

# Fukushima officials visit Starkville to learn about MSU's testing of filters to contain radioactive materials

July 28, 2017



(//www.msstate.edu/sites/www.msstate.edu/files/ICET\_20170727\_B5W4505\_0.jpg)

MSU Institute for Clean Energy Technology Director Charles Waggoner (right) explains ICET's filter testing capabilities to visitors from Japan. (Photo by Beth Wynn)

Contact: James Carskadon (mailto:jcarskadon@opa.msstate.edu)

STARKVILLE, Miss.—Officials and engineers tasked with preventing the release of radioactive material during debris removal from the Fukushima nuclear site in Japan are visiting Mississippi State University this week to learn about the university's expertise in evaluating components of radioactive containment systems.

MSU's Institute for Clean Energy Technology is the international leader in evaluating the performance of high-efficiency particulate air (HEPA) filtration systems used in nuclear power plants. ICET Director Charles Waggoner said HEPA filters, which are used in nuclear power plants' containment ventilation systems, prevent the release of air with radioactive material into the atmosphere.

The Fukushima Daiichi Nuclear Power Plant was damaged in March 2011 by a tsunami that followed an earthquake. The team of engineers visiting ICET is responsible for designing the containment ventilation systems for the damaged reactors before the containment vessels can be breached to begin debris removal.

"Much of the world's population is aware of what happened at Fukushima. Of the four reactors, three suffered a core meltdown," Waggoner said. "They are at the point of trying to determine how to breach the containment vessel in order to start to retrieve the radioactive debris from the core melting down. That material will be highly radioactive and the process that will be used will also produce aerosols. The way you remove radioactive aerosols from an airstream is to, among other things, use HEPA filters at the end of the treatment train. They're here because of our ability to evaluate the performance capabilities of HEPA filters under very adverse conditions."

The six visitors from Japan each represent one of the organizations collaborating on the design of processes and infrastructure to remove materials from the damaged reactors. The group is led by Osamu Seki of the International Research Institute for Nuclear Decommissioning.

"It is indispensable to use the HEPA filters because from now on they will help get rid of the debris from the failed nuclear plant," Seki said. "It is very important to ventilate the air, which is why the HEPA filters are indispensable to this whole process. We want to learn more about the knowledge and expertise the MSU researchers have accumulated. We also want to build a continuous relationship so we can learn more and help solve our problems."

ICET, a unit of MSU's Bagley College of Engineering and a part of MSU's Energy Institute, has been working with the U.S. Department of Energy for almost 20 years to develop the capability of testing filters under worst-case scenario conditions. Jaime Rickert, ICET's research program manager and quality assurance manager,

implemented a nuclear quality assurance program at ICET that meets Department of Energy standards. Data gathered by ICET researchers is used by the Department of Energy to determine what, if any, changes need to be made to filters at nuclear facilities.

“We provide testing data to the Department of Energy that meets their most stringent quality assurance standards, so they can then go to nuclear facilities using these filters and say, ‘yes, these filters are good for your facility,’ or, ‘we may need to adjust the conditions they’re being used in,’” Rickert said. “ICET’s nuclear quality assurance program, which has been audited and approved by the Department of Energy, ensures that they have the data to support any changes that need to be made.”

The visiting officials from Japan also will visit the Hanford Site in Washington State to discuss design considerations and the use of HEPA filters in the Waste Treatment and Immobilization Plant.

For more on MSU’s Institute for Clean Energy Technology, visit [www.icet.msstate.edu](http://www.icet.msstate.edu) (<http://www.icet.msstate.edu>).

MSU is Mississippi’s leading university, available online at [www.msstate.edu](http://www.msstate.edu) (<http://www.msstate.edu>).