

AIR & WASTE MANAGEMENT ASSOCIATION Nevada Section



What's In The News:

- **Plastics to Fuel**
- **News Doubletake**
 - Urine Charge
 - Dampen enthusiasm for pee electrical generator
- **Graphene Supercapacitors**

***** Spring Issue *****



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News from the Nevada Section Board of Directors

By: Victoria Hansen, Nevada Section Chair

Spring is finally sprung along with the winds and the pollen! Whew! It's been a great start to 2013 with moving the luncheons to Cili at Bali Hai Golf Club, along with having a great lineup of speakers. This organization is a great source for networking and professional development, so I would encourage anyone who has thought about becoming a member to look into the benefits and opportunities A&WMA has to offer at <http://www.awma.org/Public/MemberBenefits.aspx>!

If you are interested in only joining our email list, please contact our membership director, Adrienne Watkins at arwatkins@terracon.com.

Along with the Nevada Section, there's the opportunity for you to join the Eastern Sierra Chapter (ESC) for those northern counterparts who live near Reno, Sparks, Carson City, Hawthorne, Winnemucca and Elko. If you are in the area, the ESC has monthly events as well, so please check out their website at: <http://awma-easternsierra.org>.

There are a few events coming up set apart from the luncheons. This April we will be having board member elections, so please keep a look out for the email to vote. Currently we are in the process of scheduling a hike up to Mt. Charleston for the summer, as well as looking forward to the 106th Annual Conference & Exhibition for A&WMA which will take place this June 23-25 in Chicago, IL. For more information on ACE, go to <http://ace2013.awma.org/>. For more information on Nevada Section upcoming luncheons and events, please visit our website at <http://nvawma.org/>.

Lastly, I would like to take this opportunity to thank our speakers, dedicated board members, sponsors, fellow members and colleagues for their continued support of and commitment to A&WMA. The past few years have brought a few changes for the Nevada Section which have benefitted the organization immensely. Thank you for your continued support and we look forward to seeing you at our upcoming luncheons and events!

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Suffering from Seasonal Allergies? Reader's Digest Offers Some Relief

By: David Lam

If you're one of the 16.9 million adults estimated by the CDC to suffer from pollen allergy, also known as hay fever, you may be already hunting down that bottle of nasal spray. You may also already know to stay indoors when the pollen count is high, use high efficiency air filters at your home, and avoid grassy areas and trees (good luck).



However, before you give up to months of medicine and tissues, here are some tips I found tucked in Reader's Digest Magazine (I added emphasis on their tips that were particularly interesting to me):

Avoiding Pollen Outdoors

- One thing that can really help is to turn on the air conditioning in your car. In a non-air-conditioned car, closing the windows (and perhaps fitting a filter to the air intake) helps a lot.
- A good exercise mask will help keep out pollen grains and fragments during peak pollen times. Wearing a scarf over the mouth and nose will also give some protection.
- Another option to is smear a little Vaseline just inside each nostril and breathe through your nose only. Much of the pollen coming into your nose will stick to the Vaseline.

Timing Is Everything

Pollen release occurs at different times of day for different plants. Ragweed starts very early, releasing pollen between sunrise and 9 a.m. **Grasses release pollen from about 7:30 a.m. onward**, but if the ground is damp, the release will be delayed until the moisture is evaporated. **If you get up at 6 a.m. for a walk or run, you can be home safely by 7:30.**

In general, all types of plants favor warm, sunny days for releasing pollen, and they tend not to do it during rainy weather. Rain also washes residual pollen out of the air. **On cloudy days there is a buildup of pollen in the flowers, so a massive release of pollen occurs on the next day of good weather.**

Avoiding Pollen Indoors

Pollen grains have one huge point in their favor: Compared to other allergenic particles, they are big and heavy. This means that they settle more quickly from the air. In a room with 10-foot-high ceilings, all the pollen will settle within four minutes, as long as the air is com-

pletely still. In other words, **if you close all the doors and windows, block off any drafts and sit fairly still, within four minutes you will be breathing pollen-free air.**

