

# Materials Exchange Research Report

*Prepared by:*

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*Prepared for:*

New York City Department of Sanitation  
Bureau of Waste Prevention, Reuse and Recycling

44 Beaver Street  
New York, New York 10004



## BWPRR Overview

This report is one of a number of waste prevention reports prepared under a long-term contract by consultant Science Applications International Corporation, and issued at contract conclusion. The reports are listed below. The New York City Department of Sanitation (DOS, or the Department), Bureau of Waste Prevention, Reuse and Recycling (BWPRR), the sponsor, has issued a Foreword to the studies; it acknowledges the many contributors and frames a position based on its considerable efforts to review, practice, and measure waste prevention. The Foreword appears at the beginning of the first report in the series, *Measuring Waste Prevention in New York City*. Interested readers are strongly encouraged to access the material through the Department's web site at: [www.ci.nyc.ny.us/strongest](http://www.ci.nyc.ny.us/strongest). Print or electronic versions are available through BWPRR.

Late in 1997, EPA funded a roundtable, convened by the Department and the Cornell Waste Management Institute, which brought together local parties to discuss the practicalities of implementing a materials exchange in New York. The final report on the roundtable, *The New York City Materials Exchange Roundtable*, is attached as an appendix. The Department already had begun developing such an exchange, called the NY Wa\$teMatch, in partnership with the City University of New York. Current information about Wa\$teMatch can be found at [www.wastematch.org](http://www.wastematch.org).

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### Waste Prevention Reports:

- *Measuring Waste Prevention in New York City*
- *Survey of Waste Prevention Programs in Major Cities, States and Countries*
- *Procurement Strategies Pursued by Federal Agencies and Jurisdictions Beyond NYC for Waste Prevention and Recycled Products*
- *Inter-Agency Task Force Action Plan to Encourage the Use of Recycled-Content Building Materials*
- *Materials Exchange Research Report*
- *Characterization of NYC's Solid Waste Stream*
- *Life Span Costing Analysis Case Studies*
- *Packaging Restrictions Research: Targeting Packaging for Reduction, Reuse and Recycled Content*
- *NYCitySen\$e Summary Report*
- *NYC WasteLe\$\$ Summary Report*

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## I. Introduction

The New York City Department of Sanitation (DOS) is launching a new materials exchange to encourage reuse of materials currently generated by industry for which no traditional reuse or recycling markets exist. In support of this effort, SAIC conducted research to identify examples of successful exchanges of these specific industrial solid wastes that were facilitated by other materials exchange programs. SAIC contacted 31 materials exchanges located throughout the United States and Canada.

## II. Methodology

SAIC initiated telephone contact with 31 material exchanges located throughout the United States and Canada seeking specific information on successful exchanges involving the materials of interest to DOS. SAIC sent the list of materials (found in Appendix A) via fax to the appropriate contact person at the various exchanges. The contact person reviewed the list and, when possible, provided contact names and telephone numbers for businesses who either inquired about or participated in an exchange of one or more of the listed materials. In some cases, the exchange representative sent copies of summaries of successful exchanges that appeared in their catalogs or outreach literature. In most cases, the exchange representatives would not or could not provide specific information regarding successful exchanges. Established waste exchanges were unable to provide client information for one or more of the following reasons:

- the exchange provides confidential services and will not violate client confidentiality agreements;
- the exchange simply lists the materials available and sought, but does not track exchanges;
- the exchange is concerned about liability;
- the exchange lacks the resources to compile and maintain information on successful exchanges; and/or
- the exchange is a for-profit operation and is concerned about competition from other exchanges.

One exchange representative mentioned that, while gathering accounts of successful exchanges is part of his job, he has found that exchange data is not readily available.

SAIC conducted follow-up research on each reference to a specific exchange, a business that participated in an exchange, or an inquiry about any of the materials of interest to DOS. SAIC contacted the business by phone and asked for the following information:

- A description of the generator and end user of the materials exchanged (e.g., the type, size, and location of each company);
- The kind and quantities of materials exchanged;
- The estimated monetary value of the exchanged materials;
- The estimated financial savings to the generator and the end user resulting from the exchange from tax deductions, reduced disposal costs, reduced transportation costs etc.; and
- The source of the reusable material (*i.e.*, industrial by-product, packaging, etc.)

In some cases, the business representatives indicated that they were not successful in exchanging the materials for which they sought information. For those companies that were successful, the representatives provided the information to the best of their ability. However, in most cases, the companies did not maintain records on the type of information requested by the DOS.

This report is divided into two sections. The first section lists the exchanges that were contacted and provides a brief explanation of the information provided. The second section, organized by material, presents examples of successful exchanges.

### III. Materials Exchanges Contacted

#### Alabama Waste Materials Exchange (AWME)

404 Wilson Dam Avenue  
Sheffield, AL 35660  
(205) 383-5630

The telephone company indicated that this exchange is no longer operating.

#### Arkansas Industrial Development Commission (AIDC)

Ms. Kim Patterson  
1 Capitol Mall, Room 4B215  
Little Rock, AR 72201  
(501) 682-1370

The AIDC program, entitled "Scrap Match" was initiated two years ago. Exchanges are not tracked.

#### California Materials Exchange (CALMAX)

Mr. Ken Decio  
c/o California Integrated Waste Management Board  
8800 Cal Center Drive  
Sacramento, CA 95826  
(916) 255-2396

Mr. Decio indicated that identifying successful exchanges is a difficult task. He could not provide contact names, but provided copies of descriptions of successful exchanges that have appeared in the CALMAX catalog.

#### Chicago Board of Trade

Market and Product Development  
Ms. Bonnie Culp  
141 W. Jackson  
Suite 2280

Chicago, IL 60604  
(312) 435-7223

Ms. Culp said that the Board of Trade developed a recyclables exchange as a result of requests from the recycling industry. The exchange consists of an electronic bulletin board listing available and desired plastics, paper and glass. The exchange no longer lists structural panels. The service is also in the process of developing uniform quality standards for the materials posted. A subscription is required to use this resource.

