

**The DePue Student Environmental Group**  
**Siemens “We Can Change the World Challenge” (High School Competition)**  
2013-14

The Student Environmental Group at DePue High School has embarked on this year’s Siemens, “We Can Change the World Challenge.” Last year the group received recognition as a national finalist. They were also the only finalists from Illinois. The project involved encapsulating lake sludge, with paraffin wax, as a means to sequester, or remove the potential for heavy metals re-introduction into lake or stream waters. The study site focus was Lake DePue, located proximally to the Village of DePue. The students were involved in both field and lab studies.

This year the group has selected two projects designed by two different teams. The *Encapsulators’* project is a variation of last year’s encapsulation of heavy metals. This year the project team determined to examine potential encapsulation of phosphorus and phosphate compounds, in pond and lake environments, using polyurethane. Phosphate compounds, from phosphorus, can enter aquatic environments from many sources. The most recognized source is phosphates from detergents and fertilizers that enter rivers, streams and lake systems through runoff. Accumulation of phosphates in lakes and ponds results in algal blooms and accelerated plant growth. The end result is depletion in dissolved oxygen in the water, and a change in the ecosystem. Oligotrophic lakes (clearer, deeper, fish supporting lakes), will move to eutrophic conditions, (cloudier, shallower conditions supporting fewer fish, and more, smaller vertebrate, and invertebrate organisms), as more organic material accumulates and oxygen levels continue decreasing. So much for a brief description! This ecological succession in Lake DePue may be of significant economic impact for the Village of DePue

The *Thermonators’* project examines spent plastics as a possible home fuel source. This technology exists at larger, industrial levels. We are all huge proponents of the 3 R’s, but we are becoming buried under plastics, including the zillions of plastic bottles we produce and consume yearly. Imagine if homeowners could use their over-run of plastic recycle as a fuel source for the home. This is the vision of this project. The project team is working on prototype heater designs that may make this possible. This project is a great challenge, but it is always fun to work with fire...safely of course! This is a no explosion zone! The team has developed a design that they will be testing.

Please support our efforts. The projects involve a great deal of effort, time, and resources. Ask a student about the project.

**Siemens Challenge Participants:** Jacob Aden, Adilene Gavina, Servando Moreno,

Alejandro Villalobos, & James Yundt, Mentor Keith Garcia