Reducing Waste Volume and Toxicity

MnTAP Intern Project

Fairview Health Services
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Abstract

This project was initiated in order to assist Fairview Health Services in reducing waste across all waste streams and lowering the toxicity of their waste and supplies. After reviewing Fairview's current procedures and processes, a large area of waste reduction can take place by using reusable sharps containers. Using duplex copying, purchasing supplies with little or no packaging, purchasing supplies that can be recycled or contain post-consumer product, and using the least toxic cleaning chemicals available are additional methods to achieve these goals.

By reducing waste, Fairview will experience a cost saving from generating, hauling, and disposing of a lower volume. Lowering toxicity will lower the amounts of waste requiring hazardous waste disposal. Employee or patient injury from toxic supplies should also decrease resulting in fewer medical claims. Fairview will also be contributing less to landfills, by lowering their output of waste, which decreases their liability when it comes to polluting the environment in a 'cradle to grave' scenario.

A summary of the waste reduction options, I identified this summer, are listed in Table 1.

Waste Reduction Option	Waste Reduced	Raw Material Saved	Cost Savings	Status
Environmentally Preferable Purchasing	Unlimited	Unlimited	Unlimited	Recommended
Reusable Sharps Containers	6 tons/year	6 tons of plastic	$23,000/year	Recommended
Resource Management	Unlimited	Unlimited	Unlimited	Recommended
Reduction of Chemicals	---	---	---	Recommended
Eliminate Hazardous Chemicals	---	---	$4,500/year	Recommended
Environmental Policy/ Mercury Elimination	---	---	---	Recommended

Table 1: Summary Table

Background

Company Overview

Fairview Health Services is a system of 7 hospitals and 41 primary care clinics in Minneapolis/St. Paul, Minnesota and the surrounding area. Also included are a number of specialty clinics, urgent care clinics, retail pharmacies, and the Institute for Athletic Medicine, among others. As of March 15th, 2002, the Fairview system has 17,250 employees. The Fairview-University Medical Center was also recently included in a list of Top Hospitals in 2002[1]. Out of 1,958 hospitals across the country, FUMC ranks 37th in cancer, 33rd in geriatrics, and 23rd in kidney disease. These statistics are based on areas such as reputation, mortality, discharges, and the number of RNs to beds.

My home for the summer was at the Corporate Materials Management office in Bloomington. This group is composed of 8 buyers, 7 customer service representatives, along with other administrative personnel and managers. The buyers mainly work on creating contracts with vendors, distributing RFPs, resolving purchasing and billing issues, making sure Fairview employees properly use existing vendor and Premier (Fairview's group purchasing organization) contracts, and deciding which vendors to work with, what products to buy, and the pricing for these products. Customer service representatives spend their time placing phone orders for Fairview's entities, issuing purchase order numbers, creating reports, filing reports and invoices, and doing data entry. The contact information for this office is as follows:

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Incentives for Change

As our society is becoming more environmentally conscious, Fairview has felt the urge to assess its current policies, procedures, and contracts. In doing so, Fairview hopes to reduce waste and the toxicity of waste and supplies system-wide. Along with

[1] Taken from US News and World Report, July 22, 2002 issue. Copyright © 2002 News & World Report L.P. For more information see http://www.usnews.com/usnews/nycu/health/hosptl/tophosp.htm.

these changes will come increased safety of employees and patients, reduced pollution impacts on community health, and potential for cost savings.

Coincidentally, a contract is in the works with a new waste provider, Healthcare Waste Solutions (HWS). HWS offers a "one-stop shop" in which all disposal areas will be contracted out by HWS and a single invoice will be sent monthly, to Fairview, which will include all waste streams and facilities. HWS will be contracting with Armor for solid waste and recycling, Metro Safety Solutions for infectious waste and sharps disposal, and Bay West for hazardous waste. A great incentive for Fairview to pursue this option is that HWS is owned by Premier, of which Fairview is a partial owner. Poor service, a need for simplification, and expired waste service contracts have also pushed Fairview to pursue this direction. Lastly, contracting with numerous haulers can be complicated for Fairview's staff; especially at accounts payable. Simplification of Fairview's waste streams and disposal processes will also occur. As of now, accounts payable receives about one hundred invoices every month specifically for waste disposal. A decrease in the number of invoices would not only be easier on staff, but would also save on time and paper. Engaging a new service provider for waste management presented opportunities to include waste reduction and pollution prevention in the new contract and to evaluate and improve the current waste disposal processes and programs.

Another motivation for Fairview to change evolves from waste disposal costs. Primarily, reducing waste and secondly, diverting items from the solid waste stream will not only lower disposal costs, but will also offer a very significant saving on tax. In the state of Minnesota, the solid waste disposal tax is 17%. Hennepin County adds an additional14.5%, giving a total tax of 31.5%. By lowering the amount of solid waste generated, using waste reduction complimented with a recycling stream, a huge cost saving will be experienced.

Even more outrageous than the solid waste tax are infectious waste and sharps disposal costs. Disposal of sharps and infectious waste is known to be 5-6 times the cost for solid waste. By reducing waste altogether and then properly segregating waste into its corresponding waste streams, Fairview will definitely decrease its waste disposal spending.

Process Description

Following the description of my project led to the evaluation of many processes. These include, but are not limited to, the making of contracts, the formation of policies, waste segregation, waste disposal, and product evaluation. The main steps in which these processes were examined and evaluated are explained in greater detail below.

1. Review of infectious waste and sharps contract to incorporate waste reduction

The current IW and sharps contracts were not created with waste reduction in mind. Because of this, Fairview is generating huge amounts of IW each year and is also spending large sums of money on its disposal. During a year, the Fairview Health System generates about 280 tons of infectious waste and spends around $120,000 on its disposal.

On a different note, disposable sharps containers make up a considerable amount of the waste streams. In the past year, Fairview spent approximately $27,000 on 11,600 disposable containers. This does not include disposal charges. These containers introduce roughly 6 tons of plastic into the landfills.

Infectious waste and sharps disposal is performed system-wide by a single service provider. Despite the use of a single disposal company, the sharps container programs differ with each site. Some hospitals use all disposable containers, some use all reusable and others use a combination of both. The disposal process for infectious waste and sharps also varies throughout the system. In some cases is it Housekeeping's responsibility to change full sharps containers and IW containers and put the waste in its designated area. Sometimes the full sharps containers are simply thrown into the red bags. In other instances, the waste provider will change the containers throughout the facility.

2. Review of solid waste contract to incorporate waste reduction

Fairview's solid waste contracts also do not include any waste reduction initiatives. Disposal of Fairview's 3,343 tons of yearly solid waste costs about $322,000. According to the California Integrated Waste Management Board's (CIWMB) article, "Waste Reduction Activities For Hospitals", posted at http://www.ciwmb.ca.gov/bizwaste/factsheets/Hospital.htm, nine hospitals in the Los Angeles area showed paper as being the most predominant waste stream in the year 1990, followed by plastic. Figure 1 shows the percentages of each waste stream found in this study. These paper products are found primarily in packaging, cardboard boxes for shipping, and office paper. Plastic is used most often in packaging and some single use devices. Currently, Fairview has multiple solid waste and recycling providers system-wide. The reason for this non-uniformity is that, in some cases, either the city takes care of the disposal or it is the responsibility of the building management as part of rental costs. Location in a particular city or county can limit possible haulers as well. Because of the variances in disposal companies, the recycling programs differ throughout the system as well as the process of waste collection within the facilities.

Figure 1: © 1995, 2002 by the California Integrated Waste Management Board. All rights reserved. Used by permission.

Waste disposal starts when an item is considered waste and ends once the item is in a landfill, has been incinerated, or recycled. At the moment, the process is occasionally disrupted, causing waste streams to become contaminated. This occurs at the waste segregation step. The proper waste disposal process is shown in Figure 2, in which trash is separated according to its type and disposed of accordingly. An observation I made concerning this issue is that there is no existing waste segregation

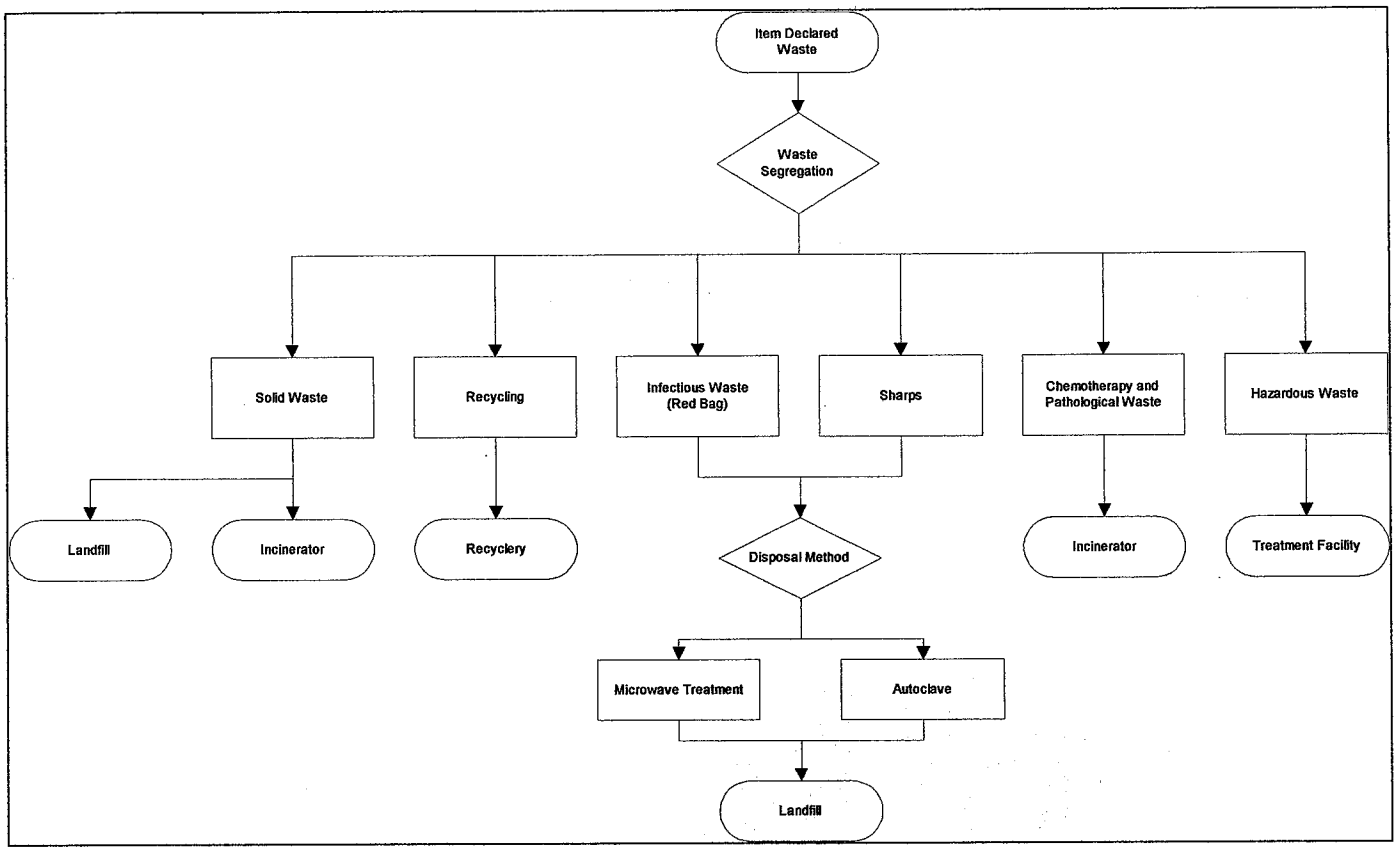

Figure 2: Waste Disposal Flowchart

program. After three site visits it was clear that the employees do not have knowledge as to what types of waste go where. The biggest problem is staff members are placing items in the red bags and/or sharps containers that do not belong there. The lack of a training program creates a huge problem. When employees are disposing of items improperly they can be costing Fairview extra money as well as possibly putting Fairview in breech of federal, state, and local regulations. For example, items placed into a red bag are required to be blood soaked. If a staff member places a blood-splattered patient gown into a red bag, this gown just cost 5-6 times the normal (solid waste) price to dispose of. Similarly, if an IV bag and tubing clearly has blood inside and is placed into a solid waste container, Fairview is at risk for breaking laws and putting the general public at risk of Hepatitis or AIDS.

3. Chemical Minimization and Toxicity Reduction

According to the Janitorial Products Pollution Prevention Project (JP4) article[2] "What Injuries Happen to Your Janitors?" six out of every hundred janitors have lost-time injuries every year. Of these injuries, 40% involve eye irritations or burns, 36% involve skin irritation or burns and 12% involve breathing chemical fumes. Along with work related injuries come company expenses. JP4 states that lost time adds up to approximately $240 per claim for the worker and their supervisor. Also included is an averaged $375 medical cost per claim. This totals $615 for each claim. When summed over an average year, an institution pays just under $4,000 on janitorial injuries.

Fairview's experience with chemical injuries is surprisingly similar. In the year 2001, Fairview had seven cleaning chemical related injuries system-wide. At this point, these claims have cost $4,531.72. However, these cases still have the ability to be reopened, allowing this total to adjust according to the case's judgement. The current total dollar amount averages to $647.39 per accident.

Right now, Fairview purchases most of its cleaning chemicals from Johnson Wax Professional through Dalco, their distributor. Johnson Wax Professional offers training when needed, but does not give presentations to every hospital on a regular, scheduled basis. They do have a number of training kits available including Restroom Care, Carpet Care, Floor Care, and Hazardous Materials. These kits include a manual for the presenter, booklets for attendees, certificates of completion, a training video tape, a poster with proper cleaning steps, and a CD-ROM with worksheets, quizzes, and a PowerPoint presentation. I reviewed these four training kits, looking for how well the materials emphasized using protective equipment, following directions on labels, using time to allow the chemical to work, and using the least toxic chemical available for daily cleaning. I felt like the training packages did a wonderful job of pointing out all of these areas. The kits had a unique method of teaching these concepts. They used the acronym, TACT, to help cleaning personnel remember Time, Agitation, Concentration, and Temperature. This easy reminder emphasizes the importance of the temperature of the water needed for dilution, the required concentration of the chemical mixture, the time necessary for the chemical to work, and agitation to loosen dirt, grime, and to allow

[2] Can be found at http://www.westp2net.org/Janitorial/commentaries/injury01.pdf.

the chemical to clean properly. I also thought the Hazardous Materials program was a great idea, going over where to find cleaning instructions, the types of protective gear needed, Material Safety Data Sheets (MSDS), product ingredients, and where to find information in case of a health emergency.

