



Alternatives for Waste Management¹

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As a nation, we are generating more garbage all the time and we don't know what to do with it. Ineffective or irresponsible disposal of this waste can pollute the environment and pose a health risk to the public. We are running out of space in existing landfills. Additionally, no one wants a landfill, or combustion or recycling center in their neighborhood.

There are two special forces contributing to our waste management problems. First, Americans have become a throw-away society. The amount of refuse discarded by American households is staggering; about four pounds per person per day. Secondly, Americans generally subscribe to the NIMBY (Not in My Back Yard) and LULU syndromes (Locally Unacceptable Land Use).

Waste disposal is an immediate, critical issue for communities all over the country. Citizens are discovering that there is no easy way to get rid of the garbage they once assumed could be burned and forgotten. We now have to look at the real problems that our nation faces.

Just as types of waste are changing, as chemically-based products multiply, so must our attitudes towards waste disposal change. Waste disposal costs are escalating and demanding an increasing percentage of community budgets. Current disposal methods threaten our health, safety and environment. Most industrial, commercial and household wastes are now being placed in landfills or surface impoundments, or burned in incinerators. Waste buried in this manner may contaminate groundwater, rivers and streams. When burned, they release hazardous gases into the air and leave toxic residues in the form of ash.

Landfills which provided a deceptively simple solution are closing either because they are full or because they do not meet new federal or state standards. One third of the landfills in the country will be full in five years. Siting of new landfills is difficult because of public opposition. As landfills close and costs of landfilling escalate, the pressure to incinerate mounts. Incinerators are costly to build, and they too do not meet favorably with public opinion.

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The Future of Waste

People are beginning to realize that the solution lies in using garbage as a **resource** rather than refuse to be destroyed. Localities, by their own choosing or by government mandate, are now choosing to recycle to reduce the waste stream. In Florida, the Legislature passed the Solid Waste Management Act (SWMA) in May 1988 which required that each county reduce its waste stream by 30 percent by 1994.

In order to manage waste, the EPA and SWMA favor an integrated solid waste management strategy that includes four parts:

1. reducing the amount of solid waste generated;
2. recycling as much refuse as possible;
3. incinerating some garbage with appropriate environmental controls and usually with energy recovery; and
4. continuing safe landfilling.

Reducing and reusing are the most viable alternatives; however, no single method will control the waste problem as effectively as a comprehensive program that relies on a number of solutions for different situations. Source reduction (eliminating unnecessary packaging and buying and reusing fewer toxic products) and recycling are the methods of choice and the direct involvement of citizens is essential. Landfilling and incineration are used only for the waste that cannot be used as a resource.

Even though solid waste management has not been a high priority of the federal government in recent years, the government could affect waste management in a number of ways: by establishing national recycling goals and packaging standards, adopting a clearly stated policy on source reduction and implementing educational programs on all approaches to waste

minimization. The federal government could also set an example for the states and stimulate markets for recycled products by requiring government purchase of products containing recycled materials.

The U.S. is currently recycling only 10 percent of its waste. The benefits of recycling come not only from the sale of recycled materials and conservation of resources but also as a result of reducing expenses or from "avoiding costs." The savings derived from not paying tipping fees for landfilling or incinerating the materials which are recycled should be included in any cost/benefit analysis of recycling. The cost of extending the life of a current landfill or of closing an old landfill and developing a new one must also be taken into account.

The waste management problem is complex because it involves a multitude of scientific, technical, economic and social factors. Due to the complexity of the situation, it will require the cooperation of government, industry and individuals working as partners rather than adversaries to find a long-term solution.

Reducing the Waste Stream

The character of Florida is the cumulative result of all the actions of 12 million people. Estimates are that Floridians produce 8 pounds of refuse per day or almost twice the national average. Florida cannot move toward a more frugal use of its resources any faster than the people of Florida choose to move. The bottom line is that the waste you generate does make a difference. If you generate less, that too, makes a difference.

