Reduce, Reuse, Recycle and Recover Waste:

A 4R’s Guide

For the First Nations Communities of Quebec and Labrador

First Nations of Quebec and Labrador
Sustainable Development Institute

March 2008
REDUCE, REUSE, RECYCLE AND RECOVER WASTE:
A 4R's Guide - For the First Nations Communities of Quebec and Labrador
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Foreword

We are already experiencing climate changes. The inhabitants of the Great North, whose families have lived there for centuries, have been feeling their impact for a number of years. The ice is forming later in winter, and it is disappearing too early in the spring. Some animal species are adopting new behaviours while other behaviours are simply appearing. Air conditioners were even installed in Kuujjuak in 2006! In addition, extreme weather events such as heavy rain, tropical thunderstorms, heat waves, tornados and shoreline erosion occur much more frequently and more violently. These changes are now familiar to members of the First Nations.

Mother Earth is sick. Mother Earth is suffering. Is she sending out distress signals or is she trying to eradicate the human cancer that is squandering her bounty and destroying her?

Climate changes may very well occur within a natural cycle, but one thing is certain: we are actively contributing to the global warming. We are perpetuating it. We are exacerbating it. We are simply making it worse...

The best way to alleviate the climate crisis is to change our habits, our actions and the way we live. We must remember that almost everything we do and everything we consume causes pollution, one way or the other.

Why is there so much garbage along the roads of our communities, left there to pollute the beauty of our forests, riverbanks and streams? Individual and collective efforts are urgently needed if we are to re-establish our sacred bond with Mother Earth.

This guide presents different behaviours that we must quickly adopt for our well-being and our betterment ...and for our children’s, our grandchildren’s and our communities’ sake as well.

Mother Earth can certainly do without us. She would certainly feel better.

But we cannot live without her.

Let’s restore the ancient respect that we once showed her.

Our well-being is at stake. So is our survival.
Introduction

In the fall of 2007, the Quebec Government held a parliamentary commission during the consultation for the development of its Government Sustainable Development Strategy. Over a year earlier, on June 15, 2006, the Assembly of the First Nations of Quebec and Labrador (AFNQL) adopted, by means of a resolution, the second version of its own First Nations of Quebec Sustainable Development Strategy\(^1\). This Strategy was developed with the invaluable contribution of the First Nations of Quebec and Labrador Sustainable Development Institute (IDDPNQL) committee members.

In order to ensure the requisite consideration and implementation of the issues presented in the First Nations of Quebec Sustainable Development Strategy, solutions and recommendations were identified. One such recommendation is that we “efficiently reduce and manage wastes resulting from human and industrial activities in the territory while minimizing the risks of environmental contamination.”

By sensitizing us to the problematics of over-consumption and residual materials (i.e. wastes), this guide hopes to achieve the following three objectives and:

1. Reducing individual and collective waste production (and the waste of resources);
2. Efficiently managing the waste that is produced;
3. Minimizing, thus, the risk of environmental contamination.

Of course reducing the production of waste and applying a real sustainable development require changes in our consumption habits, daily behaviours, lifestyle and ways of doing things. These changes can be accomplished by returning to our ancestors’ native values: respect for Mother Earth, for her inhabitants and for her resources. We must re-establish symbiosis and live in harmony with the environment. We must respect life.

We must not let the isolation of some communities and the significant distances separating them from recycling centres remain an obstacle or an excuse to not worry about anything. By recycling and

\(^1\) This Strategy is available on the IDDPNQL’s Website (www.iddpnql.ca) at www.iddpnql.ca/fichiers/strategie_2006.pdf.
reclaiming wastes, members of the First Nations can regain their pride and return to their important role as "Guardians of the Territory" and “Ambassadors” of environmental protection.

In the territory, nothing was ever lost or wasted. This way of living and doing things must be restored. Its legitimacy cannot be contested. If we are to guarantee our health and that of our grandchildren.

For our pride.

For our future.

“Sustainable development is about undertaking activities to ensure human beings a healthy and productive life that is in harmony with nature and that establishes equality among generations, current and future. In so doing, sustainable development protects the ecosystems and biodiversity while respecting the socio-cultural heritage and the structure of community life. Such activities include educating and training the population so that individuals can contribute to the planning and decision-making process, including issues of an economic nature. The proposed processes are developed to target the appropriate level of intervention and to prioritize discussion and cooperation among all decision-makers.

- Harvey Mead, Québec Sustainable Development Commissioner

2 Excerpt from the PowerPoint presentation given by M. Mead, at the Parlementaries, December 2007 (www.vgq.gouv.qc.ca/publications/communique/dec2007/Presentationauxparlementaires.pdf)
Traditional Values and Sustainable Development

For thousands of years, First Nations have been practicing what we call sustainable development. “The maintain of lifestyles and of the diversity of cultures and languages is a proof of the sustainability and the strength of the First Nations as well as the close bond always maintained with the Mother Earth. […]"

Many recent publications lead to the identification of sustainable development pillars. These pillars cannot be dissociated from one another. Sustainable development aims at being coherent by considering its various components as equal and interrelated. First Nations’ vision of the world and of development is necessarily holistic. The pillars identified here are intimately related and require special attention.

The environmental pillar is embodied by the maintenance of the integrity of ecosystems and of the protection of natural environments in order to ensure the future. The social pillar refers to the maintenance and development of the social background, of a healthy society that fights for its culture and way of life. The economic pillar must be a motor that generates economic activity and growth, and the means to achieve such growth and activity must be carefully analyzed so they do not generate more degradation in the environment. Finally, the First Nations rights pillar must be given its proper place and must play an umbrella role to all other activities in the territories, for the respect of these rights is essential to the development of First Nations and the implementation of the three other pillars.”

Quebec Policy for the Management of Residual Materials 1998-2008

The Quebec Policy for the Management of Residual Materials emphasizes the fact that “among other things, the sustainable use of natural resources depends on the better management of secondary resources, which are the residual materials” 3. The general goal of this Policy is to divert at least 65% of “waste” and to reuse and recover these residual materials. The Policy wisely postulates that we can only attain “this objective if all segments of society contribute to the effort”4. Because these residues can be reused, recovered or recycled, this is not a question of waste but one of resources. Considering our “waste products” as resources means having an awareness that will lead to the adoption of new Diverting, reusing and recovering this waste also helps to reduce the risks to our health and to the environment. In fact, waste products that decompose in a landfill form a toxic mix that, through leachate (liquid created when rainwater passes through wastes), contaminates the groundwater, surface water and soil. Moreover, the decomposition of organic matter generates biogases: methane, CO2, nitrogen, carbon monoxide and other volatile organic compounds such as toluene and benzene, both of which are carcinogenic. Burning waste does not solve the problem: toxic heavy metals (lead, mercury, arsenic, cadmium, etc.) are, in fact, sent back into the atmosphere as dangerous organic compounds (dioxins, furans, phenolic compounds, etc.). The resulting ash, which sometimes represents up to a third of the waste products' mass, also contains heavy metals and dangerous organic compounds5.

The goals established in the Quebec Policy for the Management of Residual Materials, which replaces the government’s Policy on Integrated Solid Waste Management of 1989, are:

- The application of the 4Rs principles;
- The increased accountability of producers;
- Citizens’ participation;
- Partnerships between those active in the domain;
- The regionalization of responsibilities and powers.

4 Ibid.
To reduce wastes that are sent to the dump or incinerated by 65%, the government set objectives for each sector of society and for each residual material.

*In the municipalities (and communities)*
- 60% of glass, plastic, metal, fibres (paper and cardboard), bulky residues and putrescible matter (food waste and green waste);
- 80% of non-refillable beer and soft drink containers;
- 50% of textiles;
- 20% non-returnable metals;
- 75% of oils, paints and pesticides (dangerous household materials);
- 60% of all other dangerous household materials.

*In industries, businesses and institutions*
- 70% of plastic and fibres (paper and cardboard), wood and textiles;
- 95% of metals and glass;
- 60% putrescible matter (food waste and green waste);
- 85% of tires (consumers', industries', businesses' and institutions' out-of-service tires).

*In the construction, renovation and demolition industry*
- 60% of all recoverable materials.

The *Quebec Policy for the Management of Residual Materials* clearly fits with the *First Nations of Quebec and Labrador Sustainable Development Strategy*, and the First Nations are welcome to take inspiration from Quebec's policy. Aboriginal communities are sensitive to the effects of their actions on their environment, but their sensitization, training, and human and financial resources in matters concerning waste reduction and the reuse, recycling and reclamation of residual materials remain limited. Members of the First Nations undoubtedly want to participate in the general effort to develop at least 65% of residual materials that can be systematically recovered.
“According to Nova Scotia’s experience, recycling creates 7 to 10 jobs, whereas only one job is involved in the elimination of waste”\textsuperscript{16}

Recyc-Québec estimates that for the same amount of residual material, recycling creates 30 times more jobs than waste burial, a ratio that is confirmed in a study by the Agence de l’environnement et de la maîtrise de l’énergie de France (ADEME)\textsuperscript{7}.

\textsuperscript{6} Natural Resources Canada, \url{http://www.recyclage.rncan.gc.ca/faq_e.htm}
Presentation of the Guide

The proposed actions and the small changes that must be made to your habits and behaviours are simply suggestions. You are free to apply these recommendations, take inspiration from them or to ignore them. However, you should be aware that taking action will make you feel happy and proud. These gestures are good for your health and the health of others, for the environment and even for your wallet!

Every action counts. We will explain the impact of these actions, and in particular, the consequence of paying no attention to these daily acts. We must adopt healthy lifestyles -- for our children, our grandchildren, our environment and ourselves. Each one of us can have a positive influence on a friend, a neighbour or even a stranger! It's our responsibility to ourselves, to the seven generations to come and to Mother Earth.

After a short introduction to 4Rs and to certain relevant concepts, each of the 4Rs is dealt within a separate section: Reduce (section 1), Reuse (section 2), Recycle (section 3) and Recover (section 4). Although it is discussed in an independent section (5), composting also constitutes reclamation of “waste”.

When residual materials cannot be reconditioned via one of the 4Rs and are definitely deemed waste products, and their elimination must be carefully carried out. One section of the Guide deals with this (6) issue and is followed by a description of behaviours to adopt and measures to take regarding dangerous household materials, most of which find a second life thanks to the 4Rs (section 7). Finally, the organization and the staging of a “Zero Waste” event, meeting or party are addressed in section 8.

The annexes, which are summaries intended for specific groups (young people, people in the work force, the leaders, and territory users), suggest actions and references appropriate to these segments of the community. These annexes obviously don't reiterate everything said in the preceding sections; after all, the first of the 4Rs is “Reduce” and in this case, that applies to the number of pages in the document! Instead they emphasize key points to consider, referring the reader to the pertinent sections of the Guide.

A bibliography concludes each of the sections and includes references for the reader looking for more information on certain elements presented in the Guide.

Happy reading!

Now let's take action!

First Nations of Quebec and Labrador Sustainable Development Institute
The 4 R’s

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The 4R’s

- Reduce
- Reuse
- Recycle
- Recover


The closer we get to the top of the list, the less we create waste and the less we disturb the environment with logging, mining activities, the excessive use of water, etc.

« The environment, it’s also the air, the water and the food we consume »
- Laure Waridel, co-founder of Équiterre

Applying the 4Rs means questioning our daily acts, the things we do mechanically, without thinking of the consequences, without thinking of the environment, without thinking of our grandchildren.

Applying the 4Rs means consuming intelligently, thus making substantial savings (in terms of money, time, pollution, waste and energy).

“An intelligent person resolves a problem. A wise person avoids it.” - Albert Einstein

- Do I really need this? (Reduce consumption)
  - If the answer is yes, is it available in bulk or family pack? (Reduce over-packaging and cost) If not, lobby your merchants to make changes!
- Do I already have similar item that I no longer use or that I think is out-dated? Someone in my family, a friend or a school could certainly make good use of it. (Reuse)
- Can I easily Recycle what I am buying?
  - And its packaging?
- Can I use what I am buying to produce energy? Will it decompose and return to the earth?
  - And its packaging? (Recover)
The Centre de recherche et d’éducation à l’environnement régional (CREER) created a new concept that defines a lifestyle complementary to the 4Rs: the 3NJ\(^1\).

- **Naked**: buy products with the least amount of packaging possible; buy products in bulk or in large amounts whenever possible (if this is not an option, lobby your merchants!);
- **Near**: buy local products whenever you can (from your community's hunters, fishermen and pickers);
- **Natural**: buy organic products without pesticides or at least non-GMO products\(^2\) (products from the forests and their waters are certainly an excellent choice);
- **Just**: Keep the idea of “fair trade” in mind, so that workers throughout the world will have good working conditions and are well paid (see section 1.10 “Fair Trade”).

The 3NJ principles emphasize changes in behaviour. They imply that we have to question our actions and our daily choices and that we have to think about our responsibility to our fellow human beings, to Mother Earth and to all of creation. These 3NJ echo the 6Rs that the Brundtland Green Establishment Movement is promoting: Reduce, Reuse, Recycle, Rethink (our value systems), Restructure (our economies with, for example, fair trade) and Redistribute (resources, wealth).

**The Life Cycle**

The food we buy at the grocery store, the electricity we use to operate our made-in-China electronic devices: all consumer goods require raw materials, water and energy to exist -- and to be disposed of.

“Like a living thing, a waste product has its own life, and we can talk about its life cycle. Here are the major stages:

1. [Link to CREER website](www.creer.qc.ca/autres.html)
2. GMO: Genetically Modified Organism
Man intervenes at each stage in the cycle. We therefore have a great responsibility in the management of a waste product⁵.

A new kind of analysis is being developed in universities around the world: life-cycle analysis. This is “a method for evaluating the environmental impact of a product, process or service, from the extraction of natural resources to the elimination of waste, including fabrication, delivery, product use and dismantlement of the product at the end of its life cycle”⁴.

Life-cycle management has several advantages for industries, companies and service providers, advantages that benefit the environment and its resources, health and us, the clients! In particular, considering the life cycle helps:

- To significantly reduce production costs by reducing the use of energy and the consumption of raw materials;
- To reduce polluting emissions.

**The Ecological Footprint**

The ecological footprint measures the stress the humans put on nature. This tool evaluates the surface productive needed by population to provide for its consumption of resources (food, heating, construction materials, clean air, drinking water) and its needs with regard to the absorption of wastes. Worldwide, the ecological footprint is 2.2 hectares per person, the equivalent of 20,000 m². In Quebec, the ecological footprint is 6.0 hectares (60,000 m²). If every person on the planet lived as North Americans do, we would need three Earths to supply the equivalent of the behaviours we have as consumers of goods, services and energy. We are thus in “an overrun situation with regard to the planet’s support capacity […]”⁵. Society must make a choice:

- “To maintain a non-viable economic model and non-viable consumption practices;
- To accept the imposed limits and begin to act accordingly”⁶.
The distortion of the size of the countries in the map below illustrates the proportion of the total footprint the country has in relation to the global footprint and total world population\(^7\). Quebec appears smaller because the province is sparsely populated in comparison to its surface area.

You can calculate your ecological footprint when you visit the site of the World Wide Fund (WWF) at www.earthday.net/Footprint/index.asp.

The actions proposed in this guide focus on the reduction of the individual and collective ecological footprint. The responsibility rests with each and every one of us.

**The Reduction of Waste\(^8\)**

From the very conception of a product, its lifespan is an economic choice that must incorporate not only the environmental effects of its fabrication and use but also the end of its life (life-cycle management). Designing a consumer product for its future recycling must be a concern of all industrial activities.

Today, the eco-design approach must be encouraged and developed among all the participants in the industrial world. A real effort must also be made to provide the information necessary to sensitize citizens and to train future inventors and product designers.


