



NECHPS Newsletter February 2013

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Thanks to all of our wonderful sponsors for creating such an enjoyable evening for the holiday season!

MedWaves Inc.'s Microwave Ablation Proves Effective in Destroying Thyroid Nodules in German Hospital Patient –

The Department of Nuclear Medicine at the Frankfurt University Hospital recently became the first European hospital to use microwaves to ablate thyroid nodules. The success of the new treatment comes as great news for the nearly 20 percent of Germans who have one or more thyroid nodules. In those over 65 years of age, nearly every second person is affected by a thyroid disorder. The enlargement of the thyroid node can be very unpleasant for those affected, with symptoms including a feeling like a lump in the throat, an unpleasant feeling of pressure, hoarseness and/or chronic coughing. Using microwave ablation rather than surgery has many advantages for the patient. First, the diseased tissue is removed and burned (destroyed) by microwave field irradiation. The process is faster, more efficient and less painful than alternative methods and therefore was implemented in this initial treatment at Frankfurt University Hospital in the Department of Nuclear Medicine, headed by Prof. Frank Grunwald.

Scatter radiation during mammography does not increase risk of cancer –

The radiation dose to areas of the body near the breast during mammography is negligible, or very low, and does not result in an increased risk of cancer, according to a study presented at the annual meeting of the Radiological Society of North America (RSNA). The results suggest that the use of thyroid shields during mammography is unnecessary. "Thyroid shields can impede good mammographic quality and, therefore, are not recommended during mammography," said Alison L. Chetlen, D.O., assistant professor of radiology at Penn State Hershey Medical Center. During mammography, some X-rays scatter away from the primary beam in the breast and spread outward in different directions. Although this scatter radiation is much weaker than the primary beam, there has been concern that women exposed to it during mammography could face an increased risk of cancer, especially in radiosensitive areas like the thyroid gland.

IEEMA Offering Potassium Iodide to Residents within 10 Miles of Nuclear Power Plants –

The Illinois Emergency Management Agency (IEMA) announced plans to begin offering free Potassium Iodide (KI) pills to residents living within a 10-mile radius of the state's six operating nuclear power plants. More than 60,000 homes within the Emergency Planning Zones (EPZs) of each plant soon will receive a voucher that can be redeemed for the pills at participating Walgreens stores. KI is a non-prescription drug used to protect the thyroid from radioactive iodine, which could be released during a nuclear power plant accident. Residents should receive the vouchers in the mail soon. This is the second

time the state of Illinois has distributed KI pills to residents near nuclear power plants. In 2002, the Illinois Department of Nuclear Safety (IDNS) offered KI pills to people living within the EPZs. IDNS merged with IEMA in 2003.

Most patients in the dark about what radiologists do –

The role of radiologists in healthcare has long been poorly understood among the general public, but new research presented at the annual meeting of the Radiological Society of North America (RSNA) shows that even patients who've had imaging exams in the past know little about the profession. Researchers said the study findings highlight an opportunity for radiologists to educate the public about their role in healthcare. "We know from previous studies that about half of the general public doesn't even know that radiologists are physicians," said Peter D. Miller, M.D., radiology resident at the Indiana University School of Medicine in Indianapolis. "In our study, only 53.5 percent of patients who had undergone computed tomography (CT) knew that radiologists were physicians."

Polonium: Marie Curie's Stepchild Discovery, Now In Spotlight As Lethal Weapon –

Polonium-210 is back in the spotlight. The radioisotope first gained notoriety back in 2006, after the death of Alexander Litvinenko, a one-time source for journalists who wanted to know about the inner workings of Russia. Litvinenko, as the BBC tells it, went out to tea with two Russians at a hotel in London in early November of 2006. He drank some tea and by the end of the month he was dead, poisoned it turned out, by a tiny bit of Polonium-210, which decays quickly causing catastrophic damage if inside a human body. Of course, we're talking about it today, because scientists from Switzerland, France and Russia just opened the grave of former Palestinian leader Yasser Arafat, searching for signs of the deadly element. Traces of radioisotope were reportedly found back in July on Arafat's tooth brush and on a urine stain on his underwear. So the natural question arose: Was Arafat murdered? It's an irresistible mystery and Polonium, as a tool for assassins, is just as irresistible.