Reducing the waste stream is the most significant of all the options to manage waste. If we never generate the waste, then we never have to devise ways to dispose of it. To reduce the waste we produce usually means lifestyle changes. Reduce the amount you buy in the first

place. Purchase only the amount you need. By becoming better environmental shoppers we can also reduce the waste we generate.

What You Can Do

Select products that are durable, easy to repair, have good warranties, are energy efficient, functional, aesthetic and non-polluting in both manufacture and use.

Analyze Your Purchases

You can start by analyzing what you throw away at home. Each person adds to the waste management problem. If each household reduces its waste, the problem will be reduced. Think about the goods, services and activities you buy or support. In what ways do they contribute to the solid waste problem? How could you purchase and dispose of items in ways that generate less trash? What can you do to voice your opinion about solid waste issues in your community?

For example, consider:

- buying goods in returnable and recyclable containers;
- learning where you can take items to be recycled then show your support by recycling;
- reading labels and learning more about contents in household products. Try not to purchase items with harmful ingredients;
- making suggestions to stores to offer paper bags in the produce section and to discontinue using plastic bags at the check-out line, except for special products or upon request;

- letting store managers and manufacturers who are making good environmental choices know you recognize and appreciate their efforts;
- requesting larger quantities and sizes of products by introducing a bulk buying section for grains, pasta and other dry goods;
- using consumer hotlines provided as a service by many food companies. Explain the need for environmental shopping and why you support it. Companies are very interested in how their products are perceived by consumers.

Ask manufacturers to consider these areas when designing packaging:

- plan for recyclability, both in design and material choice;
- eliminate excessive packaging;
- have more reusable or refillable packages;
- use creative thinking to find less wasteful solutions to theft prevention and shelf marketing;
- substitute non-toxic pigments and stabilizers;
- concentrate on the best and most efficient methods for minimizing the generation of waste.

These actions require cooperation among businesses, stockholders, government, employees, the general public, consumers and others. They also involve changes in lifestyles and values.

Select Durable Items

Select products that are durable, easy to repair, have good warranties, are energy efficient, functional, non-polluting in both manufacture and use, as well as aesthetic. Items such as plastic plates, polystyrene cups, razors, pens, cameras, watches and other items all end up in the landfill. Invest in durable materials you can use over and over again such as using cloth for napkins.

Some throw-away items that have caused concern are:

Batteries. Batteries are recyclable.

However, many find their way into landfills or into incinerators where they should not be. Shop for longer-lasting batteries (nickel-cadmium rechargeable batteries) as batteries create a problem in disposal.

Paper Products. Minimize the use of paper towels, plates and napkins. Invest in cloth napkins for daily use and use reusable wiping cloths, towels and plates -- not paper "throw aways."

Tires. More than 200 million tires are discarded each year in the U.S. You can help reduce this amount by buying high-mileage tires and by maintaining proper air pressure in your tires. Remember to check your tire pressure every other time you fill your tank.

Disposable Razors. Annually, more than two billion disposable razors were bought in the U.S. alone. Today's disposable razors, made from plastic and steel, can occupy space in the landfill for many years. Invest in a quality razor and change the blade or use an electric razor.

Disposable Diapers. Disposable diapers are made of an outer layer of waterproof polypropylene plastic. Sandwiched in

between the plastic layer and water-repellent liner is a thick later of an absorbent, cotton-like material made from wood pulp. It is estimated that 75,000 metric tons of plastic and 1,265,000 tons of wood pulp are used every year to make disposable diapers in the U.S. About five million tons of dirty diapers are buried in landfills in the U.S. each year and consumers spend at least \$100 million annually to dispose of these. Cotton diapers cost about one-fourth of the amount of disposable diapers during the diapering life of the child.

