Noncompliance of the new single stream recycling policy at Rutgers University

A campaign to educate the Rutgers University community is recommended

Tag Words: recycling; Rutgers; single stream; green; Waste Management

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Summary:
Throughout history, recycling has been used to save money and resources. From melting down metals to refilling milk jugs, recycling was a huge part of society. In recent years, convenience has taken its mark on the nation and now recycling can use improvement. As landfills grow towards the clouds, the movement to protect our planet is growing more and more urgent. Thankfully numerous items can be recycled and different recycling programs are set up across the country. The five main recyclable items are paper, plastics, aluminum, glass and steel. These are recycled using various methods, but ultimately recycling these products cost less and use less energy than creating an entirely new product. There are three main types of recycling, dual-stream recycling, single-stream recycling, and a pay-as-you-throw recycling. However, the dual-stream recycling is considered the most common. The current recycling program used by Rutgers University is single stream recycling. Because this is new, it is evident that not everyone on campus is familiar with how this policy works. A study was preformed to monitor the four campuses of Rutgers New Brunswick for how people are using the single stream recycling. The results were presented to both the Rutgers Facilities department and Waste Management, the company who manages Rutgers’ waste and recycling. It was concluded that students and faculty on all four campuses are not in compliance with the single stream recycling. A suggestion has been made for a campaign to educate people on the proper way to recycle. (SE/JK)

Video Link: http://www.youtube.com/watch?v=0I119fS7R5Q
History:

(Se) Unknown to most people, recycling has been around for thousands of years. Actually, before the modern age, recycling was more frequently used. Recycling materials is as easy as simply reusing the product or changing the original product into another useful object. Different recycling techniques can also be traced through time. Starting with thousands of years ago, metals were extremely valuable in a sense that they could be reused. Archaeologist have evidence of bronze was melted down and reused to make other valuable materials similar to various other metals. Metal items, such as coins, were melted down to make weapons and other household items that were more in need than the original product (Benefits-of-Recycling).

Recycling was practiced more often in earlier years because products were not being mass-produced like they are today. Thus, it was much easier and cheaper to simply reuse an item than to go out and buy, or make, a new one. Recycling during hard times is also evident throughout history. As discovered by archaeologists, much less waste was produced during hard times of either famine or war (All-Recycling-Facts). Later in history, metals were shown to have an even more importance for being remade into weapons. A highlight of recycling during recent years was for World War II. During this time, the nation pulled together to conserve and reuse metals and other fibers. Besides giving all possible goods to the war effort, citizens left on the home front were almost forced to recycle more since materials were so rationed. So, materials such as metals were being reused towards the war effort and materials at home were being reused in order to conserve so funds and materials can be sent to the troops at war (Benefits-of-Recycling).

Unfortunately, the nation made a turn for the worse after World War II had ended. Introduced in the 1940s and 1950s, landfills became popular for their convenience. It was now easier to throw away a product than to recycle it. One example of this was with milk. Milk in past years was delivered to households in glass containers and the empty glass bottles would be picked up to be reused. This process was very environmentally friendly and worked well for civilians. However, once milk was offered at stores in plastic containers, there was little need for the previous source of milk. Getting milk in plastic containers became easier and the plastic containers themselves started a problem with proper disposal. Unbeknownst to society, the popular landfills would fill up quickly and the new found love of plastics would take thousands of years to decompose. Spurred by the environmental movement, recycling took a turn for the better and has developed into what we have today. One of the highlights of recycling history is the adoption of the universal sign for recycling. The first city in the United States to mandate recycling was actually Woodbury, right here in New Jersey (All-Recycling-Facts).

Impacts of recycling: Trends

(JK) Recycling has improved throughout the years in many ways. Although metal is the most common recycled product, that has directed people to recycle even more bulkier items such as car parts, refrigerators, and entertainment machines (Schiller). This type of pick up is even being advertised in the yellow pages, which is leading people to be more aware of what can be recycled and how they can go about taking action. Even electronics are being recycled these days, which is also very well advertised in many stores that sell majority of the electronics, such as Best Buy, Office Depot, and numerous other stores.

Recycling has impacted the economy as a whole. Many businesses are also being interested in eco-friendly materials and processes. This has become a field within itself. According to the Environmental Protection Agency, recycling is found to create jobs, saves money, retains local employers, generates tax revenue, and produces economic developmental opportunities (EPA). Recycling has created jobs for the economy as well. The recycling industry directly employs 1.1 million people. There are an additional 1.4 million jobs with a $52 billion payroll in businesses that support the recycling and reuse industry. That is a total of 2.5 million people whose wages are interrelated to the recycling industry; consider the influence of those 2.5 million employees when they use their salaries in the economy (EPA). Continuing to promote recycling can create even more opportunities for employment and can encourage new ideas to be formed from new employees in this field.

Due to the importance put on recycling, manufacturers have actually changed the way they make products. Some examples of these products include the following changes: Plastic milk containers have only half the weight that they did in 1960s essentially using less plastic; the manufacturing of recycled paper uses 80 percent less water, 65 percent less energy and creates 95 percent less air pollution than virgin paper manufacturing; and recycled glass produces 20 percent less air pollution and 50 percent less water pollution (Earth 911).
According to the graph above, there has been a significant increase in recycling over the years. With the promotion of more accessible recycling methods, individuals have been encouraged to recycle more. This trend can be even more improved as the years go by with more resources of recycling are available to the public.


