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RURAL ECONOMY

Waste Management Legislation in Canada

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SOLID WASTE MANAGEMENT LEGISLATION AND PROGRAMS

Introduction

Solid waste management is becoming less a matter of personal household initiative and more an institutionalized system of legislation and programs. In order to decrease the amount of waste that is produced, discarded, and disposed of (landfilled or incinerated), governments, non-profit organizations and private companies are developing various programs and initiatives. Some programs make recycling as trouble free as possible while others offer incentives and discounts for reducing waste. While the methods differ widely the goals are the same: maximize the "3R's" (recycle, reduce, reuse) and minimize the waste going to landfills.

In Canada, all levels of government have legislative authorities with respect to the environment and, more specifically, waste management. A large number of those governments (federal, provincial, regional, municipal) have indeed acted upon that authority and adopted various legislation, regulations programs initiatives, dealing with waste management. These differ widely across jurisdictions. The purpose of this paper is to provide an overview of governmental legislation and waste management programs currently in effect that deal with household solid waste management. The goal is to compile information on how and to what degree government and business affect the solid waste stream at the household level. The focus is primarily on Canadian legislation and programs. European and American legislation is discussed when relevant. For Canada, the three levels of government are studied. The legislation and programs at the federal level are reviewed as they are for each of the 10 provinces and two territories. At the local level a cross section of municipalities are examined. These municipalities were chosen because they offered extensive or unique programs and covered a wide range of possible programs available at the local level.

This research was carried out through the study of legislation, articles, information brochures and personal correspondence. Government officials were contacted at the federal level and from each of the provinces. These officials relayed contact names of officials at the municipal level. Only in Quebec, where granting is done through a non-profit organization and not the government, was information provided by a non-government official. Those contacted then provided the information regarding the current situation in their area. This has lead to a wide difference in the amount of information available for each program. For example, in some provinces, only the text of the legislation was made available without any data or reports on the affect of the legislation on waste management. For other provinces and municipalities, extensive reports were provided and the direct effect of the programs can be estimated. For provinces and areas where only the text of the legislation was available, speculation as to its affect has been avoided and only the pertinent sections of the legislation are presented.² For the United States and Europe information was taken primarily from articles and information packages. It must be understood that the nature and numbers of initiatives, programs, regulations are changing constantly. Indeed, new programs are developed, existing ones modified and refined, and old legislation overhauled on a continual basis. Hence, the paper offers a description of the programs as they currently exist.

¹*Waste produced*: Total quantity of waste that is produced by the household before it undertakes any activities that would reduce the amount of waste it discards.

Waste discarded: Total quantity of waste that the household places at curbside for collection plus the total quantity of waste the household may bring itself to landfills.

Waste disposed of: Total quantity of waste that is landfilled or incinerated.

²Documentation for sections that come directly from legislation or a single source are indicated at the end of the section. Information gathered over the telephone from government officials is documented as personal correspondence.

Executive Summary

The programs and legislation dealing with solid waste management are wide and varied. Focused around the 3R's they address almost every type of waste common to the average household. They include programs for: bottle returns; battery returns; tire recycling; yard waste composting; plastic, glass, paper and metal recycling (Blue Box); toxic waste drop offs; large item drop offs; used oil collection, etc. These programs are designed to make it as easy as possible for the householder to divert their waste stream away from landfills.

Other programs- monthly fees, tag-a-bag systems, dumping fees- levy a charge on households and encourage them in that way to reduce the amount of waste they produce and discard. Another type of program, that dealing with packaging reduction, aims at putting less material into the system. There are programs that concern the infrastructure of the waste management system in place as well. Funding programs help local governments, non-profit organizations and companies establish depots, run recycling projects and conduct research and development. Finally, education programs are common to all areas to ensure that householders are aware of local programs and their responsibilities.

Reduction of...	Waste Produced	Waste Discarded	Waste Landfilled
Program type... Unit Pricing	x		
Home Composting		x	
Municipal Composting			x
Curbside Recycling			x
Deposit Refund	x		
Education Program	x	x	x

Most of these programs are guided by legislation (see Table 1). There is virtually no legislation on waste stream management at the federal level in Canada. It has limited its involvement to waste management on a industrial level and delegated the responsibility for households the provinces. Every province and territory in Canada has some type of legislation concerning waste management. Generally, in Canada, legislation exists at the provincial level and the programs are implemented at the municipal level. Involvement ranges from important, as in Ontario where the provincial government dictates what programs the municipalities must run, to minimal, as in Quebec where almost no provincial legislation exists. The most common legislation, found in almost all provinces, concerns the recycling of beverage containers.

In the United States similar programs dealing with tires, batteries, curbside recycling, and composting can be found. As well, in Europe, programs dealing with beverage container recycling and composting can be found. Another similarity to Canada is that in both Europe and the US, legislation is found primarily at the state level and program implementation at the local level.

WASTE MANAGEMENT LEGISLATION AND PROGRAMS - CANADA

I) FEDERAL

There is little in legislation at the federal level that deals with household waste management. These responsibilities have been delegated down to Provincial governments which in turn rely on municipalities for the implementation of the provincial objectives. (Steve Cross, Environment Canada).

The federal government however, is not totally absent and is involved, for example, in such efforts as the Packaging protocol. Through voluntary cooperation from the provinces and from industry, there have been a number of policies developed to reduce the amount of packaging by 20% in 1992, to 35% in

Table 1

GOVERNMENT LEGISLATION

EPEA: Environmental Protection and Enhancement Act

WRPA: Waste Reduction and Prevention Act

EMPA: Environment Management Protection Act

EPA: Environmental Protection Act

EA: Environment Act

PR: Primary Responsibility

	AB	BC	Man	Sask	Ont	Que	PEI	NS	NB	NWFD	NWT	YK
Legislation	EPEA		WRPA - 1990	EMPA	EPA	EA	EPA	New EA - 1994	Clean EA		EPA	EA - 1991
Environmental Fund		Sustainable Environment Fund			Some money in Ontario Multi-material Recycling Initiative			Resource Recovery Fund	Environmental Trust Fund Act 1990	No provincial fund		
Beverage Containers	PR: Manufacturers		PR: Distributors	PR: SARCAN	PR: All industry involved		PR: All industry involved	PR: Dept of Environment	PR: Minister - 1991	PR: Industry led (non-deposit system)	No	Yes - MR: Minister
Used Oil	Pilot project in place	Regulations developed in 1992	Regulations being developed				All oil collectors licensed	No		Yes - Vendors must deal with used oil	No	
Tires	PR: Tire Recycling Management Board - fund by tire surcharges	PR: FIRST Program funded through tire surcharges	PR: Used Tire Management Program - 1993 - incentive program	No	PR: Scrap Tire Project		1991 Environment Tax system	Study stage	No: Steering Committee developing plan	Under study	No	
Batteries	No	PR: Lead Acid Battery Collection System - funds by new battery surcharge		No	No		Yes - 1993	No	No	No	No	Yes
Composting/ Leaf and Yard Waste		Legislation in draft stage		Joint prov/federal program	Municipally run						No	
Packaging					Packaging producers led					Packaging Material Act - Industry led	No	
Diapers			Diaper Environmental Protection Tax								No	

1996 and 50% by the year 2000. The purpose of the government's efforts is to harmonize programs and direction throughout the country and to set policy framework for the country. In 1989 a task force on packaging established by the CCME (Canadian Council of Ministers of the Environment) outlined 6 basic policies:

- all packaging shall have minimal effects on the environment
- priority will be given to the management of packaging through source reduction, reuse and recycling
- a continuing campaign of information and education will be undertaken to make all Canadians aware of the function and environmental impacts of packaging
- these policies will apply to all packaging used in Canada, including imports
- regulations will be implemented as necessary to achieve compliance with these policies
- all government policies and practices affecting packaging will be consistent with these policies.³

II) PROVINCIAL

ALBERTA

Waste Minimization, Recycling and Waste Management Legislation

In Alberta, legislation pertaining to waste minimization, recycling and waste management is found in Part 9 of the EPA (Environmental Protection and Enhancement Act, Chapter 13.3 of the Statutes of Alberta). The EPA allows the government to establish surcharges for designated materials and where this occurs an industry operated recycling fund may be established using the surcharge money. The funds are administered by the industry through a management board or provincial corporation. The Lieutenant Governor may make regulations outlining how these funds should be administered, indicating how much the surcharge should be, how it is to be collected and dispersed, and identifying the designated materials and how they are to be collected, handled, stored, and processed. Further regulations have been developed in Alberta which help guide recycling programs for beverage containers and tires while recycling programs for oil and batteries are still in their early stages.

Beverage Container Recycling Regulation

Alberta regulation 128/93 forms the guidelines for beverage container recycling in the province and operates under Section 168 of the EPA. The regulations place the onus for recycling on the manufacturers of beverages by making them responsible for containers from the beginning to the end of the process. In order to sell beverages in Alberta a manufacturer must participate in the collection system.

The regulations state that the consumer is to pay a deposit at the time of purchase and will be refunded by a depot operator or retailer not less than the amount outlined in section 11 (Section 6). Depot operators do not have to offer refunds for beverage containers not purchased in Alberta (section 8). Once the containers are collected and sorted by the depot operators and retailers (Section 13-14) they are gathered by a common collection agency and the depot operator or retailer is reimbursed the sum that was refunded to the consumer, as well as a handling fee [outlined in Section 12 (section 10)]. The manufacturer must then use or dispose of the refillable containers. Manufacturers must also use the collection system to recover their non-refillable containers. By October 1993, a common collection system was to have been established for the recovery and disposal of non-refillable containers collected from depots (Section 5). Once into the collection system the collection system agent will dispose of the non-refillable containers (Section 16).

³The report, "National Packaging Protocol, 1992 Milestone Report" published in June, 1994 by CCME, provides a more detailed description of initiatives for both government and industry.

Tire Recycling Regulation

Also tied to Section 168 of the EPA, tire recycling regulations are outlined in Alberta regulation 249/92. The regulations allowed for the establishment of a Tire Recycling Management Board which is comprised of not less than 3 people appointed by the Governor General (Section 3). The board operates under the Environmental Enhancement Act and tire recycling regulations. This board is industry based with nominations coming from regional associations. Nominations are appointed by the minister for a 1 year term. Alberta Regulation 257/92 outlines the function of the officers and a second bylaw which defines the new tire advance disposal surcharge and how it is to be collected and administered by the Board. An annual report by the Board may be obtained from Public Works and is audited annually by the provincial board. The primary objectives of the board are: establish and maintain a scrap tire recycling program for Alberta; provide for the effective, efficient and economical recycling of scrap tires in accordance with sound environmental principles; and administer the Tire Recycling Fund (Section 4).