Consider Packaging

One of the best ways to reduce municipal solid waste is to limit packaging, which comprises about 40 percent of the solid waste stream according to a Franklin Associates study for the EPA. It accounts for 50 percent of all paper produced in the U.S., 90 percent of all glass and 11 percent of all the aluminum. One dollar out of every \$11 spent for groceries in the U.S. pays for packaging.

Overpackaged Items. An item surrounded by polystyrene beads in a box that is inside another box that is wrapped in plastic may be very secure. However, all that extra packaging material (the cost of which is added to the price you pay for the product) ends up in the landfill. Buy items such as fruit, vegetables and dry goods that often use little or no packaging at all.

Refillable and Resealable Containers. Use refillable containers. Many food cooperatives allow customers to bring their own containers to refill. Peanut butter, cooking oil, honey, shampoo, flour, nuts and many other products can be purchased in this manner. Invest in resealable containers for storing left overs; avoid using disposable plastic wraps, storage bags, etc.

Bulk Packaging. Buy food and dry goods in bulk sizes. Items with long shelf life, such as

laundry detergent, flour, and dry pet food can be purchased in large-size containers. Avoid individually wrapped portions of items such as cheese, fruit, and juice servings which are expensive and add to the waste stream.

Concentrates and Less Processed Foods.

Purchase concentrates and add the liquid yourself. Transfer to a small container(s) that you use over and over. Eat lower on the food chain by using less highly processed foods. Foods in their natural or raw form have less packaging.

Support Reduction

Buy Recycled Materials. No material is truly recycled until it is brought back into productive use in manufacturing and production. Consumer preference for products made from recycled materials can help "close the recycling loop" by increasing demand for collected recyclables. Look for a recycling symbol.



Buy Goods that Can be Recycled. Buy products in containers that can be recycled. If the same product is sold in a glass container and a similar container in a non-recyclable material, select the one that is most recyclable.

When you purchase items from the store, evaluate each one as to cost, convenience and environmental impact. In other words, how many pieces of material will have to be disposed of and are they recyclable?

Appropriate Technologies. Use appropriate technologies, whenever possible, such as solar power to dry clothes and heat water, or "human power" to open cans or brush teeth. Recycle and cut back on items that use up non-renewable resources.

Reduce Toxic Chemical Use. In minimizing the amount of toxic chemicals in the home, substitute less toxic commercial products or make your own less toxic cleaning materials. Contact the Family and Consumer Sciences agent at your local County Extension Office for information. Substitute manual pump spray containers rather than use aerosols. They are less expensive and can be refilled and used over and over again. Home remedies can be prepared that will save money and reduce the need for costly disposal of household hazardous waste.

- Keep your oven clean by sprinkling dry baking soda, then scrubbing with a damp cloth after five minutes.
- Rather than use ammonia-based window cleaners, mix 2 Tablespoons vinegar with 1 quart warm water and rub with newspaper.
- Unclog drains with metal snake or plunger, nontoxic drain openers.
- Use cedar instead of moth balls.
- Use latex or water-based paints. Donate leftover paint to theater groups or shelters.
- Use dry oxygen bleach or borax instead of chlorine bleach.
- Instead of chemical furniture and floor polishes, dissolve 2 teaspoons lemon oil into 1 pint mineral oil. Then apply and buff.

Support Reuse

The idea of being wasteful makes many people uncomfortable. Yet most of us continue to waste because we can't think of anything better to do with last year's phone book, draperies that are too short or a closet door that was scratched by a favorite pet. We are conditioned to think of

things that are old, empty, worn, broken, ugly or marred, as useless so we throw them away without much thought about the consequences. Most Americans buy far more than they can use effectively, as evidenced by bulging attics and garages.

The process of reusing is started with the assumption that the used materials that flow through our lives can be a resource rather than refuse. Waste, after all, is in the eye of the beholder. What is one person's trash is another one's treasure. If we really look at things we are throwing away, we can learn to see them as raw materials that can be reused to solve everyday problems and satisfy everyday needs. Most of us, however, haven't even begun to exploit the resources in our trash. Once you have your mind set you can use trash for positive uses. You can begin to brainstorm and generate ideas. Reusing saves money, conserves resources, and it satisfies the human urge to make things.

