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Hildegard Marsden Daycare Waste Audit Report

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1.0 INTRODUCTION

Sustainability has become a catchphrase over the last two decades. Its implications are immense. When looking at systems, large or small, it is essential that sustainability be a factor involved in the process of developing and maintaining the system. Sustainability in a system incorporates the idea that every input is accounted for and that its final outputs are minimized to work within, as well as be maintained, within the frameworks of the environment. To create a stable system, limits would need to be placed on the amount of inputs, which ultimately end up in unsustainable sinks, For example, within a waste system, sustainability can be achieved through the reduction of waste that goes into the landfill, Although some waste has no other way of disposal other than through the landfill, alternatives for the most part are present. The three R's (reduce, recycle, re-use) can be applied to virtually every product. It is very important to seek out methods of reduction and re-use of materials in order for systems to function sustainably. By minimizing the ecological effects that the input and output of systems deliver on the environment, one is aiding in the process of the developing a sustainable community as well as stable future.

2.0 WASTE

For most of Canada's history, garbage disposal was not a concern. However, at the end of WWII, in ushered a new era of Canadian prosperity and the beginning of the consumer society. In addition, the Canadian shift toward an industrial based economy promoted the growth of cities and towns. Today, virtually all Canadian urban centers and villages have weekly curbside garbage pick up. This service is paid for through municipal property taxes and no direct waste removal charge is levied. Thus, the real cost of managing garbage had been hidden from the public. Furthermore, there has been no apparent financial incentive for the homeowner to adopt alternative forms of waste management (Murrary, 1995).

As population grows, so does garbage. The 2 1 st century brings along with it a materialistic throwaway society who will generate an inordinate amount of waste. The problem can be dealt with only through a re-identification of ideals, which in the end will reduce garbage production. (Neal et. al, 1987)

Source reduction, which is reducing the amount and/or toxicity of waste generated, tops the list of solid waste management options. Recycling follows this, which includes composting incineration, and landfills. In reducing the amount and toxicity of waste that must be managed, source reduction also reduces the growing costs of collection, recycling and disposal systems.

This helps to alleviate the political conflicts that proposals of creating such systems often engender. Implementing source reduction programs involves vastly different staff skills and concerns. It requires staff with a broader, long-term view of the use of materials in society. The staff must also have an understanding of how the behavior of consumers, businesses, and government can be changed to optimize the use of materials while minimizing the waste generated (Fishbein, 1992).

In order to determine a viable plan for waste reduction, the contents of the waste stream must be known. For this reason volume is a more relevant measure than weight for solid waste planners concerned about trucking capacity and landfills, In other words, landfills fill up rather than get too heavy. Volume measurements are more difficult to make than weight measurements since volume is dependent on varying compaction rates. Measurement standards for weight have been established (pounds and tons) while those for waste volume have not. If source reduction is to help solve the solid waste problem, the implications for volume will have to be considered as well as those for weight. An ideal source reduction strategy would decrease weight without increasing volume or visa versa (Fishbein, 1992). Thus, for the following waste audit it is important to consider the interrelationship between volume and weight. Yet, one must recognize that all calculations and observations are based on a percentage of volume that a given material will take up in a landfill. By reducing volume one can thus reduce the amount of space necessary for disposal.

Reducing the amount of waste being generated is essential. As population grows, and as landfills begin to fill up, society needs to find ways to help reduce the impact that waste has on the world's ecological system. When looking at waste systems, it is essential that an audit be done determine the contents within the waste stream. These finding can lead to solutions that will help divert the waste from landfills. In this study, waste audit techniques are used to determine how to further enhance the sustainability of the Hildegard Marsden day care system at the University of Waterloo. By isolating the waste system at the day care, investigation can be performed to determine the input and output of the waste stream. Furthermore, recommendations can be implemented which in a larger system may not be quite so possible.

In order to increase the sustainability of the planet it will be essential to start small in order to change perceptions, actions and values of the dominant society. Only by doing this, will change ever be possible within the current waste systems and waste management techniques. Therefore, the solutions for the following Hildegard Marsden day care need to coincide with the available resources in the Kitchener Waterloo area. As in every system, there are loopholes. There may be

certain points in the flow of inputs and outputs were alternatives are present but are not being utilized. Determining these holes within the system and finding feasible solutions will be important in creating a sustainable ecological system; focusing on efficiency and effectiveness.

