

# Environmental Engineering Graduate Seminar

October 31, 2016, 3-4 PM  
Great Lakes Research Center Room 202

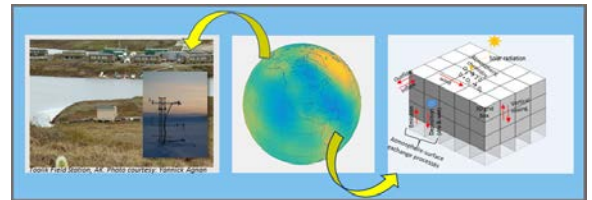
## Analysis of geosynthetic membrane caps for remediation of a former manufactured gas plant site- Kristen Jung, Dept. Civil & Environmental Engineering, Michigan Technological University

Manufactured gas plants (MGPs) provided energy to the US in the late 19th and early 20th century, but today are mostly known for the environmental impacts resulting from the improper disposal of waste products. Barr Engineering is currently designing a remediation plan for a particularly challenging former MGP site in Michigan, which includes evaluating various types of cap materials to prevent future contamination. Both traditional geomembranes, geosynthetic clay liners, and innovative technologies were analyzed for compatibility with site constraints and ability to achieve the remedial goals.



## Improvements in mercury atmosphere-surface exchange parameterizations for chemical transport models- Tanvir Kahn, Dept. Civil & Environmental Engineering, Michigan Technological University

Adequate parameterization of atmosphere-surface exchange processes of gaseous elemental mercury ( $Hg^0$ ) is an essential component of chemical transport models (CTMs) to better simulate the biogeochemical cycling of mercury. In most CTMs, the existing atmosphere-surface exchange parameterization of  $Hg^0$  has large uncertainties and lacks evaluation against field observations. Here, we evaluate the performance of existing parameterizations by comparing modeled net exchange fluxes of  $Hg^0$  to the measured exchange fluxes in two terrestrial ecosystems. We propose that the existing parameterization overestimates plant uptake of  $Hg^0$ , and does not capture a measured nighttime net deposition.



## Challenges for fuel cell vehicles from an environmental perspective- Mike Li, Department of Mechanical Engineering, Michigan Technological University

Fuel Cell Vehicles (FCV), as electric vehicles, have the potential to significantly reduce dependence on petrol and lower harmful emissions that contribute to climate change. Moreover, hydrogen, as the common type of power source for fuel cells, offers FCVs the ability to fast fully refuel within minutes, which cannot be even imagined in electric vehicles. Having vehicles like the Toyota Mirai, it seems like we are one more step closer to the future vehicles. However, several challenges still exist. Let's see what we need to come through before we can finally touch the future, from an environmental perspective.

