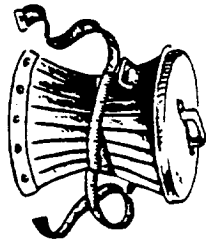
APPENDIX 1

The Waste Reduction Handbook



Recycling Program
The City of New York
Department of Sanitation
253 Broadway
New York, NY 10007

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New York City's WASTE REDUCTION HANDBOOK

☛ Practical ways to prevent waste and save the environment

The Garbage Crisis

Each New Yorker generates over a ton of trash every year. The amount of garbage collected in New York City would fill the Empire State Building in *one* week.

What can we do about it? The most environmentally sound and cost-effective solution is to create less waste in the first place.

The choices you make today affect the environment tomorrow. At work, at home, at play, or while shopping – the simple decisions you make every day can conserve natural resources, and save valuable landfill space.

By the time it closes, New York City's only remaining landfill will be the highest point on the Eastern seaboard – taller than the great pyramids of Egypt.

This booklet offers dozens of easy and effective ways for you to prevent and reduce waste.

REDUCE

- Consume less in the first place: buy only what you need.
- Don't buy trash: avoid excess packaging.

RE-USE

- Borrow or rent items you use infrequently.
- Repair the things you own to make them last longer.
- Find creative ways to give items a second life.
- Donate what you no longer need.

RECYCLE

- Buy products that are made with recycled or recyclable materials.
- Participate in your neighborhood and workplace recycling programs.

Waste Prevention Begins At Home

USE DURABLE ITEMS. Instead of paper plates, paper napkins, paper towels, and plastic utensils — use ceramic plates, cloth napkins, sponges, and silverware.

MICROWAVE THE SENSIBLE WAY. Avoid the gimmicks that food manufacturers have created for the microwave; usually it's the packaging that's been designed for the microwave, not the food. Most foods can be microwaved, whether the package says so or not. You often pay more for single serving portions and excess packaging. Try using a ceramic plate or bowl turned upside down to cover food in the microwave, instead of wasting plastic wrap.

RETURN HANGERS TO YOUR DRY CLEANER. Most cleaners are eager to receive and reuse wire hangers.

MAINTAIN WHAT YOU USE. For example, clean the filter on your refrigerator regularly to make it last longer. Keeping tires at their optimum pressure ensures them a longer life. Invest in equipment and appliances that will last and that offer good warranties. Plan to repair your equipment; investigate purchasing service contracts so any future repairs are cost-effective.

The use of paper plates is growing four times faster than the population.

New Yorkers discard more than 1.5 million, or about 670 TONS of disposable diapers every day.

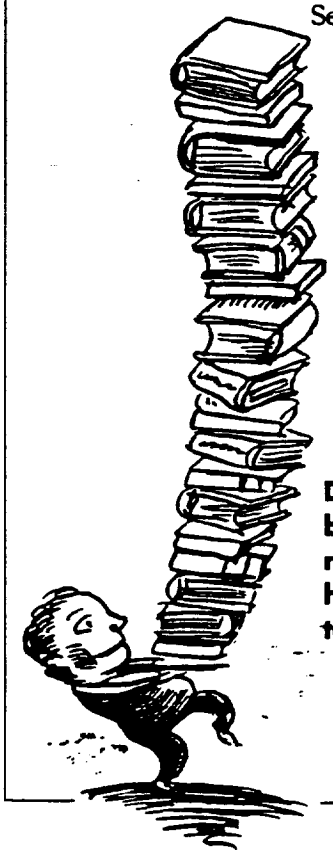
CONSIDER USING CLOTH DIAPERS. Cloth diapers are less expensive and less likely to cause diaper rash than the disposable kind. With new Velcro closure diaper covers, pins are no longer necessary.

REMOVE YOUR NAME FROM MAILING LISTS. Ask companies to take you off their mailing lists, using a postcard or their own postage-paid reply forms. Whenever you give out your name and address, also include explicit instructions telling companies not to share your address.

New York City throws out 3,000 truckloads of junk mail every year.

To have your name removed from most national mailing lists, send your full name and address, including any variations that might appear on mailing labels, to: *Mail Preference Service, Direct Marketing Association, 11 West 42 Street, P.O. Box 3861, New York, NY 10163-3861.* Or just fill out the postcard attached to the back cover of this booklet.

DONATE WHAT YOU NO LONGER NEED. Pass along clothes, books, appliances, and other items to friends, neighbors, schools, nursing homes, or other charities. Sell your unwanted items to a second-hand store or hold a tag sale.



Donating unwanted books to a library, nursing home, or hospital is a great way to avoid extra trash.

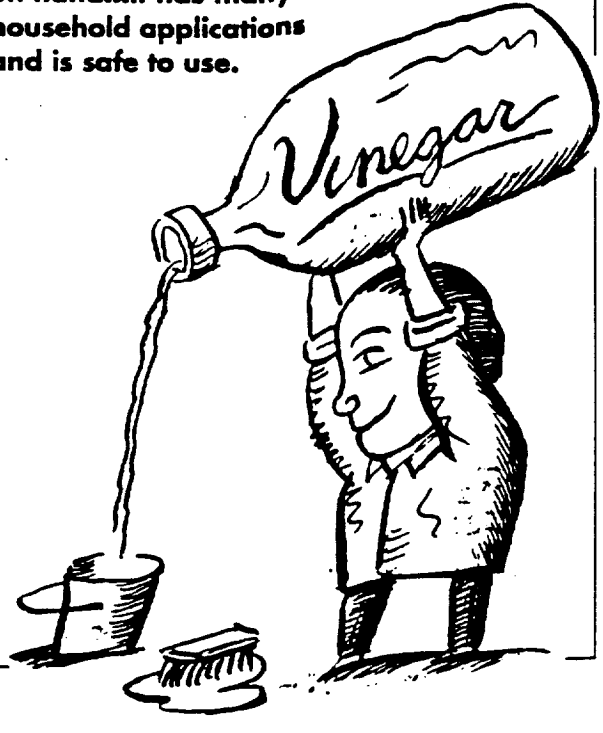
Waste Reducing Recipes

Here are substitutes for many household products that contain toxic chemicals. These common solutions, plus some elbow grease, are reliable and effective ways to get the job done, while reducing excess packaging and toxic waste.

Clogs: Unclog drains by pouring boiling water with a few tablespoons of baking soda and a large splash of vinegar down drains. This treatment once-a-week prevents clogs too.

Ceramic Tile Cleaner: Mix one-quarter cup white vinegar with one gallon of water.

Keep lots of white vinegar on hand...it has many household applications and is safe to use.



Furniture Polish: Mix three parts olive oil with one part lemon juice or vinegar and apply with a clean, soft cloth.

Oven Cleaner: Sprinkle water, then a layer of baking soda on oven surfaces. Rub gently with very fine steel wool for tough spots.

Toilet Cleaner: Sprinkle some baking soda into the bowl, then drizzle with vinegar and scour with a toilet brush.

Pest Control: Seal off all the openings where pests can enter, such as gaps around pipes or cracks in baseboards and cupboards. Caulk, cement, or steel wool work best. Also, do not leave pet food or dirty dishes out overnight.

Consumer Reports rates plain water better than the leading brands of window cleaner.

Gas stations that change oil are required to accept up to five gallons of used oil per person at no charge.

Dealers must accept your used car battery when you purchase a new one.

■ **Repel ants** by washing countertops, cabinets, and floors with equal parts water and vinegar.

■ **Repel roaches** by mixing equal parts of oatmeal, flour, and plaster of Paris placed in dishes, or apply a blend of equal parts baking soda and powdered sugar to infested area, or sprinkle boric acid around baseboards. *Do not place within reach of children or pets.*

AVOID USING BATTERIES. Use manually powered appliances, or plug electrical appliances into a wall outlet. When you do use batteries, use the rechargeable kind. Letting a rechargeable battery go completely dead once in a while extends its life.

Stop Buying Trash!

Vote with your shopping dollar. Choose products carefully and consider the environmental impact of every purchase you make.

☞ **Buy the brand that uses the least amount of packaging.** Choose the large economy size. Buy concentrates (frozen juice, stick deodorant, bar soap) and add water at home. Whenever you can, buy items loose rather than packaged.

☞ **Don't buy aerosols.** They create more waste, they're harmful to the environment, they're more expensive ounce for ounce than non-aerosols, and the containers cannot be recycled.

☞ **Buy refillables and reusables.** Instead of using disposable razors, lighters, pens, and cameras — invest in a good razor with replaceable blades, a refillable lighter, pens with refills, and a camera that lets you change the film. Buy a lunch box and reclosable containers rather than sandwich wrap and bags.

☞ **Buy recycled.** Choose products and packaging made from recycled materials. Boxes made from gray cardboard indicate the paper has been recycled.

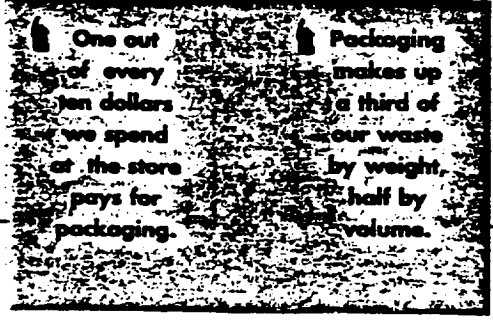
☞ **Buy recyclable.** Buy products in containers that can be recycled *in your own neighborhood:* glass, metal, aluminum foil, *rigid* plastic. Choose the products packaged most simply, preferably in a single kind of material.

☞ **Avoid plastic products labeled "degradable."** They're not necessarily recyclable, and some studies show they don't degrade.

☞ **Say "NO" to what you're not going to use.** Napkins, straws, plastic utensils, condiments — if you don't need them, leave them.

☞ **Bring along your own shopping bag,** canvas tote, or string bag, to the store.

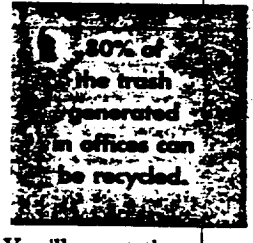
☞ **Write or call those companies that overpackage.** Let them know why you're spending your dollar elsewhere.



