

2008

Safe and Effective Cleaning Products: A Step Forward at the University of Montana

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Safe and Effective Cleaning Products at the University of Montana

EXECUTIVE SUMMARY

The goal of the student service learning project was to encourage Facility Services at the University of Montana to switch all cleaning supplies used in academic buildings to Green Seal certified products. Green Seal is a non-profit organization that certifies cleaning supplies according to environmental health and sustainability standards.¹ Environmental studies (EVST) students Shannon Kuhn, Rachel Kalenberg, and Adelle Donohue undertook the class service as part of Dr. Robin Saha's Environmental Justice: Issues and Solutions class during Fall semester 2007. Environmental justice is concerned with ensuring safe and healthy environments, including those in the home and the workplace, as well as fair and open decision making, democratic participation and full access to information about chemical hazards.

We followed an environmental justice approach to this project by involving janitors and FACS supervisors and the custodial staff throughout the project. We got help and support from Dr. Saha and Emily Peters of the UM Sustainable Campus Committee, Sustainability Initiative Team, and we worked closely with Jack Mondloch and Frenchie Michaud of Facilities Services (FACS). With their help, we gained the cooperation and participation of their custodial staff. In addition, Mark LoParco, Director of Dining Services (DS), also provided helpful information and insight from his experience switching DS to all Green Seal product usage.

We also worked closely with Erin Thompson, Alex Gorman, and Beth Berlin of Women's Voices for the Earth (WVE), a non-profit environmental health organization. WVE helped formulate the project initially and had valuable knowledge and expertise about how to encourage a switch to safer and less toxic products. WVE also helped us research the chemical composition and safety of cleaning products. WVE also helped us find out about and research other campuses that have made the switch.

Our project primarily focused on researching current cleaning products used, identifying safety concerns and potential alternatives, and assessing custodial staff awareness of and interest in "green" cleaning products here at the University of Montana.

We conducted a survey of 38 FACS janitors and analyzed the experience of other college campuses that have succeeded in implementing "green cleaning" programs. The survey also sought to obtain information about the janitors' health experiences working with the cleaning products. The survey included questions pertaining to cleaning products used, safety precautions taken, and health issues experienced while using the cleaning products while on the job (such as watery eyes, scratchy throat, skin irritation, light-headedness, and breathing difficulties). The survey also attempted to gauge custodial staff awareness about potential health hazards associated with cleaning products and knowledge about safer alternatives.

¹ More information is available on their website at www.greenseal.org.

A summary of this research and our recommendations is provided below. More detailed results can be found in our full report.

Safety Information

One element analyzed in the project was the safety information materials that janitors had access to. Each cleaning product has an associated Material Safety Data Sheets (MSDS) that provides safety information on the product, including acute exposure and emergency response, fire-fighting measures, and toxicological information. However, the reports are often confusing, incomplete, or ambiguous. We found that the MSDS are not easily understood.

Scrubbing Bubbles was listed by many janitors as their favorite product because of its effectiveness, but was also listed as a potential irritant by several janitors, who reported experiencing negative health effects while using it. MSDS information on Scrubbing Bubbles is as follows:

Antibacterial Scrubbing Bubbles I Bathroom Cleaner

U.S. Manufacturer: S.C. Johnson & Son, Inc.

MSDS current as of December 11, 2003

Route of entry: eye contact.

Acute Effects

Eyes: may cause mild eye irritation.

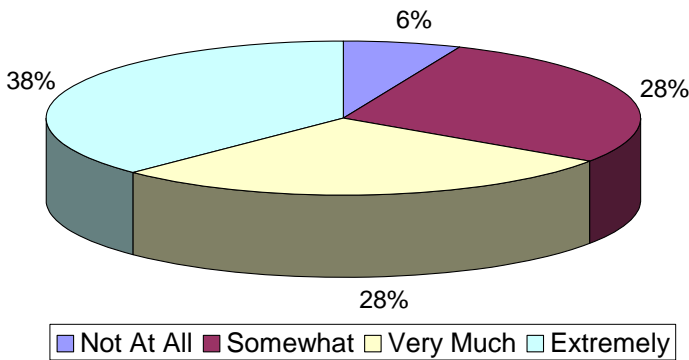
Skin: Prolonged or repeated contact may cause mild skin irritation.

Inhalation: None known.

Ingestion: None known.

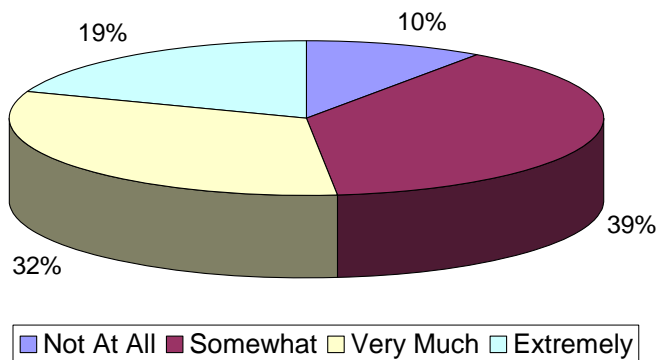
Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
Quaternary Ammonium Compound	Exposure limit/toxicity not established	Need CAS#
Tetrasodium Salt of EDTA	Exposure limit/toxicity not established	No data on human health effects
Glycol Ether	35 ppm TWA (Supplier recommended)	Suspected cardiovascular or blood toxicant, kidney toxicant, neurotoxicant, reproductive toxicant
Isobutane		Suspected neurotoxicant

Janitors' Self-reported Level of Awareness of Health Risks of Cleaning Products



This figure shows that 56% of the FACS custodians surveyed report being very much or extremely aware that there are health risks associated with cleaning products. This data is also supported by additional data we obtained through the survey regarding widespread knowledge of Material Safety Data Sheets (MSDS), which provide some safety information on cleaning products. That staff are aware of the health hazards associated with cleaning products is the first step to change.

Janitors' Self-reported Level of Awareness of Non-Toxic Cleaning Products



However, we also believe that although the staff are aware that the cleaning products may pose health risks, they do not have sufficient information regarding the safer and more effective alternative cleaning supplies.

This graph shows that almost half of FACS staff is completely unaware or only somewhat aware of safer cleaning products. We see this as a window of opportunity for encouraging change. If more awareness about safer and

effective cleaning products exists, the hope is that more people would want to support an FACS switch to safer cleaning products.

Case Studies

We looked at steps other institutions have taken to shift to green cleaning products. For example, a green cleaning initiative at Yellowstone National Park reduced the total number of cleaning products needed from 130 to 15 and resulted in benefits such as simplified procurement, easier stocking and inventory control, and reduced storage space. The University of Georgia also reduced their product usage, from 300 chemical cleaning products to three Green Seal certified products. Rutgers, the University of Wyoming and Harvard University have also all taken various steps toward adopting green cleaning products.

Every institution we researched reported positive feedback after making the transition to green cleaning products. All reported cost savings, product reduction, and staff satisfaction. A number of factors in making a successful switch can be noted for these case studies:

- Support from the top
- Implementation of a pilot project
- Commitment to the project by key employees and supervisors
- Involvement and education of custodial staff in face-to-face meetings
- Perceived health benefits

Recommendations

After initial research and work on this project this semester, we realized that there is a lot more work and research that must go into achieving our final goal of Green Seal cleaning products replacing all other products in FACS. However, we have built a very solid framework of contacts, information, and survey data for people to carry this project forward. We hope that with this initial work, this project can be continued by interested and passionate students and continued interest by those who we have been working with throughout the project. Additional recommendations follow:

- We need EVST students, or other interested individuals, to carry this project and research forward, using as a foundation the report, information, and contacts we have provided.
- We recommend that UM Sustainability Initiatives Team (SIT) create a position for a green product research intern to work directly with FACS to recommend and provide information on Green Seal products to Jack Mondloch. These products would be recommended on the basis of cost effectiveness, product effectiveness, and health benefits and would then be tested by FACS janitors.
- We would encourage the UM Sustainable Campus Committee (SCC) to make recommendations to President Dennison regarding purchasing of Green Seal products and inform him of the potential to gain credits through the LEED rating system.
- We recommend greater campus-wide education regarding cleaning products and existing alternatives. Campus outreach would garner greater interest in Green Seal product purchasing.
- Finally, we hope for greater communication between janitorial departments on campus and in associated buildings and housing. We found the separation between all areas of campus and lack of networking to be a hindrance to information sharing and progress in adopted green cleaning supplies. All departments would benefit from greater communication.

Introduction

A clean classroom, hallway, office, or bathroom at school is something most of us take for granted. We arrive at school expecting spotless bathrooms and to spend class time in a clean and comfortable classroom. However, this quality of cleanliness relies on many employees working hard and late hours to create an atmosphere of comfort and a healthy learning environment for students. We rely on this standard of cleanliness to stop the spread of illness and disease. However, we often forget that there are faces, people behind the clean classrooms and buildings. Janitors, a very necessary fixture in any institution, carry the enormous assignment of maintaining a usable learning environment for us as students and faculty. In order to maintain a certain quality of cleanliness for staff and students, various cleaning products are used. Some chemicals found in most conventional cleaning products have been proven to be harmful to people and the environment, and create negative health effects for users. This service project aimed to identify the cleaning products used here at the University of Montana, assess the toxicity of the products, and then research possible alternative products and make recommendations to Facilities Services and administration regarding the alternatives.

Additionally, we also felt that it was very important to approach this project from an environmental justice standpoint, which was maintained primarily through a procedural justice focus. Procedural justice was attained through contact with Facilities Services and a survey taken by the janitors themselves. The survey and the focus on procedural justice was

particularly important in this project because of the constant exposure to hazardous chemicals that custodial staff faces in their work environment.

Contacts for this Project

Throughout this project, we had many groups assisting us, providing information, or supporting us throughout the project. This list of contacts includes groups that would be helpful to network with for continuing this project.

Women's Voices for the Earth

Women's Voices for the Earth (WVE) is a national, women-centered environmental health and justice organization that works to eliminate or substantially reduce environmental toxics impacting human health and to increase women's participation in environmental decision-making. WVE's Safe Cleaning Products Initiative is a national effort intended to reduce women's exposure to toxic chemicals in household cleaning products. In late June, WVE convened a cross-section of groups working on safe cleaning products for a strategic national conversation about the national significance of this issue. WVE then proposed a project involving safe and effective cleaning products at UM. WVE has provided essential expertise and knowledge for this project. Our main contacts with WVE have been Erin Thompson erin@womenandenvironment.org, and Alex Gorman alex@womenandenvironment.org

UM Sustainability Initiatives Team

The University of Montana Sustainability Initiatives Team (SIT) is a group of students from many disciplines who are working on a wide range of projects to access sustainability at the University of Montana. The projects and tasks include: performing a lighting energy audit, data analysis, web site design, the Knowles Hall dorm recycling project, an Earth Day concert, a

campus wide sustainability campaign, and an alternative energy technology program. SIT also advises the Sustainable Campus Committee, which in turn advises President Dennison regarding sustainability issues on campus. Our contact has been Emily Peters at (406) 243-6001, who is the SIT Coordinator under Facilities Services.