#### Donation Depot

Mr. Frank Eaton  
New Hampshire College  
2500 North River Road  
Manchester, NH 03106-1045  
(603) 645-9666

Mr. Eaton could not provide contact names, but indicated that most of the materials of interest to the DOS are marketable.

#### EnviroSouth

Martha McInnis  
Montgomery, AL  
(334) 277-7050

Unwilling to provide information.

#### Florida Recycling Material System (FRMS)

2207 NW 13th Street, Suite D  
Gainesville, FL 32609  
(904) 392-6264

The representative indicated that this material exchange has been discontinued; recommended contacting the South Waste Information Exchange (SWIX)

**Hudson Valley Materials Exchange**

P.O. Box 550, 1 Veterans Drive  
New Paltz, NY 12561  
(914) 795-5507  
Unwilling to provide information.

**Indiana Materials Exchange**

P.O. Box 454  
Carmel, IN 46032  
(317) 773-1671  
Unwilling to provide information.

**Industrial Materials Exchange (IMEX)**

Bill Lawrence  
506 2nd, Avenue, Room 201  
Seattle, WA 98104  
(206) 296-3968  
Mr. Lawrence provided contact information.

**Industrial Materials Exchange Service (IMES)**

Ms. Diane Shockey  
P.O. Box 19276  
Springfield, IL 62794  
Ms. Shockey would not provide information because IMES is a confidential service.

**Iowa Waste Reduction Center (IWRC)**

Barbara Oltman  
75 BRC-University of Northern Iowa  
Cedar Falls, IA 50614-0185  
(800) 422-3109  
Could not provide information because IWRC provides a confidential service.

**Kentucky Department of Environmental Protection (KY DEP)**

Mr. Charles Peters  
14 Riley Road  
Frankfort, KY 40601  
(502) 564-6716  
Unwilling to provide information.

**Minnesota Technical Assistance Program (MnTAP) Materials Exchange**

**Ms. Fran Kurk**  
1313 5th Street, Suite 207  
Minneapolis, MN 55414-4504  
(612) 627-4643  
Ms. Kurk provided copies of successful exchanges that appeared in the materials exchange catalog. She does not have the resources to conduct searches to provide company contact information.

**Mississippi Technical Assistance Program (MISSTAP)**

Ms. Pat Lindig  
P.O. Drawer CN  
Mississippi State, MS 39762  
(601) 325-8068  
MISSTAP lists materials available and materials sought; the organization does not compile information on successful exchanges.

**Montana Industrial Waste Exchange**

P.O. Box 1730  
Helena, MT 59624  
(406) 994-3451  
The waste exchange has been operating for approximately one year and does not have information on successful exchanges. Laboratory chemicals are the most common materials handled through the exchange.

**National Materials Exchange Network (NMEN)**

Internet address: [www.earthcycle.com](http://www.earthcycle.com)  
Provides listing service of available materials and materials sought. Does not track exchanges.

**New Hampshire Materials Exchange (NHME)**

Jackie Badders  
122 N. Main Street  
Concord, NH 03301  
(603) 224-5388

Ms. Badders was not able to provide specific examples of exchanges, but indicated that the materials DOS is interested in are marketable.

**Ontario Waste Exchange**

Ms. Alison McNeill  
2395 Speakman Drive  
Mississauga, ON L5K 1B3  
CANADA  
(905) 822-4111 ext. 354

Ms. McNeill reviewed the materials list and provided contact information.

**Pacific Materials Exchange (PME)**

4708 E. Jaremko Street  
Mead, WA 99021  
(509) 466-1532  
Unwilling to provide information.

**Resource Exchange Network for Eliminating Waste (RENEW)**

Ms. Hope Castillo  
Texas Natural Resource Conservation  
Commission  
MC 112  
P.O. Box 13087  
Austin, TX 78711-3087  
(512) 239-3171

Ms. Castillo reviewed the materials list and did not have any contact information.

**South Carolina Waste Exchange (SCWE)**

(803) 755-3325  
Three individuals indicated that the waste exchange is no longer operating.

**Southeast Waste Exchange (SEWE)**

Ms. Maxie May  
Urban Institute  
University of North Carolina  
Charlotte, NC 28223  
(704) 547-4289

Ms. May will not provide exchange information due to confidentiality concerns. She attributes much of the success of the program to the confidential service.

**Southern Waste Information Exchange (SWIX)**

Mr. Gene Jones  
P.O. Box 960  
Tallahassee, FL 32302  
(800) 441-7949

Mr. Jones indicated that he could not provide any information on successful exchanges due to a lack of resources.

**Tennessee Materials Exchange**

Mr. Richard Bagallin  
(615) 532-8881  
The exchange began operating on May 15 and has compiled little exchange information, but Mr. Bagallin provided contact information.

**Transcontinental Materials Exchange**

Ms. Rita Czek  
1419 CEBA  
Baton Rouge, LA 70803  
(504) 388-8650  
After reviewing the list of materials of interest to DOS, Ms. Czek determined she did not have examples or contacts that could provide examples of successful exchanges.



**Tri-County Materials Exchange (TRI-MEX)**

Mr. Doug Lien  
601 N. 20th Avenue  
St. Cloud, MN 56303  
(612) 255-6140

Mr. Lien could not provide examples. He recommended contacting MnTAP because MnTAP publishes an exchange catalog that covers statewide exchanges.

**Vermont Business Materials Exchange**

Putney Press  
Brattleboro, VT  
(802) 257-7505

The exchange is a small operation and does not have the resources to provide contacts or examples of exchanges.

**Wastelink**

Ms. Mary Malotke  
140 Wooster Pike  
Milford, OH 45150  
(513) 248-0012

Ms. Malotke said that because Wastelink is a for-profit exchange, she will not provide client information.

**Western Lake Superior Sanitary District**

Ms. Sara Benning  
2626 Courtland Street  
Duluth, MN 55806  
(218) 722-3336

Ms. Benning recommended contacting MnTAP.

