

MAINE STATE LEGISLATURE

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CLEAN WATER COALITION NEWSLETTER

(207) 255-4290

Machias, Maine

Volume 3, Number 2

Spring 1989

Nancy Oden, Ed.

* Beyond Township 30 *

** Let's Save What's Left of Maine **

*** For The Future - For The Children ***

ALL OUT TO AUGUSTA

MAY 20

Gather for a Rally on the Steps of the Governor's Mansion

11:30 Saturday Morning

* * * * * EXCITING PROGRAM OF ROUSING SPEECHES & INSPIRED MUSIC * * * * *

WE NEED EVERYBODY - There's Nothing Better Than Large Numbers of Aroused
Citizens to Awaken the Politicians!

AFTER THE RALLY, those of us who wish will GATHER across the street in the
State Office Building.

We'll talk about how to SAVE WHAT'S LEFT OF MAINE and how to RECLAIM
what's already been damaged. Clean Water Coalition will have an action proposal
for a REFERENDUM to stop the importation of out-of-state garbage into Maine.

NO ONE CAN DO THIS BUT US!

We will have people there to propose action to Save What's Left of Maine's coastal waters,
lakes, wetlands, forests, fisheries, wilderness, and how to protect ourselves from out-of
state garbage, incinerators, dumps, over-development, pesticides in our food and water,
pesticide spraying, and waste and destruction of all sorts.

Only WE can make a real difference by regaining control that we've somehow lost over our
Earth's natural resources. Doesn't the water belong to all of us? The air? The Earth itself?

As we all know, we either save what we have left - SOON - or we are in the last years of
Earth as a habitable place. Again, no one will take this responsibility but us. And
We CAN Save What's Left of Maine - We CAN Reclaim the Rest - SEE YOU MAY 20, 11:30 a.m.

LET'S GET STARTED!

More information, call 255-4290 or 255-4087 or 255-4084

Is Your Group On This List??

Below is a partial list of organizations that have come out against the dump in Township 30. We think it's pretty impressive. We know we didn't get them all on the list, so let us know if your group should be on there. And we'd like more, so please get your group to endorse the fight against the toxic ash dump in Township 30, Washington County, Maine, and send us a note.

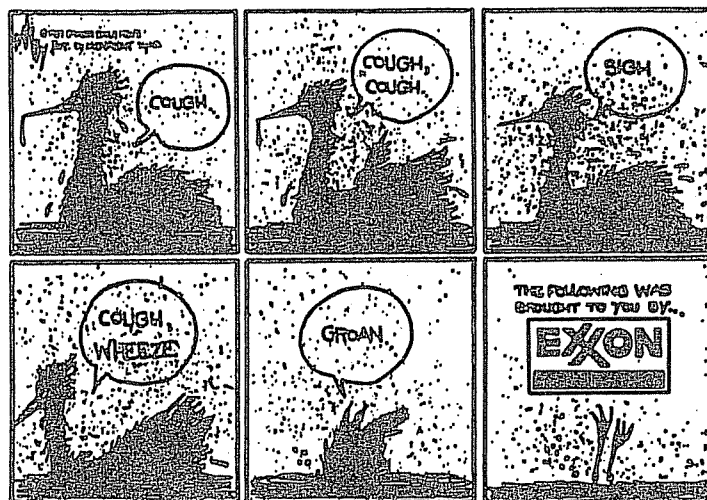
It's not facts and logic we're fighting here - the hearings showed that when Clean Water Coalition and our attorney, Martha Gaythwaite, destroyed their "facts". What we're fighting here, as people all over the country are, are money and politics. That's why we need lots of public and visible support to equalize the fight. If we can help one another, we can all win!

Within the State of Maine

Atlantic Salmon Federation, Maine Council
 Byron McPheters Garden Club
 Calais Rotary Club
 Caribou Garden Club
 Chamber of Commerce, Machias Bay Area
 Cherryfield Foods, Inc.
 Christian Civic League
 Delta Kappa Gamma Society Intl., Lambda Chapter
 Democratic State Committee
 Donnell Pond Preservation Committee
 Downeast Blueberry Co-operative
 Downeast Salmon Federation
 Jasper Wyman & Son Blueberry Co.
 John Cole (founder of Maine Times)
 Jonesport Rotary Club
 League of Women Voters of Maine
 Machias Rotary Club
 Machias Valley Sportsmen's Club
 Maine Audubon Society
 Maine Council of Churches
 Maine POWER (People Organized to Win Environmental Rights)
 Maine Times newspaper
 Maine Wild Blueberry Co.
 Narraguagus Salmon Association
 Nathaniel Pryor Reed, Hobe Sound, Fla.
 (former assistant secretary of interior)
 Ocean Products, Inc. (aquaculture)
 Penobscot County Conservation Association
 Pineo Point Fisheries Co.
 Pleasant River Fish & Game Conservation Association, Inc.
 Port Authority of Eastport
 Shaw Mudge Co.
 Schoodic Audubon Society
 Sound Earth Organic Gardeners
 Sportsmen's Alliance of Maine
 Sportsmen's Lobby
 Steuben Sidewalk Society
 Sunhaze Trout Unlimited
 Republican Party Committee, Washington Cty.
 Two Rivers Atlantic Salmon Club
 United Church of Christ, Maine
 Veazie Salmon Club

National

Atlantic Salmon Federation
 Center for the Biology of Natural Systems, Barry Commoner
 Citizens Clearinghouse for Hazardous Waste
 Defenders of Wildlife
 Eric B. Outwater, former EPA administrator, Love Canal
 Greenpeace
 National Audubon Society
 National Toxics Campaign
 Restoration of Atlantic Salmon in America, Inc.
 Small Business Service Bureau, Inc.
 Stripers, Unlimited
 United Church of Christ (1.7 million)
 Wild Blueberry Assoc. of North America
 Work on Waste, U.S.A.



*Bangor Daily News
 April 5, 1989*

Radical: What you are called when industry and government are made uncomfortable by your actions.

Special Waste: Solid waste incinerator ash. It's too expensive to treat as hazardous because it is highly toxic. So industry and government call it "special."

State-of-the-Art: Industry's latest experiment.

There's No Cause For Alarm: Grab the kids, the dog and everything you can carry and head for the hills.

String Quartet Concert

to Benefit Clean Water Coalition

Four members of the Bangor Symphony Orchestra have joined together to perform a benefit concert for the Clean Water Coalition on May 10, Wednesday, at 7:30 p.m. in the University of Maine at Machias Performing Arts Center (same place we held Township 30 hearings).

All four are world-renowned musicians, and CWC is quite fortunate to have them volunteer their talents for us. They are:

Werner Torkanowsky, conductor of the Bangor Symphony Orchestra and violinist
George Sopkin, principal cellist, B.S.O.
Estelle Holly, principal violin, B.S.O.
Brenda Liu, acting principal viola, B.S.O.

Tickets will be \$4.00 adults, \$2.00 children at the door, and will include a reception after the concert. There we will have a chance to talk with the musicians and partake of refreshments. The money will help defray our legal costs for the Township 30 toxic ash dump fight.

This should be quite a splendid event for us, and we hope you all can come. It's spring! Get out of those boots and longies and put on your finery (not necessary but part of the fun).

We'll also let you know the latest on the Township 30 hearings, when the decision should be made, what it looks like, etc.

Please come. It will be fun and we do need the money.

For more information, call Lynn Brubaker at 255-4980 or Sue Furth at 667-2391 or Don Crandlemire at 255-3130 or 255-3313.

What You Can Do To Help

Stop The Twp. 30 Dump - And Beyond

--Volunteer a few hours each week to help in the Clean Water Coalition office, downtown Machias. Need people for filing, answering letters, xeroxing, maybe a little typing. If you can do any of these, please call and let's set up some time for you to come in. We do need help NOW, while we're building for May 20 in Augusta.

--Get signatures on petition, page 4 of this issue. Make xerox copies of it blank and fill as many sheets with signatures, then mail or bring them in by May 15, please. You can get signatures outside larger stores or take petition to your next church or group meeting.

--Get people to come to Augusta on May 20th. Car pool, then convoy on down. Bring energy, sandwiches, and clean Washington County water.

--Write letters to the editor of "Bangor Daily News", "Maine Sunday Telegram", "Maine Times", etc. You may think it's all been said, but we have to keep the pressure up, and keep educating the rest of the state! So just put down in your words why you don't want the dump. Shorter is better. Need new people to do this, they won't publish anything by those of us who have written many already. Important!

--Watch for trucks going into Marion Twp. dump at night. Note license plate, markings on truck, and time. Notify us and State Police.

--Watch for tanker trucks with open valves (liquid running out), either on road or on back roads. Make note of when, where, license, markings on truck. Notify us and State Police.

o o o o o o o o o o

Bangor, You Know All That Work You've Put In To Restore Atlantic Salmon

To The Penobscot River? Well, Forget It! PERF's Gonna Re-Poison The River!

Or they would if the Township 30 dump were permitted, which it will not be. But their plan was to truck the poisonous water that would leak out of the dump to the Old Town waste water treatment plant. That means the dioxins, lead, mercury, arsenic, etc., would go right back into the Penobscot. Too bad for the Atlantic salmon. Bet Ralph Leonard didn't tell his buddies at the Penobscot Salmon Club about that!

PETITION

Spring 1989

To: Department of Environmental Protection
Land Use Regulation Commission
Governor John R. McKernan, Jr.

The undersigned hereby PETITION for PUBLIC HEARINGS with Intervenor Status for the Clean Water Coalition in the matter of changing licensees and changing the use of the Down East Landfill, Inc., also known as the Marion Township dump.

Aforesaid dump was licensed as a regional dump for Washington County towns only. We would like to put the dump under local control for local use.

NameAddressTown & Zip

Please return signed petitions to: CLEAN WATER COALITION
P.O. Box 133, Machias, Maine 04654
Phones: 255-4290 or 255-4084

by May 15, 1989. Thank you.

The Next Fight

The petition opposite is pretty self-explanatory, but the reasons behind it follow. We are filing for public hearings and intervenor status because we do not believe our interests and Alva Achorn's interests are compatible.

Alva Achorn, of Norridgewock leaking-dump infamy, has purchased the 120-acre dump in Marion Township, Washington County. This is now the last commercial dump with any significant amount of space left in the state of Maine. It is also lots closer to home than Township 30, and would impact waters very close to many people.

Ocean Products, Inc., the largest Atlantic salmon aquaculture company in the United States, is raising a million baby salmon (smolts) downstream from this dump. They are not happy with the proposed changes, either.

This dump was only allowed because citizens were promised it would be our regional dump for Washington County towns only. That's what the LURC and DEP permits state. But, as we see, when dumps are privately owned, they can go to the highest bidder, who then tries to change the rules, as Achorn plans to try.

Achorn proposes to bring garbage in from away, and to build a "secure" area with plastic lining, etc. Sound like Township 30? We want public hearings to find out just exactly what his plans are, and to decide whether he should have control of that dump. We think not.

Clean Water Coalition has proposed to Gov. McKernan that the state buy the Marion Twp. dump and turn it over to us, citizens of Washington County, for taking care of our own garbage in our own way.

If we used that dump for recycling of everything possible, and composting everything possible, and if we took out all the hazardous materials before stuff got to the dump, the dump should last us safely forever.

We're trying to do what is sensible and right for our long-term survival.

Please duplicate the petition and fill them with signatures and get them back to us by about May 15. Thanks for whatever you can do.

& & & &

FOR MAY 20 - bring family, friends, neighbors, food to share, and children. Children will inherit this poisoned earth, and should start right now learning about the mess, and what can be done to help save the earth.

OUT-OF-STATE GARBAGE:

How To Keep It OUT!

REFERENDUM! We need to put a referendum question on the ballot so we, the people of Maine, can have a direct vote, and therefore more control, over our garbage facilities. When we have a direct vote, we don't have to beg and plead in Augusta. If they'd do the job, we wouldn't have to. But, as usual, the people have to lead when we really want something done. So we shall.

Because of the following:

- many tons of out-of-state garbage come into Maine every day;
- legislators tell us it is "unconstitutional" something to do with "free trade", to ban outright the importation of garbage by commercial dumpers;
- governmental entities (we can create garbage authorities of our own - by vote), can legally decide whose garbage they will take;

WE PROPOSE that the State of Maine issue bonds and buy all existing incinerators and commercial dumps in the State of Maine, and turn them over to each region for local control. (Region can equal county or whatever the people decide.)

In the referendum wording we'll have to be careful to include the incinerator men's latest scam: shredding out-of-state garbage before it's brought into Maine and then calling it "refuse-derived-fuel" for the incinerators' ostensible purpose of making electricity.

The real money is in the out-of-state garbage, not in Maine garbage or the bit of electricity they generate. Everything they do is to take our attention off of the amount of garbage and "special waste" they bring in from out of state.

As soon as we own the incinerators, we can start shutting them down as we go to serious recycling of everything possible. We can achieve 30-50% reduction right away if we will compost all organic materials. We can set up free stores for re-usable things and then start work on reducing the amount of garbage produced in the first place.

#

FOR MAY 20 - Let your mind go - think of what is really needed to save our earth, do not concern yourself with somebody's profit or compromising to deal with current "reality". We will make the reality:

THEN BRING IN THOSE IDEAS TO SHARE WITH US ON SATURDAY, May 20, beginning 11:30 a.m.

Thank You for Your Help to the Clean Water Coalition - Volume I

We know we can't fit all of those who should be thanked on this one page, so we'll start now and continue in the next issue.

Thanks to:

- Jim Crotteau for computerizing our mailing list and willingly keeping it up to date for two years now.
- WMCS/WALZ, Machias Radio, for their continued support and coverage whenever we need it.
- WERU in Blue Hill, WQDY in Calais, WKSQ (KISS) in Ellsworth have all done special coverage on the fight against Township 30 dump.
- Washington County weekly newspapers, "Machias Valley News Observer", "St. Croix Courier", "Quoddy Tides", and "Downeast Coastal Press" have all been especially helpful.
- Bob Guptill, who has taken video movies of all our major doings for a year now, including all the hearings. He also made the now infamous video of Nate Pennell and Ron Brokaw in Twp. 30. Good job, Bob!
- Calais Press for meeting short deadlines, and for donating letterhead stationery, and for doing a great job on our materials.
- Ron Rockwell, owner of Wilderness Lodge up on Route 9, for letting us use his facilities for the successful May Day Rally last year.
- Sid Bahrt, President of Schoodic Audubon, for so many things, continued support, for designing and printing at his own cost t-shirts, letterhead and envelopes and posters.
- Ocean Products and Maine Wild Blueberry Co. for letting us use their FAX machines.
- Dr. Amr Ismail of Maine Wild Blueberry Co. for being such a strong witness for Clean Water Coalition at the Twp. 30 hearings, and for getting the Wild Blueberry Assoc. of North America to endorse the fight against Twp. 30.
- Tom Hennessey of the "Bangor Daily News" for his powerful writings against the Twp. 30 dump and for donating three (so far) color prints for us to raffle off.
- Dr. Alan Lewis, Prof. of Ecology, Univ. of Maine at Machias, for being a truly wonderful witness for CWC at the Twp. 30 hearings, and for early and continued support.
- Martha Gaythwaite, Esq., of Friedman & Babcock, Portland, for her fantastic job of lawyering for CWC at the Twp. 30 hearings and beyond. We will pay our bill, Martha, really!! (She's never even asked!)

The following towns have voted money at their town meetings for Clean Water Coalition to pay legal fees incurred during the hearings on Township 30. More than \$12,000. has been raised so far, and 14 Washington County towns have yet to meet. We need a few more thousand dollars, and hope to get it from them.
THANKS!

Addison
Alexander
Beddington
Centerville
Charlotte
Cherryfield
Columbia
Columbia Falls
Cooper
Crawford
Cutler
Deblois
East Machias
Grand Lake Stream
Harrington
Jonesboro
Jonesport
Meddybemps
Milbridge
Pembroke
Perry
Steuben
Vanceboro
Wesley
Whiting

Isn't that Great!! People have so wonderfully supportive of Clean Water Coalition efforts—we do appreciate all the good words, and actions such as above!

* * * * *

-Muriel and Phil Watts for so many things. Phil acted as our treasurer for a few months, and put posters about the hearings up in over half the county, and did whatever needed to be done. Muriel initiated the United Church of Christ resolution that went national.

-Shaw Mudge for our FAX and copy machines.

-Ukey Santos for several months of time to help in the office. He finally had to go back to making a living, but Thanks, Ukey!

-And many more - to be continued!

Money/Donation Thank You's Next Time

Raffles!

by Vickie Campbell

We are still selling tickets on the beautiful Tom Hennessey color print of a bull moose, which was donated by Sportsmen's Alliance of Maine, and the boat trip for five up the Harrington River this summer. Tom Hennessey, wildlife artist and writer for the "Bangor Daily News", has donated another color print, "Salmon Fishing on the Narraguagus River", one of the rivers threatened by the proposed dump in Township 30.

We also have a fine, handwoven basket about 14" high by 10" wide with a woven cover and handles, donated by Ukey Santos and Rita. Tickets will be sold for all of these at the MAY 20 GATHERING in Augusta, and we will draw the winners there, too.

Tickets for the prints and basket are \$1.00 or 6/\$5.00. Sailing trip tickets are \$3.00 each or two for \$5.00.

All money goes to help stop the dump in Township 30 and stop Marion Township from being filled up with garbage from away.

Stop using hazardous wastes in your house

INSTEAD OF THIS:	USE THIS:
Ammonia-based cleaners.....	Vinegar, salt and water mixture for surface cleaning. Baking soda and water for the bathroom.
Abrasive cleaners.....	Rub area with 1/2 lemon dipped in borax, then rinse.
Floor or furniture polish.....	1 part lemon juice, 2 parts olive or vegetable oil.
Silver polishes.....	Soak in boiling water with baking soda, salt, a piece of aluminum.
Toilet cleaners.....	Baking soda, toilet brush.
Disinfectants.....	1/2 cup borax in 1 gallon water.
Drain cleaners.....	Plunger; flush with boiling water, 1/2 cup baking soda, 1/2 cup vinegar.
Rug/upholstery cleaners.....	Dry cornstarch sprinkled on, then vacuumed.
Mothballs.....	Cedar chips, newspapers, lavender flowers.
Enamel or oil-based paints.....	Latex or water-based paints.
Mosses plant insecticide.....	Old dishwater or bar soap and water; spray on leaves and rinse.
Flea collars and sprays.....	Gradually add brewer's yeast to pet's diet.
Roach and ant killers.....	Roaches: baking soda, powdered sugar mix. Ants: chili powder to hinder entry.

Source: Household Hazardous Waste Wheel, available for \$3.75 from Box 70, Durham, N.H. 03824-0070.

Above very important. Once we've beaten back the dumpers, we will start a campaign to keep hazardous materials out of our septic tanks and water supplies. Clean Water Coalition has some really good materials on Household Hazardous Waste and alternatives, but above list is a good start.

* * * * *

We do not like to keep asking for money, but NOW is when we're under attack, so NOW is when we have to fight them all! This is an investment in our future. If we lose, there won't be much future. But we are NOT going to lose, be assured! When people are fighting for survival as we are, they do not give up.

Timetable for Twp. 30 Decision

When will we know what the BEP and LERC decide about Township 30 dump proposal? What with lawyers' rebuttals, surrebuttals, legal briefs, and BEP/LERC members hopefully reading all the proceedings, it looks like no earlier than September, maybe October before any decisions are made.

We will of course be going to Augusta for those meetings, and we will notify people through the media. More is better, so plan to go if you can.

* * * * *

Notes from the Treasurer

by Phil Watts

We must again bring up money. You all are aware that the hearings were lengthy and costly. Your Board of Directors did what they thought they had to do to project good opposition. We think the fight was successful. We'll find out in a few months.

Now to pay the bills. Clean Water Coalition has raised several thousands of dollars but owes several thousand presently. Hopefully everyone will continue to contribute as much as they can so we can meet the obligations facing us.

Enclosed is \$_____ to help stop the dump in Township 30, and keep Marion Township dump for Washington County, and to begin the campaign to get the incinerators and dumps out of the big money men's hands.

____ I can help in the office, call me.

____ I will be in Augusta May 20 at 11:30 a.m. for the Rally/Gathering.

____ I can take _____ people with me.

____ I could use a ride to Augusta.

Name _____

Phone _____

Address _____

Town _____ Zip _____

Buses would be cheaper, safer, and more efficient use of energy, but most people seem to prefer to drive their own cars down. Okay, so let's share rides when we can. Let us know if you can give or need a ride. We want everyone to go who wants to.

Schedule

May 10 - String Quartet Concert,
benefit Clean Water Coalition
at Univ. of Maine, Machias.
See page 3 for details.

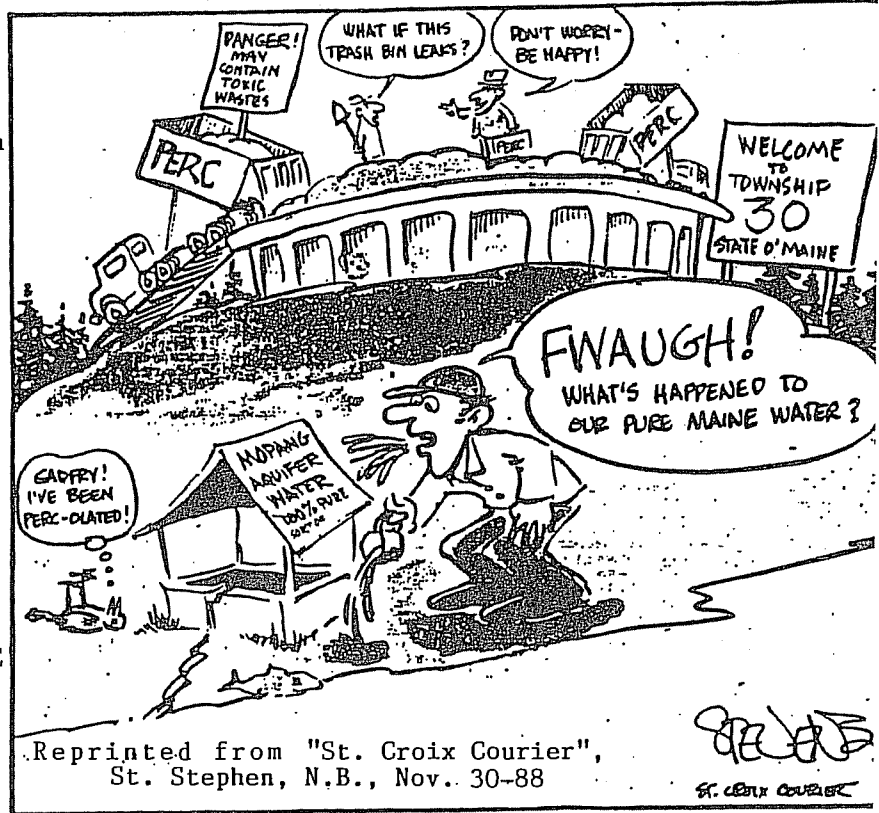
May 14-20 - declared Environmental
Awareness Week by Gov.
McKernan. We're aware, what
now? COME MAY 20.

Sometime during Env. Aw. Week - an
action against Exxon for
dumping on and killing part
of our world. Call Fred
Lancaster, 883-1101 or Carl
Rogers, 773-1782, Portland.

MAY 20 - Augusta RALLY/GATHERING -
Saving What's Left of Maine.
See Page 1 for details.
VERY IMPORTANT - PLEASE COME

Sometime early Fall, decisions by BEP
and LURC re Township 30 proposed ash
dump on our water supply. Even if
they would allow it, we won't.

* * * * *



Reprinted from "St. Croix Courier",
St. Stephen, N.B., Nov. 30-88

Rachelle Bourque Hunt, noted artist from Roque Bluffs (near Machias), has drawn for Clean Water Coalition a beautiful, fine, line drawing of an eagle plucking a salmon from a set of rapids. Also in the drawing are woods, a woodpecker, a wood duck and a feeling that this is worth fighting to save. We are printing postcards from our drawing, and will be making up a few print. If you have seen her work, you know she is extremely accurate in depicting wildlife, especially in her line drawings. We are very proud that she did this work of art just for us. To look at it is to know why we are fighting so hard, and why we MUST win! Available soon.

