

# DAILY HABITS

BY THE STUDENT ADVOCATES FOR VALUING THE ENVIRONMENT

## THE BIO-ENERGY CENTER

The Bio-Energy Center at Montana State University Northern in Havre, MT hosts a four-year diesel technology program and a multitude of student research projects. Students perform emissions tests and tests for contaminants and fuel performance on various diesel and bio-diesel blends using state of the art equipment. The biodiesel pilot plant contains facilities to crush oil sees, process the oil into biodiesel and then test the performance of the biodiesel.

While on a visit to the center I was able to help make a batch of biodiesel. First the seeds are crushed and the oil filtered. Then the oil is pumped into the processor and heated to 60°C (140°F).

Meanwhile the methanol and lye are mixed to create methoxide. Once the oil is heated the methoxide mixture is added. Over the course of the reaction, glycerin (a common ingredient in moisturizers or soaps) settles to the bottom and is then filtered off. The remaining crude biodiesel still contains some impurities that are



Glycerin settling to bottom in a lab demonstration

removed by filtering water through the mix. Usually a one to one ratio of biodiesel to water is necessary to adequately filter out impurities, however in this operation, less water can be used because the biodiesel is also filtered through an ion exchange column to remove remaining impurities. After that, we're done!

The Bio-Energy Center has a partnership to test their biodiesel blends in a North Central Montana Transit bus as well as a Burlington Northern Santa Fe Railway switch locomotive engine.

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## STATE FUND BUILDING

The Montana State Fund building located on the corner of Front St. and 14<sup>th</sup>, is wrapping up a few last finalizations and waiting for confirmation on their bid to become certified as a LEED "Gold" building. LEED stands for Leadership in Energy and Environmental Design, and that is exactly what this building represents for the State of Montana. It's important that Helena, as the capital city, leads the rest of the state in innovative and cutting edge industry and policy.

LEED certification, as developed by the U.S. Green Building Council (USGBC), has four levels: Certified, Silver, Gold, and Platinum. With each level there is an increasing amount of attention paid to the building's environmental impacts. The USGBC not only considers the energy and water use of the building itself, but also big-picture impacts, such as the site the building is constructed on and the location of the building in regards to how close it is to the building users.

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The State Fund building matches many of these criteria in its design and function. At a recent ribbon cutting ceremony, the building employees offered tours, and we were able to get a peek at some of these great features. One in particular that was of interest was the 'green roof,' on which the native plant, sedum, grows. The purpose of this is to reduce pollution from storm-water while also helping prevent heat from escaping the building interior.



Photo Credit: Marie Phillips

Other energy-saving techniques include a system that collects heat from the main server computers and for use in de-icing sidewalks in the winter and a design that allows for natural day lighting instead of fluorescent bulbs. At this time, it was not economically feasible to install solar panels, but the building is "wired to the roof" in case of technological advances that reduce this cost. The building also has on-site bike racks and showers to encourage biking to work, which is actually feasible because it's located so close to downtown and many residential neighborhoods. Even without biking, energy use is reduced because employees have less far to go to get to work.

The only way for our state to develop expertise in this up-and-coming industry is through working on projects like this. For taking a chance and leading our state in innovative design and planning techniques, kudos to the Montana State Fund.

- The S.A.V.E. Foundation is still working with Students and Carroll College to develop/establish the first class of "Green Honors" recognizing students for their commitment to environmental education, service and daily habits.
- A second gray water reuse system has been installed in Bozeman, while the first legal residential system in the state will be upgraded by BRAC systems. The improved design, adds an air gap to prevent backflow valves and their need for testing.
- The non-motorized Transportation Advisory Council of the City of Helena is bringing forward recommendations for a "Complete Streets" policy to better ensure safety and quality of life related to all modes of transportation (bike, pedestrian, car, public) through a look at the City's operations and land uses.
- The University of Montana Helena has joined S.A.V.E.'s recycling route. It was UMH diesel mechanic students who modified "The Vegi-mobile" to be able to run on 100% biodiesel year round with help of a Jerry Metcalf Foundation Grant in 2006. S.A.V.E. looks forward to similar successful endeavors with the campus and UMH students.
- New fonts are being developed to save on ink-a well-known cost to any office manager-. More on this and other green office tips coming soon at Savemobile.org and Winter 2010 Daily Habits.

## MONTANA GREEN BUILDING

Each year, new possibilities arise with green building through policy actions and better access to resources. Three areas where we have seen the greatest strides include gray water reuse, green building incentives and state building requirements. With these new policies come great opportunities to conserve water and energy, and therefore save Montanans money as well as decrease costs to utility providers for capacity expansion projects.

For example, systems that recycle gray water (water from the shower, bathtub, laundry and

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bathroom sink) for use in toilet flushing or for outside irrigation are now legal in Montana and a great way to encourage conservation in building design. New buildings can at least be 'gray water ready' meaning that the sewage and gray water piping is kept separate so that a future building owner could easily install their own gray water recycling system. Existing buildings can also be modified with the help of construction and plumbing experts. One great way to encourage gray water recycling is through incentives.

Local governments can now amend their building code to include such incentives. The idea of these incentives is that, construction projects that meet certain energy efficiency and conservation standards would qualify for a density bonus, or expedited plan review, for example. Many localities with green building incentive programs have used the LEED standard, on in the case of residential building, Energy Star, as a basis for measuring conservation, while others have developed their own unique standards.

