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**Wooden Laboratory Casework**  
Environmental Impact Assessment  
Recommendation for St. Olaf's New Science Center

**Introduction**

Since building accounts for a substantial portion of energy and natural resource consumption, choosing to build green is one way to reduce the impact a building has on its surrounding ecosystem, the individuals who use the space, and the greater community economically or otherwise supported by services offered there. In order to evaluate the eco-friendliness of a building material, it is important to look at the material's entire life cycle, including production, manufacturing, and eventual disposal. Many building materials can have harmful effects on humans and other organisms from the release of toxins such as Volatile Organic Compounds (VOCs), and CFC's into the environment.

Although most architects in Minnesota are not concerned with green building materials, St. Olaf has set high standards in order to meet LEED requirements for a gold rating. Two of the companies that St. Olaf is interested in as potential suppliers of wood casework are Collegedale Casework, LLC and Kewaunee Scientific Corp. Both companies offer a "green line" in addition to their standard line of wood casework.

**KEWAUNEE SCIENTIFIC CORPORATION**

Kewaunee Scientific Corporation, based in Statesville, NC, has been manufacturing and supplying laboratory supplies such as steel and wood cabinets, work

surfaces, fume hoods, and other accessories since the early 1900s.<sup>1</sup> Today, they serve a diverse group of clients ranging from schools, hospitals, industries, and research centers, to government agencies. In order to be responsible manufacturers, Kewaunee has adopted an environmental role, claiming “the success of our customers, our employees, and our company depends on the ability of us all to sustain the resources that underlie the products and services we offer and use.”<sup>2</sup> Kewaunee’s mission to reduce energy consumption and environmental impact can be seen in the Signature Series – Style 5 laboratory casework and especially in the EarthLine laboratory casework (made of recycled or renewable resources using environmentally conscious manufacturing techniques). The extent of the environmental impact of the two lines, in terms of materials, production, transport, performance, and disposal will be addressed in this report in order to form a basis for comparison when making decisions for interior design in the new St. Olaf Science Center.

## **Materials**

Consumers interested in Kewaunee’s various cabinet styles have a number of options available from which to choose in terms of materials used in production of the cabinets. The basic EarthLine cabinet has the option of Woodstalk or similar core material, with a Red Oak or Maple veneer surface. The EarthLine series can be modified by using Forest Stewardship Council-certified hardwood plywood as its core, with the same veneers on the surfaces. Both versions can use rapidly renewable veneers, such as American Lyptus or Asian Bamboo, but this desire must be specified with the order.

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<sup>1</sup> “Company Overview,” Kewaunee Scientific Corporation, accessed 1/26/06.  
<<http://www.kewaunee.com/companyOverview.asp>>

<sup>2</sup> “Environment,” Kewaunee Scientific Corporation, accessed 1/26/06.  
<<http://www.kewaunee.com/environment.asp>>

Additionally, the Ensemble option is also environmentally friendly, with its entire cabinet body made of recycled steel and using Woodstalk or other similar wood fronts. Materials in the Signature Series are selected for an attractive and harmonious appearance.

Customers can choose between Red Oak and White Maple for both the exterior and interior casework.

The renewable resources available as options with the EarthLine casework include both the substrate panels as well as the veneers. These substrate panels can be made of wheat board or similar agricultural fiberboards, such as Dow's Woodstalk straw fiberboard. This sort of fiberboard is a good replacement for other fiberboards that use wood instead of straw as their starting material, as well as a formaldehyde-based binder used to form the fiberboard, because it is a healthier and more environmentally friendly option.<sup>3</sup> However, on November 15, 2005, Dow Chemical Canada announced that Dow BioProducts, the manufacturer of Woodstalk, would cease operations by December 31 of that same year due to rising fuel prices and the high cost of the binder they used for their straw.<sup>4</sup> This is a serious set-back in the progress of non-wood fiberboard products, and even though there are other similar options besides the now-discontinued Dow Woodstalk, Kewaunee at this time is not using them as their substrate materials. Instead, they are using wood particleboard or hardwood plywood, which can be FSC-certified as well.

