



Resource Recovery Report

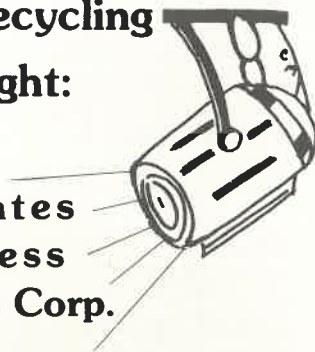
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Autumn, 1983

Recycling

Spotlight:

All-States Business Products Corp.



When people think of recycling, the picture that usually comes to mind is a group of volunteers collecting materials at a depot or possibly a curbside collection of recyclables run by a community. There are major recycling activities, however, occurring "behind the scenes" in business and industries throughout Morris County. All-States Business Products Corporation in Randolph, has perhaps one of the most comprehensive recycling programs in the County

Background: When All-States' energy conserving building was erected in 1970, systems and space were dedicated specifically for recycling. According to Abe Fischer, the company's president, All-States' theory from the beginning was "if you don't recycle, you'll be buried in garbage." For an industry whose major products are computer paper and business forms, this could not be truer.

Recycling Program: All-States recycles all paper, aluminum, silver, lead, cardboard, wood pallets and glass. Paper strips which are sliced from forms during processing are automatically vacuumed up into a series of pipes which discharge the

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Paper is vacuumed into pipes and blown into a holding room (right rear), and then baled for shipping (left rear).

The Problems With Plastics

Residents of Morris County are becoming more aware of and involved in recycling. As a result, groups and individuals are now trying to expand beyond the traditional recyclable materials (newspaper, glass, aluminum) into recovery of other materials prevalent in municipal waste streams. In particular, the desire to add plastic recycling to programs is gaining momentum.

The two most prominent types of plastic in municipal waste are polyethylene terephthalate (PET) and high-density polyethylene (HDPE). PET is used mainly in soft drink bottles

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Energy Recovery From Solid Waste

As the amounts of waste increase, so do disposal costs and the environmental problems associated with conventional disposal practices. At the same time, energy costs keep rising, increasing the need to develop alternative energy sources. The cornerstone of Morris County's long range plan for solid waste management is the implementation of an energy recovery facility.

Mass burning of solid waste in a waterwall incinerator has had the most impressive operating history and is the most proven waste-to-energy technology worldwide. The diagram

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scrap into a tall room next to the baler (see photo). Each of the 75+ employees has one or two containers at his or her work station for separation of recyclables. All scrap paper, from carbon copy to the punched out "holes," are separated into large wooden bins on rollers, then baled. Aluminum plates are also compacted into bales. Silver is extracted from film negatives and reused. Lead shavings and old lead typeset are melted down and reformed into "pigs" (lead bricks) which are reused in the typesetters. Undamaged wood pallets are returned to the supplier. Light bulbs are smashed into drums for recycling. Even glass bottles from the employee's lunches are recycled by individual employees who keep the revenues.

Revenues: The Company's 1982 recycling program netted an income of \$19,950.00 from baled paper sales alone.

Municipal Tonnage Grants: When municipalities received the 1982 Recycling Grant forms, All-States cooperated with Randolph Township officials in providing the Company's 1982 recycling records. As a result, the Township will receive over \$2,840.00 in tonnage grant monies.

Remaining Solid Waste: Most 60,000 square foot buildings occupied by over 75 employees would have large quantities of waste to be disposed of every week. Yet, because of their uniquely comprehensive recycling program, All-States Business Products disposes of only one small dumpster of waste per month.

All-States' involvement, success and commitment to recycling provides an excellent incentive for all other businesses and industries to participate in recycling activities.

Newsletter Articles

Does your recycling program include projects which would interest our readers? Do you have a new program you would like to see announced? Does a particular aspect of your program help to make it a success? If so, contact the editor at 285-6183 and your story may appear in a future issue.

A Recycling First in Morris County

One of the many reasons for municipalities to recycle is to reduce solid waste disposal costs. Ultimately, by increasing recycling, and thus reducing the amount of solid waste to be disposed of, weekly garbage collections can be decreased. The first municipality in Morris County to achieve this goal, is the **Borough of Wharton**.

Beginning in September, Wharton reduced garbage collections from two days per week per household, to one. At the same time, recycling collections were upped from one day a month per household, to two.