Different Types of Recycling

(JK) There are five basic items that all types of recycling include. These are considered have the nickname The Big Five. The Big Five includes products such as Aluminum, Glass, Paper, Plastic and Steel (Earth 911). There are six basic steps in Paper recycling: Pick Up, Sorting, Repulping, Screening, Deinking, and New Products (GP). Most cites and towns have what we know as curbside recycling. There are three different types of curbside pickup for cities. These three types are dual-stream recycling, single-stream recycling, and a pay-as-you-throw recycling.

The dual-stream recycling is considered to be the most common one of the three types. This separates two types of materials- paper and plastic. Paper goes into one bin and plastic into the other. They are then left outside on the curb on the assigned pickup days of the week. For example, on Easton Avenue near the College Avenue Campus, recycling is picked up every Monday once the materials are separated into separate bins. One problem some people come across is what goes in which containers. In order to fix this issue, the city and the recycling companies should better inform the residents of what can be recycled and where it should be placed in order to do so.

Next is the method of single-stream recycling. This is currently what Rutgers University is promoting by placing single-stream recycling bins throughout the campuses. In this type of recycling, there is no separation involved. In some ways, this makes it easier for households to recycle because they just put everything in one bin and leave it out. However, there are questions of whether this increases contamination of the recycled materials (Earth 911). Although unsure about how to control contaminating amongst the product, recycling has increased dramatically due to the increase in single-stream recycling systems.

The last form of recycling is the pay-as-you-throw recycling method. This should be the most common type of recycling because it forces the people to sort out their recycling from the
regular trash. This type of recycling charges residents per bag of trash and offers recycling for free. The pay-as-you-throw method of recycling results in less waste being produced, an improvement in the percent of households that recycle, and a reduction of waste costs (Earth 911). Cities who do this see a dramatic increase in recycling. There are problems with this type of recycling also in that residents may not properly sort out what is actually trash because that means they have to pay for it. This may been some changes in the policy, such that one bag can be for free but anymore is additional charge.

All of these are efficient ways to increase recycling; however there is still a search for the best recycling method. Many of these programs have even put in a rewards system, in which residents get money back from following recycling methods properly. People will be more likely to recycle if they receive some type of reward in return. By 2018, the PepsiCo's Dream Machine, generated in partnership with Waste Management, hopes to achieve their goal of increasing the U.S. plastic drink containers recycling rate from 34 percent to 50 percent by 2018 (PepsiCo). This idea should be implemented throughout the New Brunswick and Piscataway areas. As students, there are tremendous amounts of waste being produced everyday. If students can receive some type of reward in return for recycling, students would be much more encouraged to do so. One new method that the University is trying to promote is their partnership with Pepsi.

The University has installed “the Pepsi Dream Machine,” which gives participants rewards back for recycling. In doing this, percentage of recycling has increased amongst students. One of these machines is installed in each student center, where students can easily recycle the materials they need. These are the methods that also need to implement into the city’s recycling system. Although the Pepsi Dream Machine is available to the public, it is not very well advertised. This is another issue that is continuing throughout time. People are not well informed about the resources available to them. Waste is building up; however many do not know how to help via recycling properly or where to look.

Many States also give money if individuals bring cans and bottles and other various types of recyclables to the recycling center. In California, there are recycling centers that are set up around the cities, which allows individuals to receive money for bringing cans and bottles. Many of the cans are worth 5 cents and bottles are usually worth about 10 cents. This makes people more aware of what they are throwing out. In California, throwing away a can or a bottle is literally like throwing away money. Although 5 cents may not seem much, however taking into consideration how many canned items we use each day, it adds up to be a significant amount of money that can be used for anything else.

Many states are also mandating that cities and towns recycling. For example, East Brunswick Township has a 60% recycling mandate that they must meet (Butrica). Due to the increase in recycling throughout the town, East Brunswick's combined residential and commercial rate of recycling is at 72% (Butrica). One problem is the residents may not be well informed about the recycling system in their town. Sending mail to the residents about what the recycling policies are and how they can help to improve the percentage being recycled each year can solve this. East Brunswick Township, in particular, have taken a step further and have set up a center that allows residents to drop off anything they may feel is recyclable. The Township operates a Reclamation Center on the corner of Dunhams Corner Road and Church Lane. The
center accepts all household recyclables including newspapers, junk mail, magazines, corrugated/cardboard, and co-mingled recyclables. In addition, residents may bring leaves, branches, tires, paint, and textiles to the Center (Butrica). Providing more resources, such as these, is continuing in the promotion for more recycling.


How Items Are Recycled

(SE) Paper

One of the most common items people recycling every day, without realizing it, is paper. With our constant use of paper in our daily lives, from notebooks to envelopes to even parking tickets, it is definite plus that we can recycle this valuable resource. Recycling paper even includes a deinking process so paper used as documents can even be recycled. Of course the first step to recycling is actually collecting the paper itself. Paper is then sorted based on its content of ink or previous processing. The different types of paper are ultimately treated differently based on what recycled paper product they will make. After the sorting, the paper is made into pulp. The different assortment of paper types are added to a mixture of water and chemicals, heated, and broken to the point where only the fibers remain. The final result of the soft fibers is known as pulp (All-Recycling-Fact).