One concern of mine is that there is no focus on using "green" cleaning chemicals. During a site visit to Fairview Northland Regional Hospital, Becky Masica, the Housekeeping Manager, pointed out two cleaning chemicals that had raised some concern. The chemicals of interest were Spitfire, a graffiti and scuff mark remover, and SparCling, a toilet bowl cleaner. After examining the SparCling bottle I realized this product contained 9.5% hydrochloric acid, which was causing acid burns, and should not be used as a daily cleaner. I met with Fairview's chemical representatives, John Hafner (Johnson Wax Professional) and Don Kennedy (Dalco), to discuss these issues. As a result, John and Don visited Fairview Northland Regional Hospital to directly address these problems. Besides the strong chemicals, John and Don noticed that this facility was using too many products for carpet cleaning and was using their current cleaners incorrectly with their equipment. They also had some issues with cleaning grout in bathrooms and other areas for which they returned at a later date to give training sessions.

Waste Reduction Options

1. Environmentally Preferable Purchasing (EPP)

The most efficient method of waste reduction is stopping waste before it starts. This concept is embodied in Environmentally Preferable Purchasing (EPP). By keeping an EPP mindset while making purchasing decisions, Fairview will buy products that have less damaging impacts to the environment while compared to other products of the same type. Examples of EPP are buying products with little packaging and purchasing recycled paper. Moving beyond simply purchasing, EPP can become a "gradual and ongoing process in which a hospital continually refines and expands the scope of its efforts to select environmentally sound, healthy, and safe products and services." (Taken from *How To Do EPP in Hospitals* on http://www.h2e-online.org/tools/epp1.htm.)

Under EPP falls less toxic purchasing and waste. Included in this area are latex, PVC, mercury, and chemicals. All of these items can be hazardous to the health of patients and/or employees. Patients/employees may have or develop an allergy to latex, which can cause skin rashes, shortness of breath, or death. The plasticizer in PVC, DEHP, can leach out of the material, also causing serious health problems. Along with mercury and chemicals being dangerous, they are both expensive to dispose of. Latex, PVC, and mercury should be phased out of use by creating policies forbidding their purchase. Some chemicals are necessary for certain procedures within the hospital. These should be used with great caution. Whenever possible, less toxic chemicals should be used instead.

System-wide policies should be put into place to support and promote EPP. A sample Environmental Policy is shown in Appendix F. Policies for mercury and latex should also be created to inform employees and vendors that Fairview is taking a stand on these environmental issues. RFPs are another good way for Fairview to present their position.

In order to take this concept a step further, I talked with Weldon Johnson, the Director of EPP Services at Premier, Fairview's group purchasing organization. EPP has had a slow start within GPOs, but is now quickly picking up speed. In June of 1998, Premier signed a Memorandum of Understanding with the American Hospital Association (AHA) and the Environmental Protection Agency (EPA). This MOU put all parties in agreement to eliminate all mercury containing waste from hospitals by the year 2005. A result of this MOU is that Premier offers alternatives to products containing mercury. The most common two are thermometers and sphygmomanometers. Premier is also performing the final edits on a list of pharmaceuticals containing mercury. These drugs all have mercury in their formula in one form or another; even as a preservative. When the list is finalized it will be posted on Premier's website, www.premierinc.com.

A current plan for Premier is to eliminate PVC in high-risk exposures as a result of a recent Public Health Notification from the FDA. It is possible for the plasticizer in PVC, DEHP, to leech out of the material under certain conditions, causing possible

health problems. Another initiative is to offer latex alternatives in order to prevent and reduce latex allergy attacks.

Premier also uses environmental issues while screening new providers. Some of the characteristics they look for are ISO 14000 certification, an environmental management system, and a good history with the FDA and EPA. Premier also requests from the company any products containing hazardous materials such as mercury, latex, PVC, and DEHP.

At this point, Premier is looking at putting together a portfolio of EPP products. This package would list all products that are available after considering EPP practices. Another idea in the works is a traveling 'side-show'. This group would travel from state to state, educating Premier members on the importance of EPP and how to go about using EPP in a hospital.

2. Reusable Sharps Containers

Reusable sharps containers should be used at all of Fairview's entities. The reason for this is that besides tremendous cost savings, thousands of pounds of plastic will be diverted from the landfills every year. A recommendation for the reusable containers is that they do not contain toxic heavy metals and are either made of recycled material or are recyclable. This way Fairview will be completing the "Reduce, Reuse, and Recycle" triangle.

I performed a cost analysis with the current pricing received from HWS for both their reusable and disposable containers. The detailed spreadsheets of this analysis are in Appendix C. In summary, Fairview spends $27,000 a year on disposable containers alone; not including disposal charges. By switching these disposable containers to HWS' reusable program, Fairview will save about $23,000 annually.

My preference is that Fairview uses the Daniels reusable sharps program. Their reusable container program has some cost issues, but I think it would be a great move for Fairview to take to reduce its liability from needle sticks. This option is currently under consideration by HWS, Fairview, and other hospitals in the metro area. The system solves every single issue that has been present for all current reusable containers in the area. The containers are made of the same material as a motorcycle

crash helmet, leaving no chance for a needle or sharp to poke through. Every piece of the container can be recycled, so the containers have an 'infinite' lifespan. A rubber seal around the lid prevents any residual liquids from escaping the container. The content level can be viewed from a clear-view window on the front of the container. Sharps are inserted into the container with the help of a spring action door. The door flips down with the weight of a sharp and then immediately returns to its normal position. It is designed in such a way that an adult or even a child's hand can not fit into the area containing sharps. When the container is full, the door will remain in the upright position, rejecting the insertion of additional sharps. At this point the container is easily closed with tamper-proof locks which can not be opened until the cleaning stages.

The emptying and cleaning process is done completely with robotics. This eliminates the potential for needle sticks while opening the containers by hand. Once emptied, the containers are washed, sanitized, spun dry, and then coated with Teflon. Daniels special drying process guarantees that there will be no residual water in the containers, causing odor problems. Lastly, the Teflon coating prevents sharps from sticking to the inside of the container, requiring human hands to remove them.

3. Resource Management

Use Resource Management (RM) as a tool to write the new service agreement between Fairview and HWS. RM is a fairly new concept in the waste management field, but is expected to grow in the next few years. The goal of RM is to reduce waste while benefiting the disposal company. Normally, by reducing waste, the haulers have less to dispose of and therefore lose money. With RM, the disposal company will receive monetary incentives to aid with waste reduction. An example is taken from the Environmental Protection Agency's (EPA) WasteWise Update entitled *Resource Management: Strategic Partnerships for Resource Efficiency*. General Motors, one of the first companies to use RM, generates more than 3700 tons of fly ash per year at its Orion Assembly Facility. Fly ash is created during "the coal-burning process, which feeds the onsite powerhouse boilers." With the help of RM, GM discovered that the Scotts Company could use the fly ash in Scotts' Hyponex potting soil. GM still pays to haul the material, but a $40,000 cost savings results from the avoidance of tipping fees.

In GM's case, a Resource Manager was hired to locate waste reduction options full-time. Had their solid waste provider helped with the discovery and operation of this project, their monetary incentive would be half of the savings, $20,000. The hauler would receive this bonus on the condition that it continues to assist in finding waste reduction options. As just explained, RM is a beneficial situation for both parties and reduces the amounts of waste going to landfills.

At the moment, the Tellus Institute, an Environmental Consulting Company based out of Boston, has received a grant from the EPA. With this grant, the Tellus Institute is required to assist in up to 5 pilot projects in which the pilot company explores RM. This project includes putting together request for proposals, exploring disposal company options, and examining the disposal company's interests in RM. Agreeing to be a pilot company does not require any commitment to follow through with RM. Fairview is currently working with Geb Marett at the Tellus Institute in pursuing this contracting option. One idea that has been proposed by HWS is the hiring of a full-time resource manager. This person would spend their time searching for areas where waste reduction can be implemented. Fairview and HWS will also be exploring ways to incorporate RM contract language into the current contract proposed by HWS.

Included in RM can be the identification of new recycling streams, waste segregation training, posters/signage, and incentives, contests, and events. One issue, brought up as a result of a buyer survey I passed out, is toner cartridge disposal. Supposedly, some of the equipment that Fairview uses requires cartridges that can not be recycled. A recycling program for these items would greatly reduce Fairview's output of waste. Also, duplex copying is a simple but effective method of waste reduction.

Waste segregation training will ensure that Fairview is paying proper disposal costs. By educating employees about the separate waste and recycling streams and more specifically, what items fall under each category, Fairview will prevent spending extra money on the disposal of improperly segregated items. The education process can be done by HWS alone, but a better solution would be to have HWS and a Fairview education team to work together to put together a program and make sure it is carried out.

An issue brought to my attention regarding employee training, in general, is poor turnout. In order to boost attendance, an incentive (meal provided) or contest (prize for the department with the best attendance) could be offered. It is crucial that employees understand that this training is important and will have a huge effect on the environment and Fairview's budget. Upper management support is also necessary to help persuade employees to attend training sessions. Another idea is to hold hospital events, such as a departmental cleaning day. This way the hospital's stock will be looked over, unneeded items can be handed over to other departments, given to charity, or posted on the Materials Exchange.

Throughout our meetings with HWS a couple areas of concern have come up. My major frustration was a strong opposition to reusable sharps containers. Metro Safety Solutions was worried about their employee safety during the opening and emptying process. I reassured HWS that many other companies have successful reusable container programs without major injuries. HWS has since created a reusable container program. Also, the first proposed contract lacked language for employee training. The new focus on Resource Management should take into account this missed contract component. Lastly, the contracting process is going very slowly on Healthcare Waste Solutions' part. This lack of time management skills is not very professional and could resemble future service.

4. Cleaning Chemicals

a. Reduce number of chemicals used

Chemical consolidation is very important. I have noticed that some of Fairview's hospitals are purchasing too many chemicals for one job. By purchasing excessive chemicals, Fairview is spending extra money on unnecessary supplies and putting employers at risk. A large number of chemicals on shelves can cause confusion as to which is appropriate for a specific task. Mixing chemicals, the main source of vapor inhalation injuries, may also become more likely. Any steps that Fairview can take to prevent these situations would be greatly beneficial.

b. Ensure proper staff training

Schedule yearly training, at a minimum, for janitorial staff. This way, employees will constantly be reminded of proper cleaning methods, injury prevention, and equipment use. As a result, Fairview's payouts on workers comp claims will hopefully decrease because of fewer injuries. Scheduled consultations should also take place. This way the housekeeping managers can work directly with the vendors on any problems that may come up. I discussed these ideas with John Hafner to get an estimate of training and consultation sessions needed at each hospital. His response is shown Table 1. John also recommended consulting sessions twice a year for FV University and FV Riverside and once a year for the other locations.

	Hard Floor Care	Carpet Care/ Disinfecting	Restroom Care
FV University	2x per year	1x per year	2x per year
FV Riverside	2x per year	1x per year	2x per year
FV Southdale	1x per year	1x per year	1x per year
FV Ridges	1x per year	1x per year	1x per year
FV Northland	1x per year	1x per year	1x per year
FV Lakes	1x per year	1x per year	1x per year

Table 2: Recommended training at Fairview's hospitals

c. Review by committee

A housekeeping/environmental committee should be formed, or these chemical topics should be added to the agenda of an existing committee. The ideal group should be composed of the housekeeping managers at each site, the appropriate buyer, and any others that work or have an interest in this area. The purpose of this committee will be to address any issues that come up pertaining to the chemicals themselves, procedures, equipment, and policies. This group will meet on a regular basis and strive for chemical minimization and "green" products.

d. Eliminate most dangerous chemicals

"Green" chemicals should be a priority. One great initiative Fairview has taken advantage of is that all hospitals have automatic dispensers for frequently used products. These pieces of equipment help reduce injury by properly adding the chemical and water in their correct proportions. The apparatus also reduces waste and cost by using chemical concentrates. This way Fairview is not buying and packaging unneeded water. My suggestion is to request little to no packaging and reusable/recyclable containers from vendors. Also, toxic chemicals should be avoided whenever possible. Toxic chemicals are harmful not only to employees and patients, but to equipment and the environment. When toxic chemicals are the only option, they should be used with great caution, as seldomly as possible, and with the proper protective equipment. My three greatest concerns are with Spitfire, SparCling, and Virex. Also, a list of ingredients to avoid can be found in Appendix F.

APPENDIX A
List of References

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APPENDIX A
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APPENDIX A
List of References

Stericycle
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(Major Account Executive)
Gave tour of Stericycle's facilities.
16146 Creekwood Road
Prior Lake, MN 55372
Tel: 952.226.4650
Toll Free: 800.892.3207
Fax: 952.226.4651
St. Paul: 651.841.0009
glangdon@stericycle.com
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Tellus Institute
Geb Marett
(Research Associate)
Assisted Fairview with putting together waste disposal contracts using Resource Management.
Tellus Institute
Business & Sustainability Group
11 Arlington Street
Boston, MA 02116-3411
Tel: (617) 266-5400
Fax: (617) 266-8303
gmarett@tellus.org
http://www.tellus.org

Waste Management
Joe Wagner
Waste disposal provider for Fairview and provided waste assessment data.
Tel: 952.890.3248 ext. 17

APPENDIX B
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California Integrated Waste Management Board

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APPENDIX C
Sample Environmental Policy

FAIRVIEW

Environmental Policy

Purpose: To conserve our earth's resources, protect our environment, reduce costs, improve employee and patient safety and protect the health of the communities we serve.

