RESEARCH PROVIDED TO THE MEMBERS OF THE GOVERNOR'S SELECT COMMITTEE ON RECYCLING AND THE ENVIRONMENT

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BY: SCORE Technical Team

NOTE TO READERS:

Due to the short timeframe allocated to put this research together for the SCORE members, the SCORE technical team cautions that many of these pieces of information do not have source listings in the text. Much of this information was gathered from numerous publications provided by the state agencies of other states as well as Minnesota. Staff would be happy to provide the specific references/articles/data to members of SCORE on request.

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EXECUTIVE SUMMARY
HIERARCHY

The U.S. Environmental Protection Agency and many states have adopted solid waste management hierarchies to provide guidance to local units in decisions regarding the development of solid waste management systems and programs. Virtually every state contacted has adopted hierarchies either in statute or in plans. In total, 15 states were evaluated and the research paper contains the exact wording of their hierarchies.

All of the states essentially had identical language to the current USEPA hierarchy that has been in place since 1976, indicating that the federal guidance had worked. However, now the USEPA has proposed that the federal hierarchy be rewritten. The claim is that a rigid statement does not take in account local planning conditions when applied on a national basis.

Not one example was found of a state that has effectively implemented the policy hierarchy. Nor has any state attempted to tie funding of programs or permitting of facilities to the hierarchy. There was widespread recognition that different technologies have varying economics to develop.

A common theme among all states contacted was for a hierarchy to read:

- waste reduction/reuse
- recycling/compost
- incineration
- land disposal.

The priority given to source separated materials is explicit in only the Rhode Island language, however several of the state contacts stated that generator separation of materials was implied to be preferred. Minnesota has perhaps the most references which give a higher priority to "source separation". Reference to that priority is included in the following documentation:

- Minn. Stat. 115A.02
- County Planning and Certificate of Need Rules
- Metropolitan Council Policy Plan
- The Solid Waste Policy Report Task Force Resolutions

A hierarchy that would be consistent with existing Minnesota policy directives would be:

- waste reduction/reuse
- recycling/composting of source separated materials
- recycling/composting of mixed municipal solid waste
- incineration
- land disposal

WASTE REDUCTION
EXECUTIVE SUMMARY

ISSUE

Waste reduction is often considered to be of higher priority than any of the waste management methods, including recycling. However, waste reduction practices are relatively rare in Minnesota and elsewhere.

OTHER STATES' EXPERIENCE:

North Carolina has a technical assistance and grants program that includes source reduction as a focus. Rhode Island requires all generators of commercial solid waste and managers of multi-unit housing to prepare a plan for waste reduction and recycling. The plan must include a waste audit. Nationally, several regions have industrial waste exchanges.

Several provinces and states require certified beverage containers and/or require a specific percentage of bottles to be returnable/refillables.

Several states have proposed packaging initiatives or have established packaging councils to review and advise on waste reduction and packaging issues. Pennsylvania and Rhode Island have waste reduction procurement activities beginning at the state level.

Several states or cities have waste reduction education programs. Several states are beginning waste reduction studies to determine their best courses of action for waste reduction.

MINNESOTA'S EXPERIENCE

Minnesota has Minnesota Technical Assistance Program (MnTAP) providing technical assistance for primarily hazardous waste reduction for industrial waste generators. MnTAP also coordinates mailings from two regional waste exchanges. MPIRG, with funding from the Metropolitan Council, has established a pilot waste exchange for commercial waste. Minnesota also has an industrial waste reduction grants program.

Minnesota has a State Government Resource Recovery program which practices waste reduction on a small scale, and some local based waste reduction education is occurring in the state.

Minnesota has a packaging review law that has proved too cumbersome to implement. Last year, the Minnesota Legislature considered legislation including waste reduction provisions.

RECYCLING
EXECUTIVE SUMMARY

There are at least four main issues relating to recycling that SCORE members should consider as part of this topic:

I. Statewide "uniform" recycling goals
II. Waste composition study
III. What is economic to recycle
IV. Recycling in waste-to-energy service areas.

I. STATEWIDE "UNIFORM" RECYCLING GOALS

SCORE has indicated its preference for setting some type of statewide recycling goal for Minnesota. Many states have established "uniform" recycling goals to encourage or require counties, municipalities, or wastesheds to provide either a certain type of recycling service to residents or a specific waste abatement level. States with uniform recycling standards have been able to achieve higher levels of recycling than states without standards.

NOTE: A "goal" is defined as an interim target to be achieved, which is not enforced; a "standard" is a measurable amount/level to be achieved, which is enforced.

Certain states have uniform recycling goals which include mandatory source separation. There are two primary types of mandatory programs. One specifies service and the other establishes a source separation requirement for generators.

The United States Environmental Protection Agency (EPA) recently issued a report that presents goals and recommendations for action. It re-establishes EPA's goal of 25 percent recycling by 1992, which is much greater than the estimate of 10 percent for current national recycling levels. The 25 percent recycling goal includes "source reduction" and composting of food and yard waste.

The Metropolitan Council established a source separation standard of 16 percent by 1990, for the seven county metropolitan area including yard waste composting. The Council holds firmly to the source separation requirement and recently determined that cities using the Reuter facility to recycle could not count the mechanically separated materials recycled from Reuter toward meeting their source separation goals.

The Comprehensive Solid Waste Management Planning and Certificate of Need Rules set maximum solid wate abatement goals for Greater Minnesota counties. Waste reduction has an abatement goal of 3 percent, recycling has an abatement goal of 25 percent, and yard waste composting has an abatement goal of 12 percent by weight. No benchmarks are established for achievement of the goal.

II. WASTE COMPOSITION STUDY

One of the inherent problems in setting goals and designing programs is determining what is available in the waste stream to be recovered. A waste stream composition study involves actual hand-sorting of mixed waste, usually conducted at a landfill, into like components. Many city or county studies have been conducted. Washington is the only state to attempt a statewide composition study as a basis for setting goals. In 1985, Hennepin County prepared estimates of composition during two seasons. The Metropolitan Council recently contracted a one season waste composition study and data should be available by December, 1988. The revised and adopted solid waste facility rules require recycling facilities to describe the type, volume, prices and end markets for materials handled.

A four-season, multi-site study would be needed to get representative data for state wide estimates and would take two years. The cost could be $1.5 to $3 million, depending on the number of sites. If a waste composition study is not done, the alternative is to rely on existing studies.

III. WHAT IS ECONOMIC TO RECYCLE

If government chooses to target certain materials for recycling, economic feasibility must be considered. Although many materials are recyclable, deciding on what is economic to recycle varies by location, quality of material collected/processed and season. The theoretical concept of determining what is economically recyclable is good, but difficult in practice. Several states have taken a wide variety of approaches to tackling this dilemma: (1) Ability to market materials; (2) Determining the full cost of solid waste management; (3) Determining net processing costs (difference between the scrap value and the cost to recycle and process). Minnesota counties must evaluate whether recycling, or other management options, are "feasible and prudent". One proposal submitted to SCORE calls for all materials to receive a per ton redemption subsidy.

IV. RECYCLING IN WASTE-TO-ENERGY SERVICE AREAS

Removing recyclables from the waste stream, particularly noncombustibles, can improve the efficiency and reduce emissions from waste-to-energy and mixed waste composting facilities. Other states have used the following approaches to integrating recycling into the service areas of incinerators: (1) Permits require implementation of county planning goals; (2) Recyclables are prohibited on incinerator tipping floors; and/or (3) Permit applicants must submit recycling analyses and implementation plans.

In Minnesota, Metropolitan Counties are required to submit recycling implementation strategies to the Metropolitan Council and Greater Minnesota Counties are required to include recycling in their comprehensive waste management plans. The 1988 amendments to the Waste Management Act require the State to set policy goals for the removal of noncombustibles prior to incineration.

MARKETS
EXECUTIVE SUMMARY

ISSUE

Recycling can not exist without adequate and accessible markets. There is widespread recognition that demand for recyclables needs to be expanded, but because of the variety of vested interests, it is difficult to reach consensus on the means to do so.

SCORE believes that the state has a responsibility to provide short-term financial support to facilitate orderly and economical development of markets, and not continuous subsidies (e.g., market price supports). The state can provide long-term market support through improved: (1) Purchasing practices; (2) Research and development (e.g., investigations of new uses); (3) Technical assistance to local governments and private companies.

OTHER STATES' EXPERIENCE:

Many states have identified similar needs to improve markets. Examples of legislation and programs are reported in the research paper that cover collection, transportation, marketing and procurement components. Several states have attempted to improve the efficiency of collection, processing and transportation by directly supporting "intermediate processing facilities".

Some markets use "springboard" pricing that provides the door price plus transportation costs which allows mills to encourage consistent supplies of recyclables even from distant locations.

Forms of technical/informational assistance that exist elsewhere, but are not yet in place in Minnesota, include: (1) Computerized recycling hot-line to network collectors with truckers and markets, some with back-haul dispatch service; (2) Support for regional and/or cooperative processing and/or transportation systems; (3) Consumer shopping campaigns to "Buy Recycled!"; and (4) State government industrial development efforts.

Several states have used different types of tax incentives with varying success. Oregon has one of the oldest and most notable set of tax credit programs which, advocates claim, has been successful in increasing market capacity and therefore demand for recyclables. Other incentives include scrap materials consumption tax credits.

MINNESOTA'S EXPERIENCE

Minnesota's Market Development Program has been successful during its short 16 month history through: (1) A grant allocation for a plastics market expansion study; (2) Initiation of the plastic labeling legislation; (3) Preliminary negotiations with detinning and news-to-news mill developers; (4) Publication of the Minnesota Recycling Directory; (5) Technical assistance to the Department of Administration on recycled purchasing; and (6) Publication of the National Recycled Product Directory.

Tax incentives have a checkered history in Minnesota. After on-again, off-again starts, the only incentive left is the property tax exemption for pollution control equipment. Eleven recyclers have been found to be eligible

EXECUTIVE SUMMARY
LITTER

Litter is an evolving problem that continues to plague both the rural and urban settings. The lack of any coordinating force on either the federal or the state level adds to the uncertainty of the present volumes, expenditures and the future programming needs.

Numerous states have either longstanding or recently implemented programs to prevent or clean up the problems caused by roadside litter. The SCORE technical staff has been able to evaluate several of the nations oldest and newest litter prevention and cleanup programs. However, there exist several limitations regarding the research paper submitted to the SCORE Committee. First, the focus is on statewide litter prevention and control for roadways. There are some notable omissions of critical players in the efforts, such as local governments, park services, the private sector and others. Unauthorized dumping is only briefly explored because attempts to gather information and data was very limited.

Minnesota currently does not have a centralized litter prevention program and almost all state activities are dedicated to litter cleanup (either volunteers, community service sentences or paid employees). Minnesota Department of Transportation (MNDOT) spends approximately $1.5-2.5 million each year for litter cleanup activities depending on the available funds. Local governments spend funds on litter cleanup crews but does not centrally track expenses. Expenditures for prevention (i.e., education) related activities is diffused and extremely limited.

The recent interest in litter has caused heightened concern and involvement. Several state entities and other parties such as MNDOT, DNR, Celebrate 1990, Minnesota Beautiful, a local chapter of Keep America Beautiful and numerous task forces including SCORE are several of the currently active players on litter issues. Due to the lack of an overall organizational structure, coordination is an urgent challenge confronting Minnesota's litter reduction programs.

The following chart summarizes the information compiled on varying state programs.

Table 1

State	Container Deposit Law	Litter Tax	KAB Affiliation	Adopt A Highway	Volunteer Litter Pick-Up	Educational Ad Campaign	Formal Education Program	Grants	Penalties
California	yes	no repealed	almost	yes	no	no	no	yes - limited	$1,000 fine and/or 1 year
Nebraska	no	yes	yes	no	no	no	no	yes ($550,000/yr) 40% PR 40% Recycling 20% cleanup & admin.	$100-$500 fine (set by county)
Ohio	no	yes	yes	yes	no	no	packets to school	yes $9 million/yr	$500 and/or 60-days
Oklahoma	no	no	no	no	yes	yes	no	no	-
Texas	no	no	yes	no	yes	yes	-	no	-
Virginia	no	yes	yes	no	yes	yes	yes	$600,000/yr	$1,000 fine and/or 1/yr
Washington	no	yes	no	yes	no	no	teacher training	no	$50 fine - hotline to report litterbugs
Minnesota	no	no	no	no		no		no	$700 max. and/or 90 days

EXECUTIVE SUMMARY
PROBLEM MATERIALS

Select components of the solid waste stream can cause difficulties in the processing of the waste or can cause environmental hazards through the disposal of the waste or residuals.

The problem materials identified by SCORE fall into three categories.

1. Recycling process problem materials (multi-composite packages, plastic and moisture-resistant cardboard).

2. Collection process problem materials (tires, automobile hulks and lead-acid batteries).

3. Environmental problem materials (household batteries, paint, household hazardous waste and pesticide containers).

For the recycling process problem materials, the SCORE committee felt that it is difficult to determine the situations in which materials are not recyclable or cause problems in recycling.

Collection process problem materials such as waste tires and automobile hulks have state programs or private sector involvement that allow them to be managed. Lead acid batteries, despite a ban on disposal and the opportunity to return them to retailers, are still found in the waste stream. Currently, 1,136,000 (est.) batteries are generated each year. During the times of high scrap value, such as what is experienced now, over 80% are disposed of properly. During times with low scrap value nationally, around 66% of the batteries are managed adequately (1986). Any new strategy, such as a deposit on batteries, should address the collection of batteries that are now out of the collection/return loop and assure proper management at all times.

Environmental problem materials are a major concern expressed by SCORE. These are materials which cause problems in their disposal or in the disposal of resulting residuals. Strengthened support of the household hazardous waste collection program is indicated by the need for and effectiveness of the program. Paint is a disposal problem for painting contractors and other small businesses and is the largest volume item at household hazardous waste collections. Options need to be developed. Technical assistance and research are needed. Pesticide container disposal has been repeatedly identified by farmers and other pesticide users as a major problem. Education, research and a returnable container system are discussed. Household batteries are contributors of mercury and cadmium to the environment. New management systems, such as a deposit system, are discussed as well as accelerating the battery management research funded by LCMR this year.

The SCORE members discussed the need for research into the scope of "filters of pollutants" as problem materials. In the future, oil filters may be handled as hazardous waste, depending on recent federal actions. Water filters do not appear to be a cause of concern.

WASTE EDUCATION
EXECUTIVE SUMMARY

ISSUE: The state has important responsibilities in the educational element of the solid waste problem and should provide a state-wide focus which local governments can use to tailor their education program from. There should be a relationship between state waste progam funding and the efficacy of the local education programs and the local waste goal implementation programs. Public facilities should, in their waste handling processes, provide examples of waste reduction, recycling, and litter abatement programs.

Other states: Other states have a variety of programs which are either run from a state or local perspective and are often funded through surcharges or disposal tip fees. These progams have litter, recycling, or household hazardous waste emphases. Frequently, programs are initiated from the state, but are operated locally.

Minnesota: Minnesota has a number of existing waste education programs that encompass the areas of state-wide programs, curriculum development, and grassroots education through a focus of waste and environmental education programs. A state-wide program of significance, especially in regards to the goals of SCORE is the Waste Education Coalition. Other educational outreach programs, such as MEEB (Minnesota Environmental Education Board) and the 13 Environmental Education Councils have an important role in assisting with solid waste education in our schools.

EXECUTIVE SUMMARY
FUNDING

Minnesota's local governmental units have several mechanisms with which to raise revenue to support locally implemented recycling programs (special assessments, service charges, property tax, user fees, bonding, landfill surcharges, joint powers agreements, and sale of energy from waste management facilities). To date, many, but not all counties/cities have explored or used these options to fund waste management programs. Consistent with national trends, a large amount of the funding authority has been directed to waste-to-energy facility financing and landfill operation. State guidance/funding may be needed to allow other waste management options, such as recycling, waste reduction and composting to receive stronger emphasis (as implied by a waste management hierarchy).

Many other states have used various options to assist local governments in funding solid waste management programs (general revenue, sales surcharges/taxes, corporate taxes, tax credits and exemptions, bond funds, gross receipts taxes, packaging/products taxes, and state wide tip fee surcharges). Most of the state funding is directed to grants and loans to assist in program start-up, capital assistance and education. In almost every case, state funding is provided for a limited time, after which programs are expected to be self-supporting, or shift to local subsidies.

Some states use state funding as an incentive to direct local governments to achieve a state-wide waste management policy while allowing local design and implementation. Minnesota has been a leading advocate of this approach. There are only a few cases of states which have chosen permanent, ongoing subsidies of markets (e.g., tonnage grants), programs, etc. It appears that tax incentives (credits/exemptions) may not be the most effective way to expend state dollars to enhance recycling/waste reduction.

Product taxes/surcharges which attempt to add the cost of disposal/waste management to problem materials' purchase price are the most recent approach in funding state wide waste management programs. Packaging-based taxes have not succeeded in finding reasonable implementation/administration mechanisms to date, aside from litter taxes which are imposed on large classes of materials. Other states have imposed surtaxes on various materials with the provision that the surtax will be removed when a certain recycling goal is achieved for those materials. Five states impose surcharges on all tip fees to fund recycling and waste management efforts.

Only one state with container deposit has dedicated revenues from unredeemed deposits to a specific cause, and it is unrelated to waste management (Iowa uses some of the funds for alcohol rehabilitation). Deposits on problem materials have not been successful in the United States, mostly due to collection/storage problems and market elasticity. However, in Japan and Europe, household battery deposit systems have been implemented.

HIERARCHY
RESEARCH PAPER

DISCUSSION
HIERARCHY

State-wide Solid Waste Management Method Hierarchy

I. ISSUE: Should an explicit solid waste management hierarchy be adopted so that local planners and operators have clear direction?

II. OTHER STATE'S EXPERIENCE:

Numerous states have adopted, either by plan or statute, solid waste management hierarchies that establish definite priorities or just simply provide policy guidance. Not one of the state contacts spoke positively about the success of implementing the hierarchy.

Several examples of established hierarchies are as follows:

U.S. Environmental Protection Agency -
- o source reduction
- o recycling
- o incineration with energy recovery
- o incineration without energy recovery
- o landfilling

Source: Federal Register, Volume 41, No. 161, 8-18-1976.

The new proposed USEPA hierarchy is considerably more ambiguous. The recommendation advocates a more site specific system with the mix of management options dependent on local conditions. The USEPA proposal calls for the following two tier approach with places incineration and disposal on an equal level depending on local conditions:

1. Source reduction (including reuse of products)
2. recycling of materials (including composting).
3. and incineration (with or without energy recovery) and land disposal.

Source: USEPA: Agenda for Action, 9/1988.

Florida - Promote the reduction, recycling, reuse or treatment of solid waste, specifically including hazardous waste, in lieu of disposal of such wastes.
Source: FL Section 403.702, sec. 2 (1-G).

Iowa - The following waste management hierarchy in descending order of preference, is established as the solid waste management policy of the state:
- o Volume reduction at the source.
- o Recycling and reuse.
- o Combustion with energy recovery and refuse-derived fuel.
- o Combustion for volume reduction.
- o Disposal in sanitary landfills.

Source: IA HF 631, sec. 405, 455B.301A, p. 53.

Illinois - This Act enables the following waste management hierarchy, in descending order of preference, as State policy:

- Volume reduction
- Recycling and reuse
- Combustion with energy recovery
- Combustion for volume reduction
- Disposal in landfill facilities

Source: IL Rev. Stat. ch. 111 1/2, Sec. 7057.

Missouri - A hierarchy of resource recovery technologies:

- Reduce solid waste
- Reuse materials
- Compost yard waste such as leaves and grass clippings
- Recycle everything possible
- Incinerate whatever cannot be diverted by the previous methods and recover the energy resulting from the combustion of these materials

Landfill residuals

Source: MO State Policy Plan.

New Hampshire - This goal shall be achieved through maximum feasible waste reduction, through recycling, and through application of the best appropriate technology to design, construction, and operations of waste management facilities. This policy shall include steps to encourage reduction of packaging and the maximum possible use of products made from recycled materials by state agencies.
Source: NH Chapter 227, sec. 1.

New Jersey - It is the policy of this State to pursue a hierarchy of solid waste management techniques consisting of source reduction, recycling, resource recovery, and landfilling.
Source: NJ Title 13 and Title 52 [1].