- Pets bring in pollen on their fur, so keep them outdoors during the pollen season, and avoid stroking them. Brushing them thoroughly before they come in is another option, but obviously the allergic individual should not do this.
- If tranquil air is an impossibility, consider getting a high-quality air filter, or air conditioning. Alternatively, wet-dust and vacuum every day using a vacuum cleaner that keeps allergen particles in — to reduce the amount of pollen residue. People who are very sensitive may need to do this *as well as* having an air filter.
- Cover your armchair and bed with a sheet by day. In the evening, fold the sheet up *very* gently and wash it. This removes the layer of pollen that accumulates during the day. If studying, cover your desk and books when you are not working.

Places to Go, Places to Avoid

- For the grass-sensitive, mown grass is usually fine (it won't flower), although some people react to skin contact with grass. However, pollen that has settled on the grass may be stirred up while the grass is actually being mown. Unmown grass does not flower and will cause symptoms. Wheat, barley, oats, and corn, although they are grasses, rarely cause problems. Rye and sugarcane do release pollen, and may affect some people.
- The seashore is often pollen-free thanks to onshore breezes. Mountain peaks and ridges are also good, but deep mountain valleys can be pollen traps.
- Places that often suffer from "inversions" (air trapped at ground level) can have very high levels of pollen.

For all of Reader's Digest's allergy tips, visit:

<http://www.rd.com/health/wellness/how-to-deal-with-pollen/>

More links:

- <http://www.weather.com/activities/health/allergies/allergies-and-your-weather.html>
- <http://www.nhs.uk/Conditions/Allergies/Pages/Prevention.aspx>



Spreading cheery flower petals or fleeing from allergens?

Monthly Section Luncheons

The Nevada Section conducts monthly luncheon meetings on the **second Wednesday of every month**. During each luncheon, a presentation is given on various topics related to environmental issues and impacts facing Southern Nevada.

Luncheons are held at **Cili Restaurant** at 5160 Las Vegas Boulevard South Las Vegas, NV 89119

Check-in: 11:15 a.m. to 11:30 a.m. **Lunch Begins:** 11:30 a.m. **Presentation:** 12:00 p.m. to 12:30 p.m.

Cost: Members: \$25.00 Non-Members: \$30.00 Full Time Students: \$10.00

There are no dress code restrictions. **Self parking is available.** Cili is located inside the Bali Hai Golf Club between Town Square and the Mandalay Bay on the west side of Las Vegas Boulevard, near I-215.

For more information, or to RSVP please contact **Victoria Hansen** no later than noon on Monday the week of the luncheon by email at **geoknightv@gmail.com**. All interested parties are welcome.

Upcoming Speakers



April 10th, 2013 - Gregory Helseth, Bureau of Land Management—
"The Renewable Energy Picture for Southern Nevada".

May 8th, 2013—Dee Davis
"Quagga Mussels in the Lake Mead system"

Speakers and topics are subject to change. Please contact our Programming Director, Rob Cromwell, if you have a suggestion for future speakers or topics.

Waste Plastics to Fuel Facility Nears Completion in Ohio

*By: Ben Messenger, Waste Management World
February 13th, 2013*



Akron, Ohio based waste plastics to fuels specialist, RES Polyflow is near to completing its first full scale energy recovery facility in Cleveland, Ohio and will be demonstrating facility in spring.

The company said that the plant features a continuous

feed waste to energy conversion process that produces oil from end of life plastics and rubber.

The project - which has been funded in part by an Advanced Energy Program Grant from the Ohio Third Frontier program - broke ground in autumn 2012.

According to the RES at the heart of its technology is a process vessel with the ability to handle up to 60 tons (54.4 tonnes) per day of mixed polymer waste streams that other recycling systems typically have to discard in landfills.

