DOE/R4/10084--T1

10084

U.S. DEPT. OF ENERGY
RECEIVED

21-0104

DOE/R4/10084--T1

DE84 000371

OCT 19 10 57 AM '82

KY

REGION IV
ATLANTA, GA.

BOB- I approved
the final
report CH

F244-80 R4 10084

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

"WASTE NOT.....WANT NOT"
D.O.E. appropriate technology
small * grants * program

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	1
INTRODUCTION.	2
PERSPECTIVE	3
RESEARCH PHASE	5
STATE AND LOCAL PLANS.	8
SURVEYS	10
PUBLIC MEETINGS.	12
THE PLAN	13
SUMMARY	17
APPENDICES	18

NOTICE
PORTIONS OF THIS REPORT ARE ILLEGIBLE.
It has been reproduced from the best available copy to permit the broadest possible availability.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

MASTER

gmp
DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

ACKNOWLEDGEMENTS

This project has been extremely dependent on local volunteer labor. This is as it should be. I am grateful to all those who have nurtured this planning process into a growing community effort to save energy and natural resources through local initiative. Special thanks to Loren Kramer, Frank Gailey, Laura and Terry Manges, John Theil, Mary Thebo, Glenda White, Paige Powel, Gretchen Laufle, Tom Wills, Crystal Wyrick, Teri Mehler, Michelle Goolsbee, all of the neighborhood contacts, and the many others who helped when we needed it.

INTRODUCTION

In March of 1980, Mountain Community Workshop received a grant from the U.S. Department of Energy under the Appropriate Technology Small Grants program. The funds were to be used to investigate the local solid waste situation in Berea, Kentucky, look at various alternatives and from that information, develop an implementation strategy for a resource conservation and recovery plan for the community. This document is the result of that study and the plan that developed.

PERSPECTIVE

When the astronauts returned from space with our first real view of the planet Earth, many of us began to sense the significance of our isolation in the universe. The finite nature of our resources became all too clear. However, political realities have not allowed us to adjust our course very readily. It took another political reality, the now infamous 1973 OPEC oil embargo, to force us into begrudging action.

But where has that led us? On a national level there are still too many "political realities" that supercede the long term well-being of our citizenry. An effective energy policy can never be developed at the federal level due to its scale and inability to grasp the potential of localized resources.

We have in the past used the "all the eggs in one basket approach" to problem solving and subsidized it to the point that no other source of energy could compete. When nuclear power was first introduced it was promoted as "so cheap they won't even have to meter it." Well, they are metering it now and at the highest cost per kilowatt hour of any fuel available with the long term costs like waste disposal, plant decommission, plant disasters, etc., yet to be figured in. The cheapest and most effective source is conservation, but there is no established industry lobbying effort to take up the banner the way there is for nuclear, coal and oil.

For much too long, conservation of energy has been associated with sacrifice; with being colder, driving slower, or having less than we need. In reality, conservation is a new horizon, a chance to muster the creativity that is inside us all to bring about an enlightened change on the planet. And with that change a more equitable and fulfilling existence for all of its inhabitants.

In an effort to keep us abreast of the latest events happening, the national news media has made it such that we know more about what is happening on the other side of the world than we do about what's going on in our own communities. Some of the most exciting things are being done by our neighbors, but for the most part they go unnoticed and unappreciated. It is at this level that "the Moral Equivalent of War" is being waged and where it will also be won.

Classical capitalist economic logic is based on a premise that is now so deeply embedded in our subconscious that we have come to accept it without question. Simply stated; consumption, essentially of fossil fuels and non-fuel natural resources equals economic prosperity. This assumption made sense in the short term because energy and resources were abundant and cheap. But in the long term it has proved disastrous.

Effectively, the real costs of our consumption patterns have been externalized into social costs; in the form of air, water and noise pollution, dumping of solid and hazardous waste,

and depletion of non-renewable fuels and other natural resources. The cost exists but most often does not appear on the price tag of the product.

We are at the crossroads. We must decide whether we will continue down the superhighway that promises continued prosperity and comfortable lifestyle, even though the pot holes keep getting bigger. Or, will we forge a new road into the frontier and accept the challenge of the "American Spirit." Either way will be hard but the superhighway eventually dead ends leaving no return except backwards. Selecting a new path allows us to branch out, to use our local resources, both human and natural to their maximum potential.

RESEARCH PHASE

Several attempts at setting up recycling programs have been made in Berea over the years but the lack of long term commitment and consistency of collection doomed these efforts. Our grant proposal submitted to the U.S. Department of Energy was intended to overcome these problems and provide a vehicle for the initial leg work to be done.

Our program had several very distinct phases including research (markets, alternatives, community surveys), community education (public meetings, fact sheets), organizing (establishing core group, neighborhood networking) and implementation of strategy developed during this process.

One of the first things that we did was to en masse a substantial library of current books, periodicals, reports and other literature relating to recycling and conservation of resources. This was used to educate ourselves about what we could reasonably expect to accomplish in our locality and to make us aware of potential pitfalls that other programs had encountered. We also used the information derived from these sources to develop fact sheets, charts, etc., for community education. This library has been cataloged and is available to the public to check out. (See Appendix I)

The research phase started with getting the most current information on successful and defunct recycling programs. The primary factors influencing success were the scale of start-up, community participation, availability of markets and labor.

Very early in the project we started checking out market potentials for the full range of past consumer waste and as a result became aware of the lack of adequate markets for some materials and the inconsistency in income from the sale of others. As a result, we contacted every potential buyer that we could locate within a 120 mile radius and some as far away as Georgia. (See Appendix II)

Berea, Kentucky is the smaller of the two principle population centers in Madison County, with less than 10,000 people. Madison County was created by an act of the Virginia General Assembly in 1786 prior to the establishment of Kentucky as a Commonwealth separate from Virginia. Berea was formally established in 1890 after the community had grown up around Berea College. It has gained notability for the quality workmanship of its local artisans and craftsmen.

Berea has found itself in a comparatively similar dilemma with other communities around the country. The cost of the solid waste disposal service provided by the local government exceeds the revenues to support it. The only options that have been seriously investigated up to now are reductions in the level of service or increases in the rate for providing the service. There are several options that continue to be given inadequate consideration.

Waste reduction is the most apparent. As indicated in

Figure III, 38% of the solid waste stream is food and yard waste. Many of these organics simply do not need to be there and a high percentage could be composted on an individual basis.

Figure III also shows that 33% of our garbage is packaging, the throw-away containers for the products we consume. The best way to reduce this volume is by conscientious buying, purchasing products in returnable containers, buying in bulk*, and encouraging retailers to minimize pre-packaging.

*(Generally the packaging to actual consumable product ratio is less when larger containers or bulk buying is used,)

Once the volume has been reduced, we can recycle much of what is left. The most cost effective way of doing this is by source separation at home. Studies of communities that have undertaken a program of this type show that this requires less than two additional minutes per day over what would normally be necessary to deal with the garbage.

What are the incentives? Communities that have undertaken a comprehensive waste reduction and recycling program have found that the cost of providing the pickup service generally increases but the disposal costs are reduced and the income from the recyclables cuts the overall cost to around half what it would be otherwise. Davis, California found that after paying \$30.00 per ton for typical solid waste service, the cost of operating a recycling program increased to \$45.00 per ton. However, the cost passed along to the consumer was only \$15.00 per ton due to the sale of recyclables at an average of \$30.00 per ton.

Beyond the advantages of cost savings, there are significant reductions in environmental impact. As can be seen in Figure IV, these reductions in pollution alone should be enough to encourage us to change our ways.

At a time when the cost of energy is skyrocketing we cannot afford to waste it by throwing away the energy tied up in these materials. The most dramatic example of this is with aluminum. A 95% reduction in energy use can be achieved by recycling aluminum as opposed to making it from raw bauxite. Other potential energy savings are illustrated in Figure V.

We have also focused on the energy used to produce the presently discarded materials and the impact that has on recovery of that energy. Some communities have been looking at resource recovery facilities or so called "waste to energy" plants. Our research indicates that the capital investment required for such a plant cannot be justified when energy comparisons are made. Recycling gives a higher BTU return than combustion of the materials. Plus, these plants require a consistent volume of waste material. Any attempts to reduce the waste and recycle results in higher cost to the consumer. In essence, this encourages the waste habit.

Presently we import 2/3 of our newsprint from Canada and throw it in the trash the next day. Japan takes our scrap steel and makes it into new steel and can sell it back to us cheaper than we can make it from raw iron ore. These examples illustrate the pervasiveness of our ill-conceived materials policy. (Also see Figure VI)

We developed a series of handouts about various waste resources to be used to educate the public. These represent the bulk of the material research we accumulated and makes a very strong case for taking action to deter the continuation of these patterns. (See Appendices VII-IX)

STATE AND LOCAL PLANS

On June 24, 1980, Crystal Wyrick and I interviewed Gene Stinchcomb, the Berea city administrator. At that time he was preparing the city budget for the coming year and was able to give us current figures for operating the trash collection system and landfill. It cost approximately \$160,000.00 per year to run the system but only half of that came from revenue generated by collection fees. The remaining amount came from the general fund. So, the system was running an \$80,000.00/year deficit. He also indicated that a new dozer would be required at the landfill and a new packer truck was also needed. In addition, stiffer state and federal regulations had reduced the useful life of the landfill from 20 down to 5 years. These factors indicated that a change was needed and the city was investigating raising the rates considerably or reducing the level of service.

He also mentioned that since the landfill might be closed in five years that the city might be moving toward the regionalized landfill program being pushed by the state.

During an interview with Mr. Stinchcomb, we requested a chance to visit the city landfill site. Gene agreed and suggested that the state landfill inspector be present to explain proper operation procedure and regulations affecting landfills in Kentucky. On July 11, 1980 we met with the inspector assigned to the Berea landfill and the landfill foreman and toured the site reviewing why certain procedures were followed. The inspector had favorable comments of the current operation of the facility but indicated prior negligence in the days when the site was an open dump and was burned periodically. Some hazardous materials from local industry had also been deposited during the period. Signs of some of the long term effects of this type of mismanagement were visible in the leachate ponds but this has been gradually diminishing. The most important realization was the tremendous time and equipment, and in essence, cost, required to operate a landfill facility within regulatory constraints imposed by the state and federal government.

Organic wastes such as tree trimming, leaves, etc., were segregated to minimize waste of available landfill space. When asked, the inspector said that there were currently no state regulations that prohibited scavenging of these or other kinds of waste as long as it was approved by local option and adequate safety precautions were observed.