To minimize the toxicity of products and equipment and reduce waste.

To fulfil Fairview's value of Service: " We work to make a difference in people's lives and in our communities. We strive for excellence by anticipation, meeting, and exceeding expectation. Teamwork, cooperation, and partnership are essential to our success. We continually improve our services, kills and programs, though learning and innovation. We responsibly manage all of our resources."

Coverage: This policy applies to all Fairview organizations, their facilities, departments, employees, physicians, volunteers, members, patients, vendors and other.

Policy: Fairview shall be consistent with its mission statement, "Fairview's mission is to improve the health of the communities we serve," by carrying out the following:

- Fairview, when making purchasing decisions, will not only consider costs, but will also compare environmental impacts. These environmental issues include, but are not limited to, reduced, reusable, or no packaging when appropriate, mercury-, latex-, and/or PVC-free products, low toxicity cleaners and chemicals, recycled content products, recyclable products, reusable products.
- Fairview employees shall participate in the onsite recycling program. Waste shall be segregated into its proper containers and disposed of according to relevant laws.
- Fairview employees, physicians and volunteers are encouraged to seek out for areas of improvement with regards to recycling and reuse.
- Fairview shall meet or exceed all environmental laws and regulations.
- Fairview shall strive to conserve natural resources such as water, energy, and materials.
- Fairview shall participate with government, education, business, other healthcare systems, and the public to encourage environmental values and practices.

Provisions: A system-wide committee consisting of representatives from each major facility will be established to promote practices consistent with our environmental policy and to plan regional environmental activities.

Realization of the principles will be achieved by the full participation of each of our medical facilities and the sustained commitment of all our physicians and employees.

APPENDIX D
Cost Analysis: Sharps Containers

Disposable Container Payments System-Wide

During the time frame of July 2001 – June 2002, Fairview had 36 disposable container options available on Matkon (Fairview's purchasing system). Out of these 36 containers, only eighteen (18) were used on a regular basis. Nine (9) of the containers were not ordered at all during this twelve month period, and the remaining were ordered only periodically. Below are shown the 25 containers that were on record of being purchased during the given period. The cost of all disposable containers purchased adds up to approximately $27,000. THIS DOES NOT INCLUDE DISPOSAL CHARGES. The spreadsheet includes the Matkon number for each container, the container manufacturer, the container size, and the cost per case as indicated on the corresponding purchase order. Also, the number of cases purchased is laid out by month. These figures account for purchases taking place system-wide.

Item #	Manufacturer Name	Description	PO Price	Jun-02	May-02	Apr-02	Mar-02	Feb-02	Jan-02	Dec-01	Nov-01	Oct-01	Sep-01	Aug-01	Jul-01	Total Cases	Total Spent
92413	B-D	1.5 QT, DISPOSABLE	35.71	4	4	4	4	4	3	7	6	3	3	5	4	51	1821.21
66862	B-D	5 GAL, DISPOSABLE	39.3	0	0	0	1	0	0	0	0	0	0	0	0	1	39.3
91032	SAGE	17 GAL, DISPOSABLE	86.94	3	4	4	3	3	2	4	5	4	2	5	3	42	3651.48
39093	SAGE	8 GAL, DISPOSABLE	81.32	0	0	0	0	0	1	0	0	2	0	0	0	3	243.96
5454	SAGE	8 GAL, CHEMO STYLE	170.8	0	0	0	0	0	0	0	0	1	0	0	0	1	170.8
86561	SAGE	5 QT, DISPOSABLE	54.6	1	0	0	0	0	0	0	0	1	1	0	0	3	163.8
87339	SAGE	3 GAL, DISPOSABLE	48.05	0	0	0	0	1	0	0	0	1	0	0	0	2	96.1
57836	SAGE	0.5 GAL, DISPOSABLE	1.63	70	58	55	3	60	75	74	80	66	70	82	50	743	1211.09
103613	B-D	5.4 QT, HORIZON ENTRY	48.21	0	1	0	1	1	0	2	0	1	0	1	1	8	385.68
2379	B-D	2 GAL, DISPOSABLE	1.746	126	122	144	120	72	192	26	155	74	174	192	153	1550	2706.3
2323	SAGE	2 GAL, DISPOSABLE	60.06	0	0	0	0	1	0	0	1	0	0	0	0	2	120.12
85601	B-D	2 GAL, DISPOSABLE	1.746	36	108	144	108	120	96	84	108	96	90	72	96	1158	2021.868
47853	SAGE	3.5 X 2.75 X 5	50.2	0.2	0.14	1.2	2.18	1.2	1.2	1.3	1.1	1.3	1.1	0.14	3.1	14.16	710.832
141290	MONOJECT	2 GAL, DISPOSABLE	3.116	6	16	14	24	5	20	11	21	8	28	10	24	187	582.692
179352	KENDALL	12 QT, DISPOSABLE	48.05	0	1	0	1	0	2	0	0	0	0	0	0	4	192.2
103614	B-D	6 GAL, DISPOSABLE	42.99	0	0	0	0	0.16	0	0	2	2	0	4	0	8.16	350.7984
120894	B-D	5.4 QT, DISPOSABLE	48.21	0	1	1	0	2	0	0	0	1	0	1	1	7	337.47
175707	B-D VAC	1 QT, DISPOSABLE	56.33	2	2	3	2	3	2	3	3	3	5	4	3	35	1971.55
115530	DEVON	5 QT, DISPOSABLE	49.09	0	1	0	0	2	1	1	1	0	0	1	0	7	343.63
113099	DEVON	19 GAL, DISPOSABLE	14.98	15	8	4	13	4	12	9	9	10	10	9	8	111	1662.78
179600	KENDALL	18 GAL, DISPOSABLE	92.4	0	0	0	0	0	0	0	0	1	0	0	0	1	92.4
183673	KENDALL	2.5 QT, DISPOSABLE	41.89	0	0	1	0	0	1	0	0	0	0	0	0	2	83.78
182283	B-D	5.4 QT, HORIZON ENTRY	2.318	140	140	100	100	129	120	101	41	0	0	0	0	871	2018.978
180511	BEMIS	5 QT, CHILD PROOF	118	3	3	3	3	3	4	4	3	2	8	5	0	41	4838
180633	B-D	5.4 QT, DISPOSABLE	47.03	4	0	0	2	3	0	0	2	5	0	4	0	20	940.6
																TOTAL:	**$26,757.42**

APPENDIX D
Cost Analysis: Sharps Containers

Comparison of Reusable and Disposable Containers with HWS

For this analysis, the same 25 disposable container data was used as on the previous page. I used the number of containers to shipping case and the number of cases purchased to determine how many disposable sharps containers were bought during the span of July 2002 – June 2002. The results show that the Fairview system purchased 11,554 disposable sharps containers during this given time. Following is a cost comparison using Healthcare Waste Solutions Pricing as of August 6th, 2002. (Because the current sizes were not always available through HWS I matched up the sizing as best as possible. See 'HWS Conversion.') If Fairview were to continue using their disposable containers with HWS, it would cost approximately $60,000 annually for the containers and disposal. However, if Fairview were to convert their current disposable containers to reusable containers with HWS, the annual cost would be only $37,000. This results in an approximate $23,500 cost saving per year.

					Disposable Container Estimate			Reusable Container Estimate		
Item #	Size	#/case	# of cases	# of containers	HWS Conversion	Cost/ container	Total cost/ container type	HWS Conversion	Cost/ container	Total cost/ container type
92413	1.5 QT	36	51	1836	5.4 QT /3	1.5	2754	2.5 GAL /6	0.75	1377
66862	5 GAL	8	1	8	6 GAL	14.5	116	4 GAL	8	64
91032	17 GAL	5	42	210	9 GAL X2	50	10500	8 GAL X2	20	4200
39093	8 GAL	10	3	30	9 GAL	25	750	8 GAL	10	300
5454	8 GAL	10	1	10	9 GAL	25	250	8 GAL	10	100
86561	5 QT	1	3	3	5.4 QT	4.5	13.5	2.5 GAL	4.5	13.5
87339	3 GAL	1	2	2	3 GAL	9.5	19	2.5 GAL	4.5	9
57836	0.5 GAL	1	743	743	5.4 QT /2	2.25	1671.75	2.5 GAL /5	0.9	668.7
103613	5.4 QT	20	8	160	5.4 QT	4.5	720	2.5 GAL	4.5	720
2379	2 GAL	1	1550	1550	8 QT	7.5	11625	2.5 GAL	4.5	6975
2323	2 GAL	20	2	40	8 QT	7.5	300	2.5 GAL	4.5	180
85601	2 GAL	1	1158	1158	8 QT	7.5	8685	2.5 GAL	4.5	5211
47853	~ 1 QT	50	14.16	708	5.4 QT /5	0.9	637.2	2.5 GAL /10	0.45	318.6
141290	2 GAL	1	187	187	8 QT	7.5	1402.5	2.5 GAL	4.5	841.5
179352	12 QT	10	4	40	3 GAL	9.5	380	2.5 GAL	4.5	180
103614	6 GAL	12	8.16	97.92	6 GAL	14.5	1419.84	8 GAL	10	979.2
120894	5.4 QT	20	7	140	5.4 QT	4.5	630	2.5 GAL	4.5	630
175707	1 QT	60	35	2100	5.4 QT /5	0.9	1890	2.5 GAL /10	0.45	945
115530	5 QT	30	7	210	5.4 QT	4.5	945	2.5 GAL	4.5	945
113099	19 GAL	1	111	111	9 GAL X2	50	5550	8 GAL X2	20	2220
179600	18 GAL	5	1	5	9 GAL X2	50	250	8 GAL X2	20	100
183673	2.5 QT	1	2	2	5.4 QT /2	2.25	4.5	2.5 GAL /4	1.125	2.25
182283	5.4 QT	1	871	871	5.4 QT	4.5	3919.5	2.5 GAL	4.5	3919.5
180511	5 QT	32	41	1312	5.4 QT	4.5	5904	2.5 GAL	4.5	5904
180633	5.4 QT	1	20	20	5.4 QT	4.5	90	2.5 GAL	4.5	90
			TOTAL	11553.92		TOTAL	$60,426.79		TOTAL	$36,893.25

SAVINGS OF $23,533.54 ANNUALLY

APPENDIX E
Cost Analysis: Invoices

Sharps Invoice Comparison

For the following analysis I used seven (7) Stericycle invoices, for reusable sharps disposal, that Fairview received in the last few months. Each invoice comparison includes the site, the dates of service, and the invoice date. The invoice number refers to the number I assigned to each original invoice to make referencing easier. The Stericycle portion of the comparison states each charge as listed on the invoice. Each line states the quantity of containers or the number of times a service was completed, a description of the container or service, the price per unit of measure, and finally the total for that line. Directly to the right of the Stericycle information is the corresponding charges given by HWS had they completed the service instead. The most obvious observation was that HWS does not have all of the extra record retention fees, monthly fees, stop charges, and fuel charges. Also, Stericycle's pricing changes almost monthly, making a comparison difficult.

The results of this comparison were that Stericycle had better pricing on 4 of the 7 invoices. I am weary of these results because of the irregularities in Stericycle's billing. Overall, I think HWS' pricing is comparable if even cheaper than Stericycle.

APPENDIX E
Cost Analysis: Invoices

***** FAIRVIEW SOUTHDALE *** (INVOICE #1) SERVICE 4/22/02-5/27/02 DATED 5/31/02**

STERICYCLE				HEALTHCARE WASTE SOLUTIONS			
QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL
170	2.5 GAL REUS SHARPS DISP	4.520	768.40	170	2.5 GAL REUS SHARPS DISP	4.50	765.00
36	8 GAL REUS SHARPS DISP	10.850	390.60	36	8 GAL REUS SHARPS DISP	10.00	360.00
46	4 GAL REUS SHARPS DISP	6.780	311.88	46	4 GAL REUS SHARPS DISP	8.00	368.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
165	2.5 GAL REUS SHARPS DISP	4.520	745.80	165	2.5 GAL REUS SHARPS DISP	4.50	742.50
43	4 GAL REUS SHARPS DISP	6.780	291.54	43	4 GAL REUS SHARPS DISP	8.00	344.00
30	8 GAL REUS SHARPS DISP	10.850	325.50	30	8 GAL REUS SHARPS DISP	10.00	300.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
116	2.5 GAL REUS SHARPS DISP	4.520	524.32	116	2.5 GAL REUS SHARPS DISP	4.50	522.00
42	4 GAL REUS SHARPS DISP	6.780	284.76	42	4 GAL REUS SHARPS DISP	8.00	336.00
30	8 GAL REUS SHARPS DISP	10.850	325.50	30	8 GAL REUS SHARPS DISP	10.00	300.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
160	2.5 GAL REUS SHARPS DISP	4.520	723.20	160	2.5 GAL REUS SHARPS DISP	4.50	720.00
33	8 GAL REUS SHARPS DISP	10.850	358.05	33	8 GAL REUS SHARPS DISP	10.00	330.00
43	4 GAL REUS SHARPS DISP	6.780	291.54	43	4 GAL REUS SHARPS DISP	8.00	344.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
105	2.5 GAL REUS SHARPS DISP	4.520	474.60	105	2.5 GAL REUS SHARPS DISP	4.50	472.50
40	4 GAL REUS SHARPS DISP	6.780	271.20	40	4 GAL REUS SHARPS DISP	8.00	320.00
25	8 GAL REUS SHARPS DISP	10.850	271.25	25	8 GAL REUS SHARPS DISP	10.00	250.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
160	2.5 GAL REUS SHARPS DISP	4.520	723.20	160	2.5 GAL REUS SHARPS DISP	4.50	720.00
36	4 GAL REUS SHARPS DISP	6.780	244.08	36	4 GAL REUS SHARPS DISP	8.00	288.00
25	8 GAL REUS SHARPS DISP	10.850	271.25	25	8 GAL REUS SHARPS DISP	10.00	250.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
		TOTAL	$7,620.67			TOTAL	$7,732.00