**Wisconsin Department of Natural Resources (WI DNR)**

Mr. Sam Essak  
101 S. Webster Street  
P.O. Box 7921  
Madison, WI 53707  
(608) 267-9523

Mr. Essak indicated that the WIDNR no longer operates the waste exchange. He recommended contacting the Industrial Materials Exchange Service.

## IV. Examples of Successful Exchanges

The California Materials Exchange (CALMAX) and the Minnesota Technical Assistance Program Materials Exchange (MnTAP) publish examples of successful exchanges in their catalogues. In addition, individuals on the staff of the Ontario Waste Exchange were able to describe some successful exchanges with which they were familiar. Using these sources, SAIC was able to document successful exchanges of nine of the target categories including: sawdust and wood scraps; lumber; plastic pails; plastic barrels; 55 gallon drums; binders; food and textiles.

### A. POLYPROPYLENE BAGS

Tsumura International is a manufacturing and distributing company headquartered in New Jersey with a manufacturing plant in Shakopee, MN and a long history of operations in Minnesota. Tsumura produces a large line of home fragrances, bath products, children's toiletries and fine fragrances, including potpourris and bath gels. Long committed to recycling the company's plastic and steel drums, corrugated boxes and office paper, Tsumura management recently encouraged the Corrective Action Team to push recycling and waste reduction efforts even further.

A preliminary evaluation of Tsumura's waste stream by Joe Bluemke, Tsumura's recently named recycling coordinator, showed that at least 15 percent of the company's waste was large, woven polypropylene bags in which the company received potpourri botanicals. Bluemke showed this bag to David Allen of Murphy Sales, a Twin Cities packaging supplier, who promised to pass it on to his customers in an attempt to find a home for the 3,000 or so bags that Tsumura discarded each month.

When the polypropylene bags caught the eye of Anne Morse, the Southeastern Minnesota Recyclers Exchange Materials Exchange Coordinator, Prairie Moon Nursery came immediately to her mind as a likely reuser. Prairie Moon Nursery in Winona MN specializes in cultivation of native plants. Strongly committed to the conservation of resources, Prairie Moon has long reused cardboard packaging for shipping. According to Alan Wade, Prairie Moon's owner, another of their reuse successes is that "we have been able to avoid the use of any herbicides in the cultivation of our wildflowers by using commercial tarps as a mulch to destroy competing weeds."

Ms. Morse made a short phone call to Alan Wade at Prairie Moon, and one week later Jerry Schroek of Prairie Moon was in Shakopee loading the bags for use in collecting and storing wildflower seeds. Instead of paying for disposal, Tsumura now sells these woven polypropylene bags for a small fee. In fact, Joe Bluemke estimates that the company's bottom line improved by \$5,000 a year by redirecting the bags from a waste to a resource.

Pleased with the success of its first exchange, Tsumura International is pursuing waste reduction efforts and emphasizing its desire to support reuse. According to Bluemke, "Tsumura has hopes that suppliers will recognize that packaging is a concern, and will incorporate ease of reuse as a

factor in their future packaging decisions, allowing for the mutual benefits of an exchange to be experienced by others as well.”

*Minnesota Materials Exchange Catalog Fall 1995 (pages A and B)*

### **Follow-up Research**

Joe Bluemke of Tsumura International was contacted to provide additional information on the bags and the status of the exchange program. The polypropylene bags are woven, measuring approximately 20 x 36 inches. Most of the bags do not contain dyes, but those that are dyed contain water soluble dyes. Joe Bluemke could not provide additional information regarding the bag specifications because Tsumura did not establish additional requirements for the bags.

The materials exchange between Tsumura International and Prairie Moon Nursery was a one-time event. At the time it was conducted, Tsumura provided enough bags to last the nursery a long time. The nursery does not need a large quantity of bags on a regular basis. However, Joe Bluemke found another company interested in purchasing the bags. The Berg Bag company purchases the bags for 3 cents per bag. According to Rick Berg, the Berg Bag company uses the bags for sand bags, as packaging for wood chips, and the company sells some of the bags to other suppliers for a variety of uses. The exchange between Tsumura International and the Berg Bag Company has become a successful, ongoing, monthly transaction.

## **B. SAW DUST AND SMALL WOOD SCRAPS**

The B.J. Bear Grain Company, Ltd. is a small agricultural service company in Ontario, Canada. The company's nineteen employees haul by-products from generators to other companies or farmers that can use the “waste” material. The company's primary source of business is redistribution of brewery waste. For example, the B.J. Bear Grain Company buys brewery waste from local breweries, including Molson, and resells it to farmers who use the material for animal feed. The monetary value of the brewery waste varies and is dependent on the grain market.

The B.J. Bear Company also handles saw dust and other wood scrap. The company has used the services of the Ontario Waste Exchange to identify potential sources of materials that can be used by the agricultural community. Through the exchange, the B.J. Bear Company identified a company that produces wood products, such as picket fences. The wood finishing company was seeking a use for the saw dust and small wood scraps that it generates. The B.J. Bear Company arranged to pick up the saw dust and wood chips from the wood finishing company and deliver it to a central location for storage. Businesses that can use the wood waste pick up the material at the central location. One company purchases the saw dust and wood waste for use as animal bedding, and another company uses the material to produce pellets for wood stoves. Mr. Warren Jack, B.J. Bear Company representative was unable to provide financial information pertaining to the wood waste.

The B.J. Bear Company also serves as a middle-man in the distribution for reuse of vegetable waste from various grocery stores. The grocery stores pay waste management companies to

pick up the vegetable waste from the stores and deliver it to a central location. The waste management companies then pay the B.J. Bear Grain Company to pick up the waste from the central location and haul it to individual farmers. The vegetable waste is given to the farmers for use as cattle feed. Avoided disposal costs are the financial incentive for the grocery stores generating the food waste since, according to Mr. Jack, the cost to dispose of the vegetable waste in a landfill is \$90 per ton, while it costs only about \$50 per ton to provide the feed material to farmers.