Once the pulp is made, there are two ways to purify the recycled paper, removing its contaminants. One way to remove its contaminants is to put the pulp through a screening process. This works by having the pure pulp go through the screen, and leaving the heavier and bulkier pieces on top. These pieces usually have a substance on them that would not be allowed to move onto the next step of recycling. The second way to separate the contaminants is to spin the pulp. Cone-shaped cylinders are used to create the effect of removing contaminated by the heavier pulp being thrown off the cylinder or by the lighter pulp moving to the inside of the machine (All-Recycling-Facts).

Continuing down the process, the pulp then has the ink taken out and any leftover sticky type of residue is removed. Ink is removed by the pulp being broken down even further with the addition of chemicals. Sticky substances are actually removed by bubbles. When bubbles are added to the mixture of water, chemicals, and pulp, residue on the pulp is uplifted and only clean pulp remains. The last step, and the most important, is actually making the recycled paper. The pulp is greatly diluted with water. The pulp can be completely the recycled paper, or the pulp can
be added to new material to make the new products. The pulp is laid over a screen and left to dry. Here, the fibers of the paper start to come together. The excess water is removed by drying or having the water squeezed out. Finally, a recycled product is formed (All-Recycling-Facts). Unfortunately, paper does not last forever and has a limited number of times it can be recycled before it completely deteriorates.


Glass

Like other recycled materials, the process starts with collection and then goes to processing all the glass. Glass is actually sorted by its color and is most valuable when it is kept color separated. Unknown to most people, the different colors of glass indicate a different type of processing that is needed. Once all the glass is sorted, it is crushed to fine pieces to produce a cullet. At this stage, the cullet can be treated as a commodity and sold to manufacturing companies so they can continue the process of glass being re-used as something useful (Earth 911).

Like other methods of recycling a given material, the integrity of the product must be checked for impurities. This process actually could have some manpower. During the recycling process, the cullet of glass previous formed is run through several tests. First, a magnet is swept over the crushed glass to pick up any metals that may have fell to this position. Manual labor comes in just in time to help with the contamination problem. This step in the recycling of glass is to remove more contaminants, this time being paper or plastics. Similar to recycling paper, the grounded glass is sent through a screen. The pieces with residues are caught and discarded. Once all the contaminants are finally out to rest, the real recycling can begin (All-Recycling-Facts).

The next step to creating a new product is melting down the glass that has been tested for contaminants. Once melted, this glass can be made into a completely new object, an object with a new purpose. As mentioned previously, different colors of the glass are handled in opposing ways. Different colors of glass correspond to the different chemical compounds that are used as dyeing agents. However, if the desired product is of clear glass, erbium oxide and manganese oxide can be added to take out unwanted coloration (All-Recycling-Facts). Lastly, the melted glass is molded into the shape of the functional product. The final product has gone through the entire recycling process, has been dyed, and now has been molded into its new shape.


Plastics

Over the past few decades, plastics have been a major product used in the United States. Because this product degrades over hundreds of years until other materials, there is a real need to recycle these plastics. Recycling for plastics can be as reusing the product. An example of this, plastic bags can simply be used time after time. However, then plastics are actually processed in a recycling process, it usually follows a basic overall recycling process which includes five steps.
First, the plastics must be collected through the various types of recycling methods across the country. Both consumer grade and industrial plastics are collected in this manner. Next, sorting takes place on conveyor belts to separate the different types of plastics based on their code. Anything not plastic is obviously removed. Next, the plastic product is cut into very small pieces. Once cut, the pieces go through a washing stage. Everything from debris to labels are removed during the washing stage by water and detergents. Finally, the cleaned plastic is melted down. The melted plastic is formed into tube like shapes and cut. At this stage, the newly formed plastics can be sold to companies. Companies can either use the completely recycled plastics to be made into new products or add new plastics to the recycled plastics they have purchased (All-Recycling-Facts).


Metals

The importance of recycling metals has been around for thousands of years. Metals that are common today, where extremely valuable in past years due to low availability. However, even common metals today should be considered valuable. Unknown to many people, metals are not renewable and limited amounts are found on earth. Thus, recycling metals is very important to the survival of these resources. Metals are also great to recycle because they do not lose their value or function after they are recycled. Meaning conducting metals will still conduct, and silver will still hold its value as silver, regardless of its new shape (“Recycling Metals”).

On of the more common metals recycled is aluminum. Recycling aluminum is greatly energy saving compared to take raw aluminum and developing a new product. Aluminum is collected and processed like most other recyclables. First, aluminum (mostly cans) are collected and sorted at a waste facility. The aluminum is then crushed and formed into dense thousand-ton bales. This is done so that these bales can be shipped to appropriate companies for further use. The aluminum is then shredded, removed of labels, and melted down. Manufactures can from here add new aluminum, add lids to cans, or finish the product the way they need. The new product can be sold in stores without much further processing (“Aluminum Recycling”). The process of recycling aluminum is basically melting down used aluminum and then reshaping the metal into the desired product.