University Dining Services

Mark LoParco, Director
(406) 243-6325

Bob Stevens, Maintenance Supervisor, Lommasson Center
Office: (406) 243-2789
Cell: (406) 544-0112

University Dining Services (UDS) is a campus leader in terms of their active commitment to environmental initiatives. They now purchase biodegradable Food Zoo carry-out containers, offer reusable container incentives in both food and beverage operations, and are planning the construction of the first LEED-certified building on campus. The UM Farm to College program's emphasis on buying locally helps reduce the amount of fossil fuels required for food transport while supporting regional businesses. UDS implemented a green cleaning purchasing policy November 2007, and uses EcoLab's Green Seal certified products. They also use unbleached napkins in all of their dining facilities.

EcoLab Green Seal Certified Products

The following are Green Seal cleaning products that may be useful here at UM:

QC 51E General Purpose Cleaner
QC 52E Glass Cleaner
QC 91E Neutral Bathroom Cleaner
Quik Fill 310 Neutral Cleaner
Quik Fill 510E General Purpose Cleaner
Quik Fill 520E Glass Cleaner
Quik Fill Magnum 810 Neutral Cleaner

Quik Fill 910E Neutral Bathroom Cleaner
Oasis 139G All Purpose Cleaner
Oasis 258G Glass Cleaner
Oasis 305G Neutral Bathroom Cleaner
Oasis 110G Neutral Floor Cleaner
Oasis Pro 18G All Purpose Cleaner ***
Oasis Pro 34G Neutral Floor Cleaner ***
Oasis Pro 43G Glass Cleaner ***
Oasis Pro 67G Bathroom Cleaner ***
Revitalize 151 Pre-spray & Extraction Cleaner
Wash 'n Walk No-Rinse Floor Cleaner
Eco-Clean Elite Wash 'n Walk Enzymatic Floor Cleaner
Keystone Wash 'n Walk Enzymatic Floor Cleaner

*** used by University Dining Services

University of Montana Custodial Departments

We found out that the campus buildings are divided into groups, and each group or building has a separate janitorial staff. Listed below is FACS, the department this project focused on, and other departments that could be included or networked with in the future.

Facilities Services-Academic Buildings

Jack Mondloch, Custodial Services Supervisor
Phone: (406) 243-2161 (Office)
E-mail: Jack.Mondloch@mso.umt.edu

University Center

Roger Strobel, Assistant Director of Building Services
Phone: (406) 243-4964
Fax: (406) 243-4340

University Housing

Brad Hall, Associate Director of Maintenance and Facilities

Residence Life

Josh Hofman, Custodial Supervisor
(406) 243-5805

Adams Center

Jackie Hedtke, Operations Supervisor
(406) 243-5357

Environmental Justice Analysis

Because this project was undertaken through an environmental justice class, we had the opportunity to approach this project from an environmental justice standpoint. According to Gary C. Bryner, there are several conceptual frameworks for assessing an issue through an environmental justice standpoint (Bryner 2000). The following are frameworks that we used in the conceptualization of our project.

Procedural Justice

Procedural justice focuses on fairness in the decision making process, active and informed participants, and inclusion and representation. The decision making process must be designed in a way that will adequately represent all people involved and produce a fair outcome. Stakeholders involved must agree with the design of the process, information needs to be accessible and fully disclosed to all people interested or involved, and all participants need to be able to voice their concerns and have them taken into account for the final decision in order to meet the requirements of procedural justice. In addition, all participants need to be treated with respect and fairness regardless of their level within the system and decisions made need to be unbiased.

In regards to our case, the question of whether janitorial staff at the University of Montana has received meaningful consideration during the decision making process could be raised. As discussed above, the janitors bare the most burdens of health hazards from chemical cleaners even though they did not choose the cleaning products used. Therefore, it is

appropriate to examine how the janitors feel about the products they use and if they are aware of the hazards to human health they pose. To examine the situation from a procedural justice approach, one would look at fairness in the decision making processes at UM, inclusion and representation of the janitorial staff, and active and informed participants. We maintained staff involvement through development and implementation of a survey. We included questions involving staff awareness about safer, less toxic cleaning products and assessed how the janitors feel about current cleaning products and how their health has been affected while on the job. At FACS, 38 janitors voluntarily participated in the survey.

In regards to representation in the decision making process, it is important to know who the pivotal decision makers are and where they stand in the decision making process. The person who represents the 100 janitors at Facilities Services in the decision making process must also provide adequate representation of the workers concerns. For our case Jack Mondloch, Custodial Services Supervisor, represents the janitorial staff at UM. Jack works with Frenchy Michaud, Associate Director of Facilities Services when it comes to the cleaning products being used at UM. The staff members meet with Jack at the beginning of each shift (Mondloch, 2007) and have plenty of time everyday to express their concerns, ask questions, or even share a joke, thus exhibiting a more personal relationship. In addition to this, the average length of time janitors who took the survey were employed by UM was over 7 years. This fact from our survey could also mean that most of the employees at Facilities Services have a long-term relationship with the person who represents them in the decision making process.

In order to follow procedural justice guidelines, all people effected by the decision will need to be adequately included in the decision making process. This includes involving the janitorial staff by providing information on cleaning products, their associated hazards, and possible alternatives. Not only does the janitorial staff need to be trained on proper use of products but also of the hazards that are associated with the cleaning products and their ingredients. It is also important to consider if the janitorial staff was offered other options for cleaning products and if their concerns and voices were heard and taken into account.

In the case UM, the final decisions made on the cleaning products used as Jack and Frenchy have the authority to choose which products are used by Facilities Services. They have been working with vendors and employees over the last five years to find safer alternatives to the current cleaning products used at UM. To test “green” cleaners, three or four full-time employees are asked to use an entire bottle and fill out the Product Evaluation and Approval Form. The employees testing the product give their approval, disapproval, or recommendation for more tests and make comments on their experience with the product (Mondloch, 2007). There could be a need to reassess the effectiveness of the Product Evaluation and Approval Form and the testing process as the form was created in 1986 and may not reflect the appropriate answers needed to assess green cleaning products.

It is also important to look at how active and informed participants are in the decision making process to properly evaluate procedural justice. It is important to examine how much access and disclosure to information workers have in regards to the decision making process. Assuming all workers have access to and understood the information provided, it is also crucial

for the janitorial staff to have the opportunity to voice their concerns and know that they will be fairly represented in the decision making process.

It is also important to note that 97% of the Facilities Services janitors surveyed stated they were part of a workers union. For a more complete look at procedural justice in the future, it will be important to look at what role the union has in regards to health issues that resulted from workplace conditions or hazards, with particular focus on cleaners and chemical products.

To help ensure that the janitorial staff has been given the opportunity to voice their concerns about the toxicity of the cleaning products they use, our group conducted a survey of the janitorial staff to see what the demographic make-up of the staff is, the frequency of cleaning products used, and the health effects current cleaning products have had on workers. By sharing our results with Jack, Frenchy, and other campus committees and organizations our research group will be helping janitors have their voices heard by pivotal decision makers in the University of Montana's administrative system.

Ecological Sustainability

The amount of chemicals used for cleaning supplies alone in this country is astounding. According to the Women's Voices for the Earth (WVE) hazards report on cleaning supplies, over five billion pounds of chemicals are used each year by the institutional cleaning industry (Gorman 2007). These chemicals, along with being extremely hazardous to people, especially to the reproductive and respiratory systems, are detrimental to the environment throughout their entire life cycles, from production to disposal.

The chemical manufacturing industry is hazardous in itself in its use of toxic chemicals and its effluent release. Even common household cleaning products are known to contain such highly toxic chemicals as phosphoric acid, methylene chloride, hydrochloric acid, and various glycol ethers (Gottlieb 2001). Additionally, alkyl phenol ethoxylates (APEs), which are found in laundry detergents, stain removers, and all-purpose cleaners, have been found to “reduce embryo survival in fish...[and] commonly detected as contaminants in rivers and streams” (Gorman 2007).

After use, many chemical residues are washed away down the drain, ending up in a wastewater treatment plant. Products containing phosphorous or nitrogen lead to nutrient loading in water, diminishing water quality (Gorman 2007). Additionally, the U.S. Geological survey reported that 70% of streams tested showed the presence of detergent products and 66% showed the presence of disinfectants (Gorman 2007). When cleaning products are rinsed away down the drain, they eventually end up in our bodies of water, creating poor water quality and even ending up in our drinking water and groundwater (Gorman 2007).

According to Gary C. Bryner, in his ecological sustainability framework for assessing environmental justice issues, there are several points to be addressed to ensure ecological sustainability. One is preventing polluting and working to conserve resources (Bryner 2000). As cleaning chemicals and detergents are major sources of pollution, especially water pollution, the elimination of hazardous chemicals from cleaning products is a crucial step to preventing pollution. Some products currently in use at FACS at UM are listed in the MSDS section, along with some chemicals that are in the process of being replaced by the less toxic H2Orange2.

Another idea of Bryner's is to "use the precautionary principle in the face of uncertainty" (Bryner 2000). The precautionary principle "involves acting to avoid serious or irreversible potential harm, despite lack of scientific certainty as to the likelihood, magnitude, or causation of that harm" (PPP 2003). Basically it refers to acting cautiously, even if a certain action is only a suspected cause of a specific outcome and not scientifically proven. Many of the effects of long-term exposure to cleaning products are unknown. Many cleaning products, especially industrial cleaning products contain known carcinogens. There remains uncertainty as to how much exposure to these chemicals a body can sustain without significant health impacts; however, it is important to use the precautionary principle when the outcome is uncertain.

Less toxic cleaners are available, and have been proven to be just as effective or even more effective as conventional cleaners. Additionally, many institutions using them have reported cost effectiveness and report actually saving money by being able to use a non-toxic multi-purpose cleaner in place of several different conventional cleaners (see **Case Studies** section).

In this project, we want to work towards a more ecologically sustainable and socially responsible cleaning system at the university. In order to do this, we need to find out more about the specific hazards associated with the current cleaning products in use and then move to phase out those products. The use of more green cleaning supplies will increase the university's ecological sustainability.

Distributive Justice

In the case of the janitors at the University of Montana, and extended to janitors in general, the assessment of distributional justice is key. According to Bryner, distributive justice includes the equal or fair distribution of benefits and burdens to all affected parties (Bryner 2000). With the janitors at the University of Montana, we are making the assumption that they are in the lower income bracket and not members of the upper-middle to upper income classes, framing this as an environmental justice issue.

