containers
8. Magazines
9. Mixed Paper
10. Computers

SLED RIDING SAFETY 101

They can travel at nearly 20 miles per hour, they have no brakes and kids love them. What are we talking about? Sleds, of course. While taking the spills out of sledding would be like taking away the snow, zipping along faster than an average bicycle, which travels at 10 to 15 miles per hour, a sled can pose a serious risk of injury for both children and adults. More than half of sledding injuries are to the arms and legs, 17% to the spine, 15% to the head, and 11% are facial injuries. Other injuries include torn ligaments, frostbite, and lacerations. The good news is most of these injuries can be prevented by following the safety tips provided below.

Tip # 1 Never sled ride in the dark and always sled ride in a well light area that is free of trees or other objects. While you may be familiar with the area, everything looks different in the dark.

Tip # 2 Children under 12 years of age should always wear a helmet. Head injuries are very serious and while a broken arm or leg can be repaired, many head injuries are permanent and life threatening.

Tip # 3 Wear gloves, jackets, and boots that are insulated and water proof. Each year many children and adults are treated for frostbite while sled riding.

Tip #4 Drag your feet to slow down a run away sled. If this does not work, roll off your sled and onto the ground, this is much safer then staying on the sled.

Tip #5 Inner tubes, saucers, and snow disks are not recommended because of their fast speed and lack of steering capability.

Tip #6 Do not sled ride when it is icy outside. The ice will cause your sled to go very fast and you will not be able to control it.

Tip #7 Inspect your sled beforehand and make sure it is in good condition before hitting the sloops.

Tip #8 Inspect the terrain and never sled ride in an unsafe area. Avoid steep hills (the climb of the hill should be 30° or less), cliffs, rocky hills, the street,

driveways, icy surfaces (you cannot steer or stop on ice) and areas with trees, walls or cars.

Tip #9 Never attach your sled to the bumper of a car or any other moving vehicle. This is extremely dangerous and many people are injured or killed each year doing this.

Tip #10 Never sled ride head first, this could cause serious head and spinal injuries. If your head hits an object at 20 mph you would not survive the impact.

Tip #11 Never stand on a sled. Snowboards are designed for standing on, sled's are not.

Tip #12 Always have an adult supervise any sled riding with young children. Make sure a cellular phone is available and have a first aid kit handy.

Tip #13 Never use alcohol or drugs while sledding or while supervising children who are sledding.



EPA'S UPCOMING EVENTS

January Month - National Radon Action Month

Test your home for radon. Radon is an invisible radioactive gas that causes lung cancer. The only way to know if your home contains high radon levels is to test for it. If you are interested in finding a qualified radon service professional to test or mitigate your home, you wish to purchase a radon test kit, or have questions about a radon measurement device or radon mitigation system visit <http://www.epa.gov/radon/radontest.html> for more information.

Week - None

Day (1st) - National Environmental Policy Act Anniversary

GREENING THE DIGITAL TELEVISION TRANSITION



After February 17, 2009, most television stations will broadcast only in digital, as required by the Digital Television Transition and Public Safety Act of 2005. You will not be affected by the transition if you own a television with a digital tuner or subscribe to a TV service (e.g., cable or satellite). Currently, many over-the-air stations are broadcasting in both analog and digital TV formats. If you use “rabbit ears” or a rooftop antenna with your analog television, you must take action before February 17, 2009, to continue receiving television broadcasts. Your options include:

- ◆ Buy a converter box that will plug into your analog TV;
- ◆ Connect your analog TV to cable, satellite or other pay service; or
- ◆ Buy a TV with a digital tuner.

EPA is encouraging consumers who own an analog TV set and who receive free broadcasts (via rabbit ears or a roof antenna) to either extend the life of their TV by purchasing a digital converter box or if planning to buy a new digital TV, purchasing an energy efficient TV with the ENERGY STAR label.

The digital changeover is by no means a mandate for the elimination of old-school sets, but it will certainly send a lot of people into electronics stores to shop for new digital TVs—typically flat-panel LCD and plasma sets, and that means that a lot of tube televisions are headed for the dumpster. It is estimated that one in every 4 U.S. households will be discarding a TV set in the next year due to the all-digital television transition.