Contact: Warren Jack  
B.J. Bear Grain Company, Ltd.  
P.O. Box 99  
Floradale, ON NO8 1V D  
CANADA  
(519) 669-1750

### ***Follow-Up Research***

The saw dust and small wood scraps that the B.J. Bear Company handles are primarily used for animal bedding. The other uses for these wastes are mulch, pellets for wood burning stoves, and fuel for incinerators.

According to Warren Jack, there are few specifications for the wood used in the applications listed above. The wood waste must be dry and finely ground. He could not provide specific size information, but said that the wood waste must be as fine as sawdust or perhaps a little more coarse. For his purposes, bark is not accepted.

Warren Jack clarified that the B.J. Bear Company is not in the waste collection business. Rather, the company makes most of its money by selling the material to end users. In the case of wood wastes, B.J. Bear Company established a separate arrangement with Waste Management Company. The generator pays Waste Management a fee for collection services. Waste Management then pays B.J. Bear a small fee to take the material. B.J. Bear sells the material to end users for \$5 to \$10 per cubic yard.

The B.J. Bear Company will accept any quantity of material as long as it can find an end user. Warren Jack clarified that the company does not actually provide storage services. Instead, the company rents a silo from a farmer. The silo is used as a transfer facility. The company does not charge a storage fee, but does charge a tipping fee to reload material. Warren Jack could not provide additional financial information.

### **C. STRUCTURAL LUMBER AND PLYWOOD CRATES/SHEETING**

Stan Valenta runs a one man business in Ontario, Canada. He builds and sells garden sheds, play houses and doll houses. Mr. Valenta uses the information provided by the Ontario Waste Exchange to obtain "waste" structural lumber from subcontractors and other sources. The waste exchange has benefitted both Mr. Valenta and the builders from whom he receives the material. Mr. Valenta picks up the material himself, but does not pay for the lumber he obtains.

The builders from whom he receives the lumber avoid transportation and disposal costs. Mr. Valenta could not provide estimates for the value of the material he obtains.

Contact: Stan Valenta  
Stan's Enterprises  
R.R. 1  
Waterloo, ON N2J 4GB  
CANADA  
(519) 664-2114

### ***Follow-Up Research***

Alison McNeill of the Ontario Waste Exchange (OWE) could not provide additional exchange information on structural lumber except to suggest contacting a company called ReUze Building Centre.

Bob Sawatsky of ReUze Building Centre explained that his company accepts reusable building materials on a drop-off basis, provides free pick up service for acceptable items and sells the reusable material in his retail warehouse facility located in Scarborough, Ontario. (See the following page for additional information on ReUze Building Centre.) ReUze Building Centre typically does not handle structural lumber because it is not available in the Toronto area, but the company would welcome reusable lumber if it were available. According to Bob Sawatsky, companies with structural lumber in reasonable condition should be able to sell the material rather than disposing of it.

## **D. 55 GALLON CONTAINERS**

### **1. Plastic Barrels**

The Olmstead County Public Works Department uses the Olmstead County Materials Exchange to identify sources of good used barrels for the county household hazardous waste (HHW) facility, the HHW mobile collection unit and the 13 rural recycling sheds across the county. In 1993, the public works department accepted about three hundred 55-gallon plastic barrels that had been used only once, but were headed for disposal.

Although open 55-gallon drums were readily available, closed-top, DOT-approved (H16 and H17) plastic barrels were needed. Several companies were identified by the materials exchange as being sources for the required type of barrels, including IBM Corp., St. Mary's Hospital, Crenlo, Inc., and the Olmstead County highway sign shop, and an exchange was worked out. Through these successful exchanges, the county has saved \$7,500 on barrels (300 barrels at \$25 each) and the participating companies avoided disposal costs of up to \$3,000 (300 barrels costing \$10 each to clean and crush). Olmstead County picked up the barrels from each company.

Overall, materials exchange saved businesses and Olmstead County more than \$10,000 in 1993. This was made possible by people working together and taking the initiative, through the services provided by Olmstead County Materials Exchange and on their own, to look for reuse and cost savings options rather than relying on traditional waste disposal methods.

*Minnesota Materials Exchange Catalog Winter 1994-1995, pages D and E*

## **2. Metal Drums**

The Duluth News Tribune had traditionally received colored inks in 55-gallon steel drums that were returned to the supplier. Recently, the supplier stopped taking the spent barrels. The need for an alternative market was pressing, as newspaper publishing operations require continual shipments of ink. At this point, the paper contacted the Northeast Minnesota Waste Exchange.

The program helped complete an exchange between the News Tribune and the Western Lake Superior Sanitary District (WLSSD), "rolling the barrels" into a useful purpose: to transport bulked "waste" paint for recycling. WLSSD, a public sector solid waste and municipal wastewater management organization, was excited about the opportunity to obtain the high-quality containers for paint collected in its household hazardous waste management program.

Not only did the Duluth News Tribune save money by not having to pay for management or disposal of the barrels, the sanitary district avoided the purchase cost for new containers. The combined disposal and resource savings amount to almost \$5,000 per year.

*Minnesota Materials Exchange Catalog Fall 1995 page C*

## **3. Fiberboard Drums**

The Smith and Vandiver Company of Watsonville, California, makes fine toiletries, soaps and other scented products. Robert Neal, an employee who receives and warehouses incoming stock discovered that the CALMAX catalogue could link Smith and Vandiver with new users for their 55 gallon, fiberboard shipping drums.

Some of the barrels are being used as recycling bins at Cabrillo Junior College in Santa Cruz. Others have become popular in the construction business for hauling building materials. About 60 of the bins were used by Gordy Stroud of San Jose, whose company constructs tennis courts. Mr. Stroud says that he saved an estimated \$8-\$12 per barrel, the average cost of buying new grade 2 containers. Mr. Stroud uses the barrels to ship the ash from volcanic rock to Key Biscayne, FL where he is constructing an experimental tennis court.

