DOCUMENT RESUME

ED 314 257 SE 051 114

TITLE	Recycling Primer: Getting Back to Basics.
INSTITUTION	Connecticut Citizen Action Group.; Connecticut State Dept. of Environmental Protection, Hartford.
SPONS AGENCY	Connecticut State Office of Policy and Management, Hartford.; Department of Energy, Washington D.C.
PUB DATE	Oct 88
GRANT	DE-FG41-83R130160
NOTE	33p.; Drawings may not reproduce well.
PUB TYPE	Guides - Classroom Use - Materials (For Learner) (051)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Conservation (Environment); *Elementary School Science; Elementary Secondary Education; *Environmental Education; Hazardous Materials; Instructional Materials; Intermediate Grades; Junior High Schools; Middle Schools; Natural Resources; *Recycling; *Solid Wastes; Waste Disposal

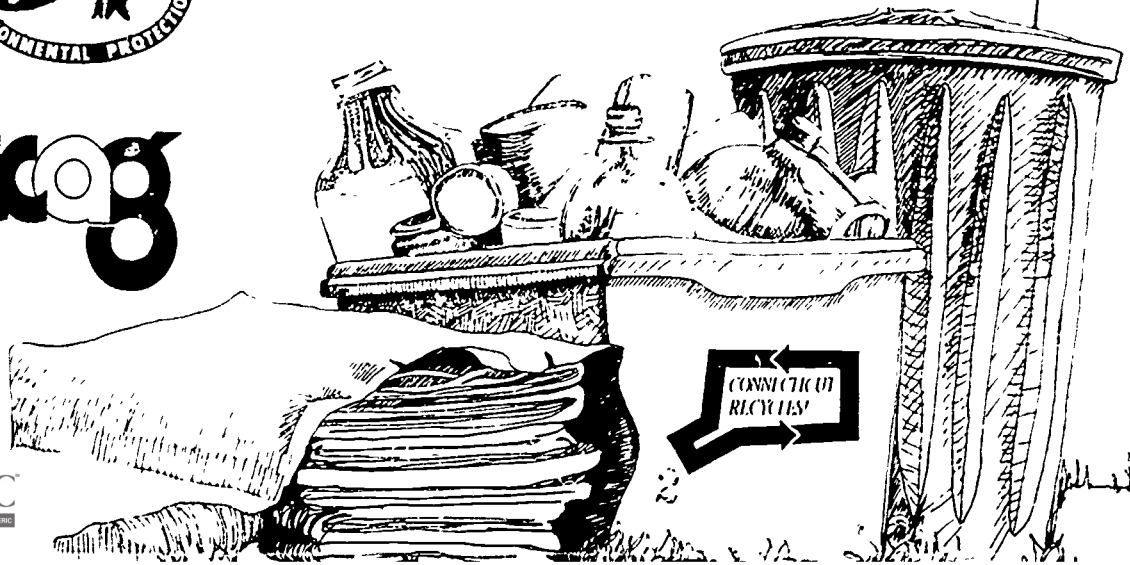
ABSTRACT

The disposal of garbage is a complex issue. Four strategies have been developed to attack the problem. They deal with: (1) waste reduction; (2) recycling; (3) energy recovery; and (4) land filling. This handbook emphasizes recycling as a method of handling the problem of dealing with solid wastes. Included are a list of the categories and uses of recyclable materials, a list of non-hazardous household substitutes, a discussion of composting, and a glossary of terms commonly used in recycling. Also discussed are policy development, community involvement, and the benefits of recycling. (CW)

RECYCLING PRIMER:

GETTING BACK TO BASICS

STATE OF CONNECTICUT
ENVIRONMENTAL PROTECTION



RECYCLING PRIMER:

Getting Back to Basics

Prepared by
The Connecticut Citizen Action Group
and
The Connecticut Department of Environmental Protection
Leslie Carothers, Commissioner

Illustrations by Chris Rowlands

The work upon which the publication is based was performed in whole or in part under Grant No. DE-FG41-83R130160 with the Connecticut Office of Policy and Management and the U.S Department of Energy. The opinions, findings, conclusions or recommendations expressed do not necessarily reflect the views of the DOE.

TABLE OF CONTENTS

APPENDICES

GARBAGE DOESN'T DISAPPEAR

It's M*A*G*I*C*!! Put the garbage out on the curb in the evening, and by morning it has disappeared. Pour waste oil down the storm drain, and —POOF!! — it's gone

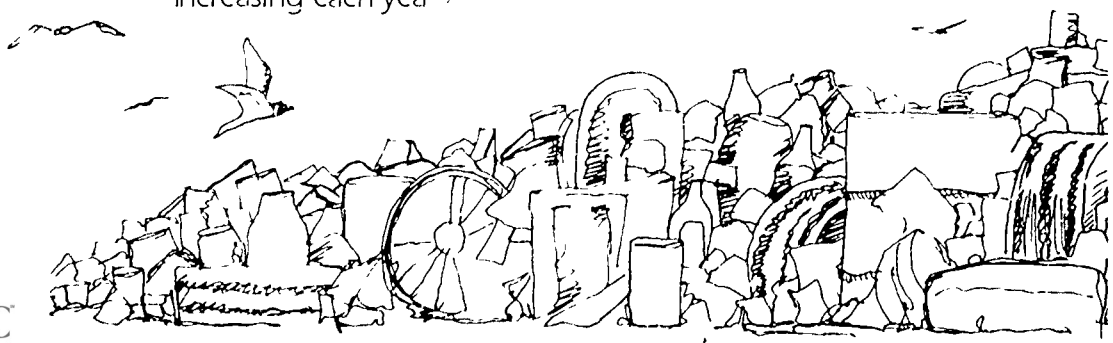
Unfortunately, the tricks aren't working.

The garbage we all generate every day is coming back to haunt us. We ride along interstate highways and find the views obscured by new hills —hills where compactor trucks toil their way up steep inclines to dump the week's accumulation of empty bottles and cans, discarded toys and furniture, soiled rugs, cardboard boxes, plastic bags full of leaves, and reams of paper from our many bureaucracies.

We turn on the evening news and see people hotly disputing the need for and location of waste-to-energy plants. We open the paper and read about families who have to use bottled water because their wells have been polluted by landfill leachate and oil and chemical spills.