In terms of the wood veneers, the standard options for EarthLine are hardwood Red Oak or Maple, but Kewaunee also offers the option of rapidly renewable veneers

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<sup>3</sup> "Dow BioProducts to Cease Operations," December 2005, BuildingGreen, Inc., accessed 1/26/06. <<http://www.buildinggreen.com/auth/article.cfm?fileName=141211d.xml>>

<sup>4</sup> "Dow BioProducts Discontinues Production of Woodstalk Products," Nov. 15, 2005, Dow Chemical Company, accessed 1/26/06. <<http://news.dow.com/prodpub/2005/20051115a.htm>>

such as American Lyptus or two shades of Asian Bamboo. These options also contribute to the low environmental impact of these cabinets, because bamboo is an extremely fast-growing grass plant with a life cycle of about 5 years, and is harvested with minimal effect on the natural habitat of the animals whose ecosystem includes bamboo. Lyptus also grows in plantations that help preserve natural habitats, and has a shorter life cycle, which allows for earlier and more sustainable harvesting than for the typical hardwood.<sup>5</sup> These veneer choices are offered for a higher cost than the standard oak or maple, but offer a lighter impact on the environment as renewable wood raw materials.

If the consumer prefers to have his or her EarthLine veneers made from the traditional hardwoods of Red Oak and Maple, woods harvested in Forest Stewardship Council-certified forests and milled by FSC-certified companies can be requested. FSC-certification means that wood products are harvested in ways beneficial to the environment, as well as to the society and economy of their location. Kewaunee obtains their raw hardwood materials from the Georgia-Pacific company, one of the leading wood and paper products companies in the United States. Georgia-Pacific values sustainable forestry, and offers a Forest MAP (Management Assistance Program) that helps forest landowners maintain sustainable planting, harvesting, thinning, and preserving habitat practices.<sup>6</sup> However, [Steph Anderson's] contact at the Kewaunee company stressed that if a consumer wants to use certified wood veneers, he or she must specify such, even when ordering from the EarthLine casework. This option is also more expensive than the standard options. However, compliance with FSC criteria will both

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<sup>5</sup> Stacy Downs, "Eucalyptus hybrid a 'green' wood favorite," Oct. 15, 2004, AZCentral.com, accessed 1/26/06. <<http://www.azcentral.com/home/design/articles/1015lyptus15.html>>

<sup>6</sup> "Landowner Assistance and Forest Map," Georgia-Pacific, accessed 1/26/06. <<http://www.gp.com/forestry/landownmap.html>>

lessen the impact on the environment and support a demand for sustainable forestry in our market today. Since Kewaunee's Signature Series also offers the choice of either Red Oak or White Maple, it is possible to request wood from FSC-certified Georgia-Pacific when selecting from the Signature Series. However, the Signature Series does not offer any renewable resource options for cores or veneers, only Red Oak or White Maple for all components. In this respect, the Earthline is a far more sustainable choice.

EarthLine's cabinets contain steel in drawer bodies and inner shelving, as well as the entire cabinet body. Steel used for the shelves and drawers is both pre-consumer and up to 40-50% post-industrial recycled steel. Obviously, post-consumer recycled materials are preferred when making greener choices, but pre-consumer is still less wasteful than virgin steel when creating the end product. Another environmental option is the Ensemble series, which is a sort of hybrid casework line between the steel cabinets and wood cabinets. The body of cabinets in this line are made of recycled steel (most likely the same pre-consumer quality) and have the same wooden veneer drawer and cupboard fronts that are available with the other EarthLine products. The high percentage of recycled sources for the steel used in these cabinets indicates Kewaunee's commitment to finding raw materials for their cabinets that offer a more environmentally-friendly option than the standard casework lines available. The Signature Series does not offer interior steel shelving and so does not benefit from recycled content steel provided by Nucor.

Materials in the EarthLine and Signature Series cabinets that could be hazardous include the stains and topcoats used to finish the wood surfaces. The large majority of stains used, however, are actually water-based and therefore do not pose the

environmental or health hazards that result from using petroleum-based products. The top coat, on the other hand, is oil-based and contains petroleum distillates and pigments, which harms health as an irritant, pollutes the environment, and is generally considered hazardous waste.<sup>7</sup> Standards must be ensured as to how to use and dispose of these sorts of materials. Kewaunee does have some processes designed to eliminate or reduce the effect these oil-based stains can have on the environment. (Material Safety Data Sheets for each stain and top coat can be accessed either at [www.kewaunee.com](http://www.kewaunee.com) or in our Appendix).