Strategies in reusing.

- Containers can be reused at home or for school projects.
- Reuse wrapping paper, plastic bags, boxes and lumber.
- Give outgrown clothing to a friend or a charity.
- Buy beverages in returnable containers.
- Try repair before you consider replacing lawn mowers, tools, vacuum cleaners, TVs.
- Donate broken appliances to charity or find out if a local vocational school can use them for students to practice repairing them.
- Offer furniture and household items no longer needed to people in need, friends, or charity.
- Sheets of paper that have been used on only one side can be used for taking notes or rough drafts of material.
- Plastic bags and wraps can be used for storing items. They can be used for packing items for mailing.
- Old outdated furniture can be reupholstered or slipcovered. Have padding added to the furniture to give it a new look. Often the frame can be modified slightly to change the way it looks.
- Old pieces of furniture can be repaired or finished with special finishes such as splattering, sponging, or rag painting, which takes very little time and skill.
- Old towels and sheets can be cut in small pieces and used for dusting and dustcloths.
- Books and magazines can be donated to public libraries or nursing homes.
- Newspapers can be donated to pet stores.
- Packing materials such as polystyrene, plastic quilting and similar packing materials can be saved and reused for the same purpose.
- Carry a reusable tote bag or take bags to the store when you go shopping. There are attractive nylon mesh bags available that can be stored easily in the glove compartment of your car. Also durable canvas bags which take very little space to tuck away when not in use.
- Old tires can be used in the garden and in the play yard.
- If you buy pre-prepared microwavable dinners, save the plates for use when planning outside parties or for children.

- Reusable containers -- many containers can be used in school projects. Ask your school what they would like you to save.
- Save items that are used in schools, day care centers, by scouts and senior citizens. Examples of these materials include:
 - aluminum containers
 - beads
 - beans
 - bottles
 - boxes
 - brushes
 - buttons
 - burlap
 - calendars
 - candles
 - carpet scraps
 - Christmas cards
 - cloth scraps
 - wallpaper samples
 - coat hangers
 - coffee cans
 - gift wrap
 - magazines
 - mirrors
 - oatmeal boxes
 - paper bags
 - pie tins
 - plastic bags
 - rug samples
 - seeds
 - shopping bags
 - toilet paper rolls
 - yogurt containers

Support Recycling

Recycling Generates Industry. As Floridians recycle, there will be a growing supply of materials generated. In order to utilize these recycled materials, manufacturing facilities will emerge to find uses for them. As more recycling plants are built and more products are

manufactured, we will gain a greater understanding of the entire process.

Recycling Creates Jobs. Recycling also creates jobs. A report at the New York Recycling Forum estimated that recycling 10,000 tons of materials would create 36 jobs compared to six for landfilling the same amount. Some communities have formed working partnerships with workshops for the disabled, developed and administered job training partnerships or otherwise found work for unemployed labor in recycling programs.

Cost Avoidance of Recycling. For years, recycling has been hampered by the belief that it should make money. But recycling is a cost-effective option if it requires fewer government subsidies than landfilling or incineration. Lower taxes, energy savings, and a cleaner environment are the real "bottom lines" in favor of recycling.

Finding Markets or "Closing the Loop." Finding outlets for recycled waste is a critical element of a successful recycling program. For communities, a first step is to identify long-established local dealers. There are several strategies that states and localities can use to successfully develop markets. These include:

- Establishing guidelines for buying supplies and equipment and encourage industry to label the percent of recycled material in a given item;
- Establishing financial incentives such as tax credits or loans;
- Finding buyers for locally-produced recycled products;
- Exploring the development of new products made from from scrap paper or fiberfill from used plastics;

- Promoting cooperative marketing programs where a non-profit organization puts recyclers and buyers of recycled products in touch with one another.