Are You Wasting Away At Work?

Incorporating waste prevention and reduction principles into the workplace saves on disposal costs, as well as reducing unnecessary waste.

☞ **Make double-sided copies.** You'll save file space, and reduce mailing costs. Learn how to make two-sided copies on your photocopiers, and show your colleagues. Ask for copies back-to-back when placing printing orders out of the office, especially for large jobs.



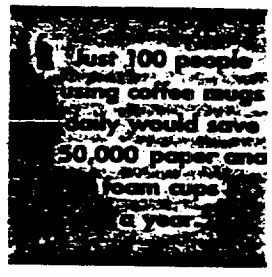
☞ **Centralize your office filing system,** and ensure common access. You'll avert the need for multiple copies in redundant files around the office.

☞ **Circulate a document** rather than making one copy for each person on the distribution list.

☞ **Post office-wide announcements** on a bulletin board or in a centrally-located binder. Electronic mail totally eliminates paper.

☞ **Don't waste paper** on tasks that can be accomplished by phone or in person.

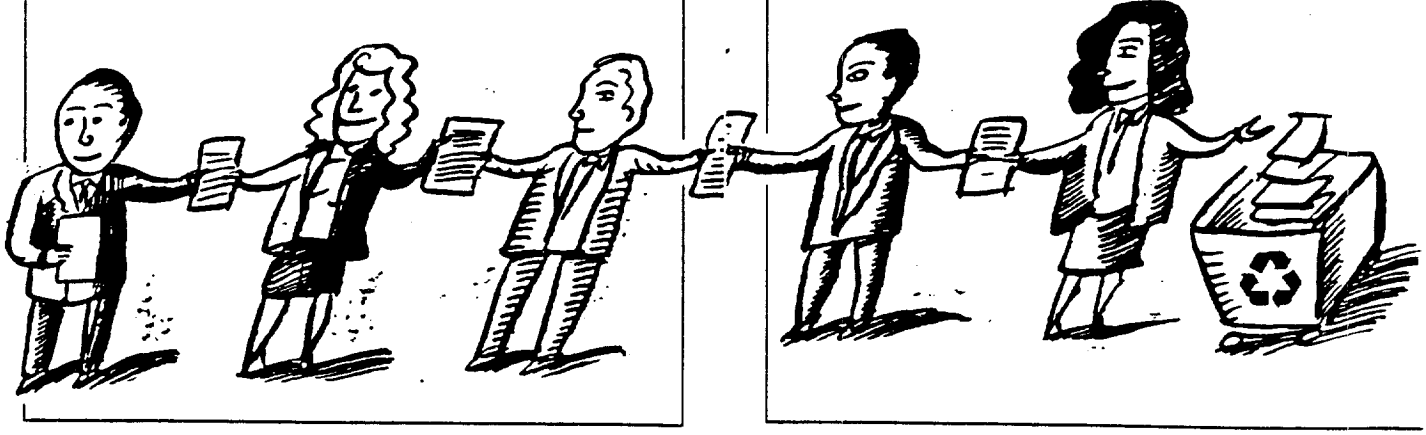
☞ **Use a coffee mug instead of disposable cups.** If you hold many meetings or special events, consider investing in reusable ware. Request caterers use reusables rather than throwaways. Ask that leftover food be donated to charities.



☞ **Check documents carefully before printing.** Use the "spell-check" feature of your word processing program, and review documents on the screen before you print. Always proofread carefully before printing multiple copies.

☞ **Make waste prevention a criterion in purchasing decisions.** Invest in equipment that is easy to repair and will last a long time; negotiate good service contracts. Refillable ink and ribbon cartridges and reusable air-conditioner filters can reduce replacement costs by half.

Circulate documents and memos rather than sending individual copies to everyone in your office.



The average office worker throws away a half pound of high-grade recyclable paper every day — over 180 pounds a year.

☞ **SAVE AND REUSE.** Save scrap paper for notes, reuse inter-office envelopes, file folders, boxes, and pallets. Donate what you don't need to schools and other institutions for art projects.

Don't waste paper on the wastepaper basket.

☞ **DONATE OLD FURNITURE AND OTHER EQUIPMENT TO CHARITIES.** Several organizations in New York City—such as Materials For The Arts — match business donations with nonprofit users.

☞ **RECYCLE YOUR OFFICE PAPER.** Substitute white paper for colored paper wherever possible: legal pads, for example. To set up an office paper recycling program, call waste paper companies listed in the Yellow Pages.

Remember to Recycle!

After you've done all you can to prevent unnecessary waste, don't just throw the rest away — remember to recycle! The following materials are currently being collected for recycling in many New York City neighborhoods:

NEWSPAPERS
MAGAZINES
CATALOGS
CORRUGATED CARDBOARD

GLASS
METAL
ALUMINUM FOIL

PLASTICS

CHRISTMAS TREES

AUTUMN LEAVES
(for compost)

WHITE OFFICE PAPER
(in many companies; ask your management)

BULK ITEMS
(large appliances, furniture, lumber)

Since the materials collected and preparation requirements vary according to building size and location, check with your superintendent or building management to find out when and how you can recycle.

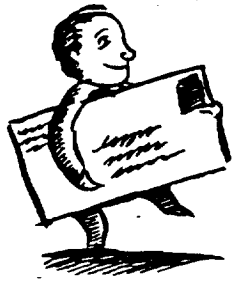
Remember, recycling is
a New York City law;
if your neighborhood recycles,
you *must* recycle or
you may receive a summons.

For more information
on New York City's
recycling programs call:

SANITATION ACTION CENTER
(212) 334-8590
weekdays, 8:30am – 4:30pm

Or write:

RECYCLING
125 WORTH STREET
NEW YORK, NY 10013



City of New York
David N. Dinkins, Mayor

Department of Sanitation
Steven M. Polan, Commissioner

Printed on recycled paper, of course.

REDUCE WASTE 1/91
Design: Art Patrol/NYC Illustrations: Robert Neubecker

Please save paper! Remove the following name from direct mail marketing lists. I understand it may take a few months for this request to make a noticeable difference in my mailbox. Thank you for your help.

COMPLETE NAME _____

Other ways my name or initials appear on mailing labels: _____

STREET ADDRESS _____ APT. #

Variations: _____

CITY _____ STATE _____ ZIP

APPENDIX 2

Excepts from the *New York City Medical Waste Management Report*

TASK 3 REPORT

FOR

NEW YORK CITY HEALTH AND HOSPITALS CORPORATION

NEW YORK CITY MEDICAL WASTE MANAGEMENT REPORT

prepared by

WASTE-TECH
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175 Pacific Street
Brooklyn, New York 11201

September 14, 1990

DRAFT

4.0 INDIVIDUAL EVALUATION OF OPTIONS

The following section describes specific management options with calculations based on a one-thousand bed hospital.

The Management Techniques evaluated in this section are highly interactive and site-specific. Therefore, all Management Techniques must be evaluated as groups of specific options in the context of an individual facility.

The purpose of this section is to provide a description and evaluation of the impacts of waste management options based on a reference facility. The staffing, labor cost, waste composition, purchasing practices, and other site specific variables for the reference facility are based on the average characteristics of HHC acute care facilities. Even within this small group of closely related facilities, there is great variability among facilities in waste handling labor costs and use of disposable items due to their very different physical facilities and many other factors.

The applicability of any option to a particular facility can only be determined after consideration of a large variety of factors unique to each institution.

4.4 PAPER TOWEL REPLACEMENT BY AIR DRYERS

OPTION DESCRIPTION: The installation of electric hand dryers in public rest rooms and all staff locker rooms has been considered as a Management Technique.

Paper towels are generated throughout a facility, however, the above locations account for an estimated 60% of paper towel generation, while requiring a relatively small number of installations.

OPTION DEVELOPMENT DESCRIPTION: The selection of locations for installation of dryers is an important consideration. The first step in the development of this option is a usage survey to determine areas of high paper towel use and the availability of power at each candidate location. This analysis assumes 100 locations and requires the purchase and installation of 120 electric hand dryers. Also required is the training and monitoring of housekeeping staff to assure that paper towels are not left in areas with electric hand dryers and training of staff in the necessity to control cost by utilizing the dryers. Development cost are based on 100 engineering hours at $50.00/hour.

FIRST YEAR DEVELOPMENT COST: $5,000

CAPITAL FACILITIES DESCRIPTION: The purchase and installation of 120 "no- touch" electric hand dryers at $209.50 each has been assumed. Installation cost have been estimated on the basis of one in-house electrician and one helper installing four dryers per day for twenty-five days. (120 dryers * $209.50 ea.) + (25 days * 15 hours per day * $15.00/hr = $30,765)

CAPITAL COST: $35,765

OPERATING AND AVOIDED COST DESCRIPTION: Operating costs include maintenance and power cost. Maintenace and replacement cost is assumed to be 5% of equipment cost. Utilities cost assume 100 uses per day per dryer, 30 seconds each use, at 500 Watts per dryer and $0.0701/Kwh, or $1,369/year.

Operating savings are the labor savings in restroom cleaning and the avoided cost of purchasing and disposal of paper towels.

4.6 FOOD SERVICE DISPOSABLES REPLACEMENT

OPTION DESCRIPTION: The elimination of disposable food service utensils and replacement with reuseable items has been considered as a Management Technique.

The items included in this analysis are disposable trays, tray covers, plates, cups, knives, forks, spoons bowls and lids. It is assumed that disposables are used in the cafeteria, along with occasional use for patient meals. A large component of disposables is catering performed by the Food Service Department within the hospital.

OPTION DEVELOPMENT DESCRIPTION: The first step required for a facility to switch to reusable products is to determine whether there is excess dishwasher capacity available. While staff may be added to an existing operation, there may not be sufficient space to permit the installation of additional dishwashing equipment.

Due to the nature of Dietary facilities, and the need to function continuously from 5am through 9pm, dinnerware cannot be kept aside for cleaning at off hours. A kitchen cannot keep sufficient stock of all dinner ware to serve three daily meals without reusing the dinnerware at each meal. For the purposes of this analysis it is assumed that the facility has the space required to install the additional equipment necessary to wash all dinner ware.