TVs contain cadmium and lead – in the case of cathode-ray tube (CRT) TVs, as much as 8 percent of the weight of a television tube is lead– as well as mer-

cury, chromium, nickel, and zinc. Dumped into landfills, these materials could leach into groundwater. Once the toxins are in the aquifer they would be a significant health issue to any living organism, and are particularly harmful to humans at any age. How much of this is leaching out of landfills is difficult to say, but results from a 1999 experiment by Timothy G. Townsend of the Florida Center for Solid and Hazardous Waste Management found that CRTs leached enough lead in simulated landfill conditions to qualify as toxic waste.

Here are a few quick television waste statistics:

704.9 million -- That's how many CRT televisions have been sold just in the USA since 1980, according to the EPA.

42.4% -- How many of those TVs are estimated to still be in use.

23.9 million -- Number of CRT TVs that will be thrown out in 2008, adding up to an estimated 711,029 tons of televisions. Numbers for end-of-life TVs have been over 20 million per year since 2005, and are expected to go up to almost 25 million by 2010. Compare this to 10 years ago, when the numbers were closer to 12 million sets disposed of per year.

18% -- By weight, that's how many of the TVs thrown out during 2006–2007 were recycled. Between 1999 and 2005, the rate was 15%. The rest went to landfills.

46,643 -- How many tons of lead is estimated to be inside TVs landfilled in 2008. This is not counting computer CRT monitors.

If you decide to replace your old analog TV with a new digital TV, look for opportunities to recycle it. Recycling TVs recovers valuable materials from the circuit boards, metal wiring, leaded glass, and plastics. Call your local household hazardous waste collection and recycling program to find out whether they will be sponsoring an upcoming event to recycle

GREENING THE DIGITAL TELEVISION TRANSITION (CONT.)

TVs and other electronics. To find a local recycling program, check out the following sites:

- ◆ Earth 911, <http://earth911.com/electronics/>, has a zip-code based search engine that enables you to look for recycling options in your community for various products. Earth 911 has taken environmental hotlines, web sites and other information sources nationwide and consolidated them into one network.
- ◆ My Green Electronics, <http://www.mygreenelectronics.org/>, provided by the Consumer Electronics Association, this site is a resource for consumers wishing to purchase green products and/or searching for local opportunities to recycle or donate used electronics.
- ◆ Sony and Waste Management, an EPA Plug-In To eCycling Partner, has teamed up with Waste Management, Inc. to offer their customers the opportunity to recycle their used Sony electronics for free. Other brands of TVs can also be recycled at selected Waste Management locations for a fee. To find a drop-off location, call 877-439-2795 or go to www.sony.com/recycle.
- ◆ National Recycling Coalition, <http://www.nrc-recycle.org/localresources.aspx>, with an easy to navigate hyperlinked map, this page provides links to state recycling resources. Many local communities have special collection/recycling days that are highlighted on their Web sites.

A good portion of recycled CRTs are turned into ... CRT televisions. Factories in Malaysia often take old U.S. tubes and rebuild them as new TVs for developing countries. Glass tubes that don't meet the specifications for reuse are either melted down by CRT furnaces to be reconstructed into new CRTs, or sent to lead smelters, where they may be turned into car batteries. So the lead may get reused, but not necessarily in an environmentally friendly manner. Therefore, for many working electronic products, donation

is a good option because it facilitates reuse and extends the product life. However, check to make sure that the organization is accepting analog TVs before you drop off your old electronics.



If you decide to buy a new digital TV, look for the ENERGY STAR label first. Today's TVs, when combined with related products like DVD players and set-top boxes, make up about 10 percent of a household's annual electricity bill. ENERGY STAR qualified TVs use about 30 percent less energy than standard units. You can find the ENERGY STAR on everything from standard TVs, to HD-ready TVs, to the largest flat-screen plasma TVs. By choosing ENERGY STAR, you are saving energy, reducing greenhouse gas emissions, and promoting cleaner air without sacrificing product quality and performance.

When purchasing a new TV, ask the retailer if they will take and recycle your old set when they deliver your new digital TV. For example, Best Buy offers their customers the service of removing an unwanted TV for recycling when they deliver a new set.

