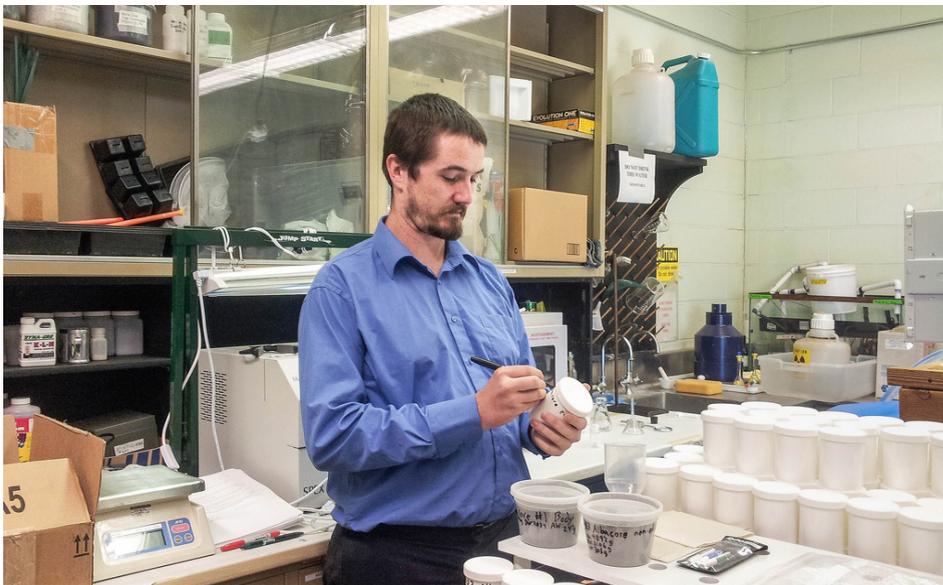


# THE Neutron

Fall 2012

## Pacific albacore carry barely detectable fingerprints of Fukushima disaster



Delvan Neville, a graduate researcher with OSU's Radiation Health Physics program, marks samples of albacore being tested for radioactivity. Photo courtesy of OSU Radiation Health Physics program

[Story by Pat Kight, Oregon Sea Grant]

CORVALLIS, Ore. – Samples of albacore tuna caught off the West Coast of the United States show minute traces of radiation that can be traced to the Fukushima reactor disaster, according to an interdisciplinary team of scientists from Oregon State University and the National Oceanic and Atmospheric Administration.

The radiation levels in fish analyzed to date are far below anything that would pose a risk

to humans who consume the fish, the research team emphasized. The findings are preliminary; additional fish remain to be tested.

But the findings could reveal new information about where Pacific albacore travel during their migratory lives – and how what happens in one part of the ocean can affect the food web thousands of miles away.

The team has collected and tested fish caught off the U.S. West Coast both before and after the devastating March 2011 Japanese tsunami and subsequent

release of radioactive material into the ocean by the Fukushima Daiichi nuclear reactor.

“We’re still processing new fish, but so far the radiation we’re detecting is far below the level of concern for human safety,” said Delvan Neville, a graduate researcher with OSU’s Radiation Health Physics program and a co-investigator on the project.

People are constantly exposed to radiation from the natural environment, Neville pointed out. “To increase their normal annual dosage of radiation by just 1 percent, a person would have to eat more than 4,000 pounds of the highest (radiation) level albacore we’ve seen.”

Neville will present the team’s preliminary findings on Oct. 27 at the Heceta Head Coastal Conference in Florence. Richard Brodeur, the NOAA Northwest Fisheries Science Center biologist who serves as lead investigator on the

## Matt MacDougall, 2012 WISE Intern, Studied Nuclear Waste Policy during his summer in Washington D.C.

Matt MacDougall, a senior nuclear engineering student from OSU, was selected for the Washington Internship for Students of Engineering (WISE) program. Each summer the WISE gives students exposure to national engineering policy.

“Each student is sponsored by a professional organization, so myself and another student were sponsored by American Nuclear Society,” MacDougall said. “We spend the summer researching an engineering related policy and then write a paper and give a presentation.”

ANS provided MacDougall and another sponsored intern with living expenses, a stipend, and office space to conduct their summer research for the policy paper.

MacDougall chose to examine how the United States manages spent nuclear fuel. His paper, “Management of Spent Nuclear Fuel,” is available online at [www.wise-intern.org](http://www.wise-intern.org).

In addition to the research the WISE students met with government representative from their home states and major figures in the nuclear policy in Washington.

“This was a huge opportunity for networking,” MacDougall said, “All of the interns came home with a huge stack of business cards from contacts that we had made.”

Learn more about the WISE program and MacDougall’s participation by visiting [ne.oregonstate.edu](http://ne.oregonstate.edu).



Matt MacDougall and the other WISE interns pose in front of the Capitol Building in Washington D.C.

(continued from page one)

project, reported the same findings to the recent annual meeting of PICES, the North Pacific Marine Science Organization, in Japan. The researchers also plan scientific journal articles.

The OSU team’s findings are consistent with those of California researchers who announced in May that they had found traces of Fukushima-linked radionuclides in bluefin tuna caught off the California coast. The bluefin news came as a surprise to the scientific and regulatory community. Shortly after the March 2011 Japanese tsunami and reactor disaster, the U.S. Environmental Protection Agency, Food and Drug Administration and NOAA jointly expressed “high confidence” in the safety of U.S. seafood products, suggesting it was unlikely that migratory fish such as tuna would be contaminated to “significantly elevated radiation levels.”

