

Studying impacts of indoor air pollution on tribal communities

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The U.S. Environmental Protection Agency (EPA) today announced that environmental health scientist Richard Peltier of the University of Massachusetts Amherst School of Public Health and Health Sciences (SPHHS) will receive a three-year, \$700,000 Science to Achieve Results (STAR) grant to measure indoor air quality in tents used by Native subsistence hunters in subarctic North America to determine possible health effects of wood smoke exposure and to provide culturally-relevant recommendations for mitigation.

Peltier, who will lead one of the few [environmental health](#) science teams qualified to do this research, says the research has observational and intervention components, and partners with First Nation members in community-based participatory research. The study, which starts in September, aims to provide information on the effectiveness of various emissions mitigation methods and to improve understanding of multipollutant emissions from burning various types of biomass indoors.

The UMass Amherst researcher, in collaboration with colleagues at the University of Toronto and Ryerson University, Toronto, will recruit study participants from among First Nation Omushkego Cree members who live at Fort Albany, Ontario, on the shores of James Bay. Whole families may travel hundreds of kilometers to remote areas as they follow the wild ducks and geese, where subsistence harvesting for James Bay Cree remains an integral part of their culture and tradition. Men hunt waterfowl in both fall and spring, and the harvested game are smoked in tents by community members.

There is a social component to the smoking process, which can last from hours to days, Peltier says. Families socialize in the tents and elders teach younger people their traditional food preservation methods. In addition to the meat smoking process, the family groups burn wood to heat their tents and are exposed to "extraordinary levels" of [air pollution](#) for the two- to six-week hunting periods twice each year, he adds.

The researcher says, "It is important to recognize the importance of these culturally-relevant activities to these community members, but we also recognize that some of these activities may lead to significant health concerns. We hope our efforts identify relatively easy-to-use techniques to reduce exposures to [indoor air](#) pollution, while protecting traditional life ways."

The scientists will not only analyze particulate matter and trace gases in the indoor air, but will collect lung function and blood pressure data from the people. They will also carry out blood tests for inflammation markers and urine tests for metabolites of wood smoke in study participants at three points: baseline as the study begins, during both fall and spring hunting seasons while the people are using traditional wood and biomass fuel, and finally during fall and spring hunting with the people using propane to heat their tents.

Switching to propane is not the only option for reducing [indoor air pollution](#) the scientists will be exploring with the native hunters, Peltier explains. Their own traditional practices include burning downed trees first and removing bark from trees before burning the wood, both of which lead to cleaner burning and could be re-adopted by family groups hunting today.

And, while the study will be based in Canada, the activities involved are qualitatively very similar to living conditions and food preservation techniques used by Native Americans in the United States, Peltier says.

"Our results should very much be translatable," he points out.

SPHHS Dean Marjorie Aelion says, "Rick Peltier is a unique researcher. He is an excellent environmental chemist who uses advanced and innovative analytical instrumentation, and applies his research to real-world [public health](#) settings. As a result his research will have direct positive impact on the health and wellbeing of the communities with whom he works. This type of research is at the core of the mission and vision of UMass Amherst's School of Public Health and Health Sciences."

Provided by University of Massachusetts Amherst

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