.....

CLEAN WATER COALITION
P.O. Box 133
Machias, Maine 04654

Non-Profit Organization
U.S. Postage Paid
Machias, Maine 04654
Permit No. 27

HOPE TO SEE YOU MAY 20 in AUGUSTA!!

Estimated quantities of the bulky waste types discussed are summarized in Table 2-10. The data presented only represents an order-of-magnitude estimate of these wastes, and the quantities are quite varied from year to year. However, such quantities provide an indication of the magnitude and potential impacts these materials have on municipal landfills.

Table 2-10
Estimated Bulky Waste Generation

<u>Material</u>	<u>Quantity (Tons per Year)</u>
Construction and Demolition Debris	156,000
Durable Goods	104,000
Scrap Tires (1)	<u>11,300</u>
TOTAL	271,300

(1) - Does not include tires stockpiled at the Durham and Bowdoin tire piles.

SPECIAL WASTE GENERATION IN MAINE

In addition to municipal solid waste, a third category called special waste must be estimated to achieve a clear idea of waste generation in Maine. Special wastes in Maine are an all encompassing category of waste materials which are generally categorized as waste generated by sources other than residential and commercial wastes. The State of Maine has adopted an official definition of this type of waste and refers to waste as special when such materials exist in unusual quantities or require special handling,

magnitude estimate of these wastes. In addition, quantities generated or disposed as shown in the table are quite varied and the generation of the wastes and the quantities requiring disposal are not necessarily consistent year to year. Therefore, forecasted future quantities do not appear reasonable for this broad category of wastes. Nonetheless, the total quantity of waste shown in Table 2-11 is considerable and is more than the quantity of estimated municipal solid waste.

Table 2-11
Estimated Special Waste Generation

<u>Material</u>	<u>Quantity (Tons per Year)</u>
Asbestos	15,400
Power Plant Ash	162,000 (1)
Incinerator Ash	193,000
Oily Debris	34,400
Industrial Sludge	604,000 (2)
Municipal Waste Water Treatment Sludge	57,000
Other	<u>9,200</u>
TOTAL	1,075,000

(1) - Figure excludes 2 independent power producers not responding to survey/questionnaire or follow-up telephone request for information.

(2) - Figure excludes 2 paper mills not responding to survey/questionnaires or follow-up telephone request for information.

MUNICIPAL SOLID WASTE CAPACITY

Having estimated the current and forecasted quantities of municipal solid waste generated, an inventory and analysis of current solid waste management facilities and practices in Maine can be examined to assess the current capacity conditions and to predict potential future problems.

Presently, 60 percent of the waste stream goes to waste-to-energy facilities, and the remaining 40 percent goes to landfills in and out of state. Table 3-1 summarizes current processing and disposal practices in the State.

Table 3-1

Summary of Current Processing and Disposal Methods in Maine

<u>Disposal Method</u>	<u>Quantity (Tons per Year)</u>	<u>Percent</u>
Waste-to-Energy	513,390	58.6
Incinerator	13,450	1.5
Landfills	331,570	37.8
Open Burning Dumps	11,710	1.3
Out-of-State Disposal	6,860	0.8
Unknown	<u>370</u>	<u>0</u>
TOTAL	877,350	100

Landfills

Maine has, historically, relied on local municipal landfills to dispose of its municipal solid waste. While this reliance has somewhat

Table 3-3
Current Incineration Capacity

<u>Facility</u>	<u>Type</u>	<u>Process</u>	<u>Municipalities Served</u>	<u>Annual Effective Design Capacity (Tons per Year)</u>
Auburn	Waste-to-Energy	Mass-Burn	17	45,000 (1)
Frenchville	Incinerator	Combustion Without Energy Recovery	5	11,000
Harpwell	Incinerator	Combustion Without Energy Recovery	1	2,500
MERC	Waste-to-Energy	Refuse-Derived Fuel	27	190,000
RWS	Waste-to-Energy	Mass-Burn	20	170,600
PERC	Waste-to-Energy	Refuse-Derived Fuel	<u>93</u>	<u>225,000</u>
TOTAL			163	644,100

(1) - Currently operated at 70-75 percent of design capacity.

The MERC and RWS waste-to-energy facilities are currently receiving the waste stream to cause these facilities to operate at or near capacity and, therefore, allow limited margins to accommodate future increases in waste generation. The Auburn facility is currently operating at 70 to 75 percent of design capacity because of reported operating and equipment problems. Major modifications are planned to bring this facility up to operating capacity. PERC, the largest waste-to-energy facility in the State, currently has approximately 185,000 of its 225,000 tons of annual design capacity under

Table 3-4

Materials Handled by Private Recycling Firms
in Maine in 1987

<u>Material</u>	<u>Tons in 1987</u>
Glass (all colors)	38,500
Aluminum	4,750
Plastics (PET)	3,275
Paper	
Corrugated	94,869
High Grade (Ledger and Computer)	15,105
Mixed Paper	6,259
Newsprint	4,617
Wood Waste	2,000
Ferrous Scrap	55,000
Non-Ferrous Scrap	<u>2,500</u>
TOTAL	226,875

These figures include residential and commercial recyclables, as well as recycling under the State's Bottle Bill. The totals are to be used with caution for two reasons. First, the number of firms is probably not comprehensive, i.e., there may be additional firms, particularly out of State, that handle Maine's recyclables. Conversely, the firms surveyed may handle small amounts of materials from out of State. Second, there may be some double counting because, often, one processor will sell to another processor who will act as the final broker. Many private recyclers are undergoing rapid growth, as much as 50 percent in a year. Virtually all firms surveyed indicated that they were willing to expand their facilities to process materials, if more materials became available through increased recycling.

Table 3-6

Imported Special Waste to
Maine Landfills
(Estimated Tons in 1987)

Oil Spill Debris	130,500
Asbestos	81,400
Incinerator Ash	400
Metal Hydroxide Sludge	3,900
Coal Ash	33,700
Oil Ash	100
Storm Drain Sludge	200
Paper Mill Sludge	90
Other	200
TOTAL	250,490

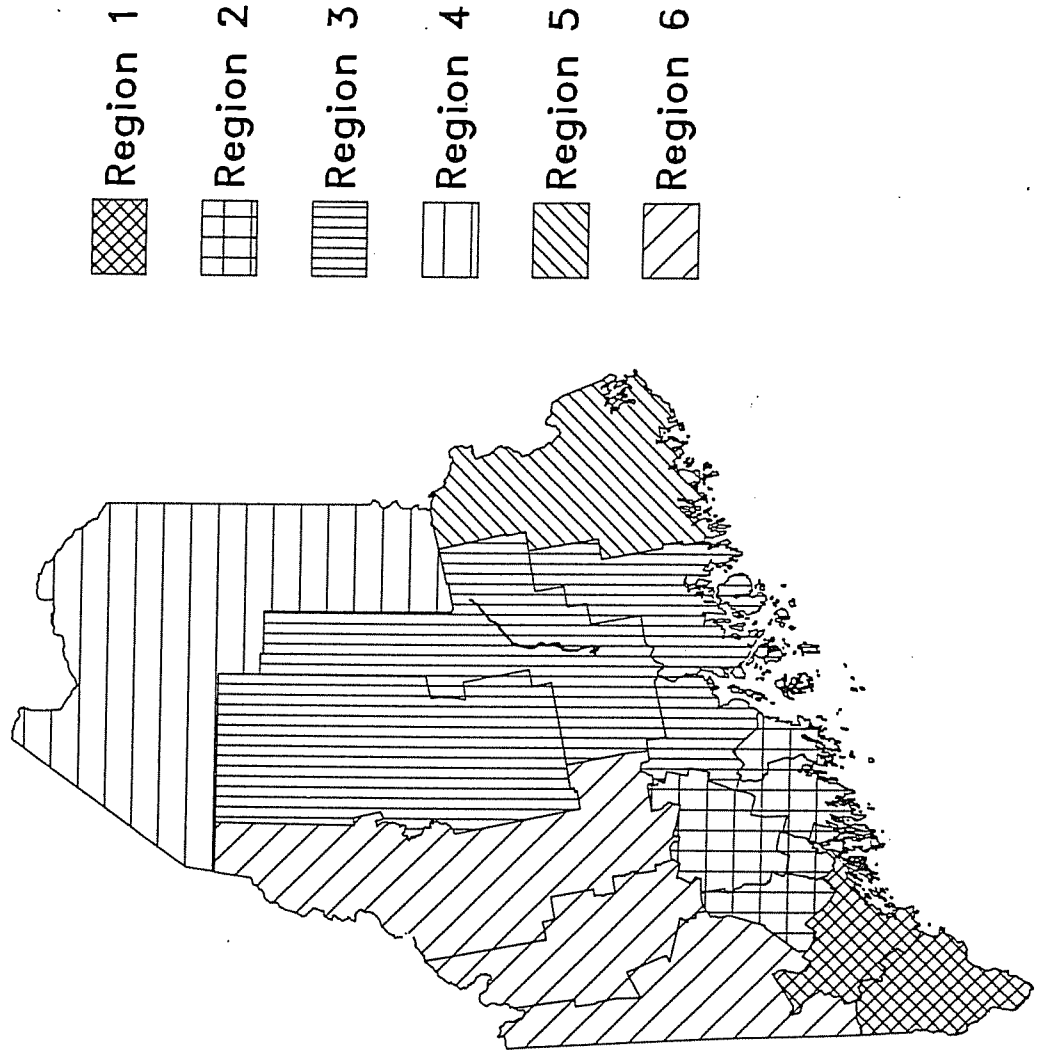
CAPACITY OF CURRENT FACILITIES

Looking beyond the short-term, if current solid and special waste management practices continue, many of Maine's communities and industries will face a dilemma. Problem and substandard landfills will close for environmental protection reasons, and remaining available landfill space will be filled to its capacity limitations. Figure 3-1 illustrates the current solid waste disposal capacity on a Statewide basis and the projected decline in disposal capacity as a direct result of landfill closures by 1995.

Over the next two years, the expansion of the Consolidated Waste Services and the remaining capacity at PERC may allow the closure of landfills located on aquifers and those documented as contaminating ground water, as well as certain of the landfills posing a threat to surface and ground water. However, by 1995, it is anticipated that only 4 landfills in the State will

Maine MSW Planning Regions

Figure 4-1



MUNICIPAL SOLID WASTE DISTRIBUTION BY REGION

Figure 4-2

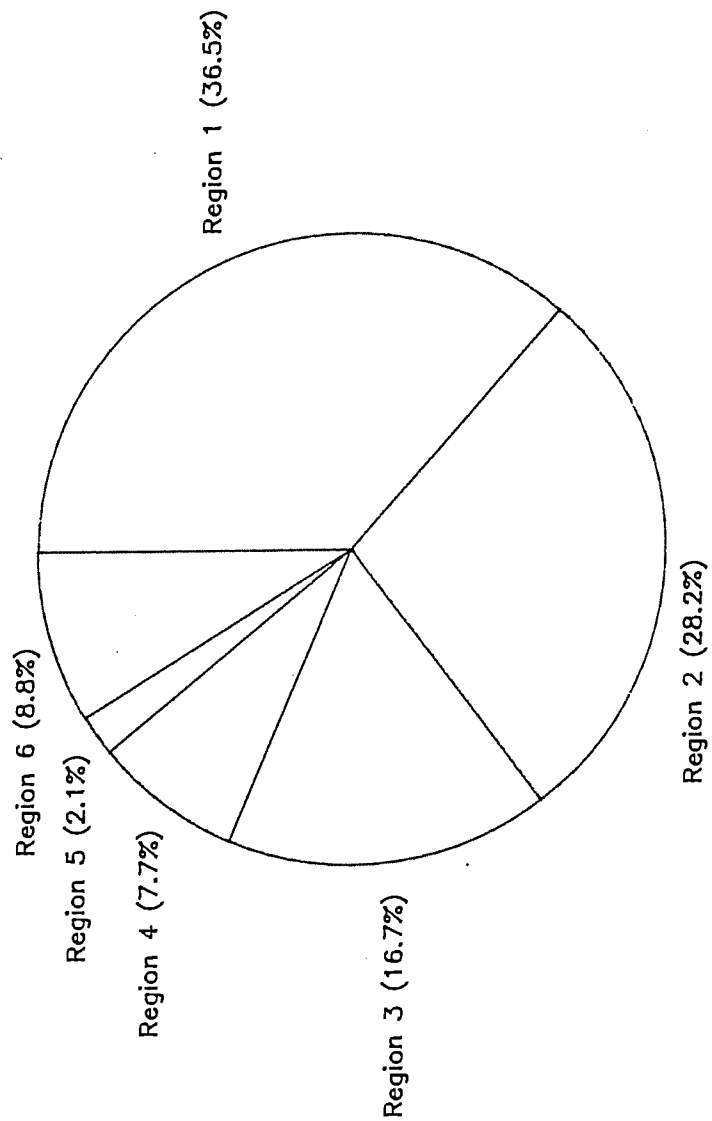


Table 5-2

Solid Waste Management Options

<u>Category</u>	<u>Suboptions</u>
Waste Reduction	Reduced Resource Use per Product (Revised Packaging) Increased Product Life Product Re-use Decreased Consumption
Recycling	Intermediate Processing Centers Residential Curbside Collection Collection of Commercial Recyclable Materials Buy-back Centers Drop-off Centers
Composting	Yard Waste Composting Back Yard Composting Municipal Solid Waste Composting
Materials Recovery	Shredding Air Classifiers Magnetic Separation Optical Sorting Aluminum Magnets Hand Sorting Composting
Energy Recovery	Modular Mass Burn with Steam and/or Electricity Field-Erected Mass Burn with Steam and/or Electricity Production Refuse Derived Fuel (RDF) with Steam and/or Electricity Production
Landfilling	Municipal Solid Waste Special Waste Incinerator Ash Bulky Waste

Table 3-2

Estimated Landfill Life

<u>Landfill</u>	<u>Type of Ownership</u>	<u>Estimated Years Remaining</u>
Consolidated Waste Services	Commercial/ Regional	*
Down East Landfill	Commercial/ Regional	18-20 years
Tri-Community Sanitary Landfill	Municipal/ Regional	15-20 years
Brunswick	Municipal/ Single Community	15 years
Dolby III Landfill	Private Company	13 years
Lewiston	Municipal/ Single Community	Less than 3 years
Hatch Hill, Augusta	Municipal/ Regional	1 year
Sawyer Environmental Recovery Facility	Commercial/ Regional	Less than 1 year
Presque Isle	Municipal/ Regional	6-8 years

(*) - The Consolidated Waste Services Landfill was granted an expansion to its existing landfill in August, 1988 for a projected volume of 678,148 cubic yards or an equivalent of 298,385 tons of municipal solid waste. The expected capacity life, as estimated by Consolidated Waste Services, is less than 2 years, based on its assessment of potential waste disposal demand and contract status. If the demand falls short of anticipation, the expected life at this facility will be longer.

5/6/89

MUNICIPAL SOLID WASTE DISPOSAL IN MAINE

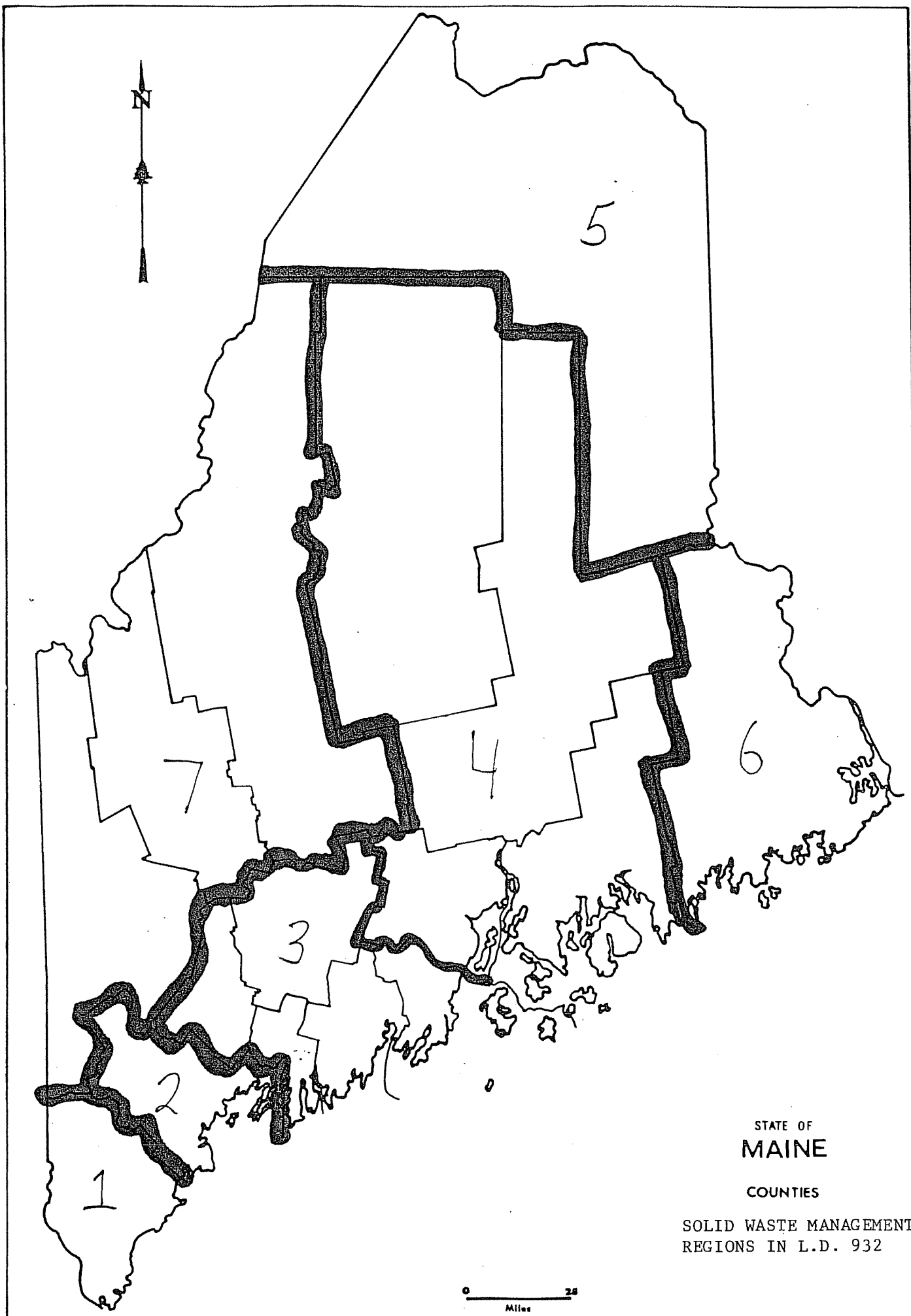
Disposal Practices - Percent 1988 Generation by Regions in LD 932

DISPOSAL PRACTICES	% by Region							% OF STATE TOTAL
	REGION 1	REGION 2	REGION 3	REGION 4	REGION 5	REGION 6	REGION 7	
Incinerators	93	88	41	76	16	0	20	60
Municipal Land Disposal & Unknown	1	11	54	17	84	66	43	32
Commercial Landfills	0	1	5	7	0	34	37	7
Exports*	5	0	0	0	0	0	0	1
TOTAL WEIGHT (TONS)	127,048	193,370	246,796	146,280	67,492	18,343	77,300	876,629
% OF STATE	14	22	28	17	8	2	9	100

SOURCE:

Data obtained from Draft Capacity Needs Analysis; Dec. 1988, R.W. Beck. Actual waste disposal at facilities may differ significantly from data presented due to changes in disposal practices during 1988. Data does not include bulky waste generation or the unorganized territories.

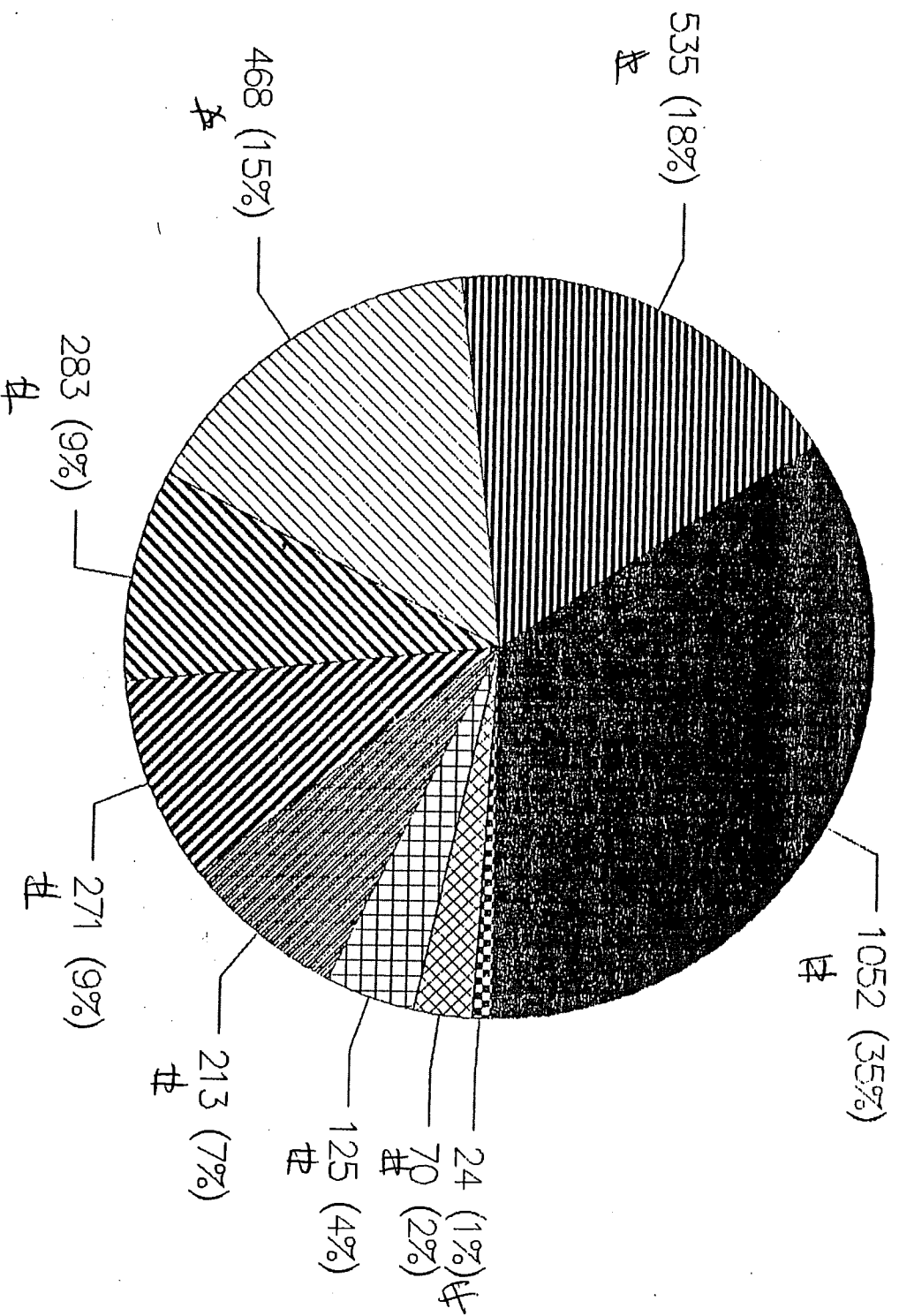
* Imports of municipal solid waste in 1988 totaled 101,000 tons. This waste went to Maine Energy Recovery Corp., Consolidated Waste Services, Penobscot Energy Recovery Corp. and Regional Waste Systems.