The Tire Recycling Fund is industry operated and receives its funding from the ~~advance~~ disposal surcharge on new tires and gifts, donations or bequests. Funds are used for the following: establishing and administering the tire recycling program; education programs for the purpose of the scrap tire recycling program; expenditures incurred in the collection, transportation, storage, processing and disposal of scrap tires; research and development activities related to recycling scrap tires; and promotion and development for marketing the products of scrap tire recycling (Section 6(1)). The fund also supports the administrative and overhead costs for the operation of the board (Section 6(2)).

Each retailer in the province is registered with the board. The retailer collects the surcharge on the tires at the time of sale and once the surcharge is collected it is remitted to the Board in the form and manner as required by the By-laws. Companies or retailers who wish to collect scrap tires for processors must also register with the Board for that purpose (Section 7). Those who collect scrap tires must record all tire transactions and have this available for inspection by the board (section 16).

On September 1, 1992 Alberta placed a \$4/tire surcharge on all new tires. This surcharge assists in paying for the operating cost of administering the tire recycling program. A non-profit corporation administers the program, operating independently of the government. Comprised of representative stakeholder groups, the boards has the authority to set and collect surcharges, and dispense funds to recyclers. Companies bid on tenders issued by the board to collect, transport and process scrap tires. The surcharge funds are used to pay for these tenders. The board also allocates funds to major processors, research and development, and education. The surcharge also funds the "Futures Fund" which develop new industries and other opportunities for new companies (Tire Talk Winter 1993, pg. 3.)

Oil Collection

Alberta has no legislation in place for oil collection. However, there is currently a pilot project in place. Once the results of the project are known, legislation could be developed with the support of the industry association (CPPI). The project has been set up by the oil industry under part 9 of the act (pg. 100) which allows for the use of economic instruments on designated materials. Oil, filters and plastic oil containers are being collected at designated depots. If regulated, consumers will likely pay a surcharge on oil to subsidize the recycling system.

Batteries

Bovar consultants (1993) prepared a technical report that found that the battery industry already has a high recycling rate, at close to 75%. It concluded that batteries should not be taxed because with the high recycling rate much of the lead in our batteries is already recycled. The town of Trail, BC and Winnipeg, MN have lead battery smelters. (Presently, Canadian Tire charges \$5 extra for batteries if an old one is not returned at the time the new one is purchased.)

BRITISH COLUMBIA

Sustainable Environment Fund Act

This legislation enables a special account to be established for a consolidated revenue fund. The goal is to provide for programs to protect and enhance the environment and for forest renewal initiatives. The fund is to consist of \$50 million, transferred from the Lottery Fund on April 1, 1990, and amounts not yet determined also from the Lottery fund. Funds will also come from the sale of government trees and seedlings, levies derived under a number of acts including the Waste management Act, and associated regulations. Included under expenditures is funding for initiatives to reduce solid waste. The environmental levies have been outlined in Section 11. Lead acid batteries, pneumatic tires are hazardous materials and a levy of \$5/battery and \$3/tire has been applied to them (Sustainable Environment Fund, Chapter 27, p.249).

Tire Recycling

Similar to Alberta, BC imposes a surcharge on the sale of new tires to offset the cost of recycling used tires. As of July 1, 1990, BC retailers began charging a \$3.00/tire environmental levy for the purchase of any tire over \$30.00 in price. A portion of the funds from this levy go toward funding the FIRST Program (Financial Incentives for Recycling Scrap Tires). The intent of the FIRST program is to overcome the financial costs of collecting tires and manufacturing and using tire derived products. The FIRST program assists tire collectors, processors and end users in BC who use tire derived products to manufacture new products or who use tire derived fuel for energy recovery (BC Environment, 1993).

The impetus for developing a tire recycling program came after the BC Ministry estimated that only 15% of the 2.5-3 million used tires discarded annually were being recycled. Faced with these concerns the government turned to the private sector to assist in developing a viable recycling industry for tires. The private sector responded by developing a collection, transportation, processing and recycling system. In 1991, the Ministry of the Environment officially set up the Scrap Tire Collection and Recycling Program and the FIRST program was established to help the creation of the system. The levy on the tires is placed into the Sustainable Development Fund which administers the FIRST Program (BC Environment, 1993).

A Scrap Tire Advisory Committee (STAC) was formed in May, 1991 to advise the ministry on the operation of the tire recycling program. It has about 60 members representing tire dealers, haulers, recyclers, processors, endusers and representatives of provincial and local governments and the science council of BC. The council's main role is to work with the ministry to help fine-tune the program, share mutual concerns and help solve problems.

The BC government has focused on two areas of concern. First, they are ensuring that retailed tires and temporary local government landfill accumulations are collected and recycled. Secondly, they are attempting to reduce the amount of tires now in stockpiles. The ministry allows tires that were stockpiled prior to the commencement of the program to be placed into the system but controls the movement of tires based on the available processing capacity. The size of tire inventory that processors and end users can accumulate and claim for transportation and end use assistance is also controlled.

The initial repository for used tires are BC tire retailers. Retailers must be willing to accept and properly store used tires which they may sell or enter into the tire recycling program as scrap tires. Used tires are collected by "tire jockeys" or hauled by the generator to the processor themselves. Traditionally, the most scrap tires have come from auto dismantlers, large commercial users and householders. In regions a long distance from a processor, an intermediate step may occur where tires are collected at a marshaling yard until there are enough tires to make an economical haul. Financial assistance for the transportation of tires may be provided to offset the cost of the transport of tires from remote areas to processing facilities. The transportation credit is provided to the processor and it is expected that it will flow down to the transporter, retailer and collector.

The final step in the system sees the tires reach processors or end users. Depending on market needs, processors change the form of the tire to produce shreds, chips or finer crumbs for end users. An

end use credit of \$0.90 to \$1.50/tire is available to processors to reduce their cost of processing. Marshalling yards, processors and endusers are the three types of participants in the system who are required to register with the ministry as having existing stockpiles if they wish to apply for this type of financial assistance (BC Environment, November, 1991).

Endusers are comprised of two groups, those who use the tires for energy and those who use the tires to create recycled products for the market place. There are two levels of credits available to end users of tire derived products (TDP). Products requiring heavy processing receive \$1.50/tire and products with a minimum amount of processing receive \$1.00/tire. The credit given for using tire rubber as a fuel has been reduced to \$0.90/tire. The new rate balances the costs of burning tire derived fuel (TDF) with its value as a fuel source.

End user credits are also available to processors during their start-up period and seasonal market variations. The length of the start-up period is negotiated between program administrators and individual participants. Scrap tire transporters who are registered with the program administrators may receive transportation credits according to a schedule that breaks the short-haul rates into four increments. And finally, processors are eligible for end user credits on TDP destined for export, provided that priority is first given to serving the needs of BC users. All transporters and processors are registered and processors may only receive tires from registered transporters.

The research and development in tire recycling is under the Recycling Research Demonstration and Development Fund, also known as R2D2. The fund is administered by the Science Council of BC, which is a crown agency. The fund offers research and development grants to BC companies to develop innovative products or new processing technology for recycled tires. Two competitions are held each year to determine who receives the grant money. The projects need to demonstrate: their innovation; their scientific merit; the potential to use a significant number of tires; that a viable market for their products or technology exists; and that their product or new process will not harm the environment (Science Council of British Columbia, 1992).

Batteries

Since July 1, 1990, a \$5 "green levy" has been collected on the sale of each new battery weighing more than two kilograms. The revenue is channelled to the Sustainable Environmental Fund which provides funds to operate the BC Lead Acid Battery Collection system. This self-sustaining program is based on a working partnership between stakeholders, collectors, haulers, and recyclers. This is a life cycle stewardship program by the industry which attempts to ensure that handling, processing and recycling facilities are in place to reduce the introduction of batteries or constituents into the environment (Battery News, March, 1992).

The Battery Collection system was developed to make use of the existing system to the fullest extent possible. Every retailer is required to accept at least one used battery for every new battery they sell. The retailer is also encouraged to collect a \$5.00 minimum core charge for each new or reconditioned battery sold to a customer not turning in used batteries. The core charge is refunded if a used battery is provided to the retailer within 30 days. The Advisory Committee sets the level for the core charge on automotive batteries. All participants are required to be registered and document their transactions quarterly (BC Environment, May, 1991).

The collection system involves a Transportation Incentive Program (TIP) and the voluntary core charge at the retail level. The TIP provides sufficient funds to insure batteries can be economically collected and hauled from all regions of the province to processing plants in an environmentally sound manner. The incentive is paid to the processors of used batteries and market pressures work to move the money through the whole collection system (BC Environment, May, 1991).

A recent regulation designed for haulers of batteries offers monetary incentives to registered program participants who break or export scrap batteries collected in B.C. It ensures that collectors and assemblers deliver the scrap batteries for recycling instead of dumping them. The

Administration and Monitoring Agency (AMA) announces new incentive levels (in \$/lb) to participants (collectors, assemblers, haulers, breakers, exporter/brokers and smelters) every month and allows them to freely negotiate scrap battery transactions based on the incentives to be paid to the breaker or exporter. The incentives are determined using a Transportation Incentive Model (TIM) developed from base recycling costs, profit margins and regulatory compliance costs provided by program participants. (Battery News, March 1992) In addition to these base costs, the model recognizes the variable transportation cost as a function of the distance between a scrap battery collection zone and its designated breaker. The transportation costs are updated quarterly. The other TIM variable is the world price of lead, which is used monthly to compute the revenue available for various battery recycling stakeholders. The model uses the computed revenue, variable transportation costs, base and recycling compliance costs and a fixed profit margin (10%) to compute an incentive level on batteries collected for each zone. The AMA reviews the incentives and activity reports periodically, as well as monitoring the incentive so as to pass it on to the assemblers and collectors. The BC Battery System Advisory Committee reviews the program operation and assists in both the program operation and developing policies. (Battery News Summer 1993)

Composting

The BC Department of Environment recognizes that composting of yard waste and wet household waste will become an increasingly important component of solid waste management programs. In 1992, regulations were drafted which outlined the details of the requirements for yard waste composting as separate from other composting facilities. The regulations include: design criteria; operating criteria; compost classifications; and criteria for compost use. (Waste Management Act Draft document, 1992).

Return of Used Lubricating Oil Regulations

Beginning in September, 1992, new regulations were developed for all retailers, wholesalers, distributors of lubricating oil. The regulations set out the requirements for return facilities. Every seller must provide a return facility on their premises or contract with a return operation located within 4 kilometers of the retailer's premise. The return facility is not to charge any individual who is returning less than 20 litres of oil or larger quantities equivalent to the largest container sold on the premises (Order in Council No. 364, Province of BC, 1992).

Municipal Solid Waste Management Financial Assistance Program

In January 1993, the BC government developed the Municipal Solid Waste Management Financial Assistance Program, as a consequence of the growing stress on existing landfills and the difficulties of locating new ones. The goal of the program is to assist in reducing the solid waste stream by 50% by the year 2000. The program has introduced five solid waste management financial programs to assist in reducing the waste stream: the Solid Waste Management Planning Financial Assistance Program; the Public Education and Information Financial Assistance Program; The Multi Material Recycling Financial Assistance Program; The Recyclable Goods Transportation Assistance Program; The Rural Waste Management Financial Assistance Program (BC Environment, January, 1993).