*CALMAX Match of the Catalog November/December, 1992*

**E. HDPE PLASTIC PAILS**

1) A new children's museum being developed this summer in Duluth's Canal Park was on the receiving end of some helpful materials exchanges. The Discovery Center will be a hands-on, interactive children's museum focusing on creative learning through art projects.

The center needed stuffing materials and plastic buckets. Gordon Humes of Granite Gear, Inc., an outdoor clothing manufacturer in the area, supplied the center with 50 pounds of excess fleece to stuff puppets. Combined savings from avoided purchase and disposal costs totaled \$150.

In addition, the center needed plastic buckets for storing collage materials and assorted art projects. With a little help from the Northeast Minnesota Waste Exchange, Old Country Foods, a food distributor in Superior, Wisconsin, graciously donated 150 excess five-gallon pails. Total savings amounted to \$80.

Both "waste" materials were constructively reused and kept from the landfill or incinerator. The net result will be some happy children and three organizations with improvements to their bottom line.

A match also was secured between Marigold Foods and Daube's Bakery in Rochester who supplied 50 five-gallon buckets to Olmstead County's HHW program.

*Minnesota Materials Exchange Catalog Fall 1995 page D*

2) Perfect Equipment Corporation manufactures automotive products, such as wheel balance weights for passenger trucks and cars, and patches and lubricants used in tire mounting and repair. The company employs 200 people and generates approximately \$20 million in sales.

A division of the Perfect Equipment Corporation recently participated in a materials exchange to fulfill the request of a customer. The customer, a large automotive repair company, requested that Perfect Equipment produce a container to trap dust released near the brake lathe during repair. The corporation developed a container with a lid that encloses the area. A hole is drilled into the lid and a vacuum is inserted to draw the dust, metal and paint chips into the container where it is trapped.

The corporation discovered that a 5 gallon pail with a lid could be used to contain the dust. While seeking a source for virgin pails, Mr. Wegehaupt came across information about the Tennessee Materials Exchange. He contacted Mr. Richard Bagallin at the exchange who informed him that the House of Thaller, a food products repackager, had hundreds of pails available. Mr. Wegehaupt contacted a representative of House of Thaller and arranged for the materials exchange. Perfect Equipment purchased 100 pails with lids from the House of Thaller for 75 cents per pail. According to Mr. Wegehaupt, a virgin pail with lid costs approximately \$4.00 to \$4.50 per pail. Perfect Equipment paid the freight cost of \$37 to ship the pails from Knoxville, where the House of Thaller is located, to LaVergne, TN. Through the exchange,

Perfect Equipment realized significant savings and the House of Thaller made money on the pails rather than having to pay for disposing of them.

Perfect Equipment plans to purchase additional pails from the House of Thaller in the future. In addition, Perfect Equipment has identified other potential uses for the used pails.

Contact: Bob Wegehaupt  
Perfect Equipment Corporation  
LaVergne, TN  
(615) 641-1950

## **F. LOOSELEAF BINDERS**

### **1. Custom Binders**

Craftwell Vinyl Specialties, Inc., employs 73 people and produces vinyl binders. The company established an "Adopt-A-Binder" program. Through this program, the company donates redundant binders (i.e., unused, over-stocked, custom-made binders) to various charitable organizations. For example, the company produced hundreds of binders for a customer launching a new marketing program. The binders were customized, containing the name of the promotional program. However, many of the binders were never used by the customer. Instead of disposing of the binders, the customer returned the unused binders to Craftwell. Craftwell used the Ontario Waste Exchange as one source of information to identify charitable organizations in need of binders. Craftwell Vinyl Specialties has donated binders to several charitable organizations, including the United Way, the Cancer Society and educational organizations.

Mike Morrow could not provide financial information pertaining to the "Adopt-A-Binder" program. Craftwell performs this service strictly as a goodwill program; the company does not receive a tax deduction or other incentives. According to Mike Morrow, the company has not audited the program and therefore he does not know its cost. The customer assumes the cost of shipping the redundant binders to Craftwell. The customer's incentive to participate in the program is to avoid costs of disposing of the redundant binders and provide a service to nonprofit organizations.

Contact: Mike Morrow  
Craftwell Vinyl Specialties, Inc.  
2820 Slough Street  
Mississauga, ON L4T 1G3, CANADA  
(905) 677-3761

### **2. Legal Case File Binders**

Briggs and Morgan, a large Metropolitan Area law firm, has used the materials exchange services of the Minnesota Technical Assistance Program (MnTAP) to help turn would-be waste into a



resource. The firm has been able to provide needed supplies for several colleges and universities in Minnesota, while at the same time freeing up storage space.

When Briggs and Morgan finalizes work for a client, the three-ring binders that held the case documentation become available. These binders were initially redistributed within the firm, but as the supply grew so did the need to find alternative management options. The former Businesses Allied to Recycled Through Exchange and Reuse (BARTER) Program began referring interested colleges to the firm about two years ago. Recently, MnTAP has referred more colleges to the firm, and placed 20 boxes of binders at Carlton College in Northfield, MN. Briggs and Morgan has placed 100 boxes of binders already this year through materials exchange. Although the process does take time, Briggs and Morgan believes that other should explore the materials exchange option since both they and colleges around Minnesota have been well served.

*Minnesota Materials Exchange Catalog Fall 1995 pages D and E*

## **G. PACKAGING MATERIALS**

### **1. Boxes and Packaging Materials**

Olmstead County helped two Rochester companies, a photography firm and a handicrafts company, complete a materials exchange in February 1991. The photography firm generates 34 cubic yards per year of clean boxes and packing material that the handicrafts company reuses, plus an additional 20 cubic yards of shredded paper that the photography firm cuts up on a paper shredder it purchased for that purpose.

As a result of the exchange, the photography firm avoids 54 cubic yards of waste and saves \$240 in disposal fees. The handicrafts company saves about \$661 per year by getting about 80 percent of its boxes and packing materials from the photography firm at no cost. The exchange is ongoing, exemplifying the goal of the materials exchange: to set up continuing relationships between firms to reuse waste.