## **Production**

In addition to material choices and uses, the production and manufacturing of the product must be addressed in order to understand its effect on the environment.

Production concerns include energy necessary to make the product, energy sources, emissions from production and assembly, and production waste. Energy is a large factor in a product's environmental impact. A company that strives to reduce energy usage or waste, and attempts to utilize renewable energy sources is preferable to a company that doesn't. Kewaunee's manufacturing processes, especially the energy needed, was not fully addressed in this report, but is an important consideration necessary for a final evaluation of the product.

Manufacturing guidelines of EarthLine casework do not specifically emphasize reducing energy use or waste, nor is Kewaunee likely using different processes than used for their standard lines. Steph Anderson's source at Kewaunee did mention a brand new environmental process of finishing the cabinetry, as well as the cutting CNC machines,

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<sup>7</sup> "Oil-based Paints and Coatings—Hazards and Responsible Use," Integrated Waste Management Board of California, March 2000, accessed 1/26/06. <<http://www.ciwmb.ca.gov/Publications/HHW/61200003.doc>>

which are programmed to waste little in terms of resources and energy. In terms of the product's energy efficiency, Kewaunee offers low-flow fume hoods made with a rapidly expanding technology superior to the standard fume hood energy efficiency, which ultimately helps the consumer save money on energy costs. If Kewaunee cabinets are chosen, therefore, this energy saving fume hood option would complement the laboratory furnishings very well. When considering the source of energy used by Kewaunee, it is important to note that they do not use renewable energy sources such as wind and solar power, since they rely 100% on natural gas to power their manufacturing plants. At this time, such reliance on fossil fuels is common throughout the US, even though renewable sources are becoming more acceptable. It may take many years before the more sustainable options for energy are utilized by industrial manufacturers such as Kewaunee.

Another production concern involves emissions created during assembly of the product, and in this case, the largest source of emissions would be the stains used to finish the wood. However, Kewaunee has taken pains to reduce the amount of VOCs they emit during the application of their stains—both the under- and the top-coats. The basic stains are automatically sprayed on the wood in a closed environment that prevents accidental or inevitable emissions. This means that no VOCs or solvents are released into the surrounding environment. The top coat, which is oil-based, is rolled onto the cabinets. Excess stain is recaptured by a draining process to be reused on the next cabinet, which also minimizes waste. (Material Safety Data Sheets for each stain and top coat can be accessed either at [www.kewaunee.com](http://www.kewaunee.com) or in our Appendix). Kewaunee also takes care to recycle, not landfill their raw materials such as sawdust. These precautions

taken by Kewaunee reduce their emissions and wastes and help the company to contribute to healthy production practices and environmental manufacturing.

## **Transport**

According to LEED recommendations, products and materials should ideally be acquired within a 200 or 500-mile radius from the consumer, in order to minimize negative environmental effects of intensive trucking, energy use, and freight costs. However, buying locally is not always a feasible option due to the nature of the product desired. Since Kewaunee and Collegedale, prospective casework providers to St. Olaf, are located in North Carolina and Tennessee respectively, buying locally is not an option in this aspect of the science center project. However, we can still minimize transportation effects by looking at how and from where each company obtains their raw materials.

The majority of materials used in the EarthLine cabinets – steel and wood – are obtained from two companies that have nationwide manufacturing plants and mills, but are concentrated in the area of the Kewaunee Company in North Carolina. Nucor Steel produces the partially-recycled steel used in the shelves, drawers, and/or bodies of the cabinets. (It is unknown whether Nucor recycled steel, or recycled materials are used in components of the Signature Series). Nucor has various plants across the U.S, the majority in the Southeastern and Midwestern states such as South Carolina, Indiana, Nebraska, and Arkansas. EarthLine wood comes from Georgia-Pacific, which also has mills spread around the country. However, family forest landowners of the southeast region, who own 42% of all forestland in the country, provide about 80% of the timber

volume for Georgia-Pacific mills.<sup>8</sup> Many of these mills are in the Georgia, North- and-South Carolina area. It is most likely that Kewaunee's wood comes from these mills.

