Reducing Carbon Emissions Through Promoting Cold Water Washing on a College Campus

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Summary

Using cold water instead of hot water when doing laundry is a simple way to reduce energy consumption. Yet in situ observations suggest that very few students use cold water. Focus groups and online surveys revealed that the main barrier to using cold water among the student body was ignorance of the benefits associated with the use of cold water as well as uncertainty about which button corresponded with the cold water setting.

To counteract these barriers, posters that listed the benefits of using cold water were hung in every laundry room. A sticker with the phrase "Cool Is Clean: Use Bright Colors" was placed on every washing machine just above the choice buttons. Systematic observations before and after the intervention revealed a significant increase in the use of cold water in the laundry rooms with stickers and posters (from 0% to 45%).

Introduction

As part of Oberlin's Climate Action Plan to be carbon neutral by 2025, Oberlin's Office of Environmental Sustainability made a goal to reduce 10-15% of the current carbon emissions by implementing behavior change initiatives. In order to identify the most efficient and effective projects, we utilized Doug McKenzie Mohr's[1] Community Based Social Marketing (CBSM) Model. This method has five steps:

1. **Select the right behaviors**: focus resources and energy on behaviors that are high impact, easily changed, and not already common.

2. **Identify barriers and benefits:** determine why people do not engage in a behavior, and what benefits they can see from doing so.

3. **Develop strategies to change behaviors:** design programs and campaigns that minimize the barriers to a behavior, and maximize the benefits.

4. **Pilot strategies and evaluate the impact:** conduct pilot programs and assess the effectiveness of particular strategies; make adjustments and improvements as needed.

5. **Broad-scale implementation and evaluation:** launch program campus-wide; continually evaluate and adjust to maximize effectiveness.

After looking at Oberlin's Greenhouse Gas Inventory for 2010, thirty high priority behaviors were identified as potential areas to change. For each of these behaviors, we quantified the environmental impact if the behavior was changed, the likelihood of changing the behavior, and the frequency with which the Oberlin community already performs the behavior.

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[1] McKenzi-Mohr, D. (2011). Fostering Sustainable Behavior, 3rd Ed. British Columbia, CA: New Society Publishers.

We used industry data to estimate each behavior's associated carbon emission; we used previous research from other universities and community programs wherever possible as a basis for estimations of malleability and commonality. When data was not available, multiple staff, faculty, and students helped to make accurate estimates. Following McKenzie Mohr's method, we computed an overall score by multiplying impact, malleability, and commonality scores. The behaviors were ranked from highest CBSM score to lowest. Cold water washing ranked seventh in terms of impact, ability to change, and commonality; it was also relatively uncontroversial and required little effort to obtain institutional support for targeting it. There are several universities that only use cold water in washers, and other schools have run successful projects and campaigns to reduce hot water in machines on campus.

Using cold water instead of hot water has many benefits and virtually no costs. It reduces laundry energy consumption by 90% and is more gentle on clothes than hot water.[2] Contrary to the belief of some, modern laundry detergent works just as well in cold water as it does in hot water. Further, routine use of cold water only poses no threat to the machines themselves.

We used focus groups, an online survey, and observations to identify barriers and benefits. Survey results suggest that 50% of students wash their clothes at whatever the default setting is on the laundry machine, and 50% reported occasionally washing their clothes using hot water. Among focus group participants there was consensus on the lack of true preference, and significant openness to only using cold water. We also learned that most students are ignorant of benefits, unclear about which button produced cold water (many machines said "bright colors" instead of cold water), often do whatever their family at home did, and had misconceptions about hot water cleaning clothes better. Students saw the main perceived benefits to be how easy it is to use to cold water, and how easy it is to reduce carbon emissions and make clothes last longer.

Based on these results, we discussed two potential strategies for increasing cold water washing. One strategy used at many institutions is to replumb washing machines so they only use cold water; this is a fail-safe method of reducing hot water use and any associated fiscal and energy costs. However, this strategy undermines Oberlin College's mission as an institution of learning. College is a time of life when people form habits that stay with them into adulthood. Taking away the choice of laundry settings would not allow students to internalize the choice to use cold water. After college and in other settings, they may therefore continue to use warm or hot water. We decided that in addition to our goal of reducing current carbon emissions on campus, we also hoped to contribute to a broader, more long term cultural shift in energy-related behavior. We thus chose to deploy an education campaign to change student behavior. In the future, all machines but one in each laundry room will be replumbed to receive only cold water. This will still greatly reduce the energy consumption of the machines, but will also give students a learning opportunity and a chance to actively make decisions. Additionally, thinking about this choice will hopefully encourage students to continue to use cold water after leaving Oberlin College.