New York - Sets hierarchy of reduction, recycling and disposal.
Source: EAF Database.

Pennsylvania - The Legislature hereby determines, declares and finds that: Waste reduction and recycling are preferable to the processing or disposal of municipal waste.
Source: PA SB 528, chap. 1, sec. 102 (a) 8.

Oregon - After consideration of technical and economic feasibility, establishes methods of managing solid waste as follows:

- Reduce amount of solid waste generated.
- To reuse materials for the purpose for which it was originally intended .
- Recycle materials that cannot be reused.
- Recover energy from solid waste that cannot be reused or recycled, so long as the resource recovery facility preserves air, land and water quality and resources.
- To dispose of solid waste which cannot be recovered, by approved landfilling or other acceptable method.

Source: OR Rev. Stat. Sec. 439.015, pp. 58-59.

Rhode Island - Declares that an integrated approach to solid waste management shall be adopted and sets the following priorities: reduction, source separation & recycling, waste processing and land disposal.
Source: EAF Database.

Texas - Preference shall be given to the following methods, to the maximum extent economically and technologically feasible and with consideration given to the appropriateness of the method to the type of solid waste material generated, treated, stored, disposed in the following order:

- Minimization of waste production
- Reuse or recycling of waste
- Treatment to destroy or reprocess the waste for the purpose of recovering energy or other beneficial resources in a manner that will not threaten public health, safety or the environment, or
- Land disposal

Source: TX Act 4477-7, sec. 3, para e, (Solid Waste Disposal Act). Similar language exists in TX subchap. O (325.561) SW Rules.

Vermont - State Solid Waste Plans shall be based on the following priorities, in descending order:

- The greatest feasible reduction in the amount of waste generation.
- Reuse and recycling of waste to reduce to the greatest extent feasible the volume remaining for processing and disposal.
- Waste processing to reduce volume necessary for disposal.
- Land disposal of residuals

Processing and disposal alternatives shall be preferred which do not foreclose the future ability of the State to reduce, reuse and recycle wastes. In determining feasibility, the Secretary shall evaluate in terms of their expected life cycle costs.
Source: Vt. Stat. tit. 10, Sec. 6601, p. 59.

Washington State - Solid waste management priorities in descending order are:

- Waste reduction
- Recycling
- Incineration, and
- Landfilling

Source: Rev. Code Wash. Sec. 70,95,010 (4), p. 59.

Wisconsin - That in the management of solid waste, wherever possible and practical, the state encourages the following priorities:

- Reduction in the amount of solid waste
- The reuse of solid waste
- The recycling of solid waste
- The composting of solid waste
- The recovery of energy from solid waste
- The land disposal of solid waste

Source: WI Stat. 144-792, Sec. 12.

III. MINNESOTA EXPERIENCE

The Waste Management Act has two references to state policy in regards to solid waste management policy:

- 115A.02 Legislative Declaration of Policy: Purposes - The goal to improve waste management in the state to serve the following purposes:
  - o Reduction in waste generated
  - o Separation and recovery of materials and energy from waste
  - o Reduction in indiscriminate dependence on disposal of waste
  - o Coordination of solid waste management among political subdivisions
  - o Orderly and deliberate development and financial security of waste facilities

- 115A.46 subd. 2 Requirements, Contents - The plans shall require the most feasible and prudent reduction of the need for and practice of land disposal of mixed municipal solid waste. The plans shall address at least waste reduction, separation, and resource recovery, and shall have objectives, immediately and over specific time periods, for reducing the land disposal of mixed municipal solid waste.

Both of these references implies that a hierarchy exists but does not statutorily provide a preference to any particular approach.

The Comprehensive Planning and Certificate of Need Rules clearly establishes a solid waste management hierarchy:

- o The abatement components are, in order of preference: waste reduction, recycling, yard waste composting, co-composting or energy recovery or both, and land disposal of residuals.

Source: Minnesota Rules (Solid Waste) 7035.1105, subd. 3, item 5.

Since the mid-70's, the Metropolitan Council Policy Plan has established a solid waste management hierarchy. The currently effective language reads:

- o Waste reduction
- o Source separation
- o Waste processing (energy recovery, volume reduction)
- o Residual management
- o Land disposal

Source: Solid Waste Management Development Guide/Policy Plan, Metropolitan Council, 1985.

The Solid Waste Task Force established as part of the State Solid Waste Policy Report process passed a resolution that calls for legislation that adopts the following hierarchy:

- Waste generation reduction
- Source separation
- Recover, recycle, reuse
- Compost biodegradeable items
- Waste-to-energy, (RDF, mass burn)/co-composting
- Land disposal

[Note: With public education as an integral part of every component]
Source: State Solid Waste Policy Report.

RECYCLING
RESEARCH PAPER

DISCUSSION
RECYCLING

I. RECYCLING GOALS

ISSUE - Many states have established "uniform" recycling goals or standards to encourage or require counties, municipalities, or wastesheds to provide either a certain type of recycling service to residents or a specific waste abatement level. In some states, the word "goal" implies a guideline or target, in others it is a "standard" or requirement with specific triggers and penalties if goals are not met. In this discussion, a "goal" is a target which is not enforced, while a "standard" is a required level of achievement which is enforced by specific triggers or penalties.

Setting a state wide recycling goal or standard can be a difficult task. Because the waste stream is not static and uniform from year to year or region to region, a reasonably accurate picture of the composition of the waste stream is needed. In addition, a standard of reasonableness must be used to determine what is really economic to recycle. Later sections of this report supply additional information on waste composition studies and determining what is economical to recycle.

If a recycling standard or goal is to be set, a definition of recycling is needed. In some states "recycling" includes waste reduction and composting. In other state it does not. In addition, a state must also determine if the recycling goal or standard is going to include recycling beyond established baseline data, or whether it is going to include recycling currently taking place.

States with uniform recycling standards have been able to achieve higher levels of recycling than states without standards. A higher level of recycling and a greater degree of state involvemet has not come without conflict. In many states where government grants and loans are available for recycling, there has been tension in the private sector over the appropriate role of the state in recycling.

For example, by necessity, if one company competes for a government grant, some other company is excluded and their business may be negatively impacted.

A. OTHER STATES

States with Uniform Recycling Goal Which Includes Mandatory Source Separation

There are two primary types of mandatory programs. One specifies service and the other establishes a source separation requirement for generators. This section discusses three states which set state wide recycling standards and require residents to source separate recyclable materials.

[illegible]

[illegible] Reduction and Recycling [illegible] This Act requires [illegible] total municipal [illegible] 25 percent at the [illegible] 25 percent. [illegible] recycling plan which [illegible] addition to [illegible] determination of a [illegible] and participation of a recycling coordinator.

[illegible] plan, the collection [illegible] the local [illegible] separation ordinances for [illegible] must establish [illegible] to refusal to [illegible].

[illegible] recycling law in [illegible] to [illegible] components [illegible] owned facility." [illegible] and townships to [illegible] recycling in [illegible] 1988 [illegible] 25 percent of the [illegible].

[illegible] requires [illegible] to [illegible] recycling in [illegible] on a staggered [illegible] of 500 employees or [illegible] to commercial [illegible].

All [illegible] will be provided with a plastic recycling bin.

[illegible], sets a [illegible] for yard waste [illegible] included in the [illegible] shock. The [illegible] comply with the [illegible] ordinance.

[illegible] to recycle eight regions of [illegible] minimum [illegible] and expanded to recycle [illegible] February 1992 [illegible] glass and metal food [illegible] beverage containers,

used crankcase oil, yard waste, dry-cell batteries, scrap tires, and plastic containers made of PET or HDPE.) After January 1, 1991, none of the specified materials shall be knowingly accepted at any landfill or waste-to-energy facility.

Municipalities with approved solid wate management plans will be required to revise their plans to incorporate a recycling plan.

Other Mandatory Programs

Other states do not mandate participation by residents. Instead they may mandate that cities, counties, or solid waste disposal facilities offer a certain type of recycling service or program. In some states, grant and loan funding is tied to implementation.

Oregon - Oregon's Recycling Opportunity Act of 1982 requires local governments to provide citizens with the opportunity to recycle through curbside collection or drop-off centers, depending on the size of the municipality. Jurisdictions with a population of 4,000 or more must provide a munimum of monthly curbside collection of source-separated recyclables for all residents. The law also requires the development of an education and promotion program by local government. There was no direct state funding for implementation of the program.

Presently, 67 of 69 cities with populations of 4,000 or more and 39 smaller towns are actively participating in curbside recycling programs. In 1982, there were only 14 such programs.

Wisconsin - According to a recent presentation by Peter Grogan of R.W. Beck at the Seventh National Recycling Congress, the state of Wisconsin's recycling legislation is similar to Oregon's in that it requires municipalities to provide residents with the opportunity to recycle. However, municipalities are only required to provide recycling drop-off centers, not curbside collection. Owners and operators of solid waste disposal sites and transfer stations must provide recycling collection centers unless a certain number already exist in the city or county. Materials accepted must include at a minimum: newspaper, aluminum, glass and plastic. Towns and cities are charged with ensuring a minimum number of drop-off facilities within the city or county.

Maryland and Pennsylvania - Peter Grogan states that these states have recently passed statewide mandatory recycling legislation. Maryland's goal is to recycle 15 percent of the state's solid waste stream within five years. The law requires development of recycling plans that reduce waste by 20 percent in the state's seven largest counties, and 15 percent in the smaller communities. Pennsylvania's Act calls for state funded local recycling collection within four years. A state wide landfill surcharge is used to finance the local recycling collection programs.

Massachusetts - Massachusetts law coordinates recycling legislation with financial incentives. A municipality must agree to pass a mandatory recycling ordinance to receive assistance for public education, technical costs or collection equipment costs. No matching grants are required.

Florida - A 1988 Law establishes a goal to reduce the amount of solid waste by 30 percent by 1994. Counties are required to initiate a recycling program by July 1, 1989 and to separate a majority of newspaper, glass, plastic bottles, and aluminum cans from the waste stream.

B. FEDERAL

The United States Environmental Protection Agency (EPA) recently issued a report entitled The Solid Waste Dilemma: An Agenda for Action. This draft report presents goals and recommendations for action by EPA, state and local government, industry and private citizens to address the municipal solid waste (MSW) management problems. The report is a result of five months of study by EPA's recently created Municipal Solid Waste Task Force.

The report establishes a goal of 25 percent recycling by 1992, which is much greater than the estimate of 10 percent for current national recycling levels. EPA further estimates that another 10 percent of the MSW is currently incinerated and the remaining 80 percent is landfilled. The 25 percent recycling goal includes "source reduction" and composting of food and yard waste. The term "municipal solid waste" as used in the report, refers primarily to residential solid waste, with some contribution from commercial, institutional and industrial sources. The percent recycling goals, therefore, are calculated by dividing the total estimated recycling amounts over the total "gross discards" of MSW materials. "Gross discards" are assumed by staff to be the sum of amounts landfilled, recycled, composted, and incinerated.

Back yard composting is included as another means of "source reduction" in the report. The report states:

> Compostable waste that must be managed by a waste handler or recycler in a central composting facility can be considered a form of recycling, whereas backyard composting can be considered reuse of a material and, therefore a type of source reduction activity. The distinction is rather arbitrary, and thus is only for the purpose of discussion.

C. MINNESOTA

The Metropolitan Area

The Metropolitan Council established a source separation standard of 16 percent by 1990, for the seven county metropolitan area in its 1985 Solid Waste Management Development Guide/Policy Plan. Yard waste composting can be included in this goal.

The Metropolitan Council has set specific source separation objectives for the Metropolitan Area as a whole and for each of the seven counties individually. The Council, through the counties, can establish service levels, facility capacities, time schedules for implementation, and it can assign specific waste responsibilities to cities and towns. The Council holds firmly to the source separation requirement. It recently determined that cities using the Reuter facility to recycle could not count the mechanically separated materials toward meeting their source separation goals.

The Council set an interim goal for 1987, of 6 percent for all seven counties except Ramsey, whose goal was set at 9 percent. As of August 15, 1988, Ramsey, Scott, Dakota and Anoka Counties were unable to achieve the goal, and these four are now looking at mandatory source separation as a way to increase recycling. Anoka and Hennepin Counties have already passed a mandatory ordinance; and Dakota and Scott Counties have proposed mandatory ordinances. This is in line with the Council's solid waste policy which suggests that counties use mandatory source separation if 1987 goals are not met.

During fiscal year 1988, the Metrpolitan Council awarded 18 solid waste grants for a total of $1,087,480.

Greater Minnesota

The Comprehensive Solid Waste Management Planning and Certificate of Need Rules (Minn. Rules 9115.0100 - .0250) set maximum solid waste abatement goals (in terms of technical and physical terms) to assist Greater Minnsota counties in analyzing the comparative cost of different waste management scenarios.

In the Rule, waste reduction has an abatement goal of 3 percent, recycling has an abatement goal of 25 percent, and yard waste composting has an abatement goal of 12 percent by weight. These goals are not used by counties or the WMB County Planning staff as specific standards for implementation. Greater Minnesota counties are directed by the Rule to evaluate recycling by judging whether it is "feasible and prudent" when compared with other waste management options. (SONAR Language)

Counties are given a great deal of autonomy by the state to design a solid waste management with a mix of waste reduction, recycling, composting, co-composting, waste-to-energy and landfilling alternatives.

Grants

Current Waste Management Board grants are structured to build on the following exisiting policies found within statute and rule:

- The counties are the primary planning and implementing bodies. Local control over planning, design and implementation (including selection of contractors) is implicit in law and rule.

- Projects funded by state general obligation bonds must be owned by a public entity that can meet the legal requirements of this financing mechanism.

- Cities can play a major role in collection of waste, recyclables and compostables.

- Private firms will often have more experience and need for efficiency than government. The Waste Management Act contains a provision for preference of private operation, if not ownership.

- State financial assistance should be limited to sharing the initial start-up costs. Long term financing should be assured by the local units of government.

These basic policies mean that county boards have the obligations and responsibilities to implement new and complex solid waste management systems. These basic policies should not be changed, but the state and local units of government need to look for opportunities to increase the involvement of the private sector, building on existing investments and expertise.

II. WASTE COMPOSITION STUDY

ISSUE

The policy direction SCORE has taken involves setting recycling goals state wide which are then met by locally designed recycling progams. One of the inherent problems in setting goals and designing programs is determining what is available in the waste stream to be recovered.

A composition study is generally done for four seasons at a number of sites that are representative of areas in the state.

A. OTHER STATES

The only state to use a waste composition study to set goals is Washington. In 1986, the Department of Ecology (DOE) conducted a state wide survey to identify the total amount of potentially recyclable materials in the post-consumer waste stream, the quantities of those materials actually being recycled and the quantities of potentially recyclable materials which are currently not being recycled. The study was limited to residential and commercial waste (some institutions and light industrial). Industrial waste generation and disposal was not addressed. In 1988, the DOE was directed to determine the best management practices for categories of solid waste in accordance with their solid waste management hierarchy. The cost of the survey and "best management practices" analysis is $600,000 of which $180,000 was used for waste stream analysis. (This cost was substantially reduced by using the Washington Conservation Corp. to sort garbage).

Missouri and Michigan have contracted for composition studies at a number of sites considered representative of the state. The information is shown below:

State	No. of sites	period	year	cost
Michigan	7 (residential waste)	four seasons	1986	$299,911
Missouri	4 (residential waste)	two seasons	1987	$ NA

Landfills in the San Francisco Bay area, California, Chicago, Illinois and Tuscon, Arizona have been the subject of an intensive waste composition analysis by "Le Projet du Garbage" directed by anthropoligist Bill Rathje. The Bureau of Applied Research in Anthropology (Arizona) excavated 99 sample units representing municipal refuse (both commercial and residential) deposited between 1977 and 1986. Every component was weighed, recorded and sorted into 20 categories. The results were suprising in that newspapers, one of the most highly recyclable items, made up 11.41 percent by weight and 14.11 percent by volume in the landfills. Disposable diapers represented 0.86 percent by weight and 1.01 percent by volume. Total fast food packaging (paper, foam, plastic) amounted to 0.26 percent by weight, 0.27 by volume.

The project also did a waste composting study (1988) which identified recyclables in household refuse for Pheonix, Arizona. The city intends to use the study to develop a recycling system.

B. FEDERAL

Franklin and Associates prepares for the Environmental Protection Agency, a national "discards" waste generation and composition study on an irregular basis. The study has been done once in 1986 (with 1984 data) and once in 1988 (with 1986 data).

C. MINNESOTA:

1979 MPCA (Barr Engineering) prepared state wide estimates of composition based on national averages projected for the State Resource Recovery Plan.

1985 Hennepin County (Pope-Reid) prepared estimates of composition for waste received at landfills and transfer stations during two seasons. The data was to be used to evaluate how recycling could be increased in the county. Later, it was used to establish a baseline recycling rate for the metropolitan area and as estimates for metro counties and waste-to-energy facilities. Cost (est.) $70,000.

1986 MPCA (Cal Recovery) prepared a two season composition analysis of wastes delivered to the Red Wing Incinerator, including residential, commercial and industrial wastes. Hazardous wastes were identified as a special sort. Cost $104,596.

1987-1988 City of Albert Lea, (Holden Farms/Ron Albrecht Associates) prepared a two season (fall, winter) sort including residential and commercial waste. Hazardous waste were identified as a special sort. Cost $85,000.

1988 Metropolitan Council (Cal Recovery) is preparing a one season waste composition study at one resource recovery site. The data is expected to be available in December. Cost (est.) $39,947.

1988 Proposed MPCA rules, (Minn. Rules 7035.2845) effective October 1988 require recycling facilities (in part) to:

- o notify the MPCA of their existence and describe the materials intended to be handled.
- o report to MPCA on the type and volume of materials handled at the facility and the final markets and locations for the materials, including the prices for materials.

The most comprehensive compostion study would be a study which sampled four seasons at 80 sites (practically one for every county) at an estimated cost of $35,000 per site which equals 2.8 million dollars and takes two years. An alternative would be to four-season sample "wastesheds" using one site each for the existing multi-county groups (12 groups, 48 counties) and sample each of the remaining counties. The estimated cost is 1.5 million dollars for this level of detail and would take two years.

If a waste composition study was not done, the option is to rely on existing composition studies (EPA, other states, Minnesota local studies) and other data.

The SCORE members should note that a state wide composition study could also assist in the development of county plans, and efficient compost and waste-to-energy facilities. It could also assist in identifying problem materials and non-combustibles and their source.

III. WHAT IS ECONOMIC TO RECYCLE

ISSUE

Although many materials are recyclable, deciding on what is economic to recycle varies by location. The basic issue becomes what materials yield the most benefit by removal from the solid waste stream.

A. What Other States Have Done

Oregon - The Recycling Opportunity Act (1983) defined recyclable materials as "any material or group of materials which can be collected and sold for recycling at a net cost equal to or less than the cost of collection and disposal of the same materials." The Department of Environmental Quality (DEQ) established by rule what is

a principal (candidate) recyclable material within each wasteshed (also established by rule). The wasteshed must show that a candidate recyclable material is not recyclable (1984). The principal recyclable materials established by rule have changed with time. The materials required vary by distance to market and population. DEQ staff believe the theoretical concept of determining what is economically recyclable is good, but difficult in practice. Also, they point out, that many communities are successfully recycling materials that are not defined as "recyclable."

New Jersey - The Mandatory Statewide Source Separation and Recycling of Solid Waste Act (1986) requires municipalities to determine what three materaials, in addition to leaves, must be recycled. The determiniation is based on, in part, the ability to market materials. A market is defined as disposition of materials "which entails a disposition cost less than the costs of transporting the recyclable materials to solid waste facilities and disposing of them as municipal solid waste.

Florida - A less direct way of determining what is economic to recycle was passed by Florida this year (1988) by a requirement for counties and municipalities to determine by June 1989 the full cost of solid waste management using a process developed by the Department of Environmental Regulation. The municipality must inform each residential and nonresidential users of their share of the full cost of solid waste management.

Washington - In determining the best management practices for each category of solid waste (as required by SHB 1694), the Department of Ecology must evaluate the costs of various management options for each category of solid waste, including a review of market availability, and take into consideration economic impact on affected parties. However, yard waste and other biodegradable materials, paper products, disposable diapers, and batteries must be considered by 1989 and metals, glass, plastics, styrofoam or rigid light weight cellular polystyrene and tires by 1990.