Local Plan

In spite of a lot of positive impacts that can result from the National Environmental Policy Act of 1976, it has once again created a mood of complacent compliance rather than innovation. In typical fashion the act required that each state develop a plan to deal with solid waste. The Kentucky Department

for Natural Resources and Environmental Protection contracted with a consulting firm to facilitate the planning process and involve local citizens. Public meetings were held in each of the Area Development Districts*, to solicit citizen input. Berea and Madison County are included in the Bluegrass Area Development District, which represents a seventeen county area in central Kentucky. The results of that input were overwhelmingly in favor of waste reduction and recycling. However, when the State returned to present its plan, source separation and composting were not even considered in the possible options. The favored options were regionalized landfills in conjunction with waterwall incinerators. When confronted with this, the reply was that the plan was not intended to exclude these possible options from being undertaken on a local initiative. Again the political realities dictate that since these options were not considered, local officials, for the most part, will continue to assume them impractical and seek to be in compliance with the plan. The preferred options require federal subsidy to get the cost down and fail to take into consideration increased transportation costs and the net energy loss when you compare the energy gained in incineration with the potential energy and natural resources saved by recovering and recycling those wastes.

The truth is that the plan had been decided before citizen input was even requested. Every city and state official that I interviewed had no doubt that the program that was finally presented would be the state plan. They said the state had been pushing in this direction for years so that greater control could be exerted over the quality of disposal and so that fewer inspectors would be required to insure that quality.

This begins to take on the aura of a plot to subvert the people. Really it's just another example of government "jumping on the band wagon" approach to problem solving and attempting to standardize communities. It demonstrates its inherent inability to move from the generalized grand scale to the specific local scale and take into consideration all of the social and physical characteristics of a community.

One more chance remains to influence the outcome of this plan. Now that the federal, state and regional plans have been drafted, local governments will have to develop a plan that is in compliance, either adopting the options recommended or developing our own that must then be specially approved. The tendency, and certainly the easiest route, will be for the local government to simply comply. But developing our own plan to conserve natural resources and energy will by far be the best option.

*A regional bureaucracy set up to funnel federal funds to local governments.

SURVEYS

To get a better understanding of how the community would respond to a waste reduction and recycling program, a series of surveys were conducted. These encompassed close to 10% of the residential customers of Berea's solid waste disposal program. Virtually every commercial business in town was contacted with approximately 50% responding and all of the industries responding. In addition, Berea College was surveyed for quantity and type of materials discarded. The highlights of these surveys are as follows:

Residential (See Appendix X)

We got responses from close to 10% of the residential community in our telephone survey. The first question asked was if they presently recycle anything. The answer was generally no. But then we asked about specifics like reusing glass jars and fabric and having yard sales. This seemed to give the respondents more self-worth when they realized they were recycling unconsciously.

About 89% said they would like to see a recycling effort in Berea and would prefer it to be voluntary. An almost equal amount said they would be willing to separate their waste by type at home.

Also of significance was that over 60% of the respondents changed their own oil and most also dumped the used oil.

Business (See Appendix XI)

We hand carried surveys to all of the businesses in the commercial zones in the city. Approximately 50% returned them. Only two said they would not like to see a recycling effort in Berea. Most of those responding said they would be willing to source separate. The predominant waste products they indicated were paper and cardboard.

Industrial (Similar to Appendix XII)

We conducted personal interviews with each of the six industries in town. Each was extremely candid and willing to participate in whatever program we could develop. Since each industry was different, compiling data was impossible. Some of the highlights were:

Gibson Greeting Card presently sends baled cardboard to a market in Dayton, Ohio by rail. They used to buy newsprint from local groups for packing material but have since given it up. Virtually every industry salvaged their metal scraps and used oil. The major problem they had in common was the huge quantity of cardboard waste. To recycle it would require pickup every day because none of them had room to spare for storage.

Berea College (See Appendix XIII) was surveyed to identify the types and quantities of waste generated on campus. Huge quantities of paper of different grades from cardboard to computer paper were found primarily in the dumpsters outside the administrative offices and the college press. The other major item was organic waste at food service. Other organics included sawdust from woodcraft, chicken manure from the poultry farm and leaves collected and baled in the fall. The dorms were noticeably lacking in uncontaminated waste other than some aluminum cans.

PUBLIC MEETINGS (See Appendix XIV)

We began the meeting by telling about how the project got started, and how it is funded by a Department of Energy Grant. Slides were used to visually emphasize the facts being discussed. Also, several posters were put around the room to demonstrate source separation, recycling, etc. We briefly reviewed all the topics researched for the fact sheets (pollution, waste oil, hazardous waste, composting, silver recovery, methane, alcohol and paper). We mentioned the facts that we had discovered through our interviews with Mr. Stinchcomb and the Berea Landfill inspector. We then described the surveys that were being done to determine resources used and how citizens seem willing to change. Next, we explained the charts he had brought: Major Metal Producers, Environmental Impact of Recycled vs. Virgin, Energy Used to Process Virgin Materials Compared to Recycled, Composition of Wastes, and Source Separation Options. The last part of the meeting was discussed at some length with factors such as waste transportation costs, labor costs, equipment costs, possible sources of labor (law offenders, volunteers, Senior Citizens, and students) pointed out. Next, the floor was opened for ideas. Some of the ideas discussed were:

1. Composting of restaurant and grocery store waste.
2. Enacting a Bottle Bill.
3. What the incentive for source separation and recycling could be.
4. The economics of waste paper pickup.
5. Recycling business paper.
6. Education on recycling, source separation, resource recovery, etc.
7. If the meetings can create a core group.

After the discussion, refreshments were served and the participants of the meeting met one another and discussed their particular interests and concerns.

Several additional community meetings were held to refine our ideas and pick the options most practical. In addition, numerous planning meetings were held to develop an implementation strategy.

In January, Second Nature in cooperation with Appalachia Science in the Public Interest (A.S.P.I.) and M.A.C.E.D., brought Pete Grogan from the Ecocycle Recycling Project in Boulder, Colorado to Berea to share with us some of his insights into running a successful operation.

THE PLAN

Mountain Community Workshop is a nonprofit group working in energy issues primarily in Madison County. During our open public meetings, it became obvious that a group more specific in nature and more localized was forming; and the logical progression was to encourage this to happen. As result, the Second Nature Recycling Project was born.

Based on the information compiled during our research phase, we decided to start the program with the collection of newsprint from residences in the community. We limited the type of materials to a fairly easily obtained item to get the program going with the potential to expand as we got established. Also, since paper comprised 35% of the total volume of solid waste stream, we felt that this was the area where we could eventually make the most significant impact in terms of reduction of waste.

Second Nature has been undertaking phase one of that implementation strategy since May of 1981. This involves a coordinated effort of several committees. The Neighborhood Committee is in charge of developing a person-to-person contact network. We have enlisted the help of approximately 50 key individuals to insure that the program is encouraged in each neighborhood. These contacts are responsible for distribution of educational materials, reminders about pickup dates, and generally applying peer pressure to their neighbors to participate. The success of the program is directly dependent on participation levels; and since we opted for a non-mandatory approach, the neighborhood network seemed the best option. The potential for this method of designating information is overwhelming because it allows communication to travel quickly and effectively and increases the possibility of success.

The Collection Committee is responsible for establishing collection routes and arranging to pick up the recycleables on a timely basis. We have started with a simple program to do a newspaper pickup so that we can work any bugs out before we begin to accept more materials. Second Nature volunteers did the pickup the first couple of times, but after that we turned it over to local civic and community groups so that they could make a little money for their projects. There are several advantages to this approach. The first and perhaps most important is that it spreads the work around. A project dependent on volunteer labor has to be careful not to "burn out" its help. Volunteers can't be expected to run a consistent pickup program on a long term basis. Secondly, if the Boy Scouts do the pickup one month, the Band Boosters the next and so on, peer pressure comes into play again. Eventually, virtually everyone will have a connection with the project just by virtue of having a relative or friend working with it, thereby increasing participation. We can't emphasize enough the need to involve the entire community in this effort.

The marketing committee has arranged for waste material

buyers to purchase the newsprint we collect and to deliver or have it picked up. A minimum price for the materials must be negotiated and a contract signed to ensure this price. That way we are guaranteed income for our efforts. As our volume increases along with the items we accept, new market agreements will have to be developed by this committee.

The Public Relations and Education Committee has the task of getting educational materials and reminders out through the neighborhood network. In addition, they are responsible for news releases, posters, doing presentations and workshops for civic groups, churches, schools, etc.

The Steering Committee is made up of the heads of each of these committees plus others willing to accept the responsibility for coordinating the entire program.

The local media has been very supportive in giving us radio air time as well as space in the newspapers. We anticipate this good relationship will continue and that information about the project will spread to other communities who have solid waste problems.

Energy issues are the tip of the iceberg. They are not the problem; they are an indication of the problem. The only way to effect them in the long run is to develop and use the resources in our local communities and assume responsibility where it can most effectively be managed. As a result, we have developed a program that has tremendous community support. The only thing we don't presently have is the financial resources to allow us to develop it beyond the newspaper pickup program previously described. But with a minimal amount of financial support, we will be able to serve the entire community and reduce Berea's energy demand.

The most abundant readily available waste resource is paper. In addition to Berea residents, the sources that we are proposing to serve with this program are Berea College, local businesses, and industry. All three of these sectors have indicated support for our program, primarily because they can see that it is in their best interest to cut down their waste levels.

On two separate occasions, Berea College students prepared reports to the administration looking at the potential for recycling on campus. Nothing ever came of their findings and proposals, however, due to the transiency of students. Other attempts at setting up a program have been made but the lack of long term commitment and consistency of collection doomed these efforts.

We are presently working with Berea College to establish a source separation program, using a summer student intern to work out the mechanics of the system. These will primarily be paper wastes consisting of cardboard and office and computer paper. It will be our responsibility to conduct a presentation for students, faculty, and staff on how to do source separation and provide the means for removing and marketing these materials.

Of the commercial enterprises responding to our business survey, most were overwhelmingly in favor of setting up a

recycling program. With the recent increase in garbage collection rates, they have become increasingly supportive. The problem lies in moving from a monthly, largely volunteer newsprint collection program, to one that can deal with the larger volumes of waste cardboard generated. This will require a staff person to work with businesses to develop a separation and collection program that can accommodate more frequent pickup.

With industry, this is even more critical. Presently local industries must have trash removed every day because of the huge volume. Most of this waste is cardboard. During the personal interviews with the plant managers from all the local industries, the consensus was a desire to work with us as soon as a dependable vehicle could be established to accept their waste paper on a daily basis.

Food and Yard Waste

Food and yard waste comprise 34% of the total solid waste stream. This organic garbage is one of the most obvious places to cut the volume of waste in our community. The majority of it simply does not need to be there. The possible options include composting, alcohol and methane production. We have tried to start at the source in our review of these options, so from that perspective, composting of organics at home has been given the highest priority. At that scale, education of citizens as to how to prepare compostables is the most logical approach to take in getting the organic element out of the residential waste stream. We plan to offer a series of educational workshops through our neighborhood network in the future.

Berea College has expressed interest in developing a composting program on campus. Having fairly centralized sources of the raw organic components will tend to lend itself to this effort. The college's basic resources for compost come from leaves collected in the fall, chicken manure from the college poultry farm, sawdust from the woodcraft facility, and food scraps from food service and Boone Tavern Restaurant. The college presently uses some of its leaves as a mulching material for landscaping with the remainder dumped along with tree trimmings and allowed to break down naturally over a long period of time. The same is basically true of the sawdust except some is used as bedding material at the poultry farm and some is given away to local residents. The chicken manure is presently sold on a first come first serve basis whenever there is a need to empty the chicken facilities. The food wastes are presently carried away by the city to the local landfill every day.