\(^8\) [www.creer.qc.ca/autres.html](http://www.creer.qc.ca/autres.html)
Calculate your CO2 Emissions

Carbon dioxide (CO2) is the greenhouse-effect gas (GHG) that we hear the most about. It is the focus of the actions and the commitments made by the signatories of the Kyoto Protocol. Various CO2 emission calculators are available in the Internet, and they can be applied to the emissions released by your means of transportation as well as those created by your heating system.

We suggest that you consult PlanetAir first, mainly because it is the only organization of its kind that is based in Quebec (Montreal) and offers the only bilingual calculator.

  - Calculate the emissions generated by your car, your air travel or your home. There are several easy steps for an individual, a business or an event. It is also possible to make on-line purchases of offset credits to “neutralize” your pollution. This option can prove to be interesting and easier for the organization of an event: all it entails is the inclusion of an informational memo in the documents given to participants or the simple addition of a line on the registration form where the participant agrees to pay back his emissions, which you can prepay (or deduct from his expense account);

- **Zerofootprint** ([www.zerofootprint.net/](http://www.zerofootprint.net/))
  - Available only in English, this site paints a global picture of your ecological footprint: your travels, your food and your residence. It even provides personalized tricks you can use to reduce your footprint. Children can also access one section. ([www.zerofootprintkids.com/kids_home.aspx](http://www.zerofootprintkids.com/kids_home.aspx));

- **CO2 Calculator** ([www.safeclimate.net/calculator/index.php](http://www.safeclimate.net/calculator/index.php))
  - Available only in English, this site calculates the energy you consume at home or in travelling from place to place;

- **Carbon Fund** ([www.carbonfund.org/site](http://www.carbonfund.org/site))
  - Available only in English, this calculates the emissions generated at home or when you travel from place to place, with different sections applicable to individuals, institutions or organizations and businesses. You can buy offset credits on-line to “neutralize” your pollution.
REMEMBER

Reducing the use of non-returnable containers, reducing waste and reducing water and energy consumption are ecological behaviours that we must all adopt. We must also teach them to our children and to our grandchildren.

- Besides being good for the environment, these ecological behaviours respect the Earth and are economical;
- We must begin today;
- And talk about them at dinner tonight!

Logos, symbols and certifications

The Möbius ribbon, better known as the recycling logo, guarantees that the product and/or its packaging is recyclable. The first arrow “symbolizes the collection of used materials, the second symbolizes the reuse and the production of new products from waste products, while the third recognizes the important role played by the consumer who reclaims more and more recycled products”\(^9\).

The recycling symbol can be tricky; “sometimes it refers to the cardboard box or the plastic packaging that a product comes in and not to the product itself. In the case of toilet paper or paper towels, the symbol could refer to the cardboard tube in the middle. So take the time to carefully read the text that accompanies the symbol”\(^10\).

When the symbol is white on a black background, the product contains recycled materials. The products containing post-consumption recycled materials are ideal, because they have already been used at least once (and you will surely recycle them again when the time comes!). The percentage of recycled fibres is sometimes written in the centre of the logo.

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The EcoLogo is the symbol of environmental certification for more than 250 categories of products. This certification, granted by Environment Canada’s Environmental Choice Program (ECP), considers the new atmospheric emissions, wastes in water, waste products, energy consumption and the use of recycled materials – briefly, the multitude of environmental factors that effect human health and the environmental considerations are involved in the life cycle of a product. One of the key aspects of the certification process is the required verification of conformity with the program’s certification criteria. TerraChoice Environmental Marketing, a company that offers an environmental program and a consulting service, has been the EcoLogo program’s official managing and executing agent since 1995. The EcoLogo does not signify that the product has no impact on the environment. Rather it symbolizes a guarantee that the certified product causes less damage than another product in the same category that does not have this label. You can consult the EcoBuyer, a database listing more than 7,500 EcoLogo-certified products and ecological services. You can find it at [http://www.ecologo.org/en/certifiedgreenproducts/](http://www.ecologo.org/en/certifiedgreenproducts/). Call toll-free: 1-800-478-0399.

Chlorine Free Product Association Certification for a chlorine-free process in the manufacturing of paper, envelopes, toilet paper, paper towels, etc. Chlorine causes environmental damage, even in weak concentrations. It is particularly harmful to organisms living in the soil and water.

The certification from the Forest Stewardship Council (FSC), the “Good Forest-Management Council”, assures that the original forest was developed and managed in a responsible manner with consideration for the environment and the human communities that depend on it ([www.fsccanada.org](http://www.fsccanada.org)).

FSC Recycled certifies that the contents of a product are 100% recycled post-consumption (fibres derived from printed-paper waste products), taking into account all the stages of transformation, from raw material to consumer.

FSC Mixed Sources certifies the contents of a product that comes from a well-managed forest, company-controlled sources and recycled wood or fibres.
This logo guarantees that at least 60% of the product biodegrades in 28 days or less, according to the norms set by the Organization for Economic Co-operation and Development (OECD).

Indicates that the product is not tested on animals.

Québec Vrai is an accredited organization that certifies Quebec businesses as organic according to the ISO 65 standard. Certification is granted by the Conseil des appellations agroalimentaires du Québec (CAAQ). It guarantees that the Quebec farmer does not use chemical fertilizer or pesticides and that the farmer uses cultivation methods that conform to sustainable development standards. Besides fruits and vegetables, you will find meats, grains, milk, maple syrup and medicinal plants that have been certified organic. You can consult the Fédération d'agriculture biologique du Québec site (www.fabqbio.ca/page8_1.html or call 450-679-0530) and the Québec Vrai site at (www.quebecvrai.org or call 819-693-4646).

N'imprimer que si nécessaire - Print only if you must  This sentence should be at the top of every e-mail you send!
1. Reduce

1.1 Why reduce?
We live in an era of over-consumption. Everything can be bought. Everything is monetized. Durable products are rare. And this consumption—goods production, transportation, packaging and waste management—is all too often at the expense of the environment. At the expense of life. At our children’s and grandchildren’s expense.

«On average, a six-month-old Canadian baby will have already consumed as many resources as a person living in a developing country will in all his or her lifetime”. In other words, if the 6.5 billion humans on Earth consumed as much as we do, we would need three to five planets to meet our "needs." The waste an individual produces in his or her lifetime is 750 times his or her adult weight.²

Let’s calculate the quantity of waste produced when we buy a grocery item. Let’s take a box of chocolate cookies as an example:

- The box packaging (recyclable);
- (Sometimes a plastic film around the box to preserve “freshness,” non-recyclable);
- A plastic tray that holds the cookies (recyclable);
- (Sometimes another plastic film around the tray to preserve “freshness”; non-recyclable);
- (Often cookies, biscuits, muffins and other cakes are wrapped individually; non-recyclable);
- The receipt (recyclable);
- A bag to carry your purchase home (non-recyclable, but reusable);

Do you recycle everything you can when you buy cookies? Do you reuse the plastic grocery bag or do you use a cloth shopping bag?

DID YOU KNOW?
For every ton (2,200 pounds) of consumer products made, five tons of waste are created.
Source: World Wildlife Fund Canada

² www.agir21.org/ge21/gegame041/index_content.html
Reducing one’s consumption means going after the source of waste production, rather than managing the consequences of this production: This means choosing a box in which muffins are not individually wrapped.

We can also reduce our consumption, our production of waste and our impact on the environment by practicing responsible consumption. All it takes is using our buying power carefully and respectfully in order to contribute positively to society, the environment and the world. Buying something means guaranteeing the waste and greenhouse gases that were caused in its production, transportation, packaging and future removal.

How can we consume responsibly?

- Buying local products helps you:
  - Curb transportation-related greenhouse gases (water, air and land pollution);
  - Limit job loss in your community, in Québec and in Canada;
  - Minimize the over-packaging needed to ensure products arrive in good shape from so

If each family living in Québec change, every week, $20 of products made outside of the country by products produce locally, more than 100 000 jobs would be created³

- Buying fair trade products (coffee, tea, chocolate, rice, bananas, soccer balls, shoes, etc.) helps you:
  - Ensure that producers have decent earnings;
  - Follow superior environmental standards;
  - Grocery stores in Amos, Val d’Or, Sept-Îles, Roberval and elsewhere offer fair trade products;
  - See Section 1.10 for more information about fair trade.

³ « Pourquoi un événement écoresponsable ? », www.evenementecoresponsable.com/content/view/34/61/
1.2 What can I reduce?

We must reduce waste production at the source. This means reducing the quantity of waste during production, distribution, purchasing, use and elimination (which, by the way, you can avoid!).

First, before buying something, ask yourself if you really need it. If the answer is yes, and if possible, try to:

1. Replace your consumption of disposable objects and products by reusable ones. For example:
   - Cloth napkins (washable) instead of paper napkins (disposable);
   - Cloth or strainer coffee filters (washable) instead of paper filters (disposable);
   - Eliminate throw-away razors, lighters, non-rechargeable batteries, etc.
2. Buy used;
3. Buy recycled or recyclable products;
4. Buy products that aren't over-packaged;
5. Buy recyclable products;

1.2.1 Plastic bags

- A plastic bag takes 200-450 years to decompose;
- Plastic bags are made primarily of petroleum. Twelve million barrels of petroleum are needed to make 100 billion plastic bags (in Québec alone, 2 billion bags are thrown away every year);
- Nine plastic bags contain enough fossil fuel to make a car run for a kilometre!
- Plastic bags are among the 10 most frequently found items on beaches;
- Plastic bags caused major flooding in Bangladesh when they blocked the sewer system in the capital city;
- Every year, more than a million sea birds, 100,000 marine mammals and an incalculable number of fish are intoxicated, strangled, infested, suffocated or have their intestines blocked by plastic bags.

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- Turtles, dolphins and whales confuse bags floating in the ocean with jellyfish. When they swallow bags, these animals choke and die since the plastic blocks their digestive systems;
- Birds, turtles and fish get tangled in bags, getting caught and eventually choking;
- Every year, 24,000 metric tons of plastic end up in the ocean;
- According to the Worldwide Home Environmentalists’ Network, 120,000 pieces of plastic of all sizes float on each km² of the oceans! In the Pacific ocean, a little island of plastic waste, nearly as big as Québec, floats along lazily. As it grows and grows...
This carcass is that of an Albatros living in the Kura atoll, a practically uninhabited area of the North Pacific. The bird swallowed an impressive quantity of plastic objects. Every one of our careless acts has repercussions...

What should we do?

If every Quebecker used a cloth shopping bag one day a year, 5,500,000 bags would not end up in our environment.6

A Recyc-Québec analysis of the lifecycle of a bag confirms that it’s better to use a reusable plastic or cotton bag for shopping.7 And favour bags made in Québec.

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"The most environmentally advantageous option after the reusable bag" is the conventional plastic bag, on the condition that it is reused at least once for the kitchen trash, since it goes to the incinerator.

These lifecycle analyses indicate that the manufacture of a plastic bag requires less energy and pollutes the air 70% less than a paper bag. Its overall environmental evaluation makes it better than a biodegradable bag. Although the production of biodegradable bags requires less energy than a traditional bag, it uses more raw resources. As for paper bags, 14 million trees are cut down every year to enough paper bags just for the Americans, not to mention the energy required or the by-products produced. And one pound of paper requires 91% more energy to recycle than one pound of plastic...

So the best idea is the reusable plastic or cotton bag. Here is a Native company and two Québec companies that make just such bags. It's up to you to choose!

- Alterna Éco-Solutions at 418-574-0898; info@alternaes.com
- Écolo-sacMC is made in various sewing cooperatives and workshops in several areas in Québec. Part of sales is given to starting non-profit organizations and environmental projects. Écolo-sac is sold in retail stores and can be identified by its image, particularly in the following stores:
  - Québec's IGA supermarkets;
  - UQAC (Chicoutimi) environmental committee;
  - The Fédération Desjardins catalogue of responsible products;
  - Some Desjardins Credit Unions;
  - Parc Québec boutiques;
  - And many more...
- You can also order a generic Écolo-sac or one personalized for your business: 418-312-0509 or mariane.stgelais@videotron.ca.

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8 www.emagazine.com/view/?3893
In sum:

- The best option is a reusable plastic or cotton bag made in Québec (or, hey, why not! a bark basket). What's more, most stores will give you a 5¢ discount for each of the bags you bring;
- The second option is the traditional plastic bag, as long as you reuse it at least once and make sure it goes to the incinerator. Don’t ever dispose of your bags in nature since the consequences are disastrous...

In closing,

- Think of the four apples, five tomatoes and other items we put into little individual produce bags before placing them in our shopping carts. Is this really necessary?
- Along the same line, use washable containers for your lunches, breaks and snacks instead of wrapping things in plastic wrap or using Ziploc bags.

Note: The 5¢ discount for every plastic bag brought back isn't the best solution since most people don't use reusable bags. Instead, we should take inspiration from Ireland who, in 2003, introduced a "PlasTax." Instead of slightly compensating people who bring their own bags, this "PlasTax" penalizes those who don’t-- thus breaking the illusion that bags are free... A consumer must pay 29¢ for each plastic bag he or she uses. This initiative has been strangely effective: The Irish reduced their annual consumption of 1.2 billion plastic bags by 90%.9

Might your band council take this initiative and invest revenues in your schools, community centres or elsewhere? Store owners will be happier not to have to pay for plastic bags…

1.2.2 Over-packaging
A food item is over-packaged when it is wrapped in more packaging than necessary. Avoid food in individual portions and that sold per unit: small fruit juices, cheese sticks, small yogurts, etc. These sizes are systematically more expensive than larger ones or bulk food. And, they come in containers or packaging that can’t be reused (at least they can be recycled). Do an experiment: For one month, save all the packaging from all the products you buy. After several days, you may already be able to imagine the mountain that you will accumulate over a month’s time.

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Since 2005, Québec companies are required to compensate municipal services for recuperation and reclaiming residual matter. Specifically, this regulation requires companies that put packaging on the market to assume 50% of the costs connected to their recuperation. It is important that consumers be accountable, but producers must be, too. Recyc-Québec expects to recuperate 50 million dollars the first year.

**Bulk and family packs**

Buy bulk whenever possible. Your supermarket should have a bulk section. Packaging is less present and often reusable. Some stores even sell household products in refillable containers.

If you can't find it at your local retailer, ask him or her to stock it! You could also go door-to-door to raise people's awareness, explain the financial and environmental advantages of bulk purchases and collect their signatures for a petition. Upheld by the band council, choices can—and must—change. Money and environment go hand-in-hand, and positively too!!!

Another appealing option: family packs. Family pack means a large container of yogurt instead of many small ones or two litres of juice instead of eight 250-ounce ones. Family packs cost much less (you get more for your money) and make for much less waste (reusable, recyclable or not). And, you can reuse containers for leftovers, lunches, storing small items, etc.

**Cook**

It's good not only for your health but for the environment too! Homemade dishes aren't packaged, unlike frozen meals that generate tons of packaging. Homemade muffins, cakes and cookies aren't wrapped either, and they are incomparably better, especially when they're warm from the oven...

**One last thing: Diapers**¹⁰

In Canada, more than a billion trees are cut every year to make disposable diapers. On average, a tree becomes mature at 40 years. Cotton, on the other hand, only needs 200 days to mature and can be used to make environmentally friendly and affordable diapers. "[...] In its first two and a half years, a

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baby will use nearly 7,000 diapers, thus producing one ton (2,200 pounds) of waste."\textsuperscript{11} A disposable diaper takes 200 to 500 years to decompose. A cotton diaper only takes six months, but that's not its only advantage:

- It can be used 200 times. It even becomes more absorbent with time;
- It makes for savings of $750-1,500/child (from birth to potty training, washing costs included).
- Before being thrown away, it can be used as a rag.

What advantage does a disposable diaper have? Other than its high price, it also has many chemical products: perfume, absorbent gels and preservatives.

