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help is needed [to attract] the first customer."

### A green DOE?

Some help may come from the US Department of Energy. In its 2011 budget, DOE plans to offer up to \$54 billion in loan guarantees to reactor builders, and it has doubled its spending on SMRs. Now DOE is considering providing money to commission an SMR.

Oak Ridge National Laboratory (ORNL) is the largest producer of carbon dioxide emissions in the DOE complex, due to its reliance on two fossil-fuel plants to produce power for its many energy-intensive programs, one of which is the Spallation Neutron Source. This month, TVA is considering whether Clinch River, Tennessee, the home of a failed fast breeder reactor

near ORNL, might host an SMR—most likely an mPower design—to replace the two fossil-fuel plants. Either ORNL would pay for the power from the reactor in advance (a lump sum to help start construction), or Congress, which controls TVA, would raise the TVA debt ceiling to finance the reactor. Once the order is placed, the NRC can start licensing work on the design. In that case, the plant could be built by 2020, just in time for DOE to make the Obama administration's deadline for cutting its CO<sub>2</sub> emissions by 28%. "There aren't many solutions for this country if we want to do something about climate change," says Michael Shepherd, Babcock and Wilcox vice president for business development. "Nuclear power is one of them."

Paul Guinnessy

## Physicist uncovers dictionary error

**Do you know** how a siphon works? If your source was a dictionary, you probably have it wrong. Now though, prompted by physicist Stephen Hughes of Queensland University of Technology in Brisbane, Australia, the Oxford English Dictionary (OED), for one, plans to revise its definition of siphon.

Hughes was visiting family in South Australia a couple of years ago when he heard about an effort to resuscitate a lake by siphoning water into it. Over the course of 50 days some 10 billion liters of water—with fish—flowed into the lake through 18 pipes 28 centimeters in

diameter, raising the water level by about two-thirds of a meter, or close to half of what had been lost via evaporation during a drought. "Most people are familiar with getting petrol out of a car or emptying a fish tank. But this was on an epic scale," says Hughes, who, after visiting the site, set about performing experiments and writing an educational paper on siphoning.

In the process, Hughes noticed that the OED defined a siphon as "a pipe . . . bent so that one leg is longer than the other, and used for drawing off liquids by means of atmospheric pressure,

STEPHEN HUGHES



**Siphoning 10 billion liters** of water from the Murray River saved South Australia's Lake Bonney (lower channel) from drying up.

which forces the liquid up the shorter leg and over the bend in the pipe." Hughes was "stunned that there was no mention whatsoever of gravity." Flow in a siphon is driven by the hydrostatic pressure difference due to the greater weight of the liquid in the longer leg. Further searching turned up many dictionaries with the same misconception, and only one, the Oxford Dictionary of English, that had it right, says Hughes. His paper, which aims to set the record straight, was published in *Physics Education* this past spring.

The 99-year-old OED definition reflects "accepted science" from its time, says Alan Hughes, an OED associate editor (not related to the physicist) who deals with scientific terms and maintains that scientists still dispute how a siphon works. A provisional revised definition slated to be published later this year "will just say what [a siphon] is and what it does," he says. A note in smaller type will refer to two possibilities for how a siphon works. "While scientists are disagreeing, I think we shouldn't commit ourselves to one particular method," says Hughes.

"When something gets into the newspapers worldwide," says the OED's Hughes, "we do take note of it. It would be embarrassing to keep the 1911 definition when a number of scientists say it is wrong." The second edition of the OED, published in 1989, is currently being reviewed, he adds. "We are at the end of the letter *r*, having started at *m*." Completing the revision could take another 20 or 30 years. "That's the advantage of having an online version of the dictionary. We publish a further chunk of revised text

every three months." Because of the public interest, he says, "'siphon' will be among the definitions we revise out of sequence."

Toni Feder

## news notes

### MIT dean is named to head NSF.

Subra Suresh, dean of engineering at MIT since 2007, was nominated by President Obama on 3 June to succeed Arden Bement, who resigned after six years as director of NSF. Suresh led MIT's materials science and engineering department

from 2000 to 2006. During his tenure as dean, in 2009 MIT's engineering department for the first time hired more women than men as new faculty. His research interests include nanotechnology and the life sciences; most recently



Suresh

he has done extensive work on the nanobiomechanical properties of red blood cells. Suresh's appointment is subject to Senate confirmation; at press time, no hearing had been scheduled by the Committee on Health, Education, Labor, and Pensions, which has jurisdiction over NSF. Bement, who was appointed by President George W. Bush, left NSF with a few months remaining on his six-year appointment and returned to Purdue University, where he is setting up a center on science policy.

DK ■

## web watch

To suggest topics or sites for Web Watch, please visit <http://www.physicstoday.org/suggestwebwatch.html>. Compiled and edited by Charles Day

<http://www.ostina.org/content/view/4914/1292>

**Bridges** is an online magazine published by the Office of Science and Technology at Austria's embassy in Washington, DC. Among the articles in the current issue is a report by OST staffer Caroline Adenberger on North Korea's first international university, Pyongyang University of Science and Technology.

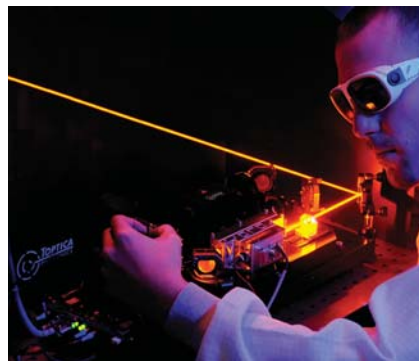


<http://www.nndc.bnl.gov/>

The **National Nuclear Data Center** at Brookhaven National Laboratory provides a clearinghouse for collision cross sections, half-lives, and other nuclear data. The center also maintains a searchable database of papers drawn from 80 journals.

<http://www.cancer.gov/cancertopics/factsheet/Therapy/radiation>

Radiation therapy can be as scary to some people as the cancer it's intended to treat. The National Cancer Institute has put together a guide, **Radiation Therapy for Cancer: Questions and Answers**, which explains the various kinds of radiation therapy and how they work.



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