Article continues on next page --->

Waste Plastics to Fuel Facility Nears Completion in Ohio (cont'd.)

By taking in as a lightly sorted and unwashed polymer stream the company said that the systems is less labour and capital intensive for operators.

Once processed the company said that the finished product generated by the RES Polyflow process is a light, sweet liquid known as pygas, which is marketable to a variety of industries.

According to the technology developer this stream is equivalent in quality and consistency to benchmark crude oil and can be tailored to the specific requirement of an off-take customer.

In conjunction with the RES Polyflow facility launch is the

commissioning of a fuels analysis laboratory housed at the College of Science, Technology, Engineering and Mathematics at Youngstown State University (YSU).

The company said that YSU Department of Chemistry students and faculty will test and characterise liquid fuel produced by RES Polyflow facilities using the lab equipment.

Funding for the fuels analysis lab was achieved through a Wright Capital Grant from the Ohio Development Services Agency.

Read the full article at: <http://www.waste-management-world.com/articles/2013/02/waste-plastic-to-fuel-facility-nears-completion-in-ohio.html>

Apex Landfill Tour—Recap

By: Lydia Scherr

Who knew a dump could be so clean? Republic Services' Apex Landfill operations are exceptional. If a landfill can be called clean, Apex is. Trash is mostly covered by dirt. Leachate is collected and burned. The landfill gases are used to power a nearby solar power generator. The Nevada Section of Air & Waste Management would like to thank Republic services (and our bus driver) for touring Apex landfill with our members. Rob Tidwell of Republic Services was a phenomenal and knowledgeable guide and we were lucky to have him. We would also like to thank them for their hospitality with breakfast and the informative presentation.



Forget apps and useless startups: These four African girls have created a pee-powered generator

By: Emil Protalinski
TheNextWeb, Nov 7th 2012

What have you built lately? 14-year-olds Duro-Aina Adebola, Akindele Abiola, Faleke Oluwatoyin, and 15-year-old Bello Eniola have created a urine powered generator.



All over Africa, young men and women have missioned across the country and arrived in Lagos, Nigeria. All they want to do is show off what they have made. Maker Faire Africa is more than your typical startup event: it actually shows off innovations, inventions, and initiatives that solve immediate challenges and problems, and then works to support and propagate them. Put another way, this isn't just a bunch of rich people talking about how their apps are going to change the world.

These four girls may not end up doing that either, but their efforts definitely stand more of a chance than yet another hyper local social cloud app. Their efforts should not go unnoticed, because if this is what they're doing as teenagers, I really hope they have the funding they need to be revolutionizing lives when they're adults.

Here's how it works:

- Urine is put into an electrolytic cell, which cracks the urea into nitrogen, water, and hydrogen.
- The hydrogen goes into a water filter for purification, which then gets pushed into the gas cylinder.
- The gas cylinder pushes hydrogen into a cylinder of liquid borax, which is used to remove the moisture from the hydrogen gas.
- This purified hydrogen gas is pushed into the generator.
- 1 Liter of urine gives you 6 hours of electricity.

If this doesn't motivate you to go out and start thinking about how you can really make an impact, then I don't know what will. If urine isn't your cup of tea, then I recommend you go and read Paul Graham's essay *Frighteningly Ambitious Startup Ideas*. In particular, pay attention to number three and number seven. Everyone else, go back to trying to figure out if you should target Android, iOS, or both.

Photo Credit: David Lat

Read the full article at: <http://thenextweb.com/shareables/2012/11/07/forget-apps-and-other-useless-startups-these-four-african-girls-have-created-a-pee-powered-generator/>

African girls' pee-powered generator raises questions

By: John Roach, NBC News

A urine-powered generator presented by a group of school-age girls at an innovation fair in Africa is generating buzz as a world-changing breakthrough, but a reality-check with the expert who invented the contraption at the heart of the technology might flush those expectations down the drain.

The contraption in question is an electrolytic cell that converts urea — the main compound in urine besides water — into nitrogen, water and hydrogen.