Costs of Recycling

(JK) Many may argue that recycling is actually costing more than to just throw everything away. This is proven to be false when comparing the results to many other countries, which have saved a significant amount from recycling. For example, Nova Scotia has saved anywhere from
$25 million to $125 million annually. It takes much more energy to make something from fresh, raw materials than from recycled material (Leahy). In the United States, communities have not reached the levels that other countries have as far as recycling overall. In 1995, Nova Scotia set up agendas to reduce the amount of trash going to landfills by 50 percent. By 1998, types of waste, such as beverage containers, newsprint, used tires and waste paint, were prohibited from landfills and were mandatory to be recycled (Leahy).

Most recycling is done on college campuses and environmentalists, where younger generations are well informed and are encouraging this movement for reusable energy. If the rest of the country was more motivated to recycle as college students are, recycling percentages would dramatically increase to close to a 100% in each town or city. This is the goal the United States is looking to meet and it will save much more money than expecting.

A single family home can easily save cans and bottles from drinking sports drinks, soda, eating canned foods, etc. It is a matter of just putting these materials into a different bin that can be picked up on a certain day. Another excuse many people have is that recycling is not picked up as often and they do not want things to be piling up in their homes. Cities and towns should look into picking up recycling twice a week instead of the normal once a week. This will encourage families to recycle more because they are no longer waiting a whole week if they forgot to throw a few things into the bin on that specific day. Also, if the family forgets or is not able to put the recycling out on the curb on that day, they have another option within the week. This can save the city money overall and also increase the percentage being recycled within the United States.


Recycling At Rutgers University

(SE) On October 14th, 2011, an interview was conducted with Alyssa Ruggiero the Project Coordinator of Waste Management of New Jersey. Various topics were discussed from Rutgers recycling to plastics, to food waste. First, waste produced by Rutgers University is divided into trash and recycling by students and faculty when they choose to throw out an item. Because Rutgers uses a single stream recycling system, all types of recycling can be placed into the same containers. Ms. Ruggiero mentioned that she believes Rutgers’ food waste goes to swine farmer. Food waste for other cities in the area may go to Wilmington, Delaware. The facility that the food waste goes to is the Wilmington Organic Recycling Center, Peninsula Compost Group. Recently, Waste Management in New Jersey has been undergoing several changes to its facilities. Previously our recycling was going to Elizabeth, New Jersey or to Port Newark, New Jersey. Recently the facility in Elizabeth has been changed over to accommodate commercial grade plastics, or rigid plastics. These are different than the plastics Rutgers recycles (#1-7), and the plastics consumers use. Recycling is now taken to a facility on St. Charles Street, Newark, New Jersey. To insure the quality of the recycling and waste being picked up and transported to the different centers, drivers are trained to assess the materials in each bin, or dumpster, at time of pick up. If drivers start to see that there is a contamination of trash in recycling, or recycling
in trash, they will inform a higher authority to discuss the matter with the customer to fix the problem (Interview). This means that if students and faculty do not fully throw out their items in the correct bins, this may not be an issue at first. Because the Waste Management facility separates out the true recycling from the trash contaminants, partial mixing of recycling and trash is not a problem. However, if large amounts of contamination are in the recycling bins consistently, the staff of Waste Management will report this as an issue.

Items that qualify for Single Stream Recycling:

<table>
<thead>
<tr>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper</td>
</tr>
<tr>
<td>Pizza boxes</td>
</tr>
<tr>
<td>Office paper</td>
</tr>
<tr>
<td>Hard cover books</td>
</tr>
<tr>
<td>Food boxes</td>
</tr>
<tr>
<td>Empty food containers</td>
</tr>
<tr>
<td>Mail</td>
</tr>
<tr>
<td>Steel and aluminum cans</td>
</tr>
<tr>
<td>Magazines</td>
</tr>
<tr>
<td>Plastic bottles</td>
</tr>
</tbody>
</table>

Additional Recyclables: include polystyrene packing materials (packing peanuts, Styrofoam), lead and nickel cadmium batteries, concrete, laboratory chemicals, scrap metal, textiles and more.

Note: glass, aluminum and steel (tin) food and beverage cans are recyclable and do not have to be rinsed clean to be placed in bins, but they must be empty. All plastic containers 1 - 7 may be recycled and all plastic bottle caps are recyclable.