Leaves and sawdust used as a mulch tend to deplete the soil of nitrogen in a natural composting process. The addition of manure and food wastes (which in this case are primarily leafy greens such as lettuce, cabbage, broccoli, etc.) can offset this depletion, break the materials down quicker and provide a more balanced soil due to the increased diversity

of its components.

Packaging

It has never been our primary goal to establish a recycling program. Our goal was to reduce waste of energy and natural resources, and minimize environmental degradation. Keeping this in mind, we have attempted to do what was most appropriate for the task at hand. As a result, we have been educating ourselves about our consumption and waste patterns and then sharing this information with the community. What we have discovered is that product packaging constitutes a large percentage of all the paper, glass, metal, and plastics used in this country and about 33% of the total volume. (See Appendix III) The best option here is to inform the public of the costs, both in product costs and social costs; and encourage the reduction of excessive packaging. For example: buying products in returnable or reusable containers, buying in bulk to reduce the product to packaging ratio and requesting retailers to minimize pre-packaging of consumer goods. What can't be removed from the waste stream should then be recycled and only as a last resort, dumped in the landfill.

Recently, several local businesses have begun accepting aluminum and steel cans. We have encouraged these businesses. Once our pickup program is established we will begin accepting these containers and sell them to these businesses. Since they have no collection service we feel that a mutually supportive relationship can be maintained.

The closest markets for glass cullet are Louisville and Cincinnati; both over 120 miles away. We cannot afford to travel to these markets with the low price presently available for glass. What we propose to do is develop more localized markets. This would be a long term process but we feel, nonetheless, necessary. Several areas we have researched include using glass as a fluxing material in brick manufacturing and as an aggregate in concrete block or asphalt. We will be working with local manufacturers to interest them in the potential of these materials for their particular needs.

SUMMARY

There is no question that this project is technically feasible. Communities that have been willing to be creative and not follow the conventional path for waste disposal can attest to this fact. Davis, California; Portland, Oregon; Boulder, Colorado have all been able to cut their disposal costs by 40 to 50% by instituting a comprehensive waste reduction and recycling program. Conservation is by far the most sensible way to save energy. Recycling of paper can save 25 to 60% of the energy used to make it from wood pulp and aluminum saves 95% of the energy used to make it from raw bauxite. The savings from less pollution and reduced demand on material resources doubles the importance of waste reduction.

We have made significant progress in the past year in developing support for a recycling effort in Berea. The best method of measuring success is in how well the program works. We have demonstrated our commitment and the support of the community. The ultimate evaluation of this program will come when we are to the point that the program can sustain itself without having to request outside support.

We have the ability to drastically reduce our energy consumption by merely using it wisely. As the energy market gets tighter, those communities that have taken the initiative to reduce their energy consumption are going to be able to cope more successfully than those who continue to believe the supply is endless. Waste reduction and recycling must be an integral part of an energy conservation program.

The program we are proposing will make us more energy self-reliant. It will indirectly point out that we have the resources to control our destiny by working together instead of being controlled by outside influences.

Conservation is the single most appropriate measure for balancing our community energy budget. (The same principles of import and export that apply to a nation also hold true on a community level.) For every dollar we spend to import energy into the community, we must export more goods and services with a resultant energy deficit. The problem with that is clearly that we are sitting on a vast resource as of yet untapped in Berea. That resource is waste reduction and recycling.

Addresses & Sources

LIBRARY of Congress, complete collection, sources of information on solid wastes, 1980

Addresses & Sources

A NEW England Recycling Directory
US EPA 1977

appendix "available publications on recycling"

pp. 47-50

ch 3 "State Solid Waste Agencies"

pp. 5-7

ADDRESS & SOURCES

A New Look at Recycling Waste Paper - Report on a conference, May 11, 1975, sponsored by the Citizens Advisory Committee on Environmental Quality

Contains a list of conference participants

ADDRESS AND SOURCES

Recycling: how to reuse wastes in home, industry & society, By, Jerome Goldstein, Schocken Books, N.Y. 1979

Appendices:

Vericomposting Consultants & Researchers p. 234
Consultants in Land Treatment & Composting Fields p. 232-

ADDRESSES AND SOURCES

Available Information Materials on Solid Waste Management
Total Listings 1966-1979
by U.S. E.P.A. 1980

"Resource Conservation & Recovery Act of 1976"

"Teaching Materials": Jr. & Sr. High Students
Films
Technology Training Programs
" E.P.A. Solid Waste Publications"

ADDRESSES AND SOURCES

Available Information Materials on Solid Waste Management
Total listings 1966-1978
by U.S. E.P.A. 1979

"Resource Conservation & Recovery Act of 1976"

"Teaching Materials": Jr. & Sr. High Students
Films
Technology Training Programs
" E.P.A. Solid Waste Publications"

ADDRESSES & SOURCES

A Guide to Running a Recycling Project
by: Recycling Information office, Oregon Dept. for Environmental Quality, Mau 1977.

Phamplets by Oregon recycling teams

Appendix I

BEVERAGE CONTAINER ISSUES

Bottles & Cans- the story of the Vermont Deposit Law
by Susan Bartlett (editor) 1978
published by: The National Wildlife Federation

Beverage Container Issues

RESOURCE and Environmental Profile Analysis of Nine Beverage Container Alternatives, final report

Robert Hunt, et al.
US EPA 1974

summary, study approach and methodology, beer containers, reuse and recycling; basic conversion factors, glass bottles, abs bottle, steel cans aluminum cans, biblio.

BEVERAGE CONTAINER ISSUES

Talking Trash Proceedings of the Meeting of the Nat. Coalition on Solid Waste, March 4 6, 1977
edited by: Kay Pilcher, Environmental Action Found., 1977, Copy I, Copy II

Beverage Container Issue pp. 53-70

ALUMINUM

Resource & Environmental Profile Analysis of Nine Beverage Container Alternatives, final report
Robert Hunt, et al., U.S. E.P.A. 1974

Aluminum Cans (Recycling possibilities) PP. 156-170

ALUMINUM

GARBAGE-America's Untapped Resource by: Nicholas Peck
in NEWAGE, July, 1979 p. 42.

recycling aspects and a few statistics

ALUMINUM

RESOURCE Recovery and Waste Reduction, third report to congress
US EPA 1975

chap 4 especially

CASE HISTORIES & SPECIFIC STUDIES

Connecticut Resources Recovery Authority 1974 Annual Report

CASE HISTORIES AND SPECIFIC STUDIES

Connecticut Resource Recovery Authority-
Annual Report 1978

Applied Technology p. 6-7
Financial Self Sufficiency p. 8-9
Interim Service Needs p. 10-12
Program Development p. 12-13
Managing toward Resource Recovery p. 14-15
Financial Statements p. 16-25

CASE HISTORIES AND SPECIFIC STUDIES

Electric Power in the 1980's- A Regional Assessment
for Kentucky by the Dept. of Energy, 1979.

Current Data & Present Predictions p. 5-21
Potential Regional Situation p. 21-31.
Kentucky's Situation 31-43
Conclusions and Recommendations on Kentucky's Electric
Power Situation p. 43-44

BIOCONVERSION

GARBAGE-America's Untapped Resource
by Nicholas Peck pp. 38-45.
in NEWAGE July-1979.

small paragraph explaining the basics

CASE HISTORIES & SPECIFIC STUDIES

Bottles & Cans- the story of the Vermont Deposit Law
Editor: Susan Bartlett, 1978
Published by: The Nat. Wildlife Federation

CASE HISTORIES AND SPECIFIC STUDIES

Community-Based Waste Recycling- A Neighborhood Action
Guide
Civic Action Institute, Washington, D.C. 1979

1 Garbagios in Eugene, OR, p. 1, chart pp. 14-16
a cooperative recycling Co.

2 Ecocycle of Boulder, CO, p. 1, chart 14-16
a private nonprofit cooperation-curbside pick

3 Ecology Action Ed. Inst. Modesto, CA p. 1 chart 14-16
a curbside pickup project

A new Look at Recycling Waste Paper - Report on a conference, May 11, 1976, sponsored by the Citizens Advisory Committee on Environmental Quality

Paper Recycling in the Bell System.

CASE HISTORIES & SPECIFIC STUDIES

Recycling: Alabama Style

Published by: Alabama Environmental Quality Assoc. 1974

Explains recycling centers in each county.

CASE Histories + Specific Studies

RECYCLING in Maine

Fred Snow, et al.
Department of Environmental Protection
State of Maine

The whole book is a useful case study.

Also, the Nottingham, New Hampshire case of changing a dump to a resource community is discussed.

GARBAGE - America's Untapped Resource

by: Nicholas Peck

in NEWAGE, July, 1979, pp. 38-45

p.44 Secaucus, N.J., is tapping old dump methane and selling like natural gas

p.42 Marblehead, Mass., talks about their recycling system

p.45 Von Roll Machine, Saugus, Mass. converting trash

CASE HISTORIES & SPECIFIC STUDIES

A Guide to Running a Recycling Project

by: The Recycling Information Office, Oregon Dept. for Environmental Quality, May 1977

some case histories of recycling centers
pp. 23-28

CASE Histories + Specific Studies

A NEW England Recycling Directory
US EPA 1977

chap. IV "recycling programs in New England"
lists current programs in NE pp. 7-33

CASE HISTORIES + Specific Studies
Solid Waste Management Center
Executive Summary-- phase one and two, and final
report

City of Berkeley, California, 1978
the first

two stapled Xerox documents summarizing the project evaluation, alternative methods considered, and findings. The second document is a final report giving the operating procedures of their composting project, press releases, photos, monthly reports 77-78, compost specifications, etc.

CASE HISTORIES + Specific Studies

Talking Trash-Proceedings of the Meeting of the Nat.
Coalition on Solid Waste March 4-6, 1977

edited by: Kay Pilcher, Environmental Action Found.,
1977 Copy 1, Copy 1.1

"Packaging Legislation: The Rural Solid Waste - Lincoln
Co." pp. 36-40

"Minnesota Exposition" pp. 77-82

"Case Studies" pp. 71-76

COMMUNITY INVOLVEMENT/SUPPORT, PUBLIC RELATIONS

Community-Based Waste Recycling: A Neighborhood Action
Guide

Civic Action Institute, Washington, D.C. 1979

Includes three case studies.

CASE HISTORIES + Specific Studies
RESOURCE Recovery and Waste Reduction Activities
A Nationwide Survey

Bradford Max
US EPA 1979

intro., waste reduction, resource recovery, source separation programs, resource recovery facilities, resource recovery projects under the president's urban policy, state resource conservation and recovery programs

Mainly lists and explains all current projects in the U.S.