Made in Québec, Magik diapers are distributed directly by their manufacturer. They cost a maximum of $400 for a kit of Velcro-equipped diapers, waterproof cover-ups and disposable linings required through potty training. Spread over two years, they will cost less than $4/week. For more information: www.merehelene.com or 1-800-659-2959.

1.3 Alternative transportation

According to the CAA, the average annual cost of owning your own car is as much as $7,080/year, or about $20/day, when you calculate a average functioning of $12.5/km (gas at $92.5, for a daily distance of less than 16 km), insurance, license, registration, depreciation and loan financing included.\textsuperscript{12} Équiterre\textsuperscript{13} encourages you to calculate your annual transportation costs and your CO\textsubscript{2} emissions by filling out a short French-language questionnaire:

www.equiterre.qc.ca/transport/calculateur/index.php

What are your alternatives?

1.3.1 Walking

Did you know that with every kilometre you walk you reduce your chances of obesity by 5%? And that every hour you drive increases this same risk by 6%? What's more, walking is an energizing activity that

\textsuperscript{11} Front commun pour une gestion écologique des déchets, 1995, Plus d'idées pour moins de déchets. Secteur municipal (vol.2), FCQGED, p. 62.
\textsuperscript{13} An organization with over forty employees in Montréal and Québec City, a hundred volunteers and 3,000 members throughout Québec. Équiterre has worked since 1993 on issues surrounding energy, agriculture and food, transportation, responsible and fair trade consumption and climate change (www.equiterre.org).
oxygenizes the brain and lowers stress. You will be more concentrated and effective at work and in class! Other advantages? Walking reinforces the cardiovascular system, lowers blood pressure, strengthens bones and firms and "rejuvenates."\textsuperscript{14}

\subsection{Bicycling}

By using a bicycle seven months out of the year, you can save as much as $4,500! Like walking, biking will get you in better shape and increase your concentration and performance at work and in school. It also has a positive effect on your mood, self-confidence, self-esteem, and anxiety and stress levels.

Although at first glance, biking seems just to work your thigh and calf muscles, it actually works your whole body, especially your heart, lungs, muscles and bones. And, unlike jogging, it doesn't strain your joints.\textsuperscript{15}

The Kahnawake Environment Protection Office coordinates the Mohawk Council of Kahnawake Bike-Share Program, a pilot-project that first took place in the summer of 2007. The Finance, Administration and Operations Committee approved financing to buy ten bicycles and to coordinate the project.

Council employees used the bicycles to attend meetings, do errands and even for exercise during break times. The bicycles were well used over the season, making the Bike-Share Program a real success. A contest was also held to encourage employees to use the bicycles at least once a week. A new bicycle was the grand prize of a drawing. All employees who participated received prizes (duffle bags, bags, T-shirts) in recognition of their efforts to combat climate change and inspire them to take other environmentally friendly steps. The Bike-Share Program had positive effects on employees by favouring healthy habits and active lifestyles. The Program also benefited the environment by curbing greenhouse gas emissions.

\subsection{Carpooling}

By carpooling for one out of every two trips, you will save nearly $1,500/year (and even more if you take long trips). Community radio, bulletin board or word of mouth are the best ways of broadcasting your

\textsuperscript{14} To learn more about the benefits of walking: www.pages.infinit.net/fa/

\textsuperscript{15} Les bienfaits du vélo-loisirs, www.tcsge-cyclo.org/drcyclo/bienfaits_page.htm
offer or need for transportation. You could also call on organizations that make carpooling their raison d'etre:

- **Covoiture.ca** ([www.covoiture.ca](http://www.covoiture.ca))
  - The advantage of this free service is that it is organized for both daily commutes and one-time long trips. Used throughout Canada, a software program works with members' itinerary and proposes custom matches:

- **Amigo Express** ([www.amigoexpress.com](http://www.amigoexpress.com); 1 877 264-4697)
  - A multi-access carpooling service in Canada, it establishes contact between drivers and passengers that would like to carpool in Québec (inter-city transportation), the Maritimes and the U.S. Accessible toll-free seven day a week all over Québec, via telephone, Internet and eight service points in Montréal, Québec City, Saguenay and Sherbrooke. AmigoExpress.com can also become a service offered by the band council or a business in your community;

  - This free online carpooling service covers all of Canada.

- **AlloStop** ([www.allostop.com](http://www.allostop.com))
  - Pioneer on the Canadian carpooling scene, AlloStop has six offices in Québec: Québec (418. 522-0056), Montréal (514-985-3032), Sherbrooke (819-821-3637), Saguenay-Lac St-Jean (Chicoutimi, Jonquière, Alma ; 418-612-0614), Rimouski (418-723-5248) and Rivière-du-Loup (418-860-2635);

- **Le Pouceux** ([www.lepouceux.com/covoiturage](http://www.lepouceux.com/covoiturage))
  - This free, French-language service has a Covoiturage Canada search engine. It also offers the Forum de covoiturage Amériques, which is a billboard where anyone can post an offer for anywhere: United States, Mexico, Chili, etc.;

- **Transport Québec** ([www1.mtg.gouv.qc.ca/fr/covoiturage/index.asp](http://www1.mtg.gouv.qc.ca/fr/covoiturage/index.asp))
  - The Quebec transportation minister offers the public a French-language database where you can offer commuters spaces in your car or check others' offers;

- **Transport Québec - Le Programme-employeur**
  - If you click on the tab "Déplacements domicile-travail" on the same web address ([www1.mtg.gouv.qc.ca/fr/covoiturage/index.asp](http://www1.mtg.gouv.qc.ca/fr/covoiturage/index.asp)), you will see an effective tool that helps employers minimize their employees’ car trips, number of cars in the parking lot, etc. To help employees who would like to put this program in place, the minister developed a flyer and information kits with ten info sheets.
1.3.4 Canoe vs. motor boat
Canoes don't cost money for gas, oil or mechanical problems; Get in shape; No air pollution; No noise...

1.3.5 Electric snowmobile
It exists, but just in France! Put some pressure on your retailer!

1.3.6 And what about planes?
Whenever possible, replace air travel with train or bus, carpooling or telephone conferencing. Air travel produces more per-kilometre greenhouse gases per passenger than all other means of transportation. For every kilometre in the air, a passenger emits CO₂: 35 X more than by train; 4 X more than by bus; 2 X more than by car.

1.4 Reduce your gas consumption
Change your habits by driving more ecologically has many advantages:

- Save gas ("You could save $24,000 in gas over a lifetime of driving")¹⁶;
- Increased life expectancy of your vehicle and its parts;
- Safer driving and therefore lower risk of accidents;
- Lowered health risks;
- Less pollution (the transportation sector is responsible for 38% of Québec's greenhouse gas emissions).

The Canadian Automobile Association suggests you evaluate your environmental behaviours behind the wheel. By answering eight short questions, you will see how you can ride and respect the environment. http://www.caa.ca/eco/english/eco-attitude/index.asp

What should we do?¹⁷

- To reduce your gas use:
  - Avoid abrupt stops and starts. Not only will you save the wear and tear on your breaks and tires, you could save up to 40% on every tank of gas.
  - Don’t drive too fast: Going from 90km/h to 100km/h increases your gas use by 10%; from 100km/h to 120km/h = 20% more! Gas consumption is optimal at 60-70 km/h.

¹⁶ Angelo DiCicco, General Director of the Toronto office of Young Drivers of Canada.
1. Reduce

- Turn off your engine as soon as you are parked or stopped for more than 10 seconds. Leaving your engine to idle for 10 seconds uses more gas than stopping and restarting your vehicle (restarting your car several times has little impact on the battery or the starter; the resulting use may be less than $10/yr);
- Idling dirties your spark plugs, and can cause a 4-5% increase in your gas use;
- In winter, keep warming the car to a minimum—idle for no more than 30 seconds before you start driving. The transmission, tires, bearings and other mobile parts can only warm up when the vehicle is moving;
- When you start moving, don't accelerate quickly or drive fast for the first five kilometres. The vehicle will warm up optimally and you will keep gas costs to a minimum...
- Keep tire pressure up. Just one under-inflated tire could increase your gas consumption by 4%, without even mentioning that its lifespan may be reduced by 15,000 kilometres;
- Remove any unused, heavy items from your vehicle. 100 pounds (≈ 45 kilos) can increase your gas consumption by 2%.
- Do regular oil and filter changes will help you save up to 50% in gas!
- Do preventive tune-ups. Poor maintenance can increase your gas consumption up to 15%;
- Air conditioning can increase your gas consumption by 20%! Open your windows, go for a sunroof or tint your windows;
- Before turning off your car, turn off all energy-consuming accessories: radio, telephone battery chargers, conditioning systems, etc. By doing so, you will reduce the demand on the engine and thus on the gas use the next time you start your car;
- A car with a manual transmission has better gas mileage than one with an automatic transmission (Note: the engine works more efficiently and uses less gas in the higher gears—4th and 5th);
- A motorized vehicle with four wheels uses 5-10% more gas than a motorized vehicle with two wheels;
- When buying a vehicle, make sure to ask about its consumption. Gas use of 10 litres/100 km instead of 13 litres/100 km makes for savings of 2,000 every five years!
Use cruise control to maintain a stable speed on straight highways and improve your gas mileage.

- To reduce pollution and stay healthy:
  - 4,000 km = 1 ton of greenhouse gas emissions
  - = the volume of a two-storey, three-bedroom house

Gas is a hazardous material. Other than its huge flammability, gas fumes are toxic and carcinogenic. Gas contributes to smog\(^ {18} \) and to air pollution in general, causing asthma and cardiac disease.

- They often say that children are more vulnerable to air pollution. Why? Because they breathe faster and inhale more air for their body weight than adults do.\(^ {19} \) Elders and people with respiratory problems are also more sensitive to air pollution;
- Gas also contributes to acid rain.\(^ {20} \) Imagine: In some areas of Canada—particularly the Maritimes—the rain can be as acid as vinegar or lemon juice\(^ {21} \);
- Leaving your engine to idle pollutes 20 times more than driving at 50km/hr;
- In the winter, emissions from cold engines are more than double normal emissions. Idle for a maximum of 30 seconds to heat your car before driving. Your car will heat more quickly;
- Recent vehicles emit 98% less pollution than your average vehicle made 15 years ago\(^ {22} \);
- Exposition to pollution emitted by a vehicle is much greater inside than outside. Again, avoid idling and don’t tailgate;
- Even a very small amount of gas (1 litre) can pollute huge quantities of water (2 million litres), and thus threaten all forms of life.\(^ {23} \) Every year, in Québec, about 140 oil spills are recorded. Clean-up efforts after the spills only save about 5% of the birdlife that are affected.\(^ {24} \)

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\(^{18}\) "The term smog comes from 'smoke' and 'fog.' It refers to a mix of gas and atmospheric particles in the air that are noxious to your health" (EnviRessource, "Smog," [www.csrs.qc.ca/Montee/EnviRessource/page.php?section=1](http://www.csrs.qc.ca/Montee/EnviRessource/page.php?section=1))


\(^{20}\) Note that acid rain doesn't fall just as rain, but also as snow and hail...


\(^{23}\) [www.mon-environnement.com/fiche-689.html](http://www.mon-environnement.com/fiche-689.html)

• To increase the lifespan of your vehicle and its parts:
  o When you idle, water condensation can cause corrosion in the tail pipe and shorten its lifespan;
  o An idling engine isn't running at its optimal temperature; the gas doesn't burn completely; gas residues condense on the cylinder walls, contaminate the oil and damage certain parts or pieces of the engine.

**Snowmobiles**

A snowmobile with an injection two-stroke engine uses less gas and oil than a two-stroke engine without injection. As a result, it produces nearly 65% less CO₂.

**Outboard motors**

Four-stroke engines are much quieter, durable and fuel efficient than two-stroke ones.

**Lawnmowers**

One hour of mowing with gas releases as many Volatile Organic Compounds as driving your car for 565 km (chemical products such as octane, benzene, toluene, xylenes, ethylbenzene, decane, undecane, hexane, isodecane, mixes, etc.).

1.5 Reduce your water use

**Water: The source of life**

The human body is made up of at least 60% water. Blood contains 83% water. Clean drinking water is essential to our wellbeing and health.

Drinking water is a precious resource that is becoming more and more rare on Earth, even if we don't experience or see it in Québec. "Every eight seconds, somewhere in the world, a child dies from an illness connected to dirty water" or lack of water. 2.6 billion people don't have access to a reliable water source. Remember: a person can survive a month without food, but only five to seven days without water.

Although oceans cover 71% of the Earth's surface, only 3% of the planet's water is fresh:

- 2% is frozen. Global warming is melting the polar caps, which in turn dirties freshwater as it mixes with the oceans;
- Less than 1% of freshwater can be found in lakes and rivers;
- Québec holds 3% of the world's renewable freshwater reserves (4,500 rivers and 500,000 lakes).

Drinking water is an exhaustible source since its consumption—and over consumption—inevitably leads to an impoverished quality of the freshwater available. Even after treatment in water filtration plants, water still contains some pollutants. This water is returned for our consumption or into nature...

Over-consumption is one of the primary sources of freshwater pollution since it taxes the capacity of filtration plants, thus reducing their efficacy. What's more, the additional energy and chemical agents used to treat and purify drinking water have an impact on both the environment and communities' budgets.

Québec residential water use is estimated at 400 litres per person per day. The Canadian average is 350 litres (three bathtubs a day), while the world average is 137 litres per person per day. In India, an individual uses an average of only 25 litres. In Madagascar, the average is the strict minimum for survival: 5.4 per day.

Not only are we among the greatest users of water in the world, the quantity we consume continues to grow! And the worst is that everyday 30% is flushed down our toilets. Purified drinking water, immediately polluted and thus unusable until it is treated again. Another 35% is used for showers and baths.

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28 Chart: http://atlas.nrcan.gc.ca/site/english/maps/freshwater/consumption/wateruse_home.gif/image_view
Some of a household's highest waste in water

<table>
<thead>
<tr>
<th>Types of waste</th>
<th>Quantity of lost water</th>
<th>Equivalent number of baths</th>
<th>Annual cost in hot water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop by drop from your faucets</td>
<td>120 litres per day</td>
<td>About 16 baths/month</td>
<td>$55</td>
</tr>
<tr>
<td>Leaking toilets</td>
<td>600 litres per day</td>
<td>About 80 baths/month</td>
<td>-</td>
</tr>
<tr>
<td>Bath</td>
<td>50-136 litres of water per bath</td>
<td>-</td>
<td>$50</td>
</tr>
<tr>
<td>Shower</td>
<td>39-57 litres of water per shower</td>
<td>-</td>
<td>$33</td>
</tr>
</tbody>
</table>

1.5.1 What can you do to reduce your water use?

If you’re interested in knowing how much water you use, you can find out thanks to a water use calculator developed by the Canadian government (www.on.ec.gc.ca/reseau/waterCalculator/login_e.html). Your daily water use will be compared to the national and provincial averages.

**In the bathroom**

- Most toilet tanks contain 18 litres. How can you reduce this phenomenal quantity of drinking water?
  - Fill a 2-litre soda bottle and place it in the toilet tank. By doing so, you will use 20% less water (this will save up to 3,800 litres of water per person per year);
  - Buy a water dam to cut volume. A family of four will save 45,000 litres per year!
  - If you’re looking for a dramatic option, change your toilet. There are models that use just 6 litres of water.
- A low-flow shower head can cut your water use in half. You will save energy costs without changing your water pressure (save about $45/year);
- Take showers more frequently than baths: a shower takes 25-100 litres of water while baths require 250 litres. Filling half the tub requires 50% more hot water than a 7-minute hot shower;
- Keeping a trash can in the bathroom is one way to save water. Too often, we throw facial tissue into the toilet. Remember: 18 litres of water per flush for conventional toilets. And even for the 6-litre model, that's 6 litres too many...