3.0 HILDEGARD MARSDEN DAYCARE

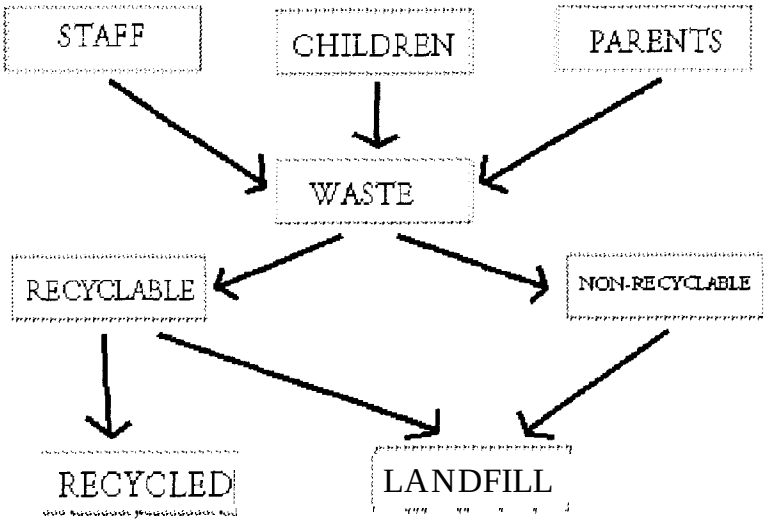
Hildegard Marsden Daycare was established on April 10, 1989 and is affiliated with the University of Waterloo. The Day Nursery is fully licensed and inspected by the Ministry of Community and Social Services and abides by all standards outlined in the Day Nurseries Act. It is a nonprofit organization that employs a total of nineteen full time and part time employees. The peak season is September to July. In infant classes (3-18 months old) there are usually twenty children, toddler classes (18-30 months old) have fifteen children, pre-school classes (24 months-5 years) have sixteen children and summer day camp (children 2 1/2-6 years old) holds sixteen children also. These classes are always full. Seventy to ninety percent of the children have parents who are affiliated with the University of Waterloo, faculty, students or alumni. (Smith, 1998)

The Hildegard Marsden Daycare has never had a waste audit performed before but is eager to find quantitative results of waste generated. Currently all the waste is placed in a dumpster that is shared with the Klemmer day care house. At this time, there are no recycling facilities. The rest of the waste that is generated goes directly to landfill. Garbage is taken out twice daily at 12:30 and 5:30pm. (Smith, 1998)

The daycare wishes to establish an "official" recycling program, one that is not based on the voluntarily actions of the employees. Presently employees take two blue boxes of metal and glass waste home per week to be recycled. The reasoning for the University of Waterloo not implementing a recycling program is under speculation. Because there has never been a waste audit performed before, it is assumed that the volume to warrant weekly pickup does not exist. However, there currently is a program in place for cardboard pickup. Whenever there is an excess of cardboard, the day care staff calls the plant operation staff and they then come out and collect the cardboard for recycling. Alicia Smith, Hildegard Marsden's day care director, wishes to find some type of validation to demonstrate the need for recycling and other waste reduction activities which would be beneficial, not only for the Hildegard Marsden day care, but also for the adjoining day care facility, the Klemmer day care house. The day care itself can not afford a recycling program because it is a non profit co-operative organization. A paper waste recycling program was attempted; yet, the rules and guidelines appeared to be too cumbersome for the staff

who was continually busy with the large amount of children. The day care is looking for practical solutions which can be easily implemented by staff.

Figure 1. Initial inputs and outputs occurring at the Hildegard Marsden Daycare



The initial flows entering and leaving the Hildegard Marsden day care, in the diagram above, demonstrates that the system is not a cohesive sustainable system. There is a large amount of waste generated, which goes directly to landfill (Figure 1). This is a concern and major obstacle in declaring the day care sustainable. The audit should isolate the major contributors to the waste generated. After the full investigation of the system is complete, recommendations can be made to help transform Hildegard Marsden into a more sustainable system.

4.0 WASTE AUDIT

Waste audits allow the user of the system to understand the contents that make up the waste stream. The audit can then be used to create waste reduction activities by directing a waste reduction work plan. The audit involves collecting the data on waste generation and waste composition.

