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Isotope shortage hurts Mac research

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A major isotope shortage is damaging McMaster University neutron beam research and preventing students from getting proper training, says professor Maikel Rheinstadter.

And if no plans are made to replace the Chalk River reactor soon, Canada is under threat of a massive brain drain to the United States, he added.

"Many scientists here were badly hit by the shutdown," said Rheinstadter of a handful of reactors closed for maintenance in March and last May.

"We cannot provide the training that is needed for the students."

Before the closures, Mac students did about five experiments a year using Chalk River neutron beams -- work needed to complete master's and PhD programs.

Now, they're down to about one per year and have to travel to Europe or the U.S. for them, said the Mac physics and astronomy professor.

Along with isotopes, reactors produce intense neutron beams. Neutron beam researchers examine molecule and biological membrane structures. Some study proteins in drug enhancers, for example, to learn how to manipulate them to make better medicine.

McMaster has its own reactor, but it's small and doesn't produce enough beams for all university researchers, Rheinstadter said.

"We urgently need to see the NRU get back to work. This is very important for the isotopes of course, but also for the neutron science in Canada."

Three nuclear reactors were shut down for maintenance in March.

Canada's NRU reactor in Chalk River has been closed since May and repairs are costing \$11 million a month, on top of the \$72 million set aside for the work. Its licence expires in 2016.

Chalk River's reopening has been pushed back several times -- it is now slated for July -- and some top researchers are starting to leave.

Some 700 people across Canada study neutron beams, Rheinstadter said.

"People have started to leave -- highly recognized scientists," he said.

"It's not just losing those people. You lose a lot of expertise; you lose all the training for the next generation."

It's difficult to get people back, he added, because the U.S. and Europe have powerful neutron sources -- something Canada used to be known for just a year ago.

The federal government must create a long-term plan for neutrons in Canada, Rheinstadter said.

"This plan must include the McMaster reactor. What happens to Chalk River after 2016?" he said.

"They (could) let all this knowledge, all this expertise, go away and die."

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