The implied benefits in this situation include clean buildings, cleaning services for students and staff, and the financial benefits for the cleaning supply companies selling their products to our school. The clean buildings and cleaning services provided by the janitors are enjoyed by students and staff at the university. Clean buildings are crucial to a comfortable learning environment, and also prevent the spread of illness and disease. The financial profits from selling cleaning supplies are enjoyed by the supply companies and the chemical industry itself. Some major companies that make products used at the University of Montana include JohnsonDiversey, SC Johnson, and Reckitt Benckiser.

The burdens that result from the production of these benefits include potential health impacts on the janitors from the toxic chemicals used during cleaning. These health impacts could lead to medical problems and possible hospital visits or long-term treatment and care. According to the YNP report, many common household cleaning products have chemicals in them that have been shown to have health effects on people in their pure form (Wakefield and Ferre 2000). Evidence has been accumulating in recent years that some chemicals can cause asthma or make it worse (Wakefield and Ferre 2000). According to an occupational lung

disease bulletin put out by the Massachusetts Department of Public Health in 1998, more than 10% of work-related asthma cases listed cleaning agents as the suspected irritant. The cleaning agents included bleach, chlorine, floor stripper, ammonia, sodium hydroxide, muriatic acid, detergents and disinfectants (Wakefield and Ferre 2000). Additionally, cleaning products can adversely affect indoor air quality. During cleaning processes, people are exposed to many pollutants found in the cleaning products (Wakefield and Ferre 2000). Finally, WVE also reports many chemicals found in cleaning products that affect the reproductive system in animal and people and have been linked to asthma. These chemicals are monoethanolamine (MEA), found in some laundry detergents, all-purpose cleaners, and floor cleaners; ammonium quaternary compounds found in some disinfectant sprays and toilet cleaners; glycol ethers commonly found in glass cleaners; alkyl phenol ethoxylates found in laundry detergents; and phthalates, which carry fragrance in cleaners (Gorman 2007).

The janitors at the university are frequently not students, so many of them do not even enjoy the benefits that their jobs produce. Additionally, the wages that the janitors receive may not adequately reflect the health problems and potential associated hospital visits that the janitors may encounter in their lifetime. Janitorial wages often do not reflect the hazardous nature of the job.

After we assess the results of our surveys, we will be able to assess the health problems janitors may be experiencing as a result of their occupation. We need to look at the impacts associated with their jobs so that we can determine just how much of a burden the janitors are dealing with as compared to the potential benefits.

In order to attain distributional justice in this project, we will mainly be looking at reducing the burdens that the janitors experience. By phasing out toxic chemicals in the workplace, the janitors will hopefully be experiencing fewer hazards on the job, better short- and long-term health, and the benefits for students and staff will remain the same. The mainstream chemical industry may suffer financial losses if the green cleaning supplies campaign reaches full potential, but that creates a possibility for a switch to the production of more environmentally-sustainable products as well.

Social Justice

In order for Universities to ensure social justice for their janitors, they must take into account factors such as political, economic, and sociocultural health and viability. Furthermore, according to Gary Bryner, “A social justice framework also suggests a more proactive approach in empowering people to choose how to live their lives and realize their ambitions” (Bryner, 2000). This includes the ability to work with dignity and respect, basic healthcare, a livable wage, and the right to organize into unions.

According to the United Students Against Sweatshop’s Campus Community Solidarity Committee, janitors are routinely exploited. As a result of janitors being paid insufficient wages by universities, it is extremely difficult for these workers to support themselves and their families, provide for their children, and receive needed health care. Often they face 90-hour work weeks divided among two or three jobs. Historically across universities nationwide, campus environments were not places where janitors could exercise their right to form unions free from discrimination and harassment. Problems include the fact that campus workers who

try to organize and form unions in colleges and universities face union-busting measures, undemocratic methods of union recognition, and labor law that doesn't support workers (USAS, 2007). However, the FACS staff that we surveyed reported that they are members of a union.

According to the Montana Department of Labor and Industry's Covered Employment and Wages (ES-202) series, "A living wage is a wage that allows families to meet their basic needs without resorting to public assistance and provides them some ability to deal with emergencies and plan ahead. It is not a poverty wage. Living wages are calculated on the basis of family budgets for several household types. Family budgets include basic necessities, savings, and state, local and federal taxes. In 2004, according to the Northwest Job Gap Study, living wages for a single Montana adult range are \$8.61 an hour for a single person and \$17.07 for single adult with two children. This assumes full time work on a year round. Differences in housing and child care costs will cause this to vary in Montana towns; Missoula would be a little higher than the Montana average. Current minimum wage is \$5.15 or \$10,712 a year. 80% of available Montana jobs pay less than the livable wage for a single adult with two dependents."

Even today colleges continue to pay wages that are below the poverty level, or contract the work out to companies that pay only the minimum wage. At the University of Montana, a full-time janitor currently earns just more than \$17,000 a year at a starting wage of \$8.25 per hour. Comparatively, an MSU janitor starts with an hourly wage of \$8.87 and an annual salary of almost \$18,500, thus making approximately \$1,500 more per year than UM janitors (Baynham, 2007). In order to achieve social justice for janitors at UM, a livable wage must be achieved. Actions that have been taken regarding this issue include the Associated Students of

the University of Montana (ASUM) passing a resolution in support of Forward Montana's "Just Wages for UM Janitors" Campaign in Spring 2007 (see attached).

In reaction to the historical and current injustices janitors are facing, students have launched campus living wage and solidarity campaigns across the country in a coordinated effort to force universities to ensure living wages, decent working conditions, and the right to organize on campuses. The living wage movement is devoted to the principle that people who work full time should not live in poverty. In particular, a living wage is the amount of money workers must earn to afford their basic necessities such as food, housing, clothing, medical care, child care, and transportation. There are currently over 50 living wage campaigns on campuses across the country (USAS, 2007).

In this project, we want to ensure social justice by tackling one of the pillars that must be attained in order to achieve a broader sense of dignity for janitors at UM. To do so, questions that need to be answered are whether or not basic and affordable healthcare is provided for janitors at UM, whether janitors are contracted by the University itself or an outsourced company who may pay their workers less, and whether UM janitors have the right to unionize. By working on a small scale towards safer cleaning products for janitors at UM, we are ultimately progressing to the broader goal of justice for janitors in general.

Material Safety Data Sheets (MSDS)

Facilities Services at the University of Montana is aware of alternative cleaning supplies and has been making some changes towards safer and more effective cleaning products. The sources that FACS and all companies use to evaluate cleaning products ingredients and hazards are the Material Safety Data Sheets, or MSDS. These sheets include product descriptions, an emergency overview, first aid measures, the composition and ingredient information, fire-fighting measures, handling and storage, personal protection measures when using the product, chemical properties, toxicological information, and other safety information about the product. It is mandatory that a company provide the MSDS to the consumer, and they are also the most commonly known sources for evaluating cleaning products. However, according to the Yellowstone National Park (YNP) report on greening Yellowstone (discussed later in Case Studies section), they could be greatly improved upon (Wakefield and Ferre 2000). In the report, according to Wakefield and Ferre (2000), MSDS are not a fully comprehensive analysis of a product, and may not provide all important information.

First, they state that the published literature may be incomplete. Most chemicals have not been tested regarding long-term chronic health effects. MSDS may provide short-term hazards, but it is not required that the manufacturers carry out a study regarding long-term effects (Wakefield and Ferre 2000).

Secondly, manufacturers are not required to provide information on the ecological effects of a product (Wakefield and Ferre 2000). Each MSDS sheet that we looked at contained a section entitled "Ecological Information," but that section most sheets was blank, except for

on Glance Foaming Glass and Multi-Surface Cleaner, which stated “When used for its intended purpose this product should not cause adverse effects in the environment.” The Lysol disinfectant spray contained some figures regarding Lethal Concentrations (LC) listed later.

Third, MSDS might not list all chemical ingredients found in a product. The manufacturer can actually claim an ingredient as a “trade secret.” The hazards associated with this chemical must still be listed, but no additional research could be done on the chemical by users because the name is unknown (Wakefield and Ferre 2000).

Finally, Wakefield and Ferre (2000) expressed other concerns regarding MSDS, including that they may not be prepared by persons with appropriate background, as OSHA has no requirements or training for people writing MSDS, some MSDS may contain mistakes or contradictions, and MSDS may be misinterpreted by users (Wakefield and Ferre 2000).

We were provided with MSDS sheets from Jack Mondloch of FACS. We obtained sheets on products that the new less toxic H2Orange2 would be replacing, and sheets on other cleaning chemicals used.

The MSDS provided information on some ingredients contained in each product, and then we obtained information about each chemical that we could find on Scorecard.org, an online information resource on pollution problems and toxic chemicals.

The following MSDS were provided by Jack Mondloch. Most of these products are in use by Facilities Services at this time. However, H2Orange2 is currently in the testing phase to replace some of these products.

Freedom Speed Stripper

Manufacturer: JohnsonDiversity, Inc.

MSDS current as of August 26, 2003

Route of entry: Inhalation, skin contact, and eye contact.

Acute Effects (from MSDS):

Eye Contact: Corrosive. May cause permanent damage including blindness.

Skin Contact: Corrosive. May cause permanent damage.

Inhalation: May cause irritation or corrosive effects to nose, throat, and respiratory tract.

Ingestion: Corrosive. May cause burns to mouth, throat, and stomach.

Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
Diethylene Glycol Ethyl Ether (CAS # 111-90-0)	Hazardous substance by CERCLA; SARA 313 Toxic Chemical notification and release reporting	Suspected Cardiovascular or Blood Toxicant, Gastrointestinal or Liver Toxicant, Kidney Toxicant, and Neurotoxicant
Monoethanolamine (CAS # 141-43-5)		Suspected neurotoxicant, respiratory toxicant, and skin or sense organ toxicant
Sodium Metasilicate Pentahydrate (CAS # 6834-92-0)		Suspected gastrointestinal or liver toxicant
Ethylene Glycol Phenyl Ether (CAS # 122-99-6)	SARA 313 Toxic Chemical notification and release reporting	Suspected developmental toxicant and reproductive toxicant
Sodium Xylene Sulfonate (CAS # 1300-72-7)		Suspected gastrointestinal or liver toxicant
Deionized Water (CAS # 7732-18-5)		Suspected liver, gastrointestinal, neurotoxicant

Bufferall

Manufacturer: Rochester Midland Corporation

MSDS Current as of August 24, 2006

Route of entry: Eye and skin contact and ingestion and inhalation.

Acute Effects (from MSDS):

Eyes: May cause moderate eye irritation.

Skin: Prolonged contact may lead to irritation and dermatitis.

Inhalation: May irritate mouth, nose, and throat.

Ingestion: Irritation. Causes vomiting, nausea, and diarrhea.

Chronic Effects:

Not known.

Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
Citric Acid (CAS # 77-92-9)	No effects/carcinogenicity listed under OSHA, IARC, or NTP.	Lacking data; covered under FIFRA

Over & Under

Manufacturer: JohnsonDiversity, Inc.

MSDS current as of March 2, 2006

Route of entry: Eye contact, skin contact, or inhalation.