Many municipalities and collector/haulers fear that such a change will wreak havoc on garbage collection schedules. By reducing solid waste collections to once per week, they fear that the amount of waste to be handled on that one day could double. And, as a result, collection time would also double. According to Borough officials, however, the transition has been a smooth one.

The Borough of Wharton began mandatory curbside collection of
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and HDPE is mainly found in milk containers. Unlike other plastic containers such as shampoo, toothpaste and plastic bags, PET and HDPE bottles are made from only one type of plastic and are, therefore, recyclable.

Currently, there are two major barriers to municipal and voluntary recycling of plastics. First, in order to make transportation of plastics feasible, containers must be compacted into bales. Handling of individual containers is difficult. Therefore, many markets will only accept baled plastic. Unfortunately, it is not usually within municipal budget capabilities to purchase a baler. Secondly, many markets will only accept PET and HDPE in quantity, necessitating storage space for the bales. The only two plastic recyclers in New Jersey, for example, prefer truckload shipments, and require 10,000 to 30,000 pounds of baled plastic if the firms are to pick up the material.

Plastic Waste Growing

Although plastic recycling on the municipal level is extremely difficult, the use of plastic in the products we buy is skyrocketing. As a result, this non-biodegradable material is feeding our solid waste problems.

According to **Resource Recycling** magazine, the use of plastic in soft drink containers jumped from only 850 million containers in 1978 to 2.5 billion bottles this year, and heading to 8 billion containers by 1985 when PET plastic is expected to capture 20 to 25 percent of the soft drink package share.

Supermarkets are shifting from using paper bags to plastic bags. The plastics industry is undertaking a major campaign, highlighting the price advantage of plastic. What about all of the disadvantages?

A two liter PET beer bottle is being introduced by Sewell Plastics, calling it a "six-pack in a bottle." Goodyear's polymer division is developing a PET can. Gulden's and the R.T. French Company have mustard out in squeezable PET plastic jars, and Jim Beam bourbon is now out in 1.75 liter PET plastic bottles. Even the Honda Motor Company is planning to employ plastic in 40 percent of the Ballade Sports CR-X body.

What does all this mean, and what can you do about it? What it means is that our solid waste problems, now somewhat eased where comprehensive recycling programs exist, will be intensified. What individuals can do to curb this trend is to avoid, whenever possible, buying goods packaged in plastic. A person can write to manufacturers of the products he/she buys encouraging the use of recyclable or biodegradable containers. Those interested in preventing the switch from paper bags to plastic bags can discuss the problem with their store manager, or write to the New Jersey Food Council at 30 W. Lafayette Street, Trenton, expressing their concerns.

Short from a breakthrough within the plastics industry, plastic is not, and never will be, fantastic.

Resource Recovery Questions & Answers: DEP Addresses Air Pollution

(Excerpted from Middlesex County
Solid Waste News, December, 1982)



The air we breathe — how clean is it? What kinds of materials are contained in our air? Where are they coming from? What action is government taking to assure us that our air is fit to breathe? Questions like these are being asked by citizens throughout the State, particularly in areas where government or private industry contemplates locating and operating a waste-to-energy plant.

In Trenton, staff members at the Department of Environmental Protection's Division of Environmental Quality are responsible for setting standards for air pollution control in New Jersey. For answers to questions about air quality standards for new waste-to-energy facilities, William O'Sullivan, Chief of the Bureau of Major Project Review of the DEQ, and Gary Pierce, a Principal Environmental Engineer in the Bureau, were interviewed. The questions and answers are presented below.

Q. What kinds of materials are released into the air from the smokestack of a waste-to-energy (garbage burning) plant?

A. There are three categories of contaminants which are released as a part of the mass burning process which are of concern from an air pollution control perspective: particulates, organic emissions and acid gases.

Q. How can these emissions be controlled?

A. PARTICULATES include unburned carbon, ash and heavy metals. Control devices are usually electrostatic precipitators or bag houses. Bag houses are something like giant vacuum cleaners. They contain hundreds of bag filters. The contaminated air goes into the bags, the particles are trapped on the bags and the relatively clean air comes out of the stack. Particles then fall into a hopper, and they are taken to a landfill. An electrostatic precipitator is an electrical device with wires and metal

plates. The wires charge the particles. Then, as they go by the metal plates, the particles are drawn to the metal plates which have an opposite charge. When the plates are shaken, the particles fall into hoppers for disposal. Both of these control devices are highly efficient and capable of getting particulate emissions down to about the same particulate emission of oil fired facilities.