Équiterre : www.equiterre.org/energie/trucs/index.php?s=eau
Your (bad) habits

- Six litres flow out of a faucet every minute. So don't let the water run while you brush your teeth, wash your hands, shave, do dishes, rinse vegetables, etc.;

Your appliances

- Look for "Energy Star," the international symbol of energy efficiency. Appliances with this symbol have a longer lifespan and save both time and money. Specifically:
  - Front-loading washer: 50% less energy and 35-50% less water;
  - Dishwasher: minimum of 25% less energy;
  - Refrigerator: minimum of 15% less energy;
  - Freezer: minimum 10% less energy (20% less for compact models).

- A front-loading washing machine uses 55 litres of water per load instead of 100 litres that a top-loader uses;
- Only run the washer and dishwasher with full loads.

Repair leaks and avoid waste!

- Depending on the speed of the drip, a leaky faucet wastes as much water as 140-680 litres every day!

- A hot water faucet that leaks one drip a second wastes the same amount of water as a 60-gallon hot water tank every ten days. That means that $35 is going down the drain every year!
  - React quickly by replacing the rubber ring in your faucet (a few pennies);

- Install low-flow aerators on your kitchen and bathroom faucets, and save as much as 5,000 litres of water a year, including 2,500 litres of hot water.
  - Low-flow aerator: $3-5
  - Annual savings: $13-20

- A toilet that keeps runs after flushing can waste as many as 750 litres of water per day!

- A hose has a flow rate of 700-1,000 litres per hour. That's what a person drinks in three years!

- It takes 400 litres to wash your car with a hose. But hand washing takes only 10 litres...;

- During the summer season, lawn watering is the main source of water consumption (which increases by 50%). About half of all water treated during the summer serves to water lawns, flower gardens and kitchen gardens. Yet, a lawn only needs 2-3 cm of water per week. A good rain therefore supplies your lawn with its needs for several days;
Watering in the daytime is ineffective since 50% of the water evaporates...

- For pool owners: If you don't cover your pool, you will lose up to 4,000 litres of water every month by evaporation! Covering your pool with a solar blanket at night not only helps prevent evaporation, it also keeps your pool warm and clean...

### 1.5.2 Bottled water

« Why our toilets' tanks contain the same water that is treated by the city of Brampton, Ontario, and sold by Coca-Cola under the name Dasani? »

Studies are constantly showing that tap water is better than many bottled waters—not to mention that many brands just bottle tap water! Per volume, the cost of bottled water is nearly 1,000 times more than tap water. In other words, the cost of a litre of bottled water is equal or more than a litre of gas; that's a lot to pay for something you have nearly for free at home (Montréal's drinking water works out to $0.022/1,000 litres!). Something isn't right... Let's collectively apply the first R of the 4Rs: Reduce—to nothing—your bottled water consumption!

Tapping, treating, bottling and transporting this water to consumers, then "eliminating" the bottles all have major environmental costs. The biggest? A plastic bottle takes 100-1,000 years to decompose. Of the 300 billion bottles sold in 2006 on the planet, 9 out of 10 weren't recycled. They were thrown in the trash...

Another environmental cost? It takes 1.5 million barrels of oil just to manufacture the bottles Americans buy every year. And that's not counting the oil it takes to transport these bottles!

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31 Economist.com, 31-07-2007
32 [www.eausecours.org/grand%20public/dossiers/Embouteillage/1aouverture.htm](http://www.eausecours.org/grand%20public/dossiers/Embouteillage/1aouverture.htm)

First Nations of Quebec and Labrador Sustainable Development Institute
Hesitant? Sceptical? Maybe the following bit of information will convince you:

- The guidelines used to determine water quality are the same for tap water and bottled water. However, the organic guidelines (coliform organisms, pesticides and other substances such as benzene and vinyl chloride) are higher and more specific in the case of tap water. In sum, bottled water can legally contain things that are not tolerated in municipal drinking water;
- The frequency of quality control and respect for tap water standards is high and laid out by bylaws, while this is not the case for bottled water;
- A study recently published in Germany affirms that, due to the plastic bottles, bottled water contains 95-165 times more antimony, a toxic substance. The toxicity of this substance is comparable to that of arsenic and, in small doses, provokes headaches and dizziness;
- The raw materials--water--costs companies nearly nothing. Those who tap water sources pay little or no royalties. For bottlers using aqueduct water, the applicable tax is often lower that that paid by the general public.

*What should we do?*

- Drink tap water!
  - Keep it in the fridge to keep it cool;
  - Air it so that the chloride evaporates. This will improve the taste.
- For outdoor activities, put water in a reusable bottle in the fridge. You can also use ice cubes so that it stays cold...

*If you want to go a step further*...

1.5.3 Dry toilets

Given the billions of people, including children, who don't have access to drinking water, isn't it shameful to waste so much water to evacuate our excrements? What is the best solution? Toilets that don't use a single drop of water: dry or composting toilets. This solution seems extreme, but it's perfect for a cottage or hunting camp. When will this contraption be required in all homes?

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33 [www.eco-bio.info/ouaterre.html](http://www.eco-bio.info/ouaterre.html)
How do you do it?

- Take your toilet apart;
- Cover the hole with a piece of cloth and a brick (to keep odours from coming up from the sewer);
- Plug the water source with a plumbing plug;
- Buy a recipient (a 50 litre plastic trash can ensures 7-10 days for a family of 2 adults and 3 children). When emptied at 2/3 full, it is nearly 20 kilos);
- Build a wooden box. The front should be closed off with a piece of fabric that can be held in place with thumb tacks.

How does it work?

- Place a generous bed of wood chips or sawdust on the bottom of the trash can (7-10 cm);
- Pour two generous ladles of wood chips or sawdust after each use (keep a full container in the room);
  - Toilet paper can be composted;
  - The chips or sawdust neutralize the smells;
- Empty the trash can on a compost pile in your yard (micro-organisms consume a lot of material and the pile will be reduced enormously; in a few months, there will only be a third of the initial volume).
  - Sawdust "works better" than wood chips; you need less and it absorbs more. However, it is easier for young children to use woodchips;
  - Using a bed of woodchips and/or sawdust helps you get a good carbon/azote ration that makes for quick composting and decomposition;
  - A recent report from the French Agence française de sécurité sanitaire des aliments sur l'agriculture biologique indicates that "composting reduces, even eliminates, the number of unsporulated pathogenic bacteria under the influence of various factors (temperature, time)."
1.5.4 Rainwater collectors (requires gutters)
The idea is simple: Collect rainwater to water plants (inside and out), water your garden and wash your car. All you need is gutters that lead to a rain barrel that you can buy or make (using a trash can, for example). For every metre$^2$ of roof, you can collect an average of 600 litres of water.

During construction, it is now possible to install a rainwater collector to bring water into the home (for the toilet, washer and dishwasher). The advantages for your appliances, for the environment and for community infrastructure are many:

- The soft, not hard, nature of rainwater helps you avoid calcium deposits. It also increases the longevity of your appliances, plumbing and faucets. It reduces the need for soap and detergent by 40-60% and also reduces the need for a fabric softener;
- Reduced tapping of the water tables and water treatment translates into energy and financial savings for community infrastructures. What's more, the lifespan of community infrastructure is extended;
- Since recuperated water doesn't contribute to run off, risks of flooding, erosion and sewer back up are less;
- There are also much more highly developed models of water basins that treat rainwater to make it drinkable;
- For more information: USD Inc. (info@gestion-usd.com, 1-800-463-2245)
1.5.5 Green roofs

Green roofs have been around for a long time. Their main advantages:

- Better isolation than regular roofs (reduced heating costs in the winter and cooler living spaces in the summer);
  - A "normal" roof exposed to the sun can reach a surface temperature of 65°C while the same roof covered in green matter will maintain a temperature of 15-20°C. A green roof also reduces loss of heat in the winter;
- Protects the roof covering, thus doubling its lifespan.

A green roof is made up of five parts:

- Weight-bearing structure: It must be able to carry the weight of the green roof;
- Waterproof layer: Of course, you have to protect the house from water;
- Draining and filtering layer: Directs water to the gutters while keeping out plant roots;
- Growth substrata: For the plants to live and grow, the substrata is generally made of leafy or bark compost mixed with aggregates of small and absorbent stones and, of course, a bit of dirt;
- Plant layer: Chosen according to the region's climate, the sun and the angle of the roof. Generally, it's best to favour perennial and indigenous plants that are very resistant to extreme temperatures and that will settle in quickly to cover the surface of the roof.

A green roof can be installed on any type of building, whether residential or commercial. Although it has additional costs at the time of construction, it quickly pays back its cost in energy savings and by its hugely longer lifespan. Erosion from rains limits the angle of your roof. There is generally no problem

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for up to a 25° incline. A steeper roof will require you to add wood, metal or plastic bands to the membrane under the plant layer to hold it all together. Specially designed trellis are also available.35

There are two kinds of green roofs: intensive and extensive.

### Intensive Green Roof

With a thickness of about 30 cm, the intensive green roof requires a special construction so that the roof’s weight-bearing structure can support the dirt, particularly when it’s soaked after a rain. What’s more, it requires regular upkeep.

### Extensive Green Roof

The extensive green roof is easier to maintain and requires a less substantial structure. It is generally 5-10 cm thick.

### Technical and energy advantages

A green roof increases a building’s durability and comfort. It:

- Limits the roof’s fluctuations in temperature to about 40% by reducing maximum temperatures and increasing minimum temperatures. In consequence, heating costs are easier to swallow in the summer and the inside environment is more comfortable in the summer;
- Considerably reduces noise since the dirt absorbs sound waves. It is in fact one of the best acoustic insulators;
- Protects the roof covering, thus doubling its lifespan (30-50 years). The roof’s waterproof materials resist longer when protected from ultraviolet (UV) rays and heat, the main causes of material disintegration;
- Is a barrier for adverse weather and thermal shocks (cold rain on hot roofs).

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Ecological and health advantages

- Traps pollens, and ambient and road dust. By increasing the humidity in the air (fostering dew), pollen and dust are trapped and absorbed by the plants and micro-organisms;
- Reduces CO and CO₂ from plants, and increases the available surface area of natural space (if just 6% of Montreal’s roofs were green, experts say that there would be a reduction in pollution and smog, and would influence temperature by about 2°C);
- Recuperates some of the green space lost to buildings, thus contributing to improving air quality (less of a major impact in rural communities);
- Has a very positive impact on water, with an organic filtration and purifying effect on rain water by complexation of heavy metals in the substrata, for example;
- Like a sponge, a green roof accumulates water: Part is used by plants and the rest evaporates. That rest is slow-evacuated along water disposal lines, thus favouring proper drainage and avoiding sewer backup during major storms (this rain tends to increase in Québec with climate change).

![Image of green roof]

Every year, a green roof can absorb up to 50% of the quantity of water than falls on the roof. That's a 5-10% reduction of water treatment costs!

Minimal maintenance

- Don't water your green roof except in the case of drought;
- Since the thickness of the substrata is relatively thin, plants will not grow very high. Therefore, generally, you don't need to cut or trim your green roof.

Although better known for its cars, Toyota has developed a modular grass tile that is very light and can be snapped onto your roof. It is easy to install and it is not necessary to make costly structure calculations. At $35 per tile, they are expensive, but the price will go down as demand increases.
1.6 Cleaning products

« Why are we using dangerous household cleaning products that can be use to make a bomb? »

Generally, we don’t ask too many questions when buying cleaning products for our bathrooms, windows, mirrors, floors and other surfaces. The wide range that’s available and ever expanding probably explains why the number of chemical agents used in North American households has doubled in the last 50 years! It is important to read the labels of what we buy and squirt light-heartedly around our homes, workplaces, schools and even health centres. Here are six ingredients to banish from your environment:

- **Ammonia**: Toxic. It causes skin irritation and destabilises ecosystems;
- **Chloride (bleach)**: Has devastating effects on the environment and your health. When in contact with acids (vinegar, lemon juice) it can give off toxic vapours;
- **Artificial fragrances/Perfumes**: 95% of chemical products used in perfumes are petroleum-derivative synthetic composites. Just one perfume (perfumed candles, laundry soap, fabric softeners, soaps, shampoos) can contain up to 50 chemical, toxic and non-biodegradable substances;
- **Phosphate**: It causes the de-oxygenization of rivers and favours the excessive production of algae that is harmful to biodiversity (particularly blue algae, or cyanobacterium);
- **Nonylphenol**: Banned in Germany, this petroleum derivative has negative effects on the endocrine system (hormones). What's more, it disintegrates very slowly in the environment.

**Other troubling facts?**

- Indoor air is two to five times more polluted that outside air because of the use of household chemical products;
- Some household chemical products can be detrimental to human fertility;
- Some household chemical products are factors in insomnia, allergies, asthma and cancer.

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Cleaning products should be considered household hazardous goods (see Section 7 “Hazardous household residues”). They are part of our daily life and can be found everywhere: kitchen, bathroom, basement, garage... These products are generally identified with specific symbols that help you recognize them.

| Poison or Toxic          | - Poisonous to humans and animals;  
|                         | - If this product is swallowed, licked, touched or inhaled it can cause illness or death. |
| Corrosive               | - Corrodes or distresses many materials;  
|                         | - This product will burn skin, eyes or, if swallowed, throat and stomach. |
| Reactive                | - Can explode or emit fatal fumes;  
|                         | - This container can explode if heated or pierced. Exploding metal or plastic can cause serious accidents, especially to the eyes. |
| Flammable               | - Catches fire quickly;  
|                         | - The container and the fumes it releases catch fire easily near a source of heat, flames or sparks;  
|                         | - A rag used with this product can catch fire on its own! |

Examples of hazardous household products

<table>
<thead>
<tr>
<th>Where</th>
<th>Ammonia</th>
<th>Furniture polish</th>
<th>Oven cleaners</th>
<th>Metal cleaners</th>
<th>Scouring powder</th>
<th>Rubbing alcohol</th>
<th>Hair dye</th>
<th>Nail polish remover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Bathroom</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

38 Ministère du Développement durable, de l’Environnement et des Parcs and RECYC-QUÉBEC
You will surely agree that you mustn’t put anything down the drain, toilet or sewer: The water treatment plant generally can’t filter these products. They end up in our lakes, rivers and other waterways, intoxicating fish, algae and everything that feeds off them on its way...

**What should we do?**

Apply the 4Rs

The 1st "R": Reduce.

- Make your own cleaning products (you'll find a few recipes below);
- Only buy what you need, favouring alternative and safe products. Look for products that:
  - Don’t show hazard or poison warnings (🚫 ☣️ ☢️);
  - Clearly indicate what they don’t contain (phosphate-free, for example);
  - Are biodegradable;
  - Have recyclable or biodegradable packaging;
  - Finally, ask your grocer or store manager to sell only environmentally safe and biodegradable products!
1.6.1 Environmentally friendly recipes

Before presenting the recipes, let's first look at their basic ingredients.\(^{39}\)

**Pure soap**

100% biodegradable, safe and non-toxic soap. Choose soaps without artificial fragrances, colorant or other additives. For generations, people washed their clothes, their houses and their toilets with pure soap.

**Vinegar (5% acetic acid)^{40}\)**

Vinegar is a naturally derived from fruit, vegetables and grains. It is edible, biodegradable and contains no chemical substances; pouring it down the drain will thus have the same effect on the sewer system and the municipal water treatment plant as any other food. Its use is inoffensive for the environment and your family members, even for people with asthma. Since it's soft on your hands, there's no need to wear gloves. And, lastly, it's affordable and much cheaper than other cleaners. Vinegar is a soft and effective disinfectant for many jobs:

- Cleaning counters, ceramic tiles, cooking equipment--indoors and out--, painted walls and floors;
- Cleaning and making mirrors, glass, inox and chrome shine;
- Getting stains out of clothing, shoes, boots and carpets;
- Getting mould out of humidifiers;
- Wiping away soap scum on tiles, compartments and shower curtains, as well as in dishwashers and washing machines;
- Cleaning mineral and mineral deposits in kettles, coffeemakers, showerheads and irons;
- Unplugging and getting the smells out of drains;
- Eliminating unpleasant odours;
- Steam cleaning microwave ovens;
- Since it cleans without a trace, there's no need to rinse afterwards (that saves water!).