FIRST YEAR DEVELOPMENT COST: Costs related to the conversion are the purchase price of sufficient dinnerware and utensils to replace all current disposable products and the cost of new dishwashing equipment, estimated as follows:

Reusable Stock	$200,000
Dishwashing Equipment	$100,000

The cost of sufficient initial reusable stock during the first year of operations is estimated based on industry average requirements of $200 per patient bed.

CAPITAL FACILITIES DESCRIPTION: The installation of a new dishwasher with sufficient capacity to wash the increased dish load is assumed, as well as purchase of sufficient stock to begin using reusable dishes, trays and flatware

CAPITAL COST: $300,000.00

OPERATING AND AVOIDED COST DESCRIPTION: Total Food Service Waste Volume is 166,076 cubic feet per year. The disposables account for 46% of the total Food Service waste Stream. The cost for disposal was determined by the percentage of total Food Service Waste in each waste stream (RMW and NRMW) the corresponding weights were used and the disposal cost, based on product density, is calculated as $ .45 for RMW and $.028 for NRMW. Disposal costs represent the cost per lb. of waste disposed of assuming that the total volume of waste is 26% RMW and 74% NRMW. This yields the following:

NRMW	RMW
34,983 Cubic Feet/Year	12,290 Cubic Feet/Year
$ 8,198/Year	$ 38,049/Year
292,807 Pounds/Year	84,555 Pounds/Year

Other operating costs are the increased labor costs for handling reusable products (follows), replacement costs of reusables, and costs of water, electric and dishwashing chemicals (increase of one third over current expense). It is assumed that operating expense is 20% of the first year stock. Avoided costs are the purchase of disposable goods and their disposal. Current disposables cost is:

CURRENT DISPOSABLES	ANNUAL COUNT (UNITS)	ANNUAL COST (DOLLARS)	ANNUAL VOLUME (CU. FT.)
9" Plate	480,000	123,040	3,992
6" Plate	1,344,000	30,448	1,326
12z Bowl	960,000	25,670	1,042
6z Bowl	1,152,000	18,495	1,136
Tray Covers	1,152,000	27,048	1,299
5z Cups	2,880,000	27,302	7,526
Flat ware Kits	192,000	11,600	1,197
14"x18" Trays	640,000	146,880	18,666
Hinged Dish	96,000	15,758	544
Oval Dish	40,000	5,120	2,592
6z Dessert	768,000	30,720	1,019
Mugs	144,000	16,704	1,522
9z Tumbler	96,000	17,000	187
8z Cup	960,000	24,960	7,958
8z Lid	1,440,000	11,520	1,387
12zCup	960,000	27,840	3,664
12z Hot Cup	576,000	31,200	1,155
8zDisposable Mug	240,000	5,040	643
12z Lid	480,000	9,120	8,435
8z Lid	128,000	1,984	109

9"x12" Tray	200,000	20,000	2,600
Knives	800,000	6,640	298
Forks	800,000	6,360	1.002
Tea Spoons	800,000	5,800	822
Soup Spoons	160,000	1,280	216
Flatware Kits	600,000	86,400	5,299
Totals	17,384,000	$634,529	75,636

Further avoided costs include the labor cost of disposing of waste, calculated based on the overall per pound labor cost of waste disposal applied to the total weight of disposable Food Service Waste.

STAFFING REQUIREMENTS DESCRIPTION: Additional dietary workers are needed to run dishwashing equipment and collect transport and distribute the reuseable products. Labor costs are the cost of additional dietary personnel to collect , transport, clean and distribute reusable items minus the labor required to stock and distribute disposables. It was estimated that the necessary manpower for a full conversion would be 7.0 Dietary Utility Workers, and 2.0 store room workers.

OPERATING COSTS (SAVINGS) SUMMARY

PAYROLL: $225,000

DISPOSAL COST, RMW: 0

DISPOSAL COST, NRMW: 0

DISPOSAL COST, OTHER WASTE: 0

CHEMICAL AND UTILITIES COST: $4,160

OTHER SUPPLIES COST: $40,000.00

OTHER OPERATING COST: $1,760

TOTAL OPERATING COST: $ 270,920.00

AVOIDED OPERATING COST: $ 741,153.00

NET OPERATING COST (SAVINGS): ($470,233)

EXPERIENCE OR BACKGROUND: Many facilities which have moved away from reusable items did so due to the high cost of replacing reusable stock, and caring for and stocking enough reusable items to make their use convenient.

Disposables are most commonly used in cafeterias and for patients on isolation. The problems entailed in collection, cleaning, stocking and distributing reusable items in cafeteria settings cause many food service managers to switch exclusively to disposable products.

It should be noted that there are several disposable items for which there was no reusable substitute identified. Lids, tray covers and hinged dishes have no reuseable replacement, yet these items represent a large portion of the total disposables volume. It is possible to decrease disposables, without substantially increasing costs by adopting policies which eliminate some of the nonessential disposable use. Tray covers may be eliminated without a decline in service. Elimination of some of the cup covers may be considered, as well as standardizing the selection of disposables.

VOLUME REDUCTION BASIS: Volume reducion is based on current use of disposable dinnerware and flatware, as determined from purchasing data.

RMW REDUCTION: 84,555 lbs/yr 12,290 Cubic Feet/Year.

NRMW REDUCTION: 292,807 lbs/yr 34,983 Cubic Feet/Year.

OTHER WASTE REDUCTION: Corrugated boxes used for shipment of disposables would be eliminated and some reduction in plastic liners may be expected.

TOTAL VOLUME REDUCTION POTENTIAL: 377,362 Pounds/Year
42,273 Cubic Feet/Year.

IMPLEMENTATION SCHEDULE

DEVELOPMENT TIME IN MONTHS: Approximately 12 months to select, purchase, and install a dishwasher and 4 months to select and purchase stock, hire and train personnel.

INSTALLATION TIME IN MONTHS: Change over would not take place until after all the above are in place. Actual implementation would be done in one week.

TOTAL MONTHS TO IMPLEMENT: 12 to 18 months.

APPENDIX 3

Assumptions and Calculations for Waste Prevention Estimates

These estimates of the impact of waste prevention activities on the New York City waste stream were developed in a preliminary way as a means of conducting sensitivity analyses using the WastePlan computer model for New York City's solid waste management plan. It is hoped that the inferences drawn from the sensitivity analyses will provide guidance both about waste prevention strategies that will prove useful to New York and about targets for future research. Three key factors make the assumptions described below at best educated guesses:

1. A near complete absence of data - many of the strategies described in the waste prevention report have never been implemented anywhere. The few programs that have been established provide minimal guidance to New York because of differences in waste stream characteristics, demographics, program design and other variables. Compounding these difficulties, few waste prevention programs collect data in a comprehensive and sophisticated manner that would allow valid extrapolation.

2. A limited budget - waste prevention activities are likely to have interdependent and cross-cutting impacts. Efforts to reduce one type of waste may increase the generation of another. A model that could account for these interdependencies would be enormously expensive to develop and unwarranted given the dearth of data.

3. Composition data by material - data on the composition of the City's waste stream were collected by material, an approach appropriate for use in planning recycling and incineration projects. In many cases, composition data by material simply do not provide the level of detail needed to make estimates of waste prevention impacts. A composition study to support waste prevention would best be done by product type. For example, in addition to determining the total quantity of mixed paper, it would be helpful to know the amount of junk mail and flexible paper packaging, so that costs and impacts of waste prevention programs can be appropriately weighed.

As a result, the assumptions that follow may err by considerable margins. These assumptions should not be taken as estimates of likely programmatic impacts, but as rough guesses intended to appraise the scale of impact of an aggressive waste prevention program, to uncover inconsistencies and to identify important subjects for future research.

The estimate of the impact of a particular strategy was developed by considering the effect of four types of waste prevention strategies:

- advance disposal fees or related taxes (ADFs);
- the CONEG Preferred Packaging Guidelines (PPG) or similar packaging reduction initiatives;
- quantity based user fees (QBUFs) in the residential and institutional sectors and increased competition in the private carting industry leading to greater impact of existing QBUFs in the commercial sector; and
- material specific programs (MSPs) implemented by either the City, the State or the federal government.

In the face of the dearth of reliable data, estimates of the impact of waste prevention were developed using a two stage approach. First, the strategies that had affects across multiple components and sectors of the waste stream -- ADFs, packaging regulation and QBUFs -- were quantified based on existing studies and educated guesses. Second, reductions specific to particular materials or components were then estimated. For some materials, programs targeted to particular materials or waste streams will generate specific reductions such as a program to increase backyard composting. In many, if not most, cases, these reductions would be encouraged by the cross cutting strategies. For example, effective QBUFs would most likely increase participation in programs to minimize unwanted direct mail and thereby decrease the quantity of mixed waste paper in the waste stream.

For each material in the waste stream, estimates of all four types of factors are described below. To prevent double counting, the figures presented for the material-specific strategies represent estimates of reductions that might occur *above and beyond* the reductions stimulated by the cross waste stream strategies. Thus, the overall reductions in mixed waste paper reflect the combined effects of City programmatic efforts and the impact of the cross-cutting strategies. Note that the joint effect of advance disposal fees, QBUFs and packaging regulation will be less than the sum of each strategy by itself because some reductions can only "occur" once.

RESIDENTIAL WASTE STREAM

Non-Corrugated Cardboard and Newsprint
Assumptions/estimates:

- 5% reduction due to combined impact of ADFs, QBUFs and packaging reduction initiatives.

Result: 5% reduction in all three categories.

Corrugated/Kraft
Assumptions/estimates:

- 6% reduction due to combined impact of ADFs, QBUFs and packaging reduction initiatives.

Office Paper
Assumptions/estimates:

- 3% reduction due to combined impact of ADFs and QBUFs.