California - The AB 2020 refund value bill has a mandate which requires the Department of Conservation (DOC) to analyze the economic value required to be collected. If the scrap value for containers in an area is below the average statewide value enough so that the containers cannot be recovered economically, the DOC must determine the difference between the scrap value and the cost to recycle and process the container. This "processing fee" must be paid by manufacturers to ensure a reasonable return to recyclers. The DOC established a processing fee for bi-metal cans, glass bottles, and plastic containers.

B. MINNESOTA

The Waste Management Act and the Comprehensive Solid Waste Planning and Certificate of Need rules (Minn. Rules 7035.1100-7035.1115) require that Greater Minnesota counties evaluate whether it is feasible and prudent to recycle in their area and what is potentially recyclable through the solid waste plan. Those plans approved through 1988 range from 1 percent to 27 percent recycling of the solid waste stream, in Greater Minnesota according to the draft State Solid Waste Policy Report. The metropolitan area ranges from 13 to 20 percent of the solid waste stream, according to the same report.

The City of Minneapolis, in its Solid Waste Management Study (February 1988) states that "when comparing the per ton cost of recycling to the per ton cost of mass burning, it is important to note that recycling one ton of solid waste results in landfill abatement of essentially one ton; while processing one ton of waste through a mass burn facility results in abatement of only about three-fourths of one ton." This was used to set a criterion by which the economic efficiency of recycling is judged. "The maximum cost of recycling one ton of material should be set equal to the cost of mass burning one and one-third tons of waste. Thus, strictly from the standpoint of economic efficiency, the total cost per ton of recycling programs can be approximately one-third more than the cost per ton of mass burn processing."

The 1988 amendments to the Waste Management Act require the counties to reduce the amount of non-combustibles in the waste stream (for waste-to-energy service areas). There is no economic criterion specified in the statute.

Association of Multiple Material Recyclers of Greater Minnesota proposal (received by SCORE members on August 31, 1988) is similar to California's processing fee except that it proposes that all materials receive a redemption subsidy and it is by ton, not by container (suggested to be $20.00 per ton). The funds would be returned to redemption centers, processing centers and manufacturers, regardless of their location (in-state or out-of-state). The initial collector can choose how much of the subsidy to provide to consumers. This subsidy would be long-term, which conflicts with SCORE policy for short-term subsidies. In addition, the following major considerations must be evaluated:

- the subsidy is set administratively. The implication is that it should be large enough to ensure profits regardless of operating costs.
- setting a subsidy by weight will encourage recycling of relatively massive materials (e.g., metals) over lighter materials (e.g., plastic)
- materials could be imported from outside of state borders to take advantage of the subsidy.

IV. RECYCLING IN WASTE-TO-ENERGY SERVICE AREAS

ISSUE

Recycling materials, particularly noncombustibles can improve the efficiency and reduce emissions from waste-to-energy facilities.

A. WHAT OTHER STATES HAVE DONE

New Jersey - The Mandatory Recycling Act (1986) has established a 25 percent recycling goal. Waste-to-energy facility permits contain requirements to implement county planning goals. "Designated recyclables" are not allowed on incinerator tipping floors. New Jersey had one existing waste-to-energy facility and 10 in the advanced planning stages.

Connecticut - Municipalities or regions must have solid waste plans which incorporate designated recyclables into their recycling systems. By January 1, 1991, regions or municipalities will be required to ensure service is available for the designated items. As of that date, landfills and incineration facilities will be prohibited from accepting those items, unless specifically approved by the Commissioner of Environmental Protection. Connecticut has 3 waste-to-energy facilities with four in advanced planning stages.

Florida - New legislation (passed June 1988) requires the Department of Environmental Regulation to include any conditions in solid waste management facility permits that are necessary to meet the 30 percent recycling requirements established in the Act. Florida has ten existing waste-to-energy facilities and four in the advanced planning stages.

New York - All applicants for permits for landfills or resource recovery facilities must submit analyses of recycling potential and a plan for implementing recycling programs. The State Department of Environmental Conservation has conditioned permits on the concomitant development of a significant recycling program. New York has eleven existing waste-to-energy facilities and eight in the advanced planning stages.

Washington - The Department of Ecology requires an analysis of recycling and reduction options before a solid waste facility permit is issued. Washington has two existing waste-to-energy facilities and four in the advanced planning stages.

Maryland - A 1988 statute allows that any county that has waste-to-energy facilities in operation as of January 1, 1988 is allowed to take a five percent credit on the 20 percent recycling rate required by 1990.

B. MINNESOTA

Waste-to-energy status

Minnesota leads the nation in the number of existing waste-to-energy facilities with 12 (an additional three are in advanced planning stages). Greater Minnesota generates approximately 3500 TPD of solid waste. Waste-to-energy facilities in Greater Minnesota have a total permitted capacity of 1150 TPD and, therefore, have the potential to burn 33 percent of the waste generated. The 1985 Metropolitan Council Policy Plan estimates that approximately 5400 TPD is generated in the metropolitan area. Including planned facilities, the total permitted capacity of waste-to-energy facilities in the metro area is 3900 TPD. The metropolitan area has the potential to burn 72 percent of the waste generated. (Using recent waste generation figures, the potential to burn is estimated at 51%).

Recycling Status

The 1988 amendments to the Waste Management Act bans yard waste from metropolitan area facilities by 1990 and Greater Minnesota facilities by 1992. The 1988 amendments also require the state to set policy goals for the removal of noncombustibles, such as glass and metals, prior to incineration. Earlier amendments prohibited the disposal of tires (1984), lead acid batteries and oil (1987) into the municipal solid waste stream.

MARKETS
RESEARCH PAPER

MARKETS
DISCUSSION

I. ISSUE: The marketing issue is comprised of at least four components:

1. The collection of recyclable materials, which is handled by private haulers, private recyclers, community organizations, and government sponsored curbside and drop off locations.

2. The transportation of collected materials to markets, which is done by the organizations mentioned above, either in vehicles borrowed, leased, or owned by the organizations or by trucking and/or rail companies as part of their business.

3. The marketing of recyclable materials to either intermediate or end markets by the above organizations or by brokers working for those organizations.

4. The procurement, which is the purchase of products containing these recycled materials. Effective procurement programs are generally enacted by government agencies which purchase in sufficient volumes to produce major impacts on the demand for materials. Government purchases are about 20 percent of the annual GNP.

During their discussions, SCORE members decided that the state has a responsibility to provide short-term support, to facilitate an orderly and economically wise development of markets for recyclables in the state and to support these markets through purchasing practices.

Many states have identified a similar need to influence markets. Examples of legislation and programs which address each of the above market components can be found in many states.

II. OTHER STATE AND NATIONAL PROGRAMS

Collection

State programs dealing with collection address amassing larger volumes of recyclables for market rather than the house-to-house collection of materials. Solid waste haulers frequently state that the collection system for getting waste (and, potentially, recyclables) from individual households is nationally established and functioning well. States need to develop programs to channel collected materials to specific locations to increase the volume of materials to be marketed. (More information on these programs can be found in the "Marketing" section of this paper.)

Massachusetts - Will use materials recovery facilities to take in mixed recyclables, separate them and prepare them for market.

New Jersey - Camden County, New Jersey, operates an intermediate processing facility which receives materials from curbside collection programs run by local governments. The majority of the county's communities participate and are reimbursed on a pro-rated basis for materials sales if the facility makes a profit during the year. Even without reimbursement, towns participate because of the avoided landfill costs, or a fee per ton paid by the state, and the convenience of not having to market materials.

Other states: California, Rhode Island, Connecticut, and New York also use material recovery facilities to accumulate and market large volumes of recyclable materials.

Transportation

Collected recyclable materials are sometimes so distant from markets that it is prohibitively expensive to ship them to markets. One concept currently in use is the "springboard" mechanism, through which market purchasers offer subsidies or a distance-based price differential system to suppliers ("market price plus transportation costs"). This currently is common in both the steel and glass industries. This springboard allows the mills to process consistent volume with the supplemented supply from distant locations.

Wisconsin has a firm which recycles HDPE plastic also uses this system to get materials from the East and West coasts. The "springboard" is initiated by the industry using the recycled materials. Other industries using recycled materials as feedstock could be encouraged to adopt this system.

Michigan - Did a study on overcoming barriers to recycling which included transportation. The study noted that options for a state to reduce transportation barriers were limited since the federal government is the primary regulator of railroads and interstate trucking. The study suggested that one major barrier was a rate setting process which does not recognize back haul arrangements and requires rates in both directions of a trucker's route to be the same. It suggested more flexibility in arranging backhauls and exempting recyclable materials from tariff schedules and most Michigan trucking permitting requirements. A recycling hotline/ computer information service to put recyclers in touch with truckers would be an important component of this system.

Alberta, Canada - A 1987 study recommended the establishment of a backhaul dispatch service, via phone or newsletter, to "facilitate the use of backhauls for moving recyclable materials."

Other states: California and Oregon have changed their motor carrier laws to exempt recyclables hauling from tariff regulations and most permit regulations. In 1982, Wisconsin completely eliminated tariffs and permit requirements for all motor carriers, requiring only that they comply with weight limits, safety and insurance regulations.

Minnesota may wish to assist in the development of a computerized backhaul clearinghouse to assist in reducing hauling costs. This type of clearinghouse concept has been proposed in Alberta and California. New Hampshire and Montana have operating clearinghouses (the Montana clearinghouse is sponsored by a private company). The New Hampshire Resource Recovery Association, a non-profit organization with members representing cities, towns, individuals and businesses, acts as a broker and coordinator for haulers. A single staff person coordinates the brokering (cost = $40,000/year). Montana Recycling is a private firm which services recycling programs in Montana, Wyoming, Idaho and North Dakota, thus reducing onerous transportation costs in these sparsly populated areas.

Marketing

New Hampshire - The New Hampshire Resource Recovery Association (NHRRA), comprised of about 300 municipalities, businesses and individuals, operates an extensive cooperative marketing system. NHRRA serves as a broker for member recyclers, selling secondary materials to markets. It negotiates market contracts, identifies market specifications, coordinates collection routes, and provides billing and payment services. Waste paper, glass, and metals are the materials included in the program. Members of the co-op reimburse NHRRA for management costs.

Michigan - Defines regional, or cooperative, marketing as "the cooperative sale by an organization, business or government of recyclable materials collected by independent groups, firms or municipalities." It identified several variations of this marketing approach:

- An organization serving as a broker for material collected and processed by themselves and others.
- The delivery of materials collected by several smaller operations to a common site where the materials are processed, stored and then transported to markets.
- The use of shared equipment to transport recyclable materials (such as the joint use of a tractor to haul separately owned trailers to market).

The options identified for Michigan to promote cooperative marketing included:

- Fund an organization to coordinate the hauling and selling of processed materials to market.
- Assist in the development of regional processing centers.
- Provide funding for transportation equipment.
- Contract with a recycling company to expand its services into areas of the state not covered by recycling services.
- Conduct technical assistance programs training county recycling coordinators or others to negotiate market contracts for recyclers in their areas.

Advantages and disadvantages were identified for each of the above options.

Montana - A private, multi-material recycling firm, Montana Recycling, operates branches throughout Montana and Wyoming which aid

smaller organizations in marketing their materials. It identifies markets, schedules transportation, and pays smaller groups directly for their materials.

New Jersey - The New Jersey 1987 Statewide Mandatory Source Separation and Recycling Act provided for $200,000 in study grants from the General Fund for market development studies focused on recyclable materials such as tires, paper, and plastic beverage containers. In addition, counties were required to adopt recycling plans which included soliciting proposals for the processing and marketing of recyclable materials, and entering into contracts to market materials collected.

Florida - In 1988, Florida Recycling and Solid Waste Legislation required the Department of the Environment to develop information on markets for recovered materials; maintain a directory of recycling businesses, and coordinate matching materials to markets. The State Solid Waste Management Program must submit an annual report including an evaluation of markets for recycled materials.

New York - 1987 legislation established a Local Resource, Reuse and Development Program within the Department of Environmental Conservation to support the collection, intermediate processing and marketing of secondary materials. Two million dollars were allocated and the state will cover up to 75 percent of the planning, design, and implementation costs of local recycling projects.

Other states: Market surveys have been completed by New Jersey, Illinois, Connecticut and Michigan. In addition, Chicago, Portland and Berkley have done regional market surveys.

Procurement

New Jersey - The Department of Transportation was required by 1987 legislation to review and modify its specifications for highway construction to encourage the use of recycled materials such as asphalt, crumb rubber and glass.

Alberta, Canada - Alberta Transportation performed a study on the use of tire crumb rubber in pavement construction.

Florida - 1988 legislation on the use of recycled materials in construction focused on DOT. A review and revision of procurement and bid procedures is required to encourage the use of recycled materials. Demonstration projects were ordered for ground rubber/road resurfacing, combustion ash, scrap steel, glass and crumb rubber asphalt.

Maryland - Extensive procurement studies have led to state encouragement of local governments to purchase recycled paper from state warehouses at the same price as virgin materials paper.

Other States: Eighteen states and four local governments have used

their purchasing power to expand markets for recyclables by enacting laws or resolutions favoring recycled products. Effective programs establish clear definitions of recycled products and revise regular bid specifications so that recycled products can compete unimpeded in the bidding process. Some states have also incorporated preferences or set asides into their procurement programs. Preferences allow the purchaser to buy a recycled product even if it is more expensive than the lowest bid. Set asides mandate that a percentage of the total annual purchase of a material contain recycled content.

Other incentives to increase demand

Two facets of efforts to increase demand are attempts to increase consumer demand for materials made from recyclables and attempts to increase recycled materials use in manufacturing. The following programs address both of these components.

Alberta, Canada - The Alberta Waste Materials Exchange lists many materials which are reusable or recyclable, such as oils, scrap metal, plastic, carboard, etc. The Exchange publishes a bi-monthly bulletin which lists waste materials available and waste materials desired.

It is important for public institutions to set "living examples" of operational methods to recycle, reduce and compost. Many states have mandatory office paper collection programs, some which are mandated by law (Arizona, Kentucky, Iowa, Michigan, Maryland, Missouri, Oklahoma, New York, Oregon, Virginia, Wisconsin, and most recently, Minnesota). Florida expands its "living example" concept to not only state buildings, but also the judiciary, public school districts and the State University System. All are required to establish waste reduction and recycling programs. Efforts should be made to expand "living examples" in all publicly funded buildings.

In 1985, Environment Canada (a federal agency) prepared a report titled A Roadmap to Government Services Relating to Recycling which listed information on government services which impacted recycling explained how recyclers could access those services.

Pennsylvania - Is conducting a major markets study which will focus on the types of incentives that manufacturers need to increase their use of recycled materials. In addition, the Pennsylvania Resources Council, a private non-profit group, has developed an environmental shopping campaign which provides lists of products packaged in recycled and recyclable materials for merchants to display in their stores and updates to product list for consumers regularly.

Illinois - Franklin and Associates have done a study for the Illinois Department of Environment and Natural Resources on the chances of tax credits encouraging Illinois' market development.

The Illinois Department of Commerce and Community Affairs initiated a Recycling Promotion and Financial Assistance Program which included,

among other components, 75 staff experienced in economic development and marketing to tailor existing Department of Commerce and Community Affairs programs to the needs of recycling industries. This service is available to any individual or group desiring to create or expand a recycling operation.

New York - A Secondary Materials Utilization Program, with an appropriation of $2.5 million to test new uses for secondary materials and give loans to businesses to encourage adoption of reclaimed material technology, was established by 1987 legislation.

An earlier 1980 bill required the Department of Environmental Conservation to coordinate the activities of the Department of Commerce, the Energy Office, the Secretary of State's Office, the Industrial Development Agency/Urban Development Corporation and the Power Authority of the State of New York in a program of resource conservation based industrial development. (No work has been performed to date due to a lack of funds and resources.)

Michigan - A Buy Recycled Program started in 1985, encourages the general public to buy products made from recycled materials. The cost of the program is $90,000.

California - Did a study on the effects of the recycling symbol and recycled packaging materials on consumers' purchasing decisions. The study determined that people were aware of and felt favorably toward the recycling symbol. By a 4 to 1 margin, shoppers said they'd be more likely to buy a product in a recycled container and would think more favorably of a company that used recycled materials. Only half of the respondents, however, purchase products packaged in recycled materials.

Connecticut - A 1988 bill requires the Economic Development Commissioner to assist in resolving solid waste management issues and to prepare a plan (by 3/1/89) to support and promote industries that use recycled materials.

Tax Options

Corporation Business Tax Investment Tax Credit

Such credits can be the entire amount or a certain percentage of capital investment to be taken as a credit all at once or over a specified number of years. Such investment may include machinery, equipment, vehicles, and building. The credit can be used for capital purchases that either facilitate collection of recyclables or create products with recycled material.

Oregon - A Business Energy Tax Credit of 35 percent is applied against the state's corporate income tax over a five year term. The maximum project size is $5 million. The state can certify up to $40 million annually. Also, a company that installs equipment which recovers a "usable material" is eligible for a 50 percent tax credit over ten years. (Over $25 million in tax credits have been taken.)

North Carolina - Offers a tax credit for individuals and corporations to purchase recycling equipment and facilities. The credit is applied to the state income tax, corporate franchise tax and property tax.

New Jersey - A 50 percent recycling equipment tax credit can be applied against the state corporate income tax. The minimum term for the credit to be applied is five years.

Corporate Business Tax Scrap Materials Consumption Tax Credit

This credit would be calculated as a percent of the amount paid for certain secondary materials by manufacturers for use in product manufacture. The credit could be limited to material recovered and reused within the state. To promote more use of secondary materials, the credit should be limited to increases in materials used in a base year.

California - A materials consumption tax credit was proposed for 1987. The rate was 10 percent of the amount paid for recyclable secondary materials purchased between October 1, 1987 and January 1, 1993.

III. MINNESOTA'S EXPERIENCE

Collection

The Metropolitan Council prepared a study on organized solid waste collection and urged counties and communities to consider implementing organized collection for a variety of reasons, including giving the county/city the opportunity to include the collection of recyclables in the bid specifications it issued to interested haulers.

Transportation

Minnesota appears to have no regulations that would unduly affect haulers and transporters of recycled materials. Collectors and transporters of hazardous wastes must comply with regulations involving reporting and safety standards.

Marketing

In 1985, the Metropolitan Council chaired an inter-agency group formed to evaluate conditions and trends in markets for recyclable materials commonly separated from the waste stream. Using this

research, the group identified materials lacking adequate stable markets, i.e., tin cans, plastics, newspaper.

In 1987, the legislature amended the Waste Management Act to create a market development program within the WMB. Minnesota Stat. 115A.48 directs the WMB Market Development Program to work in two areas. First, to assist and encourage the development of industrial markets for recyclable materials. Second, to expand markets for products made from recyclable materials. The program was appropriated $200,000 for grants and program administration and was allocated one staff position. 1988 amendments to the WMA expanded the program's scope to specifically include compost and tire derived products. No additional appropriations were provided. One additional staff person was allocated.

Plastic was allocated $75,000 for grants. Twelve proposals for market studies were received and $35,000 was awarded to Avon Plastics. Negotiations are underway to award the remaining $40,000 in grant funds.

Plastic labeling legislation was passed in the 1988 legislative session and staff has begun writing rules which will be promulgated in the spring of 1989.

Tin can markets are being established through a two phase strategy that involves AMG Resources Inc., a detinning company from Maryland. Phase one develops a collection and transportation network and sites a shredder to process cans for delivery to an existing AMG detinning facility in Gary, Indiana. Phase two involves constructing a detinning mill when adequate supplies of tin cans can be demonstrated.

Two paper manufacturers have expressed interest in Minnesota as a site for a future recycled newsprint mill. Staff submitted a proposal offering funding to conduct feasibility work to one concern which has yet to make a final decision. Preliminary discussions have been held with the second company.

A 1988 Minnesota Recycling Directory listing markets and collection programs located in Minnesota was published by the WMB. A computerized data management system was developed to maintain listings. The directory will be updated annually.

A Regional Market Directory listing multi-state markets for recyclable materials is planned. The data base management system used for the Recycling Directory has been distributed to Midwest and Great Lakes States with the goal of instituting a common system for managing market data in an interchangeable and compatible format.

Procurement

Department of Administration - Has successfully procured some products that contain recycled content such as recycled automotive parts, corrugated boxes, paper bags, paper towels and napkins.