SAN DIEGO County Demonstrates Pyrolysis of Solid
Waste

Steven J. Levy
US EPA 1975

CASE HISTORIES + Specific Studies

Resource Recovery and Waste Reduction, 3rd Report to
Congress U.S. EPA 1975

appendix: 6 demonstration projects

- 1) Shredded, classified waste as a coal substitute, St. Louis, Missouri pp. 87-90
- 2) Pyrolysis for Steam Generation- Balt., Md. pp. 90
- 3) Pyrolysis to Produce liquid fuel, San Diego Co., CA
- 4) Processed Waste as a fuel oil pp. 90-91

COMMUNITY INVOLVEMENT/SUPPORT, PUBLIC RELA.

A Guide to Running a Recycling Project

by; The Recycling Info. Office, Oregon Dept. for Environmental Quality, May 1977.

pp. 17-20 how to involve the community

p. 28 a sample press release

COMMUNITY INVOLVEMENT/SUPPORT, PUBLIC RELATIONS

Neighborhood Power by David Morris/Karl Hess, Beacon Press, Boston, 1975

Ch. 4 "Controlling the Local Economy: (the Neighborhood as an Economic Unit)" pp. 69-82

Ch. 7 Neighborhood Production: The Limits of Self Sufficiency" pp. 115-143

Ch. 8 Intercommunalism: Neighborhood Cooperation" pp. 144-158

COMMUNITY INVOLVEMENT

Community Participation in Resource Conservation and Recovery

by Neil Seldman
American Society of Civil Engineers Convention and Exposition, Atlanta, Ga. Oct. 23-25, 1979

COMMUNITY INVOLVEMENT

Environmental Design Primer

by Tom Bender, 1976 Schocken Books, N.Y.

this book might lead to public awareness facts or images and thoughts for posters

COMMUNITY INVOLVEMENT/SUPPORT, PUBLIC RELATIONS

A New Look at Recycling Waste Paper, -Report on a conference May 11, 1976, sponsored by the Citizens advisory committee on Environmental Quality

Ch. 1 pp. 6-11 Paper Recycling: A Citizen Viewpoint

ECONOMICS

Graphic Arts Monthly Feb. 1980, vol. 52, no. 2

"Cutting Energy Costs- Conservation in its simplest form" pp. 62-66

ECONOMICS

OFFICE Paper Recovery: An Implementation Manual
US EPA 1977

chap. 3 "projecting the economics of paper recovery"

ECONOMICS

RECYCLING How to reuse matter in home, industry, and society

Jerome Goldstein 1977, Schocken Books, N.Y.

chap 5 "Cutting out waste: de facto recycling via purchasing power"
short and incomplete, mentions a few specific efforts, not a general analysis of production of wastables.

Ch 10 "New Jobs & Careers in Recycling Wastes" pp. 183-190

ECONOMICS

RESOURCE and Environmental Profile Analysis of
Nine Beverage Container Alternatives, final report
Robert Hunt, et al.
US EPA 1974

ECONOMICS

RESOURCE Recovery and Waste Reduction, third
report to congress
US EPA 1975

ECONOMICS

Talking Trash Proceedings of the Meeting of the Nat.
Coalition on Solid Waste, March 4-6, 1977
edited by: Kay Pilcher, Environmental Action Found.,
1977. Copy I, Copy II

"Solid Waste Economics" pp. 95-105

EDUCATION

Farrallones, 1971, Random House Inc.,

Using "trash" in teaching 118-134.

EDUCATION

A Guide to Running a Recycling Project
by: The Recycling Information Office, Oregon Dept. for
Environmental Quality May 1977

pp. 17-20 some general education information

EDUCATION

Let's Recycle- Lesson Plans for Grades K-6 and 7-12
U.S. E.P.A. Office of Water & Waste Management 1980

COPY 1 + COPY 2

ETHANOL/GASOHOL

Fuel From Farmers A Guide to Small Scale Ethanol Production
By Solar Energy Information Data Bank, Solar
Energy Research Inst., Feb. 1980

A Comprehensive study covering: Benefits, markets, uses,
production potential, equipment selection, financial
requirements, actual processes, type of feedstocks,
plant design, business plans

Appendices- summary of legislation, permit information,
resource people & organizations, bibliography &
glossary

ETHANOL/GASOHOL

Gasohol- A Briefing Paper by the Dept. of Energy,
Office of Planning and Evaluation, 1979

Subjects Include:
Ethanol: gasohol as a motor vehical fuel

Ethanol Production

Production and Marketing of Gasohol

Economics

Legislative Initiatives

GENERAL INFORMATION

Community-Based Waste Recycling- A Neighborhood Action
Guide

Civic Action Institute, Washington, D.C. 1979

GENERAL INFORMATION

GARBAGE -America's Untapped Resource by: Nicholas Peck
in NEWAGE July, 1979, pp. 38-45.

excerpts on paper p.44, rubber p.44, steel p.42, alumin
p.42, statistics, hydrogenation, bioconversion,
pyrolysis, case studies

Excellent article

GENERAL INFORMATION

A Guide to Running a Recycling Project

by The Recycling Information Office, Oregon Dept. for
Environmental Quality, May 1977

pp. 6-14 Materials, labor, types of recycling centers,
and handling recycleables

GENERAL INFORMATION

Recycling - how to reuse wastes in home, industry &
society by Jerome Goldstein, Schocken Books, N.Y. 1979
Ch. 1 Breaking the Garbage Can Addiction pp. 1-16

Ch. 9 The Nations Recycling Industrial Complex pp. 169-
182

Ch. 10 New Jobs and careers in Recycling Wastes 183-190

Ch. 11 mandatory bottle & can deposit bills
and their results

General Information

RESOURCE Recovery Projects

requests for proposals/contracts - summaries
a current report on waste management

Denise F Hawkins
USEPA 76

One system of recovery involves building a
large central facility to process mixed wastes;
the most common vehicle to solicit bids from
private companies to build such a facility
is the Request for Proposals. That's what
this book is all about.

GLASS

Bottles & Cans - the story of the Vermont Glass Bottle Law
by: Susan Bartlett (editor) 1978
published by: The Nat. Wildlife Federation

GLASS

RESOURCE and Environmental Profile Analysis of
Nine Glass Container Alternatives, final report
Robert Hunt, et al.
US EPA 1974 pp. 53-92

Glass beer bottles pp. 93-129

GLASS

RESOURCE Recovery and Waste Reduction, third
report to congress
US EPA 1975

chap 4 especially

TECHNOLOGICAL Aspects of Using Waste Glass in Brick Manufacturing

technical report TI79 - L
National Center for Resource Recovery, Inc.
1979

GOVERNMENT

A Guide to Running a Recycling Project

by: The Recycling Information Office, Oregon Dept. for Environmental Quality, May 1977.

legalities regarding setting up a recycling project
pp. 22-23

(p. 73)

GOVERNMENT

Recycling: How to Reuse Wastes in Home, Industry & Society
by, Jerome Goldstein, Schocken Books, N.Y. 1979

Ch. 12 " Public Policies for Recycling" this shows
recyclings general legalities that must be known
before setting up recycling projects

GOVERNMENT

Talking Trash Proceedings of the Meeting of the Nat. Coalition on Solid Waste March 4-6, 1977

edited by: Kay Pilcher, Environmental Action Found.,
1977 Copy I, Copy II

"The Resource Conservation & Recovery Act of 1976"p.7-2

" E.P.A.'s Involvement in Waste Reduction"pp. 46-52

HAZARDOUS WASTE

State Decision Makers Guide for Hazardous Waste Management. US E.P.A. 1977

Covers the whole topic of Hazardous Waste: definitions, transportation, analysis methods, management, legalities
Appendices on: Information on disposing small batches of hazardous waste, disposing polychlorinated biphenyl-containing waste, vinyl chloride waste, and federal agencies

HYDROGENATION

GARBAGE America's Untapped Resource by; Nicholas Peck
in NEWAGE July, 1979, pp. 38-45.

small paragraph explaining the basics

MARKETS

A Guide to Running a Recycling Project, Recycling Info.
Office, Oregon Dept. for Environmental Quality, May 1977

p. 4-6 factors to consider

MARKETS

MARKET Locations for Recovered Materials

Stephen E. Howard

US EPA 1976

includes markets for aluminum, copper, tin cans,
glass, iron and steel,

(12-74)

MARKETS

A NEW England Recycling Directory

US EPA 1977

chap. V lists markets for recycled materials in
NE pp. 33 - 47

Metals - Precious

(silver)

RECOVERING Silver from photographic mate

s

Kodak publication no. J-10

Eastman Kodak co., '79

very good, general and specifics on all methods

Metals - Precious

(silver)

SILVER Recovery, special issue

Kodak bulletin for the graphic arts #36

Eastman Kodak Co, '79

general info on silver and their processors

METALS -- Precious

(silver)

SILVER Recovery with the Kodak chemical recovery car
tridge type P.

Eastman Kodak Co. publication no. J-9, '79

some useful info, including operating conditions
for their cartridges and various Kodak chemicals.

Overall Plans + Alt. methods

GRAPHIC Arts Monthly

Feb. 1980, vol 52, no. 2
Technical Publishing

several articles on use of scrap paper

"Energy From Scrap Paper" pp. 31-38

"Paper Mill Keeps Rollers Fined with Forest
waste" pp. 48-55

"Cutting Energy Costs - Conservation in
its simplest form" pp 62-64

OVERALL PLANS & ALT. METHODS

Connecticut Resources Recovery Authority 1974 Annual
Report

OVERALL PLANS AND ALT. METHODS

Community Participation in Resource Conservation
and Recovery

BY Neil Seldman
American Society of Civil Engineers Convention and
Exposition, Atlanta, GA Oct 23-25, 1979

Overall Plans + Alt. methods

A NEW England Recycling Directory

Office of Public Affairs
Region 1
US EPA 1977

organizing a recycling program, state solid waste
agencies, recycling programs in New England,
markets for recycled materials in New England

Overall Plans + Alt. Methods

Office Paper Recovery: An Implementation Manual

US EPA 1977

source separation program, planning, and imple-
mentation; projecting the economics of paper
recovery

OVERALL PLANS & ALT. METHODS

A Personal Waste Management Program by: Nicholas Peck
in NEWAGE: July 1979 p. 45.

OVERALL PLANS & ALT. METHODS

Recycling - how to reuse wastes in home, industry, & society by, Jerome Goldstein, Schocken Books, N.Y. 1979

Ch2 "Recycling Centers Start at Home" pp. 17-46

Ch. 3 "Things to make from trash that "never was" 47-66

Ch. 8 "Putting industrial Wastes to Use" pp. 151-168

OVERALL PLANS & ALTERNATE METHODS

Recycling in Maine by Dept. of Environmental Protection of Maine, Fred Snow, et.al.

RESOURCE Recovery and Waste Reduction 3rd Report
to Congress
US EPA 1975

background and perspectives on resource recovery and waste reduction, waste reduction, energy recovery from post-consumer waste, materials recovery, resource recovery plant cost estimates, status of waste reduction efforts and implementation of resource recovery systems. appendix:

OVERALL PLANS AND METHODS

SOLID Waste Management Center, executive summary and final report
City of Berkeley, CA 1976

states their problem and waste quantities and the evolution of selecting a method. They chose a "package incinerator producing steam".