COMPARISON OF VARIOUS RECYCLING AND WASTE REDUCTION PROPOSALS

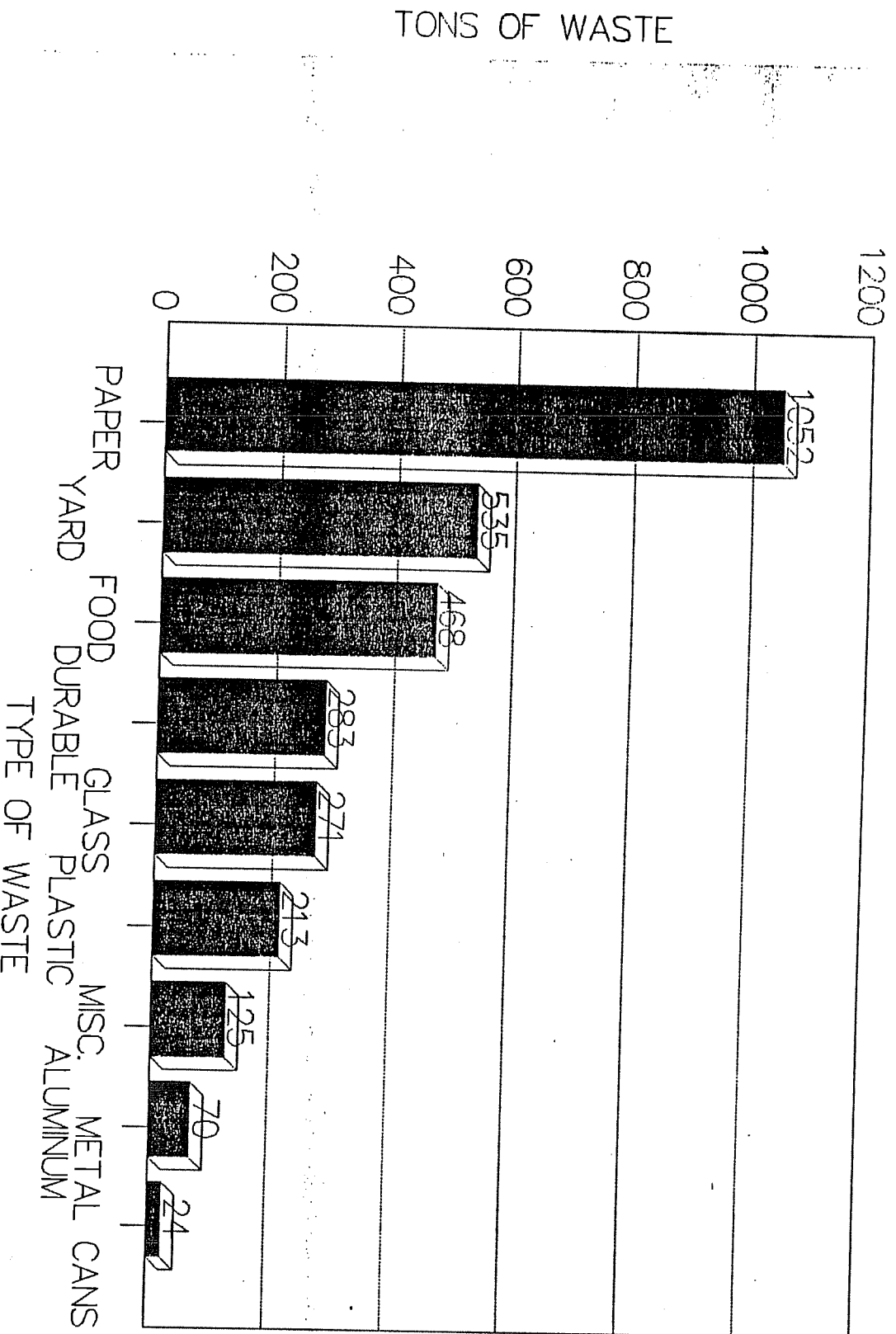
	Natural Resources Council L.D. 1431	McKernan Administration L.D. 932
Priority system	Establishes priority system favoring reduction, re-use, recycling, and composting.	Priority system favoring reduction and recycling.
Recycling goal	Establishes interim statewide goal of 25% recycling (including composting) in two years and 50% in five years.	Goals of 25% in five years for the state and regions as well as for larger communities.
Funding and technical assistance for towns	State provides 75% of capital costs of new and expanded local recycling programs; additional grants available.	Funding for mandated recycling but limited during first two years to planning costs.
Mandatory recycling	Phases in requirement that all towns recycle three materials.	Towns of 5,000+ must recycle 25% in five years; regions must also meet this goal; each town must recycle one item by 1995.
Marketing assistance	Recycling Office acts as clearinghouse of information and acts as broker of last resort; regional coordinators also assist in marketing materials.	Recycling Office acts as clearinghouse of information and broker of last resort.
Composting	Requires all towns to separate and compost leaves within two years; bans leaves from incinerators and landfills; requires state and local public works programs to use composted material as fertilizer.	No recommendation
Waste reduction measures	Provides for coding of plastic containers; bans "plastic can," multi-material juice containers, and plastic six-pack holders.	Provides for coding of plastic containers; bans "plastic can."
Packaging tax	Imposes gross receipts tax on manufacturers and distributors of consumer products packaged in non-recyclable materials.	Does not propose packaging tax.
Bottle Bill	Expands the Bottle Bill to include all beverage containers except those containing dairy products.	Expands the Bottle Bill to include all beverage containers except those containing dairy products.
Regional planning	Establishes seven districts to develop regional recycling and disposal plans, select potential sites for disposal facilities, and assist towns with recycling planning and marketing.	Establishes seven districts to develop regional recycling and disposal plans, select potential sites for disposal facilities, and assist towns with recycling planning and marketing.
State solid waste authority	Establishes authority to develop state plan; coordinate and review regional plans; provide assistance; distribute grants; act as siting authority for facilities when regions fail to act.	Establishes authority to develop state plan; coordinate and review regional plans; provide assistance; distribute grants; act as siting authority for facilities when regions fail to act.
Price regulation	Public Utilities Commission will regulate tipping fees and contracts between public and private sectors.	Review of rates by authority.
Public ownership	New landfills and incinerators to be publicly owned (with option of private sector operation) by authority.	No change in current system.
Public participation and host community rights	Continues existing public intervenor funding; provides municipal shut-down authority for dangerous facilities or persistent violators; provides independent air and water monitoring capability; trains and funds municipal inspectors; no pre-emption of local ordinances.	Automatic intervenor status; provides monitoring capability and replacement of contaminated water; trains and funds municipal inspectors; pre-empt all local solid waste ordinances except those dealing with transportation.

MONMOUTH/WALES WASTE CHARACTERIZATION TONS PER YEAR

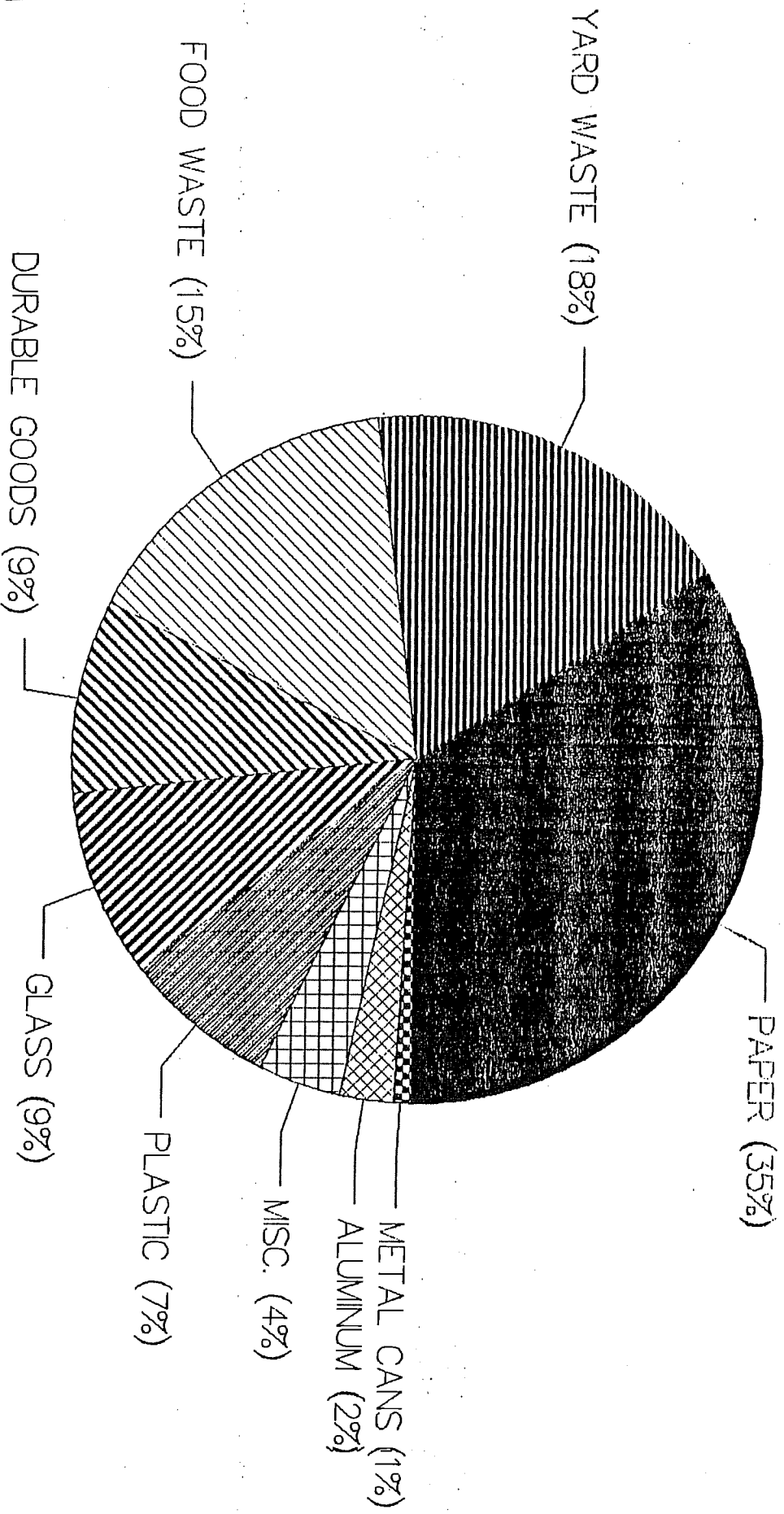


MONMOUTH/WALES WASTE

TONS PER YEAR



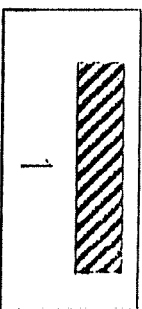
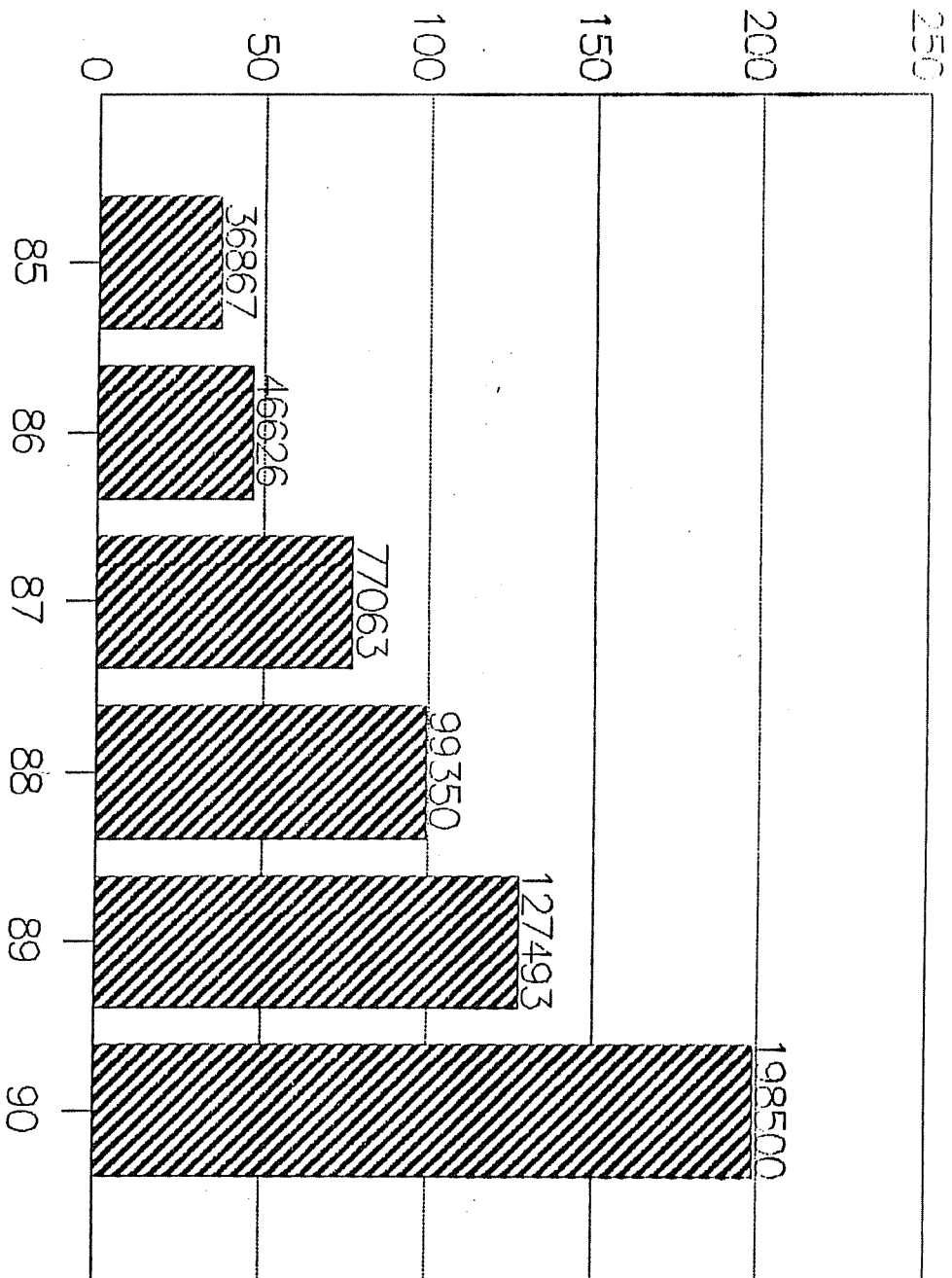
MONMOUTH/WALES WASTE TONS PER YEAR



MONMOUTH/WALES

SOLID WASTE BUDGET

DOLLARS
(Thousands)



YEAR

Public Law 100-556
100th Congress

An Act

To require that plastic ring carrier devices be degradable, and for other purposes.

Oct. 28, 1988
[S. 1986]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—DEGRADABLE PLASTIC RING CARRIERS

SEC. 101. FINDINGS.

42 USC 6914b
note.

The Congress finds that—

- (1) plastic ring carrier devices have been found in large quantities in the marine environment;
- (2) fish and wildlife have been known to have become entangled in plastic ring carriers;
- (3) nondegradable plastic ring carrier devices can remain intact in the marine environment for decades, posing a threat to fish and wildlife; and
- (4) 16 States have enacted laws requiring that plastic ring carrier devices be made from degradable material in order to reduce litter and to protect fish and wildlife.

42 USC 6914b.

SEC. 102. DEFINITIONS.

As used in this title—

- (1) the term "regulated item" means any plastic ring carrier device that contains at least one hole greater than 1¼ inches in diameter which is made, used, or designed for the purpose of packaging, transporting, or carrying multipackaged cans or bottles, and which is of a size, shape, design, or type capable, when discarded, of becoming entangled with fish or wildlife; and
- (2) the term "naturally degradable material" means a material which, when discarded, will be reduced to environmentally benign subunits under the action of normal environmental forces, such as, among others, biological decomposition, photodegradation, or hydrolysis.

42 USC 6914b-1.

SEC. 103. REGULATION.

Not later than 24 months after the date of the enactment of this title (unless the Administrator of the Environmental Protection Agency determines that it is not feasible or that the byproducts of degradable regulated items present a greater threat to the environment than nondegradable regulated items), the Administrator of the Environmental Protection Agency shall require, by regulation, that any regulated item intended for use in the United States shall be made of naturally degradable material which, when discarded, decomposes within a period established by such regulation. The period within which decomposition must occur after being discarded shall be the shortest period of time consistent with the intended use

KENNETH P. MacLEOD, CLU.
14 Allen Road
Brewster, MA 01932

of the item and the physical integrity required for such use. Such regulation shall allow a reasonable time for affected parties to come into compliance, including the use of existing inventories.

TITLE II—SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE

SEC. 201. ENLARGEMENT OF REFUGE.

Section 2 of the Act entitled "An Act to provide for the establishment of the San Francisco Bay National Wildlife Refuge", approved June 30, 1972 (16 U.S.C. 668dd note), is amended to read as follows:

"Sec. 2. There shall be included within the boundaries of the refuge the following:

"(1) Those lands, marshes, tidal flats, salt ponds, submerged lands, and open waters in the south San Francisco Bay area generally depicted on the map entitled 'Boundary Map, Proposed San Francisco Bay National Wildlife Refuge', dated July 1971, and which comprise approximately twenty-one thousand six hundred and sixty-two acres within four distinct units to be known as Fremont (five thousand five hundred and twenty acres), Mowry Slough (seven thousand one hundred and seventy-five acres), Alviso (three thousand and eighty acres), and Greco Island (five thousand eight hundred and eighty seven acres). Said boundary map shall be on file and available for public inspection in the offices of the United States Fish and Wildlife Service, Department of the Interior.

"(2) Up to 20,000 acres in the vicinity of the areas described in paragraph (1), and similar to the areas described in paragraph (1), which the Secretary determines are necessary to protect fish and wildlife resources."

Public
information.

Fish and fishing.

SEC. 202. TOTAL AREA OF REFUGE.

16 USC 668dd
note.

Subsection (a) of section 3 of such Act is amended in the second sentence by striking "twenty-three thousand acres" and inserting "43,000 acres".

SEC. 203. AUTHORIZATION OF APPROPRIATIONS.

16 USC 668dd
note.

Section 5 of such Act is amended—

(1) by inserting "(a)" before "There"; and

(2) by adding at the end the following new subsection:

"(b) There are authorized to be appropriated to the Secretary to acquire areas described in section 2(2) such sums as may be necessary, which shall remain available until expended."

Approved October 28, 1988.

LEGISLATIVE HISTORY—S. 1986 (H.R. 940) (H.R. 5117):

HOUSE REPORTS: No. 100-860, Pt. 1, accompanying H.R. 940 (Comm. on Merchant Marine and Fisheries) and No. 100-946, Pt. 2, accompanying H.R. 5117 (Comm. on Energy and Commerce).

SENATE REPORTS: No. 100-270 (Comm. on Environment and Public Works) and No. 100-266 accompanying H.R. 940 (Comm. on Commerce, Science, and Transportation).

CONGRESSIONAL RECORD:

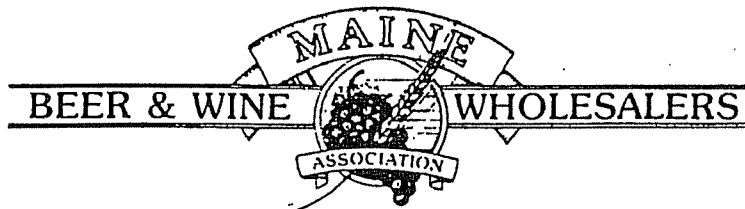
Vol. 133 (1987): Oct. 13, H.R. 940 considered and passed House.

Vol. 134 (1988): May 13, S. 1986 considered and passed Senate.

Oct. 4, considered and passed House, amended, in lieu of H.R. 5117.

Oct. 14, Senate concurred in House amendments.





14 ALLEN ROAD, BREWER, MAINE 04412 • 207-942-6741/207-989-5035

THINK ABOUT THESE FACTS BEFORE INCREASING HANDLING FEES.

1. We're talking Millions of Dollars not Pennies.

Maine consumers pay \$12 million in handling fees at \$.02 per container. An increase to \$.04 per container, with retail mark-ups, will result in \$27 million in sorting fees. Maine consumers will have to pay for this increase.

2. Handling fees DO NOT INCREASE RECYCLING.

Handling fees have nothing to do with the return rate of empties or recycling. The redemption center is given the handling fee. The consumer receives the same \$.05 deposit whether the handling fee is \$.02 or \$.04.

3. HANDLING FEES Are LESS In OTHER BOTTLE BILL STATES.

Connecticut \$.02 soft drinks, \$.01 beer

Delaware \$.01

Massachusetts \$.02

Iowa \$.01 Beer & Wine

New York \$.015

Oregon & Michigan - No Handling Fee

How can retailers in these states sort empties for less than Maine redemption centers? Conclusion - NO NEED TO INCREASE in Maine.

4. Some retailers will receive a Mega-Bucks Windfall if handling fees are increased.

One redemption center claims to sort 12 million units per year. A \$.02 increase in the handling fee gives that redemption center an additional \$240,000.00 gross revenue per year. That makes the congressional pay raise look like chicken feed.

THERE IS NO NEED TO INCREASE HANDLING FEES.

This document brings together proposals to change the Bottle Redemption Law (32 MRSA §1861 et.seq.) which are before the Energy and Natural Resources and the Business Legislation Committees. The proposals are presented without reference to L.D. number or sponsor. Existing law is provided for comparison. In addition, the option presented by Rep. McGowan at the May 8 public hearing is outlined beginning on page 8. The proposals before you address the following bottle redemption issues:

1. Beverages included (p.1)
2. Container sizes included (p.3)
3. Higher deposits for wine and spirits containers (p.4)
4. Handling fee (p.6)
5. Timing and implementation of an expansion (p.6)
6. Data reporting requirements (p.7)
7. Appropriations (p.8)
8. Proposal by Rep. McGowan (p.9)

1. What beverages to include?

Existing Law

1. Beverage. "Beverage" means beer, ale or other drink produced by fermenting malt, soda water or other nonalcoholic carbonated drink in liquid form and intended for human consumption. "Beverage" also includes wine coolers.

A. "Wine cooler" means a beverage of less than 8% alcohol content by volume consisting of wine and:

- (1) Plain, sparkling or carbonated water; and
- (2) Any one or more of the following:
 - (a) Fruit juices;
 - (b) Fruit adjuncts;
 - (c) Artificial or natural flavors or flavorings;
 - (d) Preservatives;
 - (e) Coloring; or
 - (f) Any other natural or artificial blending material.

Option 1

32 MRSA §1862, sub-§1, as amended by PL 1987, c. 649, §1, is repealed and the following enacted in its place:

1. Beverage. "Beverage" means beer, ale or other drink produced by fermenting malt, spirits, wine, wine coolers, soda or noncarbonated water, and all nonalcoholic carbonated or noncarbonated drinks in liquid form and intended for internal human consumption except for milk and dairy-derived products.

32 MRSA §1862, sub-§§12-B, 14 and 15 are enacted to read:

12-B. Spirits. "Spirits" has the same meaning as in Title 28-A, section 2.

14. Wine. "Wine" has the same meaning as in Title 28-A, section 2, except that for the purposes of this chapter "wine" does not include wine coolers.

15. Wine cooler. "Wine cooler" means a beverage of less than 8% alcohol content by volume consisting of wine and:

A. Plain, sparkling or carbonated water; and

B. Any one or more of the following:

(1) Fruit juices;

(2) Fruit adjuncts;

(3) Artificial or natural flavors or flavorings;

(4) Preservatives;

(5) Coloring; or

(6) Any other natural or artificial blending material.

Option 2

32 MRSA §1862, sub-§1-A is enacted to read:

1-A. Beverage. "Beverage" means any liquid intended for drinking whether flavored or unflavored, carbonated or still except it shall not include milk and dairy derived products, full strength fruit juice including condensed fruit juices, spirits and wine. It shall include, but not be limited to, bottled water and mineral water both plain and carbonated, soda water, carbonated and noncarbonated soft drinks, malt liquor, wine coolers and juice drinks which are a combination of a juice and another nonalcoholic liquid.