However, the department has been marginally successful in expanding purchases beyond products that typically contain recycled content.

In 1987, the department was directed by the legislature to conduct a test purchase and study of recycled paper which concluded that this product was available and performed well. The major purchasing barrier was price, which was between 6 and 12 percent higher than non-recycled.

In September, 1988, the department agreed to participate in a cooperative project with the WMB to purchase recycled printing and writing paper. The project calls for the WMB to publicize and secure purchasing quantities from state agencies and local government. Following the quantification of demand, the department will issue a special bid for one or two types of recycled paper.

PCA - Was directed by the WMA to review and comment on the Department of Administration bi-annual progress reports submitted to the Governor and LCWM. Four such reports have been issued.

WMB - The 1987 WMA amendments directed the WMB, through the Market Development Program, to provide technical assistance to government in purchasing recycled products. In response (to date), the WMB initiated and assisted in the test purchase of recycled paper, played a key role in developing a National Recycled Product Directory to be published in the first quarter of 1989, initiated a cooperative purchasing consortium of surrounding states to purchase recycled paper, requested the state printer to use recycled paper in all WMB printing jobs and business cards, and is assisting the DOA in developing a bid for the state purchase of recycled paper.

Tax Options

(See Appendix I also.) Minnesota has one tax credit which indirectly could foster demand for materials by reducing the cost of doing business. The property tax exemption (real and personal property) has a checkered history:

- 1977 All tax credits repealed by the legislature.
- 1978 Reinstated tax credits.
- 1980 Waste Management Act (excluded landfills from property tax exemptions).
- 1984 Tax credits repealed, only property tax exemption remains.

The property tax credit for pollution control equipment was defined to include recyclers in 1984. Since that time, 11 recyclers have been recommended by MPCA as approved for the exemption to the Department of Revenue. Of those, one was a materials "broker", the rest were collection facilities.

IV. OTHER TOPICS:

A. EDUCATION: A potential site for the research and development of new products may be the University of Minnesota. The University has, in the past played an active role in the development of new

industries (e.g., taconite and wild rice) from existing raw materials. An endowed chair, established to create new uses for recycled materials may be appropriate. Another option is a grant/gift to a higher education institution which would fund some directed applied research to assist in market development for recycled materials.

Other states have recycling research programs. New Jersey has the Center for Plastics Recycling Research, based at Rutgers University (funded by private dollars which match public funds, both state and national foundations). The budget for the center is $2.4 million/year, and has established a professorship at Rutgers. Florida also has a recycling research program funded by the state.

B. PRIVATE SECTOR PARTICIPATION:

State and local units of government need to explore means to improve the dialogue, involvement and input from the private sector in planning, development and implementation of expanded recycling systems. Government needs to recognize and cultivate the vast experience of private recycling business people. Proper planning and citizen participation will help to make our new and expanded recycling systems more efficient and self-sustaining. Advisory Committees, formalized public comment/input into decisions, private industry technical assistance to public agencies, assistance with recycling associations, consideration of the "right of first refusal" on proposed projects for existing businesses, and other options should be considered as a part of a comprehensive recycling package.

APPENDIX I.

Tax Options

Corporation business tax investment tax credit - Such credits can be the entire amount or a certain percentage of capital investment to be taken as a credit all at once or over a specified number of years. Such investment may include machinery, equipment, vehicles, and buildings. The credit can be used for capital purchases that either facilitate collection of recyclables or create products with recycled materials.

Corporate business tax scrap materials consumption tax credit - This credit would be calculated as a percent of the amount paid for certain secondary materials by manufacturers for use in product manufacture. The credit could be limited to materials recovered and reused within the state. To promote more use of secondary materials, the credit should be limited to increases in materials used in a base year.

Corporation business tax recycled products consumption tax credit - This is similar to the previous credit except it would be for products made of recycled material rather than use of scrap and thus aimed at users of material rather than manufacturers. For example, a newspaper publisher might be eligible for a credit for using recycled newsprint.

State procurement tax credit - This credit would be against the corporation business tax for companies which sell certain products with a specific recycled content to the state. The credit could be calculated as a percent of recycled material sales to the state. Such companies might be able to submit lower bids than virgin material suppliers knowing they would receive a tax credit thus promoting state purchase of such products.

Property tax recycling exemption - Land, buildings, machinery, or equipment used exclusively in recycling or in the manufacture of products from secondary materials could be exempt or partially exempt from the property tax.

Recycling equipment sales tax exemption - Capital equipment used in collection of secondary materials could be exempt from the sales tax (e.g., vehicles).

Recycled products sales and use tax exemption - Products composed of a certain percent of secondary materials and whose packages are similarly composed could be exempt from the sales tax if compliance is demonstrated to the revenue services department by the product manufacturer.

Refillable container alcoholic beverage tax - Beer sold in refillable containers could be exempt from the alcoholic beverages tax or subject to a reduced tax.

Recycling vehicle motor fuels tax refund - This refund would be for motor vehicle fuels sold for use in vehicles used exclusively to transport recyclable materials.

LITTER
RESEARCH PAPER

DISCUSSION
LITTER

I. ISSUE: Minnesota spends approximately $1.5-2.5 million annually for litter cleanup on the state level alone (i.e., this does not include county, city township or private sector expenditure). Currently, there exist no coordinated efforts to educate, abate or mitigate Minnesota's litter problem. As disposal regulations tighten and costs increase, the problem is expected to increase as it has in other states.

II. OTHER STATES EXPERIENCES:

California -

- Container redemption system enacted in 1987.
- In the final phase of receiving a state affiliation to Keep America Beautiful, Inc. (KAB) and has 12 local chapters.
- Conducts a statewide volunteer litter picking program on an annual basis. In addition, state operates litter crews through the CA Department of Transportation.
- Provides litter bags.
- Limited grant programs for litter and/or recycling activities (tied to beverage containers).
- $1,000 fine and/or 1 year in jail.

Annual operating budget for prevention and cleanup - Not available (activities split between several agencies. No direct appropriation is made for litter control.)

Nebraska -

- Litter tax adopted in 1978. Generates $550,000 per year.
- State affiliate of KAB and 15 local chapters.
- Grant program: 40% public education (KAB Clean Community system; 40% recycling (start-up, equipment, operation); 20% cleanup activities (volunteers) and administration.

Annual operating budget for prevention - $550,000 ($0.34 per capita).
State highway cleanup costs - not available.

Ohio -

- Litter tax adopted in 1981. Generates approximately $10 million.
- State affiliate of KAB and 23 local chapters.
- Established Ohio's Litter Prevention and Recycling program in 1980.
- Litter prevention packets have been supplied to 80 percent of state schools.
- Annual cleanup event, "Cleanup Ohio Week" involved 174,500 participants in 1987.
- Grants program: mandated to be 90 percent of state budget for local units to conduct litter prevention, cleanup and recycling activities.
- Number of agencies involved in litter law enforcement has more than doubled since 1982 to 76 agencies.

Annual operating budget for prevention - $10 million ($0.93 per capita)
State highway cleanup costs - $2.5 million ($0.23 per capita).

New Jersey -

- Operates an extensive $8.7 million grant program: administration and public education - 5%; grants to state parks for cleanup - 5%; grant to counties for cleanup - 10%; clean community grants to municipalities for cleanup - 80%.

Annual operating budget for prevention - $435,000 ($0.06 per capita) (note: this includes administration of all grant programs).
State highway cleanup costs - $2.9 million ($0.38 per capita).

Oklahoma -

- Concentrated effort toward litter reduction began in 1987.
- Extensive research has been conducted into litter receptacles - conclusion: yellow barrels at a slight tilt.
- Primary audiences: all residents, males 18-34, tourist.
- PR campaign utilizes the these, "Don't Lay That Trash On Oklahoma". Billboards, litter bags, bumper stickers, print ads.
- Original campaign costs $500,000 (funds provided by Department of Transportation, OK Turnpike Authority, Department of Health.
- Conducts an "adopt-a-highway" program.

Annual operating budget for prevention: $500,000 ($0.15 per capita).
State highway cleanup costs - not available.

Texas -

- Programing funded for state activities by State Department of Highways and Public Transportation.
- Surveys were conducted to determine the source and extent of the litter problem.
- Public Service Announcements (PSA's) targeted those determined to be the litter bugs (males between 18-34 years old). The statewide campaign, "Don't Mess With Texas" has received national attention and awards. Free distribution of litter bags and bumper stickers.
- Has implemented an "adopt-a-highway" program. Volunteers must cleanup an adopted section of highway at least four times per year.
- Has experienced a 54 percent decrease in litter (use a photometric index) during the first two years of the program. Recent reports indicate that litter rates have returned to the pre-statewide anti-litter campaign.
- Has a program to plant wildflowers along roadways as a beautification program. The intent is to discourage litter bugs by improving the aesthetics of roads as a deterrent mechanism.

Annual operating budget for prevention - $4 million ($0.24 per capita).
State highway cleanup costs - $24 million ($1.44 per capita).

Virginia -

- Enacted a litter tax in 1976. Generates approximately $1.5 million per year.
- State affiliate with Keep America Beautiful, Inc. (KAB) and operates a similar program called the "Virginia Plan".
- Has created a Division of Litter Control & Recycling in the Department of Waste Management.
- The grant program has been mandated in statute to channel at least 50 percent of all monies from the operating budget to local units. The system is a non-competitive program which uses a formula of population and road miles to determine the grant award to local units.
- Has implemented an "adopt-a-highway" program.
- Approximately 85 percent of the state's elementary program has utilized the litter curriculum.
- Has adopted a $1,000 fine and/or 1 year in jail for those convicted of littering.

Annual operating budget for prevention - $1.3 million ($0.22 per capita).
State highway cleanup costs - $3.1 million ($0.54 per capita).

Washington -

- Litter tax adopted in 1971. Generates $3 million annually.
- Recently completed task force recommends creation of a Waste Reduction, Recycling and Litter Control office in the WA Department of Ecology.
- 100 percent of the state's cleanup activities are conducted by the Ecology Youth Corp. during summer months in highly visible areas. Other local units (e.g., counties, cities, townships, federal units) are responsible for maintaining their respective roads.
- Provides litter bags.
- Conducts annual teacher training seminars.
- $50 fine. Maintains a hotline, "1-800-LITTERS" to allow citizens to report vehicles that are spotted in the act.

Annual operating budget for prevention - $3 million (0.67 per capita).
State highway cleanup costs - $1.9 million ($0.46 per capita).

Other Examples

New Mexico - Has a $0.30 license plate renewal charge that generates approximately $30,000 per year. These funds were initially earmarked to offset the cost of KAB certification expenses. There is a proposal to increase the charge to $1 per plate as a continuous funding source for litter programs.

Denver, Colorado; Portland, Oregon; Anchorage, Alaska - Have adopted a system that charges untarped or improperly tarped vehicles double the landfill fee when they arrive at the facility.

Definition of Terms and Concepts

"Adopt-A-Highway" program - Groups agree to sponsor and remove litter from their "adopted" section of highway. Distances can vary but the average minimum length is a 2-3 mile section. Volunteers are required to complete a roadway safety course to reduce possible accidents associated with litter picking. The sponsoring groups are required to collect litter at least twice each year.

Container deposit systems - In effect in ten states, including three states that have repealed litter tax laws. Considered by many to be the most effective litter reduction measure because it creates value (e.g., $0.10 per container) in a visible and significant portion of the litter stream: beverage containers. Deposits are a notable exception to most litter control mechanism since others are abatement, not prevention. Very effective in preventing and removing the vast majority of glass, perhaps the most dangerous component, from the litter stream.

Litter Reduction in Deposit States
(percentage)

State	Beverage Container Litter Reduction	Total Litter Reduction
Oregon	83	26
Vermont	76	35
Michigan	83	48
Maine	78	32
Iowa	79	38
Massachusetts	NA	35
New York	70	30
California	Effective Sept. 1, 1987	

Penalties (fines, jail or community service: litter pick up)) - There exist no federal guidelines. States set the penalties in two different methods:

- Statewide System (most popular method): Fines and jail terms (maximums and minimums) vary from $1,000 and/or 1 year to $50 and no jail term.
- Counties Empowered (Nebraska): Counties are responsible for setting levels. Some counties are without ordinances.

Keep America Beautiful, Inc. - A non-profit public service organization, established in 1953, dedicated to proper solid waste management techniques such as litter education and abatement efforts and recycling programs. There exists a certification process which states or communities have to complete to be accredited as a KAB chapter which includes completing a photometric index to estimate litter and hiring a full-time coordinator. The estimated financial expenditure (Note: exact amount is dependent upon local conditions) is as follows:

- Communities of 5,000-15,000 $10,000
- Communities of 50,000-75,000 $30,000
- States Not available

Current KAB membership: 13 states and 470 communities.

Litter tax - Ten states have adopted a litter tax. Six have repealed the tax. This is a tax levy on frequently littered items such as paper, beverage cans, plastics and packaging. This is a system to solely generate funds and has no demonstrated value for prevention or abatement of litter problems.

Unauthorized/promiscuous dumping - The disposal of MMSW outside the established collection system. A type of litter but distinguished by the type, amount or volume of wastes. Examples are: debris in a vacant lot or ditch; illegal disposal of MMSW prohibited items; household garbage disposed in a commercial dumpster; etc. Few studies or state experiences were discovered regarding this evolving form of litter. Other state officials and hauler have acknowledged that the higher the costs of disposal options and the more prohibition placed on the waste stream, the greater the incident rate of unauthorized dumping.

MINNESOTA EXPERIENCE

The problems regarding the disposal (e.g., dumping) of MMSW on private property will soon have legal aid in its abatement. The revised and adopted Solid Waste Facility Rules, which went into effect on October 15, 1988, prohibit the disposal of solid wastes on private property, by owner or with consent, unless issued a permit [7001.0020]. A recent survey conducted by the MPCA/WMB for the State Solid Waste Policy Report, of county activities, indicates that of the waste disposed, approximately 18 percent is self-hauled and 26 percent is self-burned.

The problems and issues surrounding unauthorized/promiscuous dumping is an evolving component of the litter stream. As solid waste disposal regulations tighten and disposal costs soar, the incidence of promiscuous dumping is expected to escalate too.

Current statute classifies littering as a misdemeanor punishable of up to $700 fine and/or up to 90 days in jail. As presented earlier to SCORE Committee (see handout from the third meeting titled: statutes with litter related references), the Minnesota Judges Association has adopted uniform fine and bail schedule for first

offenders of $60 fine with no court appearance required. The second offense is set at $200 and mandatory court appearance.

Enforcement of litter laws is a disappointing story of the struggle between enforcement priorities and burden of proof. The number of State Patrol citations for littering have declined by 31 percent over the last ten years, although the number of formal warnings has increased by 20 percent. In the spring of 1988, Governor Rudy Perpich wrote all judges requesting that litter cleanup be added to the community service punishments. No studies that investigate the deterrence relationship between fines and community service have been located.

Burden of proof has always been difficult for unauthorized dumping and litter enforcement. In the age of unauthorized dumping, this becomes a split issues: (a) household garbage often contains identifiers; and (b) difficult or non-trackable items such as couches, white goods and debris. Occasionally, cleanup costs of a large unauthorized dump can exceed the level of the fine.

Last summer activities in the Lilydale Regional Park brought enforcement problems to light. A DNR conservation officer spent three hours on a case in which he rummaged through six bags of trash left in the park and made three visits to the suspect's home before getting a confession. The resulting penalty was $20 in court costs and a stayed sentence.

Minnesota's litter prevention and cleanup efforts have historically been most active on the state level. A comprehensive school litter education curriculum has never been assembled in Minnesota. Printed information in the past has been limited to brief fact sheets and not distributed in any organized fashion. In general, expenditures for education related activities is diffused and limited. Minnesota has never attempted to "adopt" a slogan to help promote litter prevention.

The primary focus of litter picking activities have concentrated on the state highway system. Although a small percentage of the total road miles, it does receive the majority of travel. See the chart below:

Responsible Unit for Roads	Total Miles	Percent of Total System	Percent of Total Travel
State (includes state trunk and interstate system)	12,130	9%	57%
County (state aid highways)	30,040	23%	22%
County	15,270	12%	3%
Township	56,260	43%	2%

Responsible Unit for Roads	Total Miles	Percent of Total System	Percent of Total Travel
City (municpal state aid)	1,920	1%	7%
City	13,690	10%	9%
Other (forest service, military, etc.)	3,050	2%	--

Litter crews are usually comprised of volunteers, individuals required to perform community services or paid employees to help clean up the Minnesota highway system. MNDOT spends approximately $1.5-2.5 million dollars each year for litter cleanup activities, depending on budget allocations. In 1987, MNDOT spent $1.5 million and hauled away 7,200 tons of litter. Local government and the private sector spends significant funds on cleanup but no central record of expenses exists.

Minnesota Department of Transportation conducted a pilot project similar to an "adopt-a-highway" last spring. A press release went to 12 counties that solicited volunteers to pick up litter; 13 groups responded with a total of 1,100 individuals. After the cleanup day, a spot survey of the participants indicated that there was only interest in a one-time project, not for an on-going system (i.e., adopt-a-highway program).

In 1985 alone, a community based group, the Mississippi River Revival, sponsored several river cleanup events that resulted in a total of 40 tons being hauled off the river to be recycled and land disposed. The City of Ramsey, located in Anoka county, recently completed the certification process to become a local KAB chapter. Thus making Ramsey Minnesota's first local chapter. In 1984, Minnesota Beautiful, a private, non-profit organization was organized to encourage volunteerism that enhances and cleans up our natural environment. Programs have been established to encourage groups and individuals to clean up litter throughout Minnesota.

G. EDUCATION

Metropolitan Area Yard Waste Programs. Metropolitan Area counties have encouraged waste reduction in the form of leaving grass clippings on the lawn, or yard waste mulching. For example, in 1987 Hennepin County distributed 500,000 pamphlets on the turf benefits and the environmental benefits on leaving grass clippings on the lawns. The pamphlets were distributed by municipalities in water bills and by haulers in garbage bills.

TABLE 3: Summary of Active State Hazardous/Industrial Waste Reduction Programs

State	Funding/Staff	Source	Program Elements	Agency(s)	Comments
California	$1,400,000 (5)	Waste end tax General Fund	Research & development Technology demonstration	Dept. of Health Services Alternative Technology Section	Established FY85 Contract studies and demonstrations
Georgia	$250,000 (3)	General Fund EPA	Compliance assistance On-site evaluation	Environmental Protection Division and Georgia Tech	EPA funded 1983 Modeled after OSHA Consultation approach
Illinois	$1,600,000(12)	General Fund Disposal fees	Research and education Demonstration projects	Hazardous Waste Research and Information Center	Staffed in 1985 Research by Center staff
Minnesota	$230,000 (3)	General Fund[1] EPA[2]	Technical assistance Education Matching grants	MN Technical Assistance Program (Univ. of MN) Governor's Waste Management Board	Started in 1984 Matching grants Governor's Awards thru GWMB
New York	$494,000 (4)	General Fund	Technical assistance On-site consultation Waste Exchange	Envir. Facilities Corp., Industrial Materials Recycling Project	State recently proposed a Research & Development Center for Hazardous Waste
North Carolina	$650,000 (3)	General Fund EPA[2]	Information clearinghouse Technical assistance On-site consultation Matching grants Research and education	Pollution Prevention Pays Program and Board of Science and Technology	Started in 1983 Multi-media reduction Governor's Awards thru GWMB SE Waste Exchange
Pennsylvania	$200,000 (2)	General Fund[3]	Technical assistance	Pennsylvania Technical Assistance Program University of Penn.	Part of larger Industrial Extension Program

[1] Funded through Minnesota's Governor's Waste Management Board.
[2] Three year Cooperative Agreement of $100,000 each year through 1987 (N.C.) and 1989 (Minn.).
[3] Funded through Pennsylvania Department of Commerce.

Source: Reduction of Hazardous Wastes Innovative Opportunities for Industry and Government by Roger N. Schecter

PROBLEM MATERIALS
RESEARCH PAPER

DISCUSSION
PROBLEM MATERIALS

I. ISSUE: Selected components of the solid waste stream can cause difficulties in the processing of the waste or can cause environmental hazards through the disposal of the waste, ash, or residuals.