Acute Effects:

Eyes: May be mildly irritating to eyes.

Skin: May be mildly irritating to skin.

Inhalation: None.

Ingestion: None known.

Chronic Effects:

None known.

Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
Dipropylene glycol methyl ether (CAS # 34590-94-8)	Listed under Federal Regulation Section 313	Suspected kidney toxicant, neurotoxicant, and reproductive toxicant.
Diethylene glycol monoethyl ether (CAS # 111-90-0)	Listed under Federal Regulation Section 313	Suspected cardiovascular or blood toxicant, gastrointestinal or liver toxicant, kidney toxicant, and neurotoxicant

Hydroline Gloss

Manufacturer: Basic Coatings

MSDS current as of March 15, 2005

Route of entry: Skin contact, skin absorption, inhalation, ingestion, and eye contact.

Acute Effects:

Eyes: Irritating to the eyes. May aggravate pre-existing eye disorders.

Skin: Causes drying of the skin. May aggravate pre-existing skin disorders.

Inhalation: Excessive inhalation of vapor may cause headache, dizziness, and nausea. May aggravate pre-existing lung disorders.

Ingestion: No information.

Chronic Effects:

No information.

Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
N-Methyl-2-Pyrrolidone (CAS # 872-50-4)	Immediate health and fire hazards, listed under SARA section 313	Recognized as a developmental toxicant, suspected cardiovascular or blood toxicant, kidney toxicant, neurotoxicant, and reproductive toxicant.
Diethylene glycol ethyl ether (CAS # 111-90-0)	Immediate health and fire hazards, listed under SARA section 313	Suspected cardiovascular or blood toxicant, gastrointestinal or liver toxicant, kidney toxicant, and neurotoxicant.

Vectra-Floor Finish

Manufacturer: JohnsonDiversey, Inc.

MSDS Current as of March 2006

Principle Routes of exposure: Eye contact, skin contact, inhalation

Floor finishing products are some of the common irritants or least favorite chemicals of the janitors, but also the most difficult products to replace. Few effective alternatives to floor strippers, waxes, or finishers exist, according to Mondloch.

Ingredient	MSDS overview	Scorecard.org overview
Dipropylene glycol methyl ether	Can be mildly irritating to eyes, skin, no known carcinogenic, mutagenic, or reproductive effects, no special protection requirements for product under	Suspected kidney toxicant, neurotoxicant, and reproductive toxicant
Diethylene glycol monoethyl ether		Suspected cardiovascular or blood toxicant, gastrointestinal or liver toxicant, kidney toxicant, neurotoxicant

Stride Citrus SC Neutral Cleaner-Use Solution (1:256)

Manufacturer: JohnsonDiversey, Inc.

MSDS Current as of February 2007.

Principle routes of exposure: Eye contact, skin contact, inhalation, ingestion

Ingredient	MSDS Overview	Scorecard.org Overview
Sodium xylene sulfonate	This product contains no substances which at their given concentration, are considered to be hazardous to health.	6 of 8 basic tests to identify chemical hazards have not been conducted on this chemical, or are not available to the public, regulated by FIFRA
Alcohol ethoxylates		None of 8 basic tests to identify chemical hazards have been conducted on this chemical

Lysol Brand III Disinfectant Spray, All Scents (Aerosol)

Manufactured by: Reckitt Benckiser

This is a finishing product for the bathrooms, as it is an antibacterial disinfectant.

Ingredient	MSDS Overview	Scorecard.org Overview
Propane	Listed as flammable	Neurotoxicant, Respiratory Toxicant
Ethanol	Listed as flammable, ensure proper ventilation, do not spray in eyes, on skin or clothing, wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco, ingestion may result in ethanol poisoning	Suspected Carcinogen, Cardiovascular or Blood Toxicant, Development Toxicant, Endocrine Toxicant, Gastrointestinal or Liver Toxicant, Neurotoxicant, Reproductive Toxicant, Respiratory Toxicant, Skin or Sense Organ Toxicant
N-Aldimethbenzammsac	No information	No information
Isobutane	No specific information	None of 8 basic tests performed to test human safety, according to EPA

The following five products are the ones that will eventually be replaced by H2Orange2 after the testing phase is over. The MSDS for H2Orange2 is listed last.

(Triple S) SSS Carpet Stain Remover

MSDS current as of January 10, 2000

Acute Effects:

Inhalation: Excessive inhalation of vapors can be harmful and may cause headache, dizziness, asphyxia, anesthetic effects, and possible unconsciousness.

Eye Contact: Slight irritation

Skin contact: slight irritation

Ingestion: Possible chemical pneumonitis if aspirated into lungs. Nausea.

Chronic Effects:

Headache, dizziness, nausea, possible unconsciousness.

Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
Acetone	Not listed as a carcinogen	Suspected Cardiovascular or Blood Toxicant, gastrointestinal or liver toxicant, kidney toxicant, neurotoxicant, respiratory toxicant, skin or sense organ toxicant
Isopropanol	Not listed as a carcinogen	Suspected Cardiovascular or Blood Toxicant, developmental toxicant, gastrointestinal or liver toxicant, kidney toxicant, neurotoxicant, respiratory toxicant, skin or sense organ toxicant
Isobutane/Propane blend	Not listed as a carcinogen	Suspected neurotoxicant
2-Butoxy Ethanol	Not listed as a carcinogen	Suspected endocrine toxicant, Cardiovascular or Blood Toxicant, developmental toxicant, gastrointestinal or liver toxicant, kidney toxicant, neurotoxicant, respiratory toxicant, skin or sense organ toxicant

Liquid Formula 77 with Biosolv

Manufacturer: Chemical Specialties Manufacturing Corporation

MSDS Current as of October 2, 2003

Acute Effects:

Eyes: May cause severe eye irritation and possible burns.

Skin: May cause severe skin irritation and possible burns.

Inhalation: Prolonged breathing may cause irritation of the upper respiratory tract.

Ingestion: May cause abdominal discomfort, nausea, and diarrhea.

Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
Disodium Trioxosilicate	PEL: NA, TLV:NA	Suspected gastrointestinal or liver toxicant
Alcohol Ethoxylates	PEL: NA, TLV:NA	No data

Carcinogenic Ingredient	MSDS Overview	Scorecard.org Overview
Trisodium Nitritotriacetate	PEL: NA, TLV:NA	Recognized carcinogen, suspected kidney toxicant

Antibacterial Scrubbing Bubbles I Bathroom Cleaner

U.S. Manufacturer: S.C. Johnson & Son, Inc.

MSDS current as of December 11, 2003

Route of entry: eye contact.

Scrubbing Bubbles was listed by many janitors as their favorite product because of its effectiveness, but was also listed by several janitors as a potential irritant and that they experienced negative health effects while using it.

Acute Effects:

Eyes: may cause mild eye irritation.

Skin: Prolonged or repeated contact may cause mild skin irritation.

Inhalation: None known.

Ingestion: None known.

Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
Quaternary Ammonium Compound	Exposure limit/toxicity not established	Need CAS#
Tetrasodium Salt of EDTA	Exposure limit/toxicity not established	No data on human health effects
Glycol Ether	35 ppm TWA (Supplier recommended)	Suspected cardiovascular or blood toxicant, kidney toxicant, neurotoxicant, reproductive toxicant
Isobutane		Suspected neurotoxicant

Liquid Sunshine

Manufacturer: United 777

MSDS current as of March 3, 2005

Acute Effects:

Eyes: May cause irritation.

Skin: Prolonged or repeated contact may cause irritation.

Inhalation: Mists of this product may irritate nasal passages.

If swallowed: swallowing large amounts (more than a few ounces) may cause nausea, upset stomach, and vomiting.

Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
In accordance with Federal Regulation CFR 1910.1200, all materials in this product are considered non-hazardous.		

Glance Foaming Glass & Multi-Surface Cleaner

Manufacturer: JohnsonDiversey, Inc.

MSDS current as of March 10, 2005

Principle routes of exposure: Eyes, skin, inhalation

Acute Effects:

Skin: Not known

Eye: Not known

Inhalation: Not known

Ingestion: Not known

Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
Isobutane	LD50 Oral: NA LD50 Dermal: NA LD50 Inhalation: NA	Suspected neurotoxicant
2-Butoxyethanol	LD50 Oral: 470 mg/kg (rat), LD50 Dermal: 220 mg.kg (rabbit), LC50 Inhalation: 450 ppm (rat)	Suspected endocrine toxicant, Cardiovascular or Blood Toxicant, developmental toxicant, gastrointestinal or liver toxicant, kidney toxicant, neurotoxicant, respiratory toxicant, skin or sense organ toxicant

H2Orange2 Concentrate 117

Manufacturer: EnvirOx LLC

MSDS current as of July 2005

Acute Effects:

Eye: may cause eye irritation.

Skin: may cause skin irritation if left on for long periods of time.

Inhalation: NA

Ingestion: May cause upset stomach

Hazardous Ingredient	MSDS Overview	Scorecard.org Overview
Hydrogen Peroxide	<4%	Suspected gastrointestinal or liver toxicant, neurotoxicant, respiratory toxicant, skin or sense organ toxicant

Janitors' Survey and Survey Results

In addition to working with Jack Mondloch and Frenchie Michaud at Facilities Services (FACS), who provided us with excellent information and assistance, a major part of our project was creating and administering a survey to the FACS janitorial staff. The purpose of the survey was to obtain information about the janitor's experiences working with the cleaning products at the University of Montana and use this information to make recommendations to custodial staff and Facilities Services about safe and effective cleaners to ensure the continued health and safety of the janitorial staff. After meeting with Jack Mondloch and providing a sample survey for him to review, we were invited to administer the surveys at the janitorial meetings that take place before certain shifts begin. Jack informed us that many cleaning products have been phased out already and replaced with less toxic cleaners that are safer for the janitors and the environment, and we wanted to gauge awareness and satisfaction with this process. Facilities Services also informed us that they are constantly testing new "green" products and looking for safer, more sustainable products for staff to use

The survey audience is Facilities Services staff, who answered survey questions pertaining to type and frequency of work tasks, their work environment, cleaning products they use, and experiences with the cleaning product while on the job (See Appendix). The survey was administered at two janitorial check-in meetings on November 30, 2007 and one on December 3, 2007. We surveyed a total of 38 janitors. The results were then tabulated and summarized. Several of the results from the survey are included in the following paragraphs.