THERE IS NO M*A*G*I*C ANSWER TO WASTE DISPOSAL

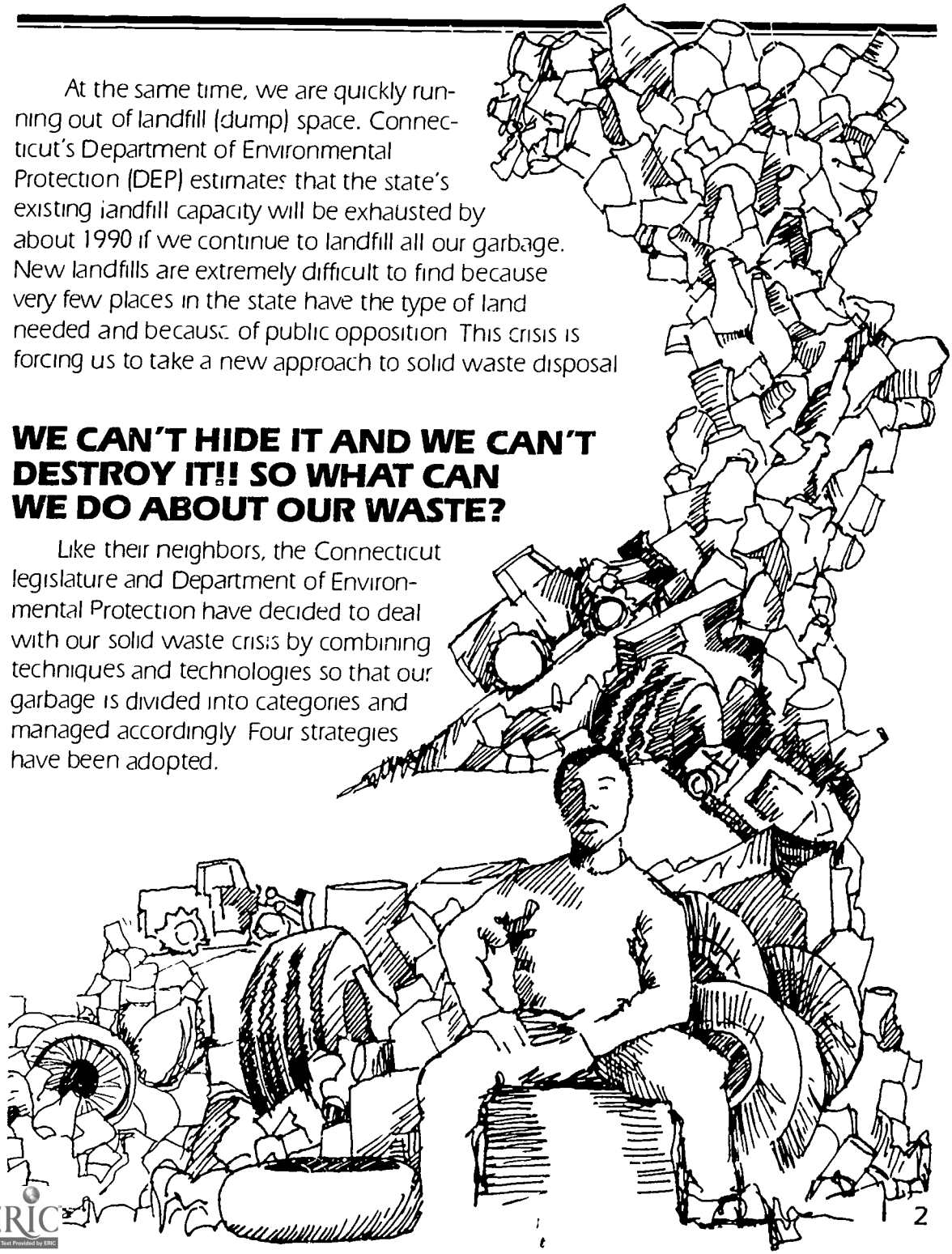
The disposal of garbage is complex because the way we live is complex. We are creating more and more garbage every year. "In 1960, each American generated an average of 2.9 pounds of trash daily; today, that figure is about 5 pounds."[1] And the content of that garbage is changing. In 1977, 1.9% of the nation's garbage was estimated to be plastics. By 1986, that estimate had jumped to 8%.[2] In 1988, 35% of the country's waste stream is estimated to be packaging, and that figure is increasing each year.[3]

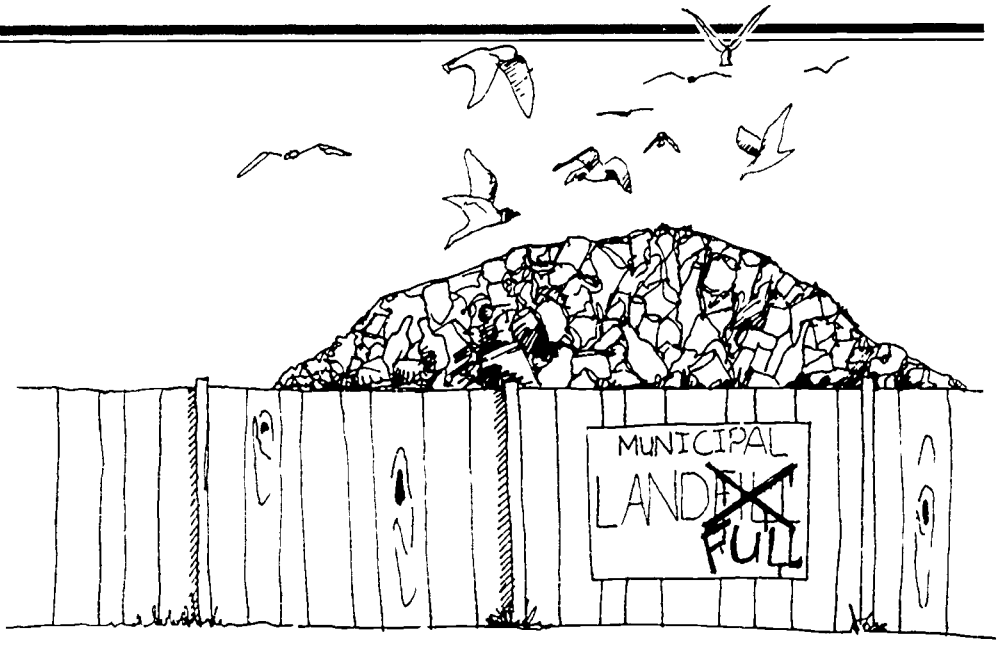


At the same time, we are quickly running out of landfill (dump) space. Connecticut's Department of Environmental Protection (DEP) estimates that the state's existing landfill capacity will be exhausted by about 1990 if we continue to landfill all our garbage. New landfills are extremely difficult to find because very few places in the state have the type of land needed and because of public opposition. This crisis is forcing us to take a new approach to solid waste disposal.

WE CAN'T HIDE IT AND WE CAN'T DESTROY IT!! SO WHAT CAN WE DO ABOUT OUR WASTE?

Like their neighbors, the Connecticut legislature and Department of Environmental Protection have decided to deal with our solid waste crisis by combining techniques and technologies so that our garbage is divided into categories and managed accordingly. Four strategies have been adopted.





1. **WASTE REDUCTION** involves reducing packaging, producing and purchasing things which are durable, repairing things if possible, decreasing non-recyclable items in the waste stream, and making sure that usable but unwanted items are given to someone who will use them.

2. **RECYCLING** involves keeping items such as glass, metal, paper and leaves out of the waste stream and processing them so that they can be made into new products. (See Appendix A for Categories and Uses of Recyclable Materials and Appendix C for Composting)

3. **ENERGY RECOVERY** involves incinerating those items which cannot be reused or recycled and capturing their energy value.[4]

4. **LANDFILLING** involves burying the residue from waste-to-energy plants and those items which cannot be handled any other way.

The goal is to minimize the need for waste-to-energy plants and landfills, which cause such controversy, by maximizing our waste reduction and recycling efforts.

EVERYONE MUST HELP

This booklet focuses on waste reduction and recycling because the success of these strategies depends on all of us. Many times a day, each of us makes decisions about what to buy for ourselves and our businesses and how to dispose of things we no longer want. Every day we choose whether to be part of the solid waste problem or part of its solution.

When we choose to reduce the amount of waste we create and to recycle what can be recycled, we decide in favor of our health, our environment, and the conservation of our resources. Just as importantly, we make an honorable commitment to the next generation so our children will not have to clean up after us.