Problem materials fall into three categories:

1. Recycling process problem materials.

2. Collection process problem materials.

3. Environmental problem materials.

Examples: Recycling process problem materials identified by the Select Committee on Recycling and Environment (SCORE) committee include multi-composite aseptic packages, plastics, moisture resistant cardboard and non-recyclable glossy paper. SCORE policy direction (although not consensus) indicated that a major difficulty lies in determining in what situation are these materials not recyclable. This effort could not be attempted within the research time frame, although the available information is provided.

Collection process problem materials are materials which are recyclable and for which routine management systems have been developed, but which have problems in their collection or processing. Examples of these materials include tires, automobile hulks, white goods, and lead acid batteries.

Environmental problem materials are materials which are generally recyclable and for which no routine management system has been developed. These are materials which cause problems in their disposal, or in the disposal of resulting ash and residuals. Examples of these materials include household batteries, paint, household hazardous waste, and pesticide containers.

II. RECYCLING PROCESS MATERIALS

ISSUE: Recycling process materials are materials which may be recyclable, but cause problems in the existing systems that have been developed, or are materials which replace existing recyclables, but are not recyclable themselves. Examples of such materials include multi-composite/aseptic containers, plastics, moisture resistant cardboard and non-recyclable glossy paper.

Plastics - Discussing the impacts of plastics is particularly difficult because of the conflicting information or lack of data that exists on the different types of resins and formulations.

Degradable plastics are of much interest today. However, there is little data available on the environmental impacts of degradables, e.g., heavy metals, effectiveness of photodegradables in landfills, and plastic residuals. Further inquiry and research is needed. A study of the issues will be completed by the Rural Development Board by January, 1990, as a result of the recent Waste Management Act amendments.

Polyvinyl chloride is a recyclable plastic in mixed plastics recycling applications. There are a few companies that have pioneered methods to recycle these plastics. However, plastic recycling is complicated by technological limitations in end-use applications, contamination and collection difficulties. Debate also exists over emissions from landfills and incinerators. Resource Advisors from the Vinyl Institute have indicated emissions from polyvinyl chloride in landfills is "trivial." A paper presented by an independent consultant at the New York Solid Waste Management Conference this year, also indicates the problem is small from PVC plastics. Research on dioxin formation and PVC indicate there is no statistically significant link between the two, but such a link was not ruled out. Plastic additives contain heavy metals which are of concern in solid waste management facilities.

Non-recyclable glossy papers and multi-composite packages - Information on these materials was not readily available to staff.

Moisture resistant cardboard - The Mead Corporation of Dayton, Ohio produces a large percentage of the moisture resistant cardboard containers sold nationwide. These containers, designed to withstand high moisture environments such as refrigeration, include such consumer containers as beverage cases and some food product packaging. The inclusion of this material in the waste paper stream is considered a contaiminant by waste paper processors due to the handling and processing difficulties it presents. Some moisture resistant containers are bi-materials, compounding the ability of existing facilities to recycle them. Apparently some recycling of this material does occur, but is almost exclusively from industrial scrap.

Moisture resistant cardboard becomes a problem waste when it is included in waste paper recovery systems, unless segregated into its own paper grade. The amounts, extent or seasonality of this contaminant has not been quantified. This material does not present problems for incinerators or landfills, except for its contribution to total volumes.

III. COLLECTION PROCESS MATERIALS
(tires, automobile hulks, lead acid batteries and white goods)

OTHER STATES' EXPERIENCE:

Automobile hulks - According to the Automotive Dismantler and Recyclers Association, about 7.5 million cars and 1.5 million trucks go "out of service" each year nationally. Over 90 percent of these vehicles are either processed by automobile and truck recyclers or sold directly to scrap metal processors.

Maryland - The Maryland Energy Office and Maryland Auto and Truck Recyclers Association, Inc. have established a program to promote the energy conservation benefits of automobile and truck recycling. This program is the first of its kind in the nation.

Lead acid batteries - Batteries are replaced on an average of every three to five years. Due to the potential of lead contaminated sulfuric acide leaking from a battery reaching ground water, there is environmental concern regarding their improper disposal. Although lead batteries are recyclable, their recycling is tied to the price of lead. Lead prices were down and lead battery recycling rates decreased in 1986. Now lead prices are high and recycling has increased significantly.

Connecticut - Requires batteries to be recycled. Cannot be landfilled or incinerated after January 1, 1991.

Florida - Disposal in landfills prohibited since 1983. The 1988 Solid Waste Bill specifically prohibits the disposal of spent lead acid batteries in any landfill or "waste-to-energy" facility after January 1, 1989. This new legislation also states that all lead acid battery retailers must accept used lead acid batteries as trade-ins for new ones.

Iowa - The Groundwater Protection Act sets forth a hierarchy for the various methods of disposal of solid waste. In order for a landfill to receive a permit they must demonstrate that they observe this hierarchy. If a landfill operator receives a spent battery, it must be taken to be recycled.

Rhode Island - Battery Deposit and Control Act was recently amended by the state legislature. Instead of a $5.00 deposit, there is now a $5.00 fee on all new batteries purchased unless a spent battery is traded in. A retailer also cannot refuse to accept a spent battery. Implementation date by January 1, 1989.

New York - Proposal in legislature that places a $5.00 deposit on lead acid batteries. It also places a 25 cent deposit on all dry cell batteries.

Tires - Waste tires present problems due to storage and the ability of waste tire processing facilities to address generation rates.

Connecticut - Scrap tires are identified as "future recyclables" under the mandatory program, not "designated recyclables" required to be recycled.

Florida - Recently enacted legislation prohibits disposal of tires in landfills by July 1, 1989, unless cut into small parts. A fee of 50 cents is assessed on each new tire sold in 1989; $1.00 after 1989.

Massachusetts - Shredded tires are approved for disposal in landfills.

Michigan - Retreaded tires are promoted in their "Buy Recycled" campaign.

Washington - Waste tire advisory committee established. Tire recycling program provides funds for removal of tires and recycling. Tire recycling account (1985) based on 0.12 percent tax on gross receipts of new tire purchases.

White goods - Refers to bulky household appliances such as air conditioners, refrigerators, stoves, washers and dryers, dishwashers and like items. Traditionally, these items were landfilled, refurbished or reprocessed for scrap depending on such variables as condition, scrap prices and distance to markets. White goods present problems due to their bulk and their possible containment of poly-chlorinated biphenyls (PCBs), a hazardous waste. The Institute of Scrap Recycling Industries (ISRI) has distributed an alert list of materials that contain an element of risk for scrap metal processors. White goods were included because of their possible PCB content.

New Hampshire - The New Hampshire Resource Recovery Association developed the Cooperative Scrap Metal Marketing Program to solve the problem of recycling scrap metal from landfills and transfer stations. The Association encourage the separation of stored scrap into separate grades that can be baled out and sold. Scrap metal containers are hired by the association to process, bale and transport the baled scrap to market. Municipalities pay for the baling and transportation to market. Revenues from the sale of scrap is deducted from the processing charges. Some municipalities have realized a net profit from their scrap metal. New Hampshire's program has proven to be a successful method of recycling, even when scrap prices are low.

MINNESOTA EXPERIENCE:

Automobile hulks - From 1972 to 1979, Minnesota had a program to deal with abandoned automobiles. In the early 1970's, abandoned automobile accumulations may have reached 200,000 in Minnesota and the existing private recycling system was unable to deal with the problem (legal impediments, shift in steel processing, low scrap prices). The program provided 100 percent grant dollars for roadside inventories, mail, aerial surveys, and collection of the identified vehicle. By 1980 the dollars spent on locating vehicles far outweighed the number of vehicles recovered and the program was allowed to expire at the end of the 1981 fiscal year.

The U.S. Environmental Protection Agency believes that seven percent of all vehicles are annually retired. Of those, ten percent are abandoned.

North Star Steel in St. Paul is the end market for most of Minnesota's automobiles. They receive about 200,000 automobiles annually of which roughly about 80 percent are from Minnesota.

Spent lead acid batteries - Estimates are that 1,136,000 batteries are generated annually. Most of those batteries are disposed of (recycled when the market price for lead is good). For example, in 1986 the market price was 25 to 50 cents a battery. Nationally, only 66 percent of the batteries were disposed of properly. Now, because of the high scrap value ($1.00 or more) over 80 percent are disposed of properly. Minnesota has good access to markets because a smelter is located in-state. The smelter receives batteries from the surrounding five-state region.

After January 1 of this year, disposal of lead acid batteries was prohibited in household trash and sanitary landfills. Retailers who sell lead acid batteries must accept used lead acid batteries from customers.

Waste tires - Minnesota waste tire statistics are:

- 5 million tires in waste tire dumps.
- annual generation rate 3.5 to million tires.
- 1.5 million tires in storage in excess of reprocessing capacity.
- tires are prohibited from land disposal (1985).

Minnesota has three waste tire processors.

- Rubber Research Elastomerics (RRE) Inc., Tire Cycle Division, Babbitt. RRE began processing waste tires in March, 1987. Tire Cycle produces a product with characteristics of virgin rubber by shredding and grinding the tires and then adding a synthetic polymer. The product can be used in rubber and plastics molding industries. Capacity is 3 million tires annually; presently processing 400,000 (approximately) annually. (State funding contribution, $489,647.)

- SPM Group, Inc., Preston. SPM operates a waste tire shredding facility since May, 1988. The facility shreds about 70,000 waste tires per month. The product is marketed as a fuel supplement in Wisconsin.

- Whicom operates a waste tire shredding facility. Whicom began operations in March, 1988. The process reduces waste tires to a rough chip form for use in road construction. Whicom shreds 1 million tires annually.

The tire program is funded by motor vehicle transfer fund. Funds are used for cleanup of stock piles, loans to processing facilities, grants to markets, grants for collection, and a hotline.

White goods - Minnesota's management of white goods consists largely of refurbishment and reprocessing for scrap, especially in the metropolitan area. Some rural counties stockpile or landfill their white goods. Twin Cities Used Appliance (TCUA) based in the metro area, is the largest handler of white goods in the state. They handle from 30,000 to 40,000 appliances each year for refurbishment and resale, or processing for scrap.

TCUA refurbishes for resale approximately 20 percent of the appliances they handle, processing the remainder for scrap. The major market for the appliance scrap is North Star Steel. North Star Steel has requirements for removal of PCB-bearing capacitors prior to shredding. Only three appliance dealers are able to meet those requirements: A-Plus Appliance Service, J.R. Appliance and TCUA.

TCUA has contracts with Sears, Best Buy and other retailers to pick up used appliances for their customers. In addition, TCUA accepts curbside collection for a fee. Scott County has contracted with TCUA to pick up appliances at its Louisville landfill. TCUA is also expecting contracts with Chisago and Isanti counties, is working with Morrison County and hauls scrap appliances from as far as Duluth, St. Cloud and Fairmont.

In addition to these activities, a shredder operation in Thunder Bay, Ontario accepts white goods from northern Minnesota and a mobile recycler from South Dakota handles many white goods in southwestern Minnesota.

White goods are valuable as recyclable scrap only when "clean" (i.e., capacitors removed and item intact, not compacted). Resource advisors have suggested white goods should be banned from disposal in municipal solid waste.

IV. ENVIRONMENTAL PROBLEM MATERIALS

A. HOUSEHOLD HAZARDOUS WASTE

OTHER STATES:

Since the first municipal household hazardous waste (HHW) collection program in 1981, a total of 850 programs in 42 states had been undertaken by the end of 1987, and many more have been conducted since then. These programs run the gamut from locally organized and funded single day collection projects, to permanent collection facilities servicing major metropolitan areas. A collection project is a one or two day event when householders can bring unwanted hazardous substances to a central location where it is packaged and shipped to a hazardous waste disposal facility. A permanent program usually involves either a regular series of one-day collection projects, or on-going collection of HHW.

HHW education programs also vary, from being essentially advertising campaigns for the collection days, to broad-based waste reduction/education programs which seek to replace collection as the ultimate solution. Funding sources range from totally state sponsored (i.e., Florida) to a state permit fee (i.e.,Iowa) to multiple government agencies (i.e., Seattle) to industry funding (i.e., Dow Chemical) to totally locally funded (i.e., San Francisco). This is a dynamic, grass roots program which, as a result, is still in the process of developing various options.

FEDERAL

Essentially no federal involvement, other than the annual conference that EPA sponsors.

MINNESOTA

Since the fall of 1985, the MPCA has been conducting a household hazardous waste (HHW) collection and education program. From 1985 through 1987, it consisted of a pilot project, funded through the Legislative Commission on Minnesota Resources (LCMR), during which a total of 14 collection projects were conducted under the auspices of the MPCA and co-sponsored by local units of government or citizen groups.

A primary result of the pilot project was the HHW legislation, passed in 1987, which authorized the MPCA to set up a permanent HHW program. The goals of this program are as follows:

- To enable every citizen in the State to manage their HHW in a manner which protects public health and the environment.

- To provide a management means which is reasonably accessible to the average citizen, both logistically and financially, and which can handle both wastes which are extremely hazardous but irregularly generated, as well as less hazardous waste generated on a continuous basis.

- To provide the means and information required to assist citizens in reducing the amount of waste they generate.

The MPCA's HHW program works to accomplish these goals by providing two major services:

- Development and distribution of educational and technical materials, including general public information and information targeted towards specific audiences, such as children. The program has also begun to establish both centralized and decentralized hotlines around the state to answer citizen's questions about proper disposal.

- Development and operation of HHW collection sites, including support for one-day collection projects, as well as the establishment of permanent, on-going collection facilities.

Ten one-day collection projects were held during F.Y. '88, and a total of 14 are planned for F.Y. '89. All of these projects were funded on a 50/50 match for disposal costs with local units of government. The local organizers are responsible for 100 percent of the publicity and siting costs. In addition, three permanent collection facilities have already been sited, and one more will be established in F.Y. '89, with the same cost-sharing arrangements. Permanent collection sites have provided a wide range of services for the participating counties, including an education program, a local telephone hotline, as well as the on-going collection of wastes.

While costs have been minimized as much as possible, with hazardous waste disposal prices averaging $350 per drum, these necessary collection projects will continue to require significant funding levels.

At current funding levels the MPCA's program cannot begin to achieve its goals of reasonably convenient access to services for Minnesota citizens. The present demand for public education activities, collection projects and permanent facilities far exceeds the program's abilities. Lack of staff has severely impinged on the program's ability to maintain educational efforts in collection communities. Lack of funds has required the program to limit permanent collection projects to small population communities.

Some of the larger metro counties and the Western Lake Superior Sanitary District (WLSSD) have also developed HHW programs. Hennepin County has held two county-wide collection projects, in the falls of 1987 and 1988; response was overwhelming, with about 4,000 participants in 1987 and over 6,000 in 1988. Within the next two

years, Hennepin County is planning to site special HHW drop-off points at transfer stations. They are also working on an innovative research program, funded by the Urban Consortium, concerning processing alternatives for collected HHW. Dakota County has also sponsored or co-sponsored a number of collection projects. They have developed a long term implementation plan which proposed the establishment of permanent collection facilities and the development of an education program, in cooperation with the MPCA. Ramsey and Washington Counties jointly conducted a research project (Pope Reid, consultants) on the efforts of HHW on their solid waste facilities. In cooperation with the MPCA, Ramsey County co-sponsored two collection programs in 1988, and depending of budget decisions, plan on doing more in the future. WLSSD, which has been operating on-going collection of HHW for almost two years, has serviced over 2,700 households. They are also working with the MPCA to expand their services both within their area and to surrounding counties.

The situation in the metro counties, as in other programs in Minnesota and around the country, is in a very dynamic and creative stage, but currently all efforts are purely voluntary and dependent on the financial resources of the county and the depth of the planning process in the individual counties. Those counties which have solid waste facilities within their boundaries, and which are more concerned about the toxicity of the wastestream, have been the leaders in addressing the HHW problems. Counties without such facilities have by and large been able to ignore their contribution and responsibility. At a minimum, preventive education programs need to be established metro-wide. For many wastes, collection projects are the only proper management methods, and some level of collection service needs to be established in each county.

The 1988 amendments to the Waste Management Act require county solid waste plans to meet the goal of reducing toxicity of ash and residuals. The outstate counties should address this legislative requirement by specifically including in their plan amendments a description of how HHW will be managed in their county.

The 1987 amendments to the Waste Management Act laid out management standards for collected household hazardous waste, namely that such wastes must be managed in accordance with hazardous waste generator standards. By implication, any HHW that solid waste incinerators or other facilities separate out from the normal wastestream should also be managed by such standards. Further, permit applications and renewals for solid waste incinerators must state how the applicant will achieve the goals of reducing the toxicity of ash and residuals. The MPCA should establish guidelines for these facilities to use in managing these wastes.

B. WASTE PAINT DISPOSAL

OTHER STATES:

The problem of waste paint disposal is addressed in this state and others through one of two programs: RCRA programs, which manage the hazardous paint wastes produced by industry and commercial sources; and household hazardous waste programs, which manage the paint wastes produced by citizens within the service areas. HHW collection in other states have been working to develop alternative ways of managing waste paint, including waste minimization through education, setting up useable paint exchanges (with either a central distribution point or through referral), and utilizing "recycling" or remanufacturer processes in cooperation with local paint producers. All of these efforts have been experimental in nature.

FEDERAL

No special federal programs that we are aware of. RCRA programs have developed waste minimization efforts focussing on paint.

MINNESOTA

Waste paint, either water or solvent-based, presents a ubiquitous and perplexing waste disposal problem in Minnesota. Solvent based paints are hazardous both because of the flammability levels of the solvents and because of the metals used as pigments. While latex (water based) paint is usually considered to be nonhazardous, it can sometimes contain elevated levels of mercury. Furthermore, because of its liquid nature, it is prohibited from landfills. At the same time, many sewage treatment agencies don't want latex paint to be sewered because it isn't easily degradable in large concentrations.

In addition to the technical problems with waste paint disposal, paint is generated widely. The MPCA's HHW project has determined that the average household has about ten cans of waste paint in storage, containing about four gallons. Approximately 60 percent of the wastes brought into HHW collection projects is paint; almost $400,000 will be spent in the next two years just to dispose of this collected paint.

The HHW program has attempted to deal with this flood of paint waste through two major efforts:

1. Paint exchanges: In certain communities, special exchange days are organized, when people who have useable excess paint can drop off their paint for people or organizations who want to use it. This option, while promising, hasn't been tried yet on any large scale.

2. Education: Fact sheets and news articles have been developed, informing householders to dry out their waste paint and dispose of the residual with the solid waste. While this interim solution provides an immediate answer, it is one which is difficult for many people to carry out and furthermore is of dubious efficacy.

Industries and businesses also generate tremendous volumes of waste paint. Each year, businesses report the generation of about 1 million gallons to the MPCA. Almost all of this is from the large generators: small generators, such as painting contractors and auto body shops, simply don't report their wastes. For instance, of the million gallons reported, only 2,400 was from painting contractors.

Many questions still remain concerning how waste paint should be managed. Some of the options which need further exploration include:

- Waste reduction options for small businesses.
- Waste exchange possibilities for businesses and households.
- Reformulation/remanufacture/processing possibilities for the paint collected at HHW collection projects.
- Conditions under which sewering of nonhazardous latex paint is a viable option.
- Conditions under which solid waste incineration or landfilling after drying may be appropriate for households.

C. PESTICIDE CONTAINERS

Pesticide container deposit has repeatedly been identified by farmers and other pesticide users as a major problem. This problem falls into four main issues: container rinsing; container collection; container recycling/disposal; and waste minimization.

OTHER STATES

Maine - Empty pesticide container deposit and return program for restricted use pesticides administered by the state. Enacted in 1983, program began in 1985. All containers must have stickers. For less than 30 gallons capacity, the deposit is $5.00 per container. For nonrefillable containers, 30 gallons capacity and over the deposit is $10.00 per container. The containers must be triple-rinsed, or an affidavit signed before return.

Oregon - Empty pesticide container return program for restricted use pesticides. Coordinated by the fertilizer and chemical dealers association. Two collections are held each year at multiple sites, each lasting two to three days. There is no charge. Since initiating the program in 1984, the program has collected 50,000 containers. An education program on proper container management has resulted in only 300 containers refused because of failure to follow triple-rinse procedures.

Iowa - Levies tax of 1/10 of one percent on all pesticides sold. Money is used for testing of rural water supplies, research, and development on how to protect rural water supplies and medical/health risk studies on pesticide use and disposal.