OVERALL PLANS

Talking Trash - Proceedings of the Meeting of the Nat. Coalition on Solid Waste March 4-6 1977

edited by: Kay Pilcher, Environmental Action Found., 1977 Copy I, Copy II

" Resource Recovery" pp. 83-94

" Private Research Efforts" pp. 32-35

"Campaign for Materials Conservation" pp. 41-45

"Source Separation- Nat. overview" pp. 71-76

PAPER

GARBAGE - America's Untapped Resource by: Nicholas Po
in NEWAGE, July 1979, p.47

recycling aspects and some statistics

PAPER

GRAPHIC Arts Monthly
Feb, 1980, vol. 52, no. 2

several articles on use of scrap paper, mostly
burning

"Energy From Scrap Paper pp. 31-38
"Paper Mill Keeps Boilers Fired with Forest Waste
pp. 49-55

PAPER

The NATIONAL Paper Buyers' Guide to Recycled Paper

Environmental Educators, Inc. 1973
paper types and categories, directory to manufacturers/
distributors, exceptional cases

PAPER

A NEW Look at Recycling Waste Paper
report on a conference May 11, 1976
sponsored by the Citizens' Advisory Committee
on
Environmental Quality

paper recycling monographs, resume of conference
discussions, committee findings, conclusions, and
recommendations, list of participants

PAPER

OFFICE Paper Recovery: an Implementation Manual
US EPA 1977

PAPER

RESOURCE Recovery and Waste Reduction, third
report to congress
US EPA 1975

chap. 4

PYROLYSIS

GARBAGE America's Untapped Resource
by: Nicholas Peck
in NEWAGE, July 1979, pp. 38-45.

small paragraph explaining the basics

PYROLYSIS

SAN DIEGO County DEMonstrates Pyrolysis of Solid Waste

Steven J. Levy

US EPA 1975

plant separates heavy materials (glass and metals) from light, further divides the heavies into ferrous and glass, white are sold, and residuals, which are sent to a landfill. Light matter is pyrolyzed to form a fuel oil.

PYROLYSIS

Resource Recovery and Waste Reduction 3rd report to Congress U.S. E.P.A. 1975

"Pyrolysis for Steam Generation"-Balt. MD, p.90

"Pyrolysis to Produce Liquid Fuel"- San Diego Co. CA pp. 90-91

RUBBER

GARBAGE America's Unlapped Resource by: Nicholas Peck in NEWAGE, July 1979, p. 44

recycling aspects and some statistics

SEWAGE AND ORGANICS

RECYCLING How to reuse wastes in home, industry and society

Jerome Golstein 1979, Schocken Books, N.Y.

chaps 4, 6, and 7 especially. Home composting, slide through the ages (brief history of its collection and use) and comparison of waste to fuel conversions vs. composting. pp. 67-90, 105-150

SEWAGE AND ORGANICS - composting

SOLID Waste Management Center Executive summary and final report
City of Berkeley, Ca. 1978

operating procedures, facts sheet, press release, photos, compost specification sheet, monthly reports, materials received and sold graphs related to their compost operation for grass, leaves, and tree trimmings. Also mentioned are firewood sale and composting with sewage sludge.

SEWAGE & ORGANICS

The Sludge Question by: Nicholas Peck in NEWAGE, July 1979, p. 42

good statistics

STEEL

GARBAGE America's Untapped Resource by: Nicholas Peck
in NEWAGE, July 1979, p. 42.

recycling aspects and some statistics.

STEEL

Resource & Environmental Profile Analysis of Nine Beverage Container Alternatives, final report

Robert Hunt et al., U.S. E.P.A. 1974

Steel Cans pp. 130-156

STEEL

RESOURCE Recovery and Waste Reduction, third
report to congress
US EPA 1975

chap 4 especially

SURVEYS AND ANALYSIS

Community Participation in Resource Conservation and Recovery
BY Neil Seldman, American Society of Civil Engineers Convention and Exposition, Atlanta, GA Oct. 23-25, 1979

Chart p. 4 D.C.'s Conservation through waste recycling potential

chart p. 12 Participation, Environmental Impact, profitability of Drop Off Center, Commercial fly back, curb-side collection

Also a lot of general statistics.

SURVEYS AND ANALYSIS

Electric Power in the 1980's - A Regional Assessment for Kentucky by the Dept. of Energy, 1979.

Current Data & Present Predictions p. 5-21

Potential Regional Situation p. 21-31

Kentucky's Situation 31-43

Conclusions and Recommendations on Kentucky's Electric Power Situation p. 43-44

Surveys & Analysis

GARBAGE America's Untapped Resource by: Nicholas Peck
in NEWAGE July 1979 pp. 38-45.

many statistics on different aspects of resource recovery, such as: costs, percentages, steel, aluminum, glass, paper, plastics, rubber, and statistics on hydrogenation, bioconversion, and pyrolysis

SURVEYS AND ANALYSIS

A SOLID Waste Estimation Procedure: material
flows approach
Fred Smith
US EPA 1975

What and how much solid waste flow
is in the U.S.

contains many charts.

SURVEYS AND ANALYSIS

~~OFFICE~~ Paper Recovery: An Implementation Manual
US EPA 1977

appendix C "waste composition sampling procedure"

SURVEYS AND ANALYSIS

RESOURCE and Environmental Profile Analysis of

Nine Beverage Container Alternatives, final report
Robert Hunt, et al.
US EPA 1978

vol. 1 chap. 2 "Study approach and methodology"

pp 9-19

Vol. 2 chap. 1 "Basic Conversion Factors"

pp. 41-51

APPENDIX II

AREA PROCESSORS

Northern Kentucky

Acme Paper Stock Company
141 North Second Street
Louisville, KY 40402
(502) 587-6823 FE, 3, 5, 7

Alton Box Board Company
Paper Reclamation Division
814 South 14th Street
Louisville, KY 40210 FE, 3, 7, 9 MI
(See also Western Kentucky)

Cincinnati Experience
Antoinette Asimus, Executive Director
270 Calhoun Street
Cincinnati, OH 45221
(513) 475-4888 3, 4, 6, 7 MI, 4, 5 MI, 7

K & R Corporation
Tri City Scrap Division
P.O. Box 21199
Louisville, KY 40201
(502) 367-6401 MI, 2, 3, 6 MI

Kirschner and Son Scrap and
Recycling Center
Gary Kirschner/ Stewart Fletcher
1203 Licking Pike
Newport, KY 41071
(606) 291-5509 MI, 5 (No alum. cans)

Klempner Brothers, Inc.
1371 Lexington Road
P.O. Box 4187
Louisville, KY 40204
(502) 585-5531 MI, 2, 3, 6 MI

Riverside Recycling, Inc.
Ceil Janson, Admin. V. Pres.
P.O. Box 573
West Tenth and Floyd Streets
New Albany, IN 47150
(812) 948-1323 FE, 7 MI, 4, 5 MI

Save-a-Tree
Tom Thompson, Courier-Journal
4707 Pinewood Road
Louisville, KY
(602) 582-4574 FE MI MI
(See also Central Kentucky)

Central Kentucky

Baker Iron and Metal Company, Inc.
717 North Limestone Street
P.O. Box 11040
Lexington, KY 40511
(606) 255-5676 MI, 2, 6 MI

Frankford Scrap Metal, Inc.
P.O. Box 344
Frankfort, KY 40601
(502) 233-7607 FE, 5, 7, 9 MI, 2, 3, 6 MI

Harry Gordon Scrap Materials
637 Patterson Street
Lexington, KY 40508
(606) 255-2442 MI, 2, 3, 6 MI, 4

Re-cy-co. Inc.
762 North Limestone Street
Lexington, KY 40511
(606) 259-0402 FE, 5, 7, 8

Save-a-Tree
271 Goldrush Road
Lexington, KY 40503
(606) 277-6716 FE

Waste and Recycling Services, Inc.
Michael A. Mills, President
P.O. Box 796, River and Norton Streets
Frankfort, KY 40602
(502) 875-2285 FE (all) FE

Western Kentucky

Alton Box Board Company
Paper Reclamation Division
604 Power Street
Bowling Green, KY 42101 FE, 4, 7, 9 MI

Alton Box Board Company
Russell Throgmorton, Plant Manager
1520 North Fifth Avenue
Evansville, IN 47710
(812) 425-6279 (Same as MI)

Kentucky Waste Paper Company
East 24th Street and I.C.R.R.
Owensboro, KY 42240
(502) 886-2994 MI, 2, 3

Western Kentucky (cont.)

Owensboro Waste Paper Company
1602 West Seventh Street
Owensboro, KY 43201
(502) 926-3467 33

Paducah Hide and Junk Company
225 South Second Street
Paducah, KY 42001
(502) 442-0488 M1

AREA PROCESSORS

CHIC

Cincinnati Metal Processors
861 Dellway
Cincinnati, Ohio 45229
() 281-400[^] M1, P

Friedman Waste Material, Inc.
1066 Marshall Avenue
Cincinnati, Ohio 45225
() 542-1234

EASTERN KENTUCKY

Lexington Scrap Metal Co., Inc.
461 Angliana Avenue
Lexington, KY 40508
(606) 255-8833

Recyclit
374 S. Mulberry
Elizabethtown, KY
(606) 765-7702 P7,3,5

Accepted Recyclable Materials

Paper (P)

- 1 Brown paper bags
- 2 Computer paper
- 3 Corrugated cardboard
- 4 High grade paper
- 5 IBM (tab cards)
- 6 Magazines
- 7 Newspaper (also newsprint)
- 8 Waste paper
- 9 White and colored ledger paper
- 10 White blank paper
- 11
- 12
- 13
- 14
- 15

Metals (M)

- 1 Aluminum cans
- 2 Brass
- 3 Copper
- 4 Ferrous metals
- 5 Non-ferrous metals
- 6 Scrap iron
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Miscellaneous (Mi)

- 1 Glass containers
- 2 Junk cars
- 3 Kitchen scrap
- 4 Lead batteries
- 5 Used motor oil
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

FIGURE III

COMPOSITION OF WASTE

also figure III
Combine

WASTES BY PRODUCT GROUP

ENVIRONMENTAL IMPACT
(for 1000 tons of steel produced)

<u>ENV. EFFECT</u>	<u>USING VIRGIN MTLs.</u>	<u>USING 100% WASTE</u>	<u>% REDUCTION</u>
Virgin Mtl. Used	2,278 tons	250 tons	90
Air Pol- lution	121 tons	17 tons	86
Water Use	16.6 mil. gal.	9.9 mil. gal.	40
Water Pol- lution	67.5 tons	16.5 tons	76
Consumed Waste	967 tons	60 tons	105
Mining Waste	2,828 tons	63 tons	97

ENERGY USED TO PROCESS

<u>MATERIAL</u>	<u>VIRGIN ORE (BTU/POUND)</u>	<u>RECYCLED MAT.</u>	<u>% ENERGY SAVED</u>
Steel	8,300	9,400	47
Al.	134,700	5,000	96
Al. (ingot)	108,000	3,400	97
Copper	25,900	2,900	83-95
Glass Containers	7,800	7,200	8
Plastic (polyethylene)	49,500	1,350	97
Newsprint	11,400	8,800	23