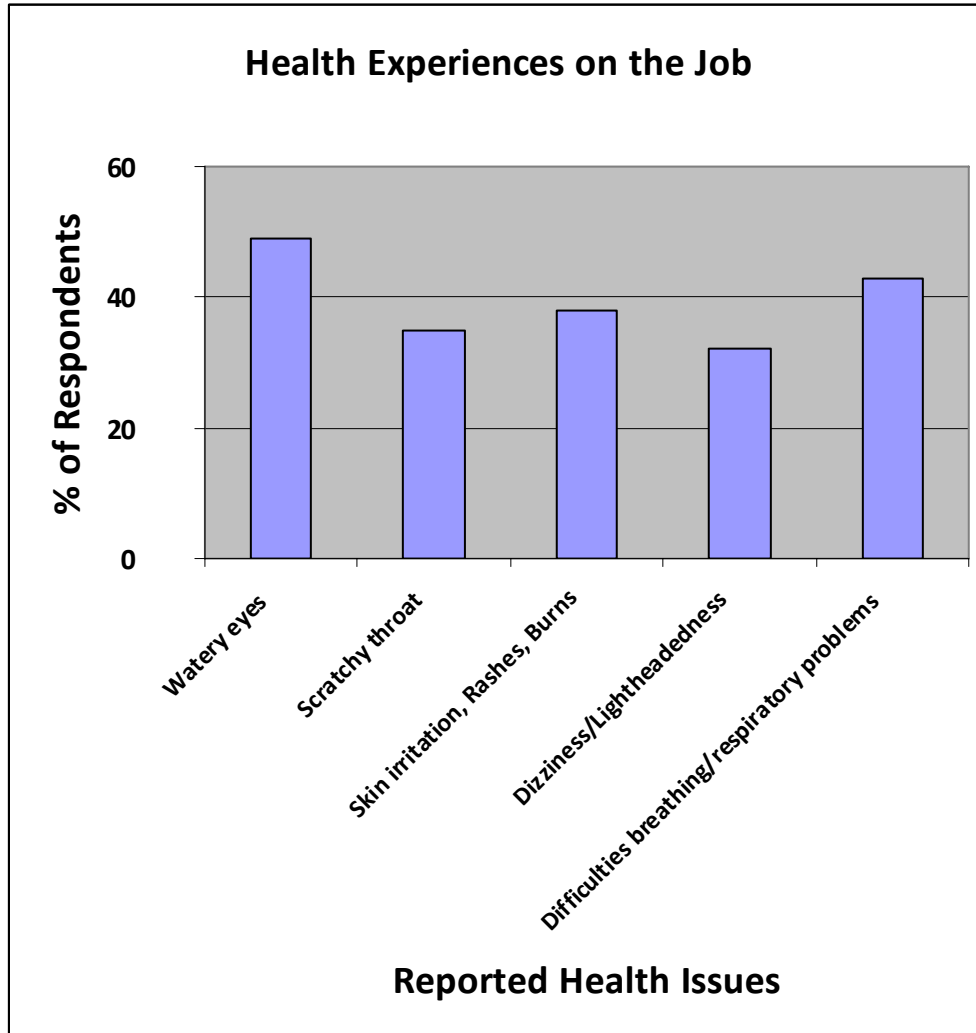
The beginning of the survey included questions pertaining to demographic information. Of the survey participants, 92% fall between the ages of 18 and 59, with only 8% in the 60-69 years age category. Additionally, the staff is mostly male, making of 76% of the employees. Ethnic makeup of staff is 86% white, 8% Native American, and 3% black. Of the staff, 89% are not students. Surprisingly, that leaves 11% as students, while 100% of surveyed staff is full time (40+ hours per week), so a small number of staff are working full time and going to school as well.

The final piece of demographic information obtained was that 97% of the staff claims union membership. Only one person answered no, which leads me to believe that perhaps the question was misunderstood or answered wrong.

Moving on the survey, the next section asks questions regarding cleaning tasks. The most common tasks completed were vacuuming, sweeping, and mopping; cleaning restrooms; and cleaning windows completed by 92%, 97%, and 54% of survey participants, respectively. Shampooing carpets and stripping and waxing floors were the least common tasks, performed less than one time per month by the vast majority of survey participants.

Next, a key part of the study included a section entitled "Work Experiences," and asked questions regarding any health issues the janitors had experienced while on the job. The participants were asked to reply "yes" or "no" to experiencing any of the following: watery eyes, scratchy throat, skin irritation, rashes or burns, dizziness or lightheadedness, and difficulty breathing or other respiratory problems. If they answered yes, they were then asked to gauge

how often they experienced these issues on a range including “never,” “rarely,” “often,” “very often,” or “always.”



It is interesting to note that although there were not high percentages in each category, 63% of respondents did report experiencing at least one symptom, and 18% reported experiencing all five symptoms while on the job.

It is also important to discuss the frequency of symptoms. Of the 49% experiencing watery eyes, 41% reported experiencing it rarely, 5% reported experiencing it often, and 3%

reported experiencing it always. Of the 35% experiencing a scratchy throat, 19% reported experiencing it rarely, 8% reported it often, and 6% very often. Of the 38% experiencing skin irritation, 30% reported it rarely, 5% reported it often, and 3% reported it always. Those reporting difficulties breathing was 43%, and 32% experienced it rarely and 11% often. The dizziness and lightheadedness section had inconsistent data, with a higher percentage reporting that they experienced it rarely than answered “yes” to experiencing it in the first place. That data comes from one survey participant who answered “no” to experiencing the symptom and then “rarely” to the frequency, which is an inconsistent answer. Additionally, in the scratchy throat category, there was one survey with a response of “yes” and then “never” when discussing frequency. This is also inconsistent data.

As shown, the frequency of symptom experience is most often “rarely,” but there is still strong evidence for health problems occurring while on the job. One janitor even reported a serious incident regarding the cleaning product Butcher’s Jackhammer which resulted in hospitalization. Although somewhat rare, the health effects are still cause for concern, as the janitors are in close contact with all products daily. Even some negative health experiences on the job are cause for concern, and there is definite evidence of health problems within the custodial staff at FACS. Long-term effects are obviously not something we could gauge with this survey, but it would be interesting to research more on that topic.

After reflecting on health issues, the survey participants were then asked whether or not the specific symptoms they experienced were associated with a specific task or using a

particular product. Sixteen out of the 38 responded “yes” and wrote a specific chemical or activity down. The results are in the following table.

Product or Activity	Percentage (%)of total responses (n=16)
Scrubbing Bubbles	37.5
Glass Cleaner	25
White Board Cleaners	12.5
Floor Stripper	12.5
Dusting	12.5
Bufferall	12.5
Floor finishing	6.25
Vacuuming	6.25
Butcher’s Jackhammer	6.25
Acidic Chemicals	6.25
Spray from other chemicals	6.25
Gum remover	6.25
Carpet shampoo	6.25

Following, we asked the janitors what safety precautions they took when using chemical cleaners. Results indicated that many janitors took safety precautions, showing 47% open windows, 89% wear gloves, 34% wear a mask, and 58% wear eye protection. Out of those that took precautions, 84% stated that these precautions have helped with the symptoms experienced when using cleaning chemicals. These results are shown in the following graph. Because so many janitors take these precautions, a following assumption would be that there is some awareness of the toxicity or potential health effects of using cleaning products. There also must be good training instruction on the part of the supervisors.



It then makes sense that 97% reported having access to information about the safety of cleaning and other products used on the job. Additionally, 83% also reported using the Material Safety Data Sheets (MSDS) and 19% even reported using them “always.” The reported reasons for using the MSDS are as follows in the table.

Reason for MSDS usage	Number of responses out of 24*
For new product information	9
To check adverse/hazardous effects	6
To read them	5
To read precautions/directions	3
For referral	2
How to mix products	2
To educate	1
To put in a folder	1

* Some respondents cited more than one reason

Then we asked about janitorial staff awareness regarding safer and more effective cleaning products. Despite the previous numbers of 63% of janitors experiencing some health

issue while on the job, only 37% reported being extremely aware of the human health risks associated with using some cleaning products. However, 26% reported being very much aware and 31% reported being somewhat aware of the associated health risks, respectively. Only 6% actually reported being “not at all” aware of the risks.

Finally, we asked the janitors to provide written responses to five questions. The first question was “Which current cleaning product is your favorite and why?” The most common response was “Scrubbing Bubbles,” and most of the explanations discussed the efficiency of the product. However, when looking back at the previous data, Scrubbing Bubbles was also the most commonly listed irritant. This shows evidence that there is great value placed on product effectiveness, and that when looking for safer alternatives, a great amount of staff satisfaction will be based upon how effective the new product is.

The second favorite product was H2Orange2, the new more environmentally-friendly product. Only three people reported it as their favorite, but that makes sense as it is still in trial period and only three to four of the janitors test new products during the trial period.

The second question was “Which current cleaning product is your least favorite and why?” The most common least favorite chemical listed was Bufferall, followed by Freedom Stripper, and the white board cleaner. Many of the reasons listed for these being the least favorite chemicals involved toxic fumes and experiencing respiratory difficulties when using the product.

The third question asked whether the respondents had tried alternative safe cleaning products before. If they had, they were asked what they liked and disliked. Several reported

that they had, but the majority stated that they did not like them because they were not as efficient and did not clean as well as conventional cleaners. However, three people reported liking the “orange stuff” or H2Orange2, which is very positive feedback since only about three or four janitors are testing that product at this time.

We also asked if they had any other health, safety or hygiene concerns about their work environment. If so, they were asked to explain.

Finally, we left a place for them if they had anything else to say or tell us. Few people responded to this question, but some did and a few had some notable responses.

I believe that using alternative cleaners is a great idea. However, I am aware of the fact that they can be more expensive. I already struggle to make a living and if our department was going to dish out more money, they should consider putting it towards our pay.

This is a very good point, as it is true that some “green” cleaners do cost more, but as seen in our case studies, most institutions have reported that a transition to green cleaners has actually saved money and resulted in decreasing the need for so many different products. As this respondent exemplifies the common misconception that non-toxic and healthier products are always more expensive. This shows the need for more information regarding cost effectiveness of green products at FACS and the University of Montana.

Another person responded:

Have used environmentally-friendly stuff before and the window and bathroom [cleaners] are not efficient.

This comment shows the need for more testing and finding more effective non-toxic products.

The entire list of responses is included in the Appendix in the document entitled “Written Responses.”

The survey results were interesting, and showed that janitors are experiencing health problems while cleaning. We believe that this information can be used to encourage UM to purchase safer and more effective cleaning products that would create a healthier work environment.

Green Seal Certification

Green Seal is a cleaning product certification standard. We encourage FACS, and eventually all UM janitorial departments, to purchase only Green Seal certified products. We believe Green Seal is an easy system to use because they provide catalogs and products can be easily chosen according to need and purchased in bulk.

Green Seal is a non-profit organization devoted to setting environmental standards, product certification, and public education. The organization's mission is "...to work towards environmental sustainability by identifying and promoting environmentally responsible products, purchasing, and production (G.S. 37, 2006)."

According to Green Seal's 2006 tax returns, available online through Guide Star ([2007](#)), \$15,000 of their total revenues of \$1.5 million was donated by the public. Approximately \$1.1 million was acquired from programs and service fees including contracts from the federal government.

Green Seal standards are consensus standards which were developed with guidance by and input from a committee of stakeholders including manufacturers, users, government officials, academic and consulting experts, and environmentalists. Standards are subject to revision by the committee.