MINNESOTA

Minnesota - Amendments to the Waste Management Act authorized the Minnesota Pollution Control Agency to implement a pilot program to determine the current management methods and extent of the problem, to experiment with collection systems for waste pesticides, and to provide information to the agricultural community and other pesticide users regarding waste pesticide management. The legislation includes an appropriation of $215,800 for the biennium. Four activities are being completed.

- Statewide farmer survey, agricultural and forestry industry survey and collection participant survey. These determined waste ownership patterns, willingness to participate in collections, awareness of hazards, effectiveness of publicity, and other factors.

- Pilot collections. Collection of waste pesticides at farms or farm hub cities was conducted.

- Information and educational materials. On pesticide storage, management, and wise purchasing.

Recommendations will be forthcoming on management of waste pesticides (not containers) in December, 1988.

A 1988 study was completed by the Minnesota Department of Agriculture on the disposal of pesticide containers. The study was handed out at the August 28, 1988, meeting of the Select Committee on Recycling Environment (SCORE). The study was based on a survey of farmers, users, and dealers. The survey and review of information from other states indicated a need for additional action. Two of the Minnesota Department of Agriculture's major recommendations are:

- "Additional efforts...should be conducted...to improve and design new and effective educational programs to address the empty pesticide container issue in a practical and environmentally sound manner."

- "The Minnesota Department of Agriculture should...further evaluate the pesticide container issue and develop recommendations to manage pesticide container disposal."

D. HOUSEHOLD BATTERIES

When household batteries become part of the waste stream, they represent a threat to human health and the environment. Both cylinder shaped batteries and button batteries contain toxic metals which impact the environment when wastes are managed by MSW composting, waste-to-energy, or land disposal systems. There is therefore the need to develop more environmentally sound management systems which remove or prevent household batteries from entering the waste stream.

Batteries contain a number of toxic metals, including mercury, nickel, cadmium, silver oxide, and lithium. This type of battery is commonly used in toys, watches, calculators, hearing aids, and other small devices. Cylinder-shaped batteries contain alkaline and manganese, which are also of concern.

The disposal of household batteries in this country has in the past been managed through landfilling. There is increased concern about toxic emissions and ash from solid waste incinerators. These sources of toxic metals should also be separated during composting operations as well. These batteries are recyclable and their collection would also conserve resources.

A recent research project by Signal Environmental System's Engineered Materials Research Center determined that 50 percent of the mercury consumed in the United States is used in disposal of batteries, but only 4 percent comes from recycled mercury. Furthermore, while rechargeable batteries account for only 22 percent of the cadmium consumed, the remaining uses are non-recoverable, such as paint pigmentation and corrosion protection for metal parts. The report stated that "the best means of reducing the source of cadmium in the waste stream is through battery recovery." Seventy-five percent of nickle-cadmium batteries are incorporated into rechargeable appliances, making collection and processing difficult. Their final conclusion was that "excluding all types of batteries from municipal solid waste would have a major impact on the amount of mercury, cadmium, and to a lesser extent, of lead, in the emissions and air residues of municipal waste-to-energy plants".

OTHER NATIONS

In Europe and Japan, which rely heavily on solid waste incineration as a primary disposal means, batteries have been routinely collected for years. In Sweden, the Environmental Protection Board found that 35 percent of all background levels of mercury in the environment is attributable to batteries that are present in the waste stream. They have been separating batteries from the waste stream and have reduced mercury emissions by 80 percent, though this is not solely attributable to battery removal. In Japan, hundreds of municipalities have passed legislation mandating that batteries be collected separately. There are even proposals to require deposits of 4-8 cents per battery.

OTHER STATES

New York - The Environmental Action Coalition, a non-profit environmental organization based in New York City, recently began a pilot study of the feasibility of implementaing a battery collection program in the city. Batteries targeted are mercuric and silver oxide cells.

New Hampshire/Vermont - In 1987, the New Hampshire/Vermont Solid Waste Project, a consortium of 26 municipalities joined together to develop and implement a regional solid waste management plan, including a unique program to remove household batteries. Approximately 70 stores and recycling centers in the region display a five-quart silver bucket with a battery collection logo adjacent to their battery display. Store operators encourage consumers to return their used batteries to the bucket. Local civic organizations volunteered to collect the batteries from the buckets on a routine basis. Once collected, the batteries are segregated for marketing or disposal in the household hazardous waste collection day.

Missouri - The Household Hazardous Waste Project of S.W. Missouri State University is developing a collection mechanism for household batteries sold by retail establishments in their region. The project is limited to collecting the mercuric and silver oxide button cells for which markets already exist.

MINNESOTA

The MPCA has received a two year LCMR grant to begin in July of 1989 to set up a voluntary collection system in selected Minnesota communities and to evaluate markets and deposit feasibility. The project would occur in several phases. First, the research phase, during which the staff person will identify which batteries of greatest concern and need to be collected, examine the collection methods of existing programs nationally and internationally, and determine what markets currently exist for the targetted batteries. During this phase, the staff person will also determine what management standards will apply to the collection sites and during storage and transportation. During the second phase, communities which are interested in participating in such a project will be contacted by the staff person, collection sites will be located and organizational systems will be set up. Communities in which solid waste incinerators are either presently in operation or on line will be targeted. Finally, the results of the demonstration project will be disseminated to other communities around the state and the country, and the benefits of the project discussed. During all these phases, public education efforts will be made to increase public awareness as defined in the program objectives.

5. FILTERS OF POLLUTANTS

Water filters - No information was encountered that suggests that there is concern about disposing of used home water treatment filters through traditional disposal means.

Most systems are currently being used to treat water that meets drinking water standards. Such systems are removing chemicals, bacteria and sediments that are allowed to be in drinking water. Both the manufacturers and the Minnesota Department of Health do not recommend such home treatment systems for treating water that does not meet the minimum standards.

The most common filtration system utilizes activated carbon to absorb organic and inorganic compounds onto the carbon. It is the opinion of the health department officials and manufacturers of the products that the chemicals are sufficiently absorbed onto the carbon as to remain attached under normal landfill conditions. Incineration would likely release some materials. In fact, this method is used by municipal and other large scale treatment systems to "re-activate" used carbon filtration particles.

Oil filters - The household hazardous waste program does currently accept used oil filters. They are drained of any excess oil and disposed of at the landfill. It may be wise to monitor the federal EPA actions with respect to the classification of oil as a hazardous waste. This will impact the management of used oil filters.

F. WASTE INKS

Waste inks in the liquid form are prohibited from entering the mixed municipal waste stream and therefore are managed through several different methods such as waste exchanges for unwanted but usable ink supplies, recycling that reblends inks, drying and subsequent disposal, or hazardous waste disposal. The focus of the SCORE committee is on waste inks that either act as a contaminant within the recycling system or the incidental ink (e.g., ink rags, spent containers or cartridges, printed material, etc.) in the waste stream. Therefore, no research was performed on ink recycling or reprocessing programs that exist in Minnesota and the U.S.

There exist no conclusive evidence of any problems caused by the presence of inks within the recycling process of materials. Sludge and bleaching residues from paper mills concentrate waste inks during the recycling of paper. In addition, no evidence exists indicating any serious environmental harm caused by the incineration or land disposal of printed materials due to the presence of inks. However, preliminary results from a soon to be released USEPA study identifies pigments (which includes inks) as a significant source of lead and cadmium within waste.

Attempts to encourage ink manufacturers to create a returnable/reusable ink container or barrel system has been met with resistance. Fear that the containers will be contaminated with foreign objects is the primary reason given.

The MPCA, MNTAP and other agencies encourage print shops to use a laundrey service to clean rags that contain ink residue. Special cautions are given not to deposit ink-moist rags in the laundry hamper, but rather to air dry the rags prior to depositing.

EDUCATION
RESEARCH PAPER

DISCUSSION
WASTE EDUCATION IN MINNESOTA

I. ISSUE: The state has important responsibilities in the educational element of the solid waste problem and should provide a state wide focus which local governments can use to tailor their education program. There should be a relationship between state waste progam funding and the efficacy of the local education programs and the local waste goal implementation programs. Public facilities should, in their waste handling processes, provide examples of waste reduction, recycling, and litter abatement programs.

II. OTHER STATES EDUCATION EFFORTS

Pennsylvania - Formal recycling education in schools, colleges, and universities. Work with Keep America Beautiful for litter and recycling education. Adult Education videos, and other materials. Funding: $2.00/ton tipping fee. Fifteen percent to 20 percent gos to these programs. Two staff.

Ohio - State wide litter and recycling ed program. Grants to local communities for local education programs. Public service announcements, brochures, other general materials. Statewide school curricula. Funding: $500,000/year for curriculum. $500,000/yr for public awareness campaigns. $1 million local education grants. Seven staff.

California - California Cleaning is a state wide litter campaign implemented by local government and interested citizen's groups. Develops promotional materials, education workshops, speaker's bureau. Two staff for litter campaigns, five staff for recycling campaigns.

Florida - Household hazardous waste amnesty days collection and education. Grants program to local communities. Funding: $2 million/$1 million/yr grants. Three staff.

Virginia - State wide litter and recycling program. State serves as litter and recycling information provider. Materials for this purpose are developed by state. Local grants program to cities and counties. State wide elementary school curriculum on waste. Funding: three taxes - $1,260,291 for grants and general promotional materials. Curriculum done separately.

Michigan - State wide school education progarm for all waste topics K-12. State wide "Buy-Recycled" campaign (waste reduction) and general solid waste education promotions. Funding: $270,000 development of school curriculum. Other figures not available. Five staff people.

Massachusetts - State provides grants and loans for counties and cities for recycling education. State develops some materials.

New Jersey - State wide litter campaign. State provides promotional

materials to assist counties. Communities also responsible for developing their own promotional materials. Funding: $12.1 million over 1.75 years through tax on litter generating products. Three staff.

State wide Recycling campaign. State provides promotional materials to assist counties. Communities also responsible for own public relations campaigns using funds from state. Funding: $2.4 million/3 years plus printing costs.

Illinois - State wide waste education program. Community promotional materials and school curriculum package. Funding: $500,000. Three staff.

III. MINNESOTA'S PLAN FOR WASTE EDUCATION

The status of waste education in Minnesota was studied previously by the Waste Education Roundtable. The Roundtable recommended that the Legislature estabish and fund a coordinating structure for education of the public on solid and hazardous wastes.

The Waste Management Board's waste education program was established by the Minnesota Legislature in 1987 (for the purpose of providing waste education to Minnesotans of all ages.) In response to the new waste education provision in the Waste Management Act (Minn. Stat. S 115A.072) and in response to the recommendations by the Waste Education Roundtable in its Final Report of August 1, 1986, the Chairman of the Waste Management Board appointed 15 members to a special task force, the Waste Education Coalition.

The Waste Education Coalition consists of representatives from those public agencies with responsibility for waste management or public education, including the Minnesota Waste Management Board, Minnesota Pollution Control Agency, Metropolitan Council, Minnesota Department of Education, Minnesota Department of Agriculture, State Planning Agency, Environmental Quality Board, Minnesota Environmental Education Board, educational institutions and other public agencies, interested citizens, and industry.

The Legislative charge of the coalition is to develop, implement, and coordinate state and regional rsources in an integrated long term waste education program which encourages the reduction, reuse, resource recovery and proper management of solid and hazardous wastes. Three committees have been formed, a clearinghouse committee, a youth education committee, and a community information and education committee.

The Coalition is currently involved in the following activities: establishing a computerized waste information clearinghouse and referral system; contracting with a consultant to modify and expand

the Itasca County solid waste management education compaign; issuing a Request for Proposal for a consultant to develop a curriculum framework for grades K-6 and complete one insturctional unit; and sponsoring a statewide advertising campaign focusing on recycling. Informational materials have been collected and are being distributed through the clearinghouse. The Coalition's Budget, established at $190,000 for the 1988-89 biennium, has been committed to staff salaries and the previously described activities, including operation of the clearinghouse, and more funding will be necessary to undertake additional projects.

OTHER STATE LEVEL INVOLVEMENT

A number of State agencies provide waste education materials and programs. The MPCA, through its public information office provide exhibits, brochures, a speakers bureau, and audio-visual materials. The MPCA also provides resources for school audiences and operators. The WMB provides similar activities through its public affairs and solid waste programs, as well as providing staff support for the work of the Waste Education Coalition.

The Department of Education, in June of 1985 adopted a rule which requires that environmental education be taught in elementary schools. While waste education can be integrated with environmental education programs, the rule does not require that waste be a topic, nor does the rule apply in secondary schools.

The Minnesota Environmental Education Board (MEEB), and 13 Regional Environmental Education Councils (REECS), both created in 1973, provided assistance in addressing regional needs for environmental education. MEEB/REEC is attached to the Department of Natural Resources and has a professional staff of five and approximately 200 active volunteers involved in school and community environmental education programs. Waste is just one of the topics addressed.

The Environmental Quality Board (EQB), as a result of recommendations at a 1986 State-wide Environmental Congress, has an Inter-Agency Environmental Education Task Force, to provide advice concerning the EQB's work in environmental education.

COUNTY ACTIVITIES

Counties are also actively involved in waste education. Waste education must be addressed in the comprehensive county plans, and indications are that many counties are either currently implementing or in the process of developing waste education programs. The activites mentioned most frequently include newspaper articles, speaking to local organizations, and school programs. In terms of topics, recycling, landfill problems and waste reduction appear to be receiving the greatest level of attention.

WASTE EDUCATION IN THE SCHOOLS

A recent survey by the Waste Education Coalition indicates that teachers in Minnesota's schools are interested in teaching waste issues, but feel limited in terms of resources available and the time constraints of required curricula.

Thirty-four percent of those responding indicate that some waste-related issue is part of the current curriculum; 94 percent said they would be likely or very likely to teach waste education if the resources of their choice were available; and 88 percent said the need for waste education is urgent or very urgent.

A key element in waste education in the schools is the "living example" in which students learn about waste management by actually participating in separation, reduction, and recycling. While some schools in Minnesota are recycling and using non-disposable utensils, no information is available on the overall status of waste managment practices in the schools.

Many schools in Minnesota and around the country have begun recycling projects. In many cases, the incentive for starting these projects is the possibility of raising funds through redemption centers. Recently, there has been a greater push to get schools more involved in waste reduction and recycling practices while teaching students about these issues. Currently, there are no schools in the nation who are practicing (or attempting to practice) total waste reduction and recycling in all of their operations. Schools have a reputation for openly sharing their experiences. There are a number of organizations which help promote model school programs. The National Diffusion Network program of the United States Department of Education is one such program. This program promotes model school programs in the nation and helps other schools adopt the programs through funding and facilitator staff help.

MINNESOTA'S PUBLIC HEALTH & SAFETY CAMPAIGN

The Minnesota Institute of Public Health created several campaigns including: anti-smoking, alcohol and drug abuse, seat belt safety, and employee right-to-know. Funding: State wide campaign can range from $35,000-$1.3 million. 2.5 staff plus 50 part-time field staff available.

WASTE REDUCTION
RESEARCH PAPER

DISCUSSION:
WASTE REDUCTION

I. ISSUES

Waste reduction is often considered to be of higher priority than any of the waste management methods, including recycling. This is because waste reduction is the most environmentally benign form of waste management. Unlike recycling or other waste management methods, there is no need to process or transport materials. Thus, the amount of energy and raw material use is reduced. However, waste reduction practices are relatively rare in Minnesota and elsewhere.

A. ISSUES SPECIFIC TO INDUSTRIAL SOLID WASTE

Industry representatives have identified the rising costs of proper waste management as the primary force driving their waste reduction efforts.

Manufacturers may be able to reduce or recycle their industrial wastes with specific equipment but often do not invest unless equipment will pay for itself within 1 - 2 years. (It should be noted that rising disposal costs will likely shorten pay-back periods for waste reduction and recycling equipment.)

While participation in the Hazardous and Nonhazardous Industrial Waste Reduction grant program is relatively low, the level of interest demonstrated by the number of requests for application forms and past work has increased.

There is a lack of documentation of the long-term results of waste reduction grants and the benefits of industrial waste reduction. This information would be useful to many generators of industrial wastes.

B. ISSUES SPECIFIC TO MUNICIPAL SOLID WASTE

Waste reduction activities that are already occurring in Minnesota, such as the State Resource Recovery Program and waste reduction practices that individuals and businesses already use, are not familiar to the general public. Publicity is rare regarding waste reduction already occurring as well as "how-to" information for people interested in reducing waste.

Several waste reduction opportunities exist in Minnesota but are not widely publicized and/or lack participation. For example, most of the activities listed below under "Minnesota's Experience" lack publicity.

In many areas, specific opportunities to reduce waste are not available. For example, stores may not offer products that are not overpackaged, products in bulk, returnable/refillable bottles, or other reusable items that could be chosen instead of disposables.

Although waste reduction usually pays for itself in the long run through avoided collection, transportation, and disposal costs, initial investments sometimes prevent people from going the least-waste route. For instance, some Minnesota school cafeterias have begun to use disposable plates and cutlery rather than replacing a dishwasher.

II. OTHER STATES' WASTE REDUCTION PROGRAMS

A. WASTE AUDITS AND SURVEYS

Rhode Island - In Rhode Island, all generators of commercial solid waste and managers of multi-unit housing in which non-municipal residential solid waste is generated must prepare a plan for source reduction and recycling. These plans must include a waste audit, (a description of the process by which recyclable materials are to be segregated from the waste) and a plan for the reduction of the amount of solid waste generated.

B. RETURNABLE/REFILLABLE BOTTLE REQUIREMENTS

Ontario, Canada - Since 1985, Ontario has required soft drink bottlers to sell 40 percent of their yearly production (30 percent of any given month's production) in returnable/refillable containers. (This is part of a program that since 1985 has also established curbside recycling for nearly 50 percent of the single-family households in Ontario, through the cooperation of container manufacturers, bottlers, and provincial and local government.)

Prince Edward Island, Canada - This province requires all carbonated beverages be sold in returnable/refillable containers.

Saskatchewan, Canada - Until recently, Saskatchewan had a policy that all beverage containers must be returnable and refillable. In 1973, Chapter L-22 (the Litter Control Act) passed which required all beverage containers to be approved by the Minister of Environment and Public Safety. The requirement that vendors distribute beverage (i.e., beer, soft drinks and other liquor intended for human consumption) in refillable containers was a decision by the Provincial Cabinet.

C. CERTIFIED CONTAINERS

Oregon and Michigan - (both states with container deposit laws) have attempted to encourage the use of reusable/refillable containers through the establishment of a certified refillable container program. The certified refillable provision allows manufacturers which produce a certified container that could be used (refilled) by more than one bottler to charge less than half the deposit of other containers. In this way, it was reasoned, standard containers, which have more potential for reuse, would be encouraged. In practice, this has not been the case. While Oregon has retained the certified

refillable container provision in their law, a low percentage of shelf space is controlled by the certified container. Michigan removed the provision in 1987 because manufacturers avoided its use, primarily because a distinctive bottle is an recognized marketing tool.

D. STATE PROCUREMENT ACTIVITIES

According to a paper by Richard Keller and Ruth Lampi, the following can be said about waste reduction in government procurement policy:

Government purchases are 20-21 percent of GNP (7-8 percent federal, 12-13 percent state and local.) Governments can use this power to influence the marketplace and reduce waste. Governments can also serve as a model for private organizations from Fortune 500 companies to nonprofits. As an example, private organizations are using government specifications to buy recycled products.

Government agencies should establish sophisticated, computerized inventory control on the products they buy. An agency may want to buy a product that they or another agency already has in inventory; the inventory control can prevent this wasteful duplication. Agencies can also share materials and buy products in bulk quantities which reduce unit costs and generally require less packaging. Purchasing officials should cooperate with salvage officials in the inventory system.

"Life cycle costing" is one concept that can be used to make purchasing decisions to reduce waste. Life cycle cost can be represented by the average cost per year of a product which is equal to the total cost to own, operate, maintain and dispose of a product, divided by the life expectancy of that product.

Governments can use their purchasing power and specifications to convince manufacturers to reduce waste volume. For example, specification for packaging and delivery could specify the use of reusable pallets.

Pennsylvania - The Pennsylvania "Municipal Waste Planning, Recycling and Waste Reduction Act" was signed into law on July 29, 1988. This law provides for the following:

> "Within two years of the effective date of the act, all Commonwealth agencies, in coordination with the Department of General Services, including state-owned universities must develop and implement source separation and collection programs for recyclable aluminum, office paper, and corregated cardboard at a minimum. Also within two years, each Commonwealth agency must implement a waste reduction program for these and other materials in agency operations."

