

National Pollution Prevention Roundtable
Tribal P2 Workgroup Conference Call
Date: Tuesday, January 19, 2010
Time: 2 pm EDT, 1 pm CDT, Noon MDT, 11am PDT, 10am AKST
Call in Number: 888-296-6500; Passcode 547845

Title: Algal Biomass Production

1) Introductions

Garrett Smith, EPA Reg I

David Jaber, co-chair

Myla Kelly, Peaks to Prairies

Jean McGinnis, Mohegan Tribe

Laura Cook, Poarch Creek Band of Creek Indians

Steve Crawford, Passamaquoddy Tribe at Pleasant Point

Mark Aaron, Salt River Pima-Maricopa Indian Community

Patricia Young, Tetlin Village Council

David Jaber, Indigenous Permaculture

Marilyn Epley, Tonkawa Tribe of Oklahoma

Monte Davis, Match-e-be-nash-she-wish Band of Potawatomi Indians of Michigan

Char Spruce, Keweenaw Bay Indian Community

Stan Harris, Mashantucket Pequot

Kevin Greenleaf, Kootenai Tribe

+ approx 15 others

2) Guest Speaker: Steve Crawford, Passamaquoddy Tribe at Pleasant Point

stevecrawford@maine.rr.com

Steve gave a presentation on the efforts of the tribe to become 100% self-sufficient by using tidal, wind, and geothermal power and by creating oil for heating from algae. Present installations and future plans include:

- Two wind turbines were installed Jan. 15, 2010
- 3 sites have been tagged for commercial wind development
- Project to use power from tides to run the sewage treatment plant – the first turbine will be installed in May
- Algal biomass production pilot project

Steve's background includes growing nori seaweed, so he has experience growing marine plants. He is running a pilot project to build a small-scale production facility where they grow algae and convert it into oil to use for heating houses (90% of the houses in Maine use oil). The impetus to start this project was the \$4.50/gallon oil prices a few years ago.

The chlorella algae is grown in tubes which will be housed in an unheated greenhouse during the Maine growing season which is April – October. The algae is fed a complete food fertilizer and an inoculate, both of which are inexpensive. Steve mentioned that effluent from the sewage treatment facility could be used to feed the algae, but using the cake as a food source might not be as desirable then. CO2 from

bottles is also fed into the tubes. The algae needs to be harvested every 1-4 days or the oil production will not be as great.

Steve estimates the density of the algae when it is harvested is 13,000 organisms per milliliter. He says that when you put the stick an inch into the tube, you can't see the end of the stick. To harvest it, 2/3 of the water in the system is removed.

The waste product of the oil production process is cake, which can be converted into food. Another waste product is oxygen.

By the end of the pilot, it is expected that they should be able to generate several hundred gallons of oil per season. One outlet for the oil is home heating. Most homes (98%) on the reservation are heated using oil, and are thus extremely susceptible to changing/rising oil costs.

Steve estimates that it will cost \$20,000 to set up the production facility – his presentation breaks out the costs and how it amortizes per gallon over the years. The cost per gallon, via this relatively small scale production system, has been \$3.58/gal...so they are in the ballpark. They received funding for the project from NREL – and air grant was used to pay for the greenhouse. A report will be written outlining the process and final outcomes of the project which will be posted on a website for access by everyone.

Mark Aaron provided a couple links to other algae biofuels stories:

- <http://uanews.opi.arizona.edu/node/29470>
- <http://www.wired.com/wiredscience/2009/12/the-lost-decade-of-algal-biofuel/>

3) Announcements

Myla announced that Laura Cook from the Poarch Creek Bank of Creek Indians will be taking over from David Jaber as co-chair of the workgroup