Raw materials are transported to Kewaunee's manufacturing plants, all located in North Carolina, mostly by truck. There is a possibility that the steel could also be brought to North Carolina by barges and railways. Kewaunee's national distributor and warehouse is in Georgia. Other warehouses are in North Carolina, and distributors for Kewaunee products all over the country. (Minnesota's Kewaunee distributor is Innovative Laboratory Systems, Inc., in Rockford, MN.) Kewaunee strongly emphasizes the fabrication of their cabinets at one location in order to assure shipping continuity and single-source responsibility.<sup>9</sup> Finished cabinets are sent to warehouses and distributors by truck. EarthLine cabinets are wrapped in reusable blankets, which are sent back to Kewaunee with the trucks to minimize packaging production and waste. Signature Series cabinets are packaged in boxes for transport.

While the location of Kewaunee's raw materials and manufacturing plants are not local or regional to Minnesota, they are for the most part all located in the southeastern region of the United States and can contribute to the local products criteria if the consumer is also in that area. For this reason, transport costs and energy requirements will be higher from Kewaunee when servicing the upper Midwest region. Since Kewaunee's product is highly specialized, it is an unfortunate consequence that the local materials qualification cannot be met in this aspect of the new science center.

## **Performance/Operation**

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<sup>8</sup> "Sustaining our Forests," Georgia-Pacific, accessed 1/26/06.  
<<http://www.gp.com/forestry/sustainforest.html>>

<sup>9</sup> "Section 12345 – Wood Laboratory Casework and Related Products" (Contemporary Full Overlay – Style 5). Pg.3. [www.kewaunee.com](http://www.kewaunee.com). (04/03).

Environmental impacts do not cease once a product is finished. The product and its materials can contribute to off-gassing and negative indoor air quality ratings, and may also require undesirable methods of cleaning and maintenance. Durability of the product is very important because of the product's high cost, and also because a lot of energy and materials are required to produce a new product. The longer productive life a product has, the more materials and energy can be saved. A balance must be found between durability and the negative impacts on indoor quality that the products used to obtain that durability contribute.

Off-gassing and air quality is one category where the wooden EarthLine casework can contribute to a building's LEED certification. Kewaunee attempts to eliminate much, if not all, of the off-gassing potential of these cabinets, and earn LEED points for using low-emitting paints and coatings, as well as low-emitting composite wood. Off-gassing is thus minimal, and the indoor environmental quality much higher than a more standard product would create. These cabinets can have a life of 30-40 years or more (Steph Anderson's contact at Kewaunee cited several examples of products made in 1939 that are still quite usable and productive). Additionally, after one consumer's use of the product is over, it can easily be reused by other consumers many times more, (a practice discussed further in the following section on disposal). In the end, the high level of durability and usefulness, as well as the low level of product emissions, helps create an environmentally conscious performance level characteristic of many green cabinet lines.

Kewaunee's Signature Series offers a high level of durability. Each cabinet finish is tested for resistance against nearly 50 chemicals commonly used in a laboratory setting (see Section 12345 in Appendix for full list of tested chemicals and testing process).

Heat resistance, moisture resistance over a 100 hr period, and impact resilience are also tested on each finish. Material Safety Data Sheets are also available for each finish and top coat at [www.kewaunee.com](http://www.kewaunee.com) and in our Appendix. Many hazardous materials are contained in these finishes and top coat, but the extent of off-gassing is unknown.

### **Consequences/Disposal**

As with all products, the consequence of what happens after their initial use is a major environmental concern. It is desirable if the product or its components can be recycled once, continuously, or reused to avoid deposit in a landfill.

EarthLine cabinets are extremely durable and can be reused over and over again. According to our Minnesota distributor, it is common for initial cabinet owners to donate used cabinets to high schools or educational facilities who can't afford to buy new, or can be sold at auctions to either defray costs of new construction or to provide funds for charitable purposes. Also, consumers can use third party casework brokers to sell used cabinets to a second owner. While the final products are not usually dismantled and recycled, the raw materials (such as steel and sawdust) are. Other than that, the disposal methods for the cabinets are up to the consumer; if they are not reused or given away, they are most likely landfilled.