Option 3

32 MRSA §1862, sub-§1, as amended by PL 1987, c. 649, §1, is repealed and the following enacted in its place:

1. Beverage. "Beverage" means liquor, as defined in Title 28-A, section 2, subsection 16, soda water or other carbonated drink in liquid form and intended for human consumption.

Comment: Liquor includes spirits, wine and malt liquors like ale, beer, etc.

2. What container sizes to include?

Bans or controls on types of containers?

Existing Law

2. Beverage container. "Beverage container" means a glass, metal or plastic bottle, can, jar or other container which has been sealed by a manufacturer and which, at the time of sale, contains one gallon or less of a beverage.

Option 1

Sec. 1. 32 MRSA §1862, sub-§8-A, 12-B, 12-C and 14 are enacted to read:

8-A. Juice container. "Juice container" means a glass, metal or plastic bottle, can, jar or other container which has been sealed by the manufacturer and which, at the time of sale, contains one gallon or less of any noncarbonated, nonalcoholic drink containing any amount of fruit or vegetable juice.

12-B. Single-serving beverage container. "Single-serving beverage container" means a beverage container containing 16 ounces or less of a beverage.

12-C. Spirits container. "Spirits container" means a glass, metal or plastic bottle, can, jar or other container which has been sealed by the manufacturer and which, at the time of sale, contains one gallon or less of spirits as defined in Title 28-A, section 31.

14. Wine container. "Wine container" means a glass, metal or plastic bottle, can or jar or other container which has been sealed by the manufacturer and which, at the time of sale, contains one gallon or less of a "fortified wine" or a "wine" as defined in Title 28-A, section 2.

Option 2

Language (yet to be received) on limiting expansion to wine, liquor and single serving juice containers.

3. Should the refund value (deposit) be higher for wine and spirits containers?

Existing Law

1863. Refund value

Every beverage container sold or offered for sale to a consumer in this State shall have a refund value. For nonrefillable beverage containers, the deposit and the refund value shall be determined and initiated by the distributor according to the type, kind and size of the beverage container, but shall not be less than 5¢. The refund value on refillable beverage containers shall be determined by the manufacturer according to the type, kind and size of the beverage container but shall not be less than 5¢.

Option 1

Sec. 3. 32 MRSa §1863, as amended by PL 1979, c. 462, §3, is repealed and the following enacted in its place:

§1863. Refund value

Every beverage container sold or offered for sale to a consumer in this State shall have a refund value. The refund value shall be:

1. Refillable containers. For refillable beverage containers, except wine and spirits containers, the refund value shall be determined by the manufacturer according to the type, kind and size of the beverage container but shall not be less than 5¢;

2. Nonrefillable containers. For nonrefillable beverage containers, except wine and spirits containers, the deposit and refund value shall be determined and initiated by the distributor according to the type, kind and size of the beverage container, but shall not be less than 5¢; and

3. Wine and spirits containers. For wine and spirits containers of greater than 50 milliliters, the refund value shall not be less than 20¢. On January 1, 1992 the department shall issue a finding on the percentages of wine containers and spirits containers returned for deposit. If the department finds the return rate of wine containers was less than 60% during 1991, then on July 1, 1992, the refund value on wine containers shall not be less than 50¢. If the department finds the return rate of spirits containers was less than 60% during 1991, then on July 1, 1992, the refund value of spirits containers shall not be less than 50¢.

Option 2

Sec. 2. 32 MRSA §1863, as amended by PL 1979, c. 462, §3, is further amended to read:

§1863. Refund value

Every beverage container sold or offered for sale to a consumer in this State shall have a refund value. For nonrefillable beverage containers, the deposit and the refund value shall be determined and initiated by the distributor according to the type, kind and size of the beverage container, but shall not be less than 20¢ for all beverage containers which contain liquor containing more than 15.5% alcohol and not less than 5¢ for all other beverage containers. The refund value on refillable beverage containers shall be determined by the manufacturer according to the type, kind and size of the beverage container but shall not be less than 20¢ for all beverage containers which contain liquor containing more than 15.5% alcohol and not less than 5¢ for all other beverage containers.

Comment: Spirits, such as rum, vodka and fortified wines, would have a minimum 20-cent deposit. Wine, beer, wine coolers, carbonated beverages and soda water would have a minimum 5-cent deposit.

4. Should there be a handling fee and if so at what level?

Existing Law

§ 1866. Application

4. Reimbursement by distributor. In addition to the payment of the refund value, the distributor shall reimburse the dealer or local redemption center for the cost of handling beverage containers, in an amount which equals at least 2¢ per returned container.

Proposals

Handling fee proposals include: increases to 3 or 4-cents; leave the handling fee at 2-cents; and one proposal to remove the handling fee completely.

5. Should an expansion be delayed, phased in or have the details worked out by an advisory committee?

No provisions exist in current law.

Proposals

Option 1

32 MRSA §1863-A is enacted to read:

§1863-A. Returnables

1. Single-serving beverage container. By January 1, 1990, every single-serving beverage container, except those constructed of cardboard, must have a refund value as set out in section 1863.

2. Juice container. By January 1, 1991, every juice container, except those constructed of cardboard, must have a refund value as set out in section 1863.

3. Spirits and wine containers. By January 1, 1992, every spirits and wine container, except those constructed of cardboard, must have a refund value as set out in section 1863.

Comment: This proposal provides that, except for cardboard containers, by January 1, 1990, all 16 oz. or smaller beverage containers, by January 1, 1991, all juice containers and by January 1, 1992, all spirits and wine containers, must be returnable for a minimum 5-cent refund.

Option 2

Sec. 4. Advisory committee. The Department of Agriculture, Food and Rural Resources shall form an advisory committee consisting of representatives of the Office of Waste Reduction and Recycling, the Bureau of Alcoholic Beverages, the operator of the bailment warehouse, the certificate of approval holders for spirits and fortified wines, distributors of other affected beverages, operators of certified redemption facilities, and other affected interests as the department finds necessary. The Department of Agriculture, Food and Rural Resources shall consult with the advisory committee in developing proposed rules for the implementation of sections 1 to 3.

-
6. Should deposit initiators (distributors and manufacturers) be required to report sales and returns of beverage containers? Should initiators return unclaimed deposits?

No provisions exist in current law.

Proposals

Option 1

§1872. Data collection provisions

1. Deposit container registration. All containers that require a deposit and are offered for sale in the State must be registered with the Department of Agriculture, Food and Rural Resources, by the initiator of that deposit, by size and by package. The initiator shall list any and all distributors of the deposit containers, including, but not limited to, the initiator and the parties responsible for the pickup and recovery of the containers.

2. Monthly report. By the 15th of each month, the initiator must file a report with the Department of Agriculture, Food and Rural Resources indicating:

A. The total number of beverage containers by type of container, including, but not limited to, metal, glass or plastic, that the initiator sold within the State during the previous month;

B. The total number of beverage containers by type of container material that the initiator redeemed and paid a deposit for, from any source, during the previous month;

C. The total dollar amount of deposits collected in the previous month from the sale of beverage containers to any source in the State; and

D. The total dollar amount of deposits paid to any source for the pickup or redemption of beverage containers in the State.

3. Monthly report. The Department of Agriculture, Food and Rural Resources, shall compile the data collected pursuant to this section, and shall make the data available to the public on a monthly basis.

Option 2

Comment: Includes state collection of unclaimed deposits.

32 MRSA §1866, sub-§6 is enacted to read:

6. Distributors reports and payments. Each distributor shall, prior to February 1st of each year, report to the commissioner the total amount of deposits paid to it by any person during the preceding calendar year, as well as the total amount of refunds paid by it to any person during that calendar year. Prior to February 1st of each calendar year, each distributor shall also pay to the commissioner, for deposit in the General Fund, the difference between the total amount of deposits paid to it in the preceding calendar year and the total amount of refunds paid by it during that year.

Sec. 2. 32 MRSA §1869, sub-§3 is enacted to read:

3. False reports. Any individual person who knowingly makes any false report pursuant to section 1866, subsection 6, is guilty of a Class E crime.

7. What changes in funding are suggested?

The municipal solid waste study committee included an appropriation to the Department of Agriculture for a Consumer Foods Inspector, a Clerk Typist II and other expenses totaling \$35,105 and \$49,380 for FY 90 and 91 respectively.

8. Proposal by Rep. McGowan, 5/8/89

Impacts on bottle bill

Expand coverage to all beverage containers 1 gallon or less. Estimated 668 million containers total, with 48 million new, but unspecified containers collected.

Deposits collected by distributors and paid into a State fund. Estimated \$20 million in revenues with a reduction in the refund value to 3-cents.

Grocers and redemption centers no longer required to redeem containers. Distributors no longer pay handling fee and are not responsible for disposing of returned containers.

Impacts on municipalities

Municipalities receive 90% of the state fund to reimburse consumers returning containers.

Municipalities would have opportunity to demonstrate that they accept "an unusually high number of containers per capita" and receive additional funds.

Remaining funds used to offset State costs of solid waste management.

Municipalities would have resource recovery centers to refund the deposit returned containers. The municipalities would then get any revenues from recycling the containers.

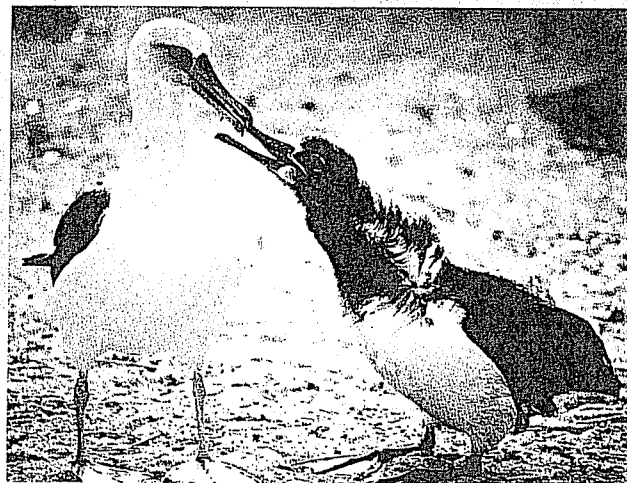
Rep. McGowan's testimony cites Administration estimates for 1993-1994 that without returnable containers the revenues from municipal recycling programs will be \$7.4 million and municipal recycling programs will cost \$15.1 million. If municipalities receive all eligible returnable containers he estimates that additional revenues from recycling could reach \$7.1 million.

Most man-made debris can create aesthetic or environmental problems. The qualities that have made plastics so successful—light weight, strength, and durability—make plastic debris a persistent threat in our oceans and waterways.

Since most plastic tends to float, currents transport it to shore. Even in remote areas like Antarctica researchers are now finding plastic bottles, bags, and sheeting washed ashore. But plastic in our waterways is more than a litter problem . . .



D. Alcorn



J. Dornon

. . . it kills.

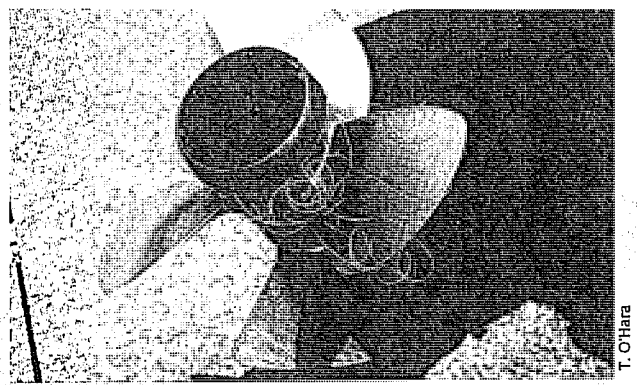
Marine animals sometimes confuse plastic items for real food—a fatal mistake. Ingested plastics can cause internal injury, intestinal blockage, or starvation. Seabirds are known to eat everything from small plastic pieces to plastic lighters and bottle caps. Some birds even feed plastic debris to their young. Sea turtles often mistake bags and sheeting for jellyfish, a favorite prey item. Even the great whales are victims—several have been found dead with plastic bags and sheeting in their stomachs. And ingesting plastic is not the only problem . . .

... thousands of marine animals die every year from entanglement in plastic trash. Sometimes an animal accidentally swims into a piece of plastic and becomes ensnared, unable to escape. Curious seal pups are often attracted to floating debris and become entangled. Birds not only become entangled in plastic connector rings and fishing line, but also use plastic as nesting materials, which can create death traps for their young.



G. Antonellis

Plastic debris is not just a problem for wildlife. Plastics also can be a floating menace to navigation. Boaters report that plastic rope and line fouls propellers and that plastic bags and sheeting clog seawater intakes and evaporators, causing engine failure, costly repairs, and annoying delays. This type of vessel disablement can be life threatening.



T. O'Hara

Tackling the Problem

According to the U.S. Coast Guard, recreational boaters, on average, dump more than one pound of garbage into the aquatic environment every time he or she goes out in a boat. Why? It's easier than bringing it back to shore. But the cost to our oceans and waterways is just too high.

You can help in these ways:

- Make it boat policy that no trash is discarded overboard. Beginning in 1989 it will be illegal to dump plastic trash overboard in all U.S. waters.
- Encourage your dock or marina to provide convenient trash disposal facilities.
- For larger vessels, install trash compactors.
- Where possible retrieve trash encountered in the water or on shore.
- Share your concern with others and encourage them to help.
- Participate in local beach cleanups, and leave the beach clean after visits.

Ultimately, the solution to the plastic debris problem lies with those who care about the future of the aquatic environment and its living resources. Become part of the solution—keep plastics out of our oceans and waterways.



Tossing this trash
overboard could leave
death in your wake.





This information is provided as part of an educational campaign jointly sponsored by the organizations listed below to inform the public about the harmful problems that arise when plastics are discarded either accidentally or intentionally into aquatic areas. Similar efforts are being directed toward other groups including the commercial fishing, merchant shipping and plastics industries.

It is our common belief that increased awareness about the growing problems caused by plastic debris, and cooperation among all groups that contribute to this problem, will result in practical solutions.

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Marine Entanglement Research Program
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PACKAGING WITHOUT PLASTICS

A recent study carried out in West Germany examines the environmental and economic consequences arising from the hypothetical elimination of plastics from all packaging applications.

The results clearly show that without plastics:

- * Tonnage of waste would increase 413%
- * Volume of waste would increase 256%
- * Energy consumption would increase 201%
- * Cost of packaging would increase 211%

Attached is a copy of the summary report carried out by the Society for Research into the Packaging Market.

If you have any questions concerning this report or about plastics and the environment, please write or call me.

Ron Hayter
Director of Environmental Affairs

25 April, 1988

ASSOCIATION OF THE PLASTICS PRODUCING INDUSTRY (REGISTERED ASSOCIATION)

PACKAGING WITHOUT PLASTIC:
MORE WASTE AND INCREASED USE OF ENERGY

NEGATIVE CONSEQUENCES FOR THE ENVIRONMENT, THE ECONOMY AND THE CONSUMER

At present plastics are used in the packaging sector to a considerable extent. Their share of the packaging market is 14%, according to weight, and their share according to value is 27%.

What would be the consequences for the environment and for the economy if plastics were abandoned as packaging materials? What would be the results of substituting them with other materials? The Society for Research into the Packaging Market, in Wiesbaden, investigated this on behalf of the Association of the Plastics Producing Industry, and now presents the outcome of the study to the public.

THE BURDENS FOR THE CONSUMER

The packaging market researchers in Wiesbaden predict in their study that a substitution for plastic packaging would mean considerable negative consequences for the environment, the economy and the consumer.

The weight of the amount of packing material done would be increased more than fourfold. The result: a drastic rise in expenditure and an increased use of energy for transportation and handling of goods.

All of the endeavours, over many years, a reduction of the materials used, and thus a protection of resources, the avoidance of waste through optimal packaging and "slimming-down" of individual packing materials would be turned into the opposite with one stroke. The increased requirement for paper and cardboard would be around 54%, for glass 21% and for metals 53%. At the same time, however, this would mean that financially twice as much as previously would have to be spent for the packaging of goods, which at present are protected by plastic - with clear financial burdens for the consumer.

The most significant consequences are those which would arise for the environment. They can be seen directly from the change in the volume of waste and the energy required. According to the researchers in Wiesbaden, the substitution of plastics will make the volume of packaging in the rubbish bin swell up to 256%, and the volume collected in a compressed form in rubbish collection vehicles up to 213%.

One of the most important indicators regarding damage to the environment is the use of energy. Without plastics as packing materials, it will also increase to double the current requirement (201%).

To a considerable extent, the use of plastic packaging contributes directly to the reduction of the amount of waste, the use of energy and the cost of packaging.

NO REASONABLE SUBSTITUTE IS POSSIBLE

The development of the packaging sector is closely connected to the whole industrial development and is marked by a strong increase in the area of consumer packaging up to the middle of the seventies. In the past few years a slowing-down process towards more optimal conditions got under way, and has not yet been concluded. Just because of plastics, it is leading to a sustained reduction in the materials used proportionate to the amount of goods packaged. In addition to the consequences already referred to, a substitution for plastics would slow down this process or even bring it to a halt.

The investigation by the Society for Research into the Packaging Market refers to packaging, where the main material is plastic. The inclusion of packaging made out of other materials, in which of necessity plastic elements such as glue, lacquer, coatings or seals are used, have not even been considered.

Detailed tests were made on individual types of plastic packaging to see which materials could be substituted for them today, if plastics were no longer available. In doing so, the basis for this was the current level of technology.

The study showed that often the substitute packaging was not as suitable as the plastic one, so that restrictions in quality would have to be accepted. It was not possible to find substitute solutions for some packaging that were even partially reasonable. Without plastics, the products packaged could no longer have been marketed.

08/12/87/G

CONSEQUENCES OF ABANDONING PLASTICS IN THE PACKAGING SECTOR

AMOUNT OF WASTE IN TONNES	+404%
VOLUME OF WASTE	+256%
VOLUME OF COLLECTED WASTE	+213%
USE OF ENERGY	+201%
EXPENDITURE	+212%

SOURCE: SRPM-STUDY "PACKAGING WITHOUT PLASTIC", 1987

PACKAGING WITHOUT PLASTIC

Ecological and Economic Consequences of a
Packaging Market Free from Plastic

Summary of an Investigation by the Society for
Research into the Packaging Market

on behalf of:

The Association of the Plastics Producing Industry
(Registered Association)
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CONTENTS

Introduction

Development of the Use of Packaging.

Object of the Investigation

Summary of the Results

Table 1:	Weight of Material - Filling-up in FRG
Table 2:	Estimate of Costs for Packaging Materials - Filling-up in FRG
Table 3:	Weight of Material - Consumption in FRG
Table 4:	Volume of Waste in Household Containers
Table 5:	Volume of Waste Collected
Table 6:	Balance of Energy Consumption

Graphic 1:	Weight of Material - Filling-up in FRG (circles)
Graphic 2:	Weight of Material - Filling-up in FRG (bars)
Graphic 3:	Weight of Material - Consumption in FRG (circles)
Graphic 4a:	Volume of Waste in Household Containers (circles)
Graphic 4b:	Volume of Waste Collected (circles)
Graphic 5:	Volume of Waste Collected (bars)
Graphic 6:	Balance of Energy Consumption (bars)

**PACKAGING
WITHOUT
PLASTIC**

In the public discussion packagings are being judged increasingly negatively. In the course of this, plastic as a packaging material is exposed to more and more criticism.

To a large degree, the discussion is being conducted without sufficiently reliable scientific data. Consequently, we have commissioned the renowned Society for Research into the Packaging Market (SRPM), which also works for the Federal Office for the Environment, to carry out an investigation into the effects of abandoning plastic in packaging.

This report gives a summary of the nature of the problem and the results of the investigation. A detailed documentation in two volumes with extensive material in table form can be acquired direct from the Society for Research into the Packaging Market.

**Association of the
Plastics Producing Industry (Registered Association)**

December 1987

INTRODUCTION

Today plastics of all types are used in the packaging sector to the largest extent ever. The topic of this investigation is to see if, and to what degree, they can be abandoned, and to examine the consequences and the subsequent substitution with other materials that this would cause.

The preoccupation with the question "What happens, if?" should not be misunderstood as a mere mental exercise. On the contrary, it is relevant wherever the discussion is in danger of sticking in the forefront, and where significant tendencies in the development are overlooked.

The forefront is primarily the "image" of plastics, to which the German term (Kunststoffe) contributes. It sounds like a contrast to the conventional materials, which to a large extent have an ancient tradition based on craftsmanship - working with iron, the production of glass or paper. Thus, in public awareness these seem to be classified as familiar and natural, good and solid, whereas plastics, which essentially have only appeared in the past 30 years, are regarded largely as something new, artificial and therefore perhaps also unnecessary, created arbitrarily by "industry". On the one hand there is the secure ground of familiar materials in broad daylight; on the other hand that incomprehensible, or at least not understood, result of the incarnation of modern industrial companies, of "large-scale chemistry", threatens under black clouds.

Of course, this simplified picture overlooks the fact that since the middle of the last century other materials have no longer been produced in the traditional way of the craftsman. Instead, they owe their competitiveness to mass production, the science of modern engineering and chemistry - this is particularly valid in the case of the production of cardboard and paper.

The development of packaging is closely related to the whole of modern industrial development. It encouraged and made possible:-

- The concentrated production (in one place) of uniform products in large lot quantities on efficient machines, i.e. at low prices per piece and therefore internationally competitive;
- Modern logistics (with repercussions for transport and communications), with standardized palettes (unit construction systems made of modules), standard-sized stock-rooms, containers etc, facilitating a quick turnover and shorter periods of storage at a very high quantity of articles;
- The modern organization of retail trade, conversion to self-service with a great variety of offers in relatively limited spaces, and handling by relatively few sales staff.

The basic concept of every (good) packaging is the complete protection, if possible, of the properties given to the product during its production, and passing them on to the ultimate buyer, without them being impaired by transport, weather conditions or the length of storage.

The "originality" of the product, which continues to become increasingly important owing to legal specifications such as extended liability for the product, not only means guaranteeing freshness, purity, protection from contamination and micro-biological deterioration, but equally the protection against deformity and breaking, preservation from drying-out and loss of weight, or on the other hand, dampness etc., i.e. complete preservation of quality.

DEVELOPMENT OF THE USE OF PACKAGING

The development of packaging is marked by two large, mutually complimentary movements:

- Owing to expanded consumption and the assertion of self-service marketing, there was a very strong increase in wrapped products within consumer packaging, particularly in the period up to the mid-70's.
- On the other hand a long-lasting process towards more ideal conditions began for reasons of expenditure and technology, and is still not over. This has led to a sustained reduction in the materials used proportionate to the amount of goods packaged. This development has several facets:
 - replacement of heavy packaging materials with lighter ones, e.g. glass and tinsplate with plastic or plastic combinations (coated cardboard),
 - replacement or partial replacement of rigid packaging with flexible packaging, primarily in the area of mail order and palette packaging, e.g. replacement of complete cardboard packaging made of corrugated or complete cardboard with trays and shrink film,
 - reduction of the number of packets and considerable reduction of the weight of packets through an increase in the average content of consumer packages (because the use of materials is, in general, considerably more favourable with larger packaging; on the other hand, the growth of the individual-packaging sector is limited to a few goods, such as drinks, ready-to-serve meals etc);
 - The continual decrease in the initial weight of the packaging (both of plastic and glass and tinsplate, as well as virgin paper. The increased portion of short fibrous old materials in corrugated cardboard prevents the reduction of the initial weight. In this instance, one has reduced the initial area of material through a more economic construction - "wrap-around" boxes, half-boxes, trays, open at the top).

The "over-packaging" often referred to in the public discussion, a technologically unnecessary, more lavish packaging done for reasons of marketing, is restricted to relatively small segments, in which the contents can be represented as being particularly luxurious, because of the packaging (no mass segments; for the bulk of the food and semi-luxury foods, as well as chemical-technological products, it is pure marketing). To this extent it is an exception to the general rule.

