

DOE project to evaluate safety of transporting used nuclear fuel

December 1 2016

With more than 74,000 metric tons of used nuclear fuel stored at locations around the United States, ensuring the safety of moving it to more secure disposal sites is a top federal priority.

A University of Houston engineer will lead a \$3 million, multi-institution effort to develop monitoring techniques to ensure the nuclear materials remain stable during transit under both normal conditions and in case of an accident.

The project, part of the U.S. Department of Energy's Nuclear Energy University Programs, will involve researchers from the University of Houston and five other organizations: the University of Illinois at Urbana-Champaign, the University of Southern California, the University of Minnesota, Pacific Northwest National Laboratory and Anatech Corporation.

The goal, said Kaspar Willam, Hugh Roy and Lillie Cranz Cullen Distinguished Professor of civil and environmental engineering at UH, is to ensure spent [nuclear fuel](#) can be safely transported from temporary storage at nuclear plants around the country to interim storage sites that will be designated by the Energy Department, and eventually to permanent storage. No permanent disposal site has been approved.

Willam, principal investigator for the grant, said more used nuclear fuel, encased in high-performance steel casks, is expected to be moved to the interim storage sites once the safety of transporting the casks - huge

enclosures, measuring as much as 25 feet in length, with the fuel rods held in place by a grid - has been established.

The spent fuel has been cooled at the [nuclear power plants](#) where it was used before being packed into the casks. "Under normal transport conditions, there will be no problem," Willam said.

He and other researchers will consider both what happens to the spent fuel in case of an accident - a train carrying the fuel casks derails, for example, or a cask falls from a truck - as well as during the routine jostling that occurs in the course of cross-country transport.

"The idea is to investigate the unexpected issues of transporting the nuclear casks," Willam said.

Each member institution will take on a different component.

Willam, a member of the National Academy of Engineering and an expert in infrastructure and structural integrity, will study structural issues, including the effect of unanticipated translateral movement. Nuclear engineers at the University of Illinois at Urbana-Champaign will perform risk analysis, including the risk of a temperature increase if the rods came into contact with one another. Other team members will explore new sensing techniques to detect changes in the internal composition of the rods and various uncertainty probabilities - what could happen, and how likely it is to happen.

Provided by University of Houston

Citation: DOE project to evaluate safety of transporting used nuclear fuel (2016, December 1) retrieved 2 May 2024 from <https://phys.org/news/2016-12-doe-safety-nuclear-fuel.html>

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