ORGANIC EMISSIONS consist of organic matter which is not completely burned. To make sure that organic materials are burned efficiently, DEP will require the following: a minimum combustion gas temperature; a minimum residence time at the minimum combustion gas temperature; and an auxiliary oil-fired burner to insure that the minimum combustion gas temperature is maintained at all times. These safeguards and proper furnace design should provide greater than 99.9% combustion efficiency.

Control of ACID GASES is obtained by the use of equipment called scrubbers. Scrubbers are wet scrubbers or dry scrubbers, depending on the particular process used. A wet scrubber can be as simple as a chamber where water with lime or caustic is sprayed to absorb and neutralize the acid gases, primarily hydrochloric acid and sulfur dioxide.

A dry scrubber is similar to a wet scrubber in that water with caustic or lime is sprayed into a chamber. However, in a dry scrubber the amount of water used is much less, so that all the water evaporates, and the dry salts remaining can be collected in the electrostatic precipitator or bag house. In the wet scrubber the salts must be separated, usually in settling basins,

from the water, which is recirculated to the scrubber. The use of scrubbers is primarily a chemical process, while particulate control devices are mechanical.

In some states, a very tall stack is used as a means of air pollution dispersion, assuring low ground level concentrations. State-of-the-art standards in New Jersey do not allow the use of tall stacks alone for air pollution control.

Q. Are some materials more resistant to destruction by burning than others? If so, what are they?

A. One example of materials which are resistant to destruction by burning are PCBs, but these are not found in high quantities in municipal waste. Federal law now prohibits the production of PCBs.

Q. How are the emissions from the smokestack of a garbage-burning plant similar to emissions from a power plant which burns fossil fuel to produce electricity? How are they different?

A. The DEP compared emissions of resource recovery facilities with emissions from oil-fired and coal-fired boilers. In general, emissions are expected to be less from a garbage-burning plant with proper controls than from a coal-fired boiler, and similar to an oil-fired boiler using low sulfur oil. (The table on page 4 compares emissions from a 1000 ton per day (TPD) resource recovery plant, to oil and coal burning plants. Percentage increase over total existing pollutant emissions is shown at the bottom).

Q. How do the emissions from the smokestack of a garbage-burning plant compare to emissions from home wood stoves and fireplaces?

A. Comparing emission factors from a properly-controlled resource recovery plant with a wood stove or fireplace (without particulate control) reveals that, pound for pound of fuel, a wood stove would emit much higher levels of particulates into the air, lower levels of acid gases, and almost 40 times as much carbon monoxide (using oak wood and adjusting for the fact that wood has a higher heat value than refuse).

Also, since home chimneys are much

Questions...Continued From Page 2

lower than resource recovery facility stacks, the ground level effect will be much higher per pound of pollutant from the home fireplace. It is likely that these factors will result in higher ground level concentration of some air contaminants from many fireplaces in a community than from a resource recovery facility, even though much more material is burned in the resource recovery plant (40 tons of refuse per hour for a 1000 ton per day resource recovery facility vs. about 10 tons of wood per hour from 1000 homes).

Q. Has the N.J. DEP prepared standards for air pollution control for waste-to-energy plants?

A. DEP is defining in greater detail minimum state-of-the-art air pollution control requirements for incineration of waste. Right now, under the existing permit rule, the applicant is required to demonstrate that he incorporates state-of-the-art air pollution control in

order to gain permit approval. The extent of the demonstration is a function of how big the project is; more is required of bigger sources. For example, for the Wheelabrator-Frye project in Middlesex County, the DEP is requiring an extensive analysis of alternatives, which would include emission estimates and costs of various control device options.

Normally, the burden for demonstrating state-of-the-art air pollution control is on the applicant. In the case of resource recovery, the DEP recognizes that many of the applicants are, directly or indirectly, counties, and so the DEP has spent considerable time evaluating air pollution control of resource recovery facilities and is specifying minimum state-of-the-art requirements.

Q. How did the DEP prepare these standards?

A. DEP hired a consultant to evaluate incineration, including

sewage sludge incineration, hazardous waste incineration and resource recovery facilities. Also, considerable in-house time has been spent in evaluating air pollution control of resource recovery. Our staff contacted numerous other states which have facilities, and are developing similar standards to California's. DEP has also discussed best available control technology with EPA and the major vendors, including Wheelabrator-Frye, UOP and others. Staff members have visited several facilities in the United States, including Saugus, Framingham and Harrisburg. Information has been gained through correspondence with other countries such as Japan, Germany and Switzerland, and site visits to Germany to look at resource recovery plants with sophisticated air pollution controls.