An example of a unique standard is the high-performance building (HPB) standard developed by the Montana State Architecture and Engineering Department. This standard must be used for all new or majorly renovated state buildings to ensure that they exceed the statewide energy conservation code by at least 20% and are built and operated as high-performance buildings. This standard can easily include gray water recycling systems and be adapted for us in local green building incentive programs.

- HPB CRITERIA**
- Site location
  - Water usage
  - Efficiency, energy & atmosphere
  - Materials & natural resources
  - Indoor environmental quality

RECYCLING UPDATE

We would like to thank all of our volunteers and sponsors of our plastics drives (see below) and trash for trees drives for another successful year. We couldn't do it without all their hard work and support. Our most recent November Plastics recycling drive was a huge success. We collected just over 14,000 pounds of plastic!



Photo Credit: Jake Campos

Trash for Trees Sponsors: Growing Friends of Helena, City of Helena, City-County Sanitation,

Pacific Steel & Recycling, Montana Beverage Association, and the Good Samaritan Thrift Store.

S.A.V.E. PLASTICS RECYCLING EVENTS MADE POSSIBLE BY:



General Services of the State of Montana

WITH SUPPORT FROM:



2011 Plastics Recycling will be held on odd numbered months starting with the second Friday and continuing through the following Monday. Items collected are detailed below.

**2011 Dates are as follows:** January 14-17, March 11-14, May 13-16, July 8-11, September 9-12, and November 11-14.



## WAYS TO GET INVOLVED

### Cinnabar Grant

The S.A.V.E. Foundation has received a \$3,000 matching grant from the Cinnabar Foundation. A matching grant means that every donation we receive from supporters like you is going to be *matched* by the Cinnabar Foundation. With this you can double your contribution and make this holiday season even jollier! We haven't reached our goal of \$3,000 yet, so now is a great time to show your support for local recycling and conservation efforts.

TIS' THE SEASON FOR GIVING!

### 2011 Plastics Recycling Drives

Volunteers greet and inform community members about which bins to sort their recyclables into and when needed assist with sorting and unloading. Collection drives in 2011 are: January 14-17, March 11-14, May 13-16, July 8-11, September 9-12, and November 11-14.

### Volunteer on the Recycling Route

You can go along for the ride with our Business Recycling Route driver, Trever, and see how things are done first-hand.

### Office Work

Help out with office tasks such as answering phones, and checking email or help build our capacity with your grant writing, editing, formatting, or technological skills. These along with many other opportunities are available for long-term or short-term volunteers.

### **For up to the minute updates:**



Twitter:  
<http://twitter.com/SAVEFoundation>



Or join our Facebook group:  
Student Advocates for Valuing the Environment

For more information, call or email us at:  
406.449.6008, [Recycle@Savemobile.org](mailto:Recycle@Savemobile.org)

## LETTER FROM S.A.V.E.

Dear Helena,

This November, S.A.V.E. celebrated its 6th year as a non-profit serving the environment and community. In this time we have successfully preserved and expanded recycling options for the schools, businesses and the community; enacted effective proactive legislation in support of local and conservation based biodiesel, legalized gray water to allow wash water to be harnessed for irrigation; and expanded incentive opportunities for green building in Montana.

In the last two years, we have expanded our focus to ensure our recycling and conservation efforts are accessible to the entire community through two Volunteer in Service to America grants (AmeriCorps VISTA) positions that benefit both the community and the recent college graduates who are able to serve.

Partnerships are more key to the success of SAVE and our programs than ever. Our recycling operation, serving businesses, schools and the community, regularly includes at least half a dozen partnerships providing everything from equipment to location. These make programs, such as the community plastics recycling, Erase your E-waste, and Trash for Trees events, possible and sustainable as they continue to expand and better serve the community.

As we "turn six" this year on America Recycles Day, it is appropriate that we celebrate with "SAVE Legend" Jason DeShaw, who-like SAVE-emerged from Carroll College in the early 00s. We hope you can join us and consider the form below. We are proud of our ongoing, evolving efforts to serve Helena and greatly appreciate and need your support.

Sincerely,

Matthew A. Elsaesser, Executive Director  
S.A.V.E. Recycling, 501(c)3  
406.449.6008/[Recycle@Savemobile.org](mailto:Recycle@Savemobile.org)



THE S.A.V.E. FOUNDATION 501(C)(3)  
SUPPORT S.A.V.E.!

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
E-Mail Address: \_\_\_\_\_

Please include Check and Mail to:

**S.A.V.E. Recycling**  
**P.O. Box 1481**  
**Helena, MT 59624**

- OR -

I Would Like to receive updates \_\_\_ in the mail \_\_\_ by e-mail  
Contact me about: \_\_\_ events \_\_\_ volunteering \_\_\_ gray water

Donate with your Credit Card

Card #: \_\_\_\_\_  
Type: \_\_\_\_\_ Exp: DATE: \_\_\_/\_\_\_  
Security Code: \_\_\_\_\_

### DONATION LEVELS:

\_\_\_ \$25 Individual \_\_\_ \$50 Household \_\_\_ \$100 Gold  
\_\_\_ \$250 Platinum \_\_\_ \$500 GREEN \$ \_\_\_ Other

\*All Donations are tax-deductible. All information collected will not be shared with any third parties and will only be used for the stated purpose (e-mail list, event notifications, etc.) S.A.V.E.'s IRS Tax ID number is 03-0531826.