At the University of Waterloo, there are two types of audits performed. A full audit involves sampling across the entire campus. They provide campus wide information for reporting purposes and can be used to prioritize waste reduction activities or to initiate mini audits where

more detailed information is required to analyze a smaller system. The second type of waste audit is the mini audit. The mini audit is a smaller project, which provides detailed information about a specific area, functional area group or specific waste type, which are used to evaluate potential waste reduction initiatives. Detail is sufficient to evaluate costs and benefits of alternative waste reduction options. The Hildegard Marsden waste audit is an example of the mini audit. (Cook, 1998)

The framework that will be followed for the Hildegard Marsden waste audit will follow University of Waterloo requirements. Unlike other audit guides, this framework is flexible so that it is easily adapted to the specific audit being carried out. Choices can be made at each step in order to tailor procedures to unique audit goals.

Important objectives of all waste audits performed at the University of Waterloo is to calculate the percentage of waste going to landfill, estimate waste composition, and monitor and evaluate waste reduction activities. The waste audit can help to raise awareness about environmental issues and promote communication about environmental performance by involving staff and waste auditors. A waste audit usually involves preliminary research, a building tour, audit design and preparation, on site evaluation of waste and creating a report.

5.0 OBJECTIVES

ERS Group Objectives:

1. To assess the waste system in terms of sustainability at the Hildegard Marsden daycare
2. To propose recommendations to minimize the waste that enters landfill at the day care given present level of waste management techniques in Kitchener/Waterloo area
3. To propose the best theoretical alternatives for reduction and to determine areas of future research in waste reduction technologies

Hildegard Marsden Objectives:

1. To find a quantitative amount of recyclable waste being produced in order to implement a permanent recycling program at the daycare
2. To determine the major sources of the waste and suitable ways of reducing the amount of waste generated

The recommendations must be feasible and work within the given infrastructure present both in the City of Waterloo and the University of Waterloo.

6.0 HYPOTHESIS

After gaining some general information about the Hildegard Marsden institution's current waste management system, and the lack of an "official" recycling facilities present, it is anticipated that there will be a high percentage of recyclable materials thrown into the waste stream. It is believed that the waste audit will highlight the significant problems and holes within the day care's current operations. It is expected that a permanent recycling project will be deemed necessary to create an efficient and sustainable waste system.

7.0 METHODOLOGY

When performing the waste audit, there are five steps that will be followed to ensure the viability of the results received. These five steps include preliminary research, a site visit, audit design and preparation, on site waste estimation and sorting and report preparation.

1. **Preliminary Research**

   Preliminary research was performed on waste generation, waste audits, and the Hildegard Marsden day care's current waste system. Patti Cook, the University of Waterloo's waste management planner, was interviewed to inquire about the proper technique of performing waste audits, the University of Waterloo's waste audit techniques, as well as past waste audits performed. To learn more about the current waste management being performed at the day care, Alicia Smith, director of Hildegard Marsden, was interviewed. She generated the information necessary to familiarize the waste audit team of current waste collection schedules, seasonal activities that may enhance waste production, as well as the current recycling system in place. The preliminary research helped to determine the scope and goals of the waste audit.

2 **Visitation of the Audit Site**

   A group visitation to the day care was made to familiarize the group with the area, as well as waste audit procedures. It provided auditors with sufficient on-site experience to develop procedures that were consistent with everyday operations. Many pitfalls can be avoided by having a good look at the audit site, examining the activities occurring in the

area, the number of collection containers, the frequency of collection and any potential unexpected activity such as unscheduled waste collection. A waste composition preliminary assessment was done in order to determine sorting classifications for the waste generated in each room. By having the entire waste audit group step through the method of classifying the waste minimized the possibility for error during the actual audit.

3. Audit Design and Preparation

The more time spent designing the waste audit, the less chance there is of problems occurring during the data collection stage. The audit group was broken into smaller groups of pairs. Each pair was given a day of the week in which they were to perform the waste audit of the day care. By breaking down the group into smaller sections, samples at the waste audit site could be taken more frequently. Visual auditing techniques were established which would were used to estimate the volume of waste generated for each room in the day care. When doing this, waste classes were broken down into classifications such as diapers, paper towels, compostable foods, non-compostable foods, etc. During the audit, the approximate number of items of each category was recorded. It was essential that the entire group agreed on which items belonged in each category. Consistency through the audit was essential in determining the best waste management plan for the day care.