Results: 3% reduction in residential office paper

Magazines/Glossy
Assumptions/estimates:

Direct Mail

- 35% of magazines/glossy paper discards in residential waste comes from direct mail
- 20% of households will participate in some effort to reduce junk mail
- 40% of incoming junk mail will be reduced by participating households
- an additional 20% of junk mail through "top down" policy efforts (i.e., jawboning of industry leaders), through ADFs and impact of QBUFs on participation in direct mail reduction and through impact of increases in postal rates.

Magazines

- 65% of magazines/glossy paper discards in residential waste comes from magazines;
- 3% reduction due to ADFs and QBUFs

Result: 35% x (20% x 40% + 20%) + 65% x 3% = 11.8%

Books/Phonebooks
Assumptions/estimates:

- 5% reduction due to shift to electronic media
- 3% reduction due to ADFs and QBUFs.

Result: 5% +3% = 8%

Mixed Paper
Assumptions/estimates:

Direct Mail

- 40% of mixed paper in residences comes from non-glossy direct mail;
- 20% of households will participate in some effort to reduce junk mail
- 40% of incoming junk mail will be reduced by participating households
- an additional 20% of junk mail through "top down" policy efforts (i.e., jawboning of industry leaders), through ADFs and impact of QBUFs on participation in direct mail reduction and through impact of increases in postal rates.

Miscellaneous Paper Packaging

- 30% of mixed paper comes from miscellaneous packaging
- 5% of paper packaging will increase due to shifts to flexible packaging
- 5% of packaging will be reduced due to combined effect of ADFs, packaging reduction initiatives and QBUFs

Other Mixed Paper

- 30% of mixed paper comes from diverse other sources
- 5% will be reduced through combined effect of ADFs and QBUFs

Result: 40% x (20% x 40% + 20%) + (30% x (-5% + 5%)) + (30% x 5%) = 12.7%

HDPE, LDPE, PVC, PP, PS and Miscellaneous Plastics
Assumptions/estimates:

- 5% reduction due to combined impact of ADFs, QBUFs and packaging reduction initiatives.

Result: 5% reduction in all five categories.

Film Plastic
Assumptions/estimates:

- 20% of residential film plastic is grocery bags;
- 10% of plastic grocery bags will be re-used or replaced by durable bags;
- 30% of plastic grocery bags will be diverted from the municipal waste stream through in-store recycling programs;
- 20% increase in the remaining film plastic packaging (for non-grocery bag films)

Result: 20% x (1-(10% + 30%)) + 80% x 120% = residential film plastic will increase by 8%

Clear and Green PET
Assumptions/estimates:

- 5.0% reduction of PET due to ADFs, QBUFs and packaging reduction initiatives.

Result: 5.0% reduction of residential PET

Grass/leaves
Assumptions/estimates:

- 33% of households generating yard waste will participate (2/3s of participation in Seattle program)
- 65% of yard waste in participating households will be diverted through composting (e.g., brush & heavy debris will still be disposed by many households)
- an additional 2% reduction of yard waste due to the effect of QBUFs
- Some grass will be reduced through "leave it on the lawn" practices rather than composting which will (numerically) balance the households that compost only leaves but not grass

Result: 33% x 65% + 2% = 23.45% of residential yard waste diverted

Food Waste
Assumptions/estimates:

- 37% of households live in residences amenable to back yard composting, defined as being in low density neighborhoods according to WastePlan statistics; this includes households amenable to rooftop composting;
- 15% of such households will participate (low rate because of concern about rodents and other pests);
- 40% of food waste in participating households will be diverted through composting (e.g., meat won't be composted, etc.);
- QBUFs will generate an incremental 2% reduction through increased participation and capture rates for composting and through unrelated waste prevention activities.

Result: (37% x 15% x 40%) + 2% = 4.22% of residential food waste diverted
22%

Lumber, Textiles, Rubber, Brush/stumps, and Miscellaneous Organics
Assumptions/estimates:

- QBUFs and ADFs produce a reduction of 3% of these organic materials

Result: 3% reduction of these categories of organic wastes

Organic Fines
Assumptions/estimates:

- As a residue of other organic wastes, "fines" will decrease as the overall category of wastes is reduced.

Result: 3% reduction in organic fines

Diapers
Assumptions/estimates:

- 5% of households using disposable diapers will switch to cloth diapers in response to programmatic efforts, activist campaigns, etc.
- 70% of diapers in households that do switch will be cloth (i.e., 30% residual use of disposables for travel, etc)
- QBUFs and ADFs engender an additional 5% reduction in disposable diaper use

Result: 5% x 70% + 5% = 8.5%

Glass
Assumptions/estimates:

- 20% of container glass is liquor bottles
- 60% of liquor bottles will be captured through extension of bottle bill
- 5% reduction of non-deposit container glass (60%) due to impact of ADFs, QBUFs and packaging reduction initiatives
- 3% reduction of miscellaneous glass due to ADFs and QBUFs

Result: (20% x 60%) + (5% x 60%) = 15% of residential container glass
3% reduction of miscellaneous glass

Aluminum
Assumptions/estimates:

- QBUFs, ADFs and packaging reduction initiatives will reduce food containers/foil and miscellaneous aluminum, but shift to flexible packaging will increase foil use

Result: No change in aluminum beverage container waste generation
No net change of food containers/foil
3% reduction of miscellaneous aluminum

Other Metal
Assumptions/estimates:

- Food containers and bi-metal cans will be reduced by 5% through the combined effect of QBUFs, ADFs and packaging reduction initiatives;

- Other metal will be reduced by 3% through the combined effect of QBUFs and ADFs.

Result: 5% reduction of food containers and bi-metal can and 3% reduction of other metals.

Inorganics
Assumptions/estimates:

- Ceramics and miscellaneous inorganics will be reduced by 3% due to effect of QBUFs and ADFs.

Result: 3% reduction of ceramics and miscellaneous inorganics.

Household Hazardous Wastes
Assumptions/estimates:

- household hazardous wastes will decline by 3% due to the impact of ADFs and QBUFs
- car batteries will decline by 20% due to the impact of deposits
- dry cell batteries will decline in toxicity

Result: 3% reduction of household hazardous wastes
20% additional decline in car batteries

Bulk Trash
Assumptions/estimates:

- 10% additional diversion due to increased activity of Good Will, etc. and improved functioning of DOS self help bulk drop-off (rate is low because it is assumed that much of additional materials directed to Good Will will not be salvageable).
- 1.0% reduction of bulk trash due to ADFs

Result: 10% + 1% = 11% of residential bulk trash is reduced or re-used.

INSTITUTIONAL WASTE STREAM

Corrugated/Kraft
Assumptions/estimates:

- 12% elimination or substitution to shrink wrap & other film plastic
- 2% re-use or re-design containers
- 3% additional reduction due to impact of QBUFs, ADFs and packaging reduction initiatives

Result: 12% + 2% + 3% = 17%

Newsprint
Assumptions/estimates:

- 5% reduction due to combined impact of ADFs and QBUFs.

Result: 5% reduction in waste newsprint.

Office Paper
Assumptions/estimates:

- 26% reduction of photocopy waste through 2x copying and reduction in number of copies made
- 45% of office paper is photocopy waste
- 5% reduction of computer paper (includes laser printout) through re-use and duplex printing
- 35% of office paper is computer printout
- additional 2% reduction of office paper through shared memos, centralized filing systems
- 3% incremental reduction due to impact of QBUFs and ADFs

Result: (26% x 45%) + (5% x 35%) + 2% + 3% = 18.45%

Magazines/Glossy
Assumptions/estimates:

Direct Mail

- 35% of glossy paper discards in institutional waste come from direct mail
- 20% of institutions will participate in some effort to reduce junk mail
- 40% of incoming junk mail will be reduced by participating institutions
- an additional 20% of junk mail through "top down" policy efforts (i.e., jawboning of industry leaders), through ADFs and impact of QBUFs on participation in direct mail reduction and through impact of increases in postal rates.

Magazines

- 65% of magazines/glossy paper discards in institutional waste comes from magazines;
- 3% reduction due to ADFs and QBUFs

Result: 35% x (20% x 40% + 20%) + 65% x 3% = 11.8%

Books/Phonebooks
Assumptions/estimates:

- 5% reduction due to shift to electronic media
- 3% reduction due to ADFs, and QBUFs.

Result: 5% +3% = 8%

Non-Corrugated Cardboard
Assumptions/estimates:

- 10% substitution to shrink wrap & other film plastic
- 5% additional reduction due to combined impact of QBUFs, ADFs and packaging reduction initiatives

Result: 15% reduction in non-corrugated cardboard

Mixed Paper
Assumptions/estimates:

Direct Mail

- 50% of mixed paper in institutions comes from non-glossy direct mail;
- 20% of institutions will participate in some effort to reduce junk mail
- 40% of incoming junk mail will be reduced by participating households
- an additional 20% of junk mail through "top down" policy efforts (i.e., jawboning of industry leaders), through ADFs and impact of QBUFs on participation in direct mail reduction and through impact of increases in postal rates.

Miscellaneous Paper Packaging

- 25% of mixed paper comes from miscellaneous packaging
- 5% of paper packaging will increase due to shifts to flexible packaging
- 5% of packaging will be reduced due to combined effect of ADFs, packaging reduction initiatives and QBUFs

Other Mixed Paper

- 25% of mixed paper comes from diverse other sources
- 3% will be reduced through combined effect of ADFs and QBUFs

Result: 50% x (20% x 40% + 20%) + (25% x (-5% + 5%)) + (25% x 3%) = 14.8%

HDPE, LDPE, PVC, PP, PS and Miscellaneous Plastics
Assumptions/estimates:

- 5% reduction due to combined impact of ADFs, QBUFs and packaging reduction initiatives.

Result: 5% reduction in all five categories.

Film Plastic
Assumptions/estimates:

- 5% of institutional film plastic is delivery bags;
- 25% of plastic delivery bags will be re-used or replaced by durable bags;
- 20% increase in remaining film plastic packaging (for non-delivery bag films)

Result: 5% x (1-25%)) + 95% x 120% = 17.75% increase in institutional film plastic

Clear and Green PET
Assumptions/estimates:

- 5% reduction of PET due to ADFs, QBUFs and packaging reduction initiatives.