Guy Builds an X-Ray Backscatter Machine in His Garage, Doesn't Have to Take His Shoes Off –

When most people tackle DIY projects related to airports, it's usually some kind of over-the-top commercial airline simulator. But not Ben Krasnow He took a decidedly different approach by building his own X-ray backscatter machine using various parts found on eBay. The final results aren't quite as instant as the machines deployed by airport security across the country, though. In fact, Ben needs to use a separate digital camera to capture a long-exposure image of an oscilloscope to truly see what something or someone is hiding. But he can rest assured knowing that his holiday guests aren't trying to smuggle any contraband into his home. "I'm sorry ma'am, but you're going to need to throw out that mac and cheese, or squeeze it into an approved container."

Researchers Find Way for African Sleeping Sickness Treatment Using X-Ray Laser –

An international group of scientists working at the Department of Energy's (DOE) SLAC National Accelerator Laboratory has mapped a weak spot in the parasite that causes African sleeping sickness, pinpointing a promising new target for treating a disease that kills tens of thousands of people each year. The results, reported Nov. 29 in Science Express, are already being enlisted in the effort to combat the disease, which is transmitted by tsetse flies infected with the single-celled parasite. The study also marks a milestone in using X-ray lasers, such as SLAC's Linac Coherent Light Source (LCLS), to determine the structures of biological molecules that are important for human health.

Metal nanoparticles may improve cancer treatment –

Research led by RMIT University has shown that cheap, non-toxic nanoparticles can enhance radiotherapy treatments for cancer. An international team of researchers led by RMIT has investigated alternatives to gold nanoparticles, which have been shown to concentrate radiation used to treat cancer but are highly expensive and mildly toxic. Doctoral researcher Mamdooh Alqathami said the team had identified bismuth as an ideal option, with tests showing that enhancing radiotherapy by using nanoparticles containing the heavy metal almost doubled the dose of radiation to surrounding cancerous tissue. "By enhancing radiation in the tumour, doctors may be able to decrease the initial dose of radiotherapy, which will hopefully result in fewer side effects for the patient while having the same impact on the cancer," Mr Alqathami, a researcher in the School of Medical Sciences, said. "Metal nanoparticles have shown promise in improving the efficacy of radiotherapy but there is a need to find cheaper and safer alternatives for therapeutic use.

FDA Widens Irradiation Use for Meat –

In two new rules, FDA is offering additional options to meat and poultry producers who use ionised radiation to kill pathogens in products. In the first rule, Food and Drug Administration (FDA) is amending the food additive regulations to provide for the safe use of a 4.5 kilogray (kGy) maximum absorbed dose of ionising radiation to treat unrefrigerated (as well as refrigerated) uncooked meat, meat byproducts and certain meat food products to reduce levels of foodborne pathogens and extend shelf life. In a second rule, FDA is amending the food additive regulations to increase the maximum dose of ionising radiation permitted in the treatment of poultry products - from 3.0kGy to 4.5kGy - to include specific language intended to clarify the poultry products covered by the regulations, and to remove the limitation that any packaging used during irradiation of poultry shall not exclude oxygen. These actions are in response to a petition filed by the US Department of Agriculture, Food Safety and Inspection Service (USDA/FSIS).

More U.S. Kids Get High-Radiation Scans, Study Says –

Increasing numbers of U.S. children undergo diagnostic imaging tests such as MRIs and CT scans, and higher-radiation tests account for a growing proportion of these procedures, researchers report. Their study of 2001-2009 insurance claims in southern California found that high-radiation procedures, which could raise the risk of cancer years later, are most commonly ordered for hospitalized children or those seen in emergency departments because of abdominal pain, headache and head injury. Overall, physicians affiliated with a pediatric hospital in San Diego ordered 200,000 diagnostic tests using radiation for 63,000 children during the period reviewed, the researchers said. Almost 8,000 of the

children had higher-radiation procedures, such as CT scans, angiography (x-ray of the inside of blood vessels) and/or fluoroscopy (moving images). Older children and boys were more likely than younger kids and girls to undergo these tests, the study said.