The Solid Waste Management Planning Financial Assistance Program assists municipalities in developing or amending their Solid Waste management plan. The Government provides some funding up-front, based on the population size and the number of municipalities in the region. The remainder of the cost is shared between the regional district and the provincial government (BC Environment, January, 1993).

The Public Education and Information Financial Assistance Program helps applicants in: educating and informing the public about activities that can be adopted to reduce, reuse and recycle municipal waste; influencing attitudes and behavioral patterns to achieve the 50% reduction goal; and raising awareness of the opportunities available in the management of municipal solid waste (BC Environment, January, 1993).

The Multi Material Recycling Financial Assistance Program aids in the development and implementation of initiatives designed to achieve the reduction goal. Funding may cover 1/3 of the capital and installation costs and 1/2 of the initial promotion and education costs related to the program (BC Environment, January, 1993).

The Recyclable Goods Transportation Assistance Program helps eligible applicants with the transportation costs of moving recyclable material from a central collection area to market. These grants are designated for smaller communities (population less than 75,000) and the island areas (BC Environment, January, 1993).

The Rural Waste Management Financial Assistance Program assists applicants with: the cost of closing inappropriate rural landfill sites and establishing rural transfer stations; the cost of collecting and moving discarded vehicles and white goods to a central location for subsequent transportation to market (BC Environment, January, 1993). All these projects are cost shared with the municipality and the provincial government.

Under the BC waste management Permit Fees Regulation, the province will charge municipalities for refuse disposal after December 31, 1995 unless the municipality has an approved solid waste management plan that a) adopts the 50% reduction by 2000 goal of CCME and b) outlines a volume based user pay scheme.

MANITOBA

Waste Reduction and Prevention

Manitoba's waste management policy, the Waste Reduction and Prevention Act was assented in March of 1990. It empowers the Government with the authority to establish financial assessments to support waste reduction programs for specific products and materials. The assessments include deposits, handling fees and pre-disposal fees, as well the power to license distributors or prohibit the sale of products or materials in Manitoba (WRAP Update Dec 1992). The Act is intended to be used in consultation with producers, consumers, and other government agencies to make recommendations and implement improvements in waste reduction. The department has the power to oversee the programs and practices of consumers, producers and governments. As well, grant programs may be offered by the department for research in waste reduction (Section 3). Finally, the department is involved in the preparation and publication of waste reduction education material.

This legislation allows the government to put deposit systems and handling fees in place for material it deems necessary (Section 8.1-8.2). The Act outlines that where a deposit system exists the producer of the product or material is responsible for the collection of the fees from the consumer. Whether the fee is collected or not, the producer is responsible for the amount of fees that should have been collected (section 8.3). When the good is returned the deposit is returned to the consumer whereas funds not returned to the consumers are turned over to the government (section 8.4). In addition, producers pay a pre-disposal levy or license fee (Section 12). The following are programs in place and being development to reduce the waste stream.

Beverage Container and Packaging Regulation (August 1992)

Regulations apply to ready to serve beverages sold in sealed containers such as metal cans, glass and plastic bottles. Dairy and infant formula containers are not on the list. As of September 1, 1992 all beverage container distributors had to be licensed in order to sell their products in Manitoba. It is illegal for any one who does not have a license to distribute these products in Manitoba. The intent of the regulation is to ensure that recovery programs in Manitoba meet or exceed levels achieved in other provinces. A future goal is to expand recovery to all beverage containers and allow the distributors to take direct responsibility for implementing programs for the recovery of their containers.

The regulation includes the following requirements: a) the filing of waste reduction plans by beverage distributors; b) licensing the distribution of beverages in Manitoba; c) the retailer pays the

government an amount assessed per container each month as set out in the Beverage Container and packaging regulation; d) establishing target recovery rates for certain containers in the first year of the regulation: Glass (non-refillable): 40%, PET: 50%, Aluminum: 60% and refillables: 95% - Current (1992) rates: Glass (non-refillable): 12%, PET: 25%, Aluminum: 43 %, Refillables: 97%; e) establishing penalties for not meeting these targets; and f) the retailer will either install recycling bins or inform customers of the closest recycling depot and provide recovery information for "container processors" (WRAP Series, April, 1991).

The numbers of containers recovered in 1993 did not meet the targets set out by the regulations and the industry was penalized \$500,000 by the Government⁴ At this time a monitoring system was put in place to measure the progress towards the regulation goals (WRAP Update, December 1992).

Tire Recycling

Tire recycling regulations are in the process of being developed and approved. In 1993, the Manitoba Government introduced the Used Tire Management Program (UTMP) an incentive program established to ensure that old tires are diverted from landfill sites. The program supports existing efforts and encourages future investments in this area. Companies are eligible to receive financial credit for each tire that is recycled or used for energy recovery. These companies have to be registered with the UTMP and meet environmental standards. The funding for the program is from the \$3.00 levy/tire established under the Waste Reduction and Prevention Act. This levy helps to alleviate the cost of collecting and transporting used tires (Manitoba Environment, Information Bulletin, December 1993). Manitoba's registered tire recycling companies receive a credit of up to \$2.50/tire which is used to produce marketable products or energy from used tires. To be eligible for the credit these companies must submit proof of their sales in the form of auditable records (Tire Talk Summer, 1993). In addition, a \$.50/tire incentive is offered to local governments who want to develop tire collection yards.

The Used Tire Management Regulations are administered by the Department of the Environment under the Waste Reduction and Prevention Act. It enforces regulations, issues and inspects regulations and establishes tire handling and storage guidelines. The minister also appoints a Used Tire Management Board that sets the policy direction for the UTMP through multiple stakeholder decision making. A Program Coordinator is contracted by the board to translate Board policy into procedures for the collection and disbursements of funds. He or she also maintains an information management system (Manitoba Environment, Information Bulletin, December 1993).

Used Oil

In 1992 the Department of Environment reported that they were in the processing of developing regulations that will "establish standards for the storage and handling of used oil and will require sellers of oil to accept used oil or identify a near-by recovery option" (WRAP Update December 1992).

Diaper Environmental Protection Tax

The intent of the tax on diapers is to discourage overuse and to make consumers think about the purchase of diapers. The EPT on diapers is expected to raise an additional \$1.5 million annually for the Environmental Innovations Fund and programs related to regional waste management (WRAP Update December 1992).

⁴Personal Correspondence, 1994

Newspaper (ONP)

In 1992 a focus was placed on the "development of collection, processing and marketing capabilities for newsprint" (WRAP Update December 1992). The emphasis was placed on developing regional processing capabilities to handle and move the material to market.

Direction of Future Regulations for Waste Paper and Packaging

On April 28, 1994 the Minister of the Environment announced a new program called "The Stewardship of Designated Products and Materials" in which businesses will become responsible for the waste products they have produced. Under this new regulation the manufacturer will pay a levy based on how much paper and packaging they use or produce. Pending further consultation, industry regulations will be developed to target two waste streams: packaging of consumer products, paper used for newspapers and magazines, and other advertising material. This has been considered under an expansion of the Beverage Container and Packaging Regulation. Manufacturers from outside the province will be partly responsible for the levy. Municipalities, with assistance from the provincial government, are responsible for operating packaging recovery programs. The funds collected from the levy will be used to support and expand the existing recycling initiatives in the province (Manitoba Government News Release, April, 1994).

Environmental Innovations Fund

In 1992 the government provided \$1.5 million from the Environmental Innovations Fund to support waste management related projects at the regional and community levels (WRAP Update December 1992).

NEW BRUNSWICK

Solid waste management in New Brunswick is guided by the Clean Environment Act. In 1986-87 a regional solid waste management program was initiated by the province. They divided the province into 13 regions, each with their own provisional solid waste management committee. The committee is comprised of volunteers and government representatives who work toward the goal of developing a solid waste management strategy for their region (Section 15(2) and 15.1(1)). Some regions have constructed and initiated operational strategies while other committees are just beginning. These committees have until 1997 to complete the program. The act enables the government to establish intergovernmental committees to coordinate and implement programs. It also allows for the Lieutenant Governor in Council to assist municipalities or a corporation with plans for the management of solid waste, including collection and disposal of solid waste and the operation of solid waste collection and disposal facilities (Section 15.2(2b.1)). These corporations are non-profit (Department of Municipal Affairs and Environment, 1994). The Solid Waste Commission (government funded) funds 50% of the initial regional committee and capital investment costs while the government front loads the development by paying the other 50%. Tipping fees from the municipalities pay for the operation costs.

Beverage Containers Act (enacted May 9, 1991)

In New Brunswick all beverage containers must be approved by the Minister, or a designate, for retail in the province. Dairy containers are not on the list of recyclable containers whereas soft drink and juice containers have been since 1992 and 1993, respectively. In applying for a beverage container to be approved for use, a distributor must supply a description of the container and its markings, and outline how and where the empty containers will be collected. All new containers must either be recyclable or refillable. There is a deposit required for all containers at the time of purchase (Section 7(1)). For refillable bottles the refund is equal to the deposit and for recyclable containers the refund is equal to a percentage of the amount of the deposit as outlined in the regulations (Section 5(3)). The distributor collects the deposits from the retailer for containers belonging to that distributor. The distributor collects their refillable and recyclable beverage containers from redemption centres and retailers and pays them the refund and a handling fee as outlined in the regulations (Section 15). The Minister has the authority to request that a

higher ratio of refillable to recyclable containers be obtained and that there be more variety in the sizes of refillable containers (Section 16). The difference between the deposit and the refund on the recyclable container is called the Environmental Fee and is paid into the Environmental trust fund (Section 18-19).

All redemption centres must be registered by the government (Section 13). Both redemption centres and retailers may accept empty containers, however, retailers do not have to accept empty containers. If they do not accept returns, retailers must display a notice where the nearest return centre is (Section 14). Both the operator of the redemption centre and the retailer do not have to accept containers which are broken, containers that will not come clean by normal washing or containers where the distributors markings are not clearly visible. As well, a retailer does not have to accept more than 8 containers at any one time.

The Beverage Containers Act (April, 1992) outlines the rules of operation for the redemption centre and the distributor. As well it establishes the amount of the deposit, refund, and handling fees for the containers. For a deposit of \$.10, \$.05 is returned to the customer, \$.025 is directed to the trust fund and the handling fee is \$.025.

Environmental Trust Fund Act (June 1990)

The fund is used to: pay costs to provide environmental protection and restoration: promote sustainable development of natural resources and conserve natural resources: and educate the public on environmental issues. The money for the fund comes from the Lottery Commission and environmental fees.

Waste Reduction Fund

Municipalities and local service districts may apply each year to have initiatives funded through this fund. The funding is on a 50-50 basis and the maximum amount granted is \$5,000 (Department of the Environment, 1994).

