Turning the Pages Towards Sustainable Paper Production

On April 19, 2011, a roundtable was hosted by the New York State Pollution Prevention Institute (NYSP2I), CITEC and Clarkson University specifically targeting and paper manufacturers in New York State. The roundtable was an in-person event held at the Adirondack Lodge at Clarkson University, where multiple manufacturers from the industry shared in discussing various topics of interest and the environmental issues they are facing. Another roundtable with manufacturers is being planned for early April 2012.

Since the roundtable, NYSP2I and its partners have met regularly to identify areas of opportunity, next steps, and implement action plans in an effort to assist the pulp and paper manufacturers with priority issues they identified.

Since the roundtable in April, the following topics have been investigated by NYSP2I and Clarkson for potential action:

CURRENT PROJECTS:

1. Removing tannins from river water to reduce reliance on municipal water supply.
   An upstate company was hoping to reduce cost by switching from purchased municipal water to withdrawing river water for use in the papermaking process. Tannins in the river water were preventing this change so removal techniques were investigated including nano-filtration and reverse osmosis. It was determined that nano-filtration would remove the tannins from the river water more effectively and efficiently. A report of the findings enabled a data-based decision for the best water sourcing options.

2. Reducing nitrates and other environmental impacts.
   NYSP2I is working with one paper manufacturer to reduce nitrate compounds from wastewater which in turn could potentially reduce other environmental impacts, including wastewater discharges, treatment chemicals and sludge waste.

3. Converting paper mill sludge to #6 fuel oil.
   Sludge waste has been identified as an environmental opportunity for almost all pulp and paper manufacturers. An analysis is being conducted on how to convert paper mill sludge into #6 fuel oil. A more robust reactor was needed to proceed...
beyond the preliminary initial stage of conversion. A new reactor that works under greater pressure and higher temperatures has been procured and analysis continues. Many of the roundtable attendees have donated sludge for this conversion.

POTENTIAL PROJECTS:

1. Finding opportunities to reduce energy consumption.
An energy audit was conducted by a NYSP2I Partner, CITEC, at a paper manufacturing facility to identify areas for potential energy conservation. While visiting the site for the audit, other opportunities for recovering water, and therefore possibly energy, were discussed. Further research may be conducted by NYSP2I to filter water from process equipment for reuse which may reduce the amount of energy required to heat river water used in the paper making process. NYSP2I has received a grant from the EPA that makes funding of further analysis of this issue possible.

2. Separating ink from diatomaceous earth filtration media.
Diatomaceous earth filtration media are currently being used to collect waste ink which ends up in the landfill. A process that may prove very effective in removing the ink from the substrate is being researched.

A new start-up packaging company is producing “form fit” packaging using mushrooms as an alternative to Styrofoam. The company believes they may be able to use paper sludge as a “soil” or growing media for the mushrooms. Research continues to identify appropriate organic waste sources for the growing media.

A future project may be to investigate the potential for using paper sludge as an aggregate in concrete. Research has yet to commence on this topic.

5. Removing latex from brokes and other paper waste.
Some paper makers raised concern about removing latex from brokes and other paper waste so that the paper can be reused. A process has been identified to release chemicals that have been embedded in paper. This process may also be effective in dealing with latex removal from paper. Testing has not commenced.

Resource Identified:
Many companies are looking for a way to get their sludge chemically analyzed. Soiltest, a firm in Wisconsin, will do the analysis for less than $300. Their contact is Brent Thyssen; phone number is 1-800-764-1622. The analysis of one sludge sample was quite thorough and aided in determining the properties of the paper sludge that was being used in research projects like the #6 oil project mentioned above.

Since the roundtable, a lot of discussion and work has been conducted. We hope to continue working on the issues presented by the paper manufacturers and to hold another roundtable in early April 2012 with an expanded group of NYS paper manufacturers. We hope you will join us! Until then, we welcome you to contact NYSP2I with questions, additional topics, concerns or ideas.