

PROJECT ABSTRACT: IPRO 345

Objective:

The purpose of IPRO 345 was to review the background and remediation technologies for Polychlorinated Biphenyls (PCB) and to design and simulate a process for remediating PCB contaminated soils.

Organization:

The IPRO 345 team was divided into two sub-teams for the majority of the semester with the overall team leader as liaison between the two teams. These two teams were the organization sub-team and the design sub-team and each one had a sub-team leader. The design sub-team was responsible for using the research data to design a plant that will fulfill the project requirements. The organization sub-team was responsible for organizing and compiling data as well as managing the creation of deliverables such as the Mid-Term Report, Poster, Executive Summary, and Final Report and Presentation.

Key Accomplishments

1. The team identified five possible remediation methods and selected one based on several factors
2. We studied the background, health effects, chemical properties, physical properties, and regulation of polychlorinated byphenyls.
3. Novel design incorporating flat-bed trucks and parts that can be assembled and carried to each site.

Critical barriers and obstacles encountered

We started out with a team where none of the members knew anything about PCB. However we did a lot of research and also consulted with two professionals with industrial experience. It was very important that we obtained as much information as possible to be able to make an informed decision about the best remediation method. Most of our research was done via the internet, technical articles and journals. We also encountered an obstacle when it came time to simulate the process. The HYSIS simulation environment to be used did not have Sand or PCB in its database of components. The team overcame this obstacle by creating Sand and PCB using various physical properties. It took almost half a day of continuous work to manipulate the inner workings of HYSIS!

Summary of results

After clean-up, only 1% of PCB will remain in the soil. The plant can be transported to each site to be treated and flat bed trucks will be used to achieve this purpose. The annual cost of running the plant will be \$50.5 million.

Next steps

There are cost-saving opportunities in using the recycle stream to the furnace. The IPRO 345 team still needs to vary certain design parameter to determine an optimum between cost and energy savings.

Team Members

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