Result: 5% reduction of institutional PET

Grass/leaves
Assumptions/estimates:

- 25% of institutions generating yard waste will participate
- 75% of yard waste in participating institutions will be diverted through composting (e.g., brush & heavy debris will still be disposed by many institutions)
- Some grass will be reduced through "leave it on the lawn" practices rather than composting which will (numerically) balance the institutions that compost only leaves but not grass
- an additional 2% reduction of yard waste due to the effect of QBUFs

Result: 25% x 75% + 2% = 20.75% of institutional yard waste diverted

Lumber, Textiles, Rubber, Brush/stumps, and Miscellaneous Organics
Assumptions/estimates:

- QBUFs and ADFs produce a reduction of 3% of these organic materials

Result: 3% reduction of these categories of organic wastes

Diapers
Assumptions/estimates:

- QBUFs and ADFs engender an 5% reduction in disposable diaper use
- 5% of institutions using disposable diapers will switch to cloth diapers
- 80% of diapers in institutions that do switch will be cloth (i.e., 20% residual use of disposables for special cases, etc)

Result: 5% x 80% + 5% = 9%

Food Waste
Assumptions/estimates:

- 20% of institutions occupy buildings amenable to on-site composting;
- 15% of such institutions will participate (low rate because of concern about rodents and other pests);
- 40% of food waste in participating institutions will be diverted through composting (e.g., meat won't be composted, etc.);
- QBUFs will generate an incremental 2% reduction through increased participation and capture rates for composting and through unrelated waste prevention activities.

Result: (20% x 15% x 40%)+ 2% = 3.2% of institutional food waste diverted

Organic Fines
Assumptions/estimates:

- As a residue of other organic wastes, "fines" will decrease as the overall category of wastes is reduced.

Result: 3% reduction in organic fines

Glass
Assumptions/estimates:

- 20% of container glass is liquor bottles
- 60% of liquor bottles will be captured through extension of bottle bill
- 5% reduction of non-deposit container glass (60%) due to impact of ADFs, QBUFs and packaging reduction initiatives
- 3% reduction of miscellaneous glass due to ADFs and QBUFs

Result: (20% x 60%) + (5% x 60%) = 15% of institutional container glass
3% reduction of miscellaneous glass

Aluminum
Assumptions/estimates:

- QBUFs, ADFs and packaging reduction initiatives will reduce food containers/foil and miscellaneous aluminum, but shift to flexible packaging will increase foil use

Result: No change in aluminum beverage container waste generation
No net change of food containers/foil
3% reduction of miscellaneous aluminum

Other Metal
Assumptions/estimates:

- Food containers and bi-metal cans will be reduced by 5% through the combined effect of QBUFs, ADFs and packaging reduction initiatives;

- Other metal will be reduced by 3% through the combined effect of QBUFs and ADFs.

Result: 5% reduction of food containers and bi-metal can and 3% reduction of other metals.

Inorganics
Assumptions/estimates:

- Ceramics and miscellaneous inorganics will be reduced by 3% due to effect of QBUFs and ADFs.

Result: 3% reduction of ceramics and miscellaneous inorganics.

"Household" Hazardous Wastes
Assumptions/estimates:

- "household" hazardous wastes will decline by 3% due to the impact of ADFs and QBUFs
- car batteries will decline by 20% due to the impact of deposits
- dry cell batteries will decline in toxicity

Result: 3% reduction of "household" hazardous wastes
20% additional decline in car batteries

Bulk Trash
Assumptions/estimates:

- 10% additional diversion due to increased activity of programs similar to Material for the Arts and to Good Will, etc. (rate is low because it is assumed that much of additional donated material will not be salvageable).
- 1.0% reduction of bulk trash due to ADFs

Result: 10% + 1% = 11% of institutional bulk trash is reduced or re-used.

COMMERCIAL/INDUSTRIAL WASTE STREAM

Corrugated/Kraft
Assumptions/estimates:

- 12% substitution to shrink wrap & other film plastic
- 2% re-use or re-designed containers
- 3% additional reduction due to impact of QBUFs, ADFs and packaging reduction initiatives

Result: 12% + 2% + 3% = 17%

Newsprint
Assumptions/estimates:

- 5% reduction due to combined impact of ADFs and QBUFs.

Result: 5% reduction in waste newsprint.

Office Paper
Assumptions/estimates:

- 26% reduction of photocopy waste through 2x copying and reduction in number of copies made
- 45% of office paper is photocopy waste
- 5% reduction of computer paper (includes laser printout) through re-use and duplex printing
- 35% of office paper is computer printout
- additional 2% reduction of office paper through shared memos, centralized filing systems
- 3% incremental reduction due to impact of QBUFs and ADFs

Result: (26% x 45%) + (5% x 35%) + 2% + 3% = 18.45%

Magazines/Glossy
Assumptions/estimates:

Direct Mail

- 35% of glossy paper discards in commercial waste come from direct mail
- 20% of businesses will participate in some effort to reduce junk mail
- 40% of incoming junk mail will be reduced by participating businesses
- an additional 20% of junk mail through "top down" policy efforts (i.e., jawboning of industry leaders), through ADFs and impact of QBUFs on participation in direct mail reduction and through impact of increases in postal rates.

Magazines

- 65% of magazines/glossy paper discards in commercial waste comes from magazines;
- 3% reduction due to ADFs and QBUFs

Result: 35% x (20% x 40% + 20%) + 65% x 3% = 11.8%

Books/Phonebooks
Assumptions/estimates:

- 5% reduction due to shift to electronic media
- 3% reduction due to ADFs, and QBUFs.

Result: 5% +3% = 8%

Non-Corrugated Cardboard
Assumptions/estimates:

- 10% substitution to shrink wrap & other film plastic
- 5% additional reduction due to combined impact of QBUFs, ADFs and packaging reduction initiatives

Result: 15% reduction in non-corrugated cardboard

Mixed Paper
Assumptions/estimates:

Direct Mail

- 50% of mixed paper in businesses comes from non-glossy direct mail;
- 20% of businesses will participate in some effort to reduce junk mail
- 40% of incoming junk mail will be reduced
- an additional 20% of junk mail through "top down" policy efforts (i.e., jawboning of industry leaders), through ADFs and impact of QBUFs on participation in direct mail reduction and through impact of increases in postal rates.

Miscellaneous Paper Packaging

- 25% of mixed paper comes from miscellaneous packaging
- 5% of paper packaging will increase due to shifts to flexible packaging
- 5% of packaging will be reduced due to combined effect of ADFs, packaging reduction initiatives and QBUFs

Other Mixed Paper

- 25% of mixed paper comes from diverse other sources
- 3% will be reduced through combined effect of ADFs and QBUFs

Result: 50% x (20% x 40% + 20%) + (25% x (-5% +5%)) + (25% x 3%) = 14.8%

HDPE, LDPE, PVC, PP, PS and Miscellaneous Plastics
Assumptions/estimates:

- 5% reduction due to combined impact of ADFs, QBUFs and packaging reduction initiatives.

Result: 5% reduction in all five categories.

Film Plastic
Assumptions/estimates:

- 5% of commercial film plastic is delivery bags;
- 25% of plastic delivery bags will be re-used or replaced by durable bags;
- 20% increase in film plastic packaging (for non-delivery bag films)

Result: 5% x (1-25%)) + 95% x 120% = 17.75% increase in institutional film plastic

Clear and Green PET
Assumptions/estimates:

- 5% reduction of PET due to ADFs, QBUFs and packaging reduction initiatives.

Result: 5% Reduction of commercial PET

Grass/leaves
Assumptions/estimates:

- 25% of businesses generating yard waste will participate
- 75% of yard waste in participating businesses will be diverted through composting (e.g., brush & heavy debris will still be disposed by many businesses)
- Some grass will be reduced through "leave it on the lawn" practices rather than composting which will (numerically) balance the businesses that compost only leaves but not grass
- an additional 2% reduction of yard waste due to the effect of QBUFs

Result: 25% x 75% + 2% = 20.75% of commercial yard waste diverted

Lumber, Textiles, Rubber, Brush/stumps, and Miscellaneous Organics
Assumptions/estimates:

- QBUFs and ADFs produce a reduction of 3% of these organic materials

Result: 3% reduction of these categories of organic wastes

Organic Fines
Assumptions/estimates:

- As a residue of other organic wastes, "fines" will decrease as the overall category of wastes is reduced.

Result: 3% reduction in organic fines

Diapers
Assumptions/estimates:

- QBUFs and ADFs engender an 5% reduction in disposable diaper use
- 5% of businesses using disposable diapers will switch to cloth diapers
- 80% of diapers in businesses that do switch will be cloth (i.e., 20% residual use of disposables for special cases, etc)

Result: 5% x 80% + 5% = 9%

Food Waste
Assumptions/estimates:

- 20% of businesses occupy buildings amenable to on-site composting;
- 15% of such businesses will participate (low rate because of concern about rodents and other pests);
- 40% of food waste in participating businesses will be diverted through composting (e.g., meat won't be composted, etc.);
- QBUFs will generate an incremental 2% reduction through increased participation and capture rates for composting and through unrelated waste prevention activities.

Result: (20% x 15% x 40%) + 2% = 3.2% of commercial food waste diverted

Glass
Assumptions/estimates:

- 20% of container glass is liquor bottles
- 60% of liquor bottles will be captured through extension of bottle bill
- 5% reduction of non-deposit container glass (60%) due to impact of ADFs, QBUFs and packaging reduction initiatives
- 3% reduction of miscellaneous glass due to ADFs and QBUFs

Result: (20% x 60%) + (5% x 60%) = 15% of commercial container glass
3% reduction of miscellaneous glass

Aluminum
Assumptions/estimates:

- QBUFs, ADFs and packaging reduction initiatives will reduce food containers/foil and miscellaneous aluminum, but shift to flexible packaging will increase foil use

Result: No change in aluminum beverage container waste generation
No net change of food containers/foil
3% reduction of miscellaneous aluminum

Other Metal
Assumptions/estimates:

- Food containers and bi-metal cans will be reduced by 5% through the combined effect of QBUFs, ADFs and packaging reduction initiatives;
- Other metal will be reduced by 3% through the combined effect of QBUFs and ADFs.