The researchers first identified two Fukushima-linked isotopes – Cesium-137 (Cs-137) and Cesium-134 (Cs-134) – this July, in samples of fish caught and frozen in 2011.

This particular combination of radioactive isotopes is produced by fission in nuclear reactors, and less commonly, nuclear weapons. Cs-134, in particular, is considered key to the Fukushima nuclear “fingerprint” because it decays very rapidly, with a half-life of just more than two years. While Cs-137, which persists for decades in the environment, could come from other possible sources, scientists say, the Cs-134 could only have come from the Fukushima reactors.

As more fish were tested, the results were consistent with the initial findings: No Cs-134 in fish caught before the disaster, but traces of the isotope in a significant number of fish caught since.

Read the full story at [ne.oregonstate.edu](http://ne.oregonstate.edu)

## HTTF Installation Set to Begin thermal hydraulics faculty compete for space

After nearly six years in development the High Temperature Test Facility is ready to be installed at the Radiation Center. The 1:64 scale model of a high temperature gas reactor is the brainchild of OSU Associate Professor, Dr. Brian Woods.

“We originally started with a much smaller design in mind,” Woods said, “but after about a year in design development we realized we needed a bigger facility.” The increase in scale added another 18 months to the project and delays in the installation process added another year and a half.

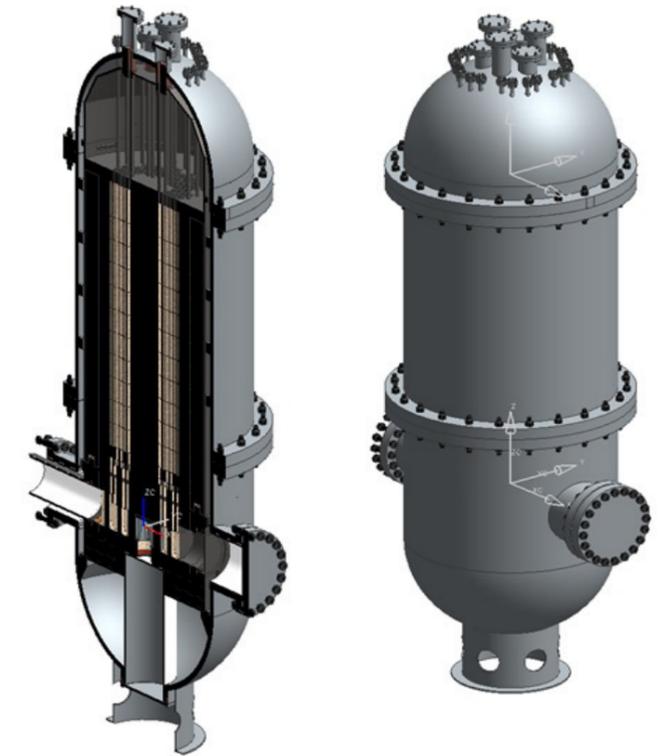
Now with an installation vendor chosen, work is set to begin in December with the installation completed sometime in January. The HTTF installation will share space in the Advanced Nuclear Engineering Systems Laboratory (ANSEL) with Dr. Wade Marcum’s Hydro-Mechanical Test Facility (HMFTF).

Researchers accustomed to the spaciousness of ANSEL will soon find themselves competing for space as HTTF dwarfs its lab mate facility in both physical size and funding, according to Marcum.

All told there is approximately \$4.14 million invested in HMFTF compared to the \$4.847 million it took to complete HTTF bringing the total value of ANSEL to \$9.8 million. The addition of another test facility in the building will make working conditions cramped, although not impossible.

“The ANSEL facility has a high-dollar price tag and houses two of the most high profile nuclear engineering facilities we have right now,” said department head Kathryn Higley. “Professor Woods and has done a remarkable job with his project from conceptualization, design and now to installation. We’re very proud to have these thermal hydraulic facilities at OSU and look forward to the knowledge we’ll gain through them.”

Woods plans to investigate simulated accidents with the HTTF model, and validate and modify the computer programs used to run the tests. “There are no high temperature gas reactors currently operating the U.S. and their needs to be more research done before designs can be approved,” Woods said.



An illustration of a component of the High Temperature Test Facility to be installed in the Radiation Center beginning in December.

### Upcoming Department Events:

Jan. 28 – ANS Winter Conference Awards Banquet and Beach Party

Look for us in the Spring Issue of the Oregon Stater, College of Engineering alumni will receive a special section insert that will include stories and features from COE.



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## We're hiring a new faculty member for fall 2013

We're hiring a new faculty member for Fall 2013. While the details are to be announced, we will be accepting applications for qualified candidates in:

- Nuclear engineering/computational physics
- Nuclear materials (computational or experimental)
- Medical physics (therapeutic, diagnostic, or nuclear medicine)
- Radiochemistry

We'll be selecting the best overall candidates from the applicant pool. If you're interested and would like to receive the job listing as soon as it posts please visit [ne.oregonstate.edu/jobs](http://ne.oregonstate.edu/jobs) and sign up for our mailing list to receive the announcement by email.