Savings of $111.33 with Stericycle

***** FAIRVIEW OXBORO BLOOMINGTON *** (INVOICE #2) SERVICE 5/1/02-5/20/02 DATED 5/31/02**

STERICYCLE				HEALTHCARE WASTE SOLUTIONS			
QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL
1	MONTHLY FEE	419.650	419.65	0	MONTHLY FEE	0.00	0.00
10	2.5 GAL REUS SHARPS DISP	0.000	0.00	10	2.5 GAL REUS SHARPS DISP	4.50	45.00
1	MINIMUM PICK-UP FEE	52.500	52.50	0	MINIMUM PICK-UP FEE	0.00	0.00
5	2.5 GAL REUS SHARPS DISP	0.000	0.00	5	2.5 GAL REUS SHARPS DISP	4.50	22.50
1	MINIMUM PICK-UP FEE	52.500	52.50	0	MINIMUM PICK-UP FEE	0.00	0.00
9	2.5 GAL REUS SHARPS DISP	0.000	0.00	9	2.5 GAL REUS SHARPS DISP	4.50	40.50
1	MINIMUM PICK-UP FEE	52.500	52.50	0	MINIMUM PICK-UP FEE	0.00	0.00
		TOTAL	$577.15			TOTAL	$108.00

Savings of $469.15 with HCWS

***** FAIRVIEW RIVERSIDE *** (INVOICE #3) SERVICE 4/29/02-5/20/02 DATED 5/31/02**

STERICYCLE				HEALTHCARE WASTE SOLUTIONS			
QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL
110	2.5 GAL REUS SHARPS DISP	3.110	342.10	110	2.5 GAL REUS SHARPS DISP	4.50	495.00
8	4 GAL REUS SHARPS DISP	4.050	32.40	8	4 GAL REUS SHARPS DISP	8.00	64.00
12	8 GAL REUS SHARPS DISP	9.320	111.84	12	8 GAL REUS SHARPS DISP	10.00	120.00
14	2.5 GAL REUS SHARPS DISP	3.110	43.54	14	2.5 GAL REUS SHARPS DISP	4.50	63.00
1	8 GAL REUS SHARPS DISP	9.320	9.32	1	8 GAL REUS SHARPS DISP	10.00	10.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
122	2.5 GAL REUS SHARPS DISP	3.110	379.42	122	2.5 GAL REUS SHARPS DISP	4.50	549.00
4	4 GAL REUS SHARPS DISP	4.050	16.20	4	4 GAL REUS SHARPS DISP	8.00	32.00
12	8 GAL REUS SHARPS DISP	9.320	111.84	12	8 GAL REUS SHARPS DISP	10.00	120.00
12	2.5 GAL REUS SHARPS DISP	3.110	37.32	12	2.5 GAL REUS SHARPS DISP	4.50	54.00
1	8 GAL REUS SHARPS DISP	9.320	9.32	1	8 GAL REUS SHARPS DISP	10.00	10.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
94	2.5 GAL REUS SHARPS DISP	3.110	292.34	94	2.5 GAL REUS SHARPS DISP	4.50	423.00
8	4 GAL REUS SHARPS DISP	4.050	32.40	8	4 GAL REUS SHARPS DISP	8.00	64.00
10	8 GAL REUS SHARPS DISP	9.320	93.20	10	8 GAL REUS SHARPS DISP	10.00	100.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
		TOTAL	$1,523.24			TOTAL	$2,104.00

Savings of $580.76 with Stericycle

APPENDIX E
Cost Analysis: Invoices

***** FAIRVIEW-UNIV. MEDICAL *** (INVOICE #4) SERVICE 4/30/02-5/30/02 DATED 5/31/02**

STERICYCLE				HEALTHCARE WASTE SOLUTIONS			
QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL
75	2.5 GAL REUS SHARPS DISP	5.080	381.00	75	2.5 GAL REUS SHARPS DISP	4.50	337.50
27	4 GAL REUS SHARPS DISP	11.300	305.10	27	4 GAL REUS SHARPS DISP	8.00	216.00
54	8 GAL REUS SHARPS DISP	10.730	579.42	54	8 GAL REUS SHARPS DISP	10.00	540.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
105	2.5 GAL REUS SHARPS DISP	5.080	533.40	105	2.5 GAL REUS SHARPS DISP	4.50	472.50
26	4 GAL REUS SHARPS DISP	11.300	293.80	26	4 GAL REUS SHARPS DISP	8.00	208.00
35	8 GAL REUS SHARPS DISP	10.730	375.55	35	8 GAL REUS SHARPS DISP	10.00	350.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
30	2.5 GAL REUS SHARPS DISP	5.080	152.40	30	2.5 GAL REUS SHARPS DISP	4.50	135.00
27	4 GAL REUS SHARPS DISP	11.300	305.10	27	4 GAL REUS SHARPS DISP	8.00	216.00
36	8 GAL REUS SHARPS DISP	10.730	386.28	36	8 GAL REUS SHARPS DISP	10.00	360.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
86	2.5 GAL REUS SHARPS DISP	5.080	436.88	86	2.5 GAL REUS SHARPS DISP	4.50	387.00
19	4 GAL REUS SHARPS DISP	11.300	214.70	19	4 GAL REUS SHARPS DISP	8.00	152.00
64	8 GAL REUS SHARPS DISP	10.730	686.72	64	8 GAL REUS SHARPS DISP	10.00	640.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
98	2.5 GAL REUS SHARPS DISP	5.080	497.84	98	2.5 GAL REUS SHARPS DISP	4.50	441.00
24	4 GAL REUS SHARPS DISP	11.300	271.20	24	4 GAL REUS SHARPS DISP	8.00	192.00
32	8 GAL REUS SHARPS DISP	10.730	343.36	32	8 GAL REUS SHARPS DISP	10.00	320.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
32	2.5 GAL REUS SHARPS DISP	5.080	162.56	32	2.5 GAL REUS SHARPS DISP	4.50	144.00
24	4 GAL REUS SHARPS DISP	11.300	271.20	24	4 GAL REUS SHARPS DISP	8.00	192.00
31	8 GAL REUS SHARPS DISP	10.730	332.63	31	8 GAL REUS SHARPS DISP	10.00	310.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
80	2.5 GAL REUS SHARPS DISP	5.080	406.40	80	2.5 GAL REUS SHARPS DISP	4.50	360.00
47	4 GAL REUS SHARPS DISP	11.300	531.10	47	4 GAL REUS SHARPS DISP	8.00	376.00
64	8 GAL REUS SHARPS DISP	10.730	686.72	64	8 GAL REUS SHARPS DISP	10.00	640.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
108	2.5 GAL REUS SHARPS DISP	5.080	548.64	108	2.5 GAL REUS SHARPS DISP	4.50	486.00
26	4 GAL REUS SHARPS DISP	11.300	293.80	26	4 GAL REUS SHARPS DISP	8.00	208.00
29	8 GAL REUS SHARPS DISP	10.730	311.17	29	8 GAL REUS SHARPS DISP	10.00	290.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
29	2.5 GAL REUS SHARPS DISP	5.080	147.32	29	2.5 GAL REUS SHARPS DISP	4.50	130.50
31	4 GAL REUS SHARPS DISP	11.300	350.30	31	4 GAL REUS SHARPS DISP	8.00	248.00
40	8 GAL REUS SHARPS DISP	10.730	429.20	40	8 GAL REUS SHARPS DISP	10.00	400.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
91	2.5 GAL REUS SHARPS DISP	5.080	462.28	91	2.5 GAL REUS SHARPS DISP	4.50	409.50
33	4 GAL REUS SHARPS DISP	11.300	372.90	33	4 GAL REUS SHARPS DISP	8.00	264.00
66	8 GAL REUS SHARPS DISP	10.730	708.18	66	8 GAL REUS SHARPS DISP	10.00	660.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
105	2.5 GAL REUS SHARPS DISP	5.050	530.25	105	2.5 GAL REUS SHARPS DISP	4.50	472.50
26	4 GAL REUS SHARPS DISP	11.300	293.80	26	4 GAL REUS SHARPS DISP	8.00	208.00
11	8 GAL REUS SHARPS DISP	10.730	118.03	11	8 GAL REUS SHARPS DISP	10.00	110.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
25	2.5 GAL REUS SHARPS DISP	5.080	127.00	25	2.5 GAL REUS SHARPS DISP	4.50	112.50
27	4 GAL REUS SHARPS DISP	11.300	305.10	27	4 GAL REUS SHARPS DISP	8.00	216.00
40	8 GAL REUS SHARPS DISP	10.730	429.20	40	8 GAL REUS SHARPS DISP	10.00	400.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
74	2.5 GAL REUS SHARPS DISP	5.080	375.92	74	2.5 GAL REUS SHARPS DISP	4.50	333.00
19	4 GAL REUS SHARPS DISP	11.300	214.70	19	4 GAL REUS SHARPS DISP	8.00	152.00
52	8 GAL REUS SHARPS DISP	10.730	557.96	52	8 GAL REUS SHARPS DISP	10.00	520.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
26	4 GAL REUS SHARPS DISP	11.300	293.80	26	4 GAL REUS SHARPS DISP	8.00	208.00
47	8 GAL REUS SHARPS DISP	10.730	504.31	47	8 GAL REUS SHARPS DISP	10.00	470.00
107	2.5 GAL REUS SHARPS DISP	5.080	543.56	107	2.5 GAL REUS SHARPS DISP	4.50	481.50
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
31	2.5 GAL REUS SHARPS DISP	5.080	157.48	31	2.5 GAL REUS SHARPS DISP	4.50	139.50
29	4 GAL REUS SHARPS DISP	11.300	327.70	29	4 GAL REUS SHARPS DISP	8.00	232.00
48	8 GAL REUS SHARPS DISP	10.730	515.04	48	8 GAL REUS SHARPS DISP	10.00	480.00
1	RECORD RETENTION FEE	4.000	4.00	0	RECORD RETENTION FEE	0.00	0.00
		TOTAL	$17,131.00			TOTAL	$14,620.00

Savings of $2,511.00 with HCWS

APPENDIX E
Cost Analysis: Invoices

***** FAIRVIEW SOUTHDALE *** (INVOICE #5) SERVICE 12/19/01-12/30/01 DATED 3/28/02**

STERICYCLE				HEALTHCARE WASTE SOLUTIONS			
QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL
170	2.5 GAL REUS SHARPS DISP	4.000	680.00	170	2.5 GAL REUS SHARPS DISP	4.50	765.00
30	4 GAL REUS SHARPS DISP	6.000	180.00	30	4 GAL REUS SHARPS DISP	8.00	240.00
30	8 GAL REUS SHARPS DISP	9.600	288.00	30	8 GAL REUS SHARPS DISP	10.00	300.00
1	RECORD RETENTION FEE	3.000	3.00	1	RECORD RETENTION FEE	0.00	0.00
146	2.5 GAL REUS SHARPS DISP	4.000	584.00	146	2.5 GAL REUS SHARPS DISP	4.50	657.00
31	4 GAL REUS SHARPS DISP	6.000	186.00	31	4 GAL REUS SHARPS DISP	8.00	248.00
22	8 GAL REUS SHARPS DISP	9.600	211.20	22	8 GAL REUS SHARPS DISP	10.00	220.00
1	RECORD RETENTION FEE	3.000	3.00	1	RECORD RETENTION FEE	0.00	0.00
28	8 GAL REUS SHARPS DISP	9.600	268.80	28	8 GAL REUS SHARPS DISP	10.00	280.00
40	4 GAL REUS SHARPS DISP	6.000	240.00	40	4 GAL REUS SHARPS DISP	8.00	320.00
160	2.5 GAL REUS SHARPS DISP	4.000	640.00	160	2.5 GAL REUS SHARPS DISP	4.50	720.00
1	RECORD RETENTION FEE	3.000	3.00	1	RECORD RETENTION FEE	0.00	0.00
		TOTAL	$3,287.00			TOTAL	$3,750.00

Savings of $463.00 with Stericycle

***** FAIRVIEW SOUTHDALE *** (INVOICE #6) SERVICE 2/4/02-2/11/02 DATED 2/28/02**

STERICYCLE				HEALTHCARE WASTE SOLUTIONS			
QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL
180	2.5 GAL REUS SHARPS DISP	4.000	720.00	180	2.5 GAL REUS SHARPS DISP	4.50	810.00
35	4 GAL REUS SHARPS DISP	6.000	210.00	35	4 GAL REUS SHARPS DISP	8.00	280.00
31	8 GAL REUS SHARPS DISP	9.600	297.60	31	8 GAL REUS SHARPS DISP	10.00	310.00
1	RECORD RETENTION FEE	3.000	3.00	1	RECORD RETENTION FEE	0.00	0.00
1	STOP CHARGE	30.000	30.00	1	STOP CHARGE	0.00	0.00
145	2.5 GAL REUS SHARPS DISP	4.000	580.00	145	2.5 GAL REUS SHARPS DISP	4.50	652.50
45	4 GAL REUS SHARPS DISP	6.000	270.00	45	4 GAL REUS SHARPS DISP	8.00	360.00
34	8 GAL REUS SHARPS DISP	9.600	326.40	34	8 GAL REUS SHARPS DISP	10.00	340.00
1	RECORD RETENTION FEE	3.000	3.00	1	RECORD RETENTION FEE	0.00	0.00
1	STOP CHARGE	30.000	30.00	1	STOP CHARGE	0.00	0.00
		TOTAL	$2,470.00			TOTAL	$2,752.50

Savings of $282.50 with Stericycle

***** FAIRVIEW SOUTHDALE *** (INVOICE #7) SERVICE 4/9/02-4/22/02 DATED 4/30/02**

STERICYCLE				HEALTHCARE WASTE SOLUTIONS			
QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	PRICE U/M (EA)	TOTAL
126	2.5 GAL REUS SHARPS DISP	4.730	595.98	126	2.5 GAL REUS SHARPS DISP	4.50	567.00
15	8 GAL REUS SHARPS DISP	9.970	149.55	15	8 GAL REUS SHARPS DISP	10.00	150.00
9	4 GAL REUS SHARPS DISP	5.510	49.59	9	4 GAL REUS SHARPS DISP	8.00	72.00
15	2.5 GAL REUS SHARPS DISP	4.730	70.95	15	2.5 GAL REUS SHARPS DISP	4.50	67.50
1	8 GAL REUS SHARPS DISP	9.970	9.97	1	8 GAL REUS SHARPS DISP	10.00	10.00
1	FUEL CHARGE	5.500	5.50	1	FUEL CHARGE	0.00	0.00
81	2.5 GAL REUS SHARPS DISP	4.730	383.13	81	2.5 GAL REUS SHARPS DISP	4.50	364.50
12	8 GAL REUS SHARPS DISP	9.970	119.64	12	8 GAL REUS SHARPS DISP	10.00	120.00
15	2.5 GAL REUS SHARPS DISP	4.730	70.95	15	2.5 GAL REUS SHARPS DISP	4.50	67.50
1	8 GAL REUS SHARPS DISP	9.970	9.97	1	8 GAL REUS SHARPS DISP	10.00	10.00
1	FUEL CHARGE	5.500	5.50	1	FUEL CHARGE	0.00	0.00
		TOTAL	$ 1,470.73			TOTAL	$ 1,428.50

Savings of $42.23 with HCWS

APPENDIX E
Cost Analysis: Invoices

Infectious Waste Invoice Comparison

This analysis is very similar to that of the sharps disposal. I used ten (10) Stericycle invoices for the original comparison. I later rejected invoice #10 because it used old pricing. I revised the analysis by adding two newer invoices. Invoices #11 and #12 are more recent and include Stericycle's current pricing. The result of this analysis was that HWS had better pricing on nine of the eleven invoices (excluding invoice #10).