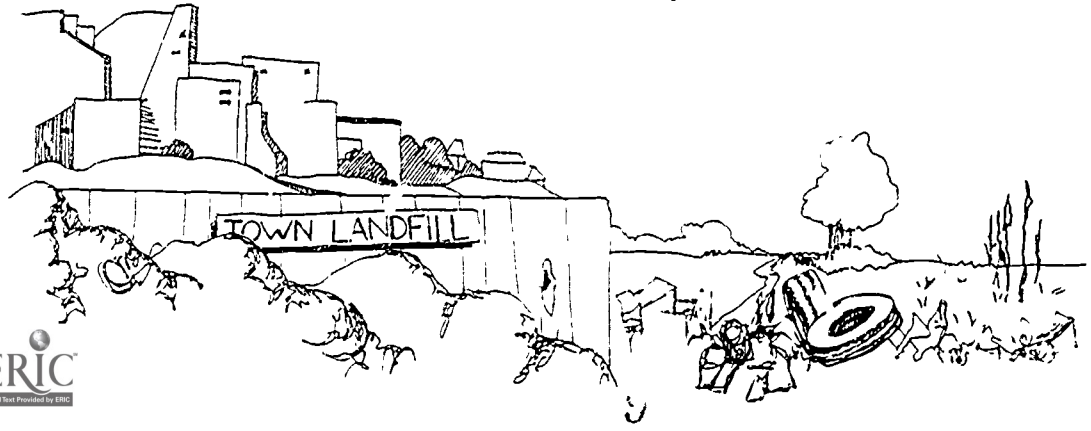
RECYCLING IS ECOLOGICAL

By recycling, we can:

REDUCE AIR POLLUTION — Using recycled aluminum instead of bauxite to manufacture aluminum reduces air pollution by 95%. Recycling steel reduces air pollution by 85%, recycling paper, by 74%, and recycling glass, by 20%.[5]

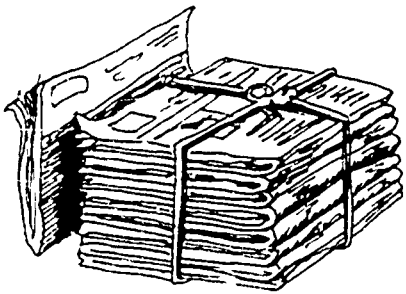
REDUCE WATER POLLUTION — Substituting recycled aluminum for bauxite in the manufacturing process reduces water pollution by 97%. Recycling steel reduces water pollution by 76%, and using recycled paper to make new paper reduces water pollution by 35%.[6]

CONSERVE ENERGY — It takes less energy to recycle something than to make it from scratch. Making aluminum from recycled aluminum



rather than from bauxite reduces energy use by 90-97% Using recycled steel to make new steel reduces energy use by 47-74%., For every million tons of scrap iron used to manufactur? new products, the energy equivalent of 3 million barrels of crude oil is saved [8] Using waste paper saves over 10,000 kilowatts of energy per ton of paper produced.[9]

CONSERVE PRECIOUS NATURAL RESOURCES — "Simply recovering the print run of a Sunday edition of the New York Times would leave 75,000 trees standing."[10] As for glass, ". . . for every ton of crushed glass used in the manufacturing process, some 1.2 tons of raw materials is saved."[11]



To print the
NY TIMES
Sunday Edition

USES

75,000 Trees
every week

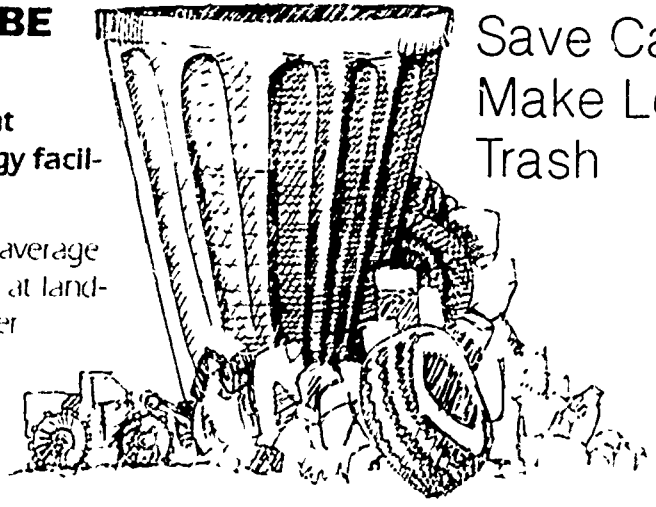
ENRICH OUR SOIL — The use of composting returns important nutrients to the soil, slows soil erosion, and improves water retention.

EXTEND OUR LANDFILL CAPACITY — Every 6 tons of mixed bottles and cans which are recycled saves approximately 10 cubic yards of landfill space Every to ? of leaves which is composted saves about 4 cubic yards of landfill space

REDUCE THE NEED FOR WASTE-TO-ENERGY PLANTS

REDUCE GLOBAL WARMING — By reducing the energy necessary to extract, process and transport raw materials, recycling reduces the carbon dioxide emissions from fossil-fuel energy sources

RECYCLING CAN BE ECONOMICAL



Disposing of solid waste at landfills or waste-to-energy facilities is expensive.

LANDFILLS — In 1986, the average tipping fee (disposal charge) at landfills in the Northeast was over $20/ton.[1]

WASTE-TO-ENERGY FACILITIES — The tipping fee at the Windham Energy Recovery Facility was $83/ton in 1988. According to the Connecticut Resources Recovery Authority, initial tipping fees at the state's other facilities will range from $27/ton at the Hartford plant to $42/ton at the Bridgeport plant. These fees are expected to continue rising each year.[2]

Recycling saves your town or city money through cost avoidance.

Between 1986 and 1988, Groton, CT, saved $127,580 (gross) in landfill disposal costs by recycling 4,092 tons of paper and 2,287 tons of bottles and cans.

In 1987-88, Greenwich, CT, saved $900,000 (net) in sludge incineration and leaf disposal costs thanks to its co-composting program for sludge, leaves and wood chips.

First Selectman Dennis Murphy of East Lyme, who has organized one of the most successful municipal recycling programs in Connecticut, estimates that without recycling "... the town's trash disposal bill will jump from $300,000 to $1 million when the dump is closed because of the high cost of sending trash to a private landfill or a trash-burning plant." By recycling, he expects to extend the life of the landfill.

Recycling generates revenues to help cover the costs of collecting, processing and marketing the recyclable items.

Glastonbury, CT, earned $22,250 in gross revenues during 1985 by selling 1,950 tons of paper, metal, glass, etc.

In 1987-88, North Stonington, CT, earned $15/ton for its recyclable corrugated cardboard. For all recyclables including deposit bottles and cans, car batteries, mixed paper and cardboard, the town earned $20,000 in 1987-88.

The DEP expects that tipping fees at recycling facilities will be low, if they are necessary at all, because the revenues from the recycled materials will help cover the facility operating costs.