"What these kids are doing is taking urea electrolysis and making hydrogen and then using that hydrogen to make electricity," Gerardine Botte, a chemical engineer at Ohio University who invented the urea electrolysis process, told NBC News when asked to comment on the generator.

According to information provided on the Maker Faire Africa website about the pee-powered system, one liter of urine provides six hours of electricity, though the site lacks details on how many watts are generated or what that electricity could power for six hours: an iPod or a neighborhood?

Another concern is the implication that the students get more energy out of the urine than they use to prepare it in the first

place. That isn't true, according to Botte.

"It is a high school project, so don't take it [so seriously]," Botte said, adding that the student's work is "empowering" and suggested they work with an engineer to understand the technology and its appropriate applications.

For Botte, the technology is most practical as a way to make the wastewater treatment process more energy efficient.

All wastewater treatment plants consume energy, she explained. Since urea is already being collected by such facilities, Botte says it makes sense to extract hydrogen from it. This in turn can be used to generate electricity, thus reducing the amount of outside energy required to run the wastewater treatment process.

"You will never get more energy out than you put in because you are treating urea ... but it is a unique and elegant way to treat urine waste, which will allow you to co-generate electricity," she said.

Read the full article at: <http://www.nbcnews.com/technology/futureoftech/african-girls-pee-powered-generator-raises-questions-1C6956099>

Best of Both Worlds Power Storage from Graphene Supercapacitors

By: Sarah Rich, EcoGeek

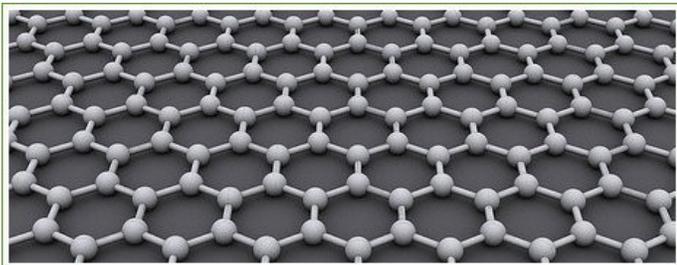


Photo Credit: CC BY-SA 2.0 by CORE-Materials

If UCLA researchers are correct, a new super-charger could transform both the way we power our electronics and recycle their old sources of energy. Bringing together the quick-charging qualities of a capacitor and the energy-holding capacities of a battery, graphene supercapacitors could replace the often toxic batteries we currently use to power our electronics.

Batteries and capacitors are relatively similar devices, functionally speaking. Standard batteries consist of two chemicals that react with each other, separated by a barrier, and have a circuit between them; capacitors are composed of two oppositely charged metal plates, separated by an insulator, with a circuit between them. When electrons flow through the circuits of batteries and capacitors alike they provide electricity. Although capacitors can be charged very quickly, they don't hold nearly as much energy as batteries.

Graphene supercapacitors would solve the energy holding problem of capacitors. Graphene conducts electricity better than any other common substance, and the one-atom thick material has more going for it than capacity: it's also thinner, lighter, and can be turned into cheaper energy-holding devices than batteries. Because it's carbon-based, it's also biodegradable. Considering the care we need to take when disposing of batteries that are often made of toxic metals, how much would it rock to be able to compost our disposable charge holders instead?

Extremely flexible and stronger than steel, graphene has been notoriously difficult to work with, as the Focus Forward video describes. The researchers who won the Nobel Prize in Physics in 2010 for their work with graphene created the substance by carefully peeling graphite with scotch tape--not a method that's easy or quick to replicate. However, researchers at UCLA claim they have found a better method to craft the substance in a delightfully MacGyver-like way: by using a consumer-grade DVD drive. After pouring graphite oxide onto CDs, popping the CDs into the drive and using the drive's laser to beam light on the material, the graphite oxide deoxygenates and becomes graphene. Miles ahead of scotch tape, this DVD drive method produces the essentially two-dimensional material easily and quickly. Imagine what could be done with a machine designed to create sheets of graphene on a larger scale.