Implementing the Project

Instead of reinventing the wheel, we researched strategies used at other institutions, and found the "Cool is Clean" turnkey project developed by the Urban Sustainability Directors Network

[2] http://articles.chicagotribune.com/2007-04-15/news/0704120283_1_hot-water-water-heater-allergen

(USDN) in conjunction with a hired consultant from Action Research[3]. They piloted a Community Based Social Marketing initiative in four cities in the United States. For this project, they had three mailings: a pre-notification letter from the city; a cover letter, informational flyer, and a magnet; then an evaluation survey postcard. The magnet simply said "Cool is Clean" and served as a reminder. The flyer contained information about energy saving (in price), information about other citizens in the area using cold water for laundry, and information about not needing to change detergents. In this pilot, participants in Asheville, NC who received information about using cold water for laundry and a reminder magnet for the machine reported to use cold water 85% of the time while the control group reported to use cold water 52% of the time.

We used insight from our survey and focus groups to develop an educational poster that addressed the barriers and benefits identified. The USDN project's informational handout included testimonials, credibility through *Consumer Reports*, the use of social norms, and education. Most students did whatever their parent did, or whatever they did the first time they did laundry at school. The major benefit students mentioned was that they were able to save energy without having to use any additional effort. For this audience saving money was not a motivator, as students do not pay water and heating bills.

We hung signs in every laundry room that listed the benefits of using cold water, both for clothes and for the environment. Additionally, each washing machine received a magnet that said "Cool Is Clean: Use Bright Colors" (see Appendix). This both served as a reminder and removed the barrier of not knowing which button to use to choose cold water. Since the machines are rented from a company, facilities and residential education suggested that we use magnets to preserve the machines. After a month, most of the magnets were no longer on the machines. Additionally, we received feedback that the logo was too large and the instruction to use "bright colors" was too small.

After learning from the first design, we created a new sticker with easily removable adhesive that was put directly onto the machines. We put both bumper stickers and posters on machines. More importantly, the bumper stickers were placed right next to or above the option buttons on the laundry machines to ensure that when students use the machine, they will be reminded to choose the cold water option. The new stickers and posters also stated more clearly which option students should choose if they want to use cold water. The new stickers stayed on until the end of the year; however they were systematically removed over the summer, perhaps by a staff member who did not realize they had been approved to remain on machines.

Assessment

We ran an observational study in six large dormitories on campus (Kahn, Burton, Asia House, Harkness, South Dorm, and African-American Heritage House) to test the change in campus behavior after the stickers were placed. Observations were made on Saturdays and Sundays since most of the students on campus did their laundry on the weekends. During each observation, we recorded total number of machines that were running at the time, as well as the options that the users chose for their laundry. We made two observations per dorm before, and seven observations per dorm after the stickers were placed. Before the stickers, none of the laundry machines observed were running with cold water, even though 50% of student self-reported that

[3] Urban Sustainability Directors Network, "Community Cold-Water Wash Turnkey Implementation Manual." January 2013.

they used cold water while washing their clothes. After the stickers were in place 45% of the machines observed were using cold water. With a P-value of .0395, we were able to conclude that this was a significant increase in the use of cold water.

Discussion

By informing students with the posters about the benefits and providing informative reminders on the machines, we were able to reduce the project's main barrier: ignorance. There was a dramatic increase in cold water usage after the poster and stickers were put up.

While working on this project, we did encounter several obstacles. In the planning stages of this project, one facilities staff member thought that using only cold water in the machines would cause the machines to grow mold. After consulting with the machine suppliers, we were able to verify that using only cold water is fine for the machine, and will not cause any damage. We also had problems keeping the magnets on the machines; presumably students were taking the magnets, since they were missing from some but not all machines. For the second round of the pilot, we used stickers, and those stayed until the end of the summer until the disappeared, potentially by staff who were not told that they had been approved to stay on the machines. These experiences highlight the importance of clear communication between program administrators, facilities personnel, and janitorial staff.

In addition to problems with keeping the stickers on the machines, some machines on campus had their options labeled differently. Ideally each machine on campus would have an individualized sticker to fit its particular design.

It should also be noted that in our assessment, 55% of students were still not using cold water for laundry, so there is quite a bit of room for improvement. Replumbing most machines to provide only cold water will dramatically reduce carbon emissions and costs associated with hot water heating. Some other possible directions to follow could include changing the price of washing with cold water and having students sign commitments saying that they will use cold water.

Appendix

Sticker placed on laundry machines