4. On Site Waste Estimations

On site waste estimations were taken four days a week at either 11:30am or 4:30pm for a three week time period. This was done to ensure that a fair representation of waste was observed to take into account variations within the day care activities. Special activities, if any, were noted to make the auditors aware of possible skewed data. The estimated volume of the waste was recorded, along with the number of items found of each category.

5. Audit Reports

The result of the waste audit was compiled into a spreadsheet where it could easily be manipulated and analyzed. A yearly estimation was prepared based on the three week waste audit and prior knowledge of the day care. The data was studied to determine possible areas that were in need of waste management improvement. Recommendations that would respond to the initial objectives were prepared. These recommendations

would include ideas that could be immediately implemented, as well as areas that could be researched in more detail for future improvements to the system. The entire goal of the recommendations would be to try to create a more sustainable system within the waste management system of the day care.

8.0 RESULTS

The waste audit was performed over a three week period with visual inspections of the waste stream four days a week. Taking visual inspections allowed for a better understanding of the types of items the day care waste stream was made up of as well as the amount being produced. It also allowed insight into the present recycling system of the day care and its effectiveness (Ashwood et al., 1996).

The waste audit did not show the results that were expected. The waste categories with the highest volume were paper towels, kleenex and diapers with the percentage by volume of 21.34%, 6.22% and 14.82% respectively (Table 1). Diapers and wipes are irreplacable within the day care system. Waste categories that included recyclable materials included glass products, metal products, cartons and cardboard which had the percentage volume of 0. 1 1%, 2.19%, 0.66% and 2.05% respectively (Table 1). Garbage that was made up of plastic products encompassed 10% of the waste, but they are mostly not recyclable in the Kitchener Waterloo recycling system. Food makes up over five percent of the waste stream (Table 1). However, this should be expected in a day care where there are so many children being fed.

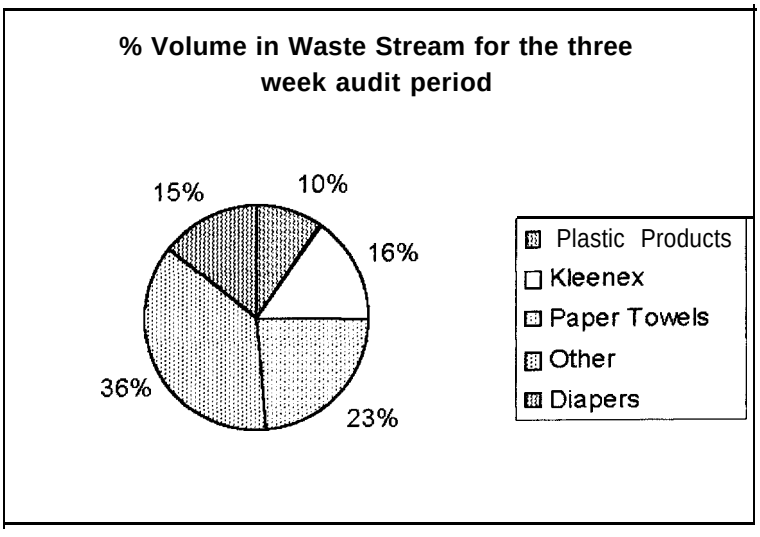
The category that surprised the observers the most was glass products. Even though it was known that the day care collected their recyclable materials and personally delivered them to a recycle bin, it was a surprise to find only one glass item through the entire three week waste audit. The day care system of recycling materials through collection and deliverence to recycling bins off the property appears to be a reliable system. There are very few recyclable materials making it into the waste stream.

In the following pages, the results of the waste audit are noted. The results are quantitative in respects to contents in the waste stream and the percent volume that they occupy. In this waste audit, percent volume is the estimate of the amount of volume that a certain article takes up in the garbage can. Content refers to the numerical number and frequency of a given articles occurrence.