Not acceptable are: light bulbs, laboratory glass, glass shelving, auto glass, dishes, or window glass

What is Considered Trash:

<table>
<thead>
<tr>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
</tr>
<tr>
<td>Dirty paper towels</td>
</tr>
<tr>
<td>Dirty napkins</td>
</tr>
<tr>
<td>Dirty tissues</td>
</tr>
<tr>
<td>Used plastic bags</td>
</tr>
</tbody>
</table>


Implementing the new single stream recycling policy is to help Rutgers receive the Gorilla Prize of the RecycleMania competition. Single Stream Recycling for Rutgers is quite new, starting in January 2011. Before, starting in 1976, Dual Stream Recycling was implemented and this program carried Rutgers through into the new Single Stream Recycling it has today. RecycleMania is a competition of colleges from North American and Canada who compete to win one of several prizes having to deal with recycling and overall reduction of waste (RecycleMania). The RecycleMania competition runs from early February through early April. Rutgers has won the Gorilla Prize from 2006 through 2011 (Recycling Guide). The Gorilla Prize is given to the college with the most accumulated recycled waste. Other prizes of RecycleMania reward college for reducing waste, such as the Waste Minimization Prize. This takes into account
the cumulative waste in pounds per person. Rutgers University ranked 175th for this award in 2011. Another good prize is the Grand Champion, which accounts for cumulative recycling rate as a percentage. Rutgers received 30th place for this prize in 2011 (“Results”).

Ultimately this shows that Rutgers has its interest in the wrong place. Although winning the competition for the most recyclables produced, this does not necessarily help reduce waste or carbon footprint on the planet. What winning the Gorilla price does not show is the actual amount of solid, non-recyclable waste Rutgers produces. Rutgers University should have its goal set on winning the Waste Minimization Prize for next year. This way, it will be guaranteed that Rutgers would reduce its overall waste production. Though sending massive amounts of items for recycling is better than sending it to the landfills, it still does not solve the problem of reducing overall consumption and byproducts of human life. The Grand Champion Prize would also be a step in the right direction by increasing the total amount (percentage) of our waste be towards total recycling. By this meaning Rutgers can increase its recycling percentage of its total waste. Either way, the focus should be on reducing consumption and total waste of the campuses all together.


Is Rutgers University Compliant with the New Single Stream Recycling – Let’s Take a Look.

(JK/SE) Our service project evaluated the single-stream recycling system at Rutgers that was imposed in 2011. The new system of recycling is single stream recycling were all types of recycling (plastic, paper, etc.,) is put into one container. Later, this recycling is separated at large facilities and distributed to companies that want a certain type of material. Although this is easier, many people seem to be confused on the new recycling protocol. We first did background research on single stream recycling and how the Rutgers facilities department handles everything. It has come to our attention that ever since the new single stream recycling has been implemented, recycling in general has been less. Our service project is to document how the single stream recycling is being used and what is getting thrown away in the trash. This is being done on all four campuses of Rutgers, New Brunswick, and at different times. This will give us a broad consensus to the question of “Is single stream recycling working?”. Our findings will be presented to Rutgers Facilities so that they can see what the problem is and if there is a way to make Rutgers recycling more effective.
<table>
<thead>
<tr>
<th>Campus</th>
<th>Building</th>
<th>Date</th>
<th>Time</th>
<th>Trash/Recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook/Douglass</td>
<td>Outside of Lippincott Dorm</td>
<td>10/10/11</td>
<td>6:30 pm</td>
<td>Dumpster over flowing with various recycling</td>
</tr>
<tr>
<td>Cook/Douglass</td>
<td>Thompson Hall, Private Office</td>
<td>10/11/11</td>
<td>9:30 am</td>
<td>Trash put in recycling</td>
</tr>
<tr>
<td>Livingston</td>
<td>Campus Center</td>
<td>10/11/11</td>
<td>4 pm</td>
<td>Newspapers in trash</td>
</tr>
<tr>
<td>Livingston</td>
<td>Campus Center</td>
<td>10/11/11</td>
<td>5 pm</td>
<td>Newspaper Recycling Bin is empty</td>
</tr>
<tr>
<td>Livingston</td>
<td>Outside Buildings Around Campus</td>
<td>10/11/11</td>
<td>afternoon</td>
<td>Paper in Trash</td>
</tr>
<tr>
<td>Busch</td>
<td>Busch Student Center</td>
<td>10/11/11</td>
<td>2:30 pm</td>
<td>Recycling filled with trash</td>
</tr>
<tr>
<td>Cook/Douglass</td>
<td>Cook Campus Center</td>
<td>10/12/11</td>
<td>3:30 pm</td>
<td>Trash over flowing in bins</td>
</tr>
<tr>
<td>College Avenue</td>
<td>Scott Hall Bus Stop</td>
<td>10/12/11</td>
<td>1:45 pm</td>
<td>Trash and recycling was all over the floor</td>
</tr>
<tr>
<td>College Avenue</td>
<td>College Ave Student Center</td>
<td>10/14/11</td>
<td>5:00 pm</td>
<td>Recycling empty and recycling in trash</td>
</tr>
<tr>
<td>Busch</td>
<td>Hill Center</td>
<td>10/15/11</td>
<td>4:45 pm</td>
<td>Recycling in trash</td>
</tr>
<tr>
<td>College Avenue</td>
<td>Scott Hall</td>
<td>10/15/11</td>
<td>7:00 pm</td>
<td>Trash was overflowing</td>
</tr>
<tr>
<td>Livingston</td>
<td>Livingston Campus Center</td>
<td>10/17/11</td>
<td>1:00 pm</td>
<td>Paper in Trash</td>
</tr>
<tr>
<td>Livingston</td>
<td>Livingston Campus Center</td>
<td>10/17/11</td>
<td>1:20 pm</td>
<td>Plastic Cups in Trash</td>
</tr>
<tr>
<td>Cook/Douglass</td>
<td>Cook Campus Center</td>
<td>10/18/11</td>
<td>8:30 am</td>
<td>Plastic Containers Thrown in Trash</td>
</tr>
<tr>
<td>Livingston</td>
<td>Livingston Around Campus</td>
<td>10/18/11</td>
<td>1:50 pm</td>
<td>Items thrown away correctly</td>
</tr>
<tr>
<td>Livingston</td>
<td>Livingston Campus Center</td>
<td>10/18/11</td>
<td>1:55 pm</td>
<td>Paper Cups in Recycling</td>
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<tr>
<td>Cook/Douglass</td>
<td>Douglas Campus Center</td>
<td>10/20/11</td>
<td>2:00 pm</td>
<td>Paper Recycled</td>
</tr>
<tr>
<td>Cook/Douglass</td>
<td>Cook Campus Center</td>
<td>10/21/11</td>
<td>10:00 am</td>
<td>Plastic Containers in Trash</td>
</tr>
<tr>
<td>Location</td>
<td>Details</td>
<td>Date</td>
<td>Time</td>
<td>Notes</td>
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</tr>
<tr>
<td>Cook/Douglas</td>
<td>Trash in Recycling Dumpsters</td>
<td>10/27/11</td>
<td>3:00pm</td>
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<tr>
<td>Cook/Douglas</td>
<td>Used Paper Plates Put in Recycling</td>
<td>10/28/11</td>
<td>9:35am</td>
<td></td>
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<tr>
<td>Cook/Douglas</td>
<td>Plastic Bottles in Trash</td>
<td>10/31/11</td>
<td>5:00pm</td>
<td></td>
</tr>
<tr>
<td>College Avenue</td>
<td>Trash Over Flowing</td>
<td>11/1/11</td>
<td>7:00pm</td>
<td></td>
</tr>
<tr>
<td>Cook/Douglas</td>
<td>Used Paper Plates put into recycling by worker</td>
<td>11/2/11</td>
<td>10:30am</td>
<td></td>
</tr>
<tr>
<td>Cook/Douglas</td>
<td>Paper Cups in Recycling</td>
<td>11/4/11</td>
<td>2:00pm</td>
<td></td>
</tr>
<tr>
<td>Busch Campus</td>
<td>Recycling was full with trash</td>
<td>11/6/11</td>
<td>3:12pm</td>
<td></td>
</tr>
<tr>
<td>Cook/Douglas</td>
<td>Bottles in Recycling</td>
<td>11/7/11</td>
<td>5:00pm</td>
<td></td>
</tr>
<tr>
<td>College Avenue</td>
<td>Both recycling and trash empty</td>
<td>11/9/11</td>
<td>4:00pm</td>
<td></td>
</tr>
<tr>
<td>College Avenue</td>
<td>Recycling and Trash were filled</td>
<td>11/10/11</td>
<td>3:15pm</td>
<td></td>
</tr>
<tr>
<td>Busch Campus</td>
<td>Soda Cans in trash</td>
<td>11/10/11</td>
<td>8:00pm</td>
<td></td>
</tr>
<tr>
<td>College Avenue</td>
<td>Both Recycling and Trash filled</td>
<td>11/14/11</td>
<td>7:13pm</td>
<td></td>
</tr>
</tbody>
</table>