**Starch**

Starch is an odourless powder that effectively cleans dirtied carpets and grease stains.

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\(^{39}\) Greenpeace Canada (http://www.greenpeace.org/canada/en/take-action/greentips/basic-ingredients)

\(^{40}\) Vinegar works wonders (www.vinegarworkswonders.com/default.asp)
**Washing soda** (*sodium carbonate*)  
Key ingredient in washing powder, washing soda removes grease and stains. It is a disinfectant and softens water. Don't use with aluminium.

**Sodium bicarbonate**  
Sodium bicarbonate, or baking soda, replaces scrubbing products. It removes odours, takes out stains, polishes and softens fabrics. It can also put out fires.

**Homemade recipes**

**All-purpose detergent**  
Vinegar or, if you prefer making things complicated:

- 1/2 cup (125 ml) of pure soap;
- 1 gallon (4 litres) of hot water.
  
  - To add a fresh smell and help remove grease, add a 1/4 cup (60 ml) of lemon juice.

This solution is good for all surfaces, which you should then rinse with water, and is effective for most cleaning stains. To obtain a more powerful detergent, double the quantity of soap and lemon juice.

**Scrubbing powder**  
Polish with a stiff bristled brush and pure soap mixed with salt or sodium bicarbonate.

Baking soda on a damp sponge is also effective on most surfaces. Adding aromatic herbs or flowers personalizes your scrubbing powder. Put the ingredients into the blender and grind until the fragrance has penetrated the powder.

To clean the oven, scrub with straight baking powder or mix with the strong version of all-purpose detergent. Don't forget to wear gloves when you scrub!

**Air freshener**  
Commercial air fresheners cover your nasal airways with chemical agents and thus reduce your sense of smell by desensitizing the nerves. It's best to replace these chemicals with natural air fresheners: Use house plants and pleasant fragrances to lessen odours.

- Put baking powder in the trash can or the refrigerator to attenuate odours at their source;
- Dissolve 1 teaspoon (5 ml) of baking powder in 2 cups (500 ml) of hot water. Add 1 teaspoon (5 ml) of lemon juice. Put the solution into a spray bottle and spray as a air freshener;
- Put slices of citrus, cloves and cinnamon in a dish with enough water to leave it to simmer for an hour a two. Your house will fill with this soft scent.

**Dishwashing liquid**
Grate a cake of pure soap into a saucepan. Cover with water and leave to simmer over low heat until all the flakes are dissolved. Add a put of vinegar to the mixture to remove grease and difficult stains. Put into a container and use just like any other dishwashing liquid.

**Mirrors and windows**
Vinegar

Or, if you like making things difficult, clean with water and pure soap and rinse with a solution of one part vinegar to four parts water.

**Carpets**
To effectively clean and deodorize carpets: vacuum, powder abundantly with starch or baking powder, let sit for an hour then vacuum again. For hard-to-remove stains, dab on a vinegar and soapy water solution.

**Disinfectant**
Mix 50-100 ml of an essential oil into a litre of water in a spray bottle.

**Furniture**
Dissolve 1 teaspoon (5 ml) of lemon essence in 1 cup (250 ml) of vegetable oil. Apply with a dry and clean rag.

**Floors**
Vinegar

Or, if you prefer making things complicated, melt 1/8 of a cup (30 ml) of paraffin in a double boiler. Add 1 litre of petroleum jelly and a few drops of lemon essence. Apply with a rag, leave to dry and polish.
To unplug a drain or pipe
Vinegar Or, if you prefer making things complicated, mix 1 cup (250 ml) of baking powder and 1 cup (250 g) of salt. Pour down the drain slowly and add 1 cup (250 ml) of vinegar. It will bubble! 15 minutes later, pour down 1 cup (250 ml) of boiling water.

Bleach
To make your whites "whiter," add 1/2 cup of lemon juice to the rinse cycle. Dry in the sun, which is a natural "sterilizer." Otherwise, there is bleach with an oxygenated formula that is less damaging than conventional bleach for both the environment and your clothes: concentrated powder bleach made by Simply Clean or liquid bleach made by Nature Clean. This product does not contain phosphates, which cause blue algae.

Copper
Rub with lemon juice and salt or hot vinegar and a little salt.

Chrome
Rub with a dry rag and white flour.

Brass
Mix equal parts of salt and flour with a little vinegar and rub with a dry rag.

Silver
Bring 1 litre of water, 1 tablespoon (15 ml) of baking powder and a strip of aluminium foil to a boil. Put the silver item into the saucepan, leave it to boil for three minutes, then polish with a soft rag. Or, polish with a paste made of ash and water.

Rags, paper towels and others...
The 1st R? Reduce… Reduce your consumption, reduce your waste production.
The 2nd R? Reuse…

• Instead of buying paper towels, save your money, preserve our forests and reduce your waste by using washable (and therefore reusable) rags. Even better: Make your own rags with old T-shirts, socks, sheets and other fabrics.
• If you must have your paper towels, make sure you buy ones made of 100% recycled paper.
Cascades sells "custom-sized" paper towels made with 100% recycled paper. Just as strong and absorbent as ordinary paper, they help you save trees since they have smaller sheets for little messes. Unbleached, Cascade products are made in Canada.

In closing...
For those among you who doubt about the efficiency of ecological products, the Télé-Québec show La vie en vert had two professional cleaning women replace the cleaning products they usually used with earth-friendly ones. They each tested two brands of window washing liquid, two brands of degreasers and two brands of all-purpose soap. The result? All the tested products met their expectations: Easy use, quick and effective for cleaning and no soapy film on surfaces. The ecological cleaners proved to be just as effective as the conventional products without any real difference between brands. They also liked:

- The smell;
- That there were no toxic fumes that sometimes catch in your throat with the conventional products;
- That their hands were much less irritated than usual.

Here are a few ecological products that are made in Québec:

<table>
<thead>
<tr>
<th>Company</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biovert</td>
<td><a href="http://www.prolav.com">www.prolav.com</a></td>
</tr>
<tr>
<td>Bio-bec (formerly Assan)</td>
<td><a href="http://www.biobec.com">www.biobec.com</a></td>
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<tr>
<td>Nettoyants Lemieux</td>
<td><a href="http://www.nettoyants-lemieux.com">www.nettoyants-lemieux.com</a></td>
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<tr>
<td>Écolo</td>
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<tr>
<td>Innu science</td>
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<tr>
<td>EcoRespect</td>
<td><a href="http://www.ecorespect.ca">www.ecorespect.ca</a></td>
</tr>
<tr>
<td>Attitude</td>
<td><a href="http://www.labonneattitude.com">www.labonneattitude.com</a></td>
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</table>

1.7 Lawn and flower bed care

This section regards only a small portion of First Nations communities—but better be safe than sorry!

Where does the idea and standard come from that says a lawn must be as green as possible and not have any dandelions or other "weeds"? What we might call the "craze of the suburbs" makes for a massive use of insecticides, herbicides and pesticides. The result? Some "harmful" insects are reinforced. In the past 50 years, the number of species that resist insecticides has gone from a dozen to

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more than 450! And yet, no less than 99% of the insects in our gardens are helpful: They pollinate plants, eat other insects and are food for birds.

- According to the U.S. Environmental Protection Agency, nearly 95% of the pesticides used on lawns are probable or possible carcinogens;
- According to a National Cancer Institute study, children are up to six times more at risk of contracting childhood leukemia when pesticides are used in their homes and gardens;
- There is an obvious health risk in storing and using toxic chemical products;
- **Pesticides and herbicides must be treated like hazardous household products and stored in a locked place before being collected or taken to facilities that can dispose of them properly and safely.**

AEF Global (Agriculture, Environnement et Foresterie), a Québec company, launched an ecological and organic yard care kit accessible to all. The Persea Kit has everything you need to care for a lawn of 3,000 ft²: fertilizers, fortifiers, grass seed, a tool for pulling dandelions and a users guide. A gardener's kit is in the works.

AEF Global has also developed four biopesticides for forest use: Bioprotec, Bioprotec HP and Bioprotec XHP, developed for aerial application, and Bioprotec CAF, which is particularly well adapted to land application. Bioprotec products can be used in the forest, wooded areas, residential neighbourhoods and other wooded sectors. Most of them are EcoCert certified. They target the following insects:

- Gypsy moth;
- Spruce bug worm;
- Western spruce budworm;
- Jack pine budworm;
- Forest tent caterpillar;
- Western hemlock looper;
- Bagworm caterpillar;
- Elm span worm;
- Fall cankerworm;
- Satin moth;
- Whitemarked tussock moth;
- Spring and fall cankerworm;

Grasscycling
Recycling grass means leaving your clippings on the lawn. This simple action makes for considerable savings in time and money:
By leaving clippings on the lawn, you will save an average of 25% to 30% of time conventionally spent mowing lawn.\(^{43}\)

Clippings meet 30% of your lawn's needs in azotes and give it back the nutritive elements it needs. Clippings are a very effective natural fertilizer when it comes to keeping your lawn healthy and bugs, "weeds" and illnesses away;

Putting your grass clippings in the trash is the worst possible way to get rid of them, both environmentally and economically speaking. Made up of 80% water, grass clippings have a very low calorie value and greatly inhibit the incineration of trash.

**Last bit of advice:**

- Cutting your grass to 6 cm will help keep moisture in the ground. Your lawn will thus need less water and not become yellow;
- One hour of using a gas-powered lawnmower pollutes as much as driving a car 550 km!\(^{44}\) An electronic lawnmower has less environmental impact, a rechargeable lawnmower even less, but the best is a manual lawnmower. No gas = no pollution and no noise.

### 1.8 Tips and tricks

**Reducing at the source**

Rule 1: Before buying something, ask yourself is you really need it.

- Buy used;
- Buy recycled and recyclable products;
- Buy recyclable products;
- Avoid everything that's disposable;
- Systematically avoid Styrofoam and all other #6 plastic ("noisy" plastic that is often used for packaging spinach, croissants, etc.) This plastic can not yet be recycled in Québec;
- Buy things with a long lifespan;
- Buy concentrated products (cleaning products) or make your own for little cost (Section 1.5 Cleaning products). This will also reduce your "production" of packaging and over-packaging;
- Use cups for hot beverages and glasses for cold ones;

---


• Avoid plastic bags. Instead, get a reusable shopping bag;
• Replace all disposable products with reusable and recyclable products;
• Rent or borrow equipment that you don't use frequently;
• Give away things you don't use anymore;
• Turn torn or stained clothing into cleaning rags;
• Repair broken or damaged items;
• Say "no" to Publi-Sacs. Get or make a sticker that says so;
• Reduce the number of marketing and publicity offers you receive in the mail, by telephone or fax www.cornerstonewebmedia.com/cma/submit.asp (free service);
• Buy products that come with a guarantee (ex.: Birkenstock's sandal soles are guaranteed for life);
• Organize book, clothing, etc. exchanges between friends and family;
• Use both sides of a sheet of paper;
• Reduce your toilet's water consumption by placing a 2-litre bottle filled with water or sand in the toilet tank;
• Drive at the speed limit;
• Don't start or stop abruptly;
• Don't let your engine idle any longer than 30 seconds when you're stopped;
• Leave your grass clippings on the lawn. They will protect your lawn from the sun and reduce the weeds;
• Buy products in bulk that you can keep for many years;
• Opt for products that are made locally to reduce the costs and negative effects of transportation;
• When possible, repair your electric appliances, alter your clothes, go to the cobbler and especially, use the resources of your imagination;
• Favour buying bulk items and family packs. If you can't find them in your community, ask your retailers to carry them!
• Avoid, as much as possible, products sold in individual formats;
• Reduce purchases of toxic products to a minimum.

1.9 The Semaine québécoise de réduction des déchets
The week-long event for reducing waste, the Semaine québécoise de réduction des déchets, is an opportunity not to produce waste—and, as we saw and understand, that's the best way of reducing your waste. It’s the ideal opportunity to organize awareness-raising activities to provide the public with ecological alternatives to waste management:
• Composting workshops;
• Conferences and kiosks on the 4Rs;
• Crafts for kids;
• Visits to the recycling centre;
• Fashion shows of recycled clothing;
• Special collections;
• Business workshops;
• Contests;
• Etc.

Individually and collectively, we can and must make the difference for the quality of our common environment. We must act every day. We must educate others every day. And this event is an opportunity for us to do just this.

On the French-language site www.sqrd.org, you'll find posters, post cards and other tools for promoting the event, and a "School Challenge" and a "Municipal Challenge" (and communities...). You can also sign up your activity.

1.10 Fair trade

Équiterre is a non-governmental non-profit organization in Québec. Its mission is to "empower citizens to make environmentally and socially responsible choices."45 It believes that fair trade is one of the best solutions for combating the negative consequences of commercial commerce.

• A fair price paid to producer communities
  By paying a just price, fair trade helps producers and craftspeople rise out of poverty.
• Direct and democratic business relationships on a human scale
  Eliminating middlemen and valuing cooperative and democratic associations gives a new face to business relationships.
• Access to education and healthcare in the South
  Thanks to fair trade, cooperatives and communities are building schools and clinics.

45 http://www.equiterre.org/en/
1. Reduce

- **Equality between men and women**
  Valuing women’s work and including them as decision-makers in their cooperatives and associations favours equality.

- **For our health, that of producers and the environment**
  Ecological agriculture and the sustainable use of resources are priorities for fair trade.

- **Fair globalization**
  Because when we buy fair trade, we change the rules of international commerce, we favour solidarity and we become aware of the power of our choices.

**The tenets of fair trade**

For a product to be certified as fair trade, its product must respect seven major criteria:

1) **Direct trade:** The product is bought by the Northern-hemisphere importer directly from the Southern-hemisphere cooperative or producers' association without a middleman;

2) **A fair price:** The product was bought at a stable and constant price, often two to three times higher than on the conventional market. An additional premium is paid for certified organic products. The purchasing price is determined by the small producers according to their needs and those of their families (health, training, social protection, etc.)

3) **Along-term commitment:** When they buy a product, importers commit to buying more than twice from the same cooperative or association, so as to ensure consistent sales;

4) **Access to credit:** According to need, Southern-hemisphere producer cooperatives can borrow at a low interest rate. With refinancing systems in place, producers can avoid costly indebtedness to loan sharks;

5) **A democratic and transparent organization:** Southern-hemisphere producers assemble in cooperatives, managed democratically and transparently;

6) **The protection of the environment:** Products are grown using methods that are ecological and respectful of the environment. Most fair trade cooperative are also certified organic;

7) **Local community development:** Part of income is reinvested in the community in the form of local development, to establish projects to improve health, education, the environment and local economy.

---

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« Les bienfaits de la marche », www.pages.infinit.net/fa/


1. Reduce


Natural Resources Canada, « Idle-Free Zone », http://www.oee.nrcan.gc.ca/idling/idling.cfm?attr=0

Go For Green : Gardening for Life, http://www.goforgreen.ca/home_e.html

Vinegar works wonders (www.vinegarworkswonders.com/default_fr.asp)
The 4R’s

2. Reuse

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2.2 WHAT CAN I REUSE?.............................................................................................................................................................. 4
2. Reuse

Reuse means thinking before deciding that we’re missing a product/object.

- Don’t I have something similar that I forgot I have?
- Do I really need it?
- Can a friend or someone in my family lend it to me?