*Minnesota Materials Exchange Catalog Winter 1994-1995 page E*

### ***Follow-Up Research***

Jack Stansfield, the Waste Reduction Coordinator of Olmstead County, Minnesota, was contacted to identify the parties involved in the exchange of packaging materials presented above. According to Jack Stansfield, Lower Photography and Wrought Iron Handicrafts, both located in Rochester, MN, exchanged the packaging materials. These companies have continued to exchange the materials since their first transaction in 1991.

Howard Lower of Lower Photography explained that his company receives a variety of boxes from the photography laboratory with which his company does business. The boxes range in size from 8" x 10" up to 36" x 24". There is minimal printing on the boxes which makes them ideal for reuse. Print generally appears on one side of the boxes. Howard Lower could not

provide additional specification information because his company has not established specifications for the boxes.

The packaging materials that Lower Photography exchanges with Wrought Iron Handicrafts arrives in the boxes it receives from the photography laboratory. The packaging material includes shredded paper, bubble wrap and styrofoam pellets. Lower photography receives enough packaging material that the company does not have to purchase any and it also supplies Wrought Iron Handicrafts with approximately 80 percent of its packing materials needs.

## **2. Plastic Peanuts**

Tom Fox owns the Handle With Care Packaging Store at 200 Pine Street in San Francisco. Part of a chain best known simply as the Packaging Stores, the company has instituted a program in 365 stores nationwide for collecting and reusing polystyrene (PS) packaging. In business just two-and-a-half years, Tom's store in San Francisco's Financial District has grown over 30 percent and does the eighth biggest volume nationwide. His store grew up reusing PS packing.

"About the time we were opening our store, the Plastic Loosefill Producers Association was starting. They're an amalgamation of firms reacting to the demand in the marketplace to help recycle these sorts of products," Tom said. "They're one of the sponsors of an 800 hotline."

In every package sent by the over 350 Handle With Care Packaging Stores, an insert is placed with the hotline number. The recipient can look up and find the closest location for reuse or recycling. Closer to home, Tom gets used packaging from a local Crabtree and Evelyn toiletries store. CALMAX exchanges add to a growing list of suppliers. "We even come to work in the morning and find bundles of packaging material at our door."

Now working on a partnership arrangement with the Building Owners & Managers Association (BOMA), the Packaging Stores in California hope to get BOMA to promote recycling of plastic products back into their businesses, using the Packaging Stores as collection points. "In San Francisco, there's a great emphasis on recycling," Tom says. "We even have a man who started a small business, going out to firms and collecting plastic peanuts. He gets them free, and we pay him less than it costs us to buy them new."

*CALMAX Match of the Catalog* November/December 1993

## **3. Paperboard Tubes**

Blueprints/Printables, in the San Francisco Bay Area, is a veritable graphic arts gallery of colorful shirts, skirts, kimonos, and vividly colored objects-appliques, earrings, and belt buckles-to name only a few. Rich in colors and varied patterns, John Basye and Barbara Hewitt print natural designs on natural fabrics (primarily cotton and silk), depicting nature or objects from nature itself. These include leaves, flowers, fish, and feathers.

Blueprints/Printables saves hundreds of cardboard tubes from the dumpster. The tubes are the cores on which their natural fabrics are wrapped. They also save at least \$100 annually in disposal fees in this ongoing CALMAX exchange. The Mother Plucker Feather Company in Hollywood pays the clothing company's shipping costs for the cores, then in turn, uses them as shipping tubes to mail their colorful plumes worldwide.

Willy Zelowitz, of The Mother Plucker Feather Company, began selling feather earrings in Westwood Village as an outdoor vendor. He has embellished feathers of all kinds for 20 years. Feathers molted by Indian peacocks come to the door of the Mother Plucker Feather Company in burlap bales, about five feet in diameter, packages that are a lot less lightweight than the CALMAX-linked mailing tubes they ultimately get remailed in.

Willy says he saves 60 cents to a dollar per tube — money he would have to spend buying mailers or other packaging material. Although he has used only 200-300 of John's fabric cores, so far, Willy expects to need a truckload in the months to come for his newest clientele.

*CALMAX Match of the Catalog May/June 1993*

## **H. TEXTILES**

### **1. Diapers**

Joan Childs of Tidee Didee Diaper Service in Sacramento CA says that more and more parents are choosing the reusable alternative and putting cloth diapers on their babies. With a diaper service, convenience and a more ecological alternative can go hand-in-hand.

Here's where CALMAX comes in: After 70-90 washings, their average wear cycle, diapers get too worn for baby wear. But, then, they make excellent rags for a variety of businesses, such as Bay Area auto dealer, Bob Benson, Hectic Household Helpers, a janitorial service in Petaluma, and Dr. Clyde Ralph, a pediatrician who has lined his examining table with Tidee Didees for more than 40 years. Other clients include auto detailers, and car washes. One of Tidee Didee's customers is an optometrist, who uses the cloths for cleaning eyeglass lenses. By extending these secondary uses, diapers can survive an average of 200-300 washings and a lot of service in-between. Tidee Didee also offers a rag service, complete with washing and return, much like their diaper service, and especially helpful for car wash customers. Through CALMAX, Joan and Bob have found new rag customers to keep those diapers spinning, not only in the dryers, but in that familiar recycling loop. One of their CALMAX connections was a mechanical engineering firm whose fine, optical-quality instruments require cotton cloths for cleaning.

Tidee Didee employs 25 workers, and their washers and dryers are ready for increased loads from expansion to new markets. And speaking of dryers, the lint from repeated loads has an amazing use—to pad the lining of caskets. Because of the sensitive nature of their business, the casket manufacturer referred to in this Match prefers to remain anonymous.

*CALMAX Match of the Catalog July/August 1993*

## 2. Fabric Scraps

Women Walking Tall is a non profit, unique project that uses stilt-walking as a vehicle for the empowerment and affirmation of women and the women's community. They offer free workshops to those who want to learn, so they don't have much of a budget.