**Results**

(SE) For over a month, people on all the campuses of Rutgers New Brunswick were watched and their action of disposing of their waste was noted. In total, 30 accounts were noted. Of those 30 accounts, only four accounted where recorded as not having problems (roughly 13%). Not having a problem ranged from the trash and recycling bins being empty to students and faculty using the bins properly to dispose of their items. The other 26 accounts were recorded has having problems (about 87%). Some problems were simply that because one or more of the bins (recycling or trash) were filled, people threw out their items in which ever bin was available, regardless if the item was able to recycled or not. At some time points, both bins were completely filled and thus, people insisted on stacking trash, cans, bottles, and plastic containers on top of the full bins. This is a sign of noncompliance of the current single-stream recycling policy. Students and faculty are simply placing their items in whatever bin is closest or more available. On the other hand, most accounts where there were problems were people simply tossing their items in the wrong bin, even when both bins were available. This may be a problem
with their noncompliance or people not understanding what is considered recycling. However, based on the results as a whole, noncompliance is most likely.

**Recommendations to Improve Compliance with the Single Stream Recycling**

It is evident that the Single Stream Recycling at Rutgers University is in need of improvement. Suggestions include signage on the bins, indicating what can or cannot go into the bins. In addition, RU should consider changing the lids to the bins. The Single Stream Recycling bin lid does not allow the plastic containers to fit, leading people to have to lift the lid to discard an item. Another way to spread awareness is to discuss the Single Stream Recycling at Freshman Orientation. In order to improve the results for RecycleMania, a heavy promotion on proper recycling just prior to the start of RecycleMania can include misconceptions about recycling, such as dirty plastics are not trash, but recycling. Lastly, Greek Life Community can promote further recycling campaigns.