I also did an analysis with the three hospital infectious waste invoices (#10, #11, #12). I used the number of containers collected, the volumes of the containers, and the weights of the containers to determine an average weight per gallon. The overall average of these three invoices was 0.73 lbs/gal.

***** FAIRVIEW EAGAN CLINIC *** (INVOICE #1) SERVICE 3/6/02-3/27/02 DATED 3/31/02**

STERICYCLE					HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL
2	28 GAL RED SQ TUB DISP	0.00	22.370	44.74	2	38 GAL CONTAIN DISP	0.00	---	0.00
2	28 GAL RED SQ TUB DISP	29.80	22.370	44.74	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	28 GAL RED SQ TUB DISP	43.80	22.370	44.74	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	28 GAL RED SQ TUB DISP	0.00	22.370	22.37	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
1	MINIMUM PICK-UP FEE	0.00	22.130	22.13	2	38 GAL CONTAIN DISP	0.00	---	0.00
			TOTAL	$178.72	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
					1	38 GAL CONTAIN DISP	0.00	---	0.00
					1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
								TOTAL	$199.80

Savings of $21.08 with Stericycle

***** FAIRVIEW CEDAR RIDGE MEDICAL *** (INVOICE #2) SERVICE 5/7/02-5/21/02 DATED 5/31/02**

STERICYCLE					HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL
2	44 GAL GREY TUB DISP	0.00	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	44 GAL GREY TUB DISP	0.00	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	44 GAL GREY TUB DISP	49.60	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
			TOTAL	$162.00				TOTAL	$149.85

Savings of $12.15 with HCWS

***** FAIRVIEW RIDGE CLINIC *** (INVOICE #3) SERVICE 3/5/02-3/26/02 DATED 3/31/02**

STERICYCLE					HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL
2	44 GAL GREY TUB DISP	0.00	22.370	44.74	2	38 GAL CONTAIN DISP	0.00	---	0.00
2	44 GAL GREY TUB DISP	0.00	22.370	44.74	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	44 GAL GREY TUB DISP	60.00	22.370	44.74	2	38 GAL CONTAIN DISP	0.00	---	0.00
2	44 GAL GREY TUB DISP	57.20	22.370	44.74	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
			TOTAL	$178.96	2	38 GAL CONTAIN DISP	0.00	---	0.00
					1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
					2	38 GAL CONTAIN DISP	0.00	---	0.00
					1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
								TOTAL	$199.80

Savings of $20.84 with Stericycle

APPENDIX E
Cost Analysis: Invoices

***** FAIRVIEW EAGAN CLINIC *** (INVOICE #4) SERVICE 5/1/02-5/29-02 DATED 5/31/02**

STERICYCLE					HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL
2	28 GAL RED SQ TUB DISP	0.00	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	28 GAL RED SQ TUB DISP	42.00	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	28 GAL RED SQ TUB DISP	41.20	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	28 GAL RED SQ TUB DISP	0.00	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	28 GAL RED SQ TUB DISP	24.60	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
			TOTAL	$270.00				TOTAL	$249.75

Savings of $20.25 with HCWS

***** FAIRVIEW HIGHLAND PK CLINIC *** (INVOICE #5) SERVICE 5/7/02-5/28/02 DATED 5/31/02**

STERICYCLE					HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL
2	28 GAL RED SQ TUB DISP	0.00	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	28 GAL RED SQ TUB DISP	0.00	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	28 GAL RED SQ TUB DISP	53.80	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	28 GAL RED SQ TUB DISP	48.60	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
			TOTAL	$216.00				TOTAL	$199.80

Savings of $16.20 with HCWS

***** FAIRVIEW SOUTHWEST CLINIC *** (INVOICE #6) SERVICE 5/20/02 DATED 5/31/02**

STERICYCLE					HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL
1	44 GAL GREY TUB DISP	52.80	25.000	25.00	1	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
1	MINIMUM PICK-UP FEE	0.00	25.000	25.00				TOTAL	$49.95
			TOTAL	$54.00					

Savings of $4.05 with HCWS

***** FAIRVIEW HIAWATHA CLINIC *** (INVOICE #7) SERVICE 5/7/02-5/28/02 DATED 5/31/02**

STERICYCLE					HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL
1	28 GAL RED SQ TUB DISP	26.80	25.000	25.00	1	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETANTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
1	MINIMUM PICK-UP FEE	0.00	25.000	25.00	1	38 GAL CONTAIN DISP	0.00	---	0.00
1	28 GAL RED SQ TUB DISP	0.00	25.000	25.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
1	RECORD RETANTION FEE	0.00	4.000	4.00	1	38 GAL CONTAIN DISP	0.00	---	0.00
1	MINIMUM PICK-UP FEE	0.00	25.000	25.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
1	28 GAL RED SQ TUB DISP	26.80	25.000	25.00	1	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETANTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
1	MINIMUM PICK-UP FEE	0.00	25.000	25.00				TOTAL	$199.80
1	28 GAL RED SQ TUB DISP	25.60	25.000	25.00					
1	RECORD RETANTION FEE	0.00	4.000	4.00					
1	MINIMUM PICK-UP FEE	0.00	25.000	25.00					
			TOTAL	$216.00					

Savings of $16.20 with HCWS

***** FAIRVIEW OXBORO CLINIC *** (INVOICE #8) SERVICE 5/6/02-5/20/02 DATED 5/31/02**

STERICYCLE					HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL
7	44 GAL GREY TUB DISP	200.00	25.000	175.00	7	38 GAL CONTAIN DISP	0.00	20.00	140.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	5	38 GAL CONTAIN DISP	0.00	20.00	100.00
5	44 GAL GREY TUB DISP	120.40	25.000	125.00	5	38 GAL CONTAIN DISP	0.00	20.00	100.00
1	RECORD RETENTION FEE	0.00	4.000	4.00				TOTAL	$340.00
5	44 GAL GREY TUB DISP	107.80	25.000	125.00					
1	RECORD RETENTION FEE	0.00	4.000	4.00					
			TOTAL	$437.00					

Savings of $97.00 with HCWS

APPENDIX E
Cost Analysis: Invoices

***** FAIRVIEW RIDGE CLINIC *** (INVOICE #9) SERVICE 5/7/02-5/21/02 DATED 5/31/02**

STERICYCLE					HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL	QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (EA)	TOTAL
2	44 GAL GREY TUB DISP	0.00	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	44 GAL GREY TUB DISP	0.00	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
2	44 GAL GREY TUB DISP	65.80	25.000	50.00	2	38 GAL CONTAIN DISP	0.00	---	0.00
1	RECORD RETENTION FEE	0.00	4.000	4.00	1	MINIMUM PICK-UP FEE	0.00	49.95	49.95
			TOTAL	$162.00				TOTAL	$149.85

Savings of $12.15 with HCWS

***** FAIRVIEW SOUTHDALE HOSPITAL *** (INVOICE #10) SERVICE 1/2/02-1/31/02 DATED 1/31/02**

STERICYCLE					HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (LB)	TOTAL	QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (LB)	TOTAL
9	CHRG/WGHT-28 GAL RED TUB	188.30	0.004	0.75	9	DISPOSAL PER LB	188.30	0.26	48.96
36	CHRG/WGHT-44 GAL GREY TUB	843.20	0.004	3.37	36	DISPOSAL PER LB	843.20	0.26	219.23
1	CHRG/WGHT-32 GAL BLUE TUB	10.30	0.004	0.04	1	DISPOSAL PER LB	10.30	0.26	2.68
9	28 GAL RED SQ TUB DISP	188.30	0.210	39.54	6	DISPOSAL PER LB	88.80	0.26	23.09
36	44 GAL GREY TUB DISP	843.20	0.210	177.07	18	DISPOSAL PER LB	617.40	0.26	160.52
1	32 GAL BLUE TUB DISP	10.30	0.210	2.16	6	DISPOSAL PER LB	105.90	0.26	27.53
1	FUEL CHARGE	0.00	5.500 EA	5.50	26	DISPOSAL PER LB	789.40	0.26	205.24
6	CHRG/WGHT-28 GAL RED TUB	88.80	0.004	0.36	14	DISPOSAL PER LB	260.10	0.26	67.63
18	CHRG/WGHT-44 GAL GREY TUB	617.40	0.004	2.47	43	DISPOSAL PER LB	1267.70	0.26	329.60
6	28 GAL RED SQ TUB DISP	88.80	0.210	18.65	1	DISPOSAL PER LB	21.00	0.26	5.46
18	44 GAL GREY TUB DISP	617.40	0.210	129.65	5	DISPOSAL PER LB	96.50	0.26	25.09
1	FUEL CHARGE	0.00	5.500 EA	5.50	24	DISPOSAL PER LB	721.20	0.26	187.51
6	CHRG/WGHT-28 GAL RED TUB	105.90	0.004	0.42	10	DISPOSAL PER LB	142.90	0.26	37.15
26	CHRG/WGHT-44 GAL GREY TUB	789.40	0.004	3.16	23	DISPOSAL PER LB	753.40	0.26	195.88
6	28 GAL RED SQ TUB DISP	105.90	0.210	22.24	1	DISPOSAL PER LB	17.80	0.26	4.63
26	44 GAL GREY TUB DISP	789.40	0.210	165.77	4	DISPOSAL PER LB	152.20	0.26	39.57
1	FUEL CHARGE	0.00	5.500 EA	5.50	4	DISPOSAL PER LB	51.20	0.26	13.31
14	CHRG/WGHT-28 GAL RED TUB	260.10	0.004	1.04	23	DISPOSAL PER LB	657.30	0.26	170.90
3	CHRG/WGHT-44 GAL GREY TUB	1267.70	0.004	5.07	7	DISPOSAL PER LB	118.30	0.26	30.76
1	CHRG/WGHT-32 GAL BLUE TUB	21.00	0.004	0.08	26	DISPOSAL PER LB	710.80	0.26	184.81
14	28 GAL RED SQ TUB DISP	260.10	0.210	54.62	1	DISPOSAL PER LB	9.80	0.26	2.55
43	44 GAL GREY TUB DISP	1267.70	0.210	266.22	9	DISPOSAL PER LB	219.90	0.26	57.17
1	32 GAL BLUE TUB DISP	21.00	0.210	4.41	37	DISPOSAL PER LB	1130.50	0.26	293.93
1	FUEL CHARGE	0.00	5.500 EA	5.50	4	DISPOSAL PER LB	160.20	0.26	41.65
5	CHRG/WGHT-28 GAL RED TUB	96.50	0.004	0.39	5	DISPOSAL PER LB	110.10	0.26	28.63
24	CHRG/WGHT-44 GAL GREY TUB	721.20	0.004	2.88	33	DISPOSAL PER LB	918.70	0.26	238.86
5	28 GAL RED SQ TUB DISP	96.50	0.210	20.27	34	DISPOSAL PER LB	812.80	0.26	211.33
24	44 GAL GREY TUB DISP	721.20	0.210	151.45	8	DISPOSAL PER LB	204.80	0.26	53.25
1	FUEL CHARGE	0.00	5.500 EA	5.50	29	DISPOSAL PER LB	967.70	0.26	251.60
10	CHRG/WGHT-28 GAL RED TUB	142.90	0.004	0.57	4	DISPOSAL PER LB	65.20	0.26	16.95
23	CHRG/WGHT-44 GAL GREY TUB	753.40	0.004	3.01	26	DISPOSAL PER LB	642.60	0.26	167.08
1	CHRG/WGHT-32 GAL BLUE TUB	17.80	0.004	0.07	1	DISPOSAL PER LB	10.20	0.26	2.65
4	CHRG/WGHT-4.3 CF BOX DISP	152.20	0.004	0.61	6	DISPOSAL PER LB	132.60	0.26	34.48
10	28 GAL RED SQ TUB DISP	142.90	0.210	30.01	1	DISPOSAL PER LB	48.00	0.26	12.48
23	44 GAL GREY TUB DISP	753.40	0.210	158.21	25	DISPOSAL PER LB	737.70	0.26	191.80
1	32 GAL BLUE TUB DISP	17.80	0.210	3.74	16	DISPOSAL PER LB	286.80	0.26	74.57
4	4.3 CF BOX DISP	152.20	0.210	31.96	33	DISPOSAL PER LB	949.90	0.26	246.97
1	FUEL CHARGE	0.00	5.500 EA	5.50	7	DISPOSAL PER LB	145.30	0.26	37.78
4	CHRG/WGHT-28 GAL RED TUB	51.20	0.004	0.20	18	DISPOSAL PER LB	635.50	0.26	165.23
23	CHRG/WGHT-44 GAL GREY TUB	657.30	0.004	2.63	3	DISPOSAL PER LB	85.20	0.26	22.15
4	28 GAL RED SQ TUB DISP	51.20	0.210	10.75	22	DISPOSAL PER LB	613.80	0.26	159.59
23	44 GAL GREY TUB DISP	657.30	0.210	138.03	6	DISPOSAL PER LB	123.00	0.26	31.98
1	FUEL CHARGE	0.00	5.500 EA	5.50	27	DISPOSAL PER LB	901.70	0.26	234.44
7	CHRG/WGHT-28 GAL RED TUB	118.30	0.004	0.47	19	DISPOSAL PER LB	563.00	0.26	146.38
26	CHRG/WGHT-44 GAL GREY TUB	710.80	0.004	2.84	26	DISPOSAL PER LB	735.00	0.26	191.10
1	CHRG/WGHT-17X16X23 BOX DISP	9.80	0.004	0.04	5	DISPOSAL PER LB	101.40	0.26	26.36
26	44 GAL GREY TUB DISP	710.80	0.210	149.27	17	DISPOSAL PER LB	442.10	0.26	114.95
1	FUEL CHARGE	0.00	5.500 EA	5.50	3	DISPOSAL PER LB	72.80	0.26	18.93
1	17X16X23 BOX DISP	9.80	0.210	2.06	20	DISPOSAL PER LB	592.10	0.26	153.95
7	28 GAL RED SQ TUB DISP	118.30	0.210	24.84	5	DISPOSAL PER LB	164.20	0.26	42.69
9	CHRG/WGHT-28 GAL RED TUB	219.90	0.004	0.88	6	DISPOSAL PER LB	129.60	0.26	33.70
37	CHRG/WGHT-44 GAL GREY TUB	1130.50	0.004	4.52	21	DISPOSAL PER LB	728.60	0.26	189.44
9	28 GAL RED SQ TUB DISP	219.90	0.210	46.18				TOTAL	$6,474.17
37	44 GAL GREY TUB DISP	1130.50	0.210	237.41					