Women Walking Tall contacted Maura Torkildson at Jeanne-Marc, a manufacturer of women's designer clothing, through CALMAX, and now they pick up scraps of fabric to use for costumes. The first exchange provided enough of one kind of fabric to piece together five matching costumes and to cover a 25-foot long snake (fake, of course) for a performance. Individual members have been sewing costumes. Women Walking Tall members perform in parades, and are in high demand for many worthy causes. These costumes will be seen by thousands of people, and WWT saved about \$900 compared to buying new fabric or ready-made costumes. Not all of the fabric is suitable for their use, so WWT passes on what they cannot use. So far, they've donated 30 garbage bags worth of fabric to the apparel design classes at Oakland High School. The students made piecework vests and sold them at their annual Art Department fundraiser. This semester they get to make clothes for themselves and will be having a fashion show at Oakland's Festival of the Lake in June. Some students have money to buy fabric, but many do not.

Oakland High is an Arts Magnet School, and the two teachers that receive the fabric are involved in art and apparel design. Jackie Begrin was nominated for the Oakland Chamber of Commerce's Educator/Advocate for the Arts Award this year. She told me that they didn't have much budget for fabric, so the fabric from Jeanne-Marc has formed the bulk of their program. Also, one of their students, Steven Vuong, has been nominated as a candidate for the Artist of the Year. He used scrap fabric from CALMAX to make an octopus skirt for a fashion show, as well as four or five other costumes.

WWT also passed on several boxes of fabric to the East Bay Heritage Quilters Association—women who make beautiful quilts for children with AIDS. Other recipients include an outpatient therapy program run by Alameda County Mental Health (scraps are used for artwork and big stretchy pieces of lycra as supports for exercises and dance therapy).

CALMAX *Match of the Catalog* January/February 1994

## I. FOOD

Triad E.R.I., owned by Mike Daley (located in Modesto, CA) is in the fertilizer/crop improvement business, but not in the usual/modern way. Mr. Daley tests and analyzes soil, crops and water for farmers then determines what nutrients are needed and where to find them. Instead of using commercial fertilizers and soil amendments, he uses mainly materials from such sources as leftover food and food by-products. Examples of these materials are eggshells, mushroom waste, and ash from biomass plants, all used as a soil amendment.

Over on the coast, Sandy Stevens and Jean-Paul Merle of C&H Sugar Company were trying to find an answer to the on-going problem of what to do with the residue from the sugar refining

process. For the last 14 years, C&H has been landfilling this residue. The cost and increasing regulatory requirements of landfilling were taking some of the sweetness out of the business.

Fortunately, the Integrated Waste Management Board and CALMAX helped them find the perfect match to meet their challenge. Their by-product turned out to be an excellent soil amendment and fertilizer—perfect for Triad E.R.I. Not only is Triad using all the material currently produced, but they'll be able to use all the material that's been landfilled for the last 23 years! It turned out to be money saving and environmentally profitable deal for both parties. This match was definitely win/win.

*CALMAX Match of the Catalog March/April 1995*

## **J. OTHER**

### **1. White Paper**

Vitex Printers in Santa Cruz has gone from famine to feast in the Getting Rid of Paper Department with a little help from CALMAX. According to Rick Pastor, Process Improvement Coordinator (who wears many other hats, including safety and recycling organizer), when the company's white paper on 2000-lb. rolls gets to within 100 to 200 feet of the core, it can no longer be fed through the machine. Yet, significant amounts of usable paper remain—former throwaways, until CALMAX.

"I've sent out three pallets of paper a week for over a year now to schools all over California," said Rick. "We offer the paper free, and only to schools—no resale allowed." And for those schools, what a find! Vitex is in the tea wrapping business. The company's primary customers are Lipton and Nestea. So think of that bright, white paper that covers a tea bag, and the nearly endless uses students might find for big rolls of it. Rick ships the paper, usually 20 rolls to a pallet, and the schools are willing to pay the freight. The other popular alternative, butcher paper usually costs \$45-50 per roll. Although the freight varies on his freebies, \$50 is about average, so California schools save in the neighborhood of \$900 for that \$50 expenditure.

According to Lyn Shirvanian, teacher at Marymount Junior High in Santa Barbara, her students, ". . . spotted it and saw banners in the making. We have all kinds of sporting events and activities where we decorate, using the paper rolls. Kids do other short-term projects with it, like painting holiday scenes. It was so inexpensive for us, we can encourage creativity without worrying about supply." One of the best ways the paper has come into play is in friendly competition, where different teams or groups choose a color or theme, decorate accordingly, and square off against their "opponents." This has virtually eliminated disciplinary problems, according to Lyn, by channeling aggression into the contests.

Perhaps the most creative use of the paper comes from the littlest kids. Lyn gave a couple of leftover rolls to her daughter's pre-school. The staff there is putting it to good use for a unique fund-raiser—holiday wrap made by the tots themselves, using a variety of media, including painting, hand prints, rollers, sponges, and squirt guns.

*CALMAX Match of the Catalog July/August 1994*

## 2. Art from Scrap

Located in a World War II vintage airplane hangar in Goleta at the Santa Barbara Airport, the Imagination Mart Materials Exchange, the facility of the Art From Scrap program, collects and warehouses materials from a huge variety of businesses for use by schools, nonprofit groups and the community at large. According to educational visionary Irene Falzone, who founded the program in her garage in 1989, community involvement has been the key to the success of this warehouse. Irene first conceived Art from Scrap while participating in a co-op nursery that used a lot of donated materials. "I just knew there were all kinds of materials being discarded that schools could benefit from . . .," she said, ". . . that making things from them could be a great way to teach kids about environmental issues. There was no link for businesses to get rid of materials, or for teachers, who needed them so badly, to access them."