Green Seal standard number 37 (G.S. 37), applies to cleaning products used for industrial and institutional purposes. G.S. 37 specifically regulates general purpose, bathroom, glass, and carpet cleaners for routine cleaning of offices, institutions, warehouses, and

industrial factories. The G.S. 40 applies specifically to Industrial and Institutional floor cleaners and additional information can also be found in the “Choose Green Report” by Green Seal which is entirely about floor finishes and strippers (Green Seal, 2006).

G.S. 37 has specified performance requirements for all products covered under it. General purpose cleaners must remove 80% of particulate soil while bathroom cleaners must remove 75% of soil. Carpet cleaners are required to perform as well as nationally recognized products in cleaning efficiency and resoiling resistance. To test glass cleaners, Green Seal looks at soil removal, smearing, and streaking by the product (Green Seal, 2006)).

This standard also has toxicity requirements products must meet. The undiluted products must not be toxic to humans (via inhalation or ingestion) or aquatic life. Products can not be carcinogens or cause reproductive harm and can not be corrosive or irritating to the eyes or skin. Green Seal approved products must not be combustible, which means they must have a flashpoint above 150 degrees F and must not be able to sustain a flame. Products also can not contribute to the production of photochemical smog, tropospheric ozone or indoor air quality and must not contain more than .5% total phosphorus (Green Seal, 2006).

In G.S. 37 there are prohibited ingredients specified including alkylphenol ethoxylates, dibutyl phthalate, heavy metals, ozone depleting compounds, and optical brighteners. Alkylphenol ethoxylates are surfactants, chemicals that get between surface and dirt to allow water to easily wash dirt away, and are commonly found in all-purpose cleaners, laundry soap and stain removers, and hard-surface cleaners. These chemicals become more toxic as they degrade and, when tested on animals, have shown to have a negative effect on reproduction

cycle and the reproductive organs (Gorman, 2007). Surfactants also bioaccumulate in the environment and cause harm to animal hormone systems (Barron, n.d.). Dibutyl phthalate is a chemical that makes plastic soft and is often used in fragrances. These types of chemicals are commonly found in cosmetics, deodorizers, fabric softeners, floor polishes, and window cleaners. These chemicals have shown reproductive and developmental harm in animal tests and have been reported to have a correlation between phthalate levels in house dust and allergies and/or asthma in children (Gorman, 2007). Other ingredients that are harmful to human and environmental health are prohibited including heavy metals such as arsenic, lead, cadmium, cobalt, chromium, mercury, nickel, or selenium; ozone-depleting compounds; and optical brighteners (Green Seal, 2006).

Other requirements of G.S. 37 include that the primary packaging of products must be recyclable, step-by-step training instructions for dilution, use, disposal, and use of equipment, standards for product labeling and Green Seal logo use, and, though not required, animal testing is discouraged.

Other standards systems encourage and require the use of Green Seal including the U.S. Green Building Council's LEED certification, the U.S. EPA, and Canada's Eco-Logo program.

In LEED standards, builders can earn points in categories such as Sustainable Cleaning Products and Materials credit and Indoor Environment Quality. Up to three points can be earned in each category. The Sustainable Cleaning Products and Materials category is used to encourage implementation of sustainable purchasing for cleaning products and materials. One point is earned for every 30% of the total annual purchased that meets the G.S. 37 standard.

For the Indoor Environment Quality category, points are awarded for green cleaning management and design practices (U.S.G.B.C., 2005).

The U.S. EPA developed the Design for the Environment program to help manufacturers and formulator companies to design products that use chemicals that are safer to the environment and to human health. Current there are 46 partner companies producing cleaning products that are safe and effective ([EPA](#), 2007).

Eco-Logo is Environment Canada's eco-labeling program under their Environmental Choice Program (ECP) which certifies a variety of products including glass cleaners, vehicle cleaners, degreasers, carpet cleaners, disinfectants, and bathroom cleaners, just to name a few (Center for a New American Dream, 2007).

Case Studies of Other Institutions: Making the Case for Green Cleaning

In order to support our case for institutional change, we have included case studies from other places around the country that have made the switch to safer and more effective cleaning products. All cases similarly reported that changing to green cleaning products was a very cost-effective measure, providing further encouragement for UM to switch for economical reasons as well as environmental and health reasons.

Yellowstone National Park

With the leadership of Yellowstone National Park (YNP) superintendent Michael Finley, in 1998 the EPA Region 8 Pollution Prevention Program funded a “greening” of custodial operations in YNP by providing two consultants to oversee the project (Wakefield and Ferre 2000). This project was planned and carried out with many similarities to the methods, processes, and eventual goals of our project with the janitors at the University of Montana. The objectives of the project at YNP called upon the National Park Service (NPS) to:

Eliminate or greatly reduce the use of toxic, hazardous, and environmentally harmful cleaning chemicals, and potential human health risks; Reduce the quantity and variety of cleaning products by consolidating and standardizing product purchases; Choose the safest and ‘greenest’ janitorial products with a proven record in commercial operations; and Involve top management, first line supervisors and janitorial staff in all aspects of this process to ensure long term success(Wakefield and Ferre 2000).

It is interesting to note that the objectives of this project also focused on including janitorial staff in the decision-making process, such as the environmental justice aspect of our project did. In

order to involve the cleaning staff from top management to janitorial staff, the project began with a “facility-wide inventory and assessment phase” (Wakefield and Ferre 2000).” During this phase, the consultants traveled around YNP to talk with the staff and to conduct a product inventory. During the product inventory, the consultants found that over 130 different cleaning products were being used in YNP (Wakefield and Ferre 2000).”

Similar to the survey we carried out with the janitors, the consultants verbally interviewed employees and supervisors of the cleaning staff at YNP to find out information pertaining to cleaning duties and work habits. Several of the questions were very similar to ones that we asked on our survey. The following list includes the questions the consultants asked the staff:

- What the cleaning goals of the organization are
- Who establishes the cleaning goals or requirements
- How the staff cleans
- What tools and products are used
- What are their toughest cleaning challenges
- How much time do they have to clean
- How many people use the buildings, restrooms
- How are the buildings or facilities used
- How old are the buildings and fixtures to be cleaned
- What are their preferences and perceptions about cleaning products
- How willing is the staff to change their work practices
- What information do they want about new products
- In what format would the information be most useful

(Wakefield and Ferre 2000)

By taking into consideration the needs of the staff, the project has a greater chance of long-term success. We found it interesting that both our project and the YNP project focused on the aspect of inclusiveness in the decision-making process as a step toward success and sustainability.

After the preliminary assessment and inventory phase, the project then set up a testing phase, where new “green” products were tested for effectiveness. This occurred during the winter, so that the busy summer season was avoided (Wakefield and Ferre 2000). After the testing phases, certain products were chosen for permanent use. The products were chosen through criteria established by the city of Santa Monica’s environmentally-preferable bid specifications (Wakefield and Ferre 2000). These specifications are laid out in a report entitled “City of Santa Monica Custodial Products Bid Specifications 1998.” The report states that the city of Santa Monica “believes that these aggressive chemicals [those required to be reported under EPA’s SARA Act] are no longer required in most cleaning product categories and seeks to protect the health of its workers by minimizing exposure to the chemicals” (Santa Monica 1998). The Santa Monica guidelines do not allow disinfectants in cleaners, separating the cleaning and disinfecting processes. Also, they do not allow products in aerosol cans, products containing ingredients classified as known or probable carcinogens, teratogens, or mutagens; no products may contain Alkyl phenyl ethoxylates (APES) above trace amounts, may not contain ozone depleting compounds, and meet the California Code of Regulations for maximum allowable VOC levels (Santa Monica 1998). Additionally, the chemical ingredients must meet the Organization

for Economic Cooperation and Development (OECD) definition for Readily Biodegradable (Santa Monica 1998).

Although the YNP report does not list specific brands of cleaning products, it does list many of the ingredients present in the products. Most of the products are plant-based and biodegradable. The only products that do not meet the Santa Monica specifications are a degreaser containing petroleum distillates, a de-limer/de-scaler that contains phosphoric acid and the graffiti remover containing 70% plant-based products but some petroleum distillates (Wakefield and Ferre 2000).

After the final products were chosen, training was provided at each site to familiarize the staff with the new products and new cleaning methods. Automatic dispensing systems were also provided so staff no longer had to worry about diluting chemicals to the proper concentrations (Wakefield and Ferre 2000). After new product implementation, follow-up visits were made to ensure understanding of the new program and products, and to help with the transition (Wakefield and Ferre 2000).

At the end of the first summer season with the new products in September 1999, an evaluation was undertaken regarding the new products. The evaluations found that with the new green cleaning products, the park reduced the total number of cleaning products needed from 130 to 15 total products. This is an over 80% reduction (Wakefield and Ferre 2000). The benefits from such a reduction included a simplified buying process, easier stocking and inventory control, reduced storage space, and increased measurement accuracy with the new dispensing system (Wakefield and Ferre 2000).

An additional interesting result of the project is that it was shown to have the potential to change the ways of thinking of the janitorial staff. Wakefield and Ferre (2000) cite a situation where resealing the concrete floor is the suggested solution to the new bathroom cleaner not being strong enough to absorb the odors, whereas in the past the suggested solution would have been a stronger chemical product. Hopefully our project has the same potential, as we discovered in our survey that many janitors currently believe that green cleaning products are ineffective.

The YNP transition to green cleaning products is a great example for any institution wishing to carry out a similar system change. The report cites several reasons for the project's success:

- Support from the top
- Implementation of a pilot project
- Commitment to the project by key employees and supervisors
- Education of custodial staff in face-to-face meetings
- Perceived health benefits
- Simplification of purchasing and reduced storage space
- Maintenance of the vision
- A willingness to look for opportunities to improve

(Wakefield and Ferre 2000)

These reasons are the same reasons we felt were important during our project here at the University of Montana.

University of Georgia

Another university that is making the transition to green cleaning products is the University of Georgia. They have switched a few of their buildings to green-seal certified products as part of a 2006 Green Cleaning Initiative and hope to implement the plan campus-wide by 2009 (Tonini 2007).

The program is receiving positive feedback from the janitors as well. One janitor who experienced chronic asthma all her life, reported that with the green-seal products, she can breathe better, has less skin irritations, and her eyes no longer burn while cleaning. Additionally, she stated that the green products clean as well or better than the conventional products (Tonini 2007).

Assistant director of the service department at the Physical Plant at the University, Kim Thomas, stated that green cleaning is also cost effective. The university has been able to reduce their product usage from 300 chemical cleaning products to three green-seal certified products. The three products are an all-purpose cleaner, a glass cleaner, and one neutral disinfectant. Additionally, the only preliminary costs for making the transition to green cleaning products was \$350 per building, which included new vacuum cleaners and microfiber cloths, special filters for the heating and cooling systems, and the green cleaning products (Tonini 2007).