Collecting Recyclables

Homeowners separate recyclables from their garbage. **Clean** recyclables are placed in special containers while the garbage goes in standard containers. Both are placed at the curb for collection by separate trucks. To enable condominiums, houses and apartments to participate, centrally located containers can be made available.

The separated recyclable materials are taken to a processing facility, prepared for shipment to end markets which will use the materials to make new products. Recyclables are cleaner if they are separated from the garbage by the homeowner. Cleaner materials are **easier to sell** and **receive better prices**.

Garbage and recyclables are mixed and separation takes place at a central site. The separation is made in one or two ways:

- manual separation where workers at a conveyer belt pick out cans, bottles, jars and plastics from the household garbage;
- semi-automated separation which uses screens and sophisticated magnets to separate the materials.

Drop-off centers are one of the simplest forms of collecting recyclable materials: citizens drop off their used glass, metal, plastics and newsprint at a designated recycling drop-off site. These centers are usually placed in an easily accessible location near a high-traffic area. New innovative drop-off methods are the "igloos" which are fiberglass, domed containers with holes at the top for depositing the materials.

These centers can serve as a fund-raiser for churches, Boy Scouts, 4-H clubs and other non-profit groups.

Buy-back centers purchase glass, aluminum, other metals, plastic, newsprint and sometimes batteries and other materials. Citizens voluntarily transport these materials to the site. The centers sort and compact the materials and then sell them to manufacturers for processing. In many cases the centers work closely with local firms such as bars and restaurants to set up procedures for collecting large volumes of recyclable materials.

A Guide to Recycling

Paper. Many communities have been recycling newspapers for years so there are existing established markets. Florida SWMA has created a substantial increase in the volume of newspaper being recycled. Paper constitutes about 40 percent of the volume of residential waste and is probably the single most important item for a community to recycle to cut down on disposal costs and save landfill space.

Although most waste paper goes to paper mills, several other industries use it for cereal boxes, insulation materials, cushioning materials for packing and shipping, and building materials such as fiberboard. The main drawbacks are the fluctuation of market prices and the sludge that must be disposed of after the ink is removed. An increasing number of states are requiring their government offices to purchase recycled paper. In a Gallup Poll, eight out of ten consumers would like the products they buy to be packaged in recycled paperboard.

Newspaper. Stack newspapers in manageable bundles and tie both ways with twine, or stack inside grocery bags. Do not include junk mail, telephone books or magazines. Keep the paper clean and dry.

Corrugated Cardboard. Corrugated cardboard consists of two layers of heavy cardboard with a ribbed section between them. It is commonly used for heavy duty cartons. Boxes can be flattened and bundled.

High Grade Paper. High grade paper or ledger includes typing, notebook, ditto, mimeo, photocopy and writing paper. White paper must be separated from colored paper and boxed or bagged. Paper with residues; carbon papers; cellophane; self-stick adhesive; wax, plastic or foil coatings cannot be recycled.

Aluminum. More than 90 percent of all the beer and soft drink cans are made of aluminum. Aluminum cans are molded without side seams and are nonmagnetic. To recycle, rinse and box or bag. Crushing is not necessary, but saves space. Aluminum foil, pie pans, TV dinner trays and lawn furniture are also recyclable. Beverage containers with only aluminum tops or bottoms cannot be mixed with pure aluminum. Twenty aluminum cans can be made using the same energy it takes to produce one can from virgin ore. This represents a 95 percent savings in energy.

Steel (Tin) Cans. Steel cans, commonly called tin cans, are typically food cans. Food cans make up 37.3 percent of total can production. These are generally steel or tin-coated steel and can be recycled. They are magnetic and have side seams. To recycle, rinse, remove the label, remove both ends and flatten. The market for tin cans fluctuates. Recycled tin is especially sought after in the U.S. since raw tin can only be obtained from foreign countries.