Reuse is about thinking before getting rid of an object, it’s about reclaiming it.

- Does a relative or a needy family need it?
- The local school might put it to good use.
- Does a community organization or an aid agency recycle it?
- A garage sale might help make ends meet.
- Does the community’s garage collect it?

Reuse is thus about extending the life or giving a second life to something that we previously considered as “garbage”. “You are reusing each time you go to: libraries, rental stores (video, tools), repair shops (shoe repair shop, electronics help desk), garage sales, used sport equipment stores, used-clothing counters and stores, antique dealers, furniture refinishers, used-book and cd stores, used construction material stores, stores that sell product in bulk and reuse containers, and computer and home appliances stores.”

As we saw in the “Reduce” section, reuse also means favouring multi-purpose objects and products instead of single-use objects/products:

- Cloth napkins (thus washable) and washable rags instead of paper napkins and paper towels (single-use);
- Washable fabric coffee filters or strainer-filters instead of single-use paper filters;
- Electric razor instead of disposable razors;
- Rechargeable batteries instead of regular batteries.

2.1 Why reuse?

- To reduce your consumption (and therefore avoid unnecessary spending);

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- To reduce your production of waste and the disposal of packaging;
- To do something good and make those around you happy;
- To preserve the environment, its resources and raw materials.

Reuse helps reduce not only the content of your garbage cans but also that of your recycling bin. “It’s simple, economic and available to all of us! All you need is to extend the life of a product by using it more than once or to be creative by giving it a second life”.

2.2 What can I reuse?

By buying used, recycled and recyclable products or products with recycled material, you reuse something that has already been consumed or used.

- Use a reusable plastic or cotton bag for your purchases. If the volume of your purchases exceeds the volume of your bags, take the plastic bag provided by the store and reuse it at least once in your kitchen garbage can. This action remains “the most beneficial for the environmental, after the reusable bag”;
- Buy family packs whenever possible. Family pack means a large container of yogurt instead of many small ones or two litres of juice instead of eight 250-ounce ones. Family packs cost much less (you get more for your money) and make for much less waste (reusable, recyclable or not). And, you can reuse containers for leftovers, lunches, storing small items;
- Reuse your family-pack containers to buy in bulk: it’s economical (buying in bulk costs less) and environmental for all of us (by reusing the same containers, you reduce the water, energy and raw-material consumption needed for the production of new containers, and you reduce your contribution to pollution and waste accumulation);
- Use and reuse cloth diapers instead of disposable ones. A disposable diaper takes 200 to 500 years to decompose; while a cloth diaper only takes 6 months. Moreover, we save $750 to $1,500 per child (from infancy to toilet-trained, including laundering costs) because a cloth diapers can be used approximately 200 times (they even become more absorbant over time).

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Lastly, since we ought to reuse them before finally throwing them away, cloth diapers can be used as rags;

- Collect and use rainwater to water your house and garden plants, the lawn and to wash your car (see section 1.5.3 “Rainwater Collectors”);
- You bought a bottle of water because you're terribly thirsty. Fill it back up for your car rides, your walks in the woods or the office. You can also refill it and put it in the freezer, turning it into an ice pack for keeping your food and drinks fresh for hours during your trips and excursions. Instead of buying paper towels, why don't you keep your money, preserve our forests and reduce waste by using washable -- and therefore reusable -- rags. Even better: make your own rags with old tee-shirts, socks, bed-sheets and blankets;
- Use both sides of a sheet of paper by printing on both sides or by using them as memo pads that you keep by the phone;
- Plastic milk bags make perfect freezer bags. Reuse them rather getting new ones;
- Transform your clothes by using dye and accessories or by reusing pieces of fabric to make appliqués. The sky's the limit!
- Your used kitchen cupboards, bathroom fixtures, doors and windows could fit perfectly for your hunting camp…;
- Charitable organizations would love to have your old clothes, jewelry and other accessories; or you can put them on a table for your annual garage sale. You can even use them to make your children and grandchildren happy at Halloween. Or why not open a second-hand-clothing store? Otherwise, your old clothes will take one to five years to decompose;
- Furniture and household appliances are also picked up by service and charitable organizations;
- Wrap your gifts with used bags, ribbons and tissue paper or create ecological and original wrappings with magazines, comics cut out of newspapers, boxes and fabric scraps, etc.;
- Finally, visit flea markets and stores that refurbish products in order to encourage reuse.

For waste from construction, demolition, renovation and roadwork, see section 3.2.5 “Construction, Renovation and Demolition Debris”.
Bibliography

Communauté métropolitaine de Québec, Plan de gestion des matières résiduelles, Section « Faire sa part », sous-section « Réemployer », www.reduiremesdechets.com/faireSaPart-Reemployer.html


3. Recycle

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3. Recycle

Like reuse, recycle means recovering an object and giving it a second life. While reusing an object means using it without really modifying it or favouring multi-purpose objects and products over single-use ones, recycling means bringing an object back to a state of raw material: paper goes back to pulp, plastics are melted and moulded into new products, etc. What was once considered waste becomes a resource, thus breaking with the linear extraction-production-consumption-destruction logic. With this new mindset, an environmentally friendly cycle and sustainable development are established, and that reduces consumption and its negative impact.

After collection, recuperated materials head to a recycling centre where paper, cardboard, plastics, glass and metals are just sorted. Each material is then compressed in a cubic tonne and sold to companies that do the actual recycling of these resources.

3.1 Why recycle?

Recycling:

- Preserves our more and more of our precious natural resources by minimizing forest and mining activities;
- Preserves huge amounts of water;
- Reduces energy demands during manufacturing;
- Bypasses air, water and soil contamination during mining and disposal (dumps, incinerators);
- Favours the conservation and protection of the environment and ecosystems;
- Reduces pollution (each tonne of recycled materials saves 2.8 tonnes greenhouse gases).
<table>
<thead>
<tr>
<th>Materials</th>
<th>Savings¹</th>
<th>Energy</th>
<th>Raw Materials</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium (1 can)</td>
<td>95%</td>
<td>8 kg bauxite</td>
<td>4 kg chemicals</td>
<td>8 m³ (for 1 tonne)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Steel (1 tonne)</td>
<td>61-70%</td>
<td>1,100 kg iron ore</td>
<td>635 kg coal</td>
<td>40%</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>54 kg limestone</td>
<td></td>
</tr>
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<td>Plastic (1 tonne)</td>
<td>57-75%</td>
<td>700 kg crude oil</td>
<td></td>
<td>2,500 litres</td>
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<tr>
<td>Paper (1 sheet)</td>
<td>25-45%</td>
<td>15 g of wood</td>
<td></td>
<td>1 litre (58-90%)</td>
</tr>
<tr>
<td>Glass (1 kg)</td>
<td>25-31%</td>
<td></td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td>Cardboard (1 tonne)</td>
<td></td>
<td></td>
<td></td>
<td>2.5 tonnes of wood</td>
</tr>
</tbody>
</table>

### 3.2 What can you recycle?

You surely recognize this symbol. It’s the Möbius ribbon, the logo for recycling. It guarantees that a product and/or its packaging is made entirely of recycled materials.

When the symbol is white on a black background, the product contains recycled materials. Products containing postconsumer recycled materials are ideal because they have already been used at least once (and you will surely recycle them again when the time comes!). The percentage of recycled fibres is sometimes written in the centre of the logo.

These logos are available for downloads on Industry Canada’s website in a wide range of standard software.²

Let’s go back to our question: What can you recycle? You will be pleasantly surprised to see that most of your “garbage” can be recycled or recovered. However, a container made of several materials must be taken apart before being recycled: For instance, a jam jar is entirely recyclable (if you don’t need it for storage), but you must separate the container (glass) from the lid (metal). A binder is not recyclable, but

---


If you manufacture a product and wish to put the recycling logo, read the National Standard of Canada CAN/CSA-ISO 14021-00, *Environmental labels and declarations - Type I environmental labelling on the Standards Council of Canada* ([www.scc.ca/](http://www.scc.ca/)).
the two cardboard covers are! You must remove the plastic spiral binding on a notebook, take out the metal papers from your cigarette packs, remove the plastic bag from the cereal box; etc.

There might be exceptions, so we recommend reading the sections specific to these various materials. Not all types of paper or plastic can be recycled. For example, even Styrofoam with the recycling logo is not recyclable in Québec.

- Paper and cardboard (Section 3.2.1);
- Plastic (Section 3.2.2);
- Glass (Section 3.2.3);
- Metal (Section 3.2.4);
- Debris from construction, renovation and demolition (Section 3.2.5);
- Waste and leftovers from dinner and the garden (Section 5);
- Computers, televisions and other electronic devices (Section 4.1.1);
- Leftover paint (Section 4.1.2)
- Cellular phones (Section 4.1.3);
- Printer cartridges (Section 4.1.4);
- Rechargeable batteries (Section 4.1.5);
- CDs, DVDs and old eye glasses (Section 4);
- All types of batteries (Section 7).

Created in 1990 by the government of Québec, the Société québécoise de récupération et de recyclage Recyc-Québec has the mandate of promoting, developing and encouraging reduction, reuse, recuperation and recycling of containers, packaging, materials or products, as well as recovering them in the perspective of preserving resources. (...) The Company can, within its objectives, make an agreement with any person, municipality, company or organization.

Recyc-Québec provides all kinds of organizations (institutions, businesses, industries, municipalities and others) with signage and awareness pictograms (in JPG, PDF or EPS format). These can be reproduced, placed and customized on your recycling bins to improve signage and therefore increase the amount of materials you recuperate.

www.recyc-quebec.gouv.qc.ca/client/fr/gerer/travail/pictogrammes.asp (site only in French)

3 www.recyc-quebec.gouv.qc.ca/client/fr/accueil.asp
<table>
<thead>
<tr>
<th>Poster Format</th>
<th>Rectangular Format</th>
<th>Square Format</th>
</tr>
</thead>
</table>
| **PAPER/CARDOARD**
| CUSTOMIZE YOUR POSTERS |
| PAPIER CARTON |
| PLASTIQUE VERRE, METAL CARTON DE LAIT ET DE JUS |
| BIODECOLORABLE |
| **PLASTIC, GLASS, METAL, MILK AND JUICE**
| CUSTOMIZE YOUR POSTERS |
| PLASTIQUE VERRE, METAL CARTON DE LAIT ET DE JUS |
| PLASTIQUE VERRE, METAL CARTON DE LAIT ET DE JUS |
| PLASTIQUE VERRE, METAL CARTON DE LAIT ET DE JUS |
| **RETURNABLE CONTAINERS**
| CUSTOMIZE YOUR POSTERS |
| BIOTERIES ET CANETTES |
| BIOTERIES ET CANETTES |
| BIOTERIES ET CANETTES |
| **COMPOSTING**
| CUSTOMIZE YOUR POSTERS |
| MATIERES COMPOSTABLES |
| MATIERES COMPOSTABLES |
| MATIERES COMPOSTABLES |
| **GARBAGE** |
| DECHETS |
| DECHETS |
| DECHETS |

Soda Cans and Drinking Bottles

Other recyclables:
- cans and plastic/glass packages
- cardboard boxes
- paper products
3.2.1 Paper and cardboard

Paper and cardboard make up close to a third of an average family’s garbage. Every year, the amount of wood and paper North Americans throw away would be enough to heat 5 million houses for 200 years! In Québec alone, we throw away the equivalent of 20 million trees a year!

In 2004, only 34% of the potential amount of recyclable paper and cardboard were indeed recycled. To apply the recycled content standards of the countries that receive our exported paper and cardboard (74% of Canadian production), “Québec companies have to import recycled paper from the United-States.”

How can this situation be rectified? Remember that before recycling, we must first:

1. Reduce;
2. Reuse.

Print both sides of a sheet of paper. And use paper that contains recycled fibres. An office worker who uses only paper with virgin fibres will cause 12 trees to be cut every year!

If you must print on one side only, use the backsides as scrap paper for notes. Also, think about using recycled ink (recycled cartridges are usually of the same and sometimes even of higher quality than unrecycled cartridges. See Section 4.1.4).

As we saw, one single sheet of recycled paper requires 25-45% less energy than a sheet made of virgin fibres, and it preserves 15 grams of wood and 1 litre of water. Recycling one tonne of waste paper is the fibre equivalent of 11 to 24 trees, depending on their size and nature. In practical terms, recycling a one-meter-high stack of newspaper saves one tree. And the benefits are even greater: a 74% reduction in air pollution and 35% less water pollution.

A sheet of paper can only be recycled about seven times, since the fibres become shorter and more fragile during the recycling process. Printed paper can be recycled without de-inking when it is used for

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6 www.enjeu.qc.ca/suggestions/index.php
making egg cartons, animal litter, cellulosic insulation, etc. However, it has to be de-inked for making new printing paper. For the time being, these materials cannot be recycled:

- Stickers;
- Metal foil (not to be mistaken with aluminium paper, which is recyclable);
- Carbon paper;
- Wallpaper (tapestry);
- Waxed, laminated or metallic paper and cardboard;
- Photographs.

You don’t have to remove the plastic windows from envelopes, tissue boxes and pasta packaging. The same goes for staples. These materials will be removed after shredding. However, you must remove the plastic or metal spiral binding on a document or calendar.

Recycled paper

As we saw, there are major environmental benefits to recycling paper. Your paper might not look as white as before, but preserving forests, reducing air and water pollution and decreasing energy demands will certainly give you reason for a clean conscience. And, for sure, it will give you an excellent community, commercial and corporate image.

Without wanting to play favourites, we will say that Cascades provides eco-friendly products (http://www.environmentalbychoice.com).

For example, it provides a line of photocopy and printer paper called Rolland Enviro100 Copy. This paper:

- Contains 100% postconsumer fibres;
- Is EcoLogo certified;
- Chlorine-free process certified;
- Made from biogas energy;
- Is FSC-recycled certified;
- Is Laser guaranteed.

In addition, this paper comes in five, 1,000-sheet reams instead of ten, 500-sheet ones. That means reduced packaging.
3. Recycle

**ÉcoLogo**

Certification from the Environmental Choice Program at Environment Canada. Criteria: level of air emissions, discharge into the water, waste, energy consumption and the efficient use of fibre.

*Cascades is the only Canadian fine paper plant that is EcoLogo certified.*

**Chlorine-free process (CFP)**

Chlorine Free Product Association – CFPA certified. Paper manufacturing that does not use chlorine for de-inking and bleaching.

*Cascades is the only Canadian fine paper manufacturer that is CFP certified*

**Biogas**

Biogas is created from the decomposition of waste in a landfill. This gas is piped to the plant and used in the manufacture of paper. Use of this green energy considerably reduces the production of greenhouse gases.

**FSC (Forest Stewardship Council Certification)**

This certification promotes the responsible management of forests, forest resources and the human communities that rely on them. Principle 3 is dedicated to the rights of native communities and their land use. First Nations’ members were involved in the development of the ten principles of certification.

FSC Recycled certifies that a product's contents are 100% recycled from post-consumer waste (fibres from printed-paper waste products). This certification considers all processing stages from raw material to consumer.

FSC Mixed Sources certifies a product's contents come from well-managed forests, company-controlled sources and recycled fibres.

Using one tonne of Rolland Enviro100 Copy paper (40 boxes of 5,000, 8½ x 11 sheets) instead of a virgin paper equivalent preserves the environment by:

- Saving the equivalent of 17 mature trees;
- Preventing the production of 490 kg of solid waste;
Reducing water use by 46,352 litres;
Reducing suspended solids in the water by 3.1 kg;
Reducing air emissions by 1,076 kg;
Reducing natural gas use by 70 m³ (via biogas).

In comparison, Domtar EarthChoice® paper is only FSC certified and the only quality of Hammermill and Williamsburg paper is their use of 30% postconsumer fibres.