Tires

There is a Steering Committee for the Atlantic Provinces which is developing a used tire management plan. There are no recommendations formulated yet (Personal Correspondence, 1994).

Batteries

There is not a perceived problem with battery disposal as the industry recycles the scrap lead already. There are no policies or regulations being developed (Personal Correspondence, 1994).

NOVA SCOTIA

In Nova Scotia municipalities are responsible for the management of household solid waste while the province establishes standards and waste diversion targets. Municipalities must apply for waste disposal site approval and have solid waste disposal strategies in place. The province at this time has no formal strategy for waste reduction but one is being developed. They are, however, following the general CCME guidelines of 50% reduction by 2000 with reduction goals of 10% by 1995 and 25% by 1997.

New Environment Act (RCO Update February 1994)

The department of the Environment is consolidating and updating their legislation which now covers 16 statutes. The new Act recognizes the principles of sustainable development, polluter pay, stronger enforcement capability, public participation and access to information and shared responsibility by the government, industry and individuals for environmental protection. The existing Resource Recovery Fund, which provides financial support for litter control and recycling will continue under the ACT. Income for the fund will come from voluntary payments or surcharges on designated materials. Manufacturers and distributors of commodities may be required to reduce packaging. As well, the new Act will retain the regulations against littering.

Recycling Act (June 15, 1989)

The purpose of the Act is to provide effective waste management practices, encourage recycling and protect the environment. The act establishes a resource recovery fund for the purpose of funding litter control and recycling programs. The money for the Resource Recovery Fund comes from industry and is given to the municipalities for recycling, litter prevention programs and demonstration projects composting. Municipalities apply for the funds on a project by project basis.

Under the act the Minister has the power to: promote recycling; provide information on the cost, operation of recycling and on the market conditions; encourage the implementation of policies to recycle waste materials and to promote energy conservation; undertake research with respect to solid waste management diversion programs; set standards for material degradability and recyclability; and to educate the public on recycling. For those who implement programs the regulations allow for: cost-sharing agreements for recycling and waste separation programs; setting standards for waste separation; providing payments for designated product programs; defining a designated product; and licensing facilities and approving programs.

Resource Recovery Fund Regulation

There is a Resource Recovery Fund Board that consists of a representative from the various sectors of the province, a municipal representative and a member of the Clean Nova Scotia Foundation. The primary function of the board is to review applications and reports from the Department. The regulations outline how the fund is to be handled, where the funds come from and how to apply to receive funds. As well it identifies the designated products and types of approved programs. The designated products are newspaper, beverage containers, non refillable alcohol beverage containers, food containers, non-food containers, packaging, disposable diapers, automobile tires, batteries, lubricating oil, and motor vehicles. The programs are as follows. Program #1- Assistance is available to set up a Residential Curbside Recycling Program (up to 70%), with some assistance for the operating costs for the first 18 months (up to 50%). At the conclusion of the cost shared program the costs of the continuation of the program can be financed through tipping fees. Program #2- Similar assistance is available to set up an Apartment Recycling Program. Program #3- Assistance is also available to establish a depot drop or recycling program. Program #4- A recycling subsidy program is available for specific programs and projects which encourage the flow of recycled material to re-use or to develop markets for reused or recycled materials. Program #5- A transportation subsidy program is available for the movement of recycled material to reuse or recycling applications. Program #6- Also approved are recycling promotions, demonstrations and education or research programs. Program #7- Derelict vehicle removal program.

Beverage Container Act

The Beverage Container Act ensures containers are recyclable and there is a deposit refund system in place. The regulations list acceptable beverages as: carbonated or non-carbonated soft drink; liquor; non-alcoholic wine and beer; carbonated or non-carbonated bottled water; carbonated or non-carbonated flavoured drinks; dairy products intended for human consumption by drinking; fruit and vegetable juice. This regulation specifies what beverages are designated products and what retail operations are depots and container collection depots. The process for depot registration and application for container approval is also covered. Finally, the deposit and refund rates are established in the regulations. The retailer collects the deposit and both the retailer and collection depot pay the refund. The retailer pays a 100% refund of the deposit and the collection depot pays at least 80% of the full deposit. The manufacturer pays the retailers and depot operators a cash refund equal to the full deposit. A sum of \$0.015 per container is paid by all manufacturers, distributors and retailers who supply the Nova Scotia Liquor Commission. Payments are collected by the NS Liquor Commission who acts as an agent for the Department of Environment for the purpose of collecting the sum.

Batteries

There are no recycling regulations for batteries though there are regulations for their safe storage once they have been collected.

Tires

These are a designated product but a recycling and collection program is still in the study stage.

Used Oil

There are no regulations for used oil. They have a voluntary system where consumers may deposit used oil at garages. There are regulations with respect to the transport of the used oil under the Dangerous Goods and Hazardous Waste Regulations.

Derelict Removal of Vehicle

For every vehicle collected a municipality receives money from the Resource Recovery Fund.

Litter Abatement Act (June, 1989)

The specific purpose of this act is to reduce litter. The minister has the power to: encourage the standardization and enforcement of municipal litter bylaws; encourage municipalities to provide accessible solid waste collection depots for persons who do not have regular garbage pick up; and establish ongoing litter campaigns. Within the act there is allowance for the establishment of return systems for designate products. Regulations may be developed for: regulating the environmental acceptability of packaging; designating a product for the propose of this act; designating retailers and other sites as return; prescribing the manner in which packaging may be disposed of and requiring manufacturers, distributors to develop appropriate collection systems for the proper disposal of packaging; licensing depots; establishing refund amounts; designating packaging as returnable and requiring it to labelled accordingly; and detailing how these collection and return systems should be operated. (Information for Nova Scotia was collected directly from the pertinent legislation).

NEWFOUNDLAND

The Newfoundland provincial government has targeted the goal of 50% reduction of the waste stream by the year 2000. The Department of Environment has taken a two prong approach to achieve this level of reduction. First, municipalities are responsible for the collection of household waste and the establishment of recycling programs. The provincial government does not fund recycling or collection initiatives so the municipality must fund each program or find alternative funding like the Environmental Partners Fund or the Shell Environment Fund. The second approach is a stewardship for the manufacturers and retailers of consumer products. The Atlantic ministers of the Environment have established a committee to look at possible solutions for the disposal of tires, batteries, biomedical waste and waste oil. The committee has at this time chosen to focus on tires and then move on to other products (Personal Correspondence, 1994).

Beverage Containers

After the Department of Environment negotiated with the soft drink industry, the Canadian Soft Drink Association and the Grocery Products Manufacturers of Canada, the industry representatives presented the government with a two fold plan. It includes an anti-litter campaign and a multi-material collection program. The government has agreed to this plan if it is consolidated into one plan and the industry prepares a business plan for the program. The department is presently pursuing the stewardship approach, however, if the recycling numbers are not high enough the department may consider other systems like a deposit refund (Cowan, Speaking Notes, 1994).

Batteries

Presently, there are no regulations in place for battery recycling. There are, however, individual private initiatives existing in the province which operate without provincial guidelines (Personal Correspondence, 1994).

Tires

A committee has been established to study tire recycling. There is a recognition by the industry that they have some responsibility for the ultimate disposal or reuse of their products. Retailers, manufacturers and the government are jointly funding a consultant's report that aims to prepare an operational plan for recycling tires (Personal Correspondence, 1994).

Packaging Reduction Program

The reduction of packaging waste is a major objective of the Newfoundland government. They considered a number of options, including beverage container legislation, but felt an approach that includes all packaging waste was more appropriate. The Packaging Material Act enables the provincial government to create legislation to deal with packaging and how packaging should be defined. For example in the multi-material collection proposal newspapers may be included in the definition of packaging. The Minister has the power to undertake or support programs or research into: the environmental profile of packaging materials throughout its life cycle; market development for recovered material from recycling; and packaging waste reduction reuse or recycling activities (Section 5(a)). The Act also outlines the areas in which the government can develop regulations if required.

On April 20, 1994 an industry led campaign was announced to take primary responsibility for addressing the problems created by the waste it produces. The program has two initiatives which the government views as fundamentally interrelated. First, an anti-litter public awareness campaign is being developed and funded by the Canadian Soft Drink Association (CSDA). The program is monitored by the provincial government and has a target of 50% reduction by year 3 and 70% by year 5 (News Release, April, 1994). Secondly, a multi-materials collection system is being organized and supported by the members of the Canadian Industry Packaging Stewardship Organization. The system will build on an existing municipal, community based and private sector recycling infrastructure. The system will compliment the existing systems while providing greater opportunities to reduce final consumption packaging from entering the landfill (News Release, April, 1994). This program will commence in early 1995 with the collection of levies (Speaking notes for Cowan, 1994). The government likes the concept of industry stewardship but reserves the right to take regulatory action should target goals not be met. The justification for this approach as compared to a beverage container regulation is that the CSDA feels that a deposit system has a significant cost both in terms of its implementation and negative employment impact, and can address no more than 10% of the litter problem (CSDA speaking notes, 1994).

The elements of the multi-material collection program are as follows: the program will focus on a much broader range of materials than just beverage containers; an industry funding organization into which packaging producers and distributors will pay a levy will be established; and municipalities which support the program will be eligible for financial support in the development, establishment and/or expansion of multi-material collection/ recycling programs. The program is meant to complement, not replace, the efforts of existing recycling programs that have been established by municipal groups. The government has committed support to the program by implementing regulations to ensure a level playing field within the industry so that all industries generating final consumption packaging are participants in the program. They are hoping to encourage system efficiency and ensure after-market development through market-driven incentives which address the three R's. The program emphasizes industry stewardship and the government acknowledges the proactive approach being taken by industry (News Release, April, 1994).

Household Hazard Wastes

These wastes are also the responsibility of municipalities, who obtain funding for hazardous waste days from the Green Plan.

Waste Oil

They are presently in the final draft stages of regulations for waste oil disposal and are using this draft as a policy guideline. The proposed act consists of the following key features. The traditional methods of waste oil disposal such as landfilling and road oiling will not be allowed. The responsibility to handle waste oil in an environmentally sound manner is placed upon the generators of the waste oil. The vendors of lubricating oil are required to accept a maximum of 10 litres of used oil back from consumers for every four or more litres of lubricating waste oil they sell. They are also required to construct an approved storage facility for returned waste oil. Waste oil must be analyzed to determine if the oil is contaminated prior to disposal, sale or transfer of possession and checked for substances outlined in the regulations. Waste oil collectors can bulk the oil prior to having it analyzed for their clients. Records of stored waste oil must be maintained and the facilities for the storage, handling and transportation of waste oil need to be licensed. Households, farmers, fishermen and loggers are exempt from analytical, storage and record keeping requirements. Storage tanks must be installed by generators who store more than 2500 litres of waste oil. Vendors have the responsibility of inspecting returned oil to ensure it is acceptable and contact their Regional office of the Department of Environment and Lands regarding any used oil they suspect may be contaminated (Waste Oil Recycling Regulations Brochure, May, 1992).