Kewaunee's Signature Series is also tested and proven to be extremely durable. All cabinet end panels are finished for the purpose of future relocation.<sup>10</sup> This indicates a commitment to sustainability on Kewaunee's part to extend the life of their products beyond its initial use.

### **Comparison of Earthline and Signature Series**

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<sup>10</sup> Ibid. Pg. 6.

Kewaunee's commitment to durability and aesthetics in its casework results in a very similar visual and functional product when choosing from either the Earthline Series or the Signature Series. When Environmental impacts are concerned, however, it is important to look at the different materials offered with the two lines. Although the two lines offer a choice between Red Oak and White Maple provided by a Forest Stewardship Council certified forest, the Earthline offers many more environmentally-friendly options. In addition to the standard veneers, Earthline offers either a bamboo or American Lyptus veneer – both highly renewable resources due to a short growth-cycle. An even bigger environmental advantage, Earthline also offers a substrate/core material of Woodstock, agrifiber, or certified plywood. Formaldehyde-free construction is used in the Earthline series, but not for the Standard Series. Recycled steel is used for Earthline's inner shelving while the Standard Series uses wood here too. Assembly of Earthline casework also reduces the use of adhesives with the use of dowels to secure particle boards.

When comparing costs, the EarthLine series is about \$1,100 more expensive when using certified wood than the Standard Series for a 39 linear foot run of baseline cabinets (see Innovative Lab Systems Budget Pricing in Appendix). It is unlikely that the durability of the EarthLine Series is any better than the Signature Series. However, the environmental impacts of production for the EarthLine Series are significantly less than with the Signature Series. Depending on the level of St. Olaf's continuing commitment to LEED gold certification and sustainability, our recommendation is to bear the increased cost and order wooden laboratory casework from the Earthline Series.

However, Kewaunee’s foresight in designing for reuse and the option of FSC-certified wood makes the Standard Series an option better than the industry standard.



California Institute of Technology  
Kewaunee Signature Series – Style 5



Emory University – EarthLine and LEED silver certified

## **COLLEGEDALE CASEWORK, LLC**

Collegedale Casework, LLC, located in Collegedale, just outside of Chattanooga, Tennessee, is one of the largest laboratory furniture manufacturers in the country. This 130,000 square foot facility employs over 125 people in manufacturing, engineering, project management, and support services. Collegedale’s services include planning,

manufacturing, and installation of laboratory casework for schools, universities, hospitals, and industries. Collegedale has been manufacturing wood casework for over 50 years, and has recently started offering steel and LEED certified “green” casework. Collegedale is a member of the USGBC (United States Green Building Council), which is a “community of professionals who share similar goals about advancing more sustainable building practices.”<sup>11</sup> Collegedale is also a member of AIA (The American Institute of Architects), whom also supports goals of sustainability and green building.



Collegedale casework, fume hoods and learning centers

## **Materials**

Collegedale offers several styles and choices of materials for its C3 wood casework. The exterior veneer type is available in red oak, white maple, or “Engineered Wood Veneer,” a composite of several different woods used in order to create the illusion of solid wood. The Engineered Wood Veneer, which combines birch, alder, oak, and maple, creates a more uniform look on the cabinet exterior with a vertical wood grain. Collegedale’s engineered wood veneer is made of a number of different hardwoods. The cabinet core is available in veneer core plywood, particleboard plywood, and agri-board,

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<sup>11</sup> Collegedale website [www.collegedale.com](http://www.collegedale.com)

which is the “green” option and is a renewable resource. Both the interior and exterior of the C3 cabinetry is made of engineered wood veneer.

Collegedale casework is made from wood panels (4x8 sheets). If the core is hardwood plywood, the wood can be FSC certified (Forest Stewardship Council). The FSC sets international standards for responsible forest management.