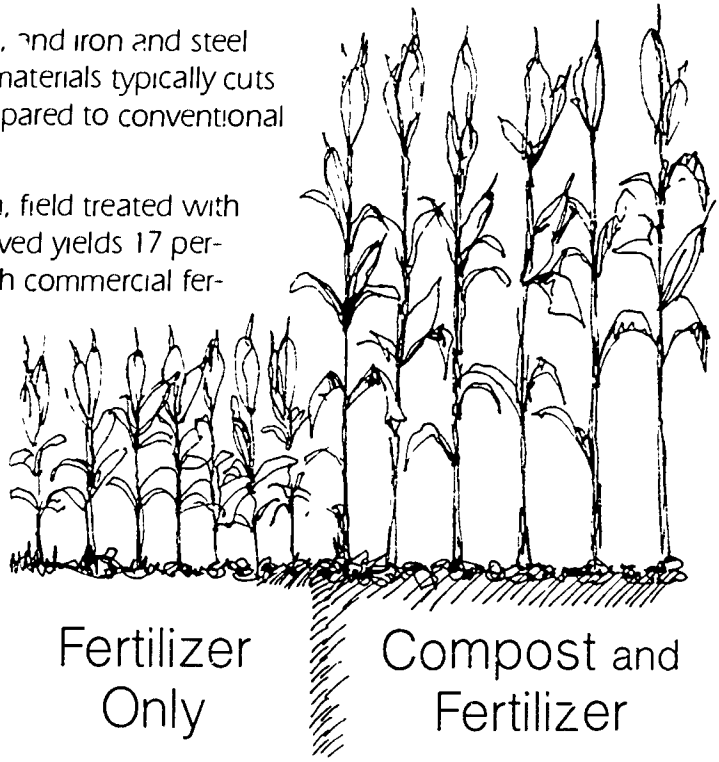
Recycling facilities are much less expensive to build than waste-to-energy facilities or lined landfills.

The DEP estimates that an intermediate processing center (IPC) for mixed recyclable materials will cost less than $5 million. By contrast, the waste-to-energy facility in Bridgeport cost over $200 million; however, it also processes much larger quantities than the IPC can (2,250 tons/day vs. 80 tons/day at an IPC).

Using recycled materials helps producers reduce costs and increase output.

"Producing paper, aluminum, and iron and steel from secondary instead of virgin materials typically cuts investment costs by one-half compared to conventional production . . ."[20]

"Test corn plots in Minnesota, field treated with both compost and fertilizer, achieved yields 17 percent higher than fields spread with commercial fertilizer alone."[21]



RECYCLING IS PUBLIC POLICY!!

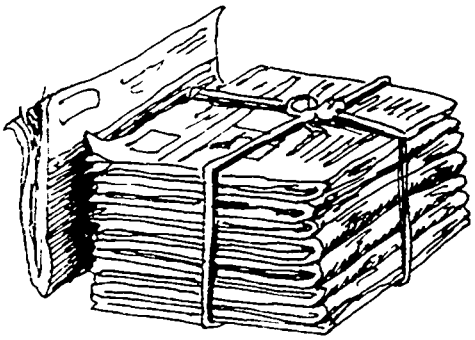
Recycling must now be undertaken by every Connecticut household and business — not simply as an idealistic exercise by a few avid environmentalists, but as a mandate of public policy

In 1986 in response to growing citizen concern about solid waste, the state legislature established a $10 million Recycling Trust Fund and required the Department of Environmental Protection to produce a statewide recycling plan. In 1987 after the plan was completed, the legislature overwhelmingly passed a second bill (P.A. 87-544) making recycling mandatory in Connecticut, the 3rd state in the country to do so. Governor William O'Neill signed the bill on July 2, 1987.

The Mandatory Recycling Act sets the goal of decreasing Connecticut's garbage by 25% through waste reduction and recycling and establishes a time frame for fully implementing the statewide recycling plan by 1991. It requires the Department of Environmental Protection to identify the items which are required to be recycled in order to achieve the 25% goal.

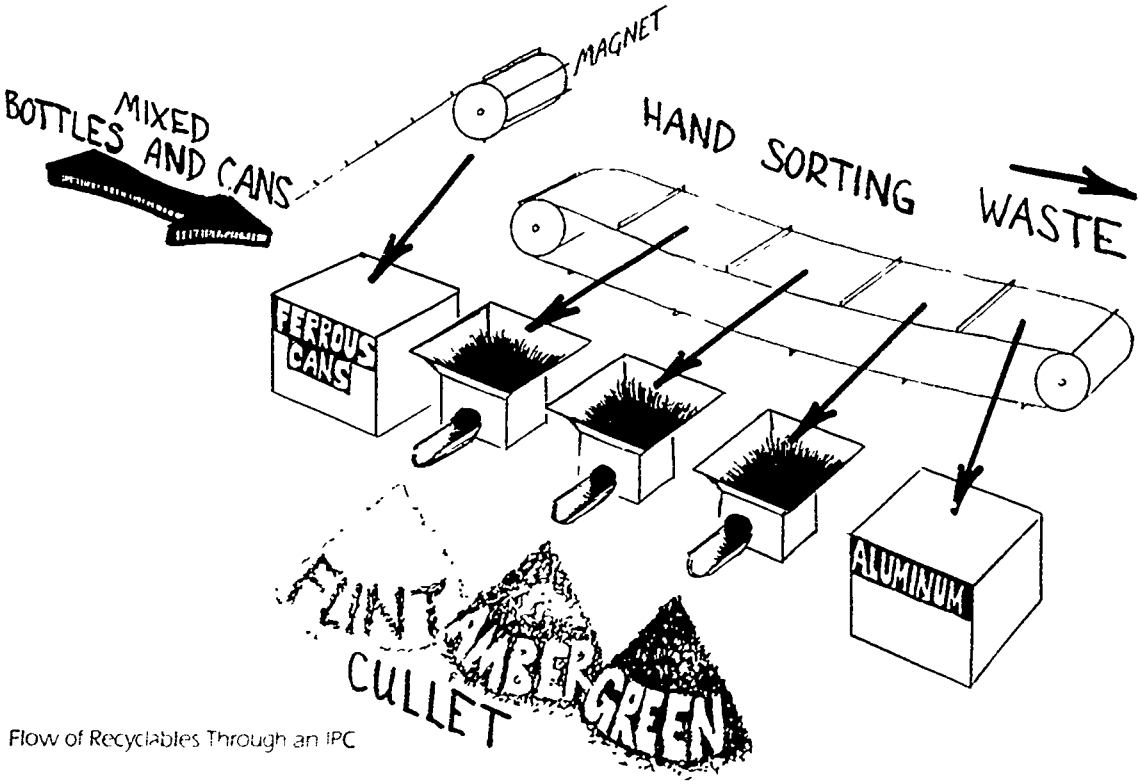
WHAT DO WE HAVE TO RECYCLE?

The mandated recyclable items which have been proposed by DEP include: cardboard, glass and metal food containers, newspaper office paper generated by businesses, scrap metal, batteries used in cars and other vehicles, waste motor oil, yard waste (including leaves, but not grass clippings), household batteries, scrap tires, and two types of plastic container (1) high-density polyethylene (H.D.P.E.) bottles or jars, such as milk jugs; and (2) polyethylene terephthalate (P E T) food containers, which are the more transparent, thinner plastic bottles used for soda, water and other beverages. Some communities may choose to recycle additional items.



WHAT IS AN INTERMEDIATE PROCESSING CENTER?