Art from Scrap had two more temporary locations, thanks to the Arts Commission and a private developer, before Karen Ramsdell of the City of Santa Barbara Airport Administration pitched in to give it a hangar for a home. Her board agreed, setting the stage for a truly collaborative community project. Initial funding came from the County Arts Commission. A second source is from tipping fees, thanks to the County Solid Waste Management Resource Recovery Committee, made up of haulers and citizen representatives from each district. More recently, Art from Scrap got a grant from the Private Industry Council's Summer Challenge for Youth project, a federal program to provide jobs for teens. "I wanted to become the least dependent on grants or outside funding . . . to be as self-sufficient as possible," says Irene. According to Project Director Joanie Hollister, that was a Mission Possible! Hers and all other salaries are made from sales at the Mart, which operates on a \$50,000/year budget. Through a membership program, schools can join The Imagination Mart for \$1 per child per year, entitling each teacher to unlimited materials from their bulk area. (During the summer, camps come for field trips for \$3/child). Sales to the public and additional memberships from individuals round out their sources of income. The fee structure for memberships per year for families, teachers, PTA's, individuals and corporations range from \$20 to \$100.

According to Patrick Davis of the Arts Commission, one of the main benefactors of the relatively inexpensive program, the program serves a much bigger function in the development of future adults responsible for tomorrow's world. "Teachers were seeing less risk-taking among kids, less finding their own solutions. Instead, they'd want to be shown how to do things and were afraid to make mistakes. This program raises these materials to the level of art and gives kids a whole new way to learn and solve problems."

Besides these benefits, The Imagination Mart bridges an important gap for schools, where materials to support curricula are always in short supply. Teachers can get materials free and workshop space for up to 60 kids. They can come to the site and "turn them loose." Here's how it works: program staff take recycled materials into the classroom and show teachers how to integrate environmental education into the existing curriculum. For example, if the class is studying Native Americans, they'll bring toilet paper rolls and bits of leather for making kachina dolls and scrap wood for drums. The kids will be invited to the Imagination Mart on a field trip for up to an hour's continuation of how to make learning an art.

As a result of this and many of their other experiences, a smaller work space in the inner city called CITY Center is in the works (Community Involved Together with Youth)- a place where kids and/or their parents can drop in at night and hang out. A lot of businesses already use the Imagination Mart warehouse for retreats—managers and workers get “glued up” together and lose their inhibitions, to heighten problem-solving and teamwork. Artist residency spaces will be available at CITY Center, so that crafters can custom build playground equipment, bus benches, and other items with recycled materials from the business community. Local artists already use many Art from Scrap materials to build floats for the annual Summer Solstice Parade, a favorite community event for 20 years.

Art from Scrap keeps the program growing by working constantly with the business community, enlightening them on how their trash bins are full of valuable materials. Executives, owners, and workers are often invited to tour the Imagination Mart warehouse. Later, kids will make items from their ex-throwaways.

CALMAX *Match of the Catalog* March/April 1994

### **3. Construction Materials**

Reuse and recycling is the right thing to do, says David Winn, from Jim Silva Concrete in Sacramento. Mr. Winn used to pay more than \$1800 a month in disposal fees. Since using CALMAX, he has reduced his fees to an average of \$300 a month while keeping 30 tons of concrete, wood, and other debris out of the local landfill. “I’ve gotten a lot of leads through the catalog and the deals have worked out,” he said. Mr. Winn’s goal is to decrease his disposal fees by 70 percent. He stands to save \$1,050 a month.

While he may be lowering his bottom line at work, David enjoys the benefits of using CALMAX right from home on his PC. Although he first used CALMAX primarily by responding to ads, his company is now listed in the catalog, too.

In the table below are listed a few examples of construction-related items traded, along with landfill space and money saved last year.

Construction-Related Item	Landfill Space Saved (in tons)	Money Saved
PVC Piping	2	\$4,000
Fluorescent light ballasts	27	2,800
Scrap Wood	5	1,000
Wood Chips	1,881	6200
Used Telephone Poles	2,500	<i>undetermined</i>
Recycled Paint	13 (3,500 gallons)	<i>undetermined</i>
Pallets	197	<i>undetermined</i>
<b>TOTALS</b>	<b>2,125</b>	<b>\$13,100+</b>

CALMAX Match of the Catalog September/October 1994

***Follow-Up Research:***

A representative of the Jim Silva Concrete Company noted that the company worked with CALMAX primarily to dispose of concrete waste. Jim Silva Concrete Company did not exchange the PVC piping, fluorescent light ballasts, used telephone poles and the other materials listed in the table presented above. These materials were listed as examples of construction materials that were traded by different companies using the CALMAX catalog.



**Appendix A****Industrial Materials For Waste Exchange Research**

1. **Plastic trays** (electronic circuit board)
2. **Corrugated cores** (fabric, paper elastic, various sizes)
3. **Urea plastic flash & molded pieces** (white/brown)
4. **Clear plastic poly bags** (for reuse)
5. **Corrugated spools, cone-shaped, from yarn or thread**  
(with or without remaining thread)
6. **Small textile trimmings/cuttings** (vinyl, lycra, tricot, nylon, polyester, leather & cotton, some with buttons, zippers, stitching)
7. **Rubber latex/foam insole material trimmings/cuttings**
8. **Saw dust and small wood scraps**
9. **Structural lumber and plywood crates/sheeting** (various sizes)
10. **Clear plastic and paper trimmings mixed together**
11. **Coffee chaff**
12. **Pleating paper**
13. **Polystyrene, wood and metal picture frame molding pieces**
14. **Plastic barrels**
15. **HDPE plastic pails** (four gallon capacity)
16. **Cast iron chips and shavings**
17. **Metric or off-spec heavy duty industrial skids**
18. **Particle board & melamine**
19. **Plastic film wheels** (16" with film attached)
20. **Window and non-window envelope sections** (various sizes)
21. **Lace pieces with plastic ends and metal clamps mixed in**
22. **Looseleaf binders** (off spec, various sizes)
23. **Clear plastic (several resins) and paper trimmings mixed together**
24. **55 gallon metal drums**
25. **Hollow core doors and shelving**
26. **Packaging materials including transport packaging, pallets and crates**
27. **Leather and textiles**
28. **Metals**
29. **Glass**
30. **Food waste**
31. **Wood and paper products**