MAJOR MINERAL PRODUCERS

<u>MINERAL</u>	<u>% PRODUCTION</u>	<u>% RESERVES</u>	<u>COUNTRIES</u>
Bauxite	64	62	Aus. Jamaica, Guinea, Surinam
Chromium	70	96	USSR, South Africa, Rhodesia, Philippines
Cobalt	90	64	Zaire, Zambia, Canada, Morocco
Iron Ore	55	61	USSR, U.S., Aus., Brazil
Nickel	63	65	Canada, New Caledonia
Platinum	99	99	South Africa, USSR, Canada
Tin	65	48	Malaysia, USSR Indonesia, Bolivia

MINERAL IMPORTS AS A PERCENTAGE OF MINERAL CONSUMPTION 1976

	<u>U.S.</u>	<u>Europe</u>	<u>Japan</u>	<u>U.S.S.R.</u>
Bauxite	88	50	100	44
Chromium	70	95	95	0
Copper	16	99	93	4
Iron Ore	35	85	99	0
Lead	12	85	78	24
Manganese	100	99	90	0
Nickel	61	90	95	0
Tin	75	90	90	22
Zinc	60	74	63	13

GENERAL

Each person in the United States now generates more than six pounds of trash/day.¹

America's trash could fill the New Orleans's Superdome from floor to ceiling, twice a day, year round, Sunday's and holidays.¹

In a year, America's trash mounts up to a grand total of 144 million tons or would make a road 16 ft. wide and 1" thick from the earth to the moon in 1 year.¹

The annual cost of trash collection and disposal in the United States is \$4 billion.¹

In the United States almost 1 ton of solid waste/person is collected annually from residential, commercial, and institutional sources, most of this waste goes into 14,000 open dumps, occupying 476,000 acres. At this rate, 500 new dumps are needed each year.²

Packaging now accounts for 30-40% of municipal solid waste.⁴

Between 1958-1970 milk consumption decreased 23.1% while milk containers increased 26.1%.⁴

Salt in small throwaway containers costs 15-17 times more than a large box of salt.⁴

Waste in packaging can be changed: ex. Campbell Soup Co. is marketing a new dog food can that uses 30% less to manufacture, if all steel and tin cans were replaced with these new cans, 1 million tons of these metals would be saved annually.⁴

In many cities expenditures on waste management are second only to those on education.⁴

A study in the U.S. suggested that an average family would only need to spend 16 minutes a week to do source separation of their trash into different material categories.⁴

If recycling increased by 1/2 in the steel industry and tripled in the paper industry, energy equal to 500,000 barrels of oil/day (worth \$5 billion) could be saved, or more energy than the daily output of 14 nuclear power plants.⁷

Even before the "age of scarcity" in America, as evidenced by a 1972 A.P.A. poll, housewives indicated a 91% willingness to participate in curbside recycling.⁷

Well run voluntary curbside programs result in a 25-30% recovery rate while a mandatory program results in 50-60% recovery rate.⁷

GENERAL INFORMATION

At present rates of consumption, America's oil and gas will be gone within a decade. America has enough crude oil to last 8.7 years and enough natural gas to last 10.7 years at present rates of consumption. (D.O.E. estimates)¹²

As of July 16, 1979 America was using 15,000,000 barrels of oil/day and importing 40% of that or 6,000,000 barrels of oil/day.¹²

Transportation takes 55% of all the petroleum used in the U.S.- roughly 10 million barrels of oil/day, or more than all the oil the U.S. imports.¹²

ALUMINUM

Makes up 1% of all trash - 800,000 tons per year, of which only 80,000 tons are saved.

Aluminum is worth \$500 per ton to recycle.¹

Aluminum from its virgin source, bauxite, needs 30 times the energy needed to make aluminum from scrap.⁴

One-half of all aluminum in garbage is cans, one-third is foils.³

Making recycled Aluminum only uses 3% of energy it takes to make primary aluminum, or 97% energy saving: 98% savings in raw materials, 97.5% reduction in water discharge, 96% reduction in air emissions, 95% reduction in water pollutants, 101% reduction in solid wastes (it removes solid wastes rather than generating them).³

Approximately 14% of all aluminum produced is used for packaging.⁴

In 1977 Americans used 20 billion square feet of aluminum foil and 24 billion aluminum cans.

During 1978 Reynolds collected and recycled 3.2 billion cans and paid the public over \$24 million. Reynolds has 80 permanent recycling facilities and 150 mobile units at 850 collection points in the U.S.⁵

NEWSPAPER

Newsprint equals 16% of all paper consumed on the U.S. Only 2.2 million tons out of 10 million tons produced are currently recycled. (or 21.7%)³

Products made from newsprint are discarded at an average of 4 hours after being printed.³

It takes 17.6 million B.T.U.'s of energy to process recycled newsprint- 23% less than that required to process virgin fiber.³

There is \$50 worth of electricity in every ton of newsprint produced. This is equal to 1/5 of the price of new news.

The United States imports 2/3's of our newsprint from Canada.⁷

There is a net energy gain ranging from 28.5% to 57.7% in the recycling of old newspapers over the energy derived from burning them.⁷

PAPER(general)
,in the U.S.,

Annual production of paper is 60 million tons but only 25% of this is recycled.¹

Paper made from old paper requires 25% less energy than paper made from scratch.¹

If 50% of waste paper was recycled instead of 25% that is now recycled in the U.S., the energy savings would equal 32 million barrels of oil/year.

Approximately 40% of all paper produced is used in packages.⁴

In Portland, Oregon, a city of 900,000 people, 80 full time employees recycle 77 tons of refuse daily.⁴

In Sweden, national laws require separation of wastepaper.⁴

In the U.S., 1/5 of all paper is recycled, this is 90% by weight of all materials recycled.⁴

U.S. recycling of high-grade paper is required by law in all federal office buildings of 100 or more employees.⁴

U.S. newspaper recycling is stipulated for federal facilities housing 500 or more families.⁴

U.S. recycling of corrugated containers is mandatory in federal facilities using 10 tons or more of this/month.⁴

If all recycled paper was used, there would be savings of: 61% in process water, 73% reduction of air pollution(from transportations, manufacturing, and harvesting), 44% reduction in waterborne wastes, and 39% reduction in process solid waste.³

GLASS

One ton of container glass equals 1,312 lbs. of sand, 475 lbs. soda ash, 181 lbs. feldspar, and 339 lbs. of limestone. The total energy to gather these ingredients is 2,055,200 B.T.U.'s (including transportation and extraction).³

It takes 1,000,000 years for glass to decompose.³

Potential uses of glass include pozzolan in cement, aggregate in concrete (glassphalt), slurry seal in roads, glass wool, and a substitute for marble chips in terrazzo tiles.³

Approximately 75% of all glass produced is used in packaging.⁴

West Germany uses 3,000 collection centers to recycle 260,000 tons of glass/year. (10% of their annual glass production)⁴

60% of the Swiss population recycles glass.

In Dayville, Connecticut, the Glass Containers Corp. facility obtains 50% of its raw materials from recycled glass or 70,000 tons/year. The plant meets air standards without costly scrubbers, conserves fuel and produces high quality glass, reduces litter and landfill volume and pours \$2.5 million into the local economy for recycled glass.⁴

STEEL

Steel makes up 7% of the United States' trash.¹

Only 1/3 as much energy is required to make steel from scrap as from ore.¹

Approximately 8% of all steel produced is used in packaging.⁴

Reuse of ferrous scraps by steel mills and foundries would equal an 86% reduction of air pollution, 76% reduction of water pollution, 40% reduction in water waste and almost eliminate solid waste produced in making new steel.⁴

Herschel Cutler of the Institute of Scrap Iron and Steel points out that "there are over 600 million tons of recoverable ferrous scrap strewn around (the U.S.) and better than 8 million cars, buses, and trucks added this year. (1978)⁴

In the U.S. there is 30-40 million tons of ferrous scrap/year or, there will be 2 billion tons by 2000 A.D.⁶

The Environmental Protection Agency says that steel from scrap costs \$12 less per metric ton than steel from ore - or 5% of it's selling price - over 1/4 of that is saved in pollution cost.⁶

The Environmental Protection Agency says that for every 1,000 tons of steel made from ferrous scrap there's an energy savings equal to 140,000 gallons of gasoline.⁶

In 1974, energy savings equal to 7.4 billion gallons of gas or enough to drive 40 million cars doing 15 miles per gallon 11,000 miles or 1/2 the total energy consumption of American autos/year was recorded when 51.3 million tons of ferrous scrap was recycled due to the "energy crisis". This was a record year.⁶

Despite the tremendous energy savings created when ferrous scrap is used instead of new steel, most of the United States' steel goes to Japan, Taiwan, Spain, England, Italy, or West Germany. This is because the Federal Government gives you your money back if you mine for iron ore through a depletion allowance. You can write off the cost of finding iron ore and mining it at 15% / year. (it works like depreciation on a house) If you import iron ore you get 10% tax benefits. If you use scrap steel you pay freight rates 3 times as expensive as for hauling iron ore. The Interstate Commerce Commission has determined this because it says "scrap iron and iron ore are not competing substances, they end up in the same commodity".⁶

PLASTIC

About 3.8% of all trash is plastic.¹

Plastic has the same heating value as coal (11,000 B.T.U.'s) but it gives off toxic gas (hydrogen chloride) and when exposed to moisture this gas turns into hydrochloric acid.¹

Plastic bags are 0.2% of the trash stream.¹

Approximately 29% of all plastic produced is used for packaging.⁴

HAZARDOUS WASTE

EPA estimates that there are over 32,250 sites which may contain waste which could cause adverse effects on public health and the environment. They also estimate that there are over 3,500 dangerous spills of hazardous materials every year that pose a threat.

ORGANICS

Every individual is now responsible for producing 100 gallons of waste water per day. This equals 0.2 pounds of sludge.¹

Currently 25% of sludge is being spread on agricultural and forest land, 25% is buried, 35% is burned, 15% goes into the ocean.

Composting could *eliminate* from 20-50% of local solid waste stream.⁷

RUBBER

A new method of rubber recycling at the University of Wisconsin is the process of immersing tires in liquid nitrogen, cooling it down to -30°F and then shattering the rubber to powder. This powder can then be used to make a halt-like road surface or turned into oil by pyrolysis.¹

The E.P.A. estimates that 266 million tires were shipped within the U.S. in 1971, and 250 million tires were taken out of use and only 46 million tires were retreaded, 7 million were recycled, 2 million were sold to tire splitters, and 195 million were thrown out.²

About 1/5 of all vehicle tires produced in the United States today are retreaded. These 45 million retreads have lifetimes up to 90% as long as those of new tires. If all tires were retreaded once, the demand for synthetic rubber would be cut by about 1/3, tire disposal problems would be cut in half, and substantial energy savings would be realized. Jobs would be lost in the synthetic rubber and new tire industries, but new jobs would be created in the tire recapping business. Such businesses tend to be much smaller and more regionally distributed than facilities to manufacture new tires.