Each renunciation of plastics would at least partially slow down or even bring to a halt this continuing process towards more optimal conditions. There can be no doubt that the attack made by plastics on the bastions of conventional packaging materials and the occupation of large areas of their territory has led to speedier and more intensive processes towards more optimal conditions in many areas. The removal of the competition created by plastics would cause these efforts to wane partially.

Unfortunately, the overall result of all these, to some extent, contrary movements for the use of packaging materials in the Federal Republic of Germany has not been calculated and presented anywhere. In our long-standing study of this topic* we have only been able to work out clear outlines for the branch of packaging of drinks, which deservedly or undeservedly is the centre of attention, and is additionally complicated by the fact that the packaging is reusable:

- here the total consumption has been climbing extremely steeply since 1970, and continues to do so almost without lessening (from 1970 to 1985 by 165% - according to delimitation by the FOE);
- the non-returnable consumption growing even more strongly (from 1970 to 1985 by 360%), because although the returnable quantity is continuing to increase in absolute terms (from 1970 to 1985 by 138.9%), it is losing its percent share.

Although this is an extremely strong, almost unique development, it is still not possible to talk about an "avalanche of rubbish from the packaging of drinks", as is so often claimed.

Rather

- The use of packaging materials for consumption in the FRG is growing in the following way:

	<u>1,000 tonnes</u>
1970	1,213.6
1973	1,608.7
1975	1,621.0
1976	1,670.0
1980	1,709.7
1983	1,722.0
1985	1,699.7

* compare numerous studies done by the SRPM, both for the Federal Office of the Environment and for the packaging industry (including press releases).

i.e. since the steep increase up to 1973, it has remained at about the same level.

- on the other hand owing to the increase in recycling (glass according to SRPM, the rest according to the FOE-method), the quantity of waste to be disposed of has developed in the following way:

	<u>1,000 tonnes</u>
1970 (estimated about)	1,150.0
1975	1,476.3
1976	1,501.5
1980	1,345.4
1983	1,243.5
1985	1,085.4

OBJECT OF THE INVESTIGATION

We have limited the area of the main investigation, in which all data is calculated and recorded precisely, to packaging where the essential material is plastics. Cellophane, which is also made from the raw material cellulose, as is paper, is not included among the plastics.

Those packagings which are composed partially of plastic, are dealt with in an appendix. If one wanted to rigourously exclude all plastic from packaging, then one would have to include the whole, extensive area in which plastics or their derivatives are used as lacquers, seals, coatings, glues. Therefore, our precise examination, naming the size of the market, is limited to packaging with a significant percentage of plastic, according to weight, such as:

- Aluminium and tinplate tops (seals)
- Coated cardboard (bulk packaging)
- Coated paper, cardboard (including paper bags, cardboard cups, combination packs)
- other hollow bodies, such as steel barrels with an interior container made of PE, PP-coated aluminium dishes.
- packaging accessories (bands, adhesive tapes).

All of our figures relate to the year 1985. It is important to stress this, because the plastic-packaging market is still fluctuating strongly, and often figures for 1986, or even projected figures for 1987, are already being used in calculations.

All figures are based on the SRPM-Packaging Panel for 1985 and additional enquiries relating primarily to the market for flexible packaging. The calculation was made in each case for three stages:

- 1st Situation in 1985, i.e. the actual use of packaging, not subject to any restrictions regarding plastics.

- Replacement Stage I: all plastic packaging to be replaced by competitive materials for packaging. In contrast with Stage 2, packaging where the essential material is not plastic, but contains small portions of plastic (e.g. PVDC-coated cellophane, cardboard continuations, PP-coated aluminium dishes etc), are also to be permitted by the replacement.
- Replacement Stage II: the replacement only permits packaging without plastic contents of any kind.

Naturally, the replacement at both stages is carried out within the framework of the 1st-situation in 1985, with regard to quantity. Also, the same structure regarding the size of the contents was used as a basis. Only in those cases where substitute materials were not available in the same size at the time of packaging, were others used (e.g. the 1.5 and 2 litre plastic bottles for non-alcoholic drinks had to be replaced by 1 litre non-returnable glass bottles).

Substitute materials which were considered, were those which were found previously, or still are found, in individual branches dealing with goods filled into packages (occasionally also those used for analogous goods). At the same time, we tried to keep the area, for which we felt there was "no replacement" amongst current competitive packaging, as small as possible. This meant that restrictions in the quality of the substitute material were accepted. These restrictions are explained thoroughly in the text. To have held rigorously to the same qualities of the product would have diminished the area to be compared too much, and would, therefore, have reduced the meaningfulness of the comparison.

Plastic packaging has a breadth of types and area of use, which is hardly paralleled by all other competitive packagings put together:

- Packagings made of paper are to be found as competitive materials in the whole area of flexible packaging (bags, packets, carrier bags, wrappers), but with the exception of shrink film; with respect to rigid hollow bodies, derivatives of paper are barely represented (combination packs, fibre drums made from coiled paper, cardboard cups).

On the other hand, the only large area for which plastic does not have a direct counterpart is that of card, plain cardboard and corrugated cardboard.

- Packaging made of steel (primarily tinplate) is to be found in all types of rigid hollow bodies, as well as in closures.

- Packaging made from aluminium is only to be found in rigid hollow bodies where the contents of the goods in them is small. Aluminium is only used for bottles in exceptional cases (pesticides). Its use of lids is significant. Foils made just from aluminium are only used in a few areas, whereas they are widely used, if made from a combination with other materials (paper).
- All other materials (wood and mechanical wood pulp, cellophane, other materials such as india rubber, fabric etc). can only be considered in relatively narrow areas.

Also, the excellent possibility of modifying plastics (quite apart from their potential in combination with other packaging materials) has helped plastics to conquer a territory in the area of packaging, which is about equal to that held by all the competitive materials together. This underlines the importance and extent of the study at hand.

The figures for packaging materials have been calculated each time for two relevant levels:

- for filling-up (=the production of goods filled into packaging) in the FRG;
- for the consumption of goods filled into packaging in the FRG, which differs from the production of such goods by the amount of filled packaging material exported and imported.

We would have liked very much to provide figures for the production of packaging material in Germany too, because the figures quoted in the Federal Statistics (special series 4, number 3.1) are to some extent very unreliable. However, a conversion from our figures for filling-up, with the help of the statistics for foreign trade, did not lead to any practical results, because the nomenclature of the statistics for foreign trade did not differentiate clearly enough between the individual types of packaging materials.

The following parameters were calculated:

- weight of material in to (level 1 and 2)
- quantity in 1,000 pieces for rigid packaging material (level 1 and 2)
- quantity in 1,000m² area for flexible packaging material (level 1 and 2)
- Packaged volume in 1,000 litre, as dimensions to help calculate the volume of waste for hollow bodies (level 1 and 2)
- volume of waste containers in 1,000 litre, i.e. volume of collecting containers in houses (level 2)
- volume of waste collection in 1,000 litre, i.e. volume of waste in the refuse lorry after collection (level 2)
- the value of plastic and substitute packaging materials could only be ascertained approximately, as an estimate, with the help of prices taken from the statistics for production.

To calculate the volume of waste we are using as a basis the first reliable, empirical investigation carried out by the Institute of Technology and Economic Trade at the University of Economics in Vienna. The density of the volume of waste expelled here in Kg/l is only meaningful for the conversion of tonnages of packaging material very generally, and applies only to domestic waste in the narrowest sense. In comparison with this, in our calculations we are dealing with packaging materials, in individual areas of filling-up, which have quite different sizes and with flat packaging materials, quite different thicknesses.

Consequently, with the help of the structures calculated by the SRPM - Packaging Panel for Germany, we had to develop factors, by which the volume of waste

- for rigid and semi-rigid hollow bodies, relates to the outer-volume of these hollow bodies. (This outer-volume can be calculated from the volume of the contents.
- for flat packaging materials, including cardboard boxes, plain cardboard and corrugated cardboard, relates to the area of the packaging material.

However, despite all the care which was applied, we do not consider the factors developed to be valid generally. Nonetheless, they are serviceable as a standard for the purpose of comparing the volume of waste from plastic packaging materials with that from competitive packaging materials.

Owing to the lack of available, empirical investigations, we were unable to present that which is certain to be most important to contemplations regarding national economy - the volume to be disposed of. Even with available, empirical investigations, it could be difficult to develop a reasonably reliable standard for these quantities.

Our calculations are aimed at the volume of waste relating to the quantities of household waste and commercial waste similar to household waste. However, on the basis of the figures for packaging materials, an exact differentiation for waste management through industry and commerce is very difficult. Equally all calculations are based on the volume before recycling, because sound data is only available for glass, but not for other relevant packaging materials (tinplate, paper).

In general, we have used the values given in the literature to calculate the energy used. The energy required for the manufacture of packaging materials was calculated from energy equivalence values and manufacturing energy. Then, we have taken into consideration, on the positive side, the energy recycled during incineration at waste incineration plants, and on the negative side, the energy used for inert packaging materials (tinplate, aluminium, glass). Additionally, the basis of this calculation is limited by the degree to which waste incineration plants include the population and the degree of technological effectiveness of these plants. The balance of the total energy used was formed from these two calculations.

In our summarizing tables (1 - 6) it was decided not to present the results of Replacement Stage I, because the results from Stage II (where no packaging materials containing plastic of any sort would be allowed any more) are expressed much more clearly and plainly. For the same reasons, we have given a version each time, both in the 1st-Situation and in Replacement Stage II, in which the amounts of plastic, which could not be replaced in Stage II, have not been taken into consideration.

To clarify the enclosed graphics (circular diagrams), it should be pointed out that their area reflects, to scale, the numerical relationship between the total amounts compared.

SUMMARY OF THE RESULTS

The consequences of replacement of the tonnage of packaging materials used for filling up in the FRG (compare Table 1 and graphics 1 and 2) are extremely serious. If one looks at the figures resolved for the sector where no replacement is possible, the increase in the use of packaging materials, compared with the 1st-figures, is more than fourfold (404%). This means that all of the cost-intensive endeavours, over many years, to reduce the use of material through more suitable packaging and "slimming - down" individual packaging materials would be turned into the opposite with one stroke. The development of individual types of packaging materials varies a great deal. The growth rates for rigid packaging materials are lower (in general up to 165%), with the exception of blown bottles (524%) and foam polystyrene packaging (639%). The growth in flexible packaging is colossal (387 - 863%). For details see graphic 2.

The costs have only been estimated superficially (Table 2). The total value of packaging materials would be raised to 211.5% of the 1st-Situation. Here, too, the differences between rigid packaging materials, which increase in general to 130% (except for tubs 164%, buckets 154%) and flexible materials (290 - 245%) are very great.

The amount of additional packaging materials necessary for replacement becomes clearer, if one compares the increased consumption (Replacement Stage II) with the relevant production in 1985.

The following data is available (in 1,000 to):-

	Production 1985	Increased Demand if Plastics are Replaced	
		in 1,000 to	in % Product
Corrugated Cardboard	2,333	1,246	53.4%
Cartons, Plain Cardboard	764	422	55.2%
Cellophane	44	ca. 9.5	461.9%
Glass	2,686	561	20.9%
Tinplate-Hollow Bodies	480	336	70.1%
Tinplate-Closures	ca. 70	35	50.0%
Steel Barrels	296	67	22.6%
Aluminium Cans, Bottles	38.9	20.6	53.0%
Aluminium Tubes	5.9	2.9	50.1%
Aluminium Closures	20.2	16.8	83.2%

The consumption in the FRG of the tonnage of packaging materials used (Table 3, Graphic 3, only differs from the use of packaging materials for filling-up, owing to filled packaging materials imported and exported. It increases in Replacement Stage II to 413%, i.e. marginally more than the packaging materials used for filling-up.

The necessary volume of waste for consumption in the FRG (Tables 4, 5, graphics 4a, 4b, 5) swells accordingly, owing to the replacement.

- the volume in receptacles to 256% of 1st-Situation
- the volume for collection to 213% of 1st-Situation

In respect of most rigid hollow bodies, the change compared with the 1st-Situation is low. In contrast, it is extremely great for flexible packaging. For details see graphic 5.

The balance of energy consumption (Table 6, graphics 6 and 7) is raised to almost exactly double the current requirement, namely to 200.7%. Here, too, the changes for individual packaging materials are extremely different (graphic 7). However, the increase in total consumption is a clear indicator of the growing danger to the environment, resulting from replacement.

HMC/PAU/21 1 88

Tab. 2:

**ESTIMATE OF COSTS FOR
PACKAGING MATERIALS**

(WITHOUT PLASTIC PACKAGING
NOT TO BE REPLACED, FOR
FILLING-UP IN THE FRG)

	Total Value of Packaging Materials Gesamtwert der Packmittel (TDM)		Veränd. auf ... % Change to %
	Ist-Zustand Ist - Situation	Replacement Ersatzung Stufe II Stage II	
Bottles	631.900	786.400	124,5 %
Cans	243.400	306.500	125,9 %
Barrels	156.100	197.600	126,6 %
Tubes	55.000	58.800	106,9 %
Coated Tins	444.700	309.900	69,7 %
Buckets	172.100	265.500	154,3 %
Stockable Crates	149.200	111.900	75,0 %
Foam Polystyrene	403.800	524.100	129,8 %
Cups	560.100	919.200	164,1 %
Closures	371.900	422.200	113,5 %
Films	1.568.100	5.405.900	344,7 %
Other Films	621.200	1.831.000	294,8 %
Textile Packaging	129.900	377.000	290,2 %
Other Films	211.500	582.000	275,2 %
All Packaging	5.718.900	12.098.000	211,5 %

GW
W

Survey without plastic packaging not to be reported

Tabelle 1: Übersicht ohne nicht zu ersetzende Kunststoff-Verpackungen:

Materialgewicht in to (Abteilung in BAD) Weight of material in to (Filling-up in BAD)

Bereich Area	Ist - Zustand Ist - Situation								Ersatzung Stufe II Replacement Stage II											
	Insges. Total	PE	PP	PVC	PS	Other Plastics	Plastic Film	Plastic Sheet	Insg. Total	Wood Pulp	Con- crete	Plin- eum	Paper	Paper and Card	Cellu- lose and other fibers	Glass	Steel (Wire)	Aluminum (Sheet)	Other Metals	No Material
Bottles Flaschen	50.319	50.319	3.093	27.345		1.340			57.982						6.994	330.115	106.363	1.121		
Canisters Küchengeräte	11.473	11.473							61.907								63.907			
Plastic Tubes	32.720	32.720							61.750					970			60.780			
Control lines Gesp. Dosen	2.032	750		300				970	2.032						172		17	1.954		
Plastic Elmer	43.050	7.330	2.301		27.354		9.627	2.110	51.235	1.031		9.107			3.297	12.060	75.305	0.353		
Plastic Flosschen/Beton, Stolgen	41.051	40.293	750						50.944					31			50.929			
Plastic Schumpolysty- rene	33.293	32.313	135						33.026	33.036							4.190			
Plastic Becher	42.650				42.650															
Plastic Glossure Verschlüsse	102.210		13.675	10.672	69.063				172.601	75.663	104.126	0.317	603				3.040	2.979		
LOPE/LLOPE-film Folien	40.344	17.221	14.303		5.723	1.001	970	1.077	40.990					11	122.706		32.107	12.323	4.027	
Plastic Glossure Gewebeverp.	110.371	110.371							2.261.142	54.004	1.031.977	337.977	303.232	119.437	11.071		102.150	620	50.074	
Plastic Glossure Verbindungen	125.021	33.374	31.940	32.513	7.309				409.900	11.246	0.246	60.670	166.372	71.039	30.072	115.994	2.039	11.610	3.222	
Plastic Glossure Verbindungen	29.000	9.430	13.370						117.330		17.621		1.117	9.430			1.900		07.154	
Plastic Glossure Verbindungen	29.600								29.600		4.325	107	19.700	19.006	1.941	70.700	03.496	5.309		
Total Insgesamt	1.063.230	691.777	79.753	59.055	153.072	2.319	19.029	14.619	0.294.377	255.062	1.246.310	422.231	694.304	354.344	63.004	940.647	537.091	44.634	134.477	
						Other Plastics	Plastic Film	Plastic Sheet	Total	Wood Pulp	Con- crete	Plin- eum	Paper	Paper and Card	Cellu- lose and other fibers	Glass	Steel (Wire)	Aluminum (Sheet)	Other Metals	No Material

1) Aufstellung geschätzt
Division estimated

Stützmaterial, plastic packaging not to be replaced

Tabelle 3: Übersicht ohne nicht zu ersetzende Kunststoff-Verpackungen:

Materialgewicht in to (Verbrauch in BRD) weight of materials in to (Consumption in FRG)

Bereich Area	Ist - Zustand								Ersatzung Stufe II											Replacem. Stage II			
	Insges. Total	PE	PP	PVC	PS	Genet. Mat.	Met. Germ.	Met. u.o.Met.	Insg. Total	Met. Holzsch.	Wellp.	Karten Vollpappe	Papier	Papier u.o.Met.	Zellglas u.o.Met.	Glas	Sticht (Wellst.)	Alu u.o.Met.	Genet. Mat.	kein Ersatz			
Flaschen	09.507	56.181	3.207	20.043		1.337	59		300.000			117		7.703		403.030	56.832	930					
Kontainer	35.029	35.029							56.504								56.504						
Flaschen, Mob.	24.297	24.297							43.001				037				43.044						
Tuben	1.605	739		205				601	1.720					140			10	1.334					
Gesp. Dosen	40.734	6.126	2.232		25.213		5.116	2.047	47.272	970		0.223		3.900		11.045	15.772	7.734					
Flaschen	30.704	37.973	709						56.544				33				56.540						
Flaschen, Stöcken	35.214	32.234	135		2.045				37.910	39.721							4.190						
Schaumpolyeth.	40.219				40.219				271.043	113.075	145.391	0.317	603			3.979							
Becher (Cups)	59.359		13.377	19.100	66.002				191.004			0.003	12	110.516			3.160	3.233					
Verpackung	59.310	17.402	13.275		5.175	1.193	1.022	1.171	66.021					64			29.173	12.195	4.309				
LDPE/LLDPE-fil.	390.774	390.774							2.104.712	69.039	1.002.044	343.961	479.940	103.041	12.029		96.076	620	72.954				
Folien																							
Folien, Sonst.	114.002	33.274	34.360	49.126	12.314				490.773	21.072	7.336	59.400	166.319	66.507	29.004	102.335	2.526	10.229	5.051				
Gewebe, Persp.	136	7.501	6.035						74.623		10.900		1.214	4.245			301		49.605				
Verbundfolien	20.695						12.033	7.760	106.374		3.279	- 300	16.229	16.065	1.719	64.950	70.699	5.219					
Insgesamt Total		630.412	74.010	97.414	152.360	2.530	19.112	11.579	6.159.526	259.497	1.177.430	485.721	665.706	314.001	64.146	504.959	404.165	42.022	131.999				

Aufstellung geschätzt

DAVIS was estimated

N/S
 Substitute
 Other
 Material
 Aluminium
 and other
 Materials
 Steel
 (Tungsten)
 Glass
 Cellulose
 and other
 Materials
 Paper
 and other
 Materials
 Rubber
 Plastic
 Cardboard
 Laminates
 Laminated
 Cardboard
 Wood
 Wood
 Total
 Plastic
 and other
 Materials
 Hittman
 Plastic
 Other
 Plastics



Müllbehältervolumen in Mio l Volume of waste in household containers in Million l

there is no calculation of the volume of waste, because these containers do not end up in household, or similar, waste.

- * Calculation of volume given under main packaging.

Tabelle 5: Übersicht ohne nicht zu ersetzende Kunststoff-Verpackungen:
Müllsammelvolumen in Mio l Volumen of waste collected in Million l

Bereich Area	Ist - Zustand								Erstellung Stufe II											
	Insges. T. l.	PE	PP	PVC	PS	Sensit. Kot.	Kunst. Gum.	Kunst. u. d. Met.	Insg. T. l.	Kunst. Metall.	Werkst.	Kunst. Vollplast.	Papier	Papier u. d. Met.	Zellulose u. d. Met.	Glas	Stahl (Weichst.)	Alu. u. d. Met.	Sensit. Met.	And. Erste
Taschen, Koffer	1.675,3	1.034,0	99,2	997,7		89,0	0,0		1.077,7			1,1		65,1		769,6	931,9	10,6		
anist. Celloph.	1.091,6	1.091,6							946,1								946,1			
Essig, Mob.	-								-											
Thon, Koffer	16,0	0,0		9,0				9,0	19,0					1,9			0,1	11,1		
Druck, Dosen	320,4	75,2	13,0		202,0		20,9	9,9	327,1	1,9		59,1		59,1		19,2	122,0	40,7		
mar. Zerkleis.	730,0	717,2	19,6						694,0				0,1	0,1			694,0			
aschensackstop.	-								-											
elgen, Celloph.	9.477,1				9.477,1				6.832,9	1.993,2	2.779,2	101,6	9,9			6,9				
schon Celloph.	2.719,2		949,6	991,0	1.991,9				2.719,2		24,9	24,9	0,2	2.809,6			26,0	20,0		
erschüsse	-								-											
PE/LLOPE-film	10.209,9	10.209,9							94.070,9	1.010,9	10.699,4	9.602,4	7.802,6	1.974,9	942,7		1.101,1	15,1	1.990,6	
tion																				
nat. Füllon	6.967,7	1.949,9	1.099,7	977,9	907,0				7.699,6	1.949,9	149,0	709,9	2.469,9	1.999,7	694,0	111,6	9,0	90,0	77,7	
webetorp.	494,9	299,4	190,9						690,2		979,9		19,9	47,1					160,1	
verbundfolien	909,9					949,1	290,2		1.992,1		99,1	7,0	- 49,6	921,9	94,1	119,1	722,2	04,6		
Stahl																				
gesamt	25.099,6	15.999,0	1.719,1	1.090,1	6.290,1	29,0	970,6	246,9	99.099,0	9.920,9	22.071,0	1.699,7	9.690,9	9.999,1	1.899,9	1.076,0	1.611,7	229,9	1.090,1	

Errechnung des Müllvolumens erfolgt nicht, da diese Behälter nicht in der Müllverbrennungsanlage
Volumenrechnung hat die Lagerverpackungen

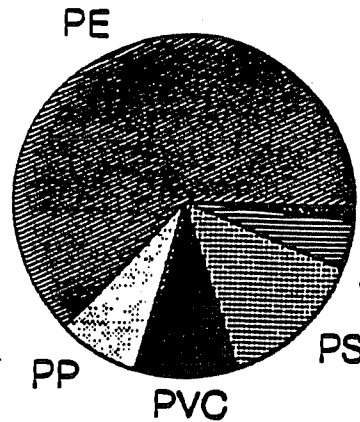
There is no calculation of the volume of waste,
because these containers don't end up in
household or similar waste.
Calculation of volume given under main packaging.