Although it is produced by an American company and thus must be shipped further, Mohawk Fine Papers is another interesting paper. (It has no link to the Mohawk Nation though!) Some of their paper products are:
- FSC certified;
- Greenseal certified (the American equivalent of EcoLogo);
- Contain recycled fibres;
- Use wind power in the manufacturing process.

**WARNING!** SOME COMPANIES CLAIM TO OFFER PAPER MADE WITH RECYCLED FIBRES BUT DO NOT INDICATE THE PROPORTION OF THESE FIBRES.

**Toilet paper and other single-use paper products**

A Canadian uses a hundred rolls of toilet paper per year. Unrolled this would stretch over 5 km! That's means Canadians throw away more than 700,000 tonnes of paper every year.

Toilet paper, tissues, paper towels and napkins are cannot be recycled since they are intended for single use and are, of course, are thrown away. The best solution is industrial or community composting. Other options?
- Toilet paper made of recycled paper;
- Handkerchiefs (washable);
- Rags instead of paper towels (old socks, stained T-shirts and used blankets make excellent rags);
3. Recycle

- Cloth napkins (washable and reusable) instead of paper napkins;
- Asking your grocer or general store to sell only recycled toilet paper, tissues and paper towels (pay attention to the logos).

Toilet paper made of recycled paper is as hygienic as its virgin forest counterpart. But, as you know, its production requires less energy, less water and preserves our forests. You also systematically save money when purchasing recycled paper: up to 35%! If every family in the country exchanged one roll of toilet paper made of virgin fibres for a roll of 100% recycled fibre, 50,000 trees and 65.5 million litres of water would be saved! It would also keep 4,567 kg pollution from the water and air.

Cascades offers toilet paper that is:

- Made of 100% recycled fibres (most are post-consumer materials);
- Bleached without chlorine (chlorine-free process certified);
- Made with 80% less water than industry averages;
- EcoLogo certified.

If every Canadian household replaced one box of tissues made of virgin fibres (boxes of 100, 2-ply tissues) with a box of entirely recycled fibres, we could:

- Save 11,654 trees;
- Prevent 48 truckloads of solid waste;
- Save 15.9 million litres of water (the consumption of 32, 4-person families for 1 year).³

On its site, the organization Greenpeace features brands of toilet paper, tissues, paper towels and napkins that it recommends and those it encourages citizens to avoid. (http://tissue.greenpeace.ca/).

What happens to recycled paper? What happens to recycled newspaper?

<table>
<thead>
<tr>
<th>Recycled Paper</th>
<th>Recycled Newspaper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardboard;</td>
<td>Egg cartons;</td>
</tr>
<tr>
<td>Tissues;</td>
<td>Fruit trays;</td>
</tr>
<tr>
<td>Toilet paper;</td>
<td>Animal litter;</td>
</tr>
<tr>
<td>Paper towels;</td>
<td>Cereal and shoe boxes;</td>
</tr>
<tr>
<td></td>
<td>Phone books;</td>
</tr>
<tr>
<td></td>
<td>Thermal insulations;</td>
</tr>
<tr>
<td></td>
<td>Roof coverings.</td>
</tr>
</tbody>
</table>

³ Greenpeace, Kleenex is wiping away our boreal forest, (http://www.kleercut.net/en/)
What happens to recycled cardboard?

Corrugated cardboard boxes; Construction materials;
Paper grocery bags.

3.2.2 Plastic

Plastics are made of oil or natural gas—non-renewable and polluting resources. Therefore, plastic is not a decomposable organic material. That is, except thin plastic products, such as plastic bags (bags take 200 to 450 years to decompose! Remember: 120,000 pieces of plastics are floating on every km$^2$ of ocean, killing over a million sea birds, 100,000 sea mammals and an infinite number of fish every year).

Several kinds of plastic are most easily recycled. In addition to preserving oil (700 kg of crude oil for 1 tonne of recycled plastic), recycling plastics saves considerable energy (57-75%) and preserves a lot of water (2,500 litres for 1 tonne of recycled plastic). Recycling keeps containers and materials, which occupy a considerable volume over several hundred years, out of our landfills.

**Various kinds of plastic**

Codes found on plastic bottles, containers and packaging indicate the type of plastic resin the object is made of. In Québec, this system was implemented in 1988 by the Société de l'Industrie du Plastique.

<table>
<thead>
<tr>
<th>“Garbage”</th>
<th>Decomposition time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calling cards</td>
<td>1,000 years</td>
</tr>
<tr>
<td>Three-side plastic pockets</td>
<td>450 years</td>
</tr>
<tr>
<td>Plastic packaging</td>
<td>100 to 1,000 years</td>
</tr>
<tr>
<td>Plastic bags</td>
<td>200 to 450 years</td>
</tr>
<tr>
<td>Nylon fishing yarn</td>
<td>600 years</td>
</tr>
</tbody>
</table>

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### WARNING: The Möbius ribbon on a plastic product does not automatically mean it is recyclable!

<table>
<thead>
<tr>
<th>Code</th>
<th>Applications</th>
<th>Features</th>
<th>Can be recycled into</th>
</tr>
</thead>
</table>
| 1 PET | **Polyethylene terephthalate**<br>Various bottles (bottled water, soft drinks, juice), cables, clothing | - Holds carbonic drinks  
- Is transparent | T-shirts, carpets, binders, pillow fillings, etc. |
| 2 PEHD | **High density polyethylene**<br>Containers for food or household products (oil, detergent, garbage bins), tubes and pipes (water, gas), etc. | - Hard and strong  
- Chemical-resistant  
- Easy to colour | Oil and detergent containers, binders, fences, plastic lumber, etc. |
| 3 PVC | **Polyvinyl chloride**<br>Containers for household cleaning or personal care products (bleach, shampoo), mineral water, food boxes, blinds, cheese and meat packaging, credit cards, bottles, etc. | - Sun-proof  
- Resists cold temperatures | Coating, pipes, car parts, road cones, signs, construction materials, etc. |
| 4 PE LD | **Low density polyethylene**<br>Flexible containers (mustard, sauces), expandable bags and wrappings (bread bags), bags (garbage, grocery, freezer), tarps, etc. | - Flexible and soft  
- Solid  
- Waxy texture  
- Light | Grocery bags, garbage bags, plastic lumber, etc. |
| 5 PP | **Polypropylene**<br>Containers and lids (margarine, yogurt, dairy products), textiles, rope, twine, furniture (patio furniture), broom fibres, carpets, personal hygiene product (toothbrushes, combs), etc. | - Moisture-proof  
- High melting point  
- Hardened in thinner parts | Car battery lid, car parts, milk boxes, measuring cups, etc. |
| 6 PSE | **Expanded polystyrene (Styrofoam)**<br>Beer glasses, utensils, small milk and cream containers, coffee cups, plates and Styrofoam packaging, insulation, protective wrapping, TV boxes, audio-video tapes, take-out food containers, CD cases, etc. | - Good insulation  
- Can be transparent  
- Hard  
- Can be transformed into foam | Office supplies, CD and video tape cases, etc. |
| 7 Autres | Ketchup bottle, cheese packaging, bacon packaging, etc. | - Very waterproof  
- Oxygen resistant  
- Grease resistant  
- Multilayered materials | Picnic tables, park benches, fences, etc. |
Find out which kinds of plastic are recycled by selective collection in your community. For the time being, these products cannot be recycled:

- Lighters;
- Binders (you can remove and recycle the cardboard, however);
- Rubber and garden hoses;
- Motor oil or solvent containers (for hazardous household products, see Section 4);
- Expandable film (Saran wrap);
- Meat, cheese, etc. packaging;
- Toys;
- Plastic furniture;
- Bags for chips, candy, crackers and cereal bags.

When you buy a plastic bottle or a can of your favourite drink, you automatically pay 5¢ more than the posted price. If you return the bottle or can, you will get your 5¢ back. Yet, every year in Québec, 400 million of these returnable bottles are thrown away. That’s $20 million that we’re not getting back! Lined up, these cans would stretch three times around the Earth! And that’s just counting Québec…

*Boissons Gazeuses Environnement* (BGE) is a non-profit organization that was created by the Québec soft drink industry to manage the system of returnable, non-refillable soft drink containers and enforce the law, regulations and the *Agreement relating to the consignment, recovery and recycling of non-refillable soft drink containers*. By dialling **1-877-canette**, restaurant owners, retailers and communities without a returnable-container collection service can:

- Register their establishment on a collection route;
- Order bags and vats for collection;
- Get tips regarding recycling, advices to implement a recycling refundable containers program at work, etc. (also available at [http://www.consignaction.ca](http://www.consignaction.ca)).
Retailers or communities receive 7¢ for each returned container.

Plastic cardboard boxes: 16.02$

Barrels can contain 100, 2-litre plastic bottles or 240 cans (175$/ barrel)

Plastic bags for barrels and plastic cardboard boxes (3.51$/10 bags)

You can get your recycling bin and a package of 10 bags for returnable containers (and posters for the “You Return, We Recycle!” awareness campaign):

- Greater Québec City: 418-643-0394;
- Greater Montréal: 514-352-5002;
- For other areas: 1-800-807-0678.
The diagram below shows how the consignment system works. For more information about this system, visit the Recyc-Québec website at www.recyc-quebec.gouv.qc.ca under the “Nos programmes et services” tab “Consignation”.

What can be made out of returnable 2-litre plastic soft drink bottles?9

- 4 containers = 1 baseball cap;
- 5 containers = 1 T-shirt;
  = insulation filling for 1 coat;
- 25 containers = 1 backpack;
- 35 containers = 1 pair of shoes;
  = filling for 1 sleeping bag;
- 90 containers = 1, 2-person tent!

3.2.3 Glass
Like plastic, glass is an inert material, so it does not move or change. A buried glass bottle takes 4,000 years to decompose. This is why it’s a good idea to recycle glass. Recycling glass is all the more important since making new glass requires a lot of energy: the basic mix of sand, sodium carbonate and lime have to be heated to between 1500°C and 1600°C.

Recycling brown, green or transparent glass makes for energy savings of 30%. By recycling just one bottle, you save enough energy to light a 100-watt bulb for four hours! What's more, recycling glass takes 50% less water, causes 20% less air pollution and creates 80% less mine waste than making glass from scratch!

Glass can be recycled indefinitely without losing its properties and quality. It is brought back to life as bottles, containers and jars of all sorts. It is also used:

- In glass-insulated wool;

9 Graphique : Ville de Arles, section « Vie pratique », www.ville-arles.fr/portail/site_proprete/img/schemaplastique.gif
• As an aggregate for road subbases, concrete blocks, asphalt and ceramic tiles;
• In reflective road paint (glass microbeads);
• As abrasive;
• To replace fine sand for jetting.

Beer bottles can also be crushed, then recycled into new products. However, before being recycled, the bottles you return to your grocery or convenient store will be reused by bottlers more than 15 times. Reuse tastes best. Especially, since you get back your 5¢-per-bottle consignment…

For the time being, these products cannot be recycled:
• Ceramic;
• Mirrors and window glass;
• Porcelain and pottery;
• Pyrex glass;
• Cups, dishes, drinking glasses;
• Crystal;
• Light bulbs and neon lights.

There are fluorescent tube crushers with carbon filters that neutralize mercury vapours. The resulting glass can be buried, but the crusher costs $7,200. Special boxes are available for carrying fluorescents to the appropriate facilities.

In closing:
• Rinse your containers (out of respect for the sorting line employees);
• No need to remove labels since that happens during the recycling process;
• Remove lids and stoppers as they are usually made of plastic or metal and not glass (put them in your bin, however—they are recyclable!);
• Don’t forget to return beer bottles, too, since they are worth 10¢ (20¢ for 450-ml bottles).

3.2.4 Metal
Like glass and plastic, most metals can be recycled indefinitely! Recycling metals preserves the environment in many ways. On the top of that list is mining, which is a very destructive and polluting activity. By recycling metal, we avoid extracting, refining, transporting—all activities requiring a lot of energy and water. In consequence, that keeps us from producing considerable greenhouse gases.
### Aluminium

- 1 tonne of recycled aluminium saves 6 tonnes of greenhouse gases;
- When you recycle just one aluminium can, you save enough energy to light a 100-watt bulb for 20 hours!
- To make 1 tonne of aluminium (sold for $1,800 in 2007), you need 60,000 soda or beer cans. In Québec alone, we drink about 1 billion each year! (That’s a value of $30 million);
- Recycled aluminium is transformed into cans, wrapping paper, garden furniture and car parts.

When you buy a plastic bottle or a can of your favourite drink, you automatically pay 5¢ more than the posted price. If you return the bottle or can, you will get your 5¢ back. Yet, every year in Québec, 400 million of these returnable bottles are thrown away. That’s $20 million that we’re not getting back! Lined up, these cans would stretch three times around the Earth! And that’s just counting Québec...

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- Greater Québec City: 418-643-0394;
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Steel

Presently, 65% of steel products are made from recycled steel.

- The steel from six recycled cars can make a frame for a house (in terms of wood, that means about 40 trees saved);
- Recycled steel is used for making engine parts, steel structures and cans.

<table>
<thead>
<tr>
<th>“Garbage”</th>
<th>Decomposition time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pieces of steel</td>
<td>100 years</td>
</tr>
<tr>
<td>Aluminium cans</td>
<td>200 to 500 years</td>
</tr>
<tr>
<td>Cans</td>
<td>10 to 100 years</td>
</tr>
</tbody>
</table>
What you can recycle:
- Tin cans ;
- Cans ;
- Beer caps ;
- Aluminium paper, foil and plates ;
- Metal lids.

For the time being, these products cannot be recycled:
- Aerosol (spray, deodorant, etc.) ;
- Sauce pans and pots ;
- Nails, screws, bolts, etc.
- Electric wires
- Utensils
- Car batteries and batteries (for hazardous household waste, see section 4.1.6) ;
- Electronic devices (for hazardous household waste, see section 4.1.1) ;
- Paint buckets (for hazardous household waste, see section 4.1.2).

3.2.5 Debris from construction, renovation and demolition

Making up 28% of all Québec's "waste,"
90% of construction, renovation and demolition debris can be recovered or recycled: wood, bricks, dirt, aggregates, metal debris, concrete, masonry, plaster, plumbing elements, glass, plastic, electric wires, shingles, asphalt, etc. A new law adopted in Québec in May 2005 forbids the incineration of construction, renovation and demolition debris. This is primarily due to the risks of contamination from construction materials: processed materials (with paint, varnish, creosote, naphthalene, etc.) are toxic and can contaminate the water table, release toxic elements in the air, etc.

<table>
<thead>
<tr>
<th>“Garbage”</th>
<th>Decomposition time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unpainted and unprocessed boards</td>
<td>3 years</td>
</tr>
<tr>
<td>Painted boards</td>
<td>13 to 15 years</td>
</tr>
</tbody>
</table>
How to proceed

Do you remember the first R? First, you Reduce the use of toxic materials, particularly materials with glue and other adhesives. Then, you favour sustainable, eco-friendly, recyclable materials that require the least maintenance.

1- Unused material should be categorized:
   - Bricks, asphalt, concrete, cement, etc.
   - Unprocessed wood
   - Metals
   - Other (processed materials, plaster, insulation, etc.)

2- Use or reuse materials.
   The community might use these materials for renovation projects, the construction of a hunting camp, etc.

3- Various categories of materials should be sent to the:
   - Dump (to then be recycled);
   - Disposal site (for construction, renovation, demolition debris);
   - Recycling centre (for construction debris);
   - Flea market (for construction debris).

Construction companies must pay to access these sites. They will be charged additional fees if they don’t sort the debris first. Communities do not have to pay for the debris that construction companies generate on their territories. Generally, companies understand and assume their environmental responsibilities.