Glass. Glass containers make up 20 to 40 percent of municipal waste glass and are the easiest for recycling centers to collect and handle. All kinds of glass containers -- heavy or light, whole or broken -- can be recycled. Glass can be recycled and reused an indefinite number of

times. Glass is 100 percent recyclable; there are no wastes or byproducts. Clear, green and brown glass are collected in many recycling programs. Broken glass is accepted as long as it is color separated. Paper labels can be left on the glass, but aluminum neck rings and caps can be a problem depending on the recycling equipment being used.

Recycling centers will not accept light bulbs, ceramic glass, dishes or plate glass because these items consist of different materials than bottles and jars. Cullet, or crushed glass, can be used to make new bottles, jars and other containers. Some other uses for cullet are glassphalt (a road paving material), building panels and terrazzo. While resale value is low, markets are relatively stable.

Plastic. Two plastics dominate the market: PET (polyethylene terephthalate) is the primary plastic for soda bottles and HDPE (high density polyethylene), the usual component of milk jugs. Many containers made of plastic are actually made of multiple layers of different plastics, each one contributing a specific quality (such as flexibility or transparency) to the final product. These are extremely difficult to recycle. A coding system will significantly aid efforts to recycle plastics. Florida included this in SB 1192. By weight, plastics constitute about eight percent of the waste stream; by volume about 30 percent. The plastic recycling industry is growing with a variety of products being manufactured, including lumber, machine parts, household items such as pans, flower pots, fiberfill and carpet.

Some plastics which are potentially recyclable are incinerated. Because they burn at a very high temperature and release a lot of energy quickly, plastic materials are much in demand by waste-to-energy plants. Burning plastics, however, can produce dioxins and other hazardous substances.

Motor Oil. Motor oil never wears out; it only gets dirty. Drain car, motor cycle or lawn mower oil into a container with a sealable lid. Some garages, service stations and some large retailers with auto shops accept used oil. Once impurities are removed, used oil can be marketed as re-refined oil or industrial fuel oil.

Organic Wastes. Grass clippings, leaves and small branches can be recycled or managed at home. Using these valuable materials can save the homeowners energy and serve as a plus in a yard maintenance program. Old Christmas trees can be recycled, chipped into mulch and used on the grounds, or replanted. They can also be used on beaches as protective barriers against the damaging effect of erosion on sand dunes and vegetation. Contact your County Extension Office for more publications on managing yard waste.

Scrap Metal. Aluminum lawn furniture, windows and door frames as well as brass, lead, steel, cast iron, nickel and fixtures and machinery parts can all be recycled. Also broken appliances, copper tubing and old car batteries can be recycled.

Getting Involved

Find people in your area who are interested in reducing waste, promoting recycling, inventing new uses for old materials, fighting litter or encouraging merchants to sell goods in returnable containers.

Concentrate on the best and most efficient methods for minimizing the generation of waste

in your home. Waste reduction is every person's responsibility. Unfortunately, more than 99 percent of all federal government spending on the environment has been for pollution control rather than waste management.

Reusing is rewarding as it develops creativity and expands the imagination. Reusing can also save money and has the potential to reduce the waste stream.

Reusing may be marketing items for monetary return. This is accomplished through garage sales, flea markets, antique and unique shops, consignment shops and cooperatives. These markets give items a "second chance" and provide ways for people to make money. At this time what is needed are ways for people to communicate what they want to give away, exchange, or sell. Certainly ads in the newspaper are available, however because they are costly, they are seldom used to dispose of items at no cost. Non-profit organizations such as the Salvation Army and the Goodwill Industries have been instrumental in accepting clothing, household items and white goods. Churches also have clothes closets, etc. These efforts should be expanded to further the useful life of various items that might otherwise become more trash. Directories, neighborhood bulletin boards and volunteer centers are all ways of advertising materials that can be shared. There may not be an exchange of money for these materials, but it relieves people of items they do not want and places them in the hands of people who can use them. It saves dollars to keep discards out of the waste stream and it makes sense to help others.