WASTE OIL

Last year 3.6 million dollars worth of used automotive oil was thrown away.⁹

The dumped oil seeped into underground waters and then into rivers, lakes, and streams. Oil dumped into sewers fouled treatment facilities. Additional millions of tax dollars were spent last year to clean up the environment and repair sewage treatment systems.⁹

The federal government has set forth a mandate that requires each state to reduce energy consumption 5 % by 1980, if these requirements are not met federal dollars to Kentucky will be cut-off.⁹

The Resource Conservation and Recovery Act of 1976 named used oil as a hazardous waste.

Used oil is a pollutant because it contains metallic contaminants (primarily lead), gasoline, diesel fuel, organic and inorganic chemicals used as additives.⁹

A concentration of one part oil to a million parts water causes odor and taste problems in drinking water while 50 to 100 parts oil can foul waste treatment processes. Three hundred ten ppm has a detrimental effect on freshwater fish.⁹

Approximately 5 million gallons of oil impact on the environment each year.⁹

In the U.S., half a billion gallons of dumped oil each year cause more pollution than the combined annual release of CDT and all other highly publicized chemicals that are detrimental to the environment.⁹

Twenty to 45% of the oil pollution in our nations waterways comes from used oil dumped on land which, through ground water and surface water run-off, finds its way into rivers and streams.⁹

Recycled oil has three main uses: 57% is reprocessed (water and particulates are removed and then used for fuel); 26% is refined and turned into pure base stock. With additives, it is used for lubricating oil; 17% is used for road oil, dust control, wood preservation or "fire log" ingredients.¹⁰

An example of used oil waste can be found in Alabama: approximately 6 million gallons of used oil are dumped there each year, this oil if reclaimed could provide energy equivalent to 11,666 gas fillups for one year or cool 7,000 homes with a one ton air conditioner for one year.⁹

Last year, 5 million gallons of used motor oil was dumped in Oregon alone. If this same oil had been recycled, the energy saved could have provided the heating needs of 6,800 homes.¹⁰

WASTE OIL (CONT.)

There is approximately 1.25 billion gallons of used oil generated annually in the United States from automotive and industrial sources. Although this is a small part of the nation's annual petroleum consumption, it does equal more than 61,000 barrels of oil/day.¹¹

Today, 50% or more of all used oil generated in this country is lost through dumping, land spreading, road oiling, incineration and direct discharge to waterways and municipal sewers.¹¹

Kentucky alone generated 16,317,544 gallons of automotive waste oil in 1976. This was the 17th highest amount in the United States.¹¹ (U.S. estimation)

TOXIC WASTES

32,000 to 50,000 disposal sites in U.S. 1,200 to 2,000
May pose significant rises to health and environment. Most
are still used.
500 to 800 are abandoned.
Only 10% of waste being disposed of properly by current regulations.

SOLID WASTE

Municipal waste, which rose at a rate of 5% a year from 1960
to 1970 slowed to 2% a year from 1970 to 1978.
U.S. municipal waste 154 million tons for 1978 or 1,400 lbs.
/person.
7% of U.S. city waste recycled
1% to energy in 1977
1978 40 cities had source separation and collection.

FOOTNOTES FOR FACT SHEETS

1. "Garbage" Newage. July 1979, pp. 38-45
2. Reduce - targets, means and impacts of source reduction. League of Women Voters, 1975.
3. Composite of Material of the Week, by State of Oregon, (recent).
4. Hayes, Dennis. Repairs, Reuse, Recycling - First Steps Toward a Sustainable Society, 1978, Worldwatch Paper 23.
5. Reynolds Aluminum Recycling Questions and Answers Pamphlet, 1979.
6. Coevolution. No. 17, Spring, 1978.
7. National Recycling Congress, Fresno, California, April, 1980, pp.21-24.
8. "Paper Profits". Garbage Guide, No.9, 1977, Environment Action Foundation.
9. Project R.O.S.E. pamphlets, a division of The Alabama Energy Management Board.
10. Dept. of Environmental Quality pamphlet on oil recycling.
11. U.S. Dept. of Energy, Used Oil Recycling Kit, Feb. 1978.
12. Bob Conrad, "Why We Must Act Now". Newsweek. July 16, 1979.

It's Second Nature

When the American Astronauts Returned from space with the first real view of the planet Earth, the interdependence of it's systems became all too clear.

It is the nature of this "Spaceship Earth" to maintain a balance within its life support systems. While technology is advancing at a galloping pace, our natural resources are being depleted.

Visualize a nation which produces enough garbage each year to make a solid road to the moon and back 16 feet wide by 1 inch thick, a nation which is just beginning to tap the vast reusable resources of its trash.....

Hey, why didn't you buy that in a returnable bottle?

What for?

Because, that throw-away bottle will be used once and join 5 billion others to be dumped this year.

So what? There's plenty of room in the land-fill.

Plenty of room in the landfill, huh? Not so. The U.S. needs 500 new landfills a year!

Well, we'll figure out something to do with all of our trash.

We don't have to just throw it all away! We can recycle most of it. My returnable bottle will be used 15 times, after which the glass can be made into a new bottle.

Americans are really beginning to do it, too. Oregon recycles 80% of their beverage containers.

Hmmm, well, what about cans. You surely can't use them over and over.

No, but they can be recycled. It takes 97% more energy to produce a can from raw material as it does from recycled aluminum. That's a double saving in energy and material!

Lopsided

The U.S. spends \$4 billion a year on garbage collection and disposal. We could save \$5 billion a year if recycling increased by $\frac{1}{2}$ in the steel industry and tripled in the paper industry.

If recycling makes so much sense, why aren't we doing it?

We could be! Many communities have successful recycling programs in operation. It's up to individuals, like us to make them work, though.

You see, each person in the U.S. generates 6 pounds of trash a day, and a lot of it ends up by the roadside, or in creeks like this one.

Yuck! So, how do we do it?

We can choose to reuse it - not lose it. Our community can set up a drop-off center for recyclables, and start curb-side pick up of our separated trash.

Separate our trash! But that sounds like a hassle.

Not really. The average American family could spend less than 3 minutes a day to put paper, metal and organics, in containers.

Before long it cc Nature to patriot to recycle our precious resource.

That Second Nature will save trees too, since over one third of our nation's trash is paper.

But, will it save money?

Yes! A voluntary program in Portland, Oregon cuts its users' garbage bills by 40%!

Instead of burying their garbage gold mine in landfills or burning it up in smoke, Americans can choose to reuse it. Reynolds paid the public \$24 million in 1978 for 3.2 billion aluminum cans. Recycled office paper promotes a 60% savings over paper produced from virgin fibre; and recycling of newsprint is good for the U.S. economy since two thirds of it is imported from Canada.

Well, what about organic stuff and plastic - can they be recycled?

The production of plastic creates hazardous waste.

The U.S. Environmental Protection Agency estimates over 3,500 dangerous waste spills each year.

And, the market for recycling plastics is limited. Since nearly one third of all plastic is used in packaging, we can demand less unnecessary packaging.

a
Just
out
nue.

The recycling industry already employs thousands, with annual sales of over \$8 billion. An increased public demand for recycling and renewable energy is creating jobs which are already feasible.

Much of my new solar greenhouse was built with used materials, and I compost my food and yard waste to make fertilizer for the soil.

Well, I'll buy a returnable bottle next time. I don't want to throw this one away. Which way to the Recycling Center?

It's up to us.
Our Second Nature
could preserve the
systems of
Spaceship Earth.

Second Nature Recycling Project

P.O. Box 63

Berea, Ky. 40403

to:

RESIDENTIAL TELEPHONE SURVEY

Name _____ Address _____

No. in household _____

Length of Residency _____ Phone _____

1. Do you: recycle now? _____ Yes _____ No compost? _____ Yes _____ No reuse glass jars? _____ Yes _____ No have yard sales? _____ Yes _____ No reuse clothing/fabric? _____ Yes _____ No		sell junk metal? _____ Yes _____ No save paper to be recycled? _____ Yes _____ No save aluminum? _____ Yes _____ No save building materials? _____ Yes _____ No reuse appliance parts? _____ Yes _____ No
2. Are you concerned about the solid waste problem? _____ Yes _____ No
3. Would you like to see a recycling center in Berea? _____ Yes _____ No
4. Have you saved things to be recycled and not found a market? _____ Yes _____ No
5. Would you participate in a recycling project if:
- (a) it were voluntary? _____yes _____no (b) it were mandatory? _____yes _____no
- (c) it reduced your garbage bill? _____yes _____no
- (d) it increased your garbage bill? _____yes _____no
- (e) your garbage bill remained the same? _____yes _____no
6. Would you be willing to separate your trash by type at home?
(source separation of paper, glass, metal, etc.) _____yes _____no
7. Would you:
- (a) be willing to deliver your separated trash to a central drop off? _____ Yes _____ No
- (b) require curbside pickup of your separated trash? _____ Yes _____ No
8. Would you support a beverage container deposit? (Bottle bill)
- (a) local ordinance _____yes _____no (b) state law _____yes _____no
- (c) federal law _____yes _____no
9. In buying, do you:
- (a) consider the amount of solid waste that will be generated? _____yes _____no
- (b) purchase products in terms of the effect on natural resources, hazardous waste, energy consumed and environmental pollution? _____yes _____no
9. Do you make an effort to purchase recycled or recyclable products? _____yes _____no
10. Do you change your own oil? _____yes _____no
- If so, what do you do with the used oil?
11. How many cans of garbage do you set out each week?

Mountain Community Energy Alternatives
P.O. Box 63 Berea Kentucky 40403 986-1641

August 8, 1980

Fellow Citizen:

Mountain Community Energy Alternatives, Inc. received a grant from the U.S. Department of Energy to study the potential for resource conservation and recovery in the Berea area. The project will explore conventional recycling of aluminum, paper, glass, etc., as well as look at ways to recover waste oil, silver, organics for composting, alcohol and/or methane production and salvage from building demolition to name a few. The primary focus will be to look at ways to reduce energy consumption in the community while strengthening the local economy by limiting the dollar flow out of Berea to pay for energy.

For a project of this nature to be successful requires a significant amount of community support. A broad based Community Task Force will be assembled to review information gathered in the research analysis phases of the project and to assist in developing an implementation strategy. We hope that you or someone from your organization can help us in formulating a plan to reduce waste in Berea by participating on this task force. The first meeting is scheduled for 7:30 p.m., August 25, 1980 at the community room of the Berea First Federal Savings & Loan Building on Chestnut Street. Hope you will be able to attend.

If I can answer questions or provide any other assistance, please call me at 986-1641 or write to Mountain Community Energy Alternatives, Inc., P.O. Box 63, Berea, Kentucky 40403.