Rhode Island - The Rhode Island Source Reduction Task Force Report of November, 1987 reports that the Rhode Island Department of Administration and the Department of Environmental Management are required by statute to review procurement specifications currently used by the state to eliminate, wherever possible, discrimination against the procurement of products manufactured with recovered materials. Although these statutes took effect on December 1, 1986, there has been no change in state procurement procedures up to the time of the task force report.

E. PACKAGING INITIATIVES

Massachusetts and New York - These two states discussed a packaging tax in their legislatures this year. Their proposals were similar to Minnesota's proposal in 1988.

New York, Connecticut, Washington and Rhode Island - have established packaging councils to review and advise on waste reduction actions. In 1989, New York will establish an eight member Waste Reduction Council to assist the Department of Environmental Regulation in reviewing manufacturing and production techniques, distribution processes, retail considerations and consumer practices and will recommend strategies that can be utilized by commercial and industrial enterprises to reduce the generation of waste and facilitate materials recovery and reuse.

Connecticut - For two years, Connecticut has reviewed the waste reduction and packaging issue, through a subcommittee of a 27 member Municipal Solid Waste Advisory Council.

San Diego, California - The County and City of San Diego have each passed nine point plans of a solid waste management policy. Two aspects are particularly relevant to waste reduction. First, the procurement guidelines will target repairable and reusable items, as well as recycled paper. Secondly, a process for reviewing excess packaging can be initiated.

F. EDUCATION ON WASTE REDUCTION

Rhode Island - According to the November, 1987 Rhode Island Source Reduction Task Force Report:

> "An education subcommittee planned long- and short-term education programs. The short-term program will target consumers and will consist of some combination of the following: in-store education, outreach with display media, awareness days, and contests/awards. The long-term program will target those involved in marketing, product design, and production, both in their educational and professional development programs. Program elements may include information-gathering through roundtables, small conferences, questionnaires, and networking and information disseminating through consultant services, forums, conferences, and publications."

Plano, Texas - Plano, Texas began an educational campaign in 1980 to reduce the number of yard clippings bagged and disposed of at the landfill through leaving clippings on lawns. The results of the program included a 13 percent reduction in the number of truckloads of garbage, an 11 percent decrease in the bags of grass and an overall savings of $100,000 for that year, according to the program director.

Media, Pennsylvania - In Media, Pennsylvania, a local non-profit group, the Pennsylvania Resource Council, (PRC) inc., conducted a grocery tag system in 1987. The primary focus on the experiment was to raise the environmental shopping conscience of consumers. The tagging system used two colors to identify recyclable and reusable items. The results indicated that too many products were targeted and that impaired the consumers ability to retain the information. In 1988, the campaign will focus on fewer products and on recyclable materials in products and packaging.

Palo Alto, California - The City of Palo Alto, California began a supermarket packaging program (1980) in which product packaging was rated and labeled from least to most favorable types of material. Colored labels that designate certain ratings are placed along the shelves in the space beneath products in the same manner as price labels. Green is a good rating, indicating the packaging is reusable. This was primarily used on bottles that will be returned for deposit. Yellow was provided for aluminum, paper and cardboard containers that can be recycled by participants in the weekly collection service. Red labels are placed under packaging that is costly to recycle and not handled by the local program.

G. TECHNICAL ASSISTANCE AND GRANTS

North Carolina - North Carolina has a technical assistance and grants program somewhat similar to Minnesota's MnTAP program. However, North Carolina's Pollution Prevention Pays Program works with any solid and hazardous waste generators, from industry to citizens groups. The program includes an information clearinghouse, specific information packages, on-site technical assistance including waste surveys and options for waste reduction, and matching grants.

Other states - The attached table shows industrial waste reduction programs in other states, primarily related to hazardous waste reduction. Although focusing on hazardous wastes, these programs are directly related to solid waste reduction by industry.

H. WASTE EXCHANGES

Several industrial waste exchanges operate around the country. Minnesota participates in two such exchanges, the Illinois Industrial Materials Exchange and the Great Lakes Waste Exchange. This is discussed further under "Minnesota Experience", below.

STUDIES

Illinois - Illinois released a report in February 1988 that reviewed policy options that encourage waste reduction. By July 1, 1989, a formal report to the Illinois Governor and Legislature which makes specific recommendations for mixed municipal solid waste reduction must be prepared.

Pennsylvania - Pennsylvania's study seems to be the most comprehensive. Required as part of the Municipal Waste Planning, Recycling and Waste Reduction Act, passed in July 1988, the study must be completed within 24 months of the effective date of the Act. The Department of Environmental Resources will prepare the study that covers, but is not limited to the advantages and disadvantages of mechanisms to stimulate waste reduction. Topics to be discussed include:

- durability
- recyclability
- tax on excessive packaging
- tax incentives
- performance standards
- prohibitions

Other topics that potentially will be added to the study include labeling of products and life cycle costing. This will help the state meet the legislative goal that by January 1, 1997, the weight or volume of municipal waste generated per capita will be less than on the effective date of the Act.

III. MINNESOTA'S EXPERIENCE

A. TECHNICAL ASSISTANCE AND IN-PLANT WASTE SURVEYS

The Minnesota Technical Assistance Program (MnTAP) was established through a WMB grant in 1984. The 1987 legislature expanded the WMB's technical assistance responsibilities to include nonhazardous industrial wastes. Since then, waste reduction work for nonhazardous industrial waste has included:

-the hiring of an engineer at MnTAP working primarily on industrial waste reduction;
-two MnTAP interns and a year-long research grant on prolonging the useful life of machine coolants;
-a MnTAP intern at a foundry helping to find ways to reduce waste there;
-a waste reduction grant for studying foundry sand reclamation; and
-beginning work on reducing several other nonhazardous industrial waste streams.

In-plant waste surveys and a waste reduction checklist are often used by MnTAP staff to assist Minnesota companies to begin reducing the amount of waste they generate.

B. WASTE EXCHANGES

A waste exchange is an information clearinghouse and marketing facilitator for materials which otherwise might be wasted. Companies with materials that are unusable at their facility, but have potential value to someone else, can market their materials through the exchange. Likewise, companies which can make productive use of waste, surplus, or recoverable materials are invited to seek users through the exchange.

The first attempt at waste excahnge in Minnesota was coordinated by MPCA in 1983. As a cooperative effort, 50 industries were placed on the waste exchange bulletin mailing list, but no industries in Minnesota were involved in listing materials. In 1985, the MPCA joined two waste exchanges, the Great Lakes Exchange and the Industrial Material Exchange Service. The mailing list of industries receiving bulletins gradually expanded to around 400 by late 1987. Between 50-60 listings by Minnesota companies now appear in the waste exchange bulletins. Since early 1988, MnTAP has coordinated Minnesota mailings of waste exchange bulletins.

Another type of waste exchange, aimed at small businesses, has been initiated by the Minnesota Public Interest Research Group (MPIRG) and funded by the Metropolitan Council. This program is called Businesses Allied to Recycle Through Exchange and Reuse, or BARTER, and focuses on small businesses in the Twin Cities metropolitan area.

C. NONHAZARDOUS INDUSTRIAL WASTE REDUCTION GRANTS PROGRAM

Currently, Minnesota generators of hazardous or nonhazardous industrial waste can apply for grants to help fund:

1) Studies on the application of a previously developed method or technology to a particular manufacturing or production process in order to determine the effectiveness of the method to reduce hazardous or nonhazardous industrial waste generation; or

2) Research projects to evaluate the feasibility of a new reduction method or technology to determine whether it could be applicable to generators in Minnesota.

D. THE MINNESOTA PACKAGING REVIEW LAW

In 1973, the Minnesota legislature passed The Recycling of Solid Waste Act, (Minn. Stat. 116F) which included a packaging review provision. This provision directed the MPCA to review new or revised packages or containers sold in Minnesota if those packages or containers 1) constituted a solid waste disposal problem or 2) were inconsistent with environmental policies of the state. In 1974, the MPCA promulgated regulations containing criteria for package/container review, but soon thereafter an injunction and

lawsuit was brought by the Can Manufacturers Institute, Inc. The Minnesota Supreme Court upheld the statute on Sept. 7, 1979. However, the court determined the regulations to be guidelines without the force and effect of law.

In September of 1980, an advisory committee was formed to assist the MPCA in implementing the packaging program. The advisory committee issued the "Report of the Minnesota Packaging Advisory Committee" in April of 1982 stating: "The consensus of the Committee is that the package review process as developed under the 1974 MPCA Guidelines is impractical as an enforcement tool, and that its exercise would uselessly tie up MPCA resources. We do see value in the Public Education and Industry Information programs."

E. STATE GOVERNMENT RESOURCE RECOVERY PROGRAM

The Waste Management Act of 1980

> "established within state government a resource recovery program to promote the reduction of waste generated by state agencies, the separation and recovery of recyclable and reusable commodities, the procurement of recyclable commodities and commodities containing recycled materials, and the uniform disposition of recovered materials and surplus property. The program shall be administered by the Commissioner of Administration."

The aspect of this program that related to waste reduction is the development of the program to recover and reuse surplus state commodities. Initially in 1981, the supplies were donated back to state agencies. In 1982, a process for recovery, refurbishing and sale of consumable supplies was implemented. This involved cleaning and selling file folders, report covers, storage boxes, and three-ring binders to the state agencies or to the public. In 1984, the program was expanded to include desk top supplies, furniture, and equipment.

F. COMPREHENSIVE WASTE REDUCTION AND RECUCLING BILL OF 1988

In the 1988 session, the Minnesota Legislature began to again look at waste reduction measures through the introduction of the Comprehensive Waste Reduction and Recycling Act. This legislation included a measure designed to reduce the physical quantity of waste by taxing non-food packages and would (through exemptions) promote the use of packages that contain secondary materials or are recyclable/reusable. The quantity of waste reduction anticipated was not calculated. While this provision did not pass, parts of the bill did become law.

FUNDING
RESEARCH PAPER

DISCUSSION
FUNDING

I. LOCAL FUNDING MECHANISMS/AUTHORITIES:

Appendix I is an analysis (previously distributed to SCORE members) regarding the various authorities local governmental units have to assist in the funding of solid waste programs. In Minnesota, according to a survey of 46 counties (Greater Minnesota), the following mechanisms were used:

Property tax revenue	- 20
Special Assessments	- 3
Service Charges	- 12
Service Charge combined with Special Assessment	- 4
User Fees	- 1
Bonding	- 2
Landfill surcharge	- 29
Joint Powers Agreement	- 6
Sale of Energy	- 2

Many of these mechanisms are currently used by the seven county metropolitan area (property tax revenue, special assessments, landfill surcharges, bonding, joint powers agreements and sale of energy).

Information on local service fees:

Service fees may be assessed in addition to tipping fees and added to property taxes as line items of total county tax charged. In Minnesota, several counties have used service fees to fund recycling programs.

Polk county charges an $80.00/household fee [seasonal residents pay $27.67/year; handicapped residents pay $50/year and businesses are charged an escallating fee based on the amount of waste generated ranging from $80 to $3200 annually]. The fund is used for incinerator costs, transfer stations, landfill operation, public education and recycling. Norman county uses a similar service fee system.

Ramsey county instituted a volume-based service fee for commercial, industrial and tax-exempt property owners (ranging from $16.68/parcel to $1248.78/parcel); while residential taxpayers pay a flat fee of $5.36/house and $3.48/apartment. This will fund the waste-to-energy facility in Newport as well as curbside collection programs.

Washington county levies a mill rate of .06 to be used for solid waste programs. Minneapolis assesses a $5.00/unit/month fee to fund its waste management programs. Hennepin County will assess an added fee to the waste-to-energy/transfer station tipping fees to pay for recycling programs.

II. OTHER STATES' SUPPORT MECHANISMS FOR LOCAL GOVERNMENT SOLID WASTE PROGRAMMING:

According to an analysis by the Environmental Defense Fund, municipalities have one thing in common with respect to solid waste management programs: no solid waste management system appears to be profitable in and of itself (recycling, landfills, incineration) for a municipality. Aside from local funding mechanisms, recycling, waste reduction and litter reduction systems may need state wide guidance and funding to assure effective/coordinated local program development.

With respect to recycling programs, economic support to local governments to develop programs and to processors and manufacturers using secondary materials may be effective. Present funding nationwide for recycling pales in comparison with subsidies for resource recovery facilities.

The trend in state government funding to local governments for recycling programs is to rely on grants and loans. Grants to subsidize capital costs, collection, processing, marketing and planning are used in most states with aggressive local implementation of recycling programs. (See the state-by-state listing in Appendix II.) Most subsidies are limited in duration, and seem intended to assist with start-up costs, demonstration projects, and promotion. Although some states provide tonnage grants for recycled materials, most states try to give a boost to specific recycling efforts at the start-up point or at the point of expansion.

A. MINNESOTA'S EXPERIENCE IN STATE FUNDING FOR LOCAL PROGRAMS:

Current grants programs at the Waste Management Board come from three sources: general revenue funds, motor vehicle transfer funds, and general obligation bonds.

General revenue funds are used for:

Low-tech Grant Program: (Used for programs addressing solid waste reduction and separation). Emphasis is placed on reduction and collection (not processing). Eligible projects include: education, waste reduction, source separation, yard waste composting, and household hazardous waste collection. Eligible applicants are limited by rule to local units of government, but they may apply on behalf of private companies. Up to 50 percent of the first year costs can be funded. [$300,000/bien]

Market development: These funds are used to encourage industrial markets for recyclables, and to expand markets for recyclable materials, including compost and tire derived products. [$200,000/bien]

Waste Education: [$160,000/bien] (Described in the Education section)

General obligation bonds are used for major solid waste grants and technical assistance programs:

Solid Waste Capital Assistance Program (CAP): (includes the Environmental Testing Grants "TEST") Eligible applicants and costs are limited by state constitution. Only local units of government can apply and a government body must own the land, buildings and equipment. Operations can be contracted to private firms. Costs are limited to capital expenditures. Operating and maintenance costs are ineligible. Long term (e.g., 20 years) financing must be assured by local units. Up to 50 percent of capital costs can be funded by grants. TEST grants provide 100% financing for initial emissions compliance tests.

III. SOURCES OF STATE FUNDING

There are many mechanisms that a state may use to provide funding for local implementation, as well as to fund state efforts to achieve state wide waste management policy goals:

Taxes (for revenue, incentives or disincentives)
General Fund
Product Surcharges
User Fees
Unredeemed Deposits
Tipfee Surcharge
Bonds

A. TAXES:

In general, many secondary materials are not competetively priced with virgin material counterparts. Although processing is usually the major cost factor, the location of manufacturing plants is often close to the supply of raw materials for virgin products. Whereas, recycled materials often have the added costs of collection, separation, processing and long-distance transportation added. Additionally, the funding of municipal waste management (in systems where everyone pays the same amount) disregards the actual materials consumption of the consumer. This forces each taxpayer to pay an equal percentage of the costs of disposal, regardless of the volume or nature of the individual's waste, which can be seen to be a disincentive for encouraging the use of secondary materials.

There are some benefits and some hazards to using the tax system to provide incentives or subsidies for recycling systems.

Tax credits: A property or sales tax credit or exemption (e.g., against taxes paid on recycling equipment or property, or gasoline used in transportation) results in a windfall, or increased cash flow for a recycling operation. Additional cash flow, however, does not guarantee increased recycling in a region. The secondary materials market demand is very inelastic, and tax credits may only result in an increased price for scrap/recyclables demanded by suppliers. A credit may permit a tax benefit even if the taxpayer-recycler fails to increase secondary materials consumption. There is no guarantee of increased recycling. The effectiveness of these types of tax breaks on promoting recycing is unknown.

Additionally, there is a high cost to the state for credits/exemptions. (Currently, the MN pollution control tax exemption costs the state $500 million/year. 95% of the credit is applied to big utilities, while 5% is applied to recycling operations.) Those dollars, ($1.3 - 1.5 million/year for recycling centers alone), it may be argued, would be more effectively spent in direct grants and loans, or temporary start-up subsidies.

Lastly, credits and exemptions may help create an incentive for the recycler just starting out and suffering initial losses. A tax credit/exemption may help to offset federal and indirect subsidies for virgin materials, but the extent of the offset is uncertain. (Various tax credits and exemptions are described in the marketing section of this research). With respect to property tax exemptions, Minnesota's property tax system is extremely complicated, and state policy makers see additional exemptions/credits as a further exacerbation of the problem. Nevertheless, nine states are currently considering various tax incentives/credits for recycling.

Levy limits: A less indirect form of assistance from the state may come in allowing counties and local units to exempt the revenue generated by local taxes from the state levy limits. This would allow those revenues to be collected without adding to the state-imposed limits to local taxation.

Under current law, a property tax levy for use in solid waste management activities is not exempt from the overall county levy limit. In order to be exempt from the general levy limit, MN Statutes 275.50 would have to be changed to explicitly make funding solid waste management programs a "special levy" that is exempt from the county levy limitations.

Corporate taxes: Ohio has recently imposed a corporate franchise tax (a surcharge on corporate income tax, not to exceed $5,000 annually) to fund various waste management programs, and other states (through general fund support of waste management) may also have used corporate income tax for this purpose. Because SCORE has directed staff to look at funding sources related to the "problem", a corporate tax was not considered.

Lastly, there are many small businesses (like recyclers and some processors) which use individual (vs. corporate) tax returns, so a credit on corporate taxes would not impact them.

Sales taxes/product charges: There are two types of mechanisms in this category. The first is a tax or surcharge imposed at the wholesale or retail level in order to place, at the front end, the cost of environmental damage, waste disposal and/or processing on problem products or virgin materials (i.e., "Product Charge"). The second is a packaging-related tax, which in many states is used for litter abatement and recycling programs.

With respect to packaging taxes, most proposals have not succeeded in becoming law (most recently, Minnesota, Massachusetts, Iowa, New York and Maine) Only Florida recently passed such a tax. It is difficult to design a workable, uncomplicated system of discriminating between packages. Minnesota has had experience with a packaging review authority, which has since been found to be unworkable. Most of these proposals have involved a low (1%) rate of tax imposed at the manufacturer or distributor level. Most also attempt to encourage recycling by exempting recyclable or recycled packaging. It appears unlikely that such a hidden tax will have the effect of changing consumer behavior/preference. This is often used as a manufacturing incentive, or simply a revenue generating mechanism.

Florida charges $0.10/ton on virgin newsprint; and $0.01/container for glass, plastic metal and coated paper until recycled at a 50% rate. Rhode Island imposes a $0.05/beverage case surcharge to fund community recycling programs.

Saskatchewan imposes a two cent per non-refillable beverage container "Environmental Handling Charge". This is concurrent with a five cent deposit on every non-refillable aluminum beverage container. These fees are levied at the wholesale level. The Environmental Handling Charge revenue ($2.89 million/year) is put into the Environmental Protection fund to fund can collection and recycling, job creation for handicapped people and environmental clean-up efforts. This system was implemented at the same time as the aluminum can was introduced as a beverage container (5/1/88) in Saskatchewan.

Product charges, on the other hand, seem to be the wave of the future in funding recycling programs. A surtax is imposed on products which cause environmental harm or are difficult to recycle once they reach the waste stream. Unlike tax credits, product charges are seen directly by the

consumer, and may (if levied at a high rate) have a direct impact on the supply and demand for recycled/recyclable materials. It also has an educational aspect (when imposed at the retail level, or in conjunction with labeling of wholesale-taxed products). It can be designed to be neither more complex nor more difficult to collect than other excise taxes. Minnesota's current sales tax at the retail level is complicated (not consistently applied), therefore state tax policy makers prefer such a tax to be applied at the wholesale level (which may require product labeling if an educational benefit is required).

Washington state, in 1988 imposed an 0.8 percent tax on the wholesale value of hazardous substances including chemicals, petroleum products and pesticides. It exempts natural gas and petroleum transported out of the state for fuel. It is expected to generate $50 million biennially, and will increase with the price and purchasing of those products over time (it is obviously not at a level designed to deter purchases). The tax is levied on the first in-state possession of the listed products.

Arizona passed a tax (3% - 5%) on hazardous products, but it was vetoed by Governor Meecham.