**Letter Sent for Service Project:**

(SE) Letter sent, along with documentation of waste management usage, to Alyssa Ruggiero, a representative of Waste Management, Dianne Gravatt of Rutgers Facilities, and Mike Kornitas, Manager of Energy Conservation at Rutgers University, proposing a campaign to strengthen the new Single Stream Recycling policy at Rutgers University:

Over the past month at Rutgers University, a study has been in progress to document students and faculty using trash and recycling practices. Although some people have been successful in placing their waste in the appropriate receptacle, most others have not done so correctly. Originally it was thought that people were simply not being compliant with the Rutgers new Single Stream Recycling Policy. However, after talking to several people, there seems to be confusion on what is able to be recycled versus what is not. For the most part, people seem to be noncompliant when it comes to using the receptacles correctly when the waste is not dealt with as efficiently as needed. For example, when the trash is filled, people simply feel entitled to place their trash in the recycling bins, regardless of their nature. This may be a noncompliance issue, or people may not understand that the “Single Stream” is for recycling only, and not for all items. On the other hand, a large part of issues with the waste management appear when either the trash bin is full, or the recycling is full. People tend to place their items in which ever bin is available. Students and faculty are not the only people who seem to have problems with the new policy. One morning, a member of the facilities staff was witnessed taking trash out of the actual trash bin, and placing it into recycling. This is an obvious sign that there is a lack of understanding in what items qualify for each receptacle.

As concerned members of the Rutgers University student body, we are asking for a campaign to strengthen the waste management practices at Rutgers. Of course it is unreasonable to believe all noncompliance will disappear, but running a campaign to make people more knowledgeable about recycling will better the current policy. If people knew exactly what items were able to be recycled, the new recycling policy may work much better.
Attached are the findings from the past month displaying the documented use of the waste management at Rutgers University, using all New Brunswick campuses.

**Responses to the Letters Sent for Service Project**

(SE) Response from Dianne Gravatt of Rutgers Facilities

Dear Susan, When you observe a custodian collecting trash, you may not realize that they do sort outside by the containers that are our collection site. There is no new recycling policy we simply have been recycling since 1978, currently we recycle well over 68% of our waste. We are well aware that most people will do what is convenient not necessarily what is right. For example if you want to know what is recyclable, in single stream, the same things that have been recyclable for the past 5 years everywhere in tri sate area. In addition you could go on our university facilities website, there you will find our pamphlet and information. Every single staff member & faculty member received a copy of a letter from the Vice President of Facilities in January of 2010 with a poster and a recycling pamphlet via email.

Attached for you is our information on recycling, and if you would like to be a part of the solution we welcome your participation in spreading the word out. In the future if you want to conduct a study or survey perhaps you might reach out to us. We welcome student cooperation. To break it down for you and your group: aluminum foil, aluminum cans, all paper including used pizza boxes, paper cups, all plastics 1-7 this includes Styrofoam carry out containers, Styrofoam cups, magazines, newspapers, plastic cups, plastic lids, tin cans, steel cans, all cardboard including pressed cardboard, milk cartons egg cartons and the list goes on.

What is not recyclable in the single stream containers: food waste, rubber gloves, batteries, and paper towels. WHEN IN DOUBT DO NOT THROW IT OUT RECYCLE IT.

In addition to all of the traditional recycling done at Rutgers we also recycle used oil, used antifreeze, tires, ceiling tiles, carpeting, scrap metals, organics (leaves, trees, branches, food waste from all dining halls, student centers, foot ball stadium).

We have 38,000 students and another 10,000 faculty and staff in NB/Piscataway. We audit our trash quarterly and we have less than a 25% contamination rate, which is really quite good considering the lack of compliance of our constituency. We recycle in over 800 buildings, over 9,000,000 square feet and 800 acres of land as well as 36 miles of roads, 18,000 parking spaces, all bus stops, and 32 miles of sidewalks, we do it every day with a very small staff. We are as efficient as we can be n times when we have lost staff, increased square footage and no increase in resources..

We are hoping that a student is going to be working with us shortly specifically to spread the word to students.

Best,
Dianne
Response from Alyssa Ruggiero of Waste Management

Hi Susan,

I just want to let you know that we have reached out to some staff from Rutgers to see what can be done to bring awareness to the recycling practices. My thoughts are through email and/or social media. As a student at Rutgers, what do you think is the best way to reach the student body? What other ideas for a campaign did you have?

Thanks,
Alyssa

Response letter from Professor Julie Fagan to Dianna Gravatt

Sent to dgravatt@facilities.rutgers.edu
Cc’d to acalcado@facilities.rutgers.edu, Antonio Calcado, Vice President, University Facilities & Capital Planning

Dear Dianna,

In my SEBS colloquium classes, students learn about issues that interest them and do a service project in relation to their particular issue. This past semester there were 2 students, Janki Kotak and Susan Eastman, that were interested in recycling. I had mentioned to them that it seemed as if the trash receptacles at Rutgers contained contents that contained recyclables and the receptacles labeled single stream recycling contained what I would consider trash. They decided to take a closer look and went to the various Rutgers University campuses at different times of day and examined what was in the trash and single stream recycling bins.