Result: 5% reduction of food containers and bi-metal can and 3% reduction of other metals.

Inorganics
Assumptions/estimates:

- Ceramics and miscellaneous inorganics will be reduced by 3% due to effect of QBUFs and ADFs.

Result: 3% reduction of ceramics and miscellaneous inorganics.

"Household" Hazardous Wastes
Assumptions/estimates:

- "household" hazardous wastes will decline by 3% due to the impact of ADFs and QBUFs
- car batteries will decline by 20% due to the impact of deposits
- dry cell batteries will decline in toxicity

Result: 3% reduction of "household" hazardous wastes
20% additional decline in car batteries

Bulk Trash
Assumptions/estimates:

- 10% additional diversion due to increased activity of programs similar to Material for the Arts and to Good Will, etc. (rate is low because it is assumed that much of additional donated will not be salvageable).
- 1.0% reduction of bulk trash due to ADFs

Result: 10% + 1% = 11% of commercial bulk trash is reduced or re-used.

NYC Solid Waste Generation and Composition, in Tons							
	Residential		Institutional		Comm./Ind. (1)		Total
PAPER	1,074,116		523,436		1,732,163		
Corrugated/Kraft		150,644		87,158		650,600	888,402
Newsprint		306,263		104,957		187,331	598,551
Office/Computer		32,559		82,352		329,396	444,307
Magazines/Glossy		92,141		12,975		28,615	133,731
Books/Phonebooks		55,545		6,252		0	61,797
Non-Corr. Cardboard		84,187		14,919		0	99,106
Mixed Paper		352,777		214,823		536,221	1,103,821
PLASTICS	302,940		60,314		273,118		
Clear HDPE		23,893		1,391		20,584	45,868
Colored HDPE		24,685		1,288		23,657	49,630
LDPE		5,612		331		0	5,943
Films & Bags		147,948		29,795		100,890	278,633
Green PET		4,741		284		5,096	10,121
Clear PET		19,759		972		17,098	37,829
PVC		9,315		333		0	9,648
Polypropylene		7,290		508		0	7,798
Polystyrene		20,313		8,486		0	28,799
Miscellaneous		39,384		16,926		105,793	162,103
ORGANICS	1,324,239		186,663		1,130,815		
Grass		170,018		37,391		0	207,409
Brush/Stumps		24,826		31,283		82,778	138,887
Lumber		69,106		5,510		0	74,616
Textiles		152,993		13,977		251,430	418,400
Rubber		65,223		1,303		0	66,526
Fines		75,418		9,126		126,609	211,153
Diapers		110,960		15,471		0	126,431
Food Waste		401,793		47,422		372,908	822,123
Miscellaneous		253,902		25,180		297,090	576,172
GLASS	164,183		20,848		133,412		
Clear Glass		94,422		8,467		0	102,889
Green Glass		34,141		2,065		0	36,206
Brown Glass		27,763		1,225		0	28,988
Miscellaneous Glass		7,857		9,091		133,412	150,360
ALUMINUM	31,673		7,565		19,382		
Food Containers/Foil		17,623		1,637		0	19,260
Beverage Cans		9,843		2,311		0	12,154
Miscellaneous Alum		4,207		3,617		19,382	27,206
METAL	128,392		24,133		108,712		
Food Containers		63,662		7,154		0	70,816
Other		64,131		16,930		108,712	189,773
Bi-Metal Cans		599		49		0	648
INORGANICS	67,464		11,358		1,560		
Ceramics		4,780		309		0	5,089
Miscellaneous		62,684		11,049		1,560	75,293
HAZARDOUS	12,332		2,797		7,437		
Pesticides		343		29		0	372
Non-Pesticide Poisons		670		24		0	694
Paint		5,561		249		0	5,810
Dry Cells		695		376		0	1,071
Medical Waste		804		822		0	1,626
Car Batteries		1,233		10		0	1,243
Miscellaneous		3,026		1,287		7,437	11,750
BULK	331,996	331,996	12,057	12,057		0	344,053
TOTAL		3,437,335		849,171		3,406,599	7,693,105
		44.7%		11.0%		44.3%	

Potential for Reduction in Residential Waste Stream									
	Tons Before Reduction		% of Res	% Red fr	% Red fr	% Red fr	% Red fr	Sum Pot'l	% Red of
	(1990)		Sector	ADFs	PPG	QBUFs	MSPs	For Red	Total WS
PAPER	1,074,116								
Corrugated/Kraft		150,644	4.4%	1.0%	3.0%	2.0%		6.0%	0.12%
Newsprint		306,263	8.9%	1.0%		4.0%		5.0%	0.20%
Office/Computer		32,559	0.9%	1.0%		2.0%		3.0%	0.01%
Magazines/Glossy		92,141	2.7%	1.0%		2.0%	8.8%	11.8%	0.14%
Books/Phonebooks		55,545	1.6%	1.0%		2.0%	5.0%	8.0%	0.06%
Non-Corr. Cardboard		84,187	2.4%	1.0%	2.0%	2.0%		5.0%	0.05%
Mixed Paper		352,777	10.3%	1.0%	2.0%	2.0%	7.7%	12.7%	0.58%
PLASTICS	302,940								
Clear HDPE		23,893	0.7%	1.0%	2.0%	2.0%		5.0%	0.02%
Colored HDPE		24,685	0.7%	1.0%	2.0%	2.0%		5.0%	0.02%
LDPE		5,612	0.2%	1.0%	2.0%	2.0%		5.0%	0.00%
Films & Bags		147,948	4.3%				-8.0%	-8.0%	-0.15%
Green PET		4,741	0.1%	1.0%	2.0%	2.0%		5.0%	0.00%
Clear PET		19,759	0.6%	1.0%	2.0%	2.0%		5.0%	0.01%
PVC		9,315	0.3%	1.0%	2.0%	2.0%		5.0%	0.01%
Polypropylene		7,290	0.2%	1.0%	2.0%	2.0%		5.0%	0.00%
Polystyrene		20,313	0.6%	1.0%	2.0%	2.0%		5.0%	0.01%
Miscellaneous		39,384	1.1%	1.0%	2.0%	2.0%		5.0%	0.03%
ORGANICS	1,324,239								
Grass/Leaves		170,018	4.9%			2.0%	21.5%	23.5%	0.52%
Brush/Stumps		24,826	0.7%			3.0%		3.0%	0.01%
Lumber		69,106	2.0%	1.0%		2.0%		3.0%	0.03%
Textiles		152,993	4.5%	1.0%		2.0%		3.0%	0.06%
Rubber		65,223	1.9%	1.0%		2.0%		3.0%	0.03%
Fines		75,418	2.2%				3.0%	3.0%	0.03%
Diapers		110,960	3.2%	3.0%		2.0%	3.5%	8.5%	0.12%
Food Waste		401,793	11.7%			2.0%	2.2%	4.2%	0.22%
Miscellaneous		253,902	7.4%		1.0%	2.0%		3.0%	0.10%
GLASS	164,183								
Clear Glass		94,422	2.7%	0.6%	1.2%	1.2%	12.0%	15.0%	0.18%
Green Glass		34,141	1.0%	0.6%	1.2%	1.2%	12.0%	15.0%	0.07%
Brown Glass		27,763	0.8%	0.6%	1.2%	1.2%	12.0%	15.0%	0.05%
Miscellaneous Glass		7,857	0.2%	1.0%		2.0%		3.0%	0.00%
ALUMINUM	31,673								
Food Containers/Foil		17,623	0.5%	1.0%	2.0%	2.0%	-5.0%	0.0%	0.00%
Beverage Cans		9,843	0.3%					0.0%	0.00%
Miscellaneous Alum		4,207	0.1%	1.0%		2.0%		3.0%	0.00%
METAL	128,392								
Food Containers		63,662	1.9%	1.0%	2.0%	2.0%		5.0%	0.04%
Other		64,131	1.9%	1.0%		2.0%		3.0%	0.03%
Bi-Metal Cans		599	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
INORGANICS	67,464								
Ceramics		4,780	0.1%	1.0%		2.0%		3.0%	0.00%
Miscellaneous		62,684	1.8%	1.0%		2.0%		3.0%	0.02%
HAZARDOUS	12,332								
Pesticides		343	0.0%	1.0%		2.0%		3.0%	0.00%
Non-Pesticide Poisons		670	0.0%	1.0%		2.0%		3.0%	0.00%
Paint		5,561	0.2%	1.0%		2.0%		3.0%	0.00%
Dry Cells		695	0.0%	1.0%		2.0%		3.0%	0.00%
Medical Waste		804	0.0%	1.0%		2.0%		3.0%	0.00%
Car Batteries		1,233	0.0%	1.0%		2.0%	20.0%	23.0%	0.00%
Miscellaneous		3,026	0.1%	1.0%		2.0%		3.0%	0.00%
BULK	99,412	331,996		1.0%			10.0%	11.0%	0.47%
TOTAL		3,437,335	100.0%		Net Reduction of Res'l Waste Stream:				6.95%
Percent of Total WS		44.7%			Net Reduction of Total Waste Stream:				3.11%
Red'n due to ADFs		1.0%							
Red'n due to QBUFs		2.0%							
ADF: Advance Disposal Fee or similar tax			PPG: Preferred Packaging Guideline or similar packaging reduction initiative						
QBUF: Quantity-based User Fee			MSP: Material Specific Strategy						