Table 1. Waste Production at Hildegard Marsden Day Care (3-week period)

	Monday Oct. 19, 26 and Nov 2 1998		Wednesday Oct 21,28 and Nov 4 1998		Tuesday Nov 20, 27 and Nov 3 1988		Friday Oct 23, 30 Nov 6 1998		TOTAL SUMMARY	
Category	Contents	% Volume	Contents	% Volume	Contents	% Volume	Contents	% Volume	Content	% Volume
paper towels	361	19.33	310	28.18	n/a	17.50	608	20.36	1279	21.34
Diapers	93	15.15	83	3.67	n/a	19.00	754	21.45	930	14.82
Wipes	861	1.641	174	5.51	n/a	0.94	59	1.45	319	2.39
Kleenex	272	15.61	210	19.72	n/a	11.32	645	18.23	1127	16.22
paper cups	34	1.36	10	0.80	n/a	2.30	64	2.55	108	1.75
white paper	52	4.18	28	3.85	n/a	3.42	43	1.32	123	3.19
colored paper	58	2.64	34	4.76	n/a	0.91	14	0.32	106	2.16
Paper	40	7.97	30	3.20	n/a	8.56	166	5.27	236	6.25
Glass	1	0.15	0	0.30	n/a	0.00	0	0.00	1	0.11
Metal	8	2.73	14	0.94	n/a	1.65	137	3.45	159	2.19
Plastic	59	15.09	98	10.91	n/a	7.64	251	6.59	408	10.06
Compost food	49.51	5.55	69	5.40	n/a	1.91	29	1.05	147.5	3.48
non compost	12.51	0.941	41	2.41	n/a	3.30	90	2.59	143.5	2.31
Styrofoam	4	0.67	4	0.64	n/a	0.98	105	2.95	113	1.31
Cartons	4	0.79	0	0.80	n/a	0.15	20	0.91	24	0.66
Envelopes	0	0.00	1	0.30	n/a	0.00	30	0.68	31	0.25
Cardboard	2	0.61	19	1.18	n/a	1.76	144	4.64	165	2.05
Miscellaneous	vomit, lint, rags,	5.91	thread, wax paper, clothes,lint, tetrapack	6.67	n/a	18.65	141	6.18	Vomit, lint, rags, clothes ietrapack, thread, wax paper	9.35
Total		100.30		99.231		100.00~		100.00~		99.96

Figure 2. Percentage of Volume for the major contributing categories



Both the graph and table illustrate the amount and types of waste being generated. The four major contributors by volume are shown in the graph. Others, which takes up 36% of the total volume, is a combination of many types of objects. The important trend to note is that when looking at deferring materials from landfill, the majority of the waste is produced through the use of plastics, kleenex, and diapers. Paper towels and diapers are only recyclable if facilities and appropriate infrastructure exists. Collecting the kleenex and paper towels for recycling would also be a cumbersome activity. Unsanitary methods of collection and might also create an obstacle in recycling these products, It is interesting to note that neither metal, glass nor paper, (in the sense of lined paper, or newspapers), contributed largely to either the volume ***or*** the amount of content. Also shown, is an annual estimation of waste produced by the day care (Table 2). This chart is useful in producing a visual image of the amount of waste that is generated by the day care in a year. The volumes that are given in the chart can also be used to estimate the feasibility of integrating new systems into the day care and surrounding area.

To produce the yearly estimation a number of calculations needed to be performed on the gathered data. The data in the table 1 represents the waste generated in the day care over a three week period (12 days). This is based on our daily visual waste audit which only took place once a day. However, the garbage is taken out two times a day. Therefore, the results need to be multiplied by two to determine *a* complete three week period of waste generation with twelve days of data collection (not Thurdsay). Then, these results need to be divided by twelve (the number of days examined) to determine the daily waste production. With this daily waste production total, it is possible to calculate the waste generated for the peak season (September-June) and the summer months (July-August). The following calculations are used:

Peak Season:

Daily total * 52 weeks /12 months * 10 months * 7 days = waste during peak season
(# of weeks/month) (# months of peak season) (# of days)

Summer ***Season*** :

Daily total /50 *20 * 52 weeks/l2 months * 2 months * 7 days = waste generated
(# per 20 students) (# of weeks/month) (# months in summer) (# of days)

The peak season has roughly 50 students while in the summer there are only 20 students. This is then multiplied by twenty to estimate waste generation of twenty students. During the summer months, only 20 students are kept in the day care. Therefore, the total for the three week period was multiplied by 13.33 to give an estimation of waste produced in the ten months of peak

season. Then, the total is divided by 50 to calculate the volume per children and then multiplied by 20 to get a three week estimation in the summer months. This number is multiplied by 2.66 to calculate the total waste production in the two summer months. Lastly, the summer month waste is added to the peak season waste to show the final estimation of waste produced by the day care in a year