APPENDIX E
Cost Analysis: Invoices

1	FUEL CHARGE	0.00	5.500 EA	5.50
4	CHRG/WGHT-4.3 CF BOX DISP	160.20	0.004	0.64
5	CHRG/WGHT-28 GAL RED TUB	110.10	0.004	0.44
33	CHRG/WGHT-44 GAL GREY TUB	918.70	0.004	3.67
4	4.3 CF BOX DISP	160.20	0.210	33.64
1	FUEL CHARGE	0.00	5.500 EA	5.50
5	28 GAL RED SQ TUB DISP	110.10	0.210	23.12
33	44 GAL GREY TUB DISP	918.70	0.210	192.93
34	CHRG/WGHT-44 GAL GREY TUB	812.80	0.004	3.25
34	44 GAL GREY TUB DISP	812.80	0.210	170.69
1	FUEL CHARGE	0.00	5.500 EA	5.50
8	CHRG/WGHT-28 GAL RED TUB	204.80	0.004	0.82
29	CHRG/WGHT-44 GAL GREY TUB	967.70	0.004	3.87
8	28 GAL RED SQ TUB DISP	204.80	0.210	43.01
29	44 GAL GREY TUB DISP	967.70	0.210	203.22
1	FUEL CHARGE	0.00	5.500 EA	5.50
4	CHRG/WGHT-28 GAL RED TUB	65.20	0.004	0.26
26	CHRG/WGHT-44 GAL GREY TUB	642.60	0.004	2.57
1	CHRG/WGHT-32 GAL BLUE TUB	10.20	0.004	0.04
4	28 GAL RED SQ TUB DISP	65.20	0.210	13.69
26	44 GAL GREY TUB DISP	642.60	0.210	134.95
1	32 GAL BLUE TUB DISP	10.20	0.210	2.14
1	FUEL CHARGE	0.00	5.500 EA	5.50
6	CHRG/WGHT-28 GAL RED TUB	132.60	0.004	0.53
1	CHRG/WGHT-40 GAL RED TUB	48.00	0.004	0.19
25	CHRG/WGHT-44 GAL GREY TUB	737.70	0.004	2.95
6	28 GAL RED SQ TUB DISP	132.60	0.210	27.85
1	40 GAL RED SQ TUB DISP	48.00	0.210	10.08
25	44 GAL GREY TUB DISP	737.70	0.210	154.92
1	FUEL CHARGE	0.00	5.500 EA	5.50
16	CHRG/WGHT-28 GAL RED TUB	286.80	0.004	1.15
33	CHRG/WGHT-44 GAL GREY TUB	949.90	0.004	3.80
16	28 GAL RED SQ TUB DISP	286.80	0.210	60.23
33	44 GAL GREY TUB DISP	949.90	0.210	199.48
1	FUEL CHARGE	0.00	5.500 EA	5.50
7	CHRG/WGHT-28 GAL RED TUB	145.30	0.004	0.58
18	CHRG/WGHT-44 GAL GREY TUB	635.50	0.004	2.54
7	28 GAL RED SQ TUB DISP	145.30	0.210	30.51
18	44 GAL GREY TUB DISP	635.50	0.210	133.46
1	FUEL CHARGE	0.00	5.500 EA	5.50
3	CHRG/WGHT-28 GAL RED TUB	85.20	0.004	0.34
22	CHRG/WGHT-44 GAL GREY TUB	613.80	0.004	2.46
3	28 GAL RED SQ TUB DISP	85.20	0.210	17.89
22	44 GAL GREY TUB DISP	613.80	0.210	128.90
1	FUEL CHARGE	0.00	5.500 EA	5.50
6	CHRG/WGHT-28 GAL RED TUB	123.00	0.004	0.49
27	CHRG/WGHT-44 GAL GREY TUB	901.70	0.004	3.61
6	28 GAL RED SQ TUB DISP	123.00	0.210	25.83
27	44 GAL GREY TUB DISP	901.70	0.210	189.36
1	FUEL CHARGE	0.00	5.500 EA	5.50
19	CHRG/WGHT-28 GAL RED TUB	563.00	0.004	2.25
26	CHRG/WGHT-44 GAL GREY TUB	735.00	0.004	2.94
19	28 GAL RED SQ TUB DISP	563.00	0.210	118.23
26	44 GAL GREY TUB DISP	735.00	0.210	154.35
1	FUEL CHARGE	0.00	5.500 EA	5.50
5	CHRG/WGHT-28 GAL RED TUB	101.40	0.004	0.41
17	CHRG/WGHT-44 GAL GREY TUB	442.10	0.004	1.77
5	28 GAL RED SQ TUB DISP	101.40	0.210	21.29
17	44 GAL GREY TUB DISP	442.10	0.210	92.84
1	FUEL CHARGE	0.00	5.500 EA	5.50
3	CHRG/WGHT-28 GAL RED TUB	72.80	0.004	0.29
20	CHRG/WGHT-44 GAL GREY TUB	592.10	0.004	2.37
5	CHRG/WGHT-4.3 CF BOX DISP	164.20	0.004	0.66
3	28 GAL RED SQ TUB DISP	72.80	0.210	15.29
20	44 GAL GREY TUB DISP	592.10	0.210	124.34
5	4.3 CF BOX DISP	164.20	0.210	34.48
1	FUEL CHARGE	0.00	5.500 EA	5.50
6	CHRG/WGHT-28 GAL RED TUB	129.60	0.004	0.52
21	CHRG/WGHT-44 GAL GREY TUB	728.60	0.004	2.91
6	28 GAL RED SQ TUB DISP	129.60	0.210	27.22
21	44 GAL GREY TUB DISP	728.60	0.210	153.01
1	FUEL CHARGE	0.00	5.500 EA	5.50
			TOTAL	$4,626.66

Savings of $847.51 with Stericycle

APPENDIX E
Cost Analysis: Invoices

***** FAIRVIEW SOUTHDALE HOSPITAL *** (INVOICE #11) SERVICE 5/1/02-5/31/02 DATED 5/31/02**

STERICYCLE				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (LB)	TOTAL
4	CHRG/WGHT-28 GAL RED TUB	89.80	0.004	0.36
20	CHRG/WGHT-44 GAL GREY TUB	716.00	0.004	2.86
4	28 GAL RED SQ TUB DISP	89.80	0.250	22.45
20	44 GAL GREY TUB DISP	716.00	0.250	179.00
1	FUEL CHARGE	0.00	5.500 EA	5.50
2	CHRG/WGHT-28 GAL RED TUB	63.40	0.004	0.25
18	CHRG/WGHT-44 GAL GREY TUB	583.60	0.004	2.33
2	28 GAL RED SQ TUB DISP	63.40	0.250	15.85
18	44 GAL GREY TUB DISP	583.60	0.250	145.90
1	FUEL CHARGE	0.00	5.500 EA	5.50
4	CHRG/WGHT-28 GAL RED TUB	76.40	0.004	0.31
23	CHRG/WGHT-44 GAL GREY TUB	752.40	0.004	3.01
4	28 GAL RED SQ TUB DISP	76.40	0.250	19.10
23	44 GAL GREY TUB DISP	752.40	0.250	188.10
1	FUEL CHARGE	0.00	5.500 EA	5.50
14	CHRG/WGHT-28 GAL RED TUB	446.40	0.004	1.79
26	CHRG/WGHT-44 GAL GREY TUB	781.00	0.004	3.12
1	CHRG/WGHT-32 GAL RED TUB	27.60	0.004	0.11
14	28 GAL RED SQ TUB DISP	446.40	0.250	111.60
26	44 GAL GREY TUB DISP	781.00	0.250	195.25
1	32 GAL RED TUB DISP	27.60	0.250	6.90
1	FUEL CHARGE	0.00	5.500 EA	5.50
4	CHRG/WGHT-28 GAL RED TUB	104.60	0.004	0.42
12	CHRG/WGHT-44 GAL GREY TUB	427.40	0.004	1.71
4	28 GAL RED SQ TUB DISP	104.60	0.250	26.15
12	44 GAL GREY TUB DISP	427.40	0.250	106.85
1	FUEL CHARGE	0.00	5.500 EA	5.50
4	CHRG/WGHT-28 GAL RED TUB	75.60	0.004	0.30
18	CHRG/WGHT-44 GAL GREY TUB	498.40	0.004	1.99
4	CHRG/WGHT-4.3 CF BOX DISP	132.60	0.004	0.53
4	28 GAL RED SQ TUB DISP	75.60	0.250	18.90
18	44 GAL GREY TUB DISP	498.40	0.250	124.60
4	4.3 CF BOX DISPOSAL	132.60	0.250	33.15
1	FUEL CHARGE	0.00	5.500 EA	5.50
4	CHRG/WGHT-28 GAL RED TUB	105.00	0.004	0.42
22	CHRG/WGHT-44 GAL GREY TUB	789.80	0.004	3.16
4	28 GAL RED SQ TUB DISP	105.00	0.250	26.25
22	44 GAL GREY TUB DISP	789.80	0.250	197.45
1	FUEL CHARGE	0.00	5.500 EA	5.50
5	CHRG/WGHT-28 GAL RED TUB	103.00	0.004	0.41
18	CHRG/WGHT-44 GAL GREY TUB	507.60	0.004	2.03
1	CHRG/WGHT-32 GAL YLLW TUB	30.00	0.004	0.12
5	28 GAL RED SQ TUB DISP	103.00	0.250	25.75
18	44 GAL GREY TUB DISP	507.60	0.250	126.90
1	32 GAL YLLW TUB DISP	30.00	0.250	7.50
1	FUEL CHARGE	0.00	5.500 EA	5.50
35	CHRG/WGHT-44 GAL GREY TUB	1201.80	0.004	4.81
35	44 GAL GREY TUB DISP	1201.80	0.250	300.45
1	FUEL CHARGE	0.00	5.500 EA	5.50
6	CHRG/WGHT-28 GAL RED TUB	155.40	0.004	0.62
23	CHRG/WGHT-44 GAL GREY TUB	617.00	0.004	2.47
6	28 GAL RED SQ TUB DISP	155.40	0.250	38.85
23	44 GAL GREY TUB DISP	617.00	0.250	154.25
1	FUEL CHARGE	0.00	5.500 EA	5.50
3	CHRG/WGHT-28 GAL RED TUB	87.20	0.004	0.35
12	CHRG/WGHT-44 GAL GREY TUB	404.40	0.004	1.62
3	28 GAL RED SQ TUB DISP	87.20	0.250	21.80
12	44 GAL GREY TUB DISP	404.40	0.250	101.10
1	FUEL CHARGE	0.00	5.500 EA	5.50
5	CHRG/WGHT-28 GAL RED TUB	127.40	0.004	0.51
14	CHRG/WGHT-44 GAL GREY TUB	357.00	0.004	1.43
1	CHRG/WGHT-32 GAL YLLW TUB	15.00	0.004	0.06
5	28 GAL RED SQ TUB DISP	127.40	0.250	31.85

HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (LB)	TOTAL
4	DISPOSAL PER LB	89.80	0.26	23.35
20	DISPOSAL PER LB	716.00	0.26	186.16
2	DISPOSAL PER LB	63.40	0.26	16.48
18	DISPOSAL PER LB	583.60	0.26	151.74
4	DISPOSAL PER LB	76.40	0.26	19.86
23	DISPOSAL PER LB	752.40	0.26	195.62
14	DISPOSAL PER LB	446.40	0.26	116.06
26	DISPOSAL PER LB	781.00	0.26	203.06
1	DISPOSAL PER LB	27.60	0.26	7.18
4	DISPOSAL PER LB	104.60	0.26	27.20
12	DISPOSAL PER LB	427.40	0.26	111.12
4	DISPOSAL PER LB	75.60	0.26	19.66
18	DISPOSAL PER LB	498.40	0.26	129.58
4	DISPOSAL PER LB	132.60	0.26	34.48
4	DISPOSAL PER LB	105.00	0.26	27.30
22	DISPOSAL PER LB	789.80	0.26	205.35
5	DISPOSAL PER LB	103.00	0.26	26.78
18	DISPOSAL PER LB	507.60	0.26	131.98
1	DISPOSAL PER LB	30.00	0.26	7.80
35	DISPOSAL PER LB	1201.80	0.26	312.47
6	DISPOSAL PER LB	155.40	0.26	40.40
23	DISPOSAL PER LB	617.00	0.26	160.42
3	DISPOSAL PER LB	87.20	0.26	22.67
12	DISPOSAL PER LB	404.40	0.26	105.14
5	DISPOSAL PER LB	127.40	0.26	33.12
14	DISPOSAL PER LB	357.00	0.26	92.82
1	DISPOSAL PER LB	15.00	0.26	3.90
3	DISPOSAL PER LB	68.40	0.26	17.78
23	DISPOSAL PER LB	767.20	0.26	199.47
2	DISPOSAL PER LB	57.80	0.26	15.03
14	DISPOSAL PER LB	496.00	0.26	128.96
4	DISPOSAL PER LB	114.00	0.26	29.64
20	DISPOSAL PER LB	728.00	0.26	189.28
2	DISPOSAL PER LB	44.80	0.26	11.65
23	DISPOSAL PER LB	637.20	0.26	165.67
1	DISPOSAL PER LB	16.00	0.26	4.16
5	DISPOSAL PER LB	156.20	0.26	40.61
5	DISPOSAL PER LB	177.00	0.26	46.02
23	DISPOSAL PER LB	774.60	0.26	201.40
6	DISPOSAL PER LB	166.80	0.26	43.37
35	DISPOSAL PER LB	1092.40	0.26	284.02
2	DISPOSAL PER LB	24.00	0.26	6.24
2	DISPOSAL PER LB	41.20	0.26	10.71
6	DISPOSAL PER LB	190.00	0.26	49.40
13	DISPOSAL PER LB	447.80	0.26	116.43
2	DISPOSAL PER LB	50.00	0.26	13.00
6	DISPOSAL PER LB	155.00	0.26	40.30
18	DISPOSAL PER LB	543.80	0.26	141.39
1	DISPOSAL PER LB	17.80	0.26	4.63
7	DISPOSAL PER LB	207.00	0.26	53.82
5	DISPOSAL PER LB	112.00	0.26	29.12
24	DISPOSAL PER LB	772.40	0.26	200.82
			TOTAL	$4,454.63

APPENDIX E
Cost Analysis: Invoices

14	44 GAL GREY TUB DISP	357.00	0.250	89.25
1	32 GAL YLLW TUB DISP	15.00	0.250	3.75
1	FUEL CHARGE	0.00	5.500 EA	5.50
3	CHRG/WGHT-28 GAL RED TUB	68.40	0.004	0.27
23	CHRG/WGHT-44 GAL GREY TUB	767.20	0.004	3.07
3	28 GAL RED SQ TUB DISP	68.40	0.250	17.10
23	44 GAL GREY TUB DISP	767.20	0.250	191.80
1	FUEL CHARGE	0.00	5.500 EA	5.50
2	CHRG/WGHT-28 GAL RED TUB	57.80	0.004	0.23
14	CHRG/WGHT-44 GAL GREY TUB	496.00	0.004	1.98
2	28 GAL RED SQ TUB DISP	57.80	0.250	14.45
14	44 GAL GREY TUB DISP	496.00	0.250	124.00
1	FUEL CHARGE	0.00	5.500 EA	5.50
4	CHRG/WGHT-28 GAL RED TUB	114.00	0.004	0.46
20	CHRG/WGHT-44 GAL GREY TUB	728.00	0.004	2.91
4	28 GAL RED SQ TUB DISP	114.00	0.250	28.50
20	44 GAL GREY TUB DISP	728.00	0.250	182.00
1	FUEL CHARGE	0.00	5.500 EA	5.50
2	CHRG/WGHT-28 GAL RED TUB	44.80	0.004	0.18
23	CHRG/WGHT-44 GAL GREY TUB	637.20	0.004	2.55
1	CHRG/WGHT-32 GAL YLLW TUB	16.00	0.004	0.06
2	28 GAL RED SQ TUB DISP	44.80	0.250	11.20
23	44 GAL GREY TUB DISP	637.20	0.250	159.30
1	32 GAL YLLW TUB DISP	16.00	0.250	4.00
1	FUEL CHARGE	0.00	5.500 EA	5.50
5	CHRG/WGHT-17X16X23 BOX DISP	156.20	0.004	0.62
5	CHRG/WGHT-28 GAL RED TUB	177.00	0.004	0.71
23	CHRG/WGHT-44 GAL GREY TUB	774.60	0.004	3.10
5	17X16X23 BOX DISPOSAL	156.20	0.250	39.05
5	28 GAL RED SQ TUB DISP	177.00	0.250	44.25
23	44 GAL GREY TUB DISP	774.60	0.250	193.65
1	FUEL CHARGE	0.00	5.500 EA	5.50
6	CHRG/WGHT-28 GAL RED TUB	166.80	0.004	0.67
35	CHRG/WGHT-44 GAL GREY TUB	1092.40	0.004	4.37
2	CHRG/WGHT-32 GAL YLLW TUB	24.00	0.004	0.10
6	28 GAL RED SQ TUB DISP	166.80	0.250	41.70
35	44 GAL GREY TUB DISP	1092.40	0.250	273.10
2	32 GAL YLLW TUB DISP	24.00	0.250	6.00
1	FUEL CHARGE	0.00	5.500 EA	5.50
2	CHRG/WGHT-44 GAL GREY TUB	41.20	0.004	0.16
2	44 GAL GREY TUB DISP	41.20	0.250	10.30
1	FUEL CHARGE	0.00	5.500 EA	5.50
6	CHRG/WGHT-28 GAL RED TUB	190.00	0.004	0.76
13	CHRG/WGHT-44 GAL GREY TUB	447.80	0.004	1.79
2	CHRG/WGHT-32 GAL YLLW TUB	50.00	0.004	0.20
6	28 GAL RED SQ TUB DISP	190.00	0.250	47.50
13	44 GAL GREY TUB DISP	447.80	0.250	111.95
2	32 GAL YLLW TUB DISP	50.00	0.250	12.50
1	FUEL CHARGE	0.00	5.500 EA	5.50
6	CHRG/WGHT-28 GAL RED TUB	155.00	0.004	0.62
18	CHRG/WGHT-44 GAL GREY TUB	543.80	0.004	2.18
1	CHRG/WGHT-32 GAL YLLW TUB	17.80	0.004	0.07
7	CHRG/WGHT-4.3 CF BOX DISP	207.00	0.004	0.83
6	28 GAL RED SQ TUB DISP	155.00	0.250	38.75
18	44 GAL GREY TUB DISP	543.80	0.250	135.95
1	32 GAL YLLW TUB DISP	17.80	0.250	4.45
7	4.3 CF BOX DISPOSAL	207.00	0.250	51.75
1	FUEL CHARGE	0.00	5.500 EA	5.50
5	CHRG/WGHT-28 GAL RED TUB	112.00	0.004	0.45
24	CHRG/WGHT-44 GAL GREY TUB	772.40	0.004	3.09
5	28 GAL RED SQ TUB DISP	112.00	0.250	28.00
24	44 GAL GREY TUB DISP	772.40	0.250	193.10
1	FUEL CHARGE	0.00	5.500 EA	5.50
			TOTAL	$4,472.83

Savings of $18.20 with HCWS

APPENDIX E
Cost Analysis: Invoices

***** FAIRVIEW UNIVERSITY MED CTR *** (INVOICE #12) SERVICE 4/1/02-4/22/02 DATED 4/30/02**

STERICYCLE				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (LB)	TOTAL
8	CHRG/WGHT-44 GAL GREY TUB	246.00	0.004	0.98
8	44 GAL GREY TUB DISP	246.00	0.250	61.50
1	FUEL CHARGE	0.00	5.500 EA	5.50
4	CHRG/WGHT-44 GAL GREY TUB	97.80	0.004	0.39
4	44 GAL GREY TUB DISP	97.80	0.250	24.45
1	FUEL CHARGE	0.00	5.500 EA	5.50
13	CHRG/WGHT-44 GAL GREY TUB	411.70	0.004	1.65
2	CHRG/WGHT-32 GAL YLLW TUB	79.70	0.004	0.32
13	44 GAL GREY TUB DISP	411.70	0.250	102.93
2	32 GAL YLLW TUB DISP	79.70	0.250	19.93
1	FUEL CHARGE	0.00	5.500 EA	5.50
3	CHRG/WGHT-44 GAL GREY TUB	92.50	0.004	0.37
3	44 GAL GREY TUB DISP	92.50	0.250	23.13
1	FUEL CHARGE	0.00	5.500 EA	5.50
9	CHRG/WGHT-44 GAL GREY TUB	216.90	0.004	0.87
9	44 GAL GREY TUB DISP	216.90	0.250	54.23
1	FUEL CHARGE	0.00	5.500 EA	5.50
4	CHRG/WGHT-44 GAL GREY TUB	132.40	0.004	0.53
4	44 GAL GREY TUB DISP	132.40	0.250	33.10
1	FUEL CHARGE	0.00	5.500 EA	5.50
8	CHRG/WGHT-44 GAL GREY TUB	288.80	0.004	1.16
2	CHRG/WGHT-32 GAL YLLW TUB	64.40	0.004	0.26
8	44 GAL GREY TUB DISP	288.80	0.250	72.20
2	32 GAL YLLW TUB DISP	64.40	0.250	16.10
1	FUEL CHARGE	0.00	5.500 EA	5.50
3	CHRG/WGHT-44 GAL GREY TUB	94.90	0.004	0.38
3	44 GAL GREY TUB DISP	94.90	0.250	23.73
1	FUEL CHARGE	0.00	5.500 EA	5.50
7	CHRG/WGHT-44 GAL GREY TUB	168.70	0.004	0.67
2	CHRG/WGHT-32 GAL YLLW TUB	41.00	0.004	0.16
7	44 GAL GREY TUB DISP	168.70	0.250	42.18
2	32 GAL YLLW TUB DISP	41.00	0.250	10.25
1	FUEL CHARGE	0.00	5.500 EA	5.50
2	CHRG/WGHT-44 GAL GREY TUB	47.80	0.004	0.19
2	44 GAL GREY TUB DISP	47.80	0.250	11.95
1	FUEL CHARGE	0.00	5.500 EA	5.50
13	CHRG/WGHT-44 GAL GREY TUB	382.90	0.004	1.53
3	CHRG/WGHT-32 GAL YLLW TUB	71.30	0.004	0.29
13	44 GAL GREY TUB DISP	382.90	0.250	95.73
3	32 GAL YLLW TUB DISP	71.30	0.250	17.83
1	FUEL CHARGE	0.00	5.500 EA	5.50
11	CHRG/WGHT-44 GAL GREY TUB	341.80	0.004	1.37
11	44 GAL GREY TUB DISP	341.80	0.250	85.45
1	FUEL CHARGE	0.00	5.500 EA	5.50
3	CHRG/WGHT-44 GAL GREY TUB	80.70	0.004	0.32
1	CHRG/WGHT-32 GAL YLLW TUB	20.80	0.004	0.08
3	44 GAL GREY TUB DISP	80.70	0.250	20.18
1	32 GAL YLLW TUB DISP	20.80	0.250	5.20
1	FUEL CHARGE	0.00	5.500 EA	5.50
5	CHRG/WGHT-44 GAL GREY TUB	118.50	0.004	0.47
1	CHRG/WGHT-32 GAL YLLW TUB	35.20	0.004	0.14
5	44 GAL GREY TUB DISP	118.50	0.250	29.63
1	32 GAL YLLW TUB DISP	35.20	0.250	8.80
1	FUEL CHARGE	0.00	5.500 EA	5.50
4	CHRG/WGHT-44 GAL GREY TUB	114.20	0.004	0.46
1	CHRG/WGHT-32 GAL YLLW TUB	4.60	0.004	0.02
4	44 GAL GREY TUB DISP	114.20	0.250	28.55
1	32 GAL YLLW TUB DISP	4.60	0.250	1.15
1	FUEL CHARGE	0.00	5.500 EA	5.50
9	CHRG/WGHT-44 GAL GREY TUB	257.20	0.004	1.03
1	CHRG/WGHT-32 GAL YLLW TUB	14.60	0.004	0.06
9	44 GAL GREY TUB DISP	257.20	0.250	64.30
1	32 GAL YLLW TUB DISP	14.60	0.250	3.65
1	FUEL CHARGE	0.00	5.500 EA	5.50
3	CHRG/WGHT-44 GAL GREY TUB	110.80	0.004	0.44
3	44 GAL GREY TUB DISP	110.80	0.250	27.70
1	FUEL CHARGE	0.00	5.500 EA	5.50
			TOTAL	$ 991.44

HEALTHCARE WASTE SOLUTIONS				
QTY	DESCRIPTION	WEIGHT (LB)	PRICE U/M (LB)	TOTAL
8	DISPOSAL PER LB	246.00	0.26	63.96
4	DISPOSAL PER LB	97.80	0.26	25.43
13	DISPOSAL PER LB	411.70	0.26	107.04
2	DISPOSAL PER LB	79.70	0.26	20.72
3	DISPOSAL PER LB	92.50	0.26	24.05
9	DISPOSAL PER LB	216.90	0.26	56.39
4	DISPOSAL PER LB	132.40	0.26	34.42
8	DISPOSAL PER LB	288.80	0.26	75.09
2	DISPOSAL PER LB	64.40	0.26	16.74
3	DISPOSAL PER LB	94.90	0.26	24.67
7	DISPOSAL PER LB	168.70	0.26	43.86
2	DISPOSAL PER LB	41.00	0.26	10.66
2	DISPOSAL PER LB	47.80	0.26	12.43
13	DISPOSAL PER LB	382.90	0.26	99.55
3	DISPOSAL PER LB	71.30	0.26	18.54
11	DISPOSAL PER LB	341.80	0.26	88.87
3	DISPOSAL PER LB	80.70	0.26	20.98
1	DISPOSAL PER LB	20.80	0.26	5.41
5	DISPOSAL PER LB	118.50	0.26	30.81
1	DISPOSAL PER LB	35.20	0.26	9.15
4	DISPOSAL PER LB	114.20	0.26	29.69
1	DISPOSAL PER LB	4.60	0.26	1.20
9	DISPOSAL PER LB	257.20	0.26	66.87
1	DISPOSAL PER LB	14.60	0.26	3.80
3	DISPOSAL PER LB	110.80	0.26	28.81
			TOTAL	$ 919.15