Total Packaging Verpackungen insgesamt

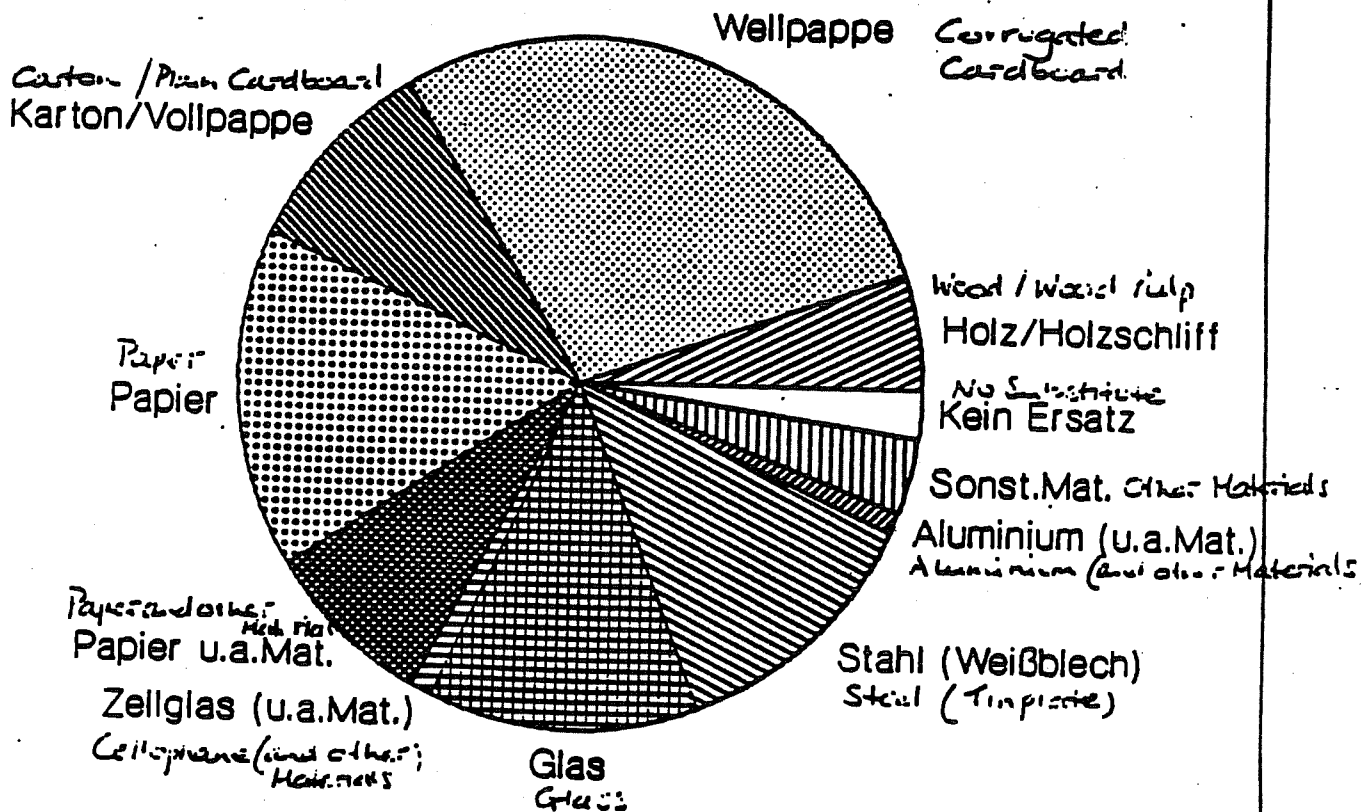
①

Abfüllung BRD Filling-up FRG
Materialgewicht in to Weight of Material in to



Kst.u.a.Mat. Plastic and other materials
Kst.gemische Plastic Mixture
Sonst.Kst. Other Plastics

Ist-Zustand Ist - Situation



GVM-Grafik

Ersetzung Stufe II

Replacement Stage II

Tabelle 6:

Grossverpackung plastische Verpackung und tota: replaced

Übersicht ohne nicht zu ersetzende Kunststoff-Verpackungen:

Saldo Energieverbrauch in TJ (Verbrauch in GAD)

Balance of energy consumption in TJ (consumption in FKR)

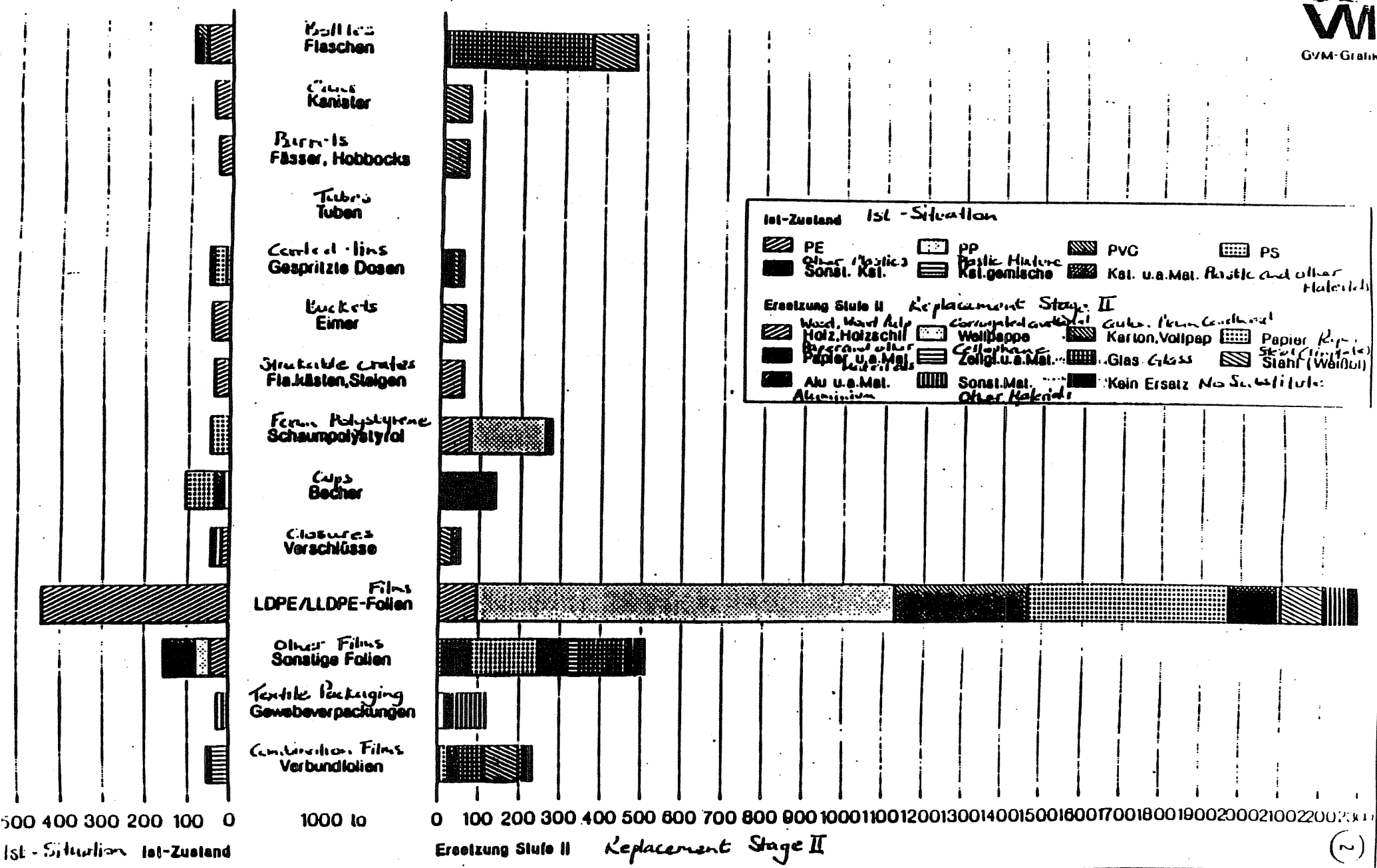
GK
WI

Bereich Area	Ist - Zustand Ist - Situation								Ersatzung Stufe II Replacement Stage II										
	Insges. Total	PE	PP	PVC	PS	Sonst. Mat.	Kst. Gem.	Kst. u.o. Mat.	Insg. Total	Misch. Holzsch.	Wellp.	Karton Wellpappe	Papier	Papier u.o. Mat.	Zellglas u.o. Mat.	Glas	Stahl (Walzst.)	Alu u.o. Mat.	Sonst. Mat.
Taschen Btlk-3	6.000,2	4.073,5	236,2	1.637,4		120,9	4,2		7.999,5			2,7		440,8		4.643,3	2.020,7	202,0	
anister Cans	2.644,9	2.644,9							2.644,9								1.630,6		
Trichter, Hob.	2.009,5	2.009,5							1.774,1				64,3				1.129,0		
uhren Teller	132,3	59,0		15,1				69,0	34,6					0,3			0,3	334,6	
espr. Dosen	3.255,3	439,9	162,2		2.032,2		307,9	239,1	2.043,3	22,9		109,9		201,9		110,3	447,6	1.643,3	
imer Buck-L-3	2.714,0	2.652,0	62,0						1.633,1				2,2	0,3			1.630,6		
aschenbästen	2.910,4	2.643,2	11,2		256,0				1.300,6	1.396,7							103,9		
olgen c. m. l. s.																			
haupolst.	3.116,6				3.116,6				6.307,1	2.902,0	3.031,5	132,4	42,0			30,3			
cher Cans	7.119,0		934,0	1.000,9	3.076,1				9.349,1			427,0	0,0	0.133,3			92,7	691,3	
erschüsse	3.663,0	1.323,5	1.017,0		437,9	103,4	70,3	30,1	3.374,0				4,4				920,0	2.434,0	107,6
PE/LLOPE-fil-	25.232,5	25.232,5							71.701,9	1.600,9	21.343,9	7.717,4	30.304,3	6.110,3	093,7		2.100,1	130,4	1.473,9
illen																			
er Filas																			
ist. Füllen	0.722,4	2.233,4	2.793,4	2.765,0	930,9				24.733,3	779,0	160,3	1.372,2	10.016,3	3.740,3	2.413,6	1.093,3	73,2	2.141,7	132,4
st. Hückung	1.030,0	345,0	492,2						2.047,4		302,3		77,3	270,4			14,4		1.292,0
webverp.																			
st. l. m. Filas	1.892,0						999,9	932,1	6.044,0		67,2	- 10,3	1.232,1	1.230,7	179,0	694,4	2.310,3	1.110,1	
rbundfolien																			
st. l.																			
gesamt	70.010,9	43.934,0	3.720,5	3.306,4	11.049,7	234,3	1.410,3	1.346,7	110.330,6	6.009,7	23.075,0	9.071,0	42.399,7	21.337,7	3.432,1	3.907,5	13.311,2	0.729,4	3.106,7
									Total	Wood	Cardboard	Corrugated	Paper	Cellulose	Glass	Steel	Aluminum	Other	

Total Packaging
Verpackungen insgesamt

Filling-up Filler
Abfüllung BRD

Weight of material in to
Materialgewicht in to

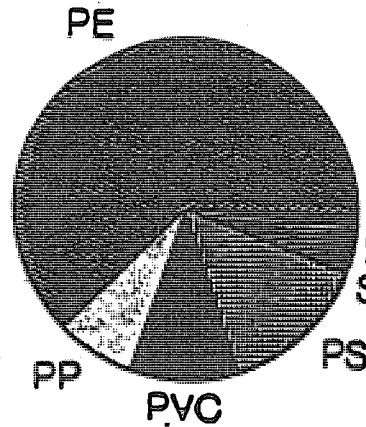




Total Packaging Verpackungen insgesamt

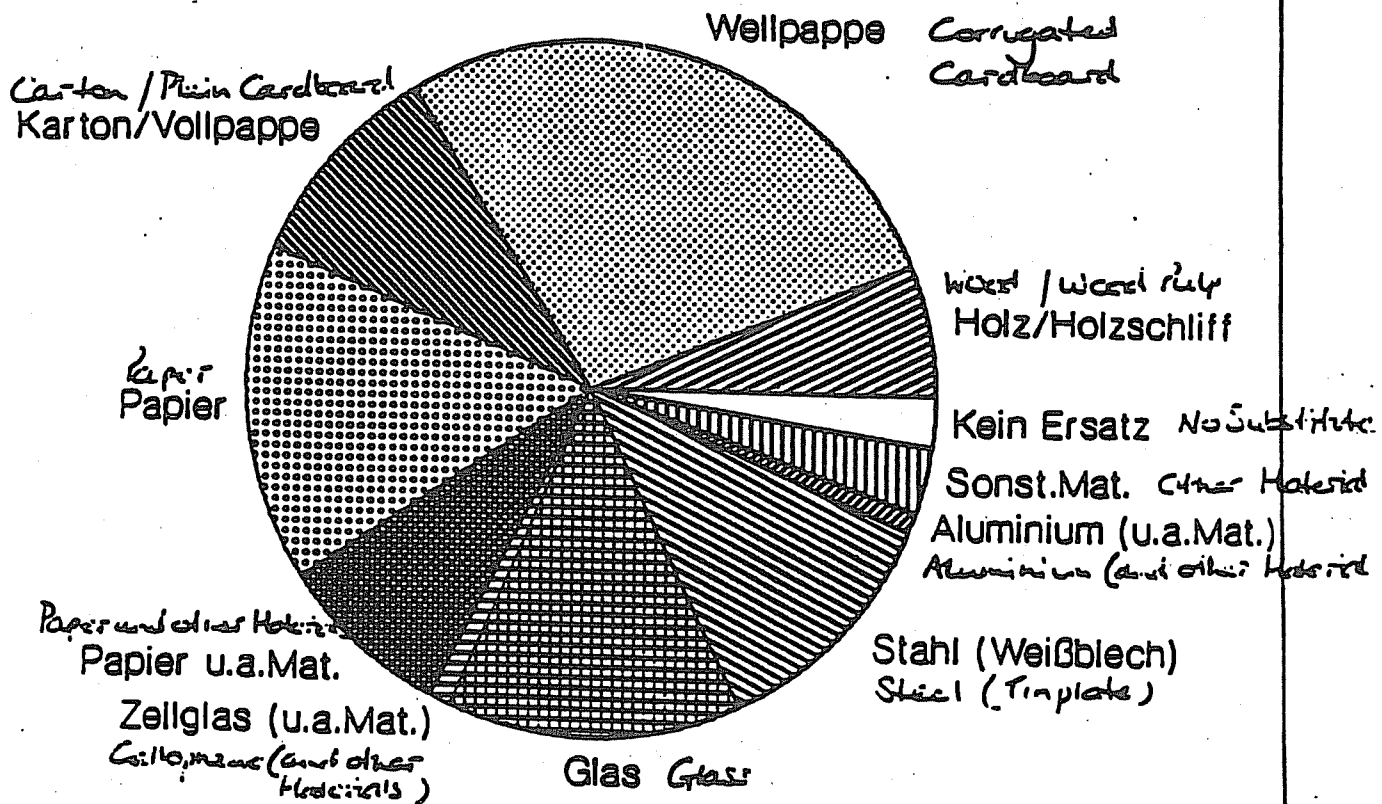
3

Verbrauch BRD Consumption FRG
Materialgewicht In to Weight of Material in to



Ist-Zustand

Ist-Situation



GVM-Grafik

Ersetzung Stufe II

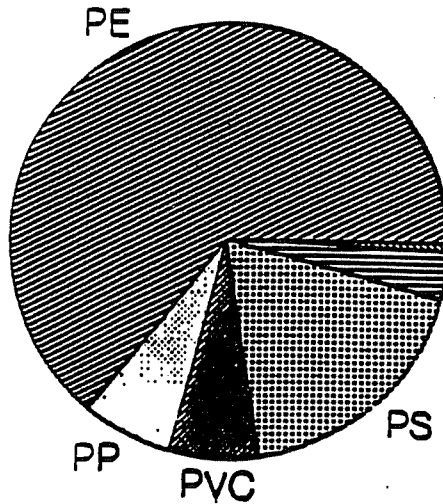
Replacement Stage II



Total Packaging Verpackungen insgesamt

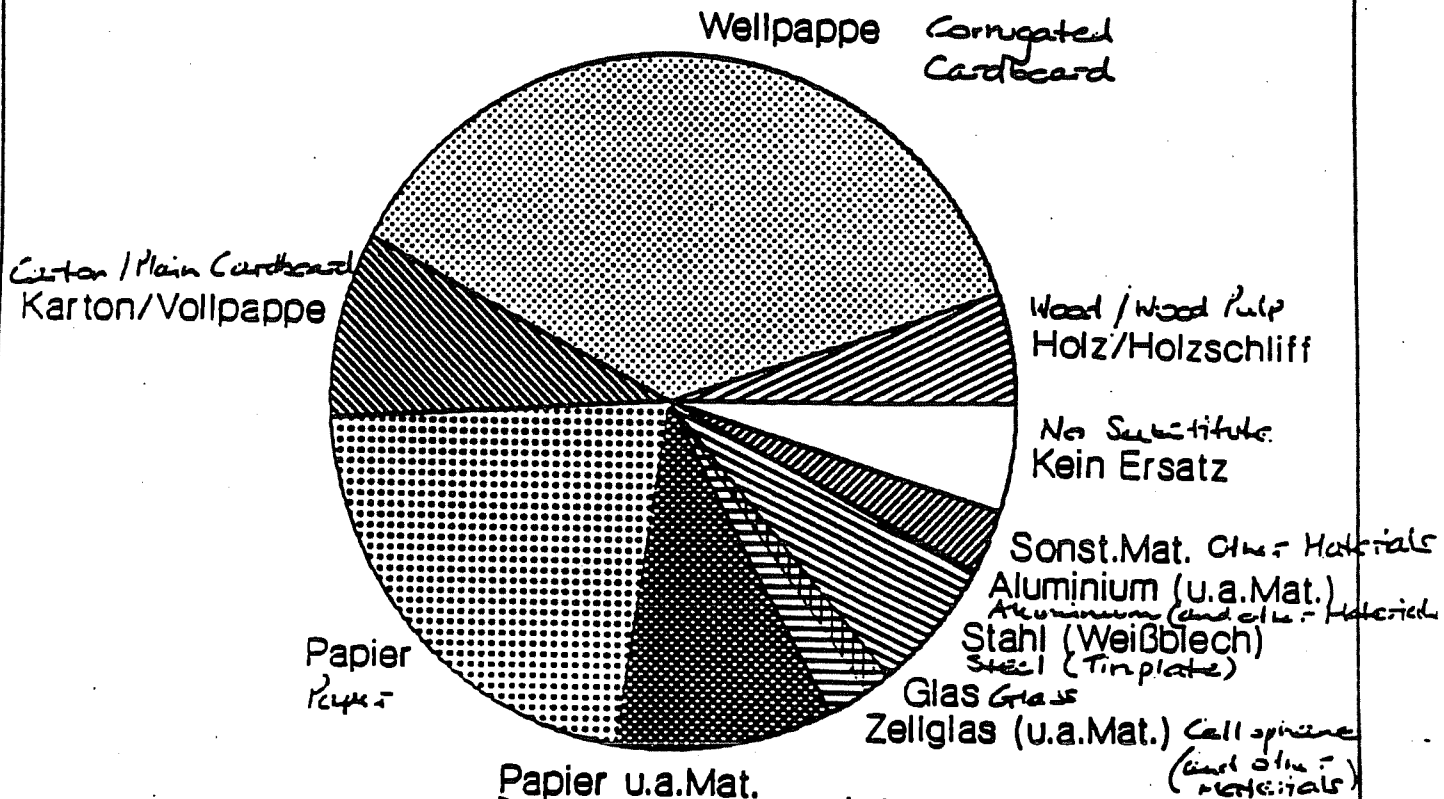
4.

Müllbehältervolumen Volume of waste in household container
Anteile Material / TL Portions of Material / TL



Kst.u.a.Mat. Plastic and other Materials
Kst.gemische Plastic Mixture
Sonst.Kst. Other Plastics

Ist-Zustand Ist - Situation



GVM-Grafik

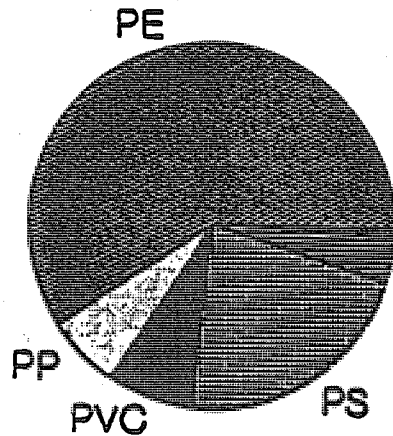
Papier u.a.Mat.
Paper and other Materials
Ersetzung Stufe II
Replacement Stage II



Total Packaging Verpackungen insgesamt

4b

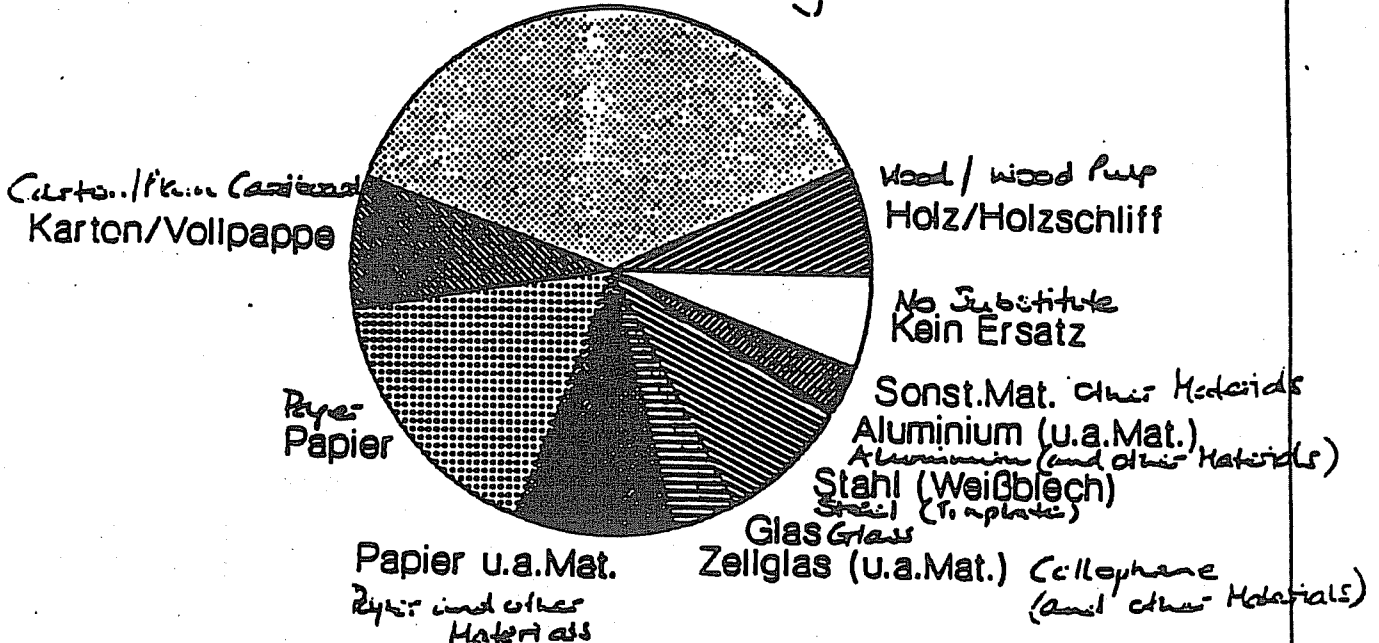
Müllsammelvolumen Volumes of waste collected
Anteile Material / TL Portions of material / TL



Kst.u.a.Mat. Plastic and other Materials
Kst.gemische Plastic Mixture
Sonst.Kst. Other Plastics