An Act Respecting the Disposal of Waste Material

The act empowers the minister to establish, construct and operate waste disposal sites as he or she deems necessary to maintain public safety. The Minister may also promote or conduct research in the field of waste disposal. The minister can make an area a waste material disposal area by creating a committee or franchise that is responsible for the operation of a waste management system and the collection of money from persons who live in the area (Revised Statutes, 1990).

NORTHWEST TERRITORIES

The Renewable Resources department is guided by the Environmental Protection Act. At present there is not a beverage container act and few regulations regarding containers exist. Liquor commission regulations state that containers can be returned to the liquor store as a method of keeping liquor containers out of the litter. There is cooperation between municipalities in dealing with hazardous waste and recycling material. Most of their initiatives follow guidelines but not regulations. There is no need for tire or battery recycling because there are very few cars. Eleven or twelve communities have household hazard waste programmes, however, there is no disposal system within the territories so chemical companies remove the waste. Communities may collect aluminum cans but other recyclable are not always cost effective. The recycling that is carried out is done by non-profit organizations and is market dependent as transportation costs are prohibitively expensive. These goods are shipped south and most of the recycling programmes get backhaul rates from trucking companies. There are no direct regulations that exist for recycling programmes and controls, if any exist, arise through the departments of fire, health, and renewable resources. Education around the 4 R's is emphasized in communities (All information through personal correspondence, 1994).

ONTARIO

In two reports completed in 1989 by the Association of Municipalities of Ontario it was recommended that changes be made to waste management legislation that would give municipalities the authority to develop modern waste management programs (Municipal waste management powers: A discussion paper, 1992). As a result Bill 7, a municipal statute, came about in 1993. This Act amended the

municipal waste management provision in the Acts dealing with municipal powers and responsibilities. These amendments provide municipalities with the explicit authority to develop comprehensive waste management systems geared to waste reduction (Highlight sheet, 1993).

3R regulations

In February 1991, the provincial government announced the Waste Reduction Action Plan which required municipalities to develop 3R programs. The plan's main purpose was to aid municipalities in meeting the overall target of a 50% reduction in the amount of waste going to disposal facilities by the year 2000. Many municipalities had been offering 3R programs but did not have the legislative power to offer a full range of programs. The new act provides the municipalities with the power they require to develop comprehensive waste management systems. This new power allows them to establish facilities and conduct research and development activities to regulate the use of their waste management system. However, should a county want to take over a portion or all of these responsibilities there must be a majority of the local municipalities in favour of the move. The act empowers the municipalities: to require separation of waste and recyclables at source; to establish user fees and incentives for waste reduction; to increase the levels of fines for breaching municipal waste bylaws; and finally, it empowered the municipalities to market products made from waste material (Highlight sheet, 1993).

Regulation 101/94 (Part I)

Ontario enacted a new program on March 3, 1994 called 3R regulation. Regulations 101-105/94 fall under the Environmental Protection Act and specify who is required to perform what type of waste reduction. It requires: recycling and backyard composting programs for all municipalities with a population of 5,000 or more; leaf and yard waste composting in municipalities with a population of 5,000 or more that have existing collection programs for these wastes and in all municipalities with more than 50,000 people. Also required are waste audits and waste reduction workplans for large retail complexes, hospitals, schools, hotels, and motels, restaurants, office buildings, large construction and demolition projects and manufacturing establishments. Required further is recycling for the above noted commercial sectors in municipalities over 5,000. Finally, packaging audits and packaging reduction workplans for Ontario industry; recycling programs for multi-unit residential buildings with six or more units in municipalities of 5,000 or more are required. Municipalities in northern Ontario have until July 1, 1996 to implement a blue box program while other cities in southern Ontario must comply by January 1, 1995. Municipalities will only have to collect recyclables from households and multifamily units (Environment Policy and Law, March 1994). These regulations are designed to ensure that industrial, commercial and institutional (IC&I) sectors as well as municipalities, develop programs to reduce the amount of valuable resource going to disposal (Ontario Ministry of Environment and Energy, 1994 [OMEE]).

Municipal Blue Box Programs (Part II)

Through regulation 101/94 (part of the 3R regulations) the provincial government requires municipalities to provide recycling and composting programs. The Blue Box Waste Management Systems regulations determine the type of program to be established based upon the size of the municipality. Municipalities with a population over 5000 must establish and maintain a blue box management system by January 1, 1995 and in Northern Ontario in areas of over 15,000 by July 1, 1996. Their systems must include all residential units, the material must be source separated, and information must be provided to the users of the systems. Collection of the blue box must occur at least half the frequency of which municipal waste is collected. The municipalities must collect all basic blue box waste categories and at least two more categories of materials from the supplementary blue box waste list. They are encouraged to add other materials to their source separation program in addition to the mandatory materials listed (A guide to source separation, OMEE, 1994). The municipality must provide residents, including those living in apartment buildings, access to recycling services equivalent to garbage disposal services. If curbside

garbage collection is provided then collection of recyclables must be provided at the curbside. If collection is provided at a collection depot then recyclable material must be accepted at depots (A guide to source separation, OMEE, 1994).

For northern Ontario, municipalities with a population under 15,000 may implement a reasonably convenient system such as depots before July 1, 1995. If a depot system is not in place by then a curbside program must be in place by January 1, 1996 (Guide to source separation, OMEE, 1994). Municipalities over 5000 are required to establish and maintain source separation programs and again must collect recyclables at the curbside or depot in conjunction with where they collect their garbage. Municipalities in northern Ontario between 5000 and 15000 people may choose a depot system regardless of the type of garbage collection operation but if this option is chosen it must be implemented by July 1, 1995. Recyclable material must be separated properly from other materials and they must collect all material on the basic list plus at least two materials from the supplementary list. Co-mingling, the collection of separated materials in a common compartment, is allowed. The public must be adequately informed about the accepted materials for recycling (News Release, OMEE, March, 1994).

Leaf and Yard Waste Systems

Also as part of 3R regulations are specifications for leaf and yard waste systems. A municipality with a population of over 5,000 must operate a leaf and yard waste system that includes the provision of home composters to residents at cost or less than cost and increased education and awareness programs. For a municipality with over 50,000 residents the system must include the collection or acceptance of leaf and yard waste that is convenient to the generators of the waste by providing access to dump sites. Material dropped off at the dump sites must be composted. These programs need to be in place in Southern Ontario by January 1, 1995 and in Northern Ontario by July 1, 1995.

Municipal Waste Recycling Depots (Part III)

Regulations for waste recycling depots state that the waste accepted needs to consist solely of waste from one or more of the schedule categories. The material from schedule 1 and 2 needs to be source separated from other kinds of waste. Waste is then shipped directly to the user of the waste, the waste distributor, or a recycling site or a waste disposal site.

Municipal Waste Recycling Sites (Part IV)

Recycling sites differ from depots in that they accept waste from one or more of the categories set out in schedule 1, 2 or 3 that has been separated from other kinds of waste. They then transfer the waste to a recycling plant either after or prior to processing it. However, the waste must be separated from other kinds of waste.

Leaf and Yard Waste Composting Sites (Part V)

For municipalities in Southern Ontario with a population less than 5,000 they do not have to meet the leaf and yard requirements. For municipalities with more than 5,000 residents the municipality must implement a home composting program. For municipalities in Southern Ontario if the population is more than 50,000 the municipality must collect or accept yard waste and compost it. For municipalities in Southern Ontario if the population is less than 50,000 then the municipality must compost the leaf and yard waste if it provides for separate pick-ups for leaves and other organic material. However, if the municipality does not provide separated programs then they do not need to collect and compost leaf and yard waste (A guide to source separation, OMEE, 1994).

Multi Unit Residential Building (Part IV)

These regulations state that if a municipality collects garbage from a multi-unit residential building, then the municipality must also collect recyclable materials from that building. If the building

owner intends to use the municipality's Blue Box program then it is the owner's responsibility to ensure that residents are notified of the requirements. The owner must include the same materials as those collected by the municipal program and can arrange for service to be provided by the municipality or by a private business (A Guide to source separation, OMEE, 1994). The owner of a building that contains six or more dwellings must implement a source separation program at the building in municipalities with a population over 5,000. For buildings in Northern Ontario programs must be in place by July 1, 1996. (see Schedule 4)

Packaging Audits and Packaging reduction workplans - Regulation 104/94

Although this legislation is not directed at households it affects the amount of waste produced by reducing the amount of packaging used and making the packaging more reusable and recyclable. The legislation requires management to examine the amount of packaging it uses, how much its material is recyclable and how much of it is reusable. The owner of the company must devise a packaging reduction workplan and determine how the changes in their system will take place. The workplan is to be updated every two years and apply to Ontario manufacturers, packagers or importers of packaged food, beverage, paper, and chemical products. The workplan the company must produce must include action to the extent that it is reasonable to ensure: a reduction in the amount of packaging used; an increase in reused or recycled content of the packaging used; an increase in the reusability and recyclability of packaging used; a reduction in the environmental impact of packaging that becomes waste; and a reduction in the burden of waste for consumers (News Release March, 1994, OMEE). A packaging audit of a company will include an investigation into: their practices for obtaining and using packaging; the types and quantities of packaging used for their products; the reusability or recyclability of a particular choice of packaging; the extent of reused packaging; the recycled content of packaging; and the environmental impact of packaging that becomes waste (News Release March, 1994 OMEE).

Refillable Containers for Carbonated Soft Drink (Regulations 357)

Under this regulation retailers must accept the empty bottles and pay the customer a refund in cash. The distributor, processor and manufacturer collect from the retail vendors all empty refillable containers for soft drinks and must reimburse the retail vendor for all deposits they refunded. Upon return of the bottles to the processor or manufacturer the distributor must also be reimbursed. The soft drink containers covered by the regulations must be refillable or recyclable. All beverage containers but liquor are covered by the blue box program. There is a deposit for refillable beer containers but not for recyclable beer containers. Deposits for beer containers occur through the practice of the Brewer's cooperative but are not legislated. The Environmental Tax on non-refillable alcohol containers is a 10¢ levy on all containers, including spirits, wine, ciders, cooler, and beer containers (for a refund price list see Schedule 5). Containers under deposit are to be returned to the retailer. Beer containers under deposit should be returned to the Brewers retail outlet and the remaining beverage containers both alcoholic and non-alcoholic are to be collected by the curbside programs. There are no handling or administration fees collected though the estimated cost of collecting, sorting and returning containers to the brewer is 5¢ to 7¢ per bottle. Finally, non-refillable and non-recyclable soft drink containers are banned from sale in Ontario (information direct from regulations).