Savings of $72.29 with HCWS

APPENDIX E
Cost Analysis: Invoices

FAIRVIEW SOUTHDALE (INVOICE #10)

QTY	VOLUME (GAL)	TOTAL VOLUME (GAL)	WEIGHT (LB)	LB/GAL
9	28	252	188.30	0.747222
36	44	1584	843.20	0.532323
1	32	32	10.30	0.321875
6	28	168	88.80	0.528571
18	44	792	617.40	0.779545
6	28	168	105.90	0.630357
26	44	1144	789.40	0.690035
14	28	392	260.10	0.66352
43	44	1892	1267.70	0.670032
1	32	32	21.00	0.65625
5	28	140	96.50	0.689286
24	44	1056	721.20	0.682955
10	28	280	142.90	0.510357
23	44	1012	753.40	0.744466
1	32	32	17.80	0.55625
4	28	112	51.20	0.457143
23	44	1012	657.30	0.649506
26	44	1144	710.80	0.621329
7	28	196	118.30	0.603571
9	28	252	219.90	0.872619
37	44	1628	1130.50	0.69441
5	28	140	110.10	0.786429
33	44	1452	918.70	0.632713
34	44	1496	812.80	0.543316
8	28	224	204.80	0.914286
29	44	1276	967.70	0.758386
4	28	112	65.20	0.582143
26	44	1144	642.60	0.561713
1	32	32	10.20	0.31875
6	28	168	132.60	0.789286
1	40	40	48.00	1.2
25	44	1100	737.70	0.670636
16	28	448	286.80	0.640179
33	44	1452	949.90	0.654201
7	28	196	145.30	0.741327
18	44	792	635.50	0.802399
3	28	84	85.20	1.014286
22	44	968	613.80	0.634091
6	28	168	123.00	0.732143
27	44	1188	901.70	0.759007
19	28	532	563.00	1.058271
26	44	1144	735.00	0.642483
5	28	140	101.40	0.724286
17	44	748	442.10	0.591043
3	28	84	72.80	0.866667
20	44	880	592.10	0.672841
6	28	168	129.60	0.771429
21	44	924	728.60	0.788528
		AVERAGE WEIGHT PER GALLON:		**0.690676**

APPENDIX E
Cost Analysis: Invoices

FAIRVIEW SOUTHDALE (INVOICE #11)

QTY	VOLUME (GAL)	TOTAL VOLUME (GAL)	WEIGHT (LB)	LB/GAL
4	28	112	89.80	0.801786
20	44	880	716.00	0.813636
2	28	56	63.40	1.132143
18	44	792	583.60	0.736869
4	28	112	76.40	0.682143
23	44	1012	752.40	0.743478
14	28	392	446.40	1.138776
26	44	1144	781.00	0.682692
1	32	32	27.60	0.8625
4	28	112	104.60	0.933929
12	44	528	427.40	0.80947
4	28	112	75.60	0.675
18	44	792	498.40	0.629293
4	28	112	105.00	0.9375
22	44	968	789.80	0.815909
5	28	140	103.00	0.735714
18	44	792	507.60	0.640909
1	32	32	30.00	0.9375
35	44	1540	1201.80	0.78039
6	28	168	155.40	0.925
23	44	1012	617.00	0.609684
3	28	84	87.20	1.038095
12	44	528	404.40	0.765909
5	28	140	127.40	0.91
14	44	616	357.00	0.579545
1	32	32	15.00	0.46875
3	28	84	68.40	0.814286
23	44	1012	767.20	0.758103
2	28	56	57.80	1.032143
14	44	616	496.00	0.805195
4	28	112	114.00	1.017857
20	44	880	728.00	0.827273
2	28	56	44.80	0.8
23	44	1012	637.20	0.629644
1	32	32	16.00	0.5
5	28	140	177.00	1.264286
23	44	1012	774.60	0.765415
6	28	168	166.80	0.992857
35	44	1540	1092.40	0.709351
2	32	64	24.00	0.375
2	44	88	41.20	0.468182
6	28	168	190.00	1.130952
13	44	572	447.80	0.782867
2	32	64	50.00	0.78125
6	28	168	155.00	0.922619
18	44	792	543.80	0.686616
1	32	32	17.80	0.55625
5	28	140	112.00	0.8
24	44	1056	772.40	0.731439
		AVERAGE WEIGHT PER GALLON:		**0.794657**

APPENDIX E
Cost Analysis: Invoices

FAIRVIEW UNIVERSITY MED CTR (INVOICE #12)

QTY	VOLUME (GAL)	TOTAL VOLUME (GAL)	WEIGHT (LB)	LB/GAL
8	44	352	246.00	0.698864
4	44	176	97.80	0.555682
13	44	572	411.70	0.719755
2	32	64	79.70	1.245313
3	44	132	92.50	0.700758
9	44	396	216.90	0.547727
4	44	176	132.40	0.752273
8	44	352	288.80	0.820455
2	32	64	64.40	1.00625
3	44	132	94.90	0.718939
7	44	308	168.70	0.547727
2	32	64	41.00	0.640625
2	44	88	47.80	0.543182
13	44	572	382.90	0.669406
3	32	96	71.30	0.742708
11	44	484	341.80	0.706198
3	44	132	80.70	0.611364
1	32	32	20.80	0.65
5	44	220	118.50	0.538636
1	32	32	35.20	1.1
4	44	176	114.20	0.648864
1	32	32	4.60	0.14375
9	44	396	257.20	0.649495
1	32	32	14.60	0.45625
3	44	132	110.80	0.839394
		AVERAGE WEIGHT PER GALLON:		**0.690145**

AVERAGE WEIGHT PER GALLON FROM ABOVE INVOICES **0.7323301**

APPENDIX F
Ingredients to Avoid

*** Taken from the Janitorial Products Pollution Prevention Project website. Found in the article, *Janitorial Product Risk Evaluation* at http://www.westp2net.org/Janitorial/tools/riskevaluation.htm.**

Benzyl Alcohol - Carcinogenic; CNS effects; vertigo

CFC-22; Chlorodifluoro Methane

Coconut Oil Diethanolamine - Carcinogenic

Diethanolamine - Suspected Carcinogen; Skin allergy

HCFC-142b

Lauric Acid Diethanolamine - Some evidence of carcinogenic effects

Methyl Chloroform; 1,1,1-TCE - Liver; Kidneys; Heart; CNS

Methyl Ethyl Ketone - CNS; GI Tract; Liver; Repro-Fetal

Naphthalene - Potential Carcinogen; Damage to GI Tract; Blood; Liver; Kidney; Repro

Nitrilotriacetic Acid - Carcinogenic - Prop. 65

Paradichloro benzene - Carcinogen - Prop. 65 ; Liver & kidney damage (from inhalation)

Tetrachloroethylene; Perchloroethylene - Carcinogenic; reproductive damage; liver & kidney damage

Toluene - CNS Impairment; Liver & Kidney Damage

Tributyl Tin

Trichloroethylene - Liver, Reproductive, & CNS damage; Prop. 65 Carcinogen

APPENDIX E
Ingredients to Avoid if Possible/Otherwise Use With Extreme Care

2-Butoxy Ethanol - Reproductive & Fetal Effects; Liver & Kidney Damage; Blood Damage

2-Phenyl Phenol - IARC Group 3 Carcinogen (Insufficient evidence)

Acetone - Potential Reproductive Effects; Liver & kidney damage; CNS Depression

Ammonia - Kidneys/Liver/CNS

Ammonium Bifluoride

Ammonium Hydroxide - Cataracts; glaucoma

Amyl Acetate - Kidney damage

Caprolactam - CNS/Neurological

Caprylic Acid - Blood

Cyclohexanol - CNS/?Liver/?Kidney/Repro

Dibutyl Phthalate - Endocrine/Mutagen/Repro/Testes/Kidney

Diethylene Glycol Monobutyl Ether - Kidney damage; CNS effects

Hydrochloric Acid

Hydrogen Peroxide

Hydroxyacetic Acid - Burns; Damage

Monoethanolamine - Liver & kidney damage; fetal damage

Morpholine

n-Butyl Acetate - CNS/Mutagen

Nonyl Phenol Ethoxylate - Endocrine PBT (Alkyl Phenol Ethoxyalate)

Octyl Phenol Ethoxylate - Endocrine PBT (Alkyl Phenol Ethoxyalate)

Phosphoric Acid

Polyethylene Monophenyl Ether - Endocrine Disruptor

Sodium Dichloro Isocyanurate

Sodium Hypochlorite; Bleach

Triethanolamine - Liver & Kidney Damage; IARC Group 3 Carcinogen (Insufficient evidence)

Triethylamine - Kidneys/Repro

Turpentine - Kidney, bladder, CNS Damage; possibly harms fetus

Xylene - Liver, kidney, CNS, spleen; IARC Group 3 (Insufficient evidence)

APPENDIX G
H2E Chemical Minimization Guide: Environmental Services

ENVIRONMENTAL SERVICES

This Chapter is designed to assist you in identifying and, substituting or eliminating high priority environmental services chemicals that have been illuminated with the H2E Prioritization Tool. These chemicals are problematic with respect to toxicity, regulatory status, and volume.

PRIORITY CHEMICAL	USE	ELIMINATION/REDUCTION TIP
Arsenic	Herbicides/Pesticides	▪ Incorporate Integrated Pest Management (IPM) techniques[1]. ▪ Substitute pesticide without arsenic.
Chloroform	Spotting or dry cleaning agent	▪ Substitute an enzymatic cleaner. ▪ Substitute non-chlorinated solvent such as mineral spirits.
Coumarin/Warfarin	Mouse and Rat Killer ("Rattex")	▪ Incorporate Integrated Pest Management (IPM) actions such as eliminate food and entrance sources. ▪ Use mechanical traps.
Dibutyl phthalate	Floor finishes and waxes Deodorizers	▪ Substitute products without dibutyl phthalate. ▪ Increase ventilation and remove sources of odor.
2-Ethoxyethanol (Ethylene glycol monomethyl ether)	Cleaners, waxes, solvents, varnishes, stains	▪ Substitute products without glycol ethers.
Phenol	Disinfectant Warming Mats	▪ Carefully evaluate application. Use only where tuberculocidal action is necessary. ▪ Peroxy compounds can be substituted. ▪ Propylene Glycol can be substituted in the warming mats.
Phenylmercuric acetate (PMA)	Preservative in cleaners, waxes, etc.	▪ Substitute products without PMA—ask manufacturer for alternatives.
Phosphoric acid	Porcelain cleaner	▪ Look for acid-free porcelain cleaners. ▪ Use mechanical action to clean.
Propane/isobutane	Aerosol propellant	▪ use non-aerosols
1,1,1 Trichloroethane (TCA)	Graffiti remover Stainless steel polish	▪ Substitute products that are chlorinated solvent free. ▪ Cover graffiti. ▪ Mechanically remove with sandblasting, if feasible. ▪ Increase security in areas where graffiti is prevalent.
Zinc oxide	Paint dye	▪ Substitute Zn-free.

[1]See Appendix H.

APPENDIX G
H2E Chemical Minimization Guide: Environmental Services

OTHER TIPS FOR HAZARDOUS CHEMICAL REDUCTION in ENVIRONMENTAL SERVICES

- **Incorporate Integrated Pest Management (IPM) techniques and practices.** See Appendix H for tips.
- **Evaluate Disinfection Practices.** Are disinfectants being used appropriately? Are the correct dilutions being used? Is the correct disinfectant being used? Is disinfection necessary? See Appendix G for Disinfection Fact Sheets .
- **Eliminate products in aerosol cans.** Most aerosol containers are flammable due to the propellants used in them. Unless these containers are totally emptied of propellant and product, they are considered hazardous chemical waste. To completely empty an aerosol container, a special device must be used and the can contents must be collected and managed as hazardous chemical waste. A much easier, safer and less expensive option is to use pump sprays. Pump spray bottles are frequently refillable allowing for bulk product purchase and reduction of solid waste volume.
- **Use rechargeable batteries.** Whenever possible, purchase products and equipment that come with rechargeable batteries and battery recharger already installed. Most alkaline batteries still contain small amounts (0.025%) of mercury and the thousands of batteries used by healthcare facilities contribute significantly to mercury pollution. The rechargeables that are pre-installed recharge while the product is plugged in.
- **Eliminate odor-masking products and perfumes in products.** Odor masking chemicals do not eliminate odor, they only mask it. Use of these products adds chemicals to the indoor air. The best way to eliminate odors is to eliminate the source of the odor and to increase ventilation.
- **Reduce the number of products that have similar ingredients.** Purchase products with multiple functions such as multi-purpose cleaners.
- **Eliminate floor waxes and strippers that contain zinc.**
- **Purchase proper equipment for transferring chemicals.** Properly designed and fitted containers will reduce spills and having to dispose of material. Consider controlled dispensing units.
- **Use controlled dispensing units for chemicals.**
- **Filter and reuse paint thinner.** Make sure that filtered material is disposed of properly. If the paint contains heavy metals or if toluene or methylene chloride is present, the filtered material will require disposal as hazardous chemical waste.
- **Investigate an ozone system in laundry instead of using standard bleaches.**
- **Segregate waste.** This allows for recovery, recycling, or may reduce the amount of waste that needs to be disposed.
- **Train employees** on waste reduction, how to use equipment properly, and proper procedures.

Implement First In First Out policy. Use the oldest, usable product first to avoid having to dispose of out-dated products.