The centerpiece of each program will be an intermediate processing center — or IPC — serving approximately 400,000 people. The IPC is a small factory where glass jars and bottles, metal cans and trays, and sometimes paper (corrugated, newspaper and mixed grades that are not directly delivered to independent paper dealers) collected from households and small businesses are brought to be prepared for sale to recyclers. Because not all the recyclable items can be handled in the same way and because each region of the state has different needs, the regional recycling programs will vary.



Flow of Recyclables Through an IPC

HOW DOES AN IPC WORK?

Conveyor belts, mag ,etic separation and hand sorting are used to separate the different materials Aluminum cans are crushed and baled for shipping to an aluminum smelter. Tin cans (dog food, soup, etc) are flattened and shipped to a detinner Color-sorted glass is crushed into "cullet" and shipped to bottle and jar manufacturers Paper is prepared for paper processors or paper mills As technologies and markets are refined, plastics will also be handled at the IPC

WHY HAVE AN IPC?

The IPC helps solve the two traditional problems of recycling. low participation and poor markets Participation is easy because the recyclable items can be mixed and collected in the same place as the non-clable waste. A household or small business simply puts all its

bottles, cans and glass containers into a single recycling "bucket" or dumpster. Paper is bundled or placed in a dumpster reserved for paper. For households that have curbside collection, the recycling "bucket" and bundled paper are put at the curb for collection. In multifamily dwellings and at small businesses, recycling dumpsters are located near those used for the nonrecyclable waste.

With high participation, the IPC can deliver consistent volumes of professionally prepared materials to manufacturers. This is important because the buyer of the product has to be guaranteed both quantity and quality. Buyers need to be assured of a steady and substantial flow of material which meets their specifications if their manufacturing processes are going to be dependent on recycled materials.

HOW WILL WE RECYCLE THE OTHER ITEMS?

The items which are not processed and marketed through an IPC are handled in a variety of ways. Leaves may be composted alone (see Appendix C) or co-composted with chipped brush and sludge at the household, municipal or regional level depending on the needs of the towns and cities involved. In most cases, waste motor oil, scrap metal and tires will be collected and stored by towns and cities as in the past, but their marketing may be arranged by a region's recycling coordinator. Car and household batteries will require special handling because of their potentially hazardous content. The DEP will recommend a management plan for these items. It may include a program of periodic collections in conjunction with other household hazardous wastes, drop-off locations at retail outlets for batteries, or return deposits.

WHO'S GOING TO PAY FOR ALL THIS?

The Recycling Trust fund is being used to help Connecticut's towns and cities plan, implement, and publicize regional programs to recycle all these items. Several grants have already been made from the fund. Operating costs are paid by the cities, towns and regions. Every municipality in the state has begun to plan for recycling, and some are already recycling many of the required items.

WHO'S RESPONSIBLE FOR PUBLIC EDUCATION?

Publicity and education are the joint responsibility of the DEP, regional program coordinators and town leaders. The DEP has initiated an information program to promote recycling throughout the state. Ray Cycle™, Connecticut's recycling superhero, is enchanting elementary school children with a song and dance routine that convinces them of the importance of waste reduction and recycling. Cities, towns and regions will be responsible for teaching their residents how to prepare their recyclables for collection. Additional support materials are available from the state.

RECYCLING AND WASTE REDUCTION ARE UP TO YOU!!!

Although the statewide recycling program will not be fully implemented until 1991, you can begin now.

REDUCE THE AMOUNT OF GARBAGE YOU GENERATE

Avoid excess packaging. The statistics on the contribution of packaging to the solid waste problem are staggering. If we choose overly packaged goods, we send a message to manufacturers that we value and will pay for such packaging.

- "Nearly $1 of every $10 Americans spend for food and beverages pays for packaging".[1]
- "Preliminary figures released by the U.S. Department of Agriculture indicate that Americans spent more for food packaging than the nation's farmers received in net income."[2]
- "More than one-half of the paper and glass produced [in the United States], and about one-third of the plastics, are incorporated in items with a lifespan of under one year. Producing these packaging materials consumes 3% of the national energy budget".[3]

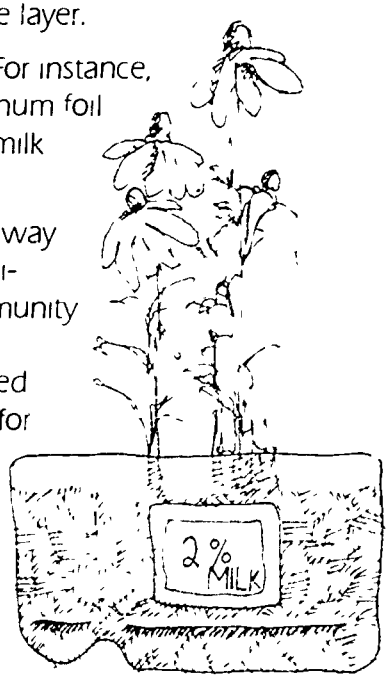
Choose biodegradable products (those that break down into nontoxic elements) whenever possible. For example, ask for a paper bag at the checkout counter rather than a plastic one. Better yet, if you are buying only a couple of items, don't take a bag. Choose paper rather than styrofoam egg cartons. Also avoid styrofoam in meat trays, disposable plates, cups, fast food restaurant packaging (when you are at a fast food restaurant, ask for no styrofoam).

Buy durable rather than disposable goods because they can be used again and again. Examples include razors, pens, diapers, vacuum cleaner bags, etc.

Buy recycled and recyclable goods. Certain paper boxes and beverage containers are now labeled with a recycling logo. During the next few years, more and more products will be labeled to indicate that they contain recycled materials or can be recycled after use. Support the manufacturers who produce these goods by buying their products.

Read labels carefully and choose non-toxic products whenever possible. Appendix B lists many nonhazardous household substitutes Avoid any product that comes in an aerosol can. Push pumps are equally effective and will not deplete the earth's ozone layer.

Re-use as many things in your house as possible. For instance, yogurt containers are good for storing leftovers. Aluminum foil is easy to rinse and use again The bottoms of plastic milk jugs make good containers for seedlings. Be creative!!



Repair as much as possible rather than throwing it away If you cannot repair or refurbish furniture, clothes, appliances, toys, etc , find someone who will. Several community organizations in Connecticut have published lists of organizations that will accept items that can be repaired and reused The Yellow Pages is another good source for such organizations.

RECYCLE WHEN RECYCLING FACILITIES ARE AVAILABLE

- If your community has recycling facilities, use them.
- Keep in contact with your local selectmen, public works officials, or whoever is in charge of recycling in your community to learn the location of your recycling stations. Contact your town hall for this information.

- Compost leaves and yard waste if you have room at home. See Appendix C or contact your local extension service for more information
- Volunteer to help your community with recycling drives or neighborhood awareness weeks.

WORK TO SUPPORT DEVELOPMENT OF A REGIONAL PROGRAM

- After contacting your town hall or local officials, attend meetings of local recycling groups.
- Write to public officials and legislators to let them know that you support recycling.
- If there isn't a recycling group in your area, start one. Support materials are available from the CCAG and the DEP

FOR MORE INFORMATION

The Connecticut Citizen Action Group (CCAG), the state's largest citizen organization, brings people together to work on the community and statewide issues that concern them. Through its three regional offices, CCAG develops people's skills and knowledge and also does research and lobbying.