Tires

Tires in Ontario are banned from landfills and this is carried out at the municipal level. Previously, up until May 19, 1993 when the regulation was rescinded, there was a \$5.00/tire tax which was paid by the consumer to the retailer when a tire was purchased. The revenue from the program went into General Revenue and though it was earmarked for environmental and recycling projects it did not necessarily go into a program to support the recycling of tires. As a result the retailer also charged a disposal fee of \$2.00 - 5.00/tire to assist in the cost of disposing old tires. The two separate charges led to confusion on the part of the consumer and a backlash from the retailers. The Ontario government did provide seed money for the

development of scrap tire recycling in the late 1980's and early 1990's until it deemed that the industry was sustainable. The seed money was then directed to companies who would use scrap chipped rubber to develop markets for this new recycled material from the Industrial Waste Diversion Program (tires).

The ministry of environment and energy now provides incentives to assist in the development of diversion options for tires under the 3R's. This is administered by the Waste Reduction Office through the Scrap Tire Project. Typically, scrap tire diversion projects eligible for funding include: demonstrations of new products or processes; research and development designed to create new or improved existing material, devices or products; and the purchase of equipment directly related to a definable tire diversion project. Projects need to be financially viable or have commercial applicability to be funded. There is a maximum amount (reviewed annually) for the grant for each application and for 1993-94 the limit was set at \$250,000. This is expressed as a percentage of costs to a stated maximum grant and is linked to an annual targeted diversion of scrap tires for a capital grant. Applicants must operate in Ontario and process Ontario scrap tires (Ministry of Environment and Energy Waste Reduction Office Scrap Tire Project, February, 1994).

Batteries

There is no formal government program for battery recycling. If they wish, the householder can return a battery to the Household Hazardous waste depot.

Waste Reduction Fund

A specific government fund for waste management does not exist so all environmental tax goes to general revenue and to the Ontario Multi Material Recycling Initiative (OMMRI). This is an industry run corporation that provides financial contributions for solid waste reduction initiatives and is supported by voluntary industry contributions.

PRINCE EDWARD ISLAND

Waste management in PEI is guided by their Environment Protection Act (EPA).

Beverage Containers

Control of beverage containers is part of the Litter Control Regulations in section 25 of the EPA. The regulation divides containers into two types: refillable and recyclable. The refillable containers are receptacles for soft drinks and beer. Empty refillable containers must be accepted by a vendor or depot operator and they must refund to that person not less than 85% of the deposit. The manufacturer then pays the depot operator or vendor an amount determined in section 3.2 of the regulations. Recyclable containers include wine and liquor containers. Deposits for recyclable containers are outlined in section 6.2. The vendor is not required to charge a deposit but if he or she does, they must pay a refund when the container is returned. The minimum for the refund is 50% of the deposit. A study of the beverage container legislation showed that retailers accept soft drink and liquor containers only and that depot operators accept soft drink, beer and liquor containers (Thompson, 1994). The regulations do not legislate handling fees for the depot operators, however, the depot operator and retailer need only return a portion of the deposit which covers some of their handling costs. The regulations limit the number of containers that can be returned at any one time for both refillable and recyclable containers. There are no aluminum cans sold in the province because containers for soft drinks and beer must be refillable (Personal Correspondence, 1994). Thompson also noted that these regulations may be amended in 1995 to include juice containers (1994).

Lead - Acid Battery Regulation (January 21, 1993)

The intent behind this regulation is to enhance the recycling of lead acid batteries. All battery retailers are required to accept a used battery at the time a consumer purchases a new battery. If a used battery is not returned then a \$5 deposit is paid by the consumer. The deposit is kept by the retailer. If a

lead acid battery is not suitable for exchange at a retail outlet then it must be disposed of at a recycling facility. Lead acid batteries are banned from the landfill sites and it is illegal to dump, bury or burn them. The retailers are required to get the batteries to suitable recycling and scrap processors. The regulations do not deal with recycling part of the program as it was felt that the manufacturers recycling system was already in place (Personal Correspondence, 1994).

Environment Tax (May 9, 1991)

This is a tax on new motor vehicle tires; these include new tires, tires on new cars and tires on cars brought into the province which are registered for the first time. The tax is presently assessed at \$2.00/tire. The money goes into general revenue and then a budget is given to the Department of Environmental Resources to run the collection programme. Tires are not banned from a landfill site but are set apart in a separate area. Also, depots are established at certain service stations. The department also contracts with private individuals to collect the tires and they are paid on a per tonnage basis (Personal Correspondence, 1994).

Used Oil Handling Regulations

These regulations make it illegal to dispose of used oil at a solid waste management facility or dispose of used oil in any storm sewer or public land (Section 2). All used oil collectors must be licensed by the Department (Section 4). Retailers must provide a return facility at the seller's premise or have a contract with another facility within five kilometers which will accept used oil from their customers (Section 5). There is no charge for returning used oil but a customer is limited to 10 liters/day or the largest container of lubricating oil sold on the premise (section 7).

Solid Waste Management

At the municipal level of waste management the provincial government has been responsible for the operation of landfill sites and the collection system since 1973. Tipping fees, charged to municipality, range from \$20-\$30 per tonne. Each municipality is responsible for their own recycling programs. The Provincial government is piloting an extended waste separation program in 10,000 homes called Waste Watch. The program started in October, 1993, for a six month trial and was extended until April 30, 1995. The number of communities in the program has more than doubled. The objectives of the program are to identify what the components of the waste stream are and then to reduce the waste stream. The program requires that householders sort their waste into recyclables, compostables and remaining waste. The containers for separation of the waste stream are provided by the provincial government. The collection schedule is bi-weekly for the collection of compost and garbage, and monthly for recyclable materials (Correspondence April 12, 1994).

QUEBEC

The regulations for waste management in Quebec is found in their Environment Act. In Chapter Q—2, Division VII, legislation explains the permits, certificates, notification and compensation needed for waste management systems. The regulations respecting solid waste, Q—2, r—14, deal with approval of sites and reports required by the government as well as approval for incineration, recovery and disposal sites. Division XII of the same regulations outlines the municipalities responsibility for collection of household waste at a frequency of at least once per week and collection of bulky solid waste at least two times per year. There is no legislation for recycling in this act.

There are two private initiatives in Quebec addressing the problem of waste management. Recyc-Quebec runs the Quebec Materials Exchange program aimed at managing industrial waste. Household waste is the focus of Collecte Sélective Quebec. This non-profit organization promotes recycling by providing financial assistance to municipalities. Working with the cooperation of the Quebec Ministry of Environment and Wildlife, Collecte Sélective Quebec has been collecting contributions from businesses

which sell short-life products and placing the money into three types of programs. Funding for the municipal program helps cover the costs of buying recovery equipment and communication expenses. The recovery centre program provides assistance in setting up a recovery centre and the Performance improvement program aims to increase recovery and reduction rates by funding special municipal projects. Currently, there is no legislation that requires companies to remit money to Collecte Sélective Quebec. However, in June of 1994 the government took the first step towards putting regulations in place that would require companies to participate in the program.

SASKATCHEWAN

Regulations for the management of waste are found in the Environmental Management and Protection Act.

Beverage Containers

The specific regulations for beverage container control exist in the Litter Control Act. The deposit refund program itself is run by SARCAN under a contract with the provincial government. SARC (Saskatchewan Association of Rehabilitation Centres) entered into recycling in 1981. They are a non-profit organization and the majority of their employees have disabilities. Since 1981 their involvement in recycling has expanded and in 1988 they formed SARCAN Recycling. SARCAN operates under a deposit refund scheme as authorized by the Litter Control Act. When the act was first passed in 1973 bottles were required to be refillable. The Act was amended in 1988 to permit the use of non-refillable aluminum cans and PET bottles. At the same time the act was amended to provide for a refundable deposit and handling fee. Both are paid by the consumer to the retailer and are passed through the distributor to the Government. When the consumer returns the container to the SARCAN centre, SARCAN refunds the deposit and claims the deposit from the government. The government also pays SARCAN all the handling fees that are collected (Resources Futures International, 1993).

The Litter Control Act of 1973 indicated that vendors were to pay funds as determined by the regulations for the return of designated beverage containers. At the time of return the vendor paid the refund amount as prescribed by the regulations to the person returning the container. A 1987 amendment to the Act added that all persons who wished to sell, or distribute a beverage in a container needed to apply to the minister for approval of the container. The 1988 amendment requires that designated containers be defined in the regulations. It outlines that all retailers and distributors need to be licensed by the Minister along with those licensed as collectors. As well, for each container the purchaser must pay an environmental charge and a refundable deposit which is to be collected by the retailers.

Handling charges, which are directed into the Environmental Protection Fund and then back into the program, are used to defray the administration costs of the program. The fund can be used for the establishment and maintenance of a program or use to arrange for the collection, storage, transportation, re-utilization or destruction of any designated containers returned to the depot. The Litter Control designated containers include: refillable and non-refillable bottles of any size for carbonated soft drinks and beer; cans of any size for soft drinks; and paper or plastic containers for the dispensing of beverages. In 1990, aluminum cans, PET bottles and non-refillable glass bottles were added to the designated container list. Environmental charges are imposed on these containers. The total list of containers includes: beverage alcohol, carbonated fruit drinks, fruit juices, vegetable juice, non-alcoholic beer, non-alcoholic wine, non-carbonated fruit drink, tea, water, metal cans (not just aluminum), plastic bottles (not just PET), non-refillable glass bottles, multi-material, and shelf stable containers (see schedule 1 for deposit rates).

Refillable containers are returned to the vendor and the industry collects them from the vendor. Designated Container System containers are returned to SARCAN depots and deposits and environmental fees are remitted to the government finance department. The government pays SARCAN for depot operation, including material collection, sorting and recovery. Aseptic packaging is not collected. There are

no banned containers however all packaging must be approved by the minister before it can go onto the shelves (for handling fees see Schedule 2).

Batteries

Currently, there is no government recycling legislation. It is estimated that 85% of batteries now sold in Saskatchewan are being recycled within the industry.

Tires

Presently, there is not a tire recycling initiative in Saskatchewan.

Composting

The provincial and federal governments co-sponsor a compost program with the Saskatchewan waste reduction council. The program is comprised of 3 initiatives: first, there are composting workshops; second, annual composting camps in which master composters are taught so that they may teach in their own communities; and third, there are 9 pilot projects in municipalities with advice from the council on composting techniques. The overall focus of the program is to provide technical advice for groups and individuals and information on how to set up composting, markets, and equipment. However, there is no funding associated with the information.

Act respecting the Management and Protection of the Environment (June 1, 1984)

The government is looking at regionalization for cost sharing of waste minimization and management. For example, the Humboldt-Watson region represents 25 governmental bodies and the Shanavan region represents 16 governmental bodies. They are in the process of final design and have not yet defined their recycling and other waste minimization programs.

YUKON

Regulation covering waste management is in the Yukon's Environment Act (1991).

Beverage Container Regulation

Under section 109 of the Environment Act, a person who manufactures or distributes a "designated material" collects a surcharge for the material and pays this to the Minister for deposit in the recycling fund. Under section 2, beverage containers are considered "designated materials". All retailers collect the surcharge when a beverage container is purchased and these are directed to the recycling fund. All depots are registered with the Executive Council Member and are registered for particular types of containers. Depots collect only containers for which they are registered and are not required to accept damaged or broken containers and do not have to collect more than 240 containers from any person in any day (see Schedule A).