Potential for Reduction in Institutional Sector									
	Tons Before Reduction		% of Inst	% Red fr	% Red fr	% Red fr	% Red fr	Sum Pot'l	% Red of
	(1990)		Sector	ADFs	PPG	QBUFs	MSPs	For Red	Total WS
PAPER	523,436								
Corrugated/Kraft		87,158	10.3%	1.0%	2.0%	2.0%	12.0%	17.0%	0.19%
Newsprint		104,957	12.4%	1.0%		4.0%		5.0%	0.07%
Office/Computer		82,352	9.7%	1.0%		2.0%	15.5%	18.5%	0.20%
Magazines/Glossy		12,975	1.5%	1.0%		2.0%	8.8%	11.8%	0.02%
Books/Phonebooks		6,252	0.7%	1.0%		2.0%	5.0%	8.0%	0.01%
Non-Corr. Cardboard		14,919	1.8%	1.0%	2.0%	2.0%	10.0%	15.0%	0.03%
Mixed Paper		214,823	25.3%	1.0%	0.5%	2.0%	11.3%	14.8%	0.41%
PLASTICS	60,314								
Clear HDPE		1,391	0.2%	1.0%	2.0%	2.0%		5.0%	0.00%
Colored HDPE		1,288	0.2%	1.0%	2.0%	2.0%		5.0%	0.00%
LDPE		331	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
Films & Bags		29,795	3.5%				-17.8%	-17.8%	-0.07%
Green PET		284	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
Clear PET		972	0.1%	1.0%	2.0%	2.0%		5.0%	0.00%
PVC		333	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
Polypropylene		508	0.1%	1.0%	2.0%	2.0%		5.0%	0.00%
Polystyrene		8,486	1.0%	1.0%	2.0%	2.0%		5.0%	0.01%
Miscellaneous		16,926	2.0%	1.0%	2.0%	2.0%		5.0%	0.01%
ORGANICS	186,663								
Grass/Leaves		37,391	4.4%			2.0%	18.8%	20.8%	0.10%
Brush/Stumps		31,283	3.7%			2.0%		2.0%	0.01%
Lumber		5,510	0.6%	1.0%		2.0%		3.0%	0.00%
Textiles		13,977	1.6%	1.0%		2.0%		3.0%	0.01%
Rubber		1,303	0.2%	1.0%		2.0%		3.0%	0.00%
Fines		9,126	1.1%				3.0%	3.0%	0.00%
Diapers		15,471	1.8%	3.0%		2.0%	4.0%	9.0%	0.02%
Food Waste		47,422	5.6%			2.0%	1.2%	3.2%	0.02%
Miscellaneous		25,180	3.0%	1.0%		2.0%		3.0%	0.01%
GLASS	20,848								
Clear Glass		8,467	1.0%	0.6%	1.2%	1.2%	12.0%	15.0%	0.02%
Green Glass		2,065	0.2%	0.6%	1.2%	1.2%	12.0%	15.0%	0.00%
Brown Glass		1,225	0.1%	0.6%	1.2%	1.2%	12.0%	15.0%	0.00%
Miscellaneous Glass		9,091	1.1%	1.0%		2.0%		3.0%	0.00%
ALUMINUM	7,565								
Food Containers/Foil		1,637	0.2%	1.0%	2.0%	2.0%	-5.0%	0.0%	0.00%
Beverage Cans		2,311	0.3%					0.0%	0.00%
Miscellaneous Alum		3,617	0.4%	1.0%		2.0%		3.0%	0.00%
METAL	24,133								
Food Containers		7,154	0.8%	1.0%	2.0%	2.0%		5.0%	0.00%
Other		16,930	2.0%	1.0%		2.0%		3.0%	0.01%
Bi-Metal Cans		49	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
INORGANICS	11,358								
Ceramics		309	0.0%	1.0%		2.0%		3.0%	0.00%
Miscellaneous		11,049	1.3%	1.0%		2.0%		3.0%	0.00%
HAZARDOUS	2,797								
Pesticides		29	0.0%	1.0%		2.0%		3.0%	0.00%
Non-Pesticide Poisons		24	0.0%	1.0%		2.0%		3.0%	0.00%
Paint		249	0.0%	1.0%		2.0%		3.0%	0.00%
Dry Cells		376	0.0%	1.0%		2.0%		3.0%	0.00%
Medical Waste		822	0.1%	1.0%		2.0%		3.0%	0.00%
Car Batteries		10	0.0%	1.0%		2.0%		3.0%	0.00%
Miscellaneous		1,287	0.2%	1.0%		2.0%		3.0%	0.00%
BULK	15,764	12,057	1.4%	1.0%		2.0%	8.0%	11.0%	0.02%
TOTAL		849,171	100.0%		Net Reduction of Institutional Waste Strea				10.03%
Percent of Total WS		11.0%			Net Reduction of Total Waste Stream:				1.11%
Red'n due to ADFs		1.0%							
Red'n due to QBUFs		2.0%							
ADF: Advance Disposal Fee or similar tax			PPG: Preferred Packaging Guideline or similar packaging reduction initiative						
QBUF: Quantity-based User Fee			MSP: Material Specific Strategy						

Potential for Reduction in Commercial/Industrial Sector									
	Tons Before Reduction		% of Comm	% Red fr	% Red fr	% Red fr	% Red fr	Sum Pot'l	% Red of
	(1990)		Sector	ADFs	PPG	QBUFs	MSPs	For Red	Total WS
PAPER	1,732,163								
Corrugated/Kraft		650,600	19.1%	1.0%	2.0%	2.0%	12.0%	17.0%	1.44%
Newsprint		187,331	5.5%	1.0%		4.0%		5.0%	0.12%
Office/Computer		329,396	9.7%	1.0%		2.0%	15.5%	18.5%	0.79%
Magazines/Glossy		28,615	0.8%	1.0%		2.0%	8.8%	11.8%	0.04%
Books/Phonebooks		0	0.0%	1.0%		2.0%	5.0%	8.0%	0.00%
Non-Corr. Cardboard		0	0.0%	1.0%	2.0%	2.0%	10.0%	15.0%	0.00%
Mixed Paper		536,221	15.7%	1.0%	0.5%	2.0%	11.3%	14.8%	1.03%
PLASTICS	273,118								
Clear HDPE		20,584	0.6%	1.0%	2.0%	2.0%		5.0%	0.01%
Colored HDPE		23,657	0.7%	1.0%	2.0%	2.0%		5.0%	0.02%
LDPE		0	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
Films & Bags		100,890	3.0%				-17.8%	-17.8%	-0.23%
Green PET		5,096	0.1%	1.0%	2.0%	2.0%		5.0%	0.00%
Clear PET		17,098	0.5%	1.0%	2.0%	2.0%		5.0%	0.01%
PVC		0	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
Polypropylene		0	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
Polystyrene		0	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
Miscellaneous		105,793	3.1%	1.0%	2.0%	2.0%		5.0%	0.07%
ORGANICS	1,130,815								
Grass/Leaves		0	0.0%			2.0%	18.8%	20.8%	0.00%
Brush/Stumps		82,778	2.4%			2.0%	1.0%	3.0%	0.03%
Lumber		0	0.0%	1.0%		2.0%		3.0%	0.00%
Textiles		251,430	7.4%	1.0%		2.0%		3.0%	0.10%
Rubber		0	0.0%	1.0%		2.0%		3.0%	0.00%
Fines		126,609	3.7%				3.0%	3.0%	0.05%
Diapers		0	0.0%	3.0%		2.0%	4.0%	9.0%	0.00%
Food Waste		372,908	10.9%			2.0%	1.2%	3.2%	0.16%
Miscellaneous		297,090	8.7%	1.0%		2.0%		3.0%	0.12%
GLASS	133,412								
Clear Glass		0	0.0%	0.6%	1.2%	1.2%	12.0%	15.0%	0.00%
Green Glass		0	0.0%	0.6%	1.2%	1.2%	12.0%	15.0%	0.00%
Brown Glass		0	0.0%	0.6%	1.2%	1.2%	12.0%	15.0%	0.00%
Miscellaneous Glass		133,412	3.9%	1.0%		2.0%		3.0%	0.05%
ALUMINUM	19,382								
Food Containers/Foil		0	0.0%	1.0%	2.0%	2.0%	-5.0%	0.0%	0.00%
Beverage Cans		0	0.0%					0.0%	0.00%
Miscellaneous Alum		19,382	0.6%	1.0%		2.0%		3.0%	0.01%
METAL	108,712								
Food Containers		0	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
Other		108,712	3.2%	1.0%		2.0%		3.0%	0.04%
Bi-Metal Cans		0	0.0%	1.0%	2.0%	2.0%		5.0%	0.00%
INORGANICS	1,560								
Ceramics		0	0.0%	1.0%		2.0%		3.0%	0.00%
Miscellaneous		1,560	0.0%	1.0%		2.0%		3.0%	0.00%
HAZARDOUS	7,437								
Pesticides		0	0.0%	1.0%		2.0%		3.0%	0.00%
Non-Pesticide Poisons		0	0.0%	1.0%		2.0%		3.0%	0.00%
Paint		0	0.0%	1.0%		2.0%		3.0%	0.00%
Dry Cells		0	0.0%	1.0%		2.0%		3.0%	0.00%
Medical Waste		0	0.0%	1.0%		2.0%		3.0%	0.00%
Car Batteries		0	0.0%	1.0%		2.0%		3.0%	0.00%
Miscellaneous		7,437	0.2%	1.0%		2.0%		3.0%	0.00%
BULK	0	0	0.0%	1.0%		2.0%	8.0%	11.0%	0.00%
TOTAL		3,406,599	100.0%		Net Reduction of Commercial Waste Stre				8.71%
Percent of Total WS		44.3%			Net Reduction of Total Waste Stream:				3.86%
Red'n due to ADFs	1.0%								
Red'n due to QBUFs	2.0%								
ADF: Advance Disposal Fee or similar tax			PPG: Preferred Packaging Guideline or similar packaging reduction initiativ						
QBUF: Quantity-based User Fee			MSP: Material Specific Strategy						

APPENDIX 4

Manhattan Citizen's Solid Waste Advisory Board (MCSWAB)
List of Reduction Initiatives for Modeling in DOS Waste Plan

Volume - Related Initiatives

1. To discourage overpackaging, require manufacturers to include product/package ratio (by volume) on the label and a requirement that no product have more than 10% packaging by volume.