***For questions concerning the content of this booklet or ways to become more involved in CCAG's recycling work, call the CCAG office closest to you:**

- **Greater Hartford Region**
  51 Van Dyke Ave., Hartford, CT 06106 527-7191
- **Eastern Connecticut Region**
  33 Church St., Willimantic, CT 06226 456-3157
- **Greater Waterbury Region**
  47 Central Ave., Waterbury, CT 06702 574-3545

The Department of Environmental Protection's Information and Education Unit offers support materials designed to involve organizations and citizens in joint efforts to increase the level of environmental awareness in Connecticut. This is an indispensable first step toward raising the level of responsible citizen and organizational participation in environmental problem solving. Any organization or individual interested in participating should contact the Information and Education Unit.

***For questions concerning recycling education, materials, etc., write:**

Kim Marcy
DEP Information and Education Unit
State Office Building, Rm. 108
165 Capitol Ave.
Hartford, CT 06106

***For questions regarding the Intermediate Processing Centers, demonstration grants, and other more technical aspects of the recycling program, write:**

Lois Hager
DEP Local Assistance Unit
State Office Building, Rm 115
165 Capitol Ave
Hartford, CT 06106

FOOTNOTES

1. "Trash Plants Spark Calls for Recycling" **New Haven Register,** 16 February 1987, p. 15.
2. Office of Solid Waste, Resource Recovery Division and Franklin Assoc., Ltd., **Fourth Report to Congress: Resource Recovery and Waste Reduction,** pp. 14, 17, Reprinted in **Source Separation and Recycling: A Connecticut Guide,** Hartford, 1981, p 2. Ellen O'Meara, Inc., RIS Development, Inc., "Waste Generation, Composition and Recovery," working paper based on information from Massachusetts, New Jersey, Rhode Island and Connecticut, 1986, p. 1.
3. Senator Joseph L. Bruno, Legislative Commission on Solid Waste Management, "Incentives for Recycling", Jan 88, p 23.
4. CCAG does not endorse the priority the DEP places on waste-to-energy strategies.
5. Environmental Defense Fund, **Power Line,** vol 12, no 5, April-June 1987, p 10-11.
6. **Ibid.**
7. Cynthia Pollack Mining Urban Wastes Potential for Recycling. (Washington, D C Worldwatch Institute, Paper 76, April 87), p. 22
8. **Power Line,** p. 10-11
9. **Ibid.**
10. Cynthia Pollack. Mining Urban Wastes Potential for Recycling (Washington, D C Worldwatch Institute, Paper 76, April 87), p 22.
11. **Ibid.,** p. 21
12. Richard Golden, Dir., Climate Protection Institute, Oakland, CA, June 23, 1988
13. **Waste Age,** March, 1987, p 61
14. Conversation with Barry Leopold, Connecticut Resource Recovery Authority, July 1988.

15. Conversation with Diane Small, Groton Public Works, Groton, CT, July 1988.

16. Raymond J. Veillette, Asst. Commissioner of Public Works. "Sludge/Leaf Grit Composting in Greenwich, CT." Town of Greenwich, 1988.

17. **Hartford Courant,** 2/15/87.

18. Department of Public Works, Town of Glastonbury, 1988

19. Conversation with David Birkbeck, Town of North Stonington, July, 1988.

20. William Chandler "Materials Recycling. The Virtue of Necessity" (Washington, D C. Worldwatch Institute, Paper 56, October, 1983), p 11

21. Cynthia Pollack. Mining Urban Wastes Potential for Recycling (Washington, D C. Worldwatch Institute, Paper 76, April 87), p 24

22 **Ibid.,** p. 8

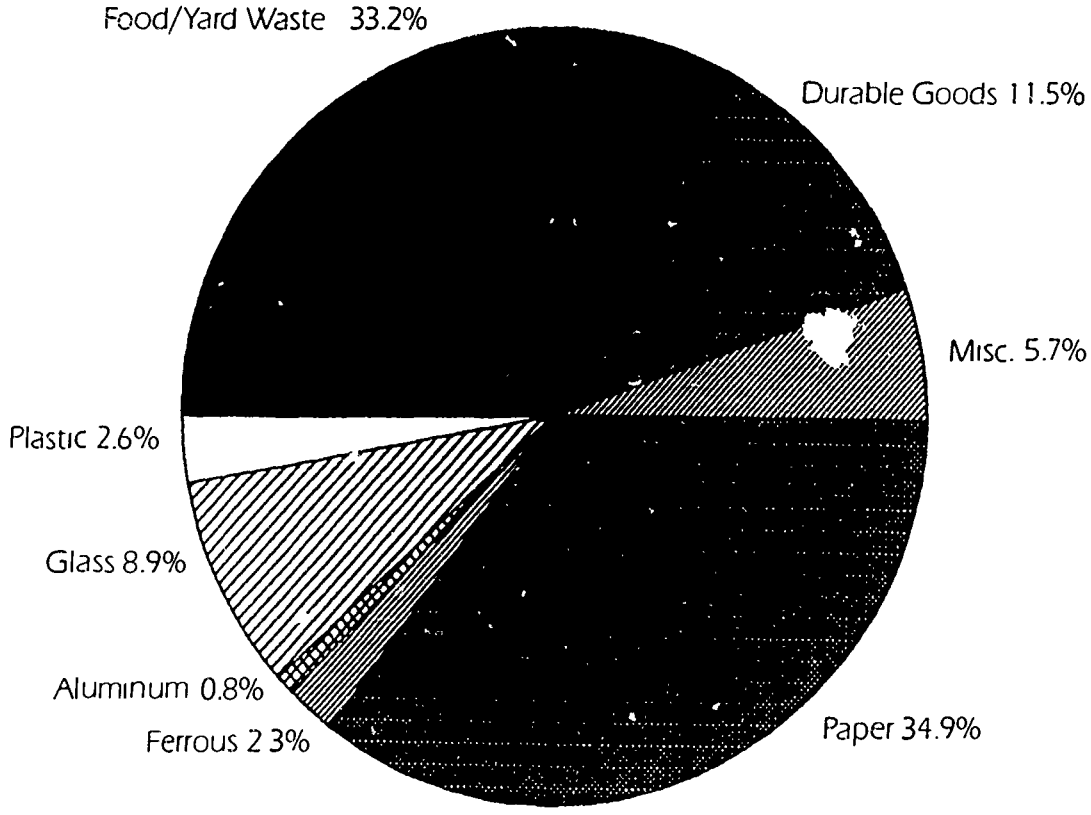
23. **Ibid.**

24. **Ibid.,** p. 10

APPENDIX A.

CATEGORIES AND USES OF RECYCLABLE MATERIALS

The breakdown (by weight) of our trash is as follows:



Source: McCamic, Frederick. 1985. **Waste Composition Studies: Literature Review and Protocol.** Boston Massachusetts Dept. of Environmental Management, Bureau of Solid Waste Disposal mimeo. Available from the Association of New Jersey Recyclers (609) 641-8292.

We do not have to throw away our household garbage! Many uses for recycled materials have been developed

1) products made from recycled glass, plastics*, ferrous metal, and aluminum

Glass

glass containers
glass wool insulation
brick terrazzo
glassphalt
abrasives
reflective paint material
highway reflectors
glass/plastic composites
ceramics

Plastic

plastic film
plastic resin
polyethylene
polypropylene
drainage products
toys
boat hulls & sails
artificial flowers
flower pots
automobile exterior panels
fiberfill insulation
appliance handles
water skis
garbage bags

Ferrous metals

cans
tin ingot
steel piping
steel castings
manhole covers

Aluminum

aluminum ingot
aluminum cans
doors
window frames
extrusions

*The most common recycled plastics are PET (from plastic soda and other beverage containers) and HDPE (from plastic milk jugs, dish-washing liquid containers, etc.)