Table 2. Yearly Estimation of Waste Production at Hildegard Marsden Day Care

Category	Content	% of content
paper towels	77593	23.60
Kleenex	68371	20.79
Diapers	56420	17.16
plastic products	24752	7.53
paper products	14317	4.35
Compost food	8948	2.72
white paper	7462	2.27
Wipes	19353	5.89
non-compost food	8706	2.65
metal products	9646	2.93
Coloured paper	6431	1.96
Cardboard	10010	3.04
paper cups	6552	1.99
Styrofoam	6855	2.08
Cat-tons	1456	0.44
Envelopes	1881	0.57
glass product	61	0.02
Miscellaneous	Vomit, lint, thread,	Wax paper, rags, tetrapacks

In these observation we are drawing on a yearly estimate. When compared to the other graph it is obvious that there are similarites between amount and volume but that some items which occur less frequently can have, as in the case of plastics, more volume in the landfill. This is an important factor when examining starting points for waste reduction initiatives. The amount of waste produced appears very large. There will be roughly 77 500 paper towels used by the day care in a year, There will also be 46 000 diapers being through into landfills in the *year* (Table 2). The volume and type of waste being produced by the day care makes it difficult to implement a new system of recycling, However, the numbers seen in Table 2 allow for insight into feasibility of if implementing new products or methods of disposal into the day care system.

9.0 RECOMMENDATIONS

After performing the waste audit for the day care and studying the results, there are three areas of recommendation that can be given to the day care. First of all, the day care can continue with the waste management system in place. However, there is also the option of investigating the possibility of integrating the day care recycling system along with the University of Waterloo. Lastly, a municipal effort can take place to research possibilities of incorporating new technologies and recycling systems into the Kitchener Waterloo area through a combined effort with other surrounding day cares.

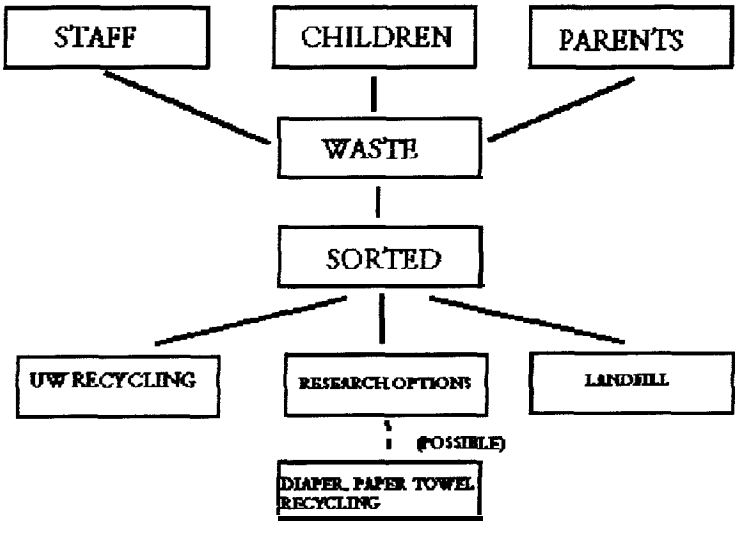
The waste management system currently in place at the day care is sufficient in recycling the majority of materials that are produced in the day care that are recyclable. There appears to be no drastic need for change because of the lack of recyclable materials making it into the waste stream. However, there a a few limitations to this system. A non-profit organizations such as Hildegard Marsden Day Care, there is a high turnover rate in employees. Some of the employees are volunteer parents only there a few hours a week. Therefore, the system may appear to be stable today, but in a month, there may be a loss of parents/employees that are willing to help out in collecting recyclable materials and taking them home. Also, with new technologies evolving, materials that were once not recyclable may become marketable and recyclable. Therefore, the amount of waste being collected and transported to and from the day care could increase to a point where the employees no longer want to take part in the waste management plan.

Solutions:

One main solution to these problems would be the integration of the day care waste management system with the University of Waterloo. A large blue box could be supplied to the day care through the University of Waterloo. Once the recycling box is full, the employees could call the University of Waterloo waste managers to come pick up and empty the container. This should not be too much work for the University operators because they are already making trips to the day care on call to collect cardboard boxes. They also collect recycling at the Columbia Ice Fields which is only about half a block away from the day care. This would take care of the stability problem that would occur if the day care kept their current system. However, there is also the possibility that the University workers will not want to come to the day care to collect their waste because of political reasons. The day care is a non-profit organization which is built on University property.