Ist-Zustand Ist-Situation

Wellpappe Corrugated Cardboard

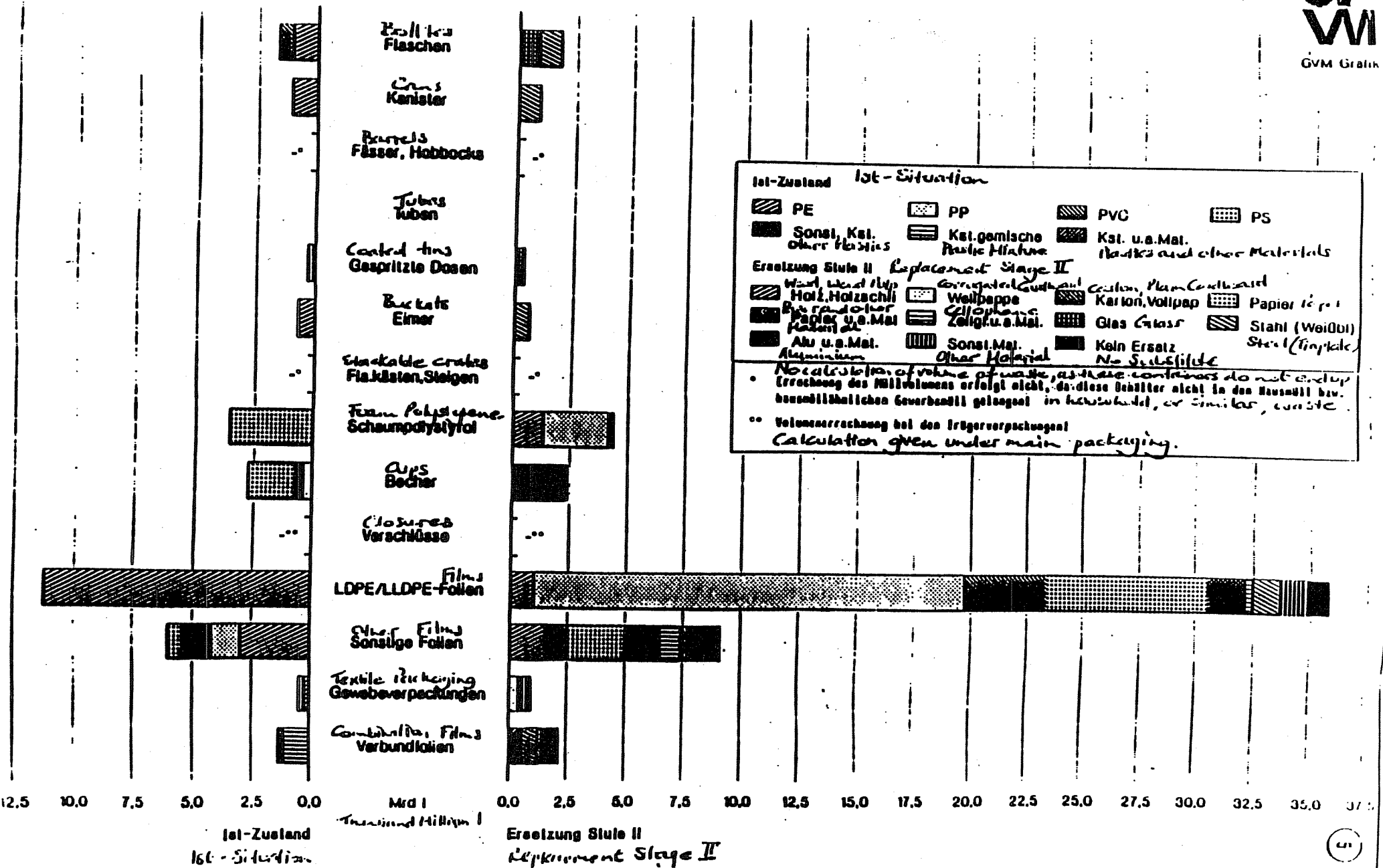


Ersetzung Stufe II

Replacement Stage II

GVM-Grafik

Total Packaging
Verpackungen insgesamt • Müllsammelvolumen in Mrd l





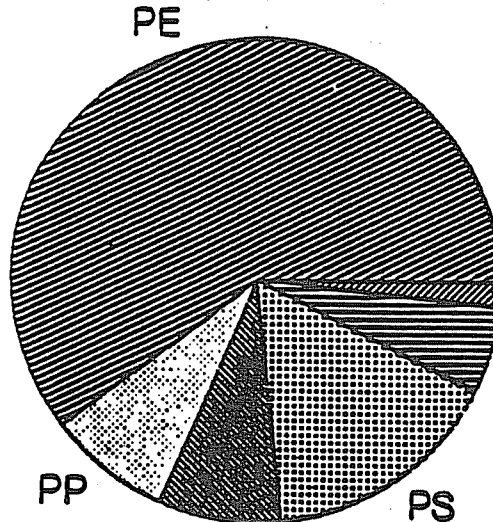
Total Packaging
Verpackungen insgesamt

(Verbrauch BRD) (Consumption FRG)

6

Saldo Energieverbrauch Balance of Energy Consuming

Anteile der Materialien Portions of Materials



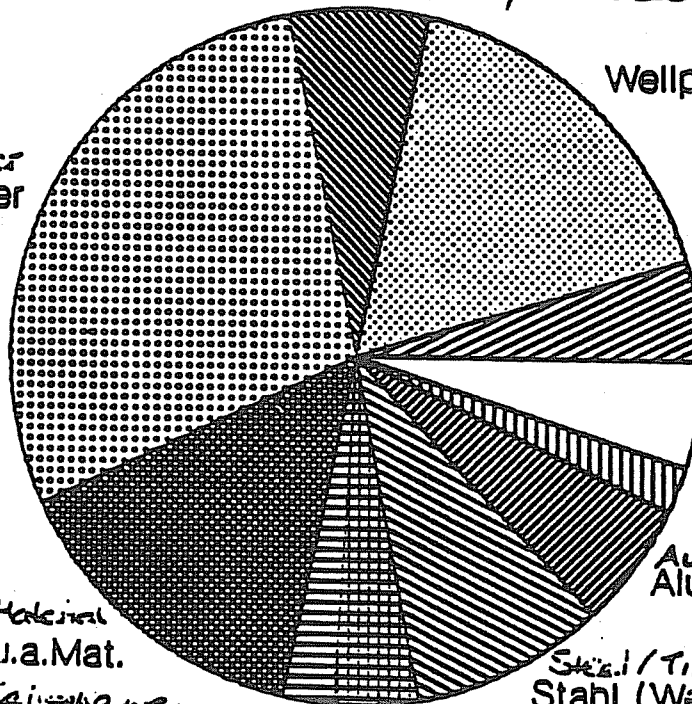
Kst.u.a.Mat. Plastic and other Materials
Kst.gemische ilastie Mixture
Sonst.Kst. Other Plastics

PVC

Ist-Zustand

Ist - Situation

Karton/Vollpappe Carton/Plain Cardboard



Wellpappe Corrugated Cardboard

Wool / Wood Pulp
Holz/Holzschliff

No Substitute
Kein Ersatz

Other Materials
Sonst.Mat.

Aluminium (and other Materials)
Aluminium (u.a.Mat.)

Stahl (Tinsplate)
Stahl (Weißblech)

Glas Glass

Zellglas (u.a.Mat.)

and other - Materials

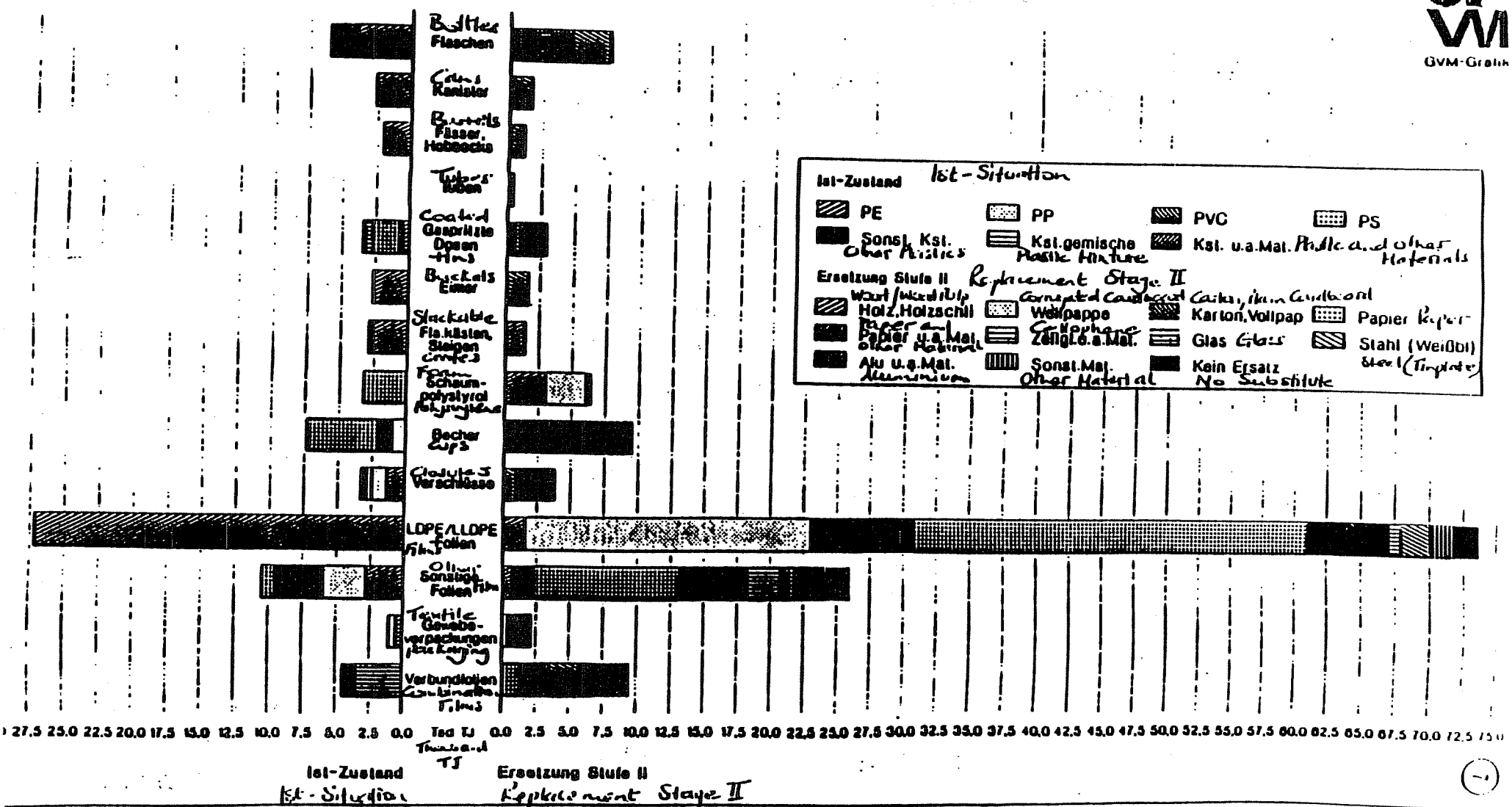
Papier and other Materials
Papier u.a.Mat.

GVM-Grafik

Ersetzung Stufe II

Replacement Stage II

Total Packaging
Verpackungen insgesamt • *Consumption FRG*
Verbrauch BRD • *Balance of Energy Consumption in Tsd TJ*
Saldo Energieverbrauch in Tsd TJ



The complete report on the investigation contains 2 volumes

Der vollständige Untersuchungsbericht umfaßt 2 Bände:

Part 1: Evaluation with tables and graphics (a total of
Teil 1: Auswertung mit 186 pages, including
Tabellen und Grafiken 17 tables and 34 graphics)
(insges. 186 Seiten inkl. 17 Tabellen
und 34 Grafiken)

Part 2: Volume of tables (a total of 170 pages, 116 tables)
Teil 2: Tabellenband
(insges. 170 Seiten, 116 Tabellen).

Die Arbeit gibt erstmals eine vollständige Übersicht über alle wichtigen Einsatzgebiete von Kunststoff in der Verpackung mit einer detaillierten Errechnung des Einsatzes der einzelnen Hohlkörper- oder Follenarten. Die Untersuchung kann mit nachfolgendem Coupon bestellt werden:

For the first time, the work provides a complete survey of all important areas of use of plastic in packaging, with a detailed calculation of the use of individual types of hollow bodies or films. The investigation can be ordered using the following coupon:

From :
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Hiermit bestellen wir die Untersuchung

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"Verpacken ohne Kunststoff",
2 Bände, Wiesbaden 1987
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zum Preis von DM 250,- zzgl. MWSt

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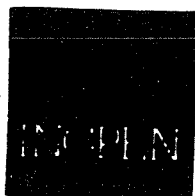
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PACKAGING SAVES WASTE



The Industry Committee for Packaging and the Environment

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Tel. 01-222 8888. Telex 9413809. Fax 01-222 5358

011-44-923

For further information: Contact the Secretary General

1987



Foreword

As the Minister with special responsibility for materials conservation and reclamation, I am very pleased to introduce this document which touches on both aspects of my responsibility.

To many people, the title "Packaging Saves Waste" may come as a surprise because it is so easy to overlook the positive contribution of packaging to the protection of products from damage or spoilage before it is discarded. But the document also deals with reclamation and recycling and gives a balanced account of the factors which must be taken into consideration before embarking on a reclamation/recycling operation.

I commend it to readers on both counts.

1 SUMMARY

1 Packaging prevents waste by:

- protecting products from damage or spoilage
- allowing products to be processed and prepared centrally (Section I/2)

2 Most waste packaging arises in household waste and represents about 1% of total solid waste. This is likely to decrease in the near future because:

- most items that can be, are already packaged
- the heavier packaging materials are being replaced by lighter ones
- containers still made from the heavier materials are requiring less material
- more containers are being diverted or extracted from the waste stream for recycling (Section II)

3 Over the last decade the amount of

waste collected by local authorities has altered remarkably little. However, waste management methods have changed. (Section II)

4 Recycling of materials from waste requires, in order of importance:

- an end use, a market for the material
- the technology necessary to clean and process (and sometimes to extract) the material
- a method for collection of the material (Section V)

5 The energy content of packaging that is composed of a mixture of combustible materials can be reclaimed either by controlled mass incineration of waste (with energy recovery) or by production of a waste derived fuel. (Section V)

6 Waste disposal costs are likely to rise in the near future because:

- current practice often makes no allowance for replacement costs when existing landfill sites are filled
- accessible landfill sites near urban areas are becoming scarcer and waste will have to be transported further (Section V)

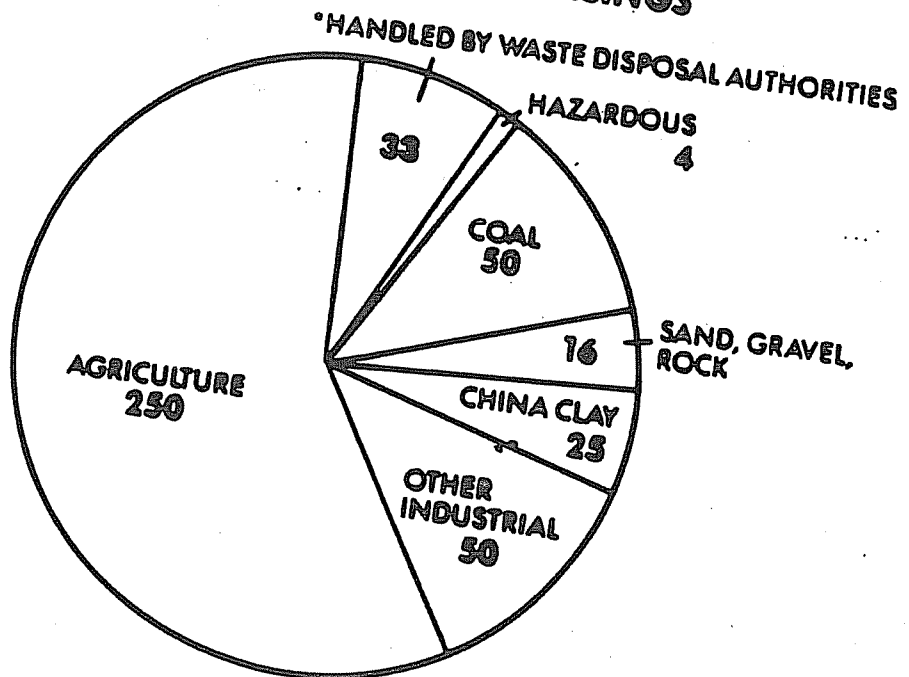
7 The economics of recycling schemes in England could be improved if disposal authorities made some allowance to collection authorities for savings realized by diverting materials for recycling. (Section V)

8 Environmental effects should be considered at the packaging design stage. (Section IV)

2 HOW MUCH WASTE?

In 1980 INCPEN decided to produce its first report on the recycling of solid wastes. It was not that simple - for a start there was remarkably little data on how much waste was produced, let alone how much was being recycled. First of all, therefore, INCPEN produced "Figuring out Rubbish" which achieved a fair measure of success in reconciling the imprecise and often conflicting data. This was followed two years later by "Recycling". Today, more data is available but it is still far from comprehensive.

UK ANNUAL SOLID WASTE ARISING

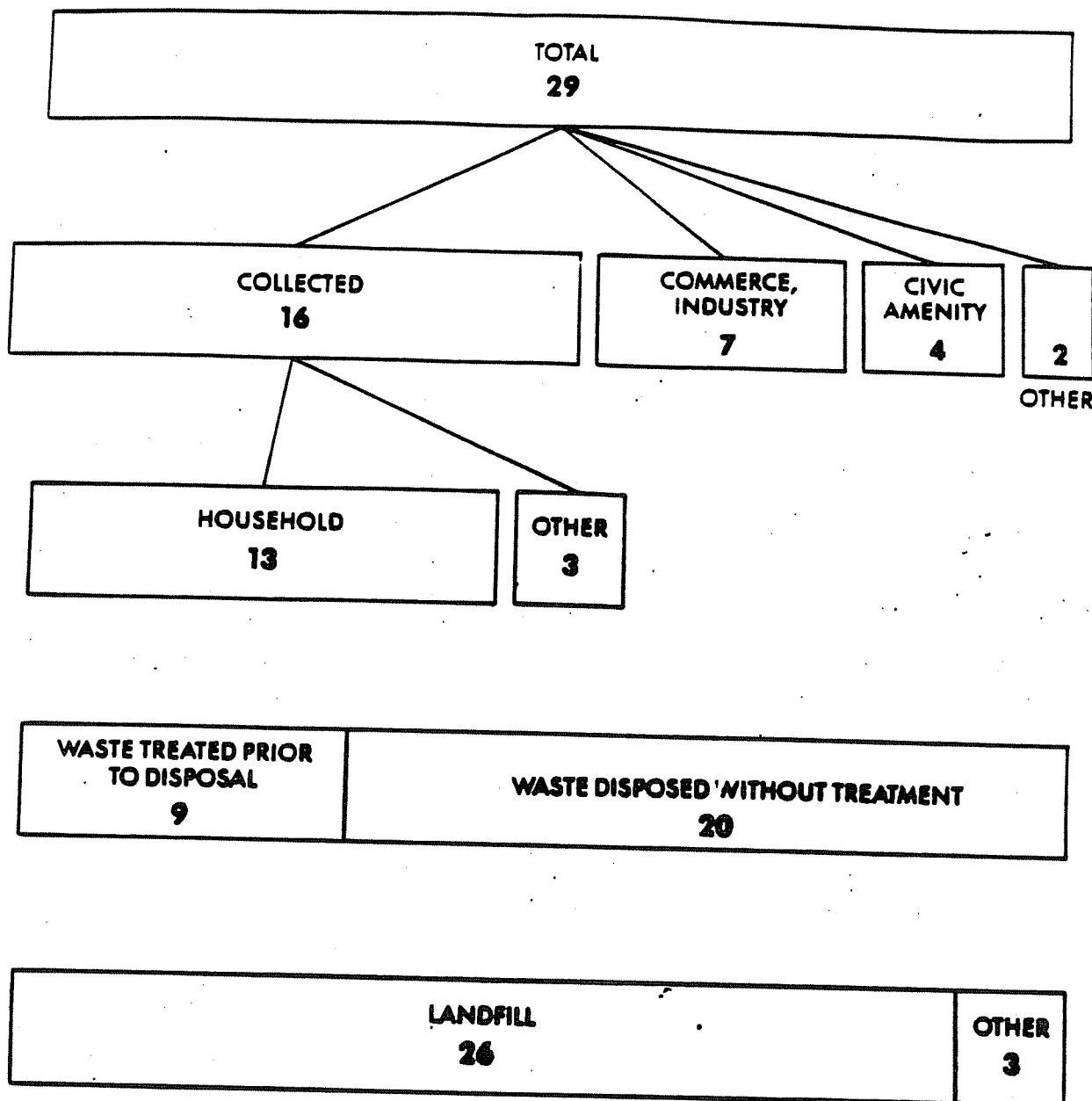


million tonnes

* Estimated

WASTE DISPOSAL AUTHORITY HANDLED WASTE IN ENGLAND AND WALES

million tonnes per annum, 1980s



Over the last decade the amount of waste collected by local authorities has altered remarkably little. But waste management methods have changed. For example, civic amenity waste (waste that householders themselves deliver to local authority sites) is becoming an increasingly large percentage of waste produced by households. In the late 1970s it accounted for 15%; now it is nearly 25%.

However, in some areas, continental-style wheeled bins or "big bins" have been introduced. These have the opposite effect; reducing civic amenity waste and increasing collected household

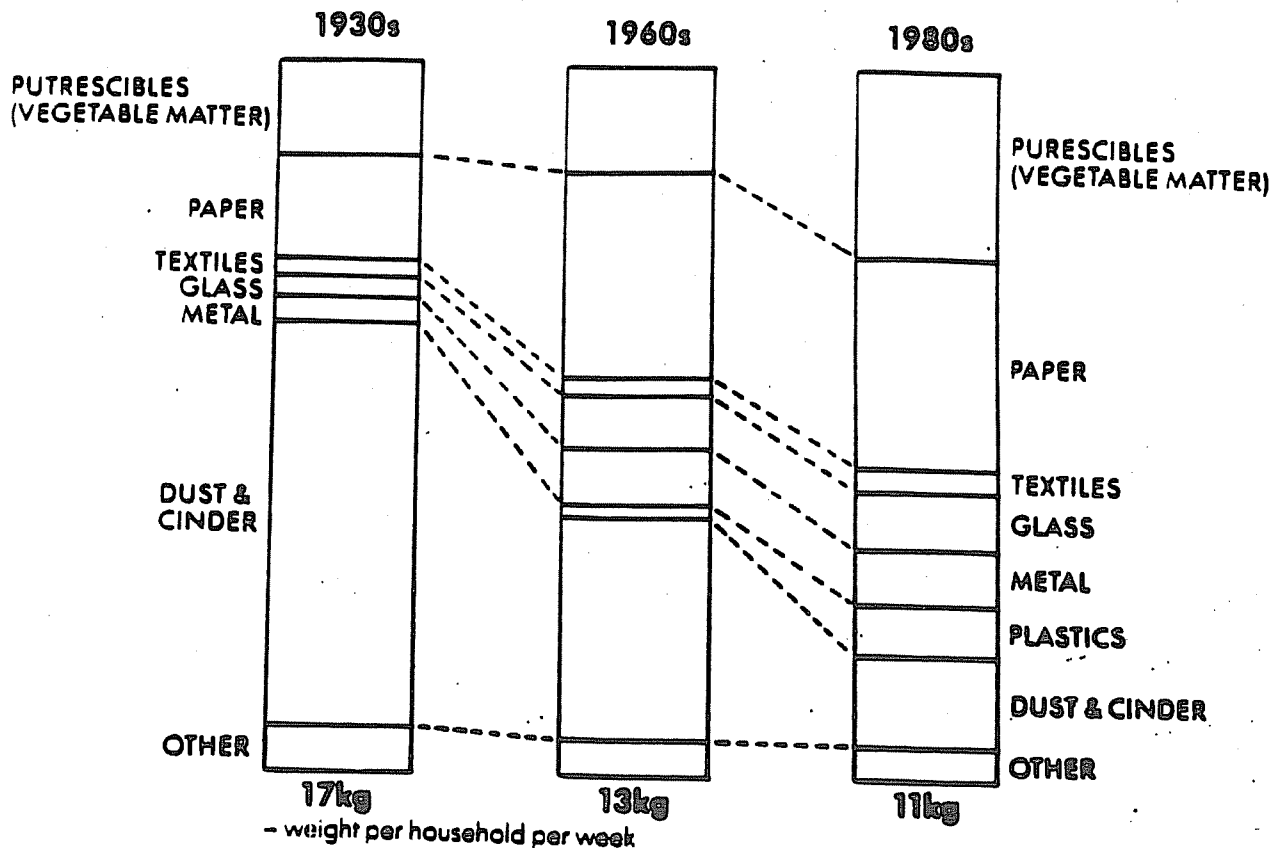
waste because DIY and garden waste can be collected directly from the household. There is debate, too, on the effect these changes may have on the prospects for recycling. In parts of Germany householders are supplied with two bins - one for "recyclables" and one for other waste. Householders have to find space for the second bin, and the bin itself costs about £25; but income from the sale of the "recyclables" will offset this to some extent.