2) products made from recycled paper

insulation
newsprint
corrugating medium
chipboard
paper bags
nursery pot
tissue
linerboard
boxboard
construction paper
protective packaging
milk cartons
greeting cards
writing cards
stationery
roofing felt
printing paper

3) potential uses for compost material

sod farms
nurseries
parkway maintenance
golf courses
gardens
landscaping
garden centers
schools
cemeteries
stadiums
mine reclamation
fertilizer constituent
topsoil constituent

4) Scrap tires can be ground into crumb rubber and used to make new rubber products (except new tires) or as an additive to asphalt

APPENDIX B.

NONHAZARDOUS HOUSEHOLD SUBSTITUTES

By **replacing** the toxic products we now use with those listed on the following pages, we will help to ensure better health and a cleaner environment for all Connecticut residents.

Below are the **all-purpose formulas** referred to under "Alternatives" in the chart on the next page:

FORMULA #1: 1 tsp. TSP (trisodium phosphate, a mineral available in hardware stores), 1 tsp. pure liquid soap, 2 tsp. Borax

FORMULA #2: 1 tsp. TSP, 1 tsp. Borax

FORMULA #3: 1 tsp. washing soda, 2 tsp. pure liquid soap

FORMULA #4: 1 tsp. Borax

FORMULA #5: 1 tsp. Borax, 2 tsp. pure liquid soap

FORMULA #6: 1 tsp TSP, 1 tsp. pure liquid soap

FORMULA #7: 1 tsp. washing soda

FORMULA #8: 1 tsp. washing soda, 1 tsp. TSP, 1 tsp. pure liquid soap

FORMULA #9: 3 tsp washing soda

FORMULA #10: 1 tbsp. TSP ½ tbsp washing soda, ½ tbsp. Borax, 2 tsp pure liquid soap

There are also a number of **non-toxic household cleaning substitutes.** Your local health food store may carry them or know where you can buy them.

Type of Cleaner & Examples of Brands	Product Danger/ Warnings	May Contain these Chemicals
Air Freshener	Interferes with ability to smell with nerve-deadening agent, cover exposed foods when spraying	Formaldehyde, ethanol, phenol
All-Purpose Cleaner	Eye irritant (caution)	Ammonia, glycerin, petroleum distillates
Bleach (Chlorine)	Eye irritant, harmful if swallowed, deadly fumes if mixed with ammonia, vinegar or strong acids	Sodium hypochlorite (chlorine), Sodium hydroxide
Carpet Shampoo	Skin and eye irritant	Sulfonated or phosphorated hydrocarbons
Cleanser (Scouring powder)	Skin and eye irritant skin sensitizing agent	Sodium hypochlorite detergents
Dishwashing	Injurious to [illegible] skin skin sensitizing agent	Sodium hypochlorite, fragrance, artificial color, detergents, ethanol
Disinfectant	Chronic poisoning from inhaling, keep away from heat, sparks, flame, avoid contact with food	Cresol phenol, ethanol, quaternary ammonium compounds
Drain Cleaner	Corrosive severe eye and skin damage may cause blindness	10% Sodium hydroxide (lye) trichloroethane sodium nitrate
Dust Cloth (Chemical)	Do not expose to open flame, supervise children's use	Unknown to HWR
Floor Cleaner (Detergent)	In case of eye contact flush with water Get prompt medical attention	Sodium sesquicarbonate sodium pyrophosphate
Floor Cleaner (ammonia)	Corrosive eye irritant irritation of airways	Ammonium hydroxide
Floor Polish	Harmful or fatal if swallowed	Ammonia detergents, fragrance phenol
Glass Cleaner	Harmful if swallowed, injurious to eyes and skin	Ammonia glycerin, naphthalene 10% isopropanol
Laundry Detergent	Harmful if swallowed, injurious to eyes and skin	Phenol sodium nitrate ethanol detergent
Mildew Stain Remover	See Bleach avoid contact with eyes skin mucous membranes	Sodium hypochlorite sodium carbonate
Oven Cleaner	May cause burns to skin and eyes avoid inhaling vapors	Sodium hydroxide
Toilet Cleaner	Corrosive do not breath vapor or fumes Fatal or harmful if swallowed	Hydrochloric acid sodium hydroxide or sodium acid sulfate
Tub & Tile	Severe eye irritant harmful if swallowed	Ethanol quaternary ammonium compounds

Alternatives

For mold and mildew, keep room ventilated, dry and clean To disinfect, see Disinfectant (below)

Non-toxic all-purpose cleaners (see page 23) baking soda, borax, lemon juice + vinegar TSP See formulas (page 22)

Clothing — Use borax as indicated on package / Dissolve 1½ tsp sodium perborate in ¼ c water Use entire amount in washload, or sparingly for other bleaching purposes

Clean spots immediately Shampoo with mild non-toxic cleaner

Polishing cleanser / Sprinkle baking soda, borax or table salt on damp sponge or non-scratching nylon scrubber, scour and rinse / Pumice stick / Add small amount sodium perborate to formulas 1, 2, 5, 6, 4

1 part borax + 1 part unscented washing Soda Adjust proportions for hard water Mild all-purpose non-toxic cleaner / Slices of lemon or peels or 3 tsp white vinegar in dishwater

Keep things dry and clean / Use borax — ½ cup to 1 gallon hot water (used by hospital) / Use aqueous solution of betzalkonium chloride 1 150, used for medical purposes

3 tbsp salsoda / Pour 1 handful baking soda + ½ c vinegar down & cover tightly for 1 minute

Dampen soft, clean, textured cotton cloth with very little lint / Vacuum cleaner brush

See Floor Cleaner (Ammonia)

Formulas 1, 5, 6, 8

Pure raw linseed oil, make a solution of ½ oil & vinegar Apply in thin coat Rub in well Dries in 4 days /Use very durable floor polish Apply more coats only on traffic areas

Formulas 4, 6, 8 — Use squeegie or cloth / Vinegar / 1 tsp TSP in 1 qt warm water (or use borax or washing soda instead)

⅓ c liquid soap + borax as directed on package other all-purpose cleaners / Baking soda / Vinegar / 1 tsp TSP per load

See Disinfectant

Formula 1 Spray on, wait 10-20 minutes Scrub off with scrubber (nylon steel wool stainless steel) / Small, fresh spots — baking soda

See Disinfectant / Formulas 1, 2, 5, 9

Using body cleaners made from vegetable oils rather than animal fats (soap) help prevent scum build-up / See Cleansers / Stiff brush for grout / Formulas 1, 2, 5, 6, 9 10 for non-damaged porcelain and fiberglass

APPENDIX C.

COMPOSTING IN YOUR OWN BACK YARD

Compost your leaves, lawn trimmings, and other organic (natural) debris instead of burning or landfilling them.