Lastly, there are larger projects that could be implemented in the Kitchener Waterloo area which could help not only the Hildegard Marsden Day Care but all day cares in the area. Overall, diapers make up 15% of the waste stream from the day care (Figure 2). If diapers could be recycled, this would greatly reduce the waste accumulation in the landfills. There is a Canadian-based company in Missisauga, Ontario called Knowaste TLC. They recycle disposable diapers, briefs, liners, under-pads and feminine napkins. Knowaste has set-up drop-off bins throughout the Toronto area (NaQuin, 1997). Knowaste claims that the diapers are a $44 billion dollar industry. When the diapers are recycled, Knowaste collects high grade pulp, mixed plastics and absorbent gels (NaQuin, 1997). This system is currently in operation in the Toronto area. However, with a high enough volume and municipal support, it may be possible to venture the expansion of the Knowaste system into the Kitchener/Waterloo area. Another city that has taken such initiatives, is the city of Guelph Ontario. Guelph built a new wet/dry recycling facility. This facilities goal was to keep the waste stream cleaner as well as to recover more recyclable materials (Gies, 1996). Prior to recycling all garbage is sent down a sorting line where the materials are divided into wet and dry items. Wet materials, which include diapers, are mostly composted and reused. Lastly, there is a new technology has been developed in California called the Diatec. Diatec is a self-contained unit roughly the size of a washing machine. It recycled diapers into plastic pellets which can be used in paving tiles, asphalt, and plastic fencing (NaQuin, 1997). With municipal support, new technologies such as the Diatec can be implemented into day care centers to reduce the amount of waste being placed in landfills. Figure 3 is the best solution at the Hildegard Marsden Day Care if sufficent technology existed to deal with the various waste which is being generated.

Figure 3. Recommended Waste Management System at Day Care



10.0 LIMITATIONS

Recommendations:

The recommendations which are suggested are in some instances not feasible. Hildegard Marsden is a nonprofit organization with limited funds to pay for extravagant waste reduction strategies. The turnover rate amoung employes is also high because it is a cooperative institution. It will thus be difficult to train all new staff in waste management since the amount of new people entering the facitily changes weekly. Many parent who help out might also lack the information in dealing with waste, and waste related issues.

The volume generated by Hildegard Marsden itself is insignificant to result in a vast program to be implemented. The employees have themselves instituted a program which is deemed as efficient because of the low numbers of glass and metal found during the audit.

The interest of the day care is also an issue. Because of the large amount of responsibility of the employees and the time contraints placed upon them, time to sort and separate waste is not availiable. So the more difficult and cumbersom activities are not a viable solution. This has already been proven with the implementation of a paper recycling program which was discontinued because of the vasts amount of time that was required.

Study:

There are certain limitations to the study performed. Simply by taking visual estimates, and the fact that there was three groups auditing the day care will result in the presence of human error. The time of day collected and the varing activites performed at the daycare is another concern for skewed data. However, different schedules were taken into account for most of the caclculations. The listing of the design categories was also an issue. There are varying articles which could not and did not fit into the categories provided. By isolating a smaller number of categories, or by creating more general categories a larger spectrum of results might have occurred.

For the most part however, the waste audit at the daycare was especially designed to identify trends which exist within the system. The identificaton of inputs and outputs was successful and the determination of the most important contributors to waste was also well identifyable. The ultimate result was satisfactory and a general conclusion on the sustainability of the system could be made.

11.0 CONCLUSION

The hypothesis initially stated proved to be wrong. The Hildegard Marsden daycare system is sustainable in the approaches they are taking in respect to the waste resources currently available to them. They have done extremely well in finding their own solutions to minimize the amount of waste which is going directly to landfill. The recommendations listed above will work and improve their system if the correct waste management infrastructure were to be put in place. There is obviously much room for improvement and a lot of opportunities for entrepreneuers to establish waste reduction systems for not only Hildegard Marsden but also for the rest of the Kitchener/Waterloo system. Sustainability is not an end but a continual process to minimize the impact any specific system has on the environment. It is an integral part in the development process and must be considered. Unfortunately sometimes, what one would like to do and what is feasible are entirely two separate ideas. One must work with what is available in resources and time, similar to the Hildegard Marsden, while researching alternatives to be implemented in the future.

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