Household waste in the whole of the UK accounts for roughly 14-15 million tonnes per annum. Its overall composition by weight is one third paper, one third putrescibles

(kitchen waste), and the final third is mainly textiles and glass, metal and plastics packaging. All packaging accounts for 28% of household waste. These proportions have changed over the years from the 1930s when dust and cinders accounted for more than half the weight and packaging was less than 10%, to the 1960s when life styles changed dramatically. Central heating, self-service supermarkets, higher disposable incomes, working wives, DIY, drinking at home, car ownership and maintenance have all been reflected in the dustbin's contents.

CHANGES IN COMPOSITION AND SIZE OF UK HOUSEHOLD WASTE COLLECTIONS

percentage by weight



During the 1970s and into the 1980s the rate of change slowed and in absolute terms the amount of household waste produced seems unlikely to change by very much at all. Most items that can be are already packaged, and the trend is to a decrease in the total weight of

packaging discarded, as the heavier packaging materials are either replaced by lighter materials or the containers are being made lighter themselves. In addition, the amount of containers recycled is likely to rise.

The majority of waste is

disposed of in landfill but accessible sites near urban areas are becoming harder to find, with the result that wastes have to be transported further at a higher cost of disposal. It is, therefore, desirable to look at other ways of handling wastes - reclamation is one option.

3 WHY RECYCLE?

Recycling waste is not a new idea. Whenever and wherever someone has been able to sell someone else's waste a scrap business has developed. When the market disappeared, so too did the business. Some reclaimed material markets are just as unstable today but there is new and increasing awareness of the finite nature of resources and attempts are being made to stabilize the markets and to find new outlets. Some of this increased awareness produces misguided activity; much effort is often put into collecting waste materials before an end-use is available for them.

Most reclaimed materials

come from industrial and commercial waste. The composition of this waste is usually known, it arises in large quantities (compared with the amount of material in each household dustbin) and can normally be collected and processed economically.

Household waste poses a different problem - it is a heterogeneous collection of all sorts of materials and arises in each of the 20 million households in the UK. It needs sorting and cleaning, and it needs to be collected in transportable quantities. So is it worth bothering with? The answer perhaps is to look at the broader implications of recycling and some

of the potential benefits.

Recycling can:

- reduce the amount of waste produced
- extend the life of landfill sites
- provide secondary raw materials
- conserve primary materials
- save energy
- remove hazardous materials from the waste stream
- reduce environmental impact arising from the extraction of resources
- make money and thereby create business and jobs
- increase environmental awareness in the general public
- reduce imports

Public interest in recycling has increased in recent years and this interest has focused on household waste and packaging in particular. These are the wastes that people are most familiar with because they see them every day. Some items of household waste, such as shoes,

a soiled pair of shoes and broken crockery, are not subject to this interest – presumably because people have seen these items fulfil their purpose.

Packaging is different because householders usually only see packaging after it has fulfilled most

of its useful life – preserving and protecting the goods throughout the distribution chain from factory to wholesaler, retailer and home. It therefore, often appears to the householder to be a waste of resources.

4 PACKAGING PREVENTS WASTE

Packaging has a much wider role than merely containing a product for the short journey from shop to home. An estimated two-thirds of all packaging is used to protect food.

Packaging also:

- preserves
- protects the outside from the product (e.g. bleach)
- aids distribution
- informs and instructs (much of the information provided on the packs is required legally)
- sells
- helps consumer choice
- identifies brand and quality standards

- provides convenience
- ensures hygiene
- reduces food spoilage
- helps keep prices down by reducing waste and permitting self-service
- encourages innovation
- saves energy

In addition to these, packaging stops products from becoming damaged or spoiled and therefore becoming waste themselves, and it allows food to be prepared, trimmed and cleaned at central processing plants. The resulting product waste therefore arises in sufficient quantity to enable it to be reused itself. For

example, the preparation of chickens for the table produces 750 kg of waste feathers, viscera, heads and feet from 1,000 chickens. If the preparation is done in people's homes this waste goes into the dustbin. If done in a factory the waste can be used to make gelatine and the feathers used in duvets and pillows (and the waste from the duvet industry is often used as a chicken feed supplement!) The oven-ready chickens are then packed in plastic bags (7 kg of plastic per 1,000 chickens) and distributed. Instead of 750 kg of waste in the household dustbin, this is replaced by 7 kg of plastics.

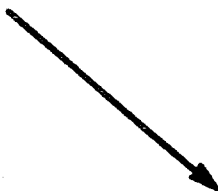
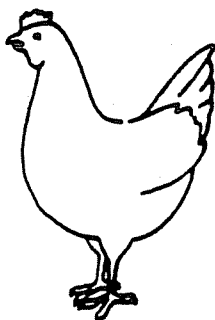
WASTE ARISING FROM FOOD PREPARED IN THE HOME VERSUS IN CENTRAL PROCESSING PLANT

Home Preparation



FEATHERS
VISCERA
HEAD
FEET

Central Processing



750 kg
FEATHERS
VISCERA
HEAD
FEET



WRAPPING



RE-USE

There are many other examples where central processing and packaging actually reduce the overall amount of waste arising and particularly reduce the amount in household waste. For example, if all the vegetables that are currently packaged were purchased in a loose, unpackaged form, then the

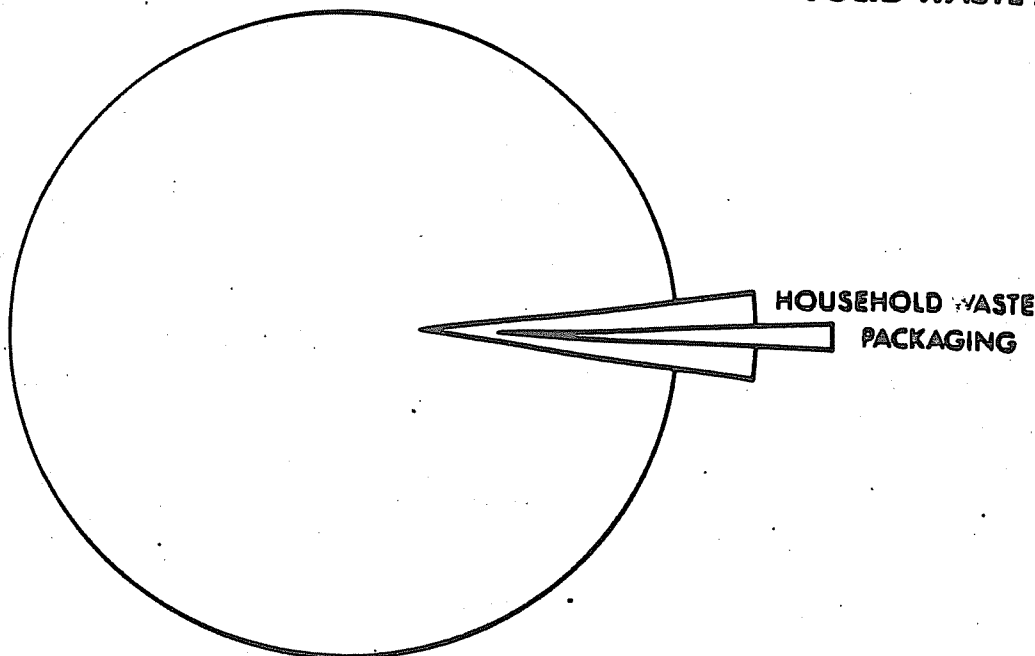
weight of household waste would be reduced by 3%.

Recycling is not only important at the post-consumer stage, it can have an impact throughout the distribution chain.

Two notable reports that examine recycling have been published recently – the Wealth of

Waste from the Department of Trade and Industry, and the Royal Commission on Environmental Pollution's XIth study. Both contain much useful information on the subject but both put a disproportionate emphasis on the packaging component of household waste.

HOUSEHOLD PACKAGING WASTE IN TOTAL UK SOLID WASTE ARISING



5 HOW TO RECYCLE

Markets and Costs

The first consideration in recycling must be to ensure that there is a market for a reclaimed material.

A recycling scheme that is demand-led stands a far better chance of succeeding. The financial costs are important because despite the other desirable reasons for recycling, the impetus to do so is often not maintained without the added benefit of financial reward. There are many examples of failed recycling schemes, some of which

have involved the general public, and in these there is the additional disaster of leaving a disillusioned public who are sceptical when approached again.

Costs, however, must be realistic and there is growing evidence that waste disposal costs have been dramatically under-estimated, particularly because no allowance is made for replacement costs when existing landfill sites are filled.

In England, unlike Scotland

and Wales, this raises another issue with regard to source-separation recycling. The collection and disposal authorities are separate and any savings in costs from diverting materials for recycling are realised by the disposal authority. Less than a quarter of the disposal authorities make any financial contribution to the collection authority involved and even those that do usually only refund for glass.

Cleaning and Processing

Having established that a market exists, the next consideration is whether the technology for processing the waste is available. Some wastes can be separated mechanically from the waste stream. This has the advantage of

not requiring any assistance from the public, other than that they dispose of their waste in the correct place, and therefore the quantity of material reclaimed is likely to be as high as is technically possible.

Most mechanical separation

schemes in the UK have been carried out by local authorities in conjunction with the Department of Trade and Industry's Warren Spring Laboratory (WSL) and have been directed towards the production of

The government appointed a minister with responsibility for co-ordinating reclamation within government departments, who set up a Recycling Advisory Unit at WSL to carry out studies and to build up a data-base of information on recycling.

WDF consists mainly of the paper (30% by weight of household waste) and plastics (7% by weight of household waste) fractions of waste and has a calorific value between $\frac{1}{2}$ and $\frac{3}{4}$ that of coal. A number of plants have been built and an estimated maximum 6% of UK waste is now treated in some way to reclaim the energy content – either as WDF or by mass incineration (with no prior separation of non-combustible fractions).

Another promising development is the use of landfill gas. Organic material in landfilled waste decomposes under anaerobic (in the absence of oxygen) conditions and often produces a methane-rich gas. In some cases, the amount of gas produced is sufficient to be attractive commercially as an alternative fuel to nearby industry.

The second part of the household waste is made up roughly 5-7% by weight from food cans, per food cans and half of the drinks cans). At present about 60 thousand tonnes a year are extracted by magnetic separation. This is sold to the foundry industry or exported out, if the level of contamination from other materials is below 10-15%, it can also be refined to produce higher value quality steel and commercially pure tin. Tinplate is also reclaimed through a source-separation scheme, Save-a-Can, which operates on similar lines to glass bottle banks and collects all types of cans, including aluminium.

The other metal in household waste is aluminium (less than 1% by weight) used mainly for the other half of the drinks can market, for drinks can ends, milk bottle tops and foil containers.

It is technically possible to separate it electromagnetically (for example, by using a Cotswold Separator) and even the relatively small amount present may warrant the use of this equipment because of aluminium's high scrap value. Aluminium may be recycled again and again with a substantial energy

saving. Once a aluminium can has been collected, it can be recycled directly into new aluminium drinks cans.

A number of source separation schemes have been and are being tested. Most recent trials involve the use of reverse-vending machines, fixed and mobile collections, all of which pay cash or a credit for the empty cans.

Glass, (about 7-8% by weight of household waste) too, cannot be mechanically separated from mixed waste to a high enough standard to be reused by the glass industry. Since 1977 glass has been recycled through the bottle bank source-separation scheme which provides the glass in a clean enough condition so that, after treatment, it can be put into a glass furnace. It now operates in over 370 district council areas and, together with industrial waste glass, 228 thousand tonnes were reclaimed in 1986. The glass companies give guaranteed prices for the cullet which relate to the cost of the primary raw materials replaced and guarantee a constant market. For each tonne of cullet loaded into a glass furnace there is a substantial energy saving.

Collection of Waste

The third consideration in recycling is the collection of the material. Household waste is usually collected weekly (with due respect for the lifecycle of the house-fly). For public health reasons it must be collected even if a dustbin is only half, or even less, full. Unlike disposal costs, collection costs are less affected by the quantity of waste arising. The cost of collection is, on presently available figures, about three-quarters of the total collection and disposal costs.

The modern rear-end loading collection vehicles are not really suitable for collection of segregated materials but in continental Europe two approaches have been tried. Vehicles with separate compartments have been used and separate rounds to collect "recyclables" have been made. Both methods increase the cost of collection but some schemes are being continued primarily, it seems, because people like to feel they are doing something useful in environmental terms.

In the UK the trend is towards the use of larger vehicles and longer routes to enable collection costs to be reduced and there are very few separate collections of "recyclable" material (usually waste paper) that

still operate. In 1986 the total weight of waste paper used by British paper and board mills was 2.1 million tonnes, representing well over 50% of the total fibre used. A further quarter of a million tonnes was exported to continental mills. Merchant processors handled 92%, local authorities 3% and voluntary organisations and others 5%.

Most recovered paper (over 70%) is recycled to produce packaging materials, with some also used in the production of newsprint, tissues and other papers. Other minor uses include moulded pulp products, insulation and animal bedding.

Charities and voluntary organisations do still collect paper from households and some local authorities provide bins at convenient sites, often in conjunction with glass and metal schemes. Household waste paper, however, is usually a mixture of newspapers, packaging, magazines and advertising material. As such it is the first to be affected when the unstable waste paper market moves into a downward phase and therefore is the first to have to rejoin the solid waste stream.

There are divided opinions on the effect that will be caused by the

planned introduction of Sections 12-14 of the Control of Pollution (1974) Act which will oblige local authorities to make a charge for the collection of commercial waste unless they consider it inappropriate to do so. It might encourage more commercial premises to source-separate their paper and board, which is often higher grade than household paper, and supply it to a reclaimer. Balanced against this, however, is the consideration that rather than pay the local authority charge, commercial premise owners might be tempted to fly-tip (litter) their waste. Some local authorities may well decide to waive the charge to prevent this happening.

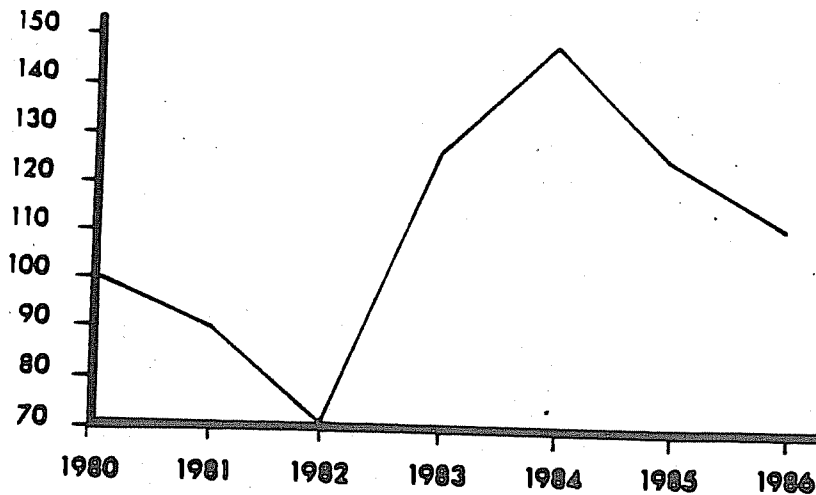
There are no official price lists for waste paper, and prices vary substantially depending upon the grade concerned. The prices of the pulp-substitute grades are influenced by, and follow movements in wood pulp prices. Prices of the lower bulk grades are influenced more by supply and demand and by the price of the alternative product made from wood pulp. In both cases currency exchange rates also have a significant influence.

6 UK SCRAP PRICES INDICES

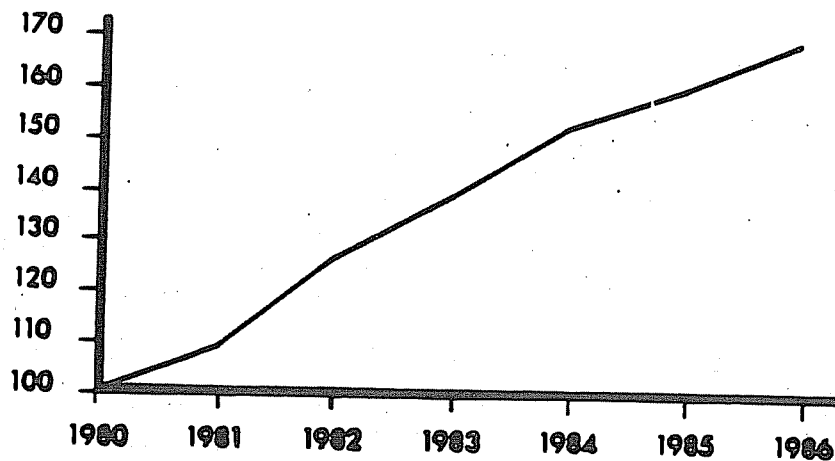
(1980 = 100)

The charts demonstrate that there is no historic uniformity of price movements for secondary materials.

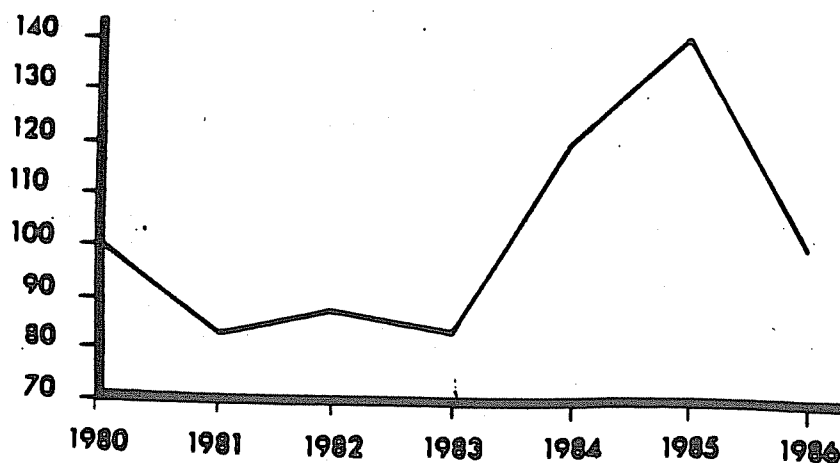
Scrap Aluminium



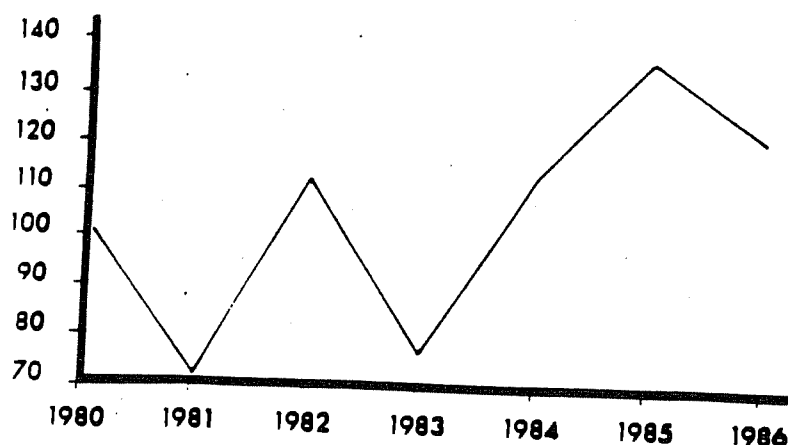
Waste Glass (cullet)



Waste Paper



Scrap Steel



7 THE FUTURE

It seems likely that packaging will continue to evolve towards the use of lighter weight materials and towards flexible combinations of plastics, paper and aluminium foil. These trends in packaging make the most of the properties of each constituent material while achieving the environmentally desirable aim of using less raw materials. Aseptic packaging of food and drinks is also likely to increase. This improves storage and, in effect, combines many of the properties of canned and frozen foods, without the expense of frozen food distribution.

The EEC Directive on Containers of Liquids for Human Consumption came into effect in 1987 - its purpose is to reduce the impact on the environment of the disposal of these containers and to reduce their consumption of energy and raw materials. There are various

ways of achieving this aim, some of which are less practical than others:

- recycling of the container material either through source-separation schemes or by separating it from mixed waste
- reclamation of the energy content of the containers
- reduction of the number of containers produced
- changes in the types of materials used for containers
- reduction of the weight of material used in each container
- reuse of the container by refilling it

Other specific provisions are also required but the Commission has assured governments that it will reject measures that discriminate between container types or systems or create barriers to trade.

So what of the future for recycling? As waste disposal costs

rise (for whatever reason) recycling will become more commercially viable. In areas where the bottle bank scheme does not at present make commercial sense, the scales should tip in its favour. Similarly, source-separation schemes for paper and metals should also benefit.

Types of plastics containers that are predominantly only one polymer may also be source-separated and recycled as materials, providing that suitable end-uses can be established. Packs composed of mixtures of polymers and other materials are unlikely to be recycled as materials but can be recycled as energy with the additional advantage that this makes use of some of the other combustible fractions of waste that would otherwise still have to be landfilled.

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- 6 Environmental Resources Ltd. Resource Recovery: A Report for the Royal Commission on Environmental Pollution. 1986.
- 7 Figuring out Rubbish - INCPEN 1981.

Useful Addresses

Aluminium Federation,
Broadway House, Calthorpe Road, Five Ways, Birmingham B15 1TN.

Association of County Councils,
Eaton House, 66a Eaton Square, London SW1W 9BH.

Association of District Councils,
9 Buckingham Gate, London SW1.

Association of Metropolitan Authorities,
35 Great Smith Street, London SW1P 3BJ.

British Carton Association
11, Bedford Row, London WC1.

British Fibreboard Packaging Association
Sutherland House, 5-6 Argyll Street, London W1V 1AL

British Paper & Board Industries Federation,
3 Plough Place, London EC4.

British Plastics Federation,
5 Belgrave Square, London SW1.

British Waste Paper Association,
Highgate House, 214 High Street, Guildford, Surrey GU3 1JB.

Can Makers Information Service,
36 Grosvenor Gardens, London SW1W 0ED.

Convention of Scottish Local Authorities,
Rosebery House, 9 Haymarket Terrace, Edinburgh EH12 5XZ.

Department of the Environment, Land Wastes Division,
Romney House, 43 Marsham Street, London SW1P 3PY.

Energy Technology Support Unit (ETSU),
Building 156, AERE, Harwell, Didcot, Oxon OX11 0RA.

Glass Manufacturers Association,
19, Portland Place, London W1Y 4BH.

Institute of Waste Management,
3 Albion Place, Demgate, Northampton NN1 1UD.

Metal Packaging Manufacturers Association,
Elm House, 19 Elmshott Lane, Cippenham, Slough, Berkshire SL1 5QS.

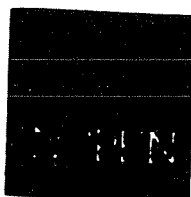
The Institute of Packaging,
Sysonby Lodge, Nottingham Road, Melton Mowbray, Leicestershire LE13 0NU.

The Warmer Campaign,
83, Mount Ephraim, Tunbridge Wells, Kent TN4 8BS.

Warren Spring Laboratory,
Gunnelswood Road, Stevenage, Herts.

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Michael Mitchell	INCPEN
Alan Davies	British Steel Corporation
Jim Faithfull	ICI
Rosemary Good	Rockware Group
Derek Hayter	British Alcan Aluminium
Victor Stevens	CWS



INCPEN was founded in 1975 with two main goals;

- to provide a forum for debate on the economic, social and environmental aspects of packaging
- to provide factual information and act as a channel for communication with Government, environmentalists and the consumer on the role of packaging in society

Its members include suppliers of raw materials, packaging manufacturers, producers of packaged goods, wholesalers and retailers.

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