Every institution we researched reported positive feedback after making the transition to green cleaning products. All reported cost savings, product reduction, and staff satisfaction.

Rutgers

Rutgers, the State university of New Jersey, has been touted as one of the countries most progressive institutions in regards to sustainability. In recent years the university has focused some of their efforts on the cleaning products they use. The Rutgers Facilities Custodial Product Evaluation Team was developed to find the “greenest” product and/or system available. For their research they focused on three areas, chemical composition, dispensing systems, and performance (Green Faith, 2007).

They looked at bio-based products, derived from corn, soy, coconut oils or other natural, renewable fuels, rather than petroleum based products because bio-based products tend to be more biodegradable and less hazardous to human health. They looked at seven companies and found two that made bio-based products, Rochester-Midland and Hillyard.

To ensure that workers were not required to measure out chemicals by hand, the research team also examined metered chemical dispensing systems from Rochester-Midland and Hillyard. They found that both companies offered dispensers that met their needs in size, ease of use, ADA compliance, versatile, able to fill bucket or bottle and free of a metering tip which can easily become clogged.

In addition to Rochester-Midland and Hillyard products, the team also tested JohnsonDiversity products. JohnsonDiversity products received more “excellent” votes than Rochester-Midland or Hillyard products. However, the team determined that the shortfalls of the products could be overcome with proper training. Overall, Rutgers Facilities Custodial Product Evaluation Team found Rochester-Midland products to be the best product tested (Green Faith, 2007).

In addition to the research conducted by the Rutgers Facilities Custodial Product Evaluation Team, Kevin Lyon, director of the university-wide Purchasing Department, has been an immense advocate for environmentally and socially sound purchasing policies at Rutgers (Alvarez, 2007). Rutgers has taken care to research purchasing and supply chain management and their relation to environmental science and management by studying their impacts on social, economic, and environmental processes and systems through a life cycle approach to products and services, covering material extraction, packaging, shipping, use, disposal, and reuse. Through this process, Rutgers hopes to demonstrate and apply the benefits of integrating social, ethical and environmental indicators (Rutgers, 2007).

Other institutions have also been working with the cleaning products used by custodial staffs. The University of Wyoming has developed a “green” cleaning database that lists the vendor contact information in an effort to aid faculty and staff in making the University of Wyoming a “greener” campus. The database is accessible to the public at <http://uwadmnweb.uwyo.edu/pplweb/sustainability/Custodial%20Products.asp> (University of Wyoming, 2007). Other institutions that have green cleaning policies and practices as part of their sustainable campus initiatives include Harvard (<http://www.greencampus.harvard.edu/greenclean/about.php>) and Yale (<http://www.yale.edu/sustainability/greenclean.htm>).

Harvard

Harvard’s Green Cleaning Program is a combined effort of Harvard Green Campus Initiative and University Operations Services’ Facilities Maintenance Operations (FMO). The

main goal of the green cleaning program is to develop an environmentally safe, employee safe and building occupant safe green cleaning program for FMO's custodial services.

The Green Cleaning Program officially began in the summer of 2004 after receiving partial funding by a donor who was interested in the health effects of cleaning chemicals. Harvard's current criteria are based off of Green Seal's GS-37 criteria for Industrial and Institutional Cleaners. Harvard believes that green cleaning is not just about products, but also about using sustainable cleaning methods. Some examples of methods that FMO has been most successful with include microfiber cloths, mops, entrance matting, and high filtration (HEPA) vacuums. Microfiber cloths and mops are made out of a special material that does not need to chemicals to clean and can be washed and reused many times. A life cycle analysis of microfiber cloths found that they are an excellent alternative to paper towels that are only used once. Entrance matting is used to keep dirt from entering a building, reducing the need for cleaning products. High filtration vacuums can be used to clean carpets and keep indoor air quality at an optimal level.

Recommendations

Through this research and data collection, we have laid a solid basis for this project to be carried forward. The final goal is a transition by the University of Montana to mandate that all custodial products purchased will be Green Seal certified, and we hope this project will continue to move in that direction.

One of the first important steps is continued education and outreach. We have begun to forge a cooperative relationship with FACS, which is important in our continued effort to provide information and awareness on alternative cleaning supplies. Many of the survey responses indicated that custodial staff was not as aware of alternative cleaning supplies as hoped. There is a great deal of interest and concern for employees on the part of FACS supervisors, and this can be encouraged greatly through providing more information and research on safer and more effective cleaning products. Jack Mondloch specifically expressed great interest and awareness about green cleaning, but also stated that with his other duties he would never have time to research products thoroughly. The main source of information on cleaning products is the cleaning product companies themselves, which approach FACS with an agenda and a sales pitch. A large opening exists for student research or potentially a student position that would research cleaning products and provide recommendations to the purchasing staff at FACS. More information regarding cost effectiveness, product effectiveness, and health benefits associated with green cleaning products would be beneficial to the staff at FACS.

Information could be spread campus-wide as well. It was really interesting and surprising to learn how much had already been done to ensure worker health at FACS, and the progress that had been made toward increased purchasing of green cleaning products. The transition made at Dining Services to the use of solely Green Seal certified products was also news to us. Spreading this information campus wide through outreach programs and information-sharing would lead to greater interest in total University Green Seal certification product purchasing.

One of the hindrances that we found in making the transition to green products here at the University of Montana is the separation of custodial staff by area and department. There exists little to no communication between departments. For example, Dining Services recently switched to all Green Seal certified products but this information is not known by the other custodial departments. Mark LoParco of DS told us that there is little communication between the separate areas of campus. Greater networking and information sharing between staffs would increase the speed at which an entire campus transition could be made.

We urge President Dennison to encourage this transition through a University-wide purchasing policy change that would require all custodial products to be Green Seal certified. An ASUM resolution has already been passed recommending this (see attached resolution in Appendix). The transition to green cleaning, which goes above and beyond safe cleaning products to include HEPA filter vacuums, specific types of cleaning rags, and unbleached any recycled paper products, would benefit the university by contributing to the Climate Commitment made by Dennison. Dennison joined the ACUPCC, and as shown in the table, the

university could gain credits through the LEED rating system. A switch to green cleaning would contribute to the campus climate neutrality goal.

- We need EVST students, or other interested individuals, to carry this project and research forward, using as a foundation the report, information, and contacts we have provided.
- We recommend that SIT create a position for a green product research intern to work directly with FACS to recommend and provide information on Green Seal products to Jack Mondloch. These products would be recommended on the basis of cost effectiveness, product effectiveness, and health benefits and would then be tested by FACS janitors.
- We would encourage SCC to make official recommendations to President Dennison regarding purchasing of Green Seal products and inform him of the potential to gain credits for this action through the LEED rating system.
- We recommend greater campus-wide education regarding cleaning products and existing alternatives. Campus outreach would garner greater interest in Green Seal product purchasing.
- Finally, we hope for greater communication between janitorial departments on campus and in associated buildings and housing. We found the separation between all areas of campus and lack of networking to be a hindrance to information sharing and progress in

the area of green cleaning supplies. All departments would benefit from greater communication.

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Appendix A: Janitor Survey

Written Survey Comments 11/30/07 & 12/3/07

24. Which current cleaning product is your favorite and why?

- Survey 1.** Windex it makes things streak free.
2. Freedom Stripper, very effective.
 3. Not have one.
 4. No response.
 5. Pledge. It works well.
 6. No response.
 7. None.
 8. H2Orange. Multifunctional and biodegradable.
 9. None.
 10. No response.
 11. Scrubbing Bubbles. Good disinfectant.
 12. No response.
 13. Scrubbing Bubbles work really well.
 14. Scrubbing Bubbles-cleans everything from bathrooms to carpets.
 15. No response.
 16. Scrubbing Bubbles
 17. Scrubbing Bubbles it is easy to use.
 18. Foamy glass cleaner-works well w/no streaking.
 19. Red bottle.
 20. Bleach/disinfectants.
 21. Alcohol based glass cleaner, economical-easy to use-effective.

22. Glass cleaner-A lot of glass in Anderson Hall. Scrubbing Bubbles-so many uses.
23. Scrubbing Bubbles, it's a daily disinfectant.
24. Scrubbing Bubbles, disinfects in 60 seconds, low harm to me & environment.
25. H2Orange2-clean (green) and safe
26. Glass cleaner in a can-does a very good job.
27. Scrubbing Bubbles. It's the most versatile.
28. It's like asking a mom who her favorite child is.
29. Scrubbing Bubbles-works great.
30. Scrubbing Bubbles, because it is very versatile.
31. Renown blue glass cleaner-never leaves streaks on mirrors and is great for wiping up surfaces that I have cleaned w/other products (like when Scrubbing Bubbles leaves bubbles behind)
32. Dow Scrubbing Bubbles-it works on just about everything.
33. Lysol-cleans well and kills germs.
34. The ones that are bad for you, like Scrubbing Bubbles and Expo board cleaner (and acid for toilets). I like them because they actually work and sterilize.
35. H2Orange2. Does a good job.
36. Scrubbing Bubbles-it works.
37. No response.
38. No response.

25. Which current cleaning product is your least favorite and why?

Survey 1. Toilet bowl cleaner because I must touch the toilet.

2. Shower cleaner
3. Not have.
4. No response.
5. Don't know.

6. No response.
7. Acid cleaners, Buffer All (very toxic), burns in throat, burns on skin. Had respiratory problem for several weeks.
8. Bufferall; it's sticky. & Acid Bowl; it's hazardous.
9. Freedom Stripper/ fumes
10. No response.
11. NA
12. No response.
13. Butcher's Jackhammer.
14. Acid Wash-it is made with acid!
15. No response.
16. No response.
17. Hydroline, because it stinks.
18. Stripper-very messy
19. Green.
20. ?
21. No particular "least favorite."
22. There are not any I particularly dislike.
23. I don't have a least favorite that I know of.
24. Gum remover-basically is a highly toxic solvent.
25. Scrubbing Bubbles-makes it difficult to breathe.
26. Scrubbing Bubbles-have inhaled the fumes too many times & it's not a good feeling.
27. Freedom floor stripper. Strong, unpleasant odor.
28. Least favorite child.
29. White board cleaner-see above [*referring to #17 where it was stated that watery eyes, breathing difficulty was associated with using the white board cleaner*]

- 30. Bufferall, it gets all over everything and is hard to get off.
- 31. One of the varieties of the Lysol disinfectant spray-it stinks!
- 32. No response.
- 33. Expo dry erase cleaner-smudges board and stinks.
- 34. I really don't put this much thought into it, sorry.
- 35. Bufferall.
- 36. No response.
- 37. No response.
- 38. No response.

26. Have you tried alternative safe cleaning products before? If so, what did you like and dislike?

Survey 1. No.

- 2. No response.
- 3. No.
- 4. No response.
- 5. Yes- they don't clean well.
- 6. No response.
- 7. Yes. Not as toxic.
- 8. Yes (H2Orange) likes; see #24, dislikes; it can stain things orange
- 9. Yes/ low fumes
- 10. No response.
- 11. NA
- 12. No response.
- 13. Yes in other bldgs., didn't seem to work as well.