Iowa requires shelf labels on materials defined as "household hazardous materials" and applies a 4% tax. Materials subject to the surtax include: motor oils, oil filters, gasoline and diesel additives, degreasers, waxes, polishes, solvents, paints (except latex), lacquers, thinners, caustic cleaners, spot removers, and petroleum based fertilizers. It does not include, detergents, soaps, bleach, personal care products, cosmetics or medications.

Vermont proposed a statewide container tax of 3 cents to $3.00 per product on household products that require disposal in household hazardous waste programs. This was defeated in 1987.

Minnesota: Retailers in our state have cautioned that such a product tax should be imposed on a limited number of products, revenue should be used for solid waste management (vs. general revenue), it should impose limited new record keeping requirements, and periodic justification is needed to continue the assessment. Retailers oppose labeling at the state level (i.e., preferring uniform national labeling).

The MN Revenue Department provided SCORE with an estimate of a product tax system: A one percent tax, imposed at the retail level, on the following problem materials: household and automotive batteries, white goods, paints and coatings, pesticides and oil filters. At one percent, such a tax would generate $11.3 million/year in Minnesota.

Retailers/Resource Advisors have provided information and direction on the impacts of such a product tax at the retail level. (They also caution that many retailers are the first in-state purchaser, in the event of a wholesale-level approach). Estimates for conversion of cash registers to deal with the new tax on certain materials range from $250 to $500,000 for programmable registers (younger than 5 years). Some retailers do not have computerized registers, and this would add to the administrative and operational burdens for those store owners. At least a six month lead time is needed for such a conversion. Administrative expenses (excluding programming of registers) could be up to 3 percent of the tax collected for the average retailer. If the taxed items are not primary products, they may choose to discontinue them rather than to convert.

B. STATEWIDE TIP FEE SURCHARGE

Surcharges on tip fees at landfills and resource recovery facilities are being used in an increasing number of states to underwrite the costs of recycling, landfill abatement, clean-up and monitoring. Surcharges increase the cost of disposal and are passed along ultimately to waste generators as higher hauling fees. But, it is important to understand that haulers cannot always immediately pass on the costs to their customers because of long-term fixed price contracts. Surcharges on tip fees are considered a particularly equitable method of generating revenues for recycling and landfill abatement programs, except in cases where solid waste programs are funded by tax levy.

The draft Solid Waste Policy Report contains the following estimate of total solid waste volume (converted to tons) in Minnesota in 1986:

Landfill disposal	-	3,004,000
Recycling	-	236,000
Yard Waste Compost	-	67,000
Energy Recovery/ MSW and co-compost	-	34,000
Total Waste Stream		3,341,000

Assuming that a surcharge applied to waste residues from energy recovery facilities and/or MSW composting facilities is one-half of the fee applied to landfilled waste; and that there is no growth in the waste stream; that all yard waste is removed by 1992 and that it equals about 10 percent of the 1986 waste disposed in landfills; that recycling reaches 10 percent of the total waste stream by 1990, 15 percent by 1995 and 25 percent by 2000; and that energy recovery and MSW composting handle 10%, 20% and 40% respectively:

Revenue Generation at $1, $2, and $5 per ton (Rough Estimate)

Year	$1	$2	$5
1986	$ 3,031,000	$ 6,042,000	$ 15,155,000
1990	2,498,000	4,996,000	12,490,000
1995	1,872,000	3,744,000	9,360,000
2000	870,000	1,740,000	4,350,000

As shown, revenues would be expected to decline over time as yard waste is removed totally from the MSW waste stream after 1990 in the Twin Cities and after 1992 in Greater MN, and as recycling and waste to energy facilities handle increasing amounts of the waste stream. Revenue generation declines in direct proportion to the amount of waste reduction, re-use, and recycling that occurs; and by half the amount of waste-to-energy processing that occurs. Note that the estimates above assume no growth in the waste stream. It is likely the waste stream will continue to grow, so the estimates may prove to be low. It is also assumed that the entire state is subject to the surcharge in the figures above; although a two tier system (Metro and non-metro) may be reasonable.

Other States' Experiences:

Five states (Illinois, Iowa, Pennsylvania, New Jersey and Vermont) are known to have state wide surcharges. In Illinois, a $0.45/ton surcharge is collected at landfills. In Iowa, a small surcharge was increased to $2.00/ton on 7/1/88 and is applied only to landfills. $1.50 goes to the state for grants and administration, and $0.50 goes to local waste management commissions or landfill operators to begin recycling programs. Pennsylvania will impose a $2.00/ton surcharge beginning 10/26/88 at landfills and resource recovery plants to be used exclusively for recycling programs.

Minnesota's Experience:

MN Statutes Chapter 115A.919 and 115.A921 allow counties and cities that host mixed municipal solid waste disposal facilities to impose a fee on the operators of such facilities. In both cases, the fees are paid directly to the county and/or city.

To date, there is no state wide surcharge imposed on Minnesota facilities. Twenty nine Greater Minnesota counties, and all seven Metro counties have enacted landfill surcharges. (Only four of the seven counties have landfills, however, all seven counties share the landfill surcharge revenue under a joint powers agreement.)

In the case of counties, there is no limit on the size of the fee (surcharge) that can be imposed. The revenue is credited to the county general fund and can be used only for landfill abatement or closure, post closure and response actions, or mitigation and compensation for local risks, costs, and adverse side effects of the facility.

In the case of cities, there is a limit on the size of the fee to $0.35/cubic yard or its equivalent. The revenue is also credited to the general fund of the city, to be used accordingly: $0.10 can be used for any general fund purpose; the remaining $0.25 can be used only for landfill abatement or mitigation and compensation.

In both cases, "waste residue" from energy and resource recovery facilities at which solid waste is processed and, where the processing results in at least 50% reduction in volume, one half of the fee is waived.

Metropolitan Solid Waste Landfill Fee: A fee has been established on the operators of mixed municipal solid waste disposal facilities (landfills) in the Twin Cities metropolitan area. The fee is $0.50/cubic yard or equivalent (with waste residue exempt as described above). Payment of the fee is made to the Commissioner of Revenue, and proceeds of the fees, including interest and penalties, are deposited in the state treasury in two separate accounts.

One half of the revenue is placed in the Metropolitan Landfill Contingency Action Fund [for water supply monitoring (Dept. of Health) and closure/post-closure after twenty years (PCA)]. The second half of the money is placed in the Metropolitan Landfill Abatement Fund for use by the Metropolitan Council as program administration and grants to any qualified person for: resource recovery; market development for reusable, recyclable waste materials; public education; planning; and technical assistance; and grants to counties to pay for planning, developing and operating yard waste composting and recycling programs.

C. DEPOSITS

The SCORE members requested information on container deposit as a source of funding (through unredeemed deposits) for solid waste programs. If container deposit was instituted in Minnesota, approximately $10 million/year (ten cent deposit, 95% return rate, 1985 regional container volume estimates) in revenue from unredeemed deposits may be expected.

Of the ten states which now have a container deposit system, only one, Iowa has access to the unredeemed deposit funds (all other states allow the unredeemed deposits to remain in the private sector collection system). Iowa dedicates the funds to alcohol rehabilitation programs. California's new law imposes a one cent per container charge at the distributor level. The money is turned over to the Department of Conservation. In concept, the tax is used to establish a one cent per container minimum redemption value at local redemption centers. (Hundreds of convenience zones with recycling centers have been established throughout the state.)

The redemption value, and the fee is proposed to increase over time if minimum recycling/redemption rates are not achieved. The funds from unredeemed containers ($35 million/year) are to be used for administration; a reserve fund; to fund convenience incentive payments for rural centers; litter and recycling information/education program; litter and recycling activities; and redemption bonuses. At this time, the California system is under criticism because the convenience center concept is not working, and the redemption value appears to be too low to foster extensive voluntary recycling.

Proposals for deposits on problem materials appear to have been limited to lead acid batteries in the United States. Only one state (Rhode Island) had a deposit system for lead acid batteries, but this was changed to a surcharge prior to implementation. Most other states mandate collection, or apply a non-refundable surcharge. If a lead acid battery deposit system were in place in Minnesota, it is estimated that the return from unredeemed deposits would be aproximately $20,000/year, based on a $5.00 deposit. Collection systems for household batteries exist in Europe and Japan, but have not been feasible yet in the U.S. due to difficulty in developing workable storage/deposit systems, and the fact that not all household batteries are recyclable at this time.

D. INCENTIVES USING STATE FUNDING

It is clear that the state may use criteria for local implementors to achieve prior to the reciept of state funding. One approach mentioned by SCORE members was the concept of witholding state funds if a local implementing government did not achieve program goals.

If a county did not meet recycling standards, certain state funds designated for county recycling activities or for other county programs could be withheld or terminated. The state could also reward performance that exceeded standards through the same program.

Minnesota has an example of linking eligibility and procudural requirements in statute and rule: the Community Health Services Program of the Minnesota Department of Health. This program allows for the withholding, termination or required reimbursement of subsidy funds if a county fails to comply with an approved plan or budget or requirements of an applicable rule or statute, or other just cause. However, CHS has never had to withhold funds.

APPENDIX 1
MINNESOTA: LOCAL FUNDING AUTHORITIES FOR SOLID WASTE PROGRAMING COSTS

M.S. 400 gives counties broad authority to conduct solid waste management programs including collection, processing, and disposal of solid waste and activities involving closure and postclosure of solid waste facilities. The law also provides a number of ways for counties to finance solid waste management programs which include the following:

1. Counties may acquire by gift, lease, purchase, contract for deed or eminent domain any land it feels is necessary for solid waste purposes.

2. Counties may construct, expand, repair, operate and maintain any property or facilities necessary for solid waste management purposes. Counties may also enter into contracts with others for these purposes.

3. Counties may establish a solid waste service area by resolution and after holding a public hearing. Within the service area the county may:

* by ordinance and after a public hearing, establish service charges to property owners and establish rates for the use of the disposable facilities;

* determine the manner in which rates and service charges will be billed or collected;

* assess all property that is delinquent in paying service charges and extending these assessments to the tax rolls of the county;

* levy a tax on any property in the service area;

* use any combination of service charges and taxes for waste management purposes (such service charges may include depreciation and payment of principal and interest on money borrowed for acquisition or betterment of facilities).

4. Counties may levy property taxes upon all property in the county in anticipation of waste management activities. The proceeds of the tax may be placed in a special fund for such future needs. The proceeds also may be invested in securities as authorized in M.S. 475.66.

5. Counties may issue revenue bonds for waste management purposes. The principal of the revenue bonds is to be retired solely from revenue derived from rates and charges.

6. Counties may issue other bonds not dependent on revenue derived from the operation of a waste management system. Proceeds from these bonds may be used for the acquisition or betterment of solid waste

facilities including releases from closed solid waste facilities or for refunding any outstanding bonds issued for such purposes. These bonds may be retired using any of the county's taxing power.

7. Counties owning or operating solid waste management facilities must establish a solid waste management fund in which all rates and charges must be accounted for.

8. Additional authority to charge fees for county services was granted by the 1987 Legislature. Under Chapter 164, counties may charge fees for services provided by any county office, department, or employee. The county may also impose a fee on the operators of facilities for each cubic yard of mixed municipal waste. Revenue from the fee must be credited to the county's general fund. The funds generated by the fee may be used for only landfill abatement purposes, closure or post closure care and response actions for the purposes of mitigation or compensation and other adverse affects attributed to waste management facilities.

9. Counties may use the joint powers agreement as a means of promoting cooperation and jointly financing projects of interst to cities, counties, and townships. According to a State Planning Agency report on Interlocal Cooperation, "cooperating units have available all of the various financial powers of local government and have the added advantage of being able to use them in various combinations, the extent to which they can go in providing a local service is limited only by their combined resources and occasionally by limits stated in the law."

The State Attorney General's office has two concerns regarding joint powers agreements. The first is the authorities of a joint board are not clearly specified in the statute, except for issuance of bonds. Second, there are some questions concerning the liability of the participating units in a joint board.

10. Chapter 685, passed by the 1988 Legislature, provides that counties may receive up to 85 percent of the cost of abating waste tire nuisances if their waste tire abatement plan is approved by the Waste Management Board. The law also provides that the county may, through civil action, recover abatement costs from the tire collector responsible for the nuisance and may be eligible to receive grants from the board to establish waste tire collection sites.

APPENDIX II
OTHER STATES' FUNDING MECHANISMS TO LOCAL PROGRAMS

California

- o State recycling policy (1988) recommends that the county solid waste management planning fee (specified in California Government Code) be used for all planning and program development requirements for local governments that would result from implementing State Recycling Policy; "program development" means work leading up to capital and operational costs; these fees are to be raised from surcharges on landfills or haulers of wastes operating within local boundaries;

- o funds for implementing local programs to be included as part of costs for overall solid waste systems (i.e., consumers pay for recycling); costs to consumers should be structured on user basis (variable drum rates--90 gallon drums in which recyclable items are placed at each residence--rate can vary greatly depending on locale, e.g. $36-$65 from one county to another), or at least with additional costs charged above average flat base rates once recycling opportunities are outlined.

Canada

Ontario Ministry to the Environment distributes these grants. They are all aimed at supporting municipal recycling and are available to municipalities and sometimes to other entities as indicated below.

- o operating cost grant (available to municipalities)
  grants up to five years per project to cover net operating cost of a project up to a specified maximum percent of gross expenses;

- o capital cost grant (available to municipalities and nonprofit recyclers)
  grants to share in the capital costs of new plant and equipment (land and related costs not eligible) necessary for initiating or expanding recycling projects; grant is determined on case-by-case basis depending on share of costs applicant is prepared to contribute and other available funding sources;

- o household bins (available to municipalities)
  grants for share of cost for municipalities to acquire household bins for curbside recycling, amount to municipalities determined by what they willing to contribute and what they can get from other sources; 1 bin per household served;

- o promotion and advertising grant (available to municipalities and nonprofit recyclers)
  grants to support up to 50% expenses to a maximum of 10 cents per capita per year for maximum of 5 years, for promoting and advertising local recycling project;

- o education grants (available to municipalities, industry associations, comunity or environmental organizations, companies, boards of education or individuals)
  grants up to $15,000 provided on case-by-case basis for raising understanding and awareness of 4R's: reduction, reuse, recycling, recovery; includes wages and salaries, benefits, materials, purchased services;

- o demonstration grant (available to municipalities, individuals, companies organizations)
  grants up to 100% of costs for demonstration, pilot, study projects for increasing knowledge base and advancing state-of-the-art recycling;

- o feasibility study grants (available to municipalities and nonprofit recyclers)
  grants up to 50% for studies required for operating and capital cost grants.

In addition to the grants, Ontario has put a 7 cent/case deposit for curbside collection of recyclables.

Connecticut

- o State provides $25,000 grants to planning agencies (level of agency not clarified) for setting up regional reclamation systems using intermediate processing centers;--municipalities must join and participate in one region or develop recycling program of own (perhaps "planning agency" is whoever plans the program);
  state may issue grant to cover 100% cost for plan, design and construction of intermediate processing centers and accompanying education.

Florida

- o Has enacted a trash tax effective October 1, 1988 that will impose fees as of January 1, 1989 on producers and distributors of tires and newsprint:
  - o a 50 cent fee will be added to each new tire sold; the fee will double in 1990; the state has not determined whether distributors or producers will pay these fees;
  - o a 10 cent/ton fee will be on newsprint, but for each ton a company recycles, the dime will be deducted;

- o the producers of lead-acid batteries and solvent and petroleum products will pay $1 tax/units sold;

- o by October 1992 companies producing packaging made of glass, plastic, plastic-coated paper or aluminum or other metels must recycle 50% of its product or a 1 cent deposit will kick in; in 1995 that will be raised to 2 cents for companies not meeting the 50% recycling goal;

- o the monies collected from these fees will be deposited in one of two trust funds: a new trust for funding recycling programs; and an existing trust for funding cleanup of hazardous waste; the new trust fund money will be distributed to municipalities and counties for recycling efforts.

Ilinois

- Requires cities to adopt a recycling program, specifies requirements; authorizes certain grants to nonprofit organizations, cities, counties for recycling projects.

Massachusetts

- Provides grants or loans to municipalities for intermediate processing centers; recipients required to do public education in return for financial aid;

- municipalities are being persuaded to join above mentioned regional centers through cost-avoidance measure, as landfill costs are $60-70 per ton; to join, municipalities must pass mandatory source separation ordinances requiring households to place cans and bottles into special containers.

New Jersey

- Surcharge of $1.50 per ton of waste delivered to solid waste management transfer or disposal facility used to replenish revolving fund to provide rebates to counties for every ton of recycled material (and other purposes); under new mandatory source separation/recycling, the revolving state Recycling Fund provides grants to municipalities or counties for collection, processing and marketing of recyclables;
  County must prepare/adopt plan implementing state goals:
  -municipalities must recycle 15% of prior year's solid waste stream;
  -$7.8 million go from treasury to counties and municipalities:
  15% to counties and 85% to municipalities; these appropriations must be repaid to general fund from recycling fund;

- not less than 45% of state nonlapsing revolving fund (administered by New Jersey Department of Energy and Environmental Protection) must be used for 5 year program of recycling grants to municipalities based on total number of tons annually recycled from residential and commerical sources in that municipality; not more than 10% of fund can be for county and municipalities planning.

New York

- Introduced bill to appropriate $100,000 for Department of Environmental Conservation to establish solid waste management training program; would train and develop instructional materials for municipalities and other operators of solid waste management facilities, including programs for reduction or recycling;

- introduced bill mandates source separation by municipalities by 1989; directs commissioner of Environmental Conservation to prepare model local law for use for municipalities.

Ohio

- Funds from assessment on corporations in state based on corporate francise tax rate (a surcharge on corporate income tax based on amount of profit, at certain millage rate, not to exceed $5,000 annually), for coordination of activities in political subdivsions aimed at local-level (city, county, township) establishment of recycling centers;
  - 80% of funds generated ($10 million annually since 1981) goes to local governments for litter prevention and recycling;
  - local governments apply for grants annually--a match is required for litter control, no match is required for recycling programs--amount varies with type of grant and size of government entity:

    $100,000 is at the high end of grants, for 1st year operating costs, down to $60,000 next years if applied for;

    cities of 100,000 population average around $80,000-60,000 grants, cities below 10,000 population average $30,000;

    grants are given for operational expenses of recycling programs run by nonprofits, local government demonstrations of innovative programs ($10,000-15,000), integration of recycling into solid waste management to reduce flow of wastes to landfills.

Oregon

- In 1983 Oregon enacted law requiring local entities to give every citizen opportunity to recycle as conveniently as having their garbage collected;
- recycling services are funded by local entities through garbage rate, franchise fees or alternative source; the first two fees are collected from private haulers--all garbage collection in Oregon is by private haulers with whom citizens have the choice to contract or they may dump their own garbage;
- local governments are mandated to provide education and promotion for recycling programs; the state funds (from oil overcharge) and provides technical assistance for projects;
- (1987) funds capital costs (not including land) from State appropriation ($2.5 million in 1986) to local governments for 75% of project costs up to $1 million; mass burn plant, recycling facility and industrial waste-to-energy facilities have been funded.

Pennsylvania

- (1988) Funds local recycling collection within 4 years using statewide landfill surcharge:

  the surcharge is $2/ton, expected to total $28 million goes into recycling fund; funds up to 90% of local recycling programs--on a case-by-case basis.

Rhode Island

- o Rhode Island Solid Waste Management Corporation funds (from disposal fees plus 5 cent taxx/case of soda and beer) 100% (almost) costs of local recycling programs for first 3 years of operation; the cost for 6 year funding cycle is $30 million, includes recycling faciity; it is mandatory for 29 municipalities using state solid waste facilities and also available to 39 other cities in 1989;
- o state funding will "offset" all costs to municipalities that statute requires, e.g., operational and administrative expenses, but not "extra" expenses incurred by cities in preparing or transporting materials to market;

- o state will recover revenues obtained from marketing recyclables during first 3 years of program;

- o Department of Environmental Mmanagement will determine level of funding to municipalities from $25 million over 5 years to coordinate governmental, industrial and volunteer recyling schemes--part of mandatory source separation and recycling in which municipalities must adopt rules requiring separation of recyclables from waste stream.

Wisconsin

- o municipalities can establish and require use of recycling facilities--grants for demonstration projects and waste reduction available from state to municipalities;
  grant amounts are 50% of actual cost up to $75,000, from a State fund of $150,000/year, generated from state tax revenues.