Sincerely,

David Goolsbee

DG/mg

business survey

name of business: _____ contact person: _____

address _____ phone: _____

Feel free to make comments as necessary:

1. What type of products does your business sell or deal with?
2. Are you concerned about the solid waste problem?
3. What type of wastes or by-products are generated by your business?
4. What is currently being done with your waste?
5. Does your business recycle now?

Yes	No		Yes	No		Yes	No	
_____	_____	cardboard	_____	_____	appliances/	_____	_____	batteries
_____	_____	office paper	_____	_____	furniture	_____	_____	oil
_____	_____	newspaper	_____	_____	clothing/	_____	_____	rubber
_____	_____	organics	_____	_____	fabric	_____	_____	other(explain)
_____	_____	metal	_____	_____	tires	_____	_____	_____
- 5a. If no, can you identify any barriers that have prevented you from recycling?
6. Have you saved things to be recycled and found no market?
7. Would your company like to see a recycling center in Berea?
8. Would your company support a recycling project if:
 - (a) it were voluntary? ____yes ____no
 - (b) it were mandatory? ____yes ____no
 - (c) it reduced your garbage bill? ____yes ____no
 - (d) it increased your garbage bill? ____yes ____no
 - (e) your garbage bill remained the same? ____yes ____no
9. Would you be willing to separate your trash by types?
(source separation of paper, metal, glass) ____yes ____no
10. Would your company: (a) require pickup service for your recyclables? ____yes ____no
(b) transport recyclable trash to a central drop off? ____yes ____no
11. Would your company support a beverage container deposit? (bottle bill)
 - (a) local ordinance ____yes ____no
 - (b) state law ____yes ____no
 - (c) federal law ____yes ____no

12. In buying materials for your company do you consider:
 (a) the amount of solid waste that will be generated? ☐yes ☐no
 (b) purchasing products in terms of the effect on natural resources,
 hazardous waste, energy consumed and environmental
 pollution? ☐yes ☐no
13. Does your company make an effort to purchase recycled or recyclable
products? ☐yes ☐no
14. Does your company create waste oil? ☐yes ☐no
If so, what do you do with it?
15. How much garbage does your company generate weekly?
16. How much do you presently pay for solid waste disposal?

Thank you in advance for your cooperation.

MCEA
P.O. Box 63
Berea, Kentucky 40403

Mountain Community Energy Alternatives
P.O. Box 63 Berea Kentucky 40403 986-1641

August 8, 1980

Fellow Citizen:

Mountain Community Energy Alternatives, Inc. received a grant from the U.S. Department of Energy to study the potential for resource conservation and recovery in the Berea area. The project will explore conventional recycling of aluminum, paper, glass, etc., as well as look at ways to recover waste oil, silver, organics for composting, alcohol and/or methane production and salvage from building demolition to name a few. The primary focus will be to look at ways to reduce energy consumption in the community while strengthening the local economy by limiting the dollar flow out of Berea to pay for energy.

To this end we are conducting a survey of the business community to determine general attitudes and the level of understanding of solid waste issues. Enclosed you will find a copy of this survey. If you will fill it out, fold and seal it as indicated and drop it in the mail we would greatly appreciate it.

We will also be holding a community meeting to review information gathered in the research/analysis phases of the project and to allow for citizen input into the implementation strategy. The meeting is scheduled for 7:30 p.m., August 25, 1980 at the community room of the Berea First Federal Savings & Loan Building on Chestnut Street. We sincerely hope you will be able to join us.

If I can answer questions or provide any other assistance, please call me at 986-1641 or write to Mountain Community Energy Alternatives, Inc., P.O. Box 63, Berea, Kentucky 40403.

Sincerely,

David Goolsbee
Project Coordinator

DG/mg

(100% Recycled Paper)

INDUSTRY SURVEY

name of industry: _____ phone: _____
 address: _____
 contact: _____

1. What type of products does your industry sell or deal with?
2. What type of wastes or by-products are generated by your business?
3. What is currently being done with your wastes?

	YES	NO		YES	NO
4. Does your industry recycle now?	_____	_____	metal?	_____	_____
cardboard?	_____	_____	tires?	_____	_____
office paper?	_____	_____	batteries?	_____	_____
newspaper?	_____	_____	oil?	_____	_____
or autos?	_____	_____	rubber?	_____	_____
appliances?	_____	_____			
OTHER?	_____	_____			

5. Have you saved things to be recycled and not found a market? _____

6. Would your industry like to see a recycling center in Berca? _____

7. Would your company support a recycling project if: it was voluntary? _____

" " " " " " " " it was mandatory? _____

" " " " " " " " your garbage bill is less? _____

" " " " " " " " your garbage bill was the same? _____

" " " " " " " " your garbage bill cost more? _____

8. Would your industry be willing to separate your trash by types? (source separation) _____

9. Would your industry be willing to take the recyclables of your trash to a central drop off? _____

(or would you have to have pickup service for your recyclables) _____

10. Would your industry support a beverage container deposit ordinance? _____

" " " " " " " " Bottle Bill State Law? _____

" " " " " " " " Bottle Bill National Law? _____

(CONTINUED ON BACK)

INVESTIGATIVE UNIT.

YES NO

11. In buying materials for your company do you consider the amount of solid waste that will be generated and purchase accordingly? _____
Or does your company consider products in terms of the effect on natural resources, hazardous waste, energy consumed, and environmental pollution? _____
12. Does your industry make an effort to purchase recycled or recyclable products? _____
13. Does your industry create waste oil? _____
If so, what do you do with it? _____
14. How much garbage does your company generate weekly? _____

(We are having a citizen's task force meeting on August __, at _____
_____ to discuss our project if you _____)

are interested or want more information please contact us at P. O. Box 63,
Berea, KY 40403 or call 986-1641.)

(100 % Recycled Paper)

ARE YOU CONCERNED ABOUT:

reducing physical & visual pollution
conserving natural resources
cutting energy consumption
saving money

Join us in a community meeting to discuss the potential
for waste reduction & recycling in Berea

Monday August 25 7:30 p.m.

Berea First Federal Savings & Loan

Community Participation Sought in Recycling Project

Mountain Community Energy Alternatives, Inc., received a grant from the U.S. Department of Energy to study the potential for resource conservation and recovery in the Berea area. The project is exploring the possibility of recycling a variety of materials.

For a project of this nature to be successful a significant amount of community support is required. Mountain Community Energy Alternatives is encouraging Bereans to participate in the development and implementation of a strategy for recycling.

A public meeting is scheduled for 7:30 p.m. Tuesday, September 30, in the community room of the First Federal Savings and Loan on Chestnut Street. The agenda will include review of the financial analyses of several different recycling program options, hearing the results of the recently completed telephone surveys, and "brainstorming" ideas for implementing a recycling project in Berea.

For further information on how you can participate or for further information regarding recycling, call David Goolsbee at 986-1641, or write to Mountain Community Energy Alternatives, Inc., P.O. Box 63, Berea, Ky. 40403.

ARE YOU CONCERNED ABOUT?

- reducing physical & visual pollution
- conserving natural resources
- cutting energy consumption
- saving money

join us in a community meeting to discuss the potential
for waste reduction & recycling in Berea

Tues. Sept. 30th 7:30 p.m.

Berea First Federal Savings & Loan

ARE YOU CONCERNED ABOUT:

- reducing physical & visual pollution
- conserving natural resources
- cutting energy consumption
- saving money

join us in a community meeting to discuss the potential
for waste reduction & recycling in Berea

January 27, 1981

7:30 p.m.

Fireside Room • Draper • Berea College

SPECIAL GUEST - PETE GROGAN - ECOCYCE BOULDER, COLO.

Second Nature

A Berea Effort in Recycling
P.O. Box 63
Berea, Kentucky 40403
986-9341

January 29, 1981

Dear Friends:

We were encouraged by the turn-out for the meeting with ECO-CYCLE's Pete Grogan on the 27th. It was most informative to hear first hand the nitty gritty of one of the largest community recycling programs in the country.

Berea is much smaller than Boulder, and we feel that a hint can be taken from Mr. Grogan to start out small. We obviously need to gain a balance and learn to walk with a sure step before galloping into a race to conserve resources.

As Mr. Grogan stated, recycling is logical; it taps a vast source of energy and materials, provides jobs, and cuts energy consumption and environmental pollution. We would like to share with you some of the research that the Berea Recycling Project has compiled, as well as initiate a plan of implementation.

At this point, it seems most sensible to start with a program to recycle Berea's paper--office, newsprint, cardboard, and mixed. We'd like to share our ideas and hear yours!

Some potential areas of service include:

1. Neighborhood contact people
2. Publicity
3. Education
4. Steering committee: method of pick-up (who, when, where), market contacts, equipment, etc.

A Grant application to the Dept. of Energy Appropriate Technology Small Grants Program will be submitted by March 19th, requesting funds with which we can instigate a feasible recycling program in the Berea area.

We hope to see all of you who are interested in helping us "get off the ground" at a meeting on Wednesday, February 11th at 7:00 P.M. at the public library on Chestnut St.

Thank you for your interest, and we'll see you the 11th.'

David and Michelle Goolsbee

*newspaper
articles removed*

SAVE A BUNDLE!

Saturday May 2nd

- Mark your calendar and start to save your newspaper right now. Second Nature, a community based non-profit group will be collecting newspaper for recycling the 1st Saturday of each month.
- Simply bundle your newsprint with twine or cloth and place it by the curb on May 2 by 1:00 p.m. and we will pick it up. If it does happen to rain, place the material in a plastic bag.
- Newsprint includes newspapers, tabloids and other printed material made of newsprint. It must be free of contaminants. At this time, we are unable to accept books, magazines, phone books, cardboard, or any other waste paper. We hope to be able to take these materials in the near future, but for now, only newsprint, please.
- Local church, school and civic groups interested in making a little money for their group can work with us collecting the materials later in the summer. For more information, write the Second Nature Recycling Project, P.O. Box 63, or call David or Michelle Goolsbee at 986-1641.

Thank you in advance for making this effort to reduce waste of energy and natural resources in Berea a success!

● Second Nature Recycling Project

Here we come
again.

Saturday
June 6th
Newspaper Pickup

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION

100% Recycled Paper

Help Needed!

* CIVIC GROUPS needing to make money to do one of our Saturday pickups!

Please, BUNDLE your newsprint. If you don't, we have to.

* VOLUNTEERS to help distribute literature, pick up papers, load trucks, raise funds for needed equipment, rented space, etc., etc., etc.!

Call 986-1641 or 986-2224

* * * * THANKS for your SUPPORT

JOIN THE GANG

Save your newspapers for pickup
on the **1st Saturday** of each month

Second Nature Recycling Project

a non-profit organization

Help Needed!

* CIVIC GROUPS needing to make money to do one of our Saturday pickups!

* Please, BUNDLE your newsprint. If you don't, we have to.

* VOLUNTEERS to help distribute literature, pick up papers, load trucks, raise funds for needed equipment, rented space, etc., etc., etc.!

Call 986-1641 or 986-2224

* * * * THANKS for your SUPPORT

JOIN THE GANG

Save your newspapers for pickup
on the **1st Saturday** of each month

Second Nature Recycling Project

a non-profit organization