Forest management certification involves an inspection of the forest management unit by an independent FSC-accredited certification body to check that the forest complies with the internationally-agreed FSC Principles of Responsible Forest Management. If the forest complies with FSC standards, then the FSC accredited certification body issues a certificate for the operation. Certified forest operations can claim the forest products they produce come from a responsibly managed forest. Before a certified forest operation can sell their products as FSC certified, they must also obtain chain of custody certification (FM/COC).

Chain of custody certification provides a guarantee about the production of FSC-certified products. Chain-of-custody is the path taken by raw materials from the forest to the consumer, including all successive stages of processing, transformation, manufacturing and distribution. From a customer perspective, the FSC label represents a promise that is being made to them. Chain of custody standards are the mechanism FSC has to ensure that 'promise' is delivered. Operations that have been independently verified for FSC chain of custody certification are eligible to label their products with the FSC logo.<sup>12</sup>

We are unsure about the use of recycled content in Collegedale casework. Efforts are made to use low or no VOC glues and adhesives. Stains and finishes most likely water-based though the local supplier was unsure and is in the process of doing further research.

### **Production/Transportation**

It was difficult to find information about energy input and output from both Collegedale and H&B Specialized Products as this is not information that customers are usually concerned about. However, it is important to know a product’s energy use for

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<sup>12</sup> “About FSC Certification.” [www.fsc.org/en](http://www.fsc.org/en). Accessed 1-27-06.

LEED certification because even if a product uses environmentally friendly materials, its production may require large amounts of energy that deplete the earth's natural resources.

The one chemical that is significantly emitted by the production process at Collegedale is toluene. In 2002, Collegedale emitted 13,626 lbs of this chemical. Toluene is a clear, colorless liquid that occurs naturally in crude oil and the tolu tree. It is used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes. From 1990 to 2002, total air releases of toluene have decreased 90%.<sup>13</sup> We could not find any information about carbon dioxide, sulfur dioxide or nitrogen oxides.

Collegedale makes an effort to be efficient in production and to minimize waste. They use as much wood from each stock piece as is possible. In fact, Collegedale has installed software that allows them to effectively use about 95% of the wood. Some of the 5% remaining is used for packing and some is sent to the jobsite to be used for cleaning and blocking. Remaining scraps are sent to a landfill. There is no aftermarket or use for Collegedale plywood other than chipping and burning. With North Carolina's mild winters, it is not necessary to utilize the waste in a wood fired heater.<sup>14</sup>

Much of the plywood used by Collegedale is harvested in Tennessee, North Carolina, South Carolina, Virginia, West Virginia, and is then trucked to nearby mills. Once the panels are produced, they are trucked to Collegedale's factory about 250 miles away. Collegedale is located in Collegedale, TN, which is outside St. Olaf's 500-mile radius guideline for locally obtained materials necessary to earn LEED certification

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<sup>13</sup> Information from Scorecard website [http://www.scorecard.org/env-releases/facility.tcl?tri\\_id=37315CLLGD6115M#major\\_chemical\\_releases](http://www.scorecard.org/env-releases/facility.tcl?tri_id=37315CLLGD6115M#major_chemical_releases)

<sup>14</sup>Information from Chip Albright at the Collegedale LLC headquarters

points. At Collegedale, the raw materials are cut up, sanded, and coated with a finish. From there they are loaded into trucks with a minimal amount of blankets and cardboard packaging and shipped to H & B Specialized Products, Inc. in Minneapolis. When finally shipped to the construction site, H&B specialists unload the product without the use of machines. While the finished product is obtained locally, the raw materials are not; it is the source of raw materials that earns LEED certification points.

### **Performance/Operation**

Since many building materials contain toxic or hazardous materials, it is important to find out what percentage of the product contains toxic substances and if there are any off-gassing effects from adhesives or varnishes. If the varnish and finishes used by Collegedale are indeed water-based, the glues and adhesives of low VOC content, and off-gassing from the products minimal, then negative Indoor Air Quality effects are most likely low. However, because Mr. Gulbransen was unsure of these things, this is an issue that bears further scrutiny. It is the Collegedale mission to supply high quality durable products, but as to the actual maintenance of the product, no information was provided.