According to their observations, they found that 86% of the receptacles contained inappropriate material; i.e. trash in the recycling and recycling in the trash. About a month or so ago, Susan Eastman sent you a letter concerning the lack of compliance of the new single stream recycling here at Rutgers University. In a follow up email, she said that you indicated that there were no problems with compliance with the single stream recycling program and in past trash audits, we had less than a 25% contamination rate. Twenty five percent seems actually pretty high – meaning that one in four times, we are getting it wrong. Susan also contacted Waste Management. Waste Management was very receptive and in their email they wrote that they would like to help make Rutgers more efficient in their recycling program and were looking for feedback on how to make this possible. Waste Management stated that they had been in contact with some of your staff to see if they can help to improve compliance.

It was the impression of the students that the reason for noncompliance was not lack of caring but a lack of information. They went around campus and asked students why, for example, they just threw out a plastic recyclable with remnants of food or drink in the trash and why, for instance, did they throw their paper towels or napkins in the recycling. Napkins to them are paper products and hence should be recycled and the plastics that had not been rinsed were dirty and therefore not recyclable but trash.
Additionally, noncompliance was likely the result of the bins (recycling or trash) being filled, where people threw out their items in which ever bin was available, regardless if the item was able to recycled or not. At some time points, both bins were completely filled and thus, people insisted on stacking trash, cans, bottles, and plastic containers on top of the full bins (and spilling out onto the floor). I have also noted this at times in the Ladies room in the CDL building on SEBS.

Below is a link to a video the students made to highlight the importance of recycling and the Rutgers single stream recycling program.

http://www.youtube.com/watch?v=OI119fS7R5Q

We therefore believe that Rutgers, in order to be successful in handling the waste stream, should implement a campaign to promote appropriate recycling. If people knew exactly what items were supposed to be recycled, the new recycling policy may work much better. Perhaps this could be done in coordination with RecycleMania – a program where Rutgers has done so well. Some Recommendations to Improve Compliance with the Single Stream Recycling include: signage on the bins, indicating what can or cannot go into the bins, consider changing the lids to the bins. The Single Stream Recycling bin lid does not allow the plastic containers to fit, leading people to have to lift the lid to discard an item. Another way to spread awareness is to discuss the Single Stream Recycling at Freshman Orientation. In order to improve the results for RecycleMania, a heavy promotion on proper recycling just prior to the start of RecycleMania can include misconceptions about recycling, such as dirty plastics are not trash, but recycling. Additionally, Greek Life Community can be requested to help promote the recycling effort at Rutgers University.

Sincerely,

Julie M. Fagan, Ph.D.  
Associate Professor  
School of Environmental and Biological Science  
Rutgers University  
84 Lipman Dr.  
New Brunswick, NJ 08903

fagan@rci.rutgers.edu  
(848) 932-8354

References


Editorials:
It has come to my attention the growing need for more education in society on how to properly take care of our planet. Between every city having different regulations on recycling, to the general public being confused about what exactly can be recycled and where, it is safe to say the vast majority of recycling programs in the United States can use improvement. In previous decades it was cheaper and easier to reuse household items until they were no longer functional. An example of this was glass milk jugs. These were picked up, washed, and reused for future milk deliveries. Recently there has been a transfer out of this way of thinking and into Americans throwing out products after their immediate use. This has led the country to accumulate mountains of trash, instead of trying to reuse items that they once kept. Plastic water bottles are a main example of this trend. Plastic water bottles became popular for their convenience, but serve as a massive issue for the world to deal with. Unknown at the time of original creation, the plastic of these bottles take thousands of years to degrade. Above all, without a constant recycling program implemented throughout the country, recycling of these plastic bottles is not consistent. Thus, these reusable, recyclable, bottles end up in landfills. From aluminum cans, to steel, to paper, and again the plastic bottles, a strong support of a recycling program in every state or city may help to fix the abundant waste added to our landfills every day. The problem with people not recycling can stem from people not understanding what can be recycled, or it could be a lack of implementation of a recycling policy where the person is. With better education to the public, recycling can take a turn for the better. Because the problem of how to deal with the world’s waste is such a pressing issue, an incentive to recycle, reducing the world’s landfill waste as a result, could be the best option to get more people participating. Recycling not only helps the environment, but also helps our economy by providing jobs within its own industry. On the positive side, some companies have noticed the increased favor in reducing the nation’s consumption. They have started advertising using less material, or advertising that their product is made from recycled material. Regardless, society is signaling back to industry their value in maintaining the planet’s health. Now we must be diligent in keeping our planet clean, starting with a stronger recycling policy.

In researching my own college campus, I have discovered that many people do not even know what recycling actually entails. Right now, my campus is promoting the single stream method of recycling; however to many students they just see it as another trash can. When interviewing the students, they don’t know what “single-stream recycling” even means. They do not realize what can and cannot be recycled. Many are under the impression that anything paper (including used paper napkins and paper towels) can be thrown in with everything but they do not think that plastic containers with a little bit of ketchup or mayonnaise cannot because it is dirty. These assumptions just prove that although campuses and other places are trying to promote the “go-green” movement, they are not educating the people about the details involved in order for their plan to succeed. The people are not going to do research the details of recycling on their own. They need to informed by the community they are living in (maybe through the regular mailing system using pamphlets).