There is a regulation for a depot system to collect liquor and aluminum cans. These depots are run by a non-profit recycling society. With a \$.10 deposit for a bottle and a refund of \$.05 the balance is put into the Recycling Fund and goes directly back into the plan from which it was taken. This fund is used to promote waste minimization but the money must always go back to programmes supporting the goods from which it came. The fund should cover the proportionate cost of warehouse workers and transportation costs. Beverage container money can also be used to get material to market. Money from the funds are obtained through application to the Minister of Environment. Currently, there are community depots in 14 of 16 communities.

Batteries

There are regulations governing tire battery recycling. They promote the segregation of the goods at the landfill sites but there is only one landfill that is staffed and the segregation process is voluntary.

Packaging

There is an initiative by Raven Recycling to promote reduction in packaging, increase what can be recycled locally and further recycling education through signage in stores. As a result of the Environment Act a solid waste management plan will follow a coming discussion paper. The first territorial government consults with the municipality to develop waste management plans.

Municipal Act

Chapter 119 of the Municipal Act (Waste Collection and Disposal) gives Municipalities the responsibility to collect garbage and operate landfills subject to the Public Health Act.

The following sections are part of the Statutes of the Yukon (1991) and deal with the various waste management programs.

Waste Management

This deals primarily with the requirements of the Solid Waste Management plan, Special Waste Management plans, and unlawful deposits of waste and litter. Municipalities are required to submit a Solid Waste Management Plan two years after regulations were enacted. The plan specifies the design, construction and operation of waste disposal facility and identifies locations for new solid waste facilities.

Waste Reduction and Recycling

Section 106 of Waste Reduction and Recycling is about Consumer Choice Programs. The minister can establish and adopt programs for providing information on products or packaging which will enable consumers to identify products or packaging that have the least impact on the natural environment. Section 107 allows the Commissioner in Executive Council to provide funding and other support for the purposes of establishing, continuing or operating waste reduction programs and recycling projects. Section 108 establishes the authority for the Recycling Fund and states the objective of the fund is to support projects and activities that reduce, reuse and recycle waste. Section 109 establishes the authority to define by regulation that a material is a designated material for which a surcharge can be levied and depots must be established. Under Section 110 the Minister can ban the use or sale of any package or manufactured product that will cause significant damage to the environment. Section 144 outlines all the areas for which regulations can be established by the Commissioner in Executive Council. He or she can: designate material; designate material be recycled; govern the use, manufacturing, and distribution of designated material; outline surcharges, deposits, and fees; outline requirements for the manufacturers, retailers and distributors for the operation of the designated material program.

Other waste management projects are carried out by the Recycle Organic Together Society (ROTS). It is a non-profit volunteer organization funded by the city of Whitehorse. The primary use of funds is education programmes. These are mostly technical seminars on composting at the community and commercial level. Depots run by the organization are centralized and segregation occurs prior to being deposited. Some of the items like egg cartons are kept within the community. Aluminum cans are collected because of their large markets, these are then densified and then sent to the markets. Paper and newspaper are collected for recycling and sent south. This is supported by government at the provincial and municipal level.

III) MUNICIPAL

Edmonton

For all municipalities in Alberta the responsibilities and regulations for waste collection and disposal fall under the Public Health Act, the Municipal Act and The Environmental Protection Act.

The City of Edmonton is not involved in industrial or commercial waste management. Its primary responsibility is managing and reducing residential waste. Presently, waste material is collected in a two truck system for single family residential areas. They have curbside waste collection and a Blue Box recyclable collection program. There is limited waste collection for multifamily dwellings and the majority of them pay for private collection services. For recyclables the city has established 11 depots as drop spots. The city also offers special collections throughout the year to gather litter, festival waste, Christmas trees, telephone books, used paper from civic offices and toxic material (Toxic Round Up). Once the recyclables are processed the city sends them to their markets and hauls the remainder of the waste to landfills. This program has been financed through a general tax levy and through collection of tipping fees at facilities.

Currently, Edmonton is in the process of approving a new "Total System Plan" to be tested in a pilot project in 1995 and adopted by 1998. The system would feature a single truck collection method. Single family residential housing will use a wet/dry collection system using two bags. There would be waste collection for multifamily dwellings as well and the depot recycling for multifamily residences and approved small business would be expanded. The Strathcona transfer station will be redeveloped as a recycling/waste depot for multifamily residences, small business, and household toxic wastes. The special collections would be continued with the processing stage being more extensive. The recovery of recyclables will be centralized at a Materials Recovery Facility (MRF) and composting will also be centralized. The disposal of the materials will occur through the sale of the recyclables and compost at their markets, wet waste will be composted and the remainder will be hauled to landfills. This program will be financed by a utility charge. The Council defeated the original proposal for a tag a bag program in late June, 1994 and then in July, 1994 approved two flat rates for waste collection to be added to the utility bill and deleted from the tax levy. The single family residential units pay a higher monthly fee than multifamily units recognizing the two levels of service. The flat fee is slightly higher than the tax levy as money needs to be collected to pay for the development of the Material Recovery Facility (Creating a Total System Plan, One Step at a Time, 1994).

Fredericton

New Brunswick uses a regional approach to deal with solid waste management. Originally, there were 12 regions but this may be reduced to 7 or 8. Each region has a provisional committee that oversees waste management programs.

Fredericton had one of the first municipalities to have a solid waste management commission (1985). They have curbside pickup and have had recycling since 1979. The 1987 curbside program was not entirely successful and they introduced the "Blue Box" program in 1989. Their recycling program includes bundled newspapers, flattened corrugated cardboard, plastic shopping bags, and all beverage containers (except dairy containers). These include liquor, wine and beer bottles, soft drink containers, mineral water containers, and all juice containers. Other plastic, glass and metal containers are not accepted by the Blue Box but these can be dropped off at the Solid Waste Commission Recycling Centre or the Southside Redemption Centre. There has not been great acceptance of the beverage container return system. Provincially there is a 60-70% return rate for soft drink containers and in Fredericton it has been as low as 40-50%. Originally, the city had 2 annual clean ups, in the spring and fall. However, due to budget pressures there is now only a fall program for a 2-3 week period. The yard waste and leaves collected are composted in old landfill sites. The solid waste collection program is funded through the tax base and through tipping fees of \$40/metric tonne.

A major problem for recycling in New Brunswick is the prohibitive transportation cost to get the materials to market. As a result programs have been limited to materials that have a good market value or to materials processed in the region. One initiative that has been undertaken is the purchase of a new tire shredder. It is shared by the landfill sites and the shredded tires are shipped to Maine. (Personal Correspondence, 1994).

Winnipeg

Solid waste disposal for the city of Winnipeg is defined in the waste minimization regulation WRAP-1990. The City of Winnipeg act gives authorization for the municipality to collect garbage. The solid waste collection program is funded through a tax levy and through the tipping fees for commercial and private haulers.

In Winnipeg residential waste comprises about 40% of the total waste stream. Originally, all waste was landfilled at 2 landfills but in 1985 there was a directive to move to a 1 landfill site system. However, there was no master plan for waste management at that time. In 1990 a waste minimization and action plan was developed. It led to the adoption of a hierarchy of waste minimization and the development of a purchase policy.

The first phase of the recycling program was the development of 5 depots and the plans for a sixth. The depots accept newsprint, aluminum and plastic beverage containers. The province promotes a product stewardship such that industry assists in funding recycling. They have produced educational information through the SW system brochure about the 4 R's and composting. They offer composters a subsidy of \$25 through a refund system. Finally, they have a leaf collection program at the depots, Christmas tree recycling, and have pilot tested curbside pickup. Future plans for the program see it growing but the direction of the program has not yet been determined. Specific plans that have been identified are the expansion of the fall leaf and educational programs. A levy on tires will divert tires from landfills and more information on grass recycling vs bagging grass is being produced. Methane extraction from old landfills may occur if this becomes a cost effective venture.

The following Waste Minimization Study was adopted by the committee on Works and Operations on June 26, 1990. First, they were to amend Plan Winnipeg. The primary objective here was to promote cost effective, sustainable waste minimization policies and programs according to the following hierarchy of minimization strategies: reduction, re-use, recycle, recover. Second, they were to initiate programs to promote public and private sector awareness and prepare initiatives on waste minimization through: continued support of recycling projects and testing the stability of local markets for recyclable materials; providing education on environmental issues; subsidizing a program that provides a limited number of backyard composting units to the public at large as a pilot project; providing grants to do waste minimization research; undertaking environmental purchasing through the purchasing department; and implementing an additional \$1.00/tonne to be added to the current tipping fees of \$16.80/tonne. Third, they were to initiate programs in 1991 that: investigated and recommended funding options for waste minimization and recycling programs including tipping fee surcharges, increasing the mill rate and introducing a utility concept for solid waste management; undertake market development and stabilization initiatives in the areas of newsprint de-inking, de-tinning, plastics separation, tire recycling, glass re-use and recycling, including an assessment of the feasibility of diversion credits; investigate leaf composting and wood chipping as pilot projects; and increase tipping fees by \$3.20/tonne. Finally, they were to investigate a user pay system. (information from the Waste Minimization Action Plan)

Victoria

Victoria uses a self-sustaining waste management system where the user pays a fee quarterly, like a water bill. As of January 1992 prices were \$9/month for 1 can/week and a \$3/sticker for each additional can/week. There is no limit if you are willing to pay. Multifamily dwellings over 4 units can use a private system otherwise prices are: 1-4 units - \$9.00/month/unit; 5 - 14 units - 7.95/month/unit; and over 14 units

- \$5.30/month/unit. Presently there is a landfill ban on corrugated cardboard, drywall, paints, tires, and batteries. Some recycling is done privately and the CRD is responsible for recycling within the Capital Regional District. These amounts reflect an increase of fees for garbage pick-up. Still the tonnage has decreased from 12000 tonnes/yr to 8000 tonnes/yr. Also, though it is at a low percentage, there is more litter in public garbage receptacles throughout the City. It is felt that this would not occur if the cost of the sticker was reduced to \$1.50/sticker. It was when the price was raised to \$3.00 that they saw the increase in the use of litter cans.

Grass clippings, garbage, and lumber can be taken to the transfer station which is open on Saturdays from 7:00 am to 10:00 pm. Residents can take garden waste to the waste transfer station and the city transports it to the CRD where it pays \$20/tonne to dump it there. The city of Victoria is considering charging a small fee/vehicle to recover some of these costs. The CRD takes this garden waste, grinds it and uses it for composting.

The Capital Regional District is comprised of 11 municipalities and 4 electoral areas, including Victoria. It is managed by a board of elected officials and became involved in waste disposal in 1973 when the province directed all regional districts to take control of their solid waste disposal. In 1987 the CRD adopted a waste management plan because their existing landfill was full and the expansion required the draining of a adjacent lake. There was public pressure to implement a plan to reduce the waste entering the new site. They wanted to reduce waste by 50% by 1995 based on 1989 levels.