14. No.
15. No response.
16. Yes, no harsh odor.
17. No.
18. No.
19. No response.
20. No.
21. Yes-I am neutral on them.
22. I have not, but am not opposed to them. My only concern is if they work as well as other products.
23. Not sure.
24. Yes-no disinfectant value or the dwell time is so long it is not efficient.
25. Yes/ they are safe but don't do quite as good of job.
26. Yes the orange clean is good stuff.
27. No.
28. No.
29. Yes. Orange Clean products work fairly well.
30. No.
31. No.
32. No response.
33. Yes-works well on organic material but doesn't remove bowl ring.
34. Yes-the green stuff, vinegar.
35. No response.
36. No.
37. Yes.
38. No response.

27. Do you have any other health, safety or hygiene concerns about your work environment? If so, please explain.

Survey 1. No.

2. No response.
3. No response.
4. Asbestos
5. No response.
6. No response.
7. Yes. Tons. (system shut down, receptive to everything...that are sick related) (work overload)
[underlined several times, then a smiley face followed by a question mark]
8. I sometimes worry about the effects of repeated exposure to chemicals & dust.
9. None.
10. No.
11. No response.
12. No response.
13. Constant construction dust in old journalism bldg.
14. No.
15. No response.
16. No response.
17. No.
18. No.
19. No.
20. NA
21. Rest rooms are never perfectly clean-people-only 1 in 6 wash their hands-! Men are worst.
22. Not really.

- 23. No.
- 24. No.
- 25. No response.
- 26. No.
- 27. Contagious diseases. Mainly cold/flu virus. Passed on to me through indirect contact with many students, staff, faculty.
- 28. No.
- 29. No response.
- 30. No response.
- 31. No.
- 32. Fire extinguishers-everyone should know how to use them.
- 33. No.
- 34. No.
- 35. No response.
- 36. No.
- 37. The majority of vacuums put out as much crud in the air as they pick up. I want a quality HEPA vacuum.
- 38. No

28. Is there anything else that you'd like to say or tell us?

Survey 1. Thanks for the cookies.

- 2. No response.
- 3. No response.
- 4. Have used environment friendly stuff before and the window and bathroom are not efficient.
- 5. No response
- 6. No response.

7. Good day! Take Care! Always wear gloves, especially on university campus. Be heads up.
8. I believe that using alternative cleaners is a great idea. However, I am aware of the fact that they can be more expensive. I already struggle to make a living and if our department was going to dish out more money, they should consider putting it towards our pay.
9. Nope.
10. No.
11. No response.
12. No response.
13. No response.
14. No.
15. No response.
16. No response.
17. No.
18. No.
19. No response.
20. NA
21. Thank you.
22. I appreciate your interest and effort in making this survey *[smiley face]*.
23. No.
24. No.
25. No response.
26. No.
27. No response.
28. Thinking...no.
29. No response.
30. No response.

- 31.** No.
- 32.** No response.
- 33.** No.
- 34.** No.
- 35.** No response.
- 36.** No response.
- 37.** My department heads (not all) display very little concern for our safety and on occasion have sent us into harms way “with knowledge there of.” Poor.
- 38.** No.

Appendix B: ASUM (Associated Students of University of Montana) Resolution Regarding Safe and Effective Cleaning Products

Whereas, there are over 70,000 chemicals being used in cleaning products today, and fewer than two percent have been thoroughly tested for their effects on human health;

Whereas, recent advancements in chemical technology have made it possible to develop cleaning products that are as effective as conventional products, but that do not contain harsh chemical ingredients;

Whereas, Green Seal certified products are cost effective when evaluated over the length of the maintenance cycle;

Whereas, benefits of these products include improved health of the custodial staff and building occupants, improved student and worker productivity, and reduced liability from worker safety issues;

Whereas, by phasing out toxic chemicals in the workplace and switching to Green Seal certified products, UM will receive recognition in the community for reducing resource consumption and pollution, and safeguarding human health;

Whereas, UM can receive up to nine credits on the US Green Building Council's LEED rating system for a green cleaning program;

Whereas, these credits will move UM towards meeting the requirements of the American College and University President's Climate Commitment;

Therefore, Let It Be Resolved that the Associated Students of the University of Montana recommend the establishment of a university-wide cleaning procurement policy that adopts Green Seal principles, certification, and recommendations as a minimum product selection standard.

Authored by: Senator Shannon Kuhn

Sponsored by: Senator Kip Rand

Approved: Fall 2007

SB21-07/08

Appendix C: Student Reflections

Shannon

I enjoyed this project because it made the connections between work, the environment, and social change. I am interested in working on issue campaigns regarding the connections between ecological sustainability and social justice, and this experience gave me first-hand experience into exploring the deeper dimensions of environmental justice. I learned a lot about organizing, communication, and collaboration over the course of this project. I believe that it proved to be strategic that this project was run by three women; I feel we were able to maintain a strong presence without being overly aggressive. Especially when we were interacting with the janitorial staff, I felt they understood we were genuinely concerned about their health, and not just surveying them for a grade.

One of the most valuable skills I gained was experience in conducting participatory research. Spending months revising our survey, with painstaking attention to every word and detail, ultimately paid off. It was interesting learning how number scales, open-ended questions, etc. are all used for very specific reasons. I do regret not finishing the survey earlier, just so we would have had more time to conduct surveys. Another really exciting thing was having Robin teach us all the nifty tricks Excel can do. I have a much deeper appreciation for data crunching, and social statistics as a result of compiling the results of our survey! It was a rewarding feeling to be able to produce tangible results; something that does not occur very often in EVST classes.

It was interesting in seeing the different responses we received depending on our wording, or how we framed the project. I don't like how the word "green" is casually tossed around nowadays, as an all-encompassing term for sustainability. We decided to use the terms, "safe and effective" instead because that describes green products, but in a way that is clearer. A lot of times when the word "green" is put before something it automatically triggers a response in a person's head, good or bad.

Most of all, I appreciate the fact that a service-learning project such as this was an option for EVST 477. This experience was invaluable, and I am really proud that we were able to look at this issue from an environmental justice standpoint. I hope that more professors begin integrating service-learning into their curricula's, and that students have opportunities to apply the academic skills they are learning in the classroom with real-life situations.

Adelle:

When WVE first presented the idea of switching to green janitorial products at the University of Montana, it seemed like a simple and potentially rewarding project. Although working on this project has been very rewarding, interesting, and a great learning experience, it was in no way the simple "quick fix" project I first envisioned.

First, there were many unexpected findings in our initial search for information. For example, I assumed that safer and more effective cleaning products would be a semi-new idea for Facilities Services, but once we talked with Jack Mondloch, it was clear that much had already been done in the area of switching to green cleaning products and Facilities Services

had already replaced many of their products. Additionally, we found that Dining Services had already entirely changed to green cleaning supplies, and when asked if they ever communicated with Facilities Services or shared information, the answer was no, there was little to no communication between the six or more separate janitorial staff units. The lack of communication was definitely an unexpected, and something that could be greatly improved upon to create a more sustainable campus.

Secondly, it was difficult working out which groups we were associated with. SIT, SCC, FACS, and WVE were all groups that we shared information with. It was interesting having so much feedback and different interested parties to keep in contact with. However, I think it was the best way to carry out this project because many people with a say in the way things work knew what we were doing and shared really helpful information with us.

The final element that I think is important to talk about was the survey. Writing a survey was an entirely new experience for me, and it was a lot more difficult than I expected. Wording is very important in order to obtain the information that you are looking for and also making sure that people are going to understand what you are asking. At first our survey came across as slightly aggressive and even accusatory towards Facilities Services, and at once people were concerned with the way that Facilities Services would react. Accusatory was definitely not the way we wanted to come across, as our goal was to work *with* FACS and provide them with helpful information and receive information from them, not alienate the group we are interested in working with. After much editing, we finally came up with a survey that seemed to be appropriate, but it was a lot more challenging than expected.

Finally, working with the other members of this group has been a great experience, and I can honestly say that this is one of the best group projects I have ever participated in. We worked together well and got along as a team.

I really hope this project is continued next semester and as long as it takes to make the transition to green cleaning at the University of Montana. I think it is a really important step, and we have laid a solid framework for moving this project forward.

Rachel

I have enjoyed working on this project with Shannon and Adelle and feel that our research went very well. I greatly appreciate the help and support offered to me by Shannon and Adelle and, even though I was not able to see it, I am sure they did a fantastic job on the presentation. Looking back on the work we accomplished, there are a few suggestions and comments I would like to make in regards to the survey, future research, and collaboration.

I believe our survey was a successful learning experience. We were able to develop a survey geared to meet our research interests and administer the survey to a specific audience. We also faced some challenges with the survey but were ultimately able to complete the task. One change that Adelle had mentioned to the group was to exclude the option of “never” when trying to assess the frequency of experienced health impacts after asking a yes/no question, such as demonstrated in questions 12 through 16 on the survey. I would recommend excluding “never” as it would only apply if one answered “no” to the question above and in that case it would be redundant. Another option to solve this problem would be to just leave out the yes/no question and simply ask “how often do you experience these symptoms?”

Another suggestion for the survey would be to administer the survey in a more personal face-to-face manner. The way our survey was conducted provided good quantitative data. However, it is possible that face-to-face interviews would provide better qualitative data as survey could be carried out in a conversation-like manner and follow-up questions could be asked.

The topics of green cleaning and janitorial health are very complex and our research has provided a basis of information for future research. In future research, students should be able to focus the scope of their research to specific areas. This will help students develop a complete and thorough understanding of the topic and its issues. Our research focused on one of several sectors of cleaning at UM, academic and administrative buildings, as well as discovering about the topics of green and conventional cleaning products, standards, and case studies. There are several more sectors of cleaning at UM that need to be included in further research and consideration for using green cleaning products. Future research could be broken out to help managerial staff in each of the cleaning sectors.

As I mentioned, we worked with Facilities Services and more work with them could be done in the future. Future research should be geared towards helping Jack, and other managerial staffers, with research they do not have time to do. I think this will be most beneficial to Facilities Services and their employees as important, health-saving research can be done without too much duplication. It will be important to work closely with managers of janitorial staffs throughout University of Montana in further research. As with this project, it is

important that future projects, surveys, and statistics are available to janitorial staffs. Honesty and openness should be practiced so all parties have total inclusion.

In my experience, collaboration is the best way to get something accomplished. I feel that our group greatly benefited from partnering with WVE. Their help getting started and input on the survey were critical to the project, and I would like to thank Erin, Beth, and Alex for sharing their ideas, thoughts, questions, and concerns. Emily with the Sustainability Initiative Teams (SIT) has also been very helpful and there are many opportunities to partner with SIT in the future. I think it is very important to continue fostering cooperative relations with organizations within the University system as well as those within the community of Missoula.