- Composting is the biological degradation or breakdown of organic matter. It involves leaving your organic "waste" in a pile in your back yard so it can turn into a nutrient-rich soil conditioner which adds nitrogen, phosphorus, and potassium to the soil
- Organic waste includes. leaves, grass clippings, vegetable and fruit scraps, garden waste, fireplace and wood ashes, coffee grounds, etc

Composting in Your Own Backyard — The Fundamentals

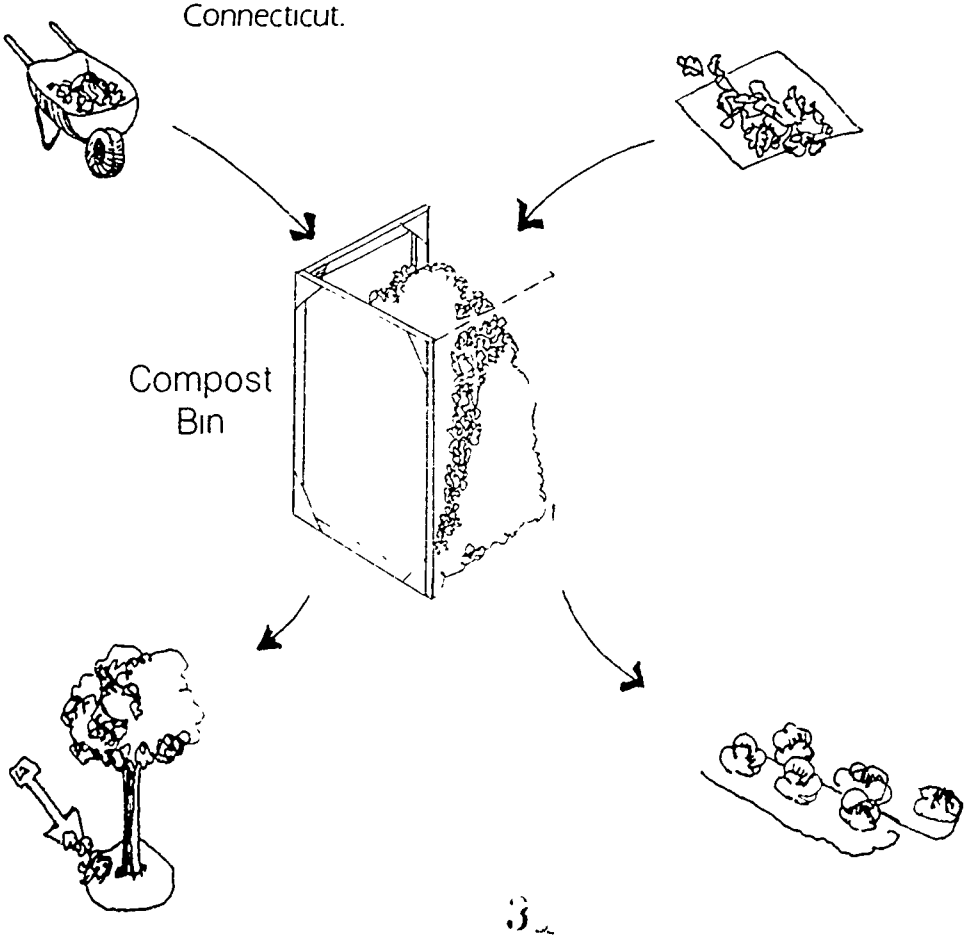
1. At the bottom of your compost bin, put 6 inches of leaves, ashes, or other woody material (shredding or chopping materials speeds decomposition). That is your carbon source. The base should be about 16 square feet (4 feet by 4 feet, for example)
2. Sprinkle with water until materials are about as moist as a wrung-out sponge.
3. Add a 2 to 3 inch layer of grass clippings, vegetable scraps, garden waste or manure for nitrogen
4. Mix the two layers together to insure speedy multiplication of bacteria
5. Repeat the layering and watering process until the pile is 4 feet high

6. Turn the pile once a week and sprinkle it periodically to keep it moist. The compost is usually ready to use 3-6 months after the pile is started.

Note: Do not compost meat, dairy products, fats, oils, or grease. These items do not break down and may attract animals.

- For further information, contact your local office of the University of Connecticut's Cooperative Extension Service and ask about backyard composting. (See the blue pages of the phone book).

- Composting of yard waste and sludges on a larger scale at central facilities is underway and growing in Connecticut.



GLOSSARY

biodegradable: the property of a substance that permits it to be broken down by microorganisms into simple, stable compounds such as carbon dioxide and water (See "decompose")

bottle bill: a law requiring deposits on beverage containers, like aluminum cans and plastic bottles. Encourages recycling and discourages littering and landfilling. More accurately called a beverage container deposit law

composting: waste management process that creates an optimal environment for decomposition by layering organic wastes like food scraps and grass clippings so they'll decay into fertile humus

conserve: to protect from loss or depletion. Conservation is the wise use of natural resources to minimize loss and waste

decompose: to break down into component parts or basic elements, to rot. Decomposition is imperative for the continuation of life since it makes essential nutrients available for use by plants and animals

dump: open, unsanitary disposal site used before existence of licensed controlled burial sanitary landfills

energy recovery: the generation of energy by burning solid waste

garbage: spoiled or waste food that is thrown away. Generally defined as wet food waste, excludes dry material (trash). The term is often used interchangeable with the word "trash"

groundwater: water beneath the earth's surface that fills the spaces and moves between soil particles and rock. Supplies wells and springs.

hazardous waste: waste that causes special problems for living organisms or the environment because it is poisonous, explosive, burns or dissolves flesh or metal, ignites easily with or without a flame or carries disease. Some hazardous wastes cause only one problem, others cause several.

humus: organic material consisting of decayed vegetable matter that provides nutrients for plants and increases the ability of the soil to retain water

landfill: a site for the controlled burial of solid waste

leachate: liquid that has percolated through solid waste and/or been generated by solid waste decomposition and contains extracted, dissolved or suspended materials. May contaminate groundwater or surface water

methane: a colorless, odorless, flammable, potentially dangerous gaseous hydrocarbon (CH_4) present in natural gas and formed by the decomposition of organic matter. Can be used as a fuel

natural resource: valuable, naturally occurring material such as soil, wood, air, water or minerals

nonrenewable resource: a natural resource that, because of its scarcity, the great length of time it takes to form or its rapid depletion, is considered finite in amount (e.g., coal, copper, petroleum)

organic: derived from living organisms

pollution: harmful substances de-

posited in the environment, leading to a state of dirtiness, impurity or unhealthiness.

raw material: unprocessed natural resource or product used in manufacturing.

recycle: the collection and reprocessing of manufactured materials for reuse either in the same form or as part of a different product.

renewable resource: a natural resource derived from an endless or cyclical source (e.g., sun, wind, water, wood, fish). With proper management and wise use, replacement of these resources by natural or human-assisted systems can be approximately equal to their consumption

reuse: to extend the life of an item by using it again, repairing it, modifying it or creating new uses for it

sanitary landfill: a specially engineered site for disposing of solid waste on land. Constructed in a way that reduces hazards to health and safety

solid waste: all solid and semi-solid wastes, including trash, garbage, yard waste, ashes, industrial waste, swill, demolition and construction waste and household discards such as appliances, furniture and equipment

solid waste management: the controlling, handling and disposal of all solid waste. One goal of solid waste management is to reduce waste to a minimum.

trash: material considered worthless, unnecessary or offensive that is usually thrown away. Generally defined as dry waste material, excludes food waste (garbage) and ashes. The term is often used interchangeably with the word "garbage."