Q. Citizens are concerned about the effects of lead. Can you comment on the amount of lead which might be produced by a

Comparison of Emissions from Selected Facilities

	EMISSIONS IN TONS/YEAR						
	Particulate Matter	SO ₂	HCL	NO _x	Lead	CO	VOS ¹
1,000 ton/day Resource Recovery Facility with Scrubber ² (417.5 million BTU/hr)	144	525	183	548	18	730	20
Existing Oil-Fired Boiler ³ (417.5 million BTU/hr)	73	584	1.2	919	0.3	61	13
New Coal-Fired Boiler ⁴ (417.5 million BTU/hr)	55	1095	15	1300	0.4	73	22
Percentage Increase of Morris County Emissions Due to Resource Recovery ⁵	3.7	9.7	NA	2.3	NA	0.8	NA

¹Volatile Organic Substances

²Assumes 70% SO₂ control, 90% HCL control

³Assumes 0.3% sulfur oil, no scrubbing

⁴Assumes compliance with New Source Performance Standards

⁵Based on 1980 Emissions Inventory for Morris County, NJDEP

Statewide Recycling Campaign To Begin

Governor Thomas H. Kean has officially declared November as "New Jersey Recycling Month." And with this declaration, the New Jersey Office of Recycling will launch a full scale, two-year recycling education campaign.

With \$600,000 from the State Recycling Education Fund (\$300,000/year) the Office of Recycling has hired a project team from the public relations and advertising firms of Holt and Ross and William Kohm Associates. The team has developed a comprehensive campaign that will bring recycling information to all New Jersey residents.

The annual \$300,000 budget will be invested in advertising and public relations programs that will effectively relate recycling information to the most people at an economical cost. The advertising budget will be directed toward:

- magazine advertisement
- paid radio announcements
- outdoor advertising (i.e. billboards)
- TV public service announcements
- direct mail campaign to municipalities
- audio visual shows
- transit advertisements
- mechanicals for posters, bumper stickers, etc.
- radio public service announcements
- newspaper supplements

R.E. Cycle, the captivating magician that will be spreading the words "Recycling Pay\$," forms the cornerstone of the public relations activities. He will appear at schols, shopping centers and train stations throughout the State. His picture will appear on all advertising material generated through this program. Public relations activities will also include:

- toll-free number for recycling information
- litter abatement strategies
- clearinghouse for artwork, mechanicals, etc.
- activities in heavy tourist areas
- litter bags for automobiles
- educational recycling curriculum for schools

The program will kick off at the 1983 League of Municipalities Convention where R.E. Cycle will make his first appearance.



R.E. Cycle

Attention Recycling Program Coordinators

Discounted "Recycler" tickets are still available for the 1983 "Recycling in the 80's" dinner slated for November 20. Any manager, coordinator, or chief organizer of a recycling program is eligible for a "Recycler" ticket for \$18, \$32 off the full cost of the dinner.

A few free tickets are also still available to all New Jersey mayors and freeholders.

For ticket information contact:

*Mr. Robert C. Donovan
Owens-Illinois, Inc.*

*Park 80 Plaza West-One
Saddle Brook, New Jersey 07662
Telephone: 368-9434*

R2-D2 Teaches Recycling

In an effort to extend recycling education to school children, Morris County's solid waste staff is offering a unique recycling educational program to County elementary schools.

Through the cooperation of the Coca-Cola Bottling Company, a robot modeled after R2-D2 will travel to county schools delivering recycling information. The robot is remote controlled and "speaks" with children about recycling through a remote microphone.

For scheduling information contact your school principal.

Market News: Aluminum & Newsprint prices up!

In the past month, aluminum prices have jumped at least 50% over recent levels. The Garden State Paper Company has raised prices from 20¢ to 30¢ per pound while the Dover Recycling Center's prices have increased to 32¢ per pound. Garden State Paper buys aluminum cans at the Rockaway Valley Paper Recycling Center in Wharton (328-7080) and the West Essex Recycling Center in Fairfield (227-4441). Information regarding Dover's Center can be obtained by calling 366-2000.

Garden State Paper Company has also raised prices paid for newspaper. In 1983 alone, prices jumped from \$16 per ton, to \$20 per ton, to the current price of \$25 per ton. Garden State buys old newsprint at the two centers mentioned above, and at the Morris County Paper Recycling Center in Cedar Knolls (540-8886).