Graphene supercapacitors have immense potential to revolutionize the efficiency and environmental-friendliness of our electronics. Especially after listening to the researchers discuss graphene's potential, it's difficult not to be excited for the future of this technology. Graphene supercapacitors could charge electronic devices, but further research will determine just how much these supercapacitors can charge (are electric car charging stations really a possibility?), and if and when they'll be available for consumers. In any case, here's hoping the technology can take off.

Read the full article at: <http://www.ecogeek.org/component/content/article/3847>



A&WMA Eastern Sierra Chapter—Recent and Upcoming Events

By: Sandra Carroll, Eastern Sierra Chapter Vice-Chair

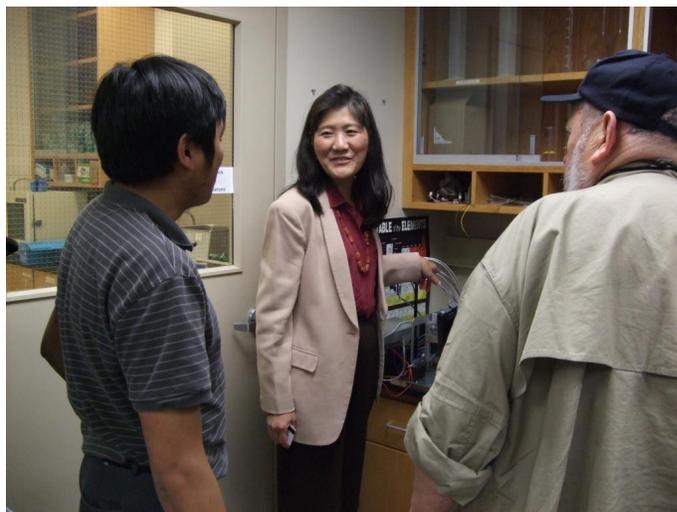
Judith Chow, Sc.D. and Desert Research Institute, Division of Atmospheric Sciences hosted an Eastern Sierra Chapter (ESC) event on April 5, 2013. Dr. Chow presented her latest findings on the "Effects of Black and Organic Carbon and their Emission Inventory Development."

As summarized in her abstract, particulate matter emissions affect the earth's climate, visibility, air pollution, ecosystems, and health. Black and organic carbon are major components of PM_{2.5} and PM₁₀, originate from fossil fuel and biomass combustion, suspended dust, biological material, and atmospheric conversion of volatile organic compounds to particles. Carbonaceous aerosol consists of thousands of specific chemical compounds and morphologies, making it uncertain to measure and model, and creating large uncertainties in predictions of climate change.

Dr. Chow discussed the adverse environmental and health effects of carbonaceous aerosol and uncertainties in the development of carbon emission inventories. Following this discussion, ESC members and colleagues toured the Atmospheric Sciences laboratories.

Upcoming ESC events planned for the remainder of 2013 include:

- Mine Life Cycle – regulatory update, environmental management challenges, and successes highlighted
- Local Measures for Recycling, Pollution Prevention, and Managing the Waste Stream
- Legislative Update – legislator and environmental agency perspectives



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The Air & Waste Management Association (A&WMA) is a nonprofit, non-partisan professional organization that offers individuals a wide array of resources and benefits embodied within the technical and scientific environmental community. Membership benefits include the opportunity for professional development, information exchange, networking opportunities, and public education and outreach. By helping to promote global environmental responsibility, A&WMA hopes to increase the effectiveness of organizations and individuals to make critical decisions that benefit their surrounding communities. These benefits are currently extended to over 8000 environmental professionals in 65 countries. In 2007 A&WMA celebrated its 100th year of providing service to environmental professionals.

For more information and to see how the A&WMA will benefit you, access the links to the following web sites.

<http://www.awma.org/about/index.html>

<http://www.awma.org/join/index.html>



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