One plan to achieve this goal is to use BC's waste management Perm Fees Regulation, through which the province will charge municipalities for refuse disposal after December 31, 1995 unless the municipality has an approved solid waste management plan that adopts the 50% reduction by 2000 goal and outlines a value based user pay scheme.

Another user pay plan initiated by the CRD has five main elements. First, the tipping fee focusing on the Hartland landfill was raised from \$10.50/tonne in 1988 to \$75/tonne in 1993 (with an increasing number of banned items and higher tipping fees for selected substances, such as gypsum, wall board and asbestos). Second, the efficiency of the landfill operation has been improved so that the allowable ratio of garbage to daily cover is now 6:1, twice what it was five years ago. Third, within the four core municipalities, each household is charged a basic annual fee of \$100 to \$140 for the collection of the equivalent of one can or bag of garbage per week. This fee is included as a separate item by the municipalities on the household's property tax notice or as a separate utility bill. Households in the other municipalities and voting areas contract directly with private waste haulers whose rates also reflect the increased tipping fees they must pay. Fourth, an extra can or bag of garbage can cost an additional fee ranging from \$1.50 to 3.00/sticker. These stickers are then attached to the extra bag of garbage. Finally, the CRD provides a wide range of recycling services and educational programs to help residents reduce their garbage. Their programs include: regional blue box program (curbside pick up of glass bottles, aluminum and tin cans, and newspapers); staffed municipal drop off depots for corrugated cardboard, boxboard, mixed cardboard, junk mail, magazines catalogues, telephone book and parable plastic bottles; backyard composer distribution program which provides subsidized composters; centralized yard and garden composting facilities; and a salvage area and a multi-material recycling drop-off facility at the Hartland landfill site (here they accept all standard recyclables plus white goods, ferrous and non-ferrous and LAB). (Personal Correspondence, 1994)

Pictou County, Nova Scotia

This recycling system has one permanent depot site and 69 temporary collection points served by a mobile trailer system. The central depot location is open five day per week and the mobile depot system moves between pick-up sites. A roll off container truck and trailer, each with a set of collection bins is used. Two sites can be served each on each trip. As the trailer is left at one site and the main vehicle moves to a second location. An attendant remains at each temporary depot site during operation to sort and clean the site. Serviced is based on the volume of materials expected at that site. Ten locations are served once

per week and each of the 17 rural municipal units are visited one day per month. The villages are served twice per month and the system is flexible enough to respond to community interest. The system operates year round. The system is designed for the residential waste stream as the depot accepts old corrugated cardboard, old newspaper, tin and aluminum cans, glass and mixed plastics. Residents bring recyclables to the depot sites and the material collected at temporary sites is processed at the central depot (Municipal 3R's Infrastructure, 1994).

Village of Petit Kodiak, New Brunswick

This village had funding for recycling from the Environmental Partnership fund for recycling in 1993-94 and through this program have established a recycling building which is open 24 hrs/day, 7 days/week. At the depot they collect newspaper, cardboard, tins, glass (coloured and clear) and limited types of plastic (due to a lack of markets). They tried a pilot project with a blue bag system for residents which was collected at the same time as garbage, however, it was not successful due to poor communication. A tax levy pays for recycling and garbage pick up.

London, Ontario

London has weekly garbage pickup which is funded by a tax levy. They have a limit of up to 10 bags or 2 cu. meters per residence but this limit is not routinely enforced. The recycling is contracted out to BFI and they have had a blue box system for the past 5 years. It includes collection of newspapers, plastic pop bottles, glass bottles (clear and coloured) and jars, tin and aluminum cans, beverage, food and juice containers. The number of items collected will change in January of 1995 as the city must add two more materials to their list of accepted recyclables. The recycling program is offered only for single family dwellings. Presently, multi-family dwellings are not part of the program. However, as a result of the provincial legislation there needs to be a program in place for multi-family dwellings by January 1, 1995. Grass clippings are collected in spring and fall for clean-up. As well, larger items are collected at this time, with the exception of building materials. There is no charge for residents to dump larger pieces in the city dump, however, for material being brought in by trucks a charge is assessed.

London has a number of diversion programs in place. They have been offering backyard composting for 4 years and are waiting for funding again for this summer. The program, funded by the province, allows the resident to purchase a composter for 1/3 of the cost and the remainder is paid for by the province. They have sold 12,000 composters over the past three years and hope to sell 12,000 more this summer during one weekend event. They also have educational material on "grasscycling" (cutting grass often enough that it mulches on the grass). These programs are in place to assist residents to deal with their yard waste since by the summer of 1995 all yard waste will be banned from the landfill. The city is looking at offering to collect the material in the spring and fall and compost it. They will also accept yard waste at the recycling depot site so that it can be recycled. However, yard waste will not be picked up on a weekly basis with other garbage pick up next summer. For hazardous waste diversion they have a depot which was open 11 Saturdays from May 7, 1994 to September 24, 1994 to accept all household hazardous waste. The city of London has also compiled a recycling markets directory for the London region for a large range of materials, some of which are banned from the landfill. (information from legislation and personal correspondence, 1994).

Calgary

Garbage collection is funded by the rate and there is no limit to the amount of garbage disposed of by residents. They have various diversion programs in operation. Each year Christmas tree drop off locations are established at Firehalls for a limited period after January 1. The trees are chipped and used at the Calgary zoo and city parks. Also, each quadrant of the City has a depot and the three city landfills which will accept leaves and yard waste in the fall. These are transferred to the central composting area at the Shepard Landfill site. Four designated firehalls operate as depots for hazardous

waste collection year round and they have one large round up event per year. This material is sent to Swanhills. However, the landfills accept hazardous wastes and used oil year round. The landfill depot also accepts used oil filters, batteries, propane tanks, and 4 or less tires/trip. All are stockpiled at the Shephard landfill. In addition, the landfills separate out scrap metal which is then picked up by a scrap metal recycling operation. There is a \$10 fee for the disposal of any appliance which requires the CFC's to be removed. Box springs are removed and recycled by a mattress manufacturing operation.

Recycling utilizes a depot system which is being expanded from 29 depots to a city wide network of 35 recycling drop off centres by the end of 1994. They accept newspapers, clear and coloured glass and all household food cans. The City of Calgary is in the progress of compiling a waste management plan.

Education programs in Calgary include a composting demonstration project at the Calgary Zoo. As well they have brochures published for back yard composting and recycling information for their depot program. Another program operating in Calgary in the non-profit agency Clean Calgary which is funded by the city. They operate the "great Paint exchange" each year in the spring. Private Initiatives in the city include: 4 operators of the blue box program for households; a paper recycler who has 5 containers set up in the city for collecting mixed paper; a local mattress maker who reuses springs and wood from old mattresses; and a company called Plasticycle which is starting up a plastic recycling operation. (Information from personal correspondence, 1994).

Greater Vancouver

Regional District

Vancouver proper is part of the Greater Vancouver Regional District which is made up elected representatives from each of the 18 municipalities. The GVRD is in the planning process of their Solid Waste Action Plan due to be complete in early 1995. All the Municipalities offer at least curbside collection of garbage and recycling depots, composting programs and yard waste chipping. There are a number of different recycling programs in the region but the GVRD supports the greatest amount of source separation as possible. The GVRD looks after CFC removal using one contractor for the region.

The province offers a residential compost distribution where the municipality pays 1/3, the province pays 1/3 and the homeowner pays 1/3. The municipality submits an application to the GVRD for a review of an endorsement of the program. The GVRD's review is to ensure that the chosen composter is rodent resistant and meets set criteria. If it does the application by the municipality to purchase composters in bulk with the assistance of the province to resell to homeowners is then sent on to the province for final approval.

City of Vancouver

The city of Vancouver's level of service differs for single family units and multi family units. For single families there is a limit to the amount of garbage the city will pick up. The limit is 3 bags/week for a single family unit and 5 bags/week total for a duplex. The service is funded by the millrate, however, additional bags cost \$1.50/ bag. The recycling program presently serves single families and duplex dwellings with curbside collection. There is source segregation with this program: the blue box holds containers made of glass, metal, plastic (types 1 and 2 only); the blue bag holds newspapers only; and the yellow bag holds mixed paper which includes paperboard, magazines, telephone books, boxboard, and cardboard. Through the provincial program they offer residential compost bins at a cost of \$25. In the fall they have a leaf collection program where the leaves are placed in special large paper bag and the whole thing is composted, leaves, bag and all. They also have Christmas tree collection. These are chipped and used in the parks and the leftover material is placed on the leaf composter. Some of the material is sold to the public. The city of Vancouver owns its own landfill sites and charges tipping fees of \$69/tonne.

For multi family units there are six mini-recycling depots which have been in place since 1993. They each have 3 containers which correspond to the blue box and the two bags. There are also 2 main recycling depots which have been in existence since 1974. One is located in south Vancouver and the other

at the Vancouver landfill site. These depots accept materials from residential units and from small businesses. They accept the same materials as the mini depots as well as plastic containers (type 4-7), large corrugated cardboard, appliances and scrap metal. Materials from the blue box program and the 6 mini depots are marketed by a company called Environmental Technology Ltd., while the material collected at the main depots is marketed separately. In addition, leaves and Christmas trees can be dropped off at the main depot.

Vancouver is conducting a pilot project for apartment recycling in July 1994. There will be 150 buildings in the program with containers for collecting similar materials to the curbside pick up. Participation in the pilot project is voluntary. Each apartment building in the project will receive a set of central recycling carts and each suite will receive a reusable Blue Bag for storage and transportation of recyclable materials to the central carts. They will be testing a number of collection methods for the duration of the project. The goal of this project is to refine operating methods and costs of an Apartment Recycling program in order that a city wide service can be implemented.

In addition to waste pick up and recycling centres the city has other regulations and programs in place. There is a limited disposal ban on tires. Only 4 tires are allowed per user at the transfer station. Tires are accepted at most service stations for recycling. Appliances, such as fridges, freezer and washing machines may not be accepted at the landfill. Oil filters are also not accepted at the landfills but are accepted for recycling at most service stations for recycling. As well, since 1990, Vancouver, with the assistance of the province, has supplied 14,000 backyard composters to residents at a subsidized cost of \$25.00. In addition the city has funded City Farmers (a non profit group) to run a demonstration compost project, a compost hotline and an urban garden. The city also provides workshops on composting and vermicomposting. Environmental grants exist for non-profit community groups or agencies which have projects to assist in reducing waste. Last year they had \$200,000 which was given to 20 organizations. Finally, the city encourages suppliers to offer recycled products as alternatives to their regular items on material supply contracts through the Recycled Products Procurement Policy. Purchases are evaluated on price and highest available post consumer content and makes awards on an individual basis information from personal correspondence, 1994).