Recycling to be Prominent at 1983 League Convention

This year's League of Municipalities Convention (November 15-17) will feature informative recycling events and displays for municipal officials.

The two educational sessions, entitled "How to Get More in '84," will focus on the 1983 grant programs and managing successful recycling programs. Both will be held on November 16.

From 2:30 p.m. the New Jersey Office of Recycling will introduce the new 1983 guidelines for Program Planning and Education Grants. The second session, from 3:45-5:15 p.m. will include such topics as setting and meeting recycling goals, publicizing recycling and contracting for recycling services.

R.E. Cycle, the State's official recycling representative, will appear on the 16th with his magic show and a wealth of recycling information. New Jersey Commissioner of Energy, Leonard S. Coleman, and Administrator of the Office of Recycling, Mary T. Shiel, will also be on hand to discuss recycling with participants.

Municipal Update

Butler — On September 3, Butler opened its new recycling center at Bellevue Avenue. Between the hours of 8:30 a.m. and noon, 12,500 pounds of newspaper and 750 pounds of glass were collected.

The center, organized by the Butler Recycling Committee, is operated by the volunteer efforts of Boy Scout Troop Number 4 and the scouts' parents.

On September 17, the scouts conducted a curbside drive, collecting paper from residents who had called in a special request for curbside service.

Promotional activities prior to the first collection included newspaper advertisements and community cable TV spots.

Due to the success of the opening day, arrangements were quickly established to include aluminum cans in their second collection on October 1.

Denville — The Denville Environmental Commission has designed a new recycling flier to help advertise the Township's recycling center program. The center, located in the DPW yard at 140 Morris Avenue, accepts newspaper, glass, ferrous metals and oil during regular DPW hours. The Commission and the township are working on adding aluminum collection to the depot.

Jefferson Township — On October 5, the Township Council adopted a mandatory recycling ordinance for curbside collection of newspaper, glass, and ferrous and non-ferrous containers. The ordinance will be activated after program details are finalized. Collection will most likely be conducted by a private contractor.

Morris Plains — The Morris Plains Recycling Committee with the assistance of the mayor and Borough council will open a new recycling depot for newspaper, glass and aluminum. The depot will be open the second Saturday of each month beginning November 12, 1983. Local volunteer groups will operate the center at 21 Grannis Avenue (the Armitage tract) from 9 a.m. to 12 noon.

Rockaway Township — On September 20, Rockaway Township amended their existing mandatory newspaper recycling ordinance to include ferrous and non-ferrous cans, and glass. After a 20-day waiting period, the collections and enforcement activities will begin.

Roxbury Township — After the institution of their mandatory recycling program, Township officials found it difficult to handle the large quantities of glass they had collected. **The Mennen Company** supplied the Township with 32 5-gallon drums for glass collection activities. The **Township of Denville** loaned Roxbury a "can opener" to remove the tops of the barrels so that the drums could be utilized for the program.

*A Publication of
The Board of Chosen Freeholders*

Officials Learn, "Asphalt Recycling Pays"

On September 27, municipal officials from throughout Morris County learned that recycling saves money, energy and resources, and how state, county and municipal asphalt recycling activities can provide recycling grant money for municipal programs.

Freeholder Alfonse Scerbo, chairman of the County Public Works Committee, explained how asphalt recycling activities on county roads can provide recycling income for the municipalities in which the project roads are located.

George Tucker, Executive Vice President for Tri-County Asphalt Corporation, and Cliff Heath, President of the New Jersey Asphalt Pavement Association, demonstrated the mechanics of asphalt recycling. They announced that their organizations will maintain careful records for municipalities recycling grant money may be obtained.

Anthony Cancro, Supervising Energy Specialist of the New Jersey Office of Recycling presented case studies of 9 New Jersey municipalities which will receive anywhere from a few hundred dollars to over \$15,000 in Recycling Grant monies for reporting asphalt recycling activities in 1982.

Those attending left the seminar with all the information necessary to engage in, and benefit from asphalt recycling.

MORRIS COUNTY PLANNING BOARD

COURTHOUSE, MORRISTOWN, NEW JERSEY 07960 285-6183



SOLID WASTE STAFF

Kenneth Gallagher
Solid Waste Coordinator

Glenn Schweizer
Principal Planner

Lauren S. Roman
Recycling Coordinator and Editor

OFFICE LOCATED AT 3 SCHUYLER PLACE, MORRISTOWN