2*. To discourage waste generation in general, institute variable waste disposal charges for residential, commercial and institutional waste. Charge institutions, homeowners and individual tenants (model various linearly increasing fee structures) for special bags (containing no toxic precursors) for nonrecyclables. Issue, free of charge, other, distinctive bags for collecting recyclables. Also require that these extra bags in the waste stream be removed from the waste stream and recycled by the supplier of these bags (or his agent) at his cost and benefit as part of his contract with the municipality.

3*. Institute variable waste disposal charges by means of tags and stickers, sold to landlords, homeowners, and institutions and a requirement of specific size reusable containers.

4. To educate consumers about the true costs of packaging (and probably direct them towards less substantial packaging) require that, for each consumer product, the percentage of total cost which is accounted for by packaging be displayed on the package.

5*. Prohibit the sale of food in disposable packaging and with disposable cutlery and condiments in individual packages and paper napkins) if the food is to be consumed on the premises.

6*. Impose a five cent tax on bags given out at retail establishments, require signs alerting customers to this, and require that reusable bags be sold.

7*. Alternatively, give retail customers a 5 cent discount for using their own bag (shopping bags, cleaning bags, et. al.) or a reusable box which is offered for sale for 45 cents.

8. Require, or alternatively provide tax incentives for large retailers to make applicable products (e.g., grains, detergents, liquid, etc...) available in bulk.

9*. Require, or alternatively provide tax incentives for retailers providing a minimum percentage of retail shelf space to be set aside for products in fillable/returnable packaging -- this could be expanded to include bulk packaged products and concentrates. (This has also be proposed by a New Hampshire representative.)

10. To discourage wanton remodelling and destruction of otherwise serviceable building exteriors and interiors, and the creation of demolition waste, tax building construction materials (2 cents) and, alternatively (5 cents) per dollar, and construction permits ($200) and, alternatively, ($1,000). Exempt construction materials purchased solely in small quantities and for purposes of repairing or replacing worn building materials.

11*. Require all producers and retailers to accept for recycling, reuse, and/or disposal all returned transport packaging. Require that the consumer can leave all packaging material at the point-of-sale. Require that retailers accept all used packaging materials returned by the consumer.

12*. To discourage disposables, require a tax of (3 cents) and, alternatively, (10 cents) on all disposable products with an exemption for products with a manufacturer's warrantee of at least three years or if manufacturer has an established program to take products back for reuse or recycling. (Disposable means those products which replace products which are reusable, washable, repairable, and/or refillable.)

13. Require that Sunday newspapers be available for sale by the section.

14. Require that phone companies issue phone books on an 18 month basis.

15*. Require a tax of (25 cents) and, alternatively, ($1) on each product which contains parts which are not removeable, serviceable, replaceable, or repairable at facilities in the local area. ("Parts" includes spare parts as well as items like batteries) (Formulate durability standards/design for repairability (e.g., minimum warranty standards, availability of spare parts) for certain products (e.g., double-sided copiers, electronics, appliances).

16*. To reward durable products and reusable packaging, establish a tax credit of (5 cents) and, alternatively, (10 cents) for products and packages which can be refilled in existing programs, recharged by consumer, with at least 50% recycled content, and designed for easy repair (component parts replaceable by consumer) and for products which encourage waste prevention (e.g., canvas bags, double-sided copiers)

17*. Institute a tax credit for companies which install equipment which reduces consumption of nondurable products (dishwashers, double-sided copiers, washing machines, etc..) and which offer services which reduce use of nondurable products (diaper services).

18*. To ensure adequate consumer education and implementation of source reduction, require municipalities to run

- Public Service ads (50 per month, all media);
- Subway, bus, and commuter rail ads (one message per month, one ad per car);
- billboard ads (50 per month);
- leaflets in utility bills (2 campaigns per year);
- free advertising directory for repair, reuse, resale, thrift, etc... shops (issue and distribute one per year via mail and/or via phone company).

19. Explore the effect of collecting a nominal fee from shops to cover costs.

20*. Require that waste reduction handbooks providing less toxic alternatives to household hazardous wastes, and less voluminous alternatives to nondurables and packaging be provided to all.

21*. To enhance consumer education and encourage sound purchasing decisions, require manufacturers to label products for warrantee period and provide information to purchaser on where products can be repaired (if such repair is not nominally available as shoe repair and watch repair typically are)

22. To ensure schoolchildren are educated early, require that waste prevention is taught as a special part of the curriculum in grades K-12.

23. To ensure the curriculum is complete, special waste prevention curriculum as part of science instruction -- which grades, what length of time, curriculum content?

24. To ensure Source Reduction is integrated into the curriculum, specify methods of integration of SR material into other, nonscience, classes (e.g., math problems, civics lessons, geography - natural resources and environmental issues

25*. To assist consumers in environmental purchasing, require shop owners label items with long warrantee periods, refillable, rechargeable, and reusable items, bulk packaged items, concentrates. Use a universe of labelling options. Model with reasonable participation estimates.

26. Institute a system of block and large building volunteer captains who are trained by DOS to disseminate information to fellow tenants and residents about waste prevention.

27. Require municipalities to adopt policies and procedures including the following:

    1 Procurement policies promoting waste prevention (applied to all purchases of state and local government, their contractors, grantees, etc...) including at a minimum, products with extended warrantees, having materials delivered in reusable containers, and purchasing uniform equipment (one, well-made brand and model, for each discrete need, which, if one breaks down it is used as the source of spare parts to repair the others).

    2 Institution of the "model office" concept in all offices based on a waste audit mechanism (applied to all state and local government offices, contractors, grantees, etc...)

28. To ensure that government programs promote waste prevention aims, require that the City provide economic incentives for or actually operate programs such as the following:

    1 Reuse Centers -- Collection, Resale/reconditioning/swap shop/repairs of bulk items, electronics and appliances, clothing, furniture

    2 Awards for superior products and packaging innovations (to encourage industry R&D of better packaging and products)

29. Require the State Department of Economic Development (DED) to issue annual reports on how to reduce the weight and volume of packaging and on how to replace disposable products with reusable ones.

30. Require State DEC to make available to local sanitation districts sets of data on common materials and bibliographic references on materials and waste prevention/reduction, and require DEC to develop a booklet with model scenarios and plans for different types of municipalities.

31. Require NYSDED to offer expertise in the form of a handbook on how to implement waste prevention to all businesses.

32. Require that tax credits be provided to businesses which maintain and/or repair or refurbish durable products.

33. Require use of reversible envelopes for utility bills.

34*. Support federal legislation to require that all generators of junk mail be required to send a prepaid postcard requesting removal of addressee from the mailing list be sent with all catalogs, flyers, solicitations, etc....

35*. Support federal legislation to require that all generators of junk mail be required to pay for return postage for all returned junk mail.

Toxicity - Related Initiatives

36. To discourage toxics in packaging via consumer education, require that manufacturers label composition of package with constituent and percent of the following pollutant precursors (nickel, cadmium, mercury, lead, manganese, chromium, arsenic, titanium, copper, beryllium, cobalt, silver, gold, radioactive elements, iron, chlorine, fluorine, sulfur, and nitrogen)

37. To discourage toxics in packaging, require a tax of (2 cents) and, alternatively, (5 cents) be assessed for each package containing any of the following pollutant precursors (nickel, cadmium, mercury, lead, manganese, chromium, arsenic, titanium, copper, beryllium, cobalt, silver, gold, radioactive elements, iron, chlorine, fluorine, sulfur, and nitrogen)

38. To discourage toxics in products, require manufacturers to label composition of products with constituent and percent of the following pollutant precursors (nickel, cadmium, mercury, lead, manganese, chromium, arsenic, titanium, copper, beryllium, cobalt, silver, gold, radioactive elements, iron, chlorine, fluorine, sulfur, and nitrogen)

39. To discourage toxics in products, require a tax of (2 cents) and, alternatively, (5 cents) be assessed for each product containing more than 1% sum total of the following pollutant precursors (nickel, cadmium, mercury, lead, manganese, chromium, arsenic, titanium, copper, beryllium, cobalt, silver, gold, radioactive elements, iron, chlorine, fluorine, sulfur, and nitrogen). Exceptions would include products with a manufacturer's warrantee of at least three years or if manufacturer has an established program to take products back for reuse or recycling.

40. Formulate a definition for "egregious packaging" and draft model legislation banning it.

41. To ensure reductions of pollutant precursors in packaging and products, expand the scope of CONEG law, which requires phase-out of certain constituents in packaging, to include

more metals in addition to the cadmium, mercury, lead, and chromium already required (e.g., nickel, manganese, arsenic, titanium, copper, beryllium, cobalt, silver, gold, radioactive elements, iron, chlorine, sulfur, nitrogen and any other significant pollutant precursor). Also include not only packaging but also products in the requirements. Also increase the scope of the CONEG provisions to phase-out within five years rather than phase-down these toxic precursors.

42*. To assist consumers in environmental purchasing, require shop owners to label items such as non-toxic cleaners and other nontoxic household items which are substitutes for items normally considered hazardous wastes. Use a universe of labelling options. Model with reasonable participation estimates.

Recycling - Related Initiatives

43*. Require auto manufacturers to charge a deposit on cars and take back discarded cars for recycling.

44*. Establish a virgin materials use tax (this would benefit both reduction and recycling efforts of both packaging and products)

45. To discourage multi-material packaging, require a tax of (3 cents) and, alternatively, (10 cents) for each material in each package containing more than a single material.

46. Prohibit the sale of multi-material containers with the exception of those containers with removable caps made of a different material.

47. Issue all householders that wish to compost their kitchen and/or garden waste a free composting container complete with worms and instructions for vermicomposting under the sink.

48. To assist consumers in environmental purchasing, require shop owners label items with recycled content packaging and recyclable materials. Use a universe of labelling options. Model with reasonable participation estimates.

49. To reward durable products and reusable packaging, establish a tax credit of (5 cents) and, alternatively, (10 cents) for products and packages which can be recycled in existing programs at a rate of 50% or more.

50. Institute a tax credit for companies which install equipment which recovers a "usable material".

51. Model the effect on recycling of publishing a frequently updated list of secondary materials, costs, and sources, where available.

52". Require that products labelled "recycled" state clearly the percentages of pre-consumer and post-consumer waste content.

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