Brain Tumors Respond To Diet And Radiation Therapy –

Brain cancer researchers have successfully treated mice with malignant gliomas, a type of aggressive and deadly brain tumor, with a unique combination of radiation therapy and ketogenic diet, a high fat, low carbohydrate and minimal protein regime that forces the body to use fat instead of sugar for energy. Should the approach succeed in human trials, they say the diet could quickly and easily be added to current human brain tumor treatments. The researchers, led by Adrienne C. Scheck, from Barrow Neurological Institute at St. Joseph's Hospital and Medical Center in Phoenix, Arizona, reported the results of using the combination therapy on mice in PLoS ONE. Theirs is thought to be the first study of its kind to look at the effects of the ketogenic diet with radiation. In a press statement released this week, Scheck says their study shows promise for treating human malignant gliomas.

Caltech students invent terahertz chip that gives your phone x-ray vision –

Students at the California Institute of Technology have invented a new chip that spits out terahertz waves at a rate of roughly 300 times per second. What does that mean for consumers? In the not too distant future, you'll be able to buy a phone with a camera that can see through certain materials. Our headline says "x-ray vision", but that's a bit misleading. An x-ray is defined as a wavelength that measures between 0.01 nanometers and 10 nanometers in length. Terahertz waves on the other hand, they're between 1 millimeter and 0.1 millimeters. What are the practical uses of such waves? The students say you'll be able to take a picture of a piece of chicken you're eating and get an accurate measurement of how much fat it contains. Your phone will also be able to identify drugs, explosives, and weapons hidden inside everyday objects. That might not sound too compelling, but then again the internet was invented so universities could easily exchange research papers. Today we have 1080p video streaming, Skype calls, and more social networks than we care to count.

X-Ray Pin-Up Calendar Redefines Beauty And Creepiness At The Same Time –

Forget the next Sports Illustrated Swimsuit Issue or the hot rod pinups calendar you look forward to hanging in your garage every year, now you can see if beauty really is beyond skin deep. A group of sexy models recently posed for full body shots and they did so behind an x-ray machine that captured their inner beauty — literally. The X-ray pin-up calendar is the work of a German advertising company and is likely geared towards radiologists and bone specialists who have nothing better to do than look at sexy women in their "true form." Known as the "bone-bunnies" this group of hot — We assume — models pose in the bone buff and they do it while sporting high heels that show off their toes and the bones that support them. We're not sure what the calendar was suppose to be promoting but the "Got Milk" campaign could learn a little sometime about promoting "healthy bones" through this campaign. The

suggestive poses are still featured front and center with the X-Ray Pin-Up Calendar but this time viewers are forced to use their imagination more than they would with most pin-up calendars.

Cancer Radiation Therapy: Are You Ready for The Next Big Wave? –

Proton Therapy is expected to eventually replace the traditional methods of radiotherapy in the future and thus, holds immense market potential and opportunity for players in the business of radiation therapy, says RNCOS. In the US, around 2 Million people are newly diagnosed with cancer every year. Most oncologists agree that 50-60% of cancer patients require radiation therapy at some point of time in their treatment. Radiation therapy in itself faces severe challenges from the side effects. In such a scenario, Proton therapy is all set to be the next game changer and a real life savior for the patients suffering from cancer in the US. Proton therapy, the latest innovation and the most technologically advanced method in the field of radio-oncology, answers all the problems related to radiation therapy. The technology is expected to eventually replace the traditional methods of radiotherapy in the coming future and thus, holds immense market potential and opportunity for players in the business of radiation therapy.

The secret to longevity: Wine and radioactivity –

The people on the Greek island of Ikaria live 10 years longer than other westerners. Most ninety-year-olds are sexually active there. Opa! Is it the water or the wine? It's possibly both. Stamatis Moraitis, who's 98-years-young, opts for the wine explanation. Not any wine, though. He likes the local stuff. Speaking to the BBC, the Ikarian attributes longevity to the unadulterated vino he and his fellow islanders produce. "The wine they make commercially has preservatives," he says. "That's no good. But this wine we make ourselves is pure." He'd have as good a sense for the answer as anyone. Moraitis used to live in the U.S. He returned to his native land to die 45 years ago after American doctors diagnosed terminal lung cancer and gave him 9 months to live. The wine has certainly done him no harm. What about the water? Ikaria, off the coast of Turkey, is known for hot springs. Many people associate thermal baths with health benefits, but there's an unusual quality that might be making Ikaria's wet stuff the elixir of life: it's radioactive.

Look for announcements of a special DOT training in the spring!

Our annual meeting will be in June. More information to follow.