### **CONCLUSION**

While we would like to offer a recommendation to St. Olaf of the better option between the green lines of Kewaunee and Collegedale, the information we were able to obtain was insufficient to do so. Unfortunately for the purposes of our research, Collegedale is in the process of redesigning much of their product lines and can currently offer only limited information both on their website and over the phone. We had a lot of

trouble getting an informed individual from Collegedale on the phone and were able to get very little useful information even when sitting in front of a local distributor.

Kewaunee, on the other hand, seems to have a lot more experience providing for LEED certified buildings. Information for their Standard Series online was extremely complete and in-depth, including MSDS for all of their finishes and topcoat. Valuable information was easily obtained from both Kewaunee's corporate office and Innovative Lab Systems, our local distributor. Based simply on these interactions, we recommend that St. Olaf deal with Kewaunee and their EarthLine Series. The environmental benefits of the Earthline Series center on raw materials obtained sustainably, the use of non-toxic materials, and extreme durability of the final product. However, before a final recommendation can be made, we also suggest that more information be obtained from Collegedale once their redesign process has concluded.

## **Sources**

Albright, Chip. Vice President, Laboratory Group Collegedale, LLC. *Quick Question* [Personal email] 26 Jan 2006.

Asleson, Wes, sales representative for Innovative Laboratory Systems, Inc. Interview by Steph Anderson, 26 January 2006, Northfield, MN. Telephone conversation.

Collegedale Casework, LLC [Company website]. <http://www.collegedale.com/>

"Company Overview." Kewaunee Scientific Corporation. Accessed 1/26/06.  
<<http://www.kewaunee.com/companyOverview.asp>>

"Dow BioProducts Discontinues Production of Woodstalk Products." Nov. 15, 2005. Dow Chemical Company. Accessed 1/26/06.  
<<http://news.dow.com/prodbus/2005/20051115a.htm>>

"Dow BioProducts to Cease Operations." December 2005. BuildingGreen, Inc. Accessed 1/26/06.  
<<http://www.buildinggreen.com/auth/article.cfm?fileName=141211d.xml>>

Downs, Stacy. "Eucalyptus hybrid a 'green' wood favorite." Oct. 15, 2004.  
AZCentral.com. Accessed 1/26/06.  
<<http://www.azcentral.com/home/design/articles/1015lyptus15.html>>

"Environment." Kewaunee Scientific Corporation. Accessed 1/26/06.  
<<http://www.kewaunee.com/environment.asp>>

EPA "Envirofacts Data Warehouse"  
[http://oaspub.epa.gov/enviro/multisys2.get\\_list?facility\\_uin=110000371302](http://oaspub.epa.gov/enviro/multisys2.get_list?facility_uin=110000371302)

Frederick, Jim, general sales manager for Kewaunee Scientific Corporation. Interview by  
Steph Anderson, 23 January 2006, Northfield, MN. Telephone conversation.

FSC, Forest Stewardship Council. <http://www.fsc.org/en>

Gulbransen, Jim 2006, Casework Division Manager at H&B Specialized Products.  
[Interview] January 26.

H&B Specialized Products, Inc. [Company website]. [www.hbsponline.com/labcswk.html](http://www.hbsponline.com/labcswk.html)

"Landowner Assistance and Forest Map." Georgia-Pacific. Accessed 1/26/06.  
<http://www.gp.com/forestry/landownmap.html>

Minnesota Office for Environmental Assistance  
<http://www.moea.state.mn.us/greenbuilding/index.cfm> 25 Jan 2006.

"Oil-based Paints and Coatings—Hazards and Responsible Use," Integrated Waste  
Management Board of California, March 2000, accessed 1/26/06.  
<<http://www.ciwmb.ca.gov/Publications/HHW/61200003.doc>>

Scorecard: The Pollution Information Site  
[http://www.scorecard.org/env-releases/facility.tcl?tri\\_id=37315CLLGD6115M#major\\_chemical\\_releases](http://www.scorecard.org/env-releases/facility.tcl?tri_id=37315CLLGD6115M#major_chemical_releases)

"Sustaining our Forests." Georgia-Pacific. Accessed 1/26/06.  
<<http://www.gp.com/forestry/sustainforest.html>>