If debris is stored at a fenced dumping site or at the dump:
   - Metals can be brought to iron workers;
   - Wood can be chipped and used as filling materials in landscaping, in compost or burnt (as long as the wood is unprocessed);
   - Cement, bricks and other materials can be crushed and used as filling material.

One on-call employee can be enough during the summer. He assists construction companies in managing their debris. He directs them to the proper areas at the dump. Under public pressure, the Eastmain Cree community decided to make the site accessible and free to everyone. The result? In less
than two months, a jumble of debris made it impossible to recuperate recyclable material. Reserved and
controlled access is essential!

- Employee (20 hr/week for 16 weeks at $12/hr) : $3,840
- Gate to limit access to the site : $200
- Tempo cover: $1,000 (optional for high quality materials)

TOTAL: $4,040 to 5,040.

For more information

Regroupement des récupérateurs et des recycleurs de matériaux de construction et de démolition du Québec (3R MCDQ). [www.3rmcdq.qc.ca](http://www.3rmcdq.qc.ca) or 1 877 461-2083.


Bibliography


Greenpeace, Kleenex is wiping away our boreal forest, ([www.kleercut.net/en](http://www.kleercut.net/en))


Recyc-Québec, [www.recyc-quebec.gouv.qc.ca](http://www.recyc-quebec.gouv.qc.ca)
The 4R’s

4. Recover

4. RECOVER .................................................................................................................................................. 3

4.1 WHAT CAN YOU RECOVER? .............................................................................................................. 3
  4.1.1 Electronic devices ............................................................................................................................ 4
  4.1.2 Left-over paint ................................................................................................................................. 6
  4.1.3 Cell phones ..................................................................................................................................... 7
  4.1.4 Ink cartridges ................................................................................................................................. 8
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  4.1.8 Unused tires ..................................................................................................................................... 13
4. Recover

Most of the materials thrown in the garbage can be used and processed in ways other than being destroyed. This is what is called *recovery*. Reusing, recycling and composting (for food leftovers; see Section 5) are the most frequently used methods for recovering waste. When it’s not possible to reuse or recycle objects—such as dead batteries, ink cartridges or cell phones, which all contain toxic elements labelled hazardous household waste—there is one last option before throwing them away: scrap dealers, recycling workers and recoverers. On Recyc-Québec’s website, you can search its *Répertoire québécois des récupérateurs, des recyclers et des valorisateurs*¹ by administrative region, company and material type.

Another alternative is recovering the energy stored in residual material. That means turning waste into a fuel for manufacturing processes or equipment designed to produce energy. Various mechanical, biological and caloric systems and technologies can convert, reprocess or break up wastes into new materials or energy. For example, the methane caused by rotting materials in dump sites can be recycled. This gas is converted into power, and thus eliminates its harmful effects on the environment (methane is a greenhouse gas 20 times more powerful than CO₂).

Of course, this “R” is difficult, if not impossible, for individuals to apply. Therefore, this segment is intended for industries or towns with a high volume of waste to manage.

4.1 What can you recovered?

Although it represents less than 1% of our waste, hazardous household waste (HHW) threatens our health and that of the environment. Incinerators, dumps, dumping sites and water treatment plants cannot get rid of them safely. Luckily, we can recover them by recycling components in most of the following hazardous household waste:

- Computers, televisions and other electronic devices (section 4.1.1);
- Left-over paint (section 4.1.2);

• Cell phones (section 4.1.3);
• Printer cartridges (section 4.1.4);
• Rechargeable batteries (section 4.1.5);
• Car batteries and batteries (section 4.1.6);
• Used oil, their containers and filters (section 4.1.7);
• Unused tires (section 4.1.8);
• CD and DVD: Plastique D.C., a company in Granby, Québec, transforms laser discs into plastic granules. You can call them at 450-777-7555 or 1-800-643-3933;
• Eyeglasses: Optométristes sans frontières and Lions Clubs collect glasses and send them to poor countries. Drop boxes are available at some optometrist offices.

4.1.1 Electronic devices

In 2007, in Canada, millions of electronic devices were sent to a dumping site or incinerator. More precisely, we’re talking about:

- 1.8 million computers;
- 552,000 laptops;
- 2.4 million screens;
- 2.4 million cell phones;
- 3 million computers, scanners and faxes.

"These mountains of wastes will continue to grow as the lifetime of devices shortens: The life cycle of the personal computer went from 6 to 2 years in one decade!" In Québec alone, we buy over 3.5 million IT and communications devices each year: computers, printers, televisions, cell phones, sound systems, small appliances, scanners, etc. These devices have an average lifespan of 2 to 3 years, after which individuals, companies and institutions replace them with models that have better performance. This generates 30,000 tonnes of waste per year (140,000 tonnes in Canada) of which only 6% is recycled! Yet, 82% of a computer’s weight is recyclable. The recovery industry that collects this waste and gets rid of the hazardous materials they contain exist already.

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Hazardous materials? Yes, you read that right. Because it contains the following materials, this "waste" is dangerous to human health and to the environment after spending time at the dump or being crushed or burnt:

- **Lead**: Increases blood pressure, causes lesions to the kidneys and brain, disrupts the nervous system, reduces children's learning capabilities and affects their behaviour (aggressiveness, hyperactivity, etc.). The cathode-ray tube of a computer screen contains 2.4 kg of lead;
- **Cadmium**: poisons and damages lungs and kidneys;
- **Beryllium**: One of the most toxic chemicals known, it is damaging to the lungs and heart. In addition to causing Berylliosis, it can increase risks of cancer and alter DNA;
- **Arsenic**: Irritates the stomach, intestines and lungs, reduces the production of white and red blood cells and causes skin problems. It can also create resistance to infections, disrupt the heart, cause brain damage and alter DNA;
- **Mercury**: Toxic in very small doses (1/70th of a teaspoon can contaminate 870,000 p² of water), damages the kidneys, brain and nervous system.

Phenomenal quantities of used computer hardware are sent to developing countries: India receives up to 20,000 kilos a day, while Nigeria welcomes 500 containers per month. 75% of the material shipped is unusable. Frequently, it is destroyed inadequately, thus becoming a health risk for people living near landfills. In some cases, lead percentages are 2,000 times higher than standards recommended by the World Health Organization.

In conclusion, electronic products contain precious resources, including ferrous metals, aluminium, copper, precious metals (gold, silver, copper, platinum) and engineered plastics.

*Staples stores* in Québec collect electronic waste, then send it to one of Québec’s five Centres de formation en entreprise et récupération (CFER), an ecological recovery site. CFER has developed expertise in recycling computer hardware and collecting heavy metals. Within a year, this organization saved over 880,000 kilos of hardware from being buried.

Now, all we have to do is feed this collection network, which has been encouraged to extend throughout Québec, by creating a drop-off point that is easily accessible for citizens. There are two possible options:
1) The hazardous material collection centre in your community could start accepting this type of hazardous household waste, or;

2) Consumers could bring obsolete electronic equipment back to the retailer who sold it. In Québec, the success of left-over paint and tire collection initiatives perfectly illustrate how cooperation with retailers is possible and desirable in solving the problem of hazardous waste.

One interesting alternative for old computers:

Ordinateurs pour les écoles

By dialling 1-888-636-9899 or visiting http://cfs-ope.ic.gc.ca, you can donate or receive computers. This program repairs and currently distributes over 340 computers each day.

4.1.2 Left-over paint

Each year, Quebecers buy more than 15 million paint containers—that's 58 million litres. Of this quantity, 4 million litres (over 5 tonnes) become hazardous household waste. Currently, about half of this is recycled.

Although it is classified among hazardous waste, paint can be recycled, refurbished and put back on the market, just like its metal or plastic containers. You can get rid of left-over paint and its containers at a local recycling centre equipped to handle hazardous materials or at paint stores that take them back. It is important to keep paint in its original container and not mix it with any other products.

Recycled paint is as good quality as other paints since it comes from them and is cheaper. The price-quality ratio is excellent.

Founded in 1997, the non-profit organization Éco-Peinture represents the great majority of paint trademark owners in Québec. On behalf of its members, it has managed the current recovery and reclamation system for discarded paint cans and paint since April 2001 throughout Quebec. Its members pay 25¢ per paint can to finance recovery

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4. Recover

and reclamation activities. Toll free: 1 866 951-3343 or www.peinture.qc.ca.

Accepted products:
- Primer and paint (latex, alkyd, enamels and others);
- Metal or rust paint;
- Aluminium paint;
- Stains;
- Varnishes;
- Lacquers;
- Aerosol paint;
- Road-marking paint (available in retail stores);
- Wood or masonry finishing products (preservatives), including acrylic driveway sealer.

Almost all recovered paint in Québec has been developed by Peintures récupérées du Québec, located in Victoriaville. The organization sorts, processes and conditions recycled paint and sells quality finished products for both exterior and interior in several colours. These products are sold under the “Boomerang” label. Now a branch of Société Laurentide and the Canadian leader in paint recovery, Peintures Récupérées also collects left-over paint from the Maritimes and the northeastern United States.

Steel containers (24% of arrivals) are recovered, pressed and shipped to a smelting plant. Waste, such as dry paint, etc. (16% of arrivals), can not be processed for the time being. Some are discarded by companies specialized in the field.

4.1.3 Cell phones

A cell phone contains lead, mercury, cadmium and arsenic. About 96% of a cell phone’s weight is recyclable. Only the rubber keypad is not. Cell phones are refurbished and resold whenever possible, and recycled components are used to manufacture other products, including plastic lumber.

Cell phone’s rechargeable batteries are also recyclable. A thermal recovery process extracts the metals they contain (nickel, iron, cadmium, lead and cobalt) for making new rechargeable batteries or stainless steel products.
Where can you return cell phones

Bell stores accept all used cell phones, batteries and accessories regardless of the cell phone's manufacturer. Drop boxes will soon be installed in all Desjardins credit unions. Or, you can send them to:

Mobile Take-Back
8590 Airport Rd.
Brampton, Ontario, L6T 5A3

Your package will be delivered free of charge if you print and cut out this prepaid postage label (you can also download it at www.bell.ca/support/PrsCSrvWls_Clp_shipping.page).

For each cell phone collected, Bell will donate $1 to World Wildlife Fund Canada, a worldwide organization seeking to protect the environment and stop its degradation by conserving global biodiversity, guaranteeing sustainable use of renewable natural resources and favouring initiatives intended to reduce pollution and overconsumption. Desjardins Group will also donate funds from their initiative to WWF Canada.

The Bell's mobile phone recovery program was launched in 2003. Since 2007, over 232,000 phones and 57 metric tonnes of batteries and accessories have been diverted from landfill sites.

For more on cell phone batteries, see Section 4.1.5, "Rechargeable batteries".

4.1.4 Ink cartridges

It takes 1,000 years for an ink cartridge to decompose. Despite this fact, each year on the planet, more than 400 million laser printer and ink cartridges are thrown away. Only 25% are recycled, even though they contain toxic substances, such as lead, dioxin, black carbon and cyanide. They are also made of plastics, acrylic, metal and aluminium sheets, and can therefore pollute the water and soil.

The refurbishing process consists of replacing some elements and adding powder or ink. Recycled cartridges are of equal quality, and sometimes even of higher quality than the original ones.

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Éco-Logik, www.eco-logik.ca/jsp/ecologik/e_index.jsp?TN=e_index_promo.jsp
Where can you return them?

Two options are available:

- Eco-Logik, which helps schools finance special activities, and;
- Mira Foundation, which trains guide dogs for the blind and disabled.

Eco-Logik is an educational program for recycling printer cartridges. It has three objectives:

1) Develop student’s ecological awareness;
2) Help schools finance various activities;
3) Collect empty printer cartridges for recycling.

Following the Eco-Logik program, schools collect their empty printer cartridges and those from students’ and employees’ homes. Then, they send them to LaserPro, an organization that pays the school anywhere from $0.50 to $4 for each empty cartridge, depending on the model, and then recycles them. LaserPro pays the shipping and provides collection boxes. This program helps schools finance extracurricular activities, purchase computer equipment, etc.

If you have questions or would like to register your school, call Eco-Logik at 819-566-2847 or 1-800-555-9531. You can also send an email to eco_logik@eco-logik.ca or fill out the online registration form at http://www.eco-logik.ca/jsp/ecologik/e_index.jsp?TN=e_index_schoolsubscription.jsp.

This program is also available for non-profit organizations.

In the same vein, the Mira Foundation finances part of its activities with the resale of empty ink cartridge and cellular phone donations. Their collection procedures and instructions are the following:

**Original cartridges only**

For Greater Québec City:

- **Minimum required**: 5 laser cartridges (+ ink cartridges and cellular phones if available);
- Call 418-845-6472.

Outside of Greater Québec City:

- **Minimum required**: 10 laser cartridges (+ ink cartridges and cellular phones if available);
- Call 1-800-799-6472, send a fax to 418-845-1000 or email to cfalardeau@mira.ca. The organization will send someone to pick them up free of charge.

If you have only a few cartridges and cellular phones, see the lists of drop-off centres around Québec at http://www.mira.ca/contenta/am1-10a.html.

4.1.5 Rechargeable batteries
Non-rechargeable batteries are expensive and have a short lifespan. That means they soon become hazardous household waste. Apply the first R—Reduce—by purchasing products that do not require batteries. Or use adapters. Or buy rechargeable batteries.

When used with products with high energy consumption, rechargeable batteries can replace from 50 to 300 alkaline batteries. Not only does this represent a major savings, it also effectively applies the 2nd R—Reuse!

However, only 4% of the 48 million batteries bought each year in Québec are rechargeable.6 Not only are alkaline batteries not rechargeable, they also contain heavy metals (including mercury, cadmium and lead) and very high collection costs means that few retailers recover them. For the time being, only ecocentres or sites in Québec City, Stoneham, Neuville and Saint-Raymond de Portneuf collect and send them to companies specialized in safe disposal. Please note that button cells, the kind of batteries used in watches and calculators, for instance, are recyclable (some stores, such as jewellery stores, collect them).

Rechargeable batteries also contain heavy metals, but they can be reused between 500 to 1,000 times and can be recycled. Their original casing and circuits are kept, only the cells are changed. The refurbishing process is less expensive in most cases than buying new batteries, and these batteries perform better.

Where can you return them?
Over 50,000 retailers, businesses and city collection centres participate in the Rechargeable Battery Recycling Corporation's (RBRC) battery recycling program. This industry-funded non-profit organization

collects, transports and recycles rechargeable batteries and cellular phones. The collection containers are too often behind the retailer’s counter or back store and you simply can’t see it. Ask for it!

This rechargeable battery and cellular phone recycling program is free for all participants: consumers, retailers, communities, public organizations and companies. RBRC pays the costs of shipping and recycling rechargeable batteries and cellular phones, and provides free collection containers, including prepaid and preaddressed shipping labels, safety instructions and small plastic bags to hold each used battery and cellular phone. It’s simple and free.

To sign up: [www.rbrc.org/call2recycle/community/comm_signup.html](http://www.rbrc.org/call2recycle/community/comm_signup.html)

For more information or if you have questions, call 1-800-822-8837 or 877-2-RECYCLE.

Recycled cadmium is used to make new batteries, while nickel and iron are used in the manufacture of stainless steel products. Cell phones are refurbished and resold whenever possible. Part of the profits from cellular phone resale is given to charity.
### 4.1.6 Car batteries and batteries
Alkaline batteries (non-rechargeable batteries) and car batteries contain heavy metals (including mercury, cadmium and lead). Thirty-five percent of their weight is manganese and zinc to which 20% to 30% of iron or steel is added. All of these materials can be recovered.7

Retailers generally do not collect non-rechargeable batteries because of very high collection costs. Only two collection methods are used in Québec for hazardous household waste (HHW). They are:

1) Municipal drop-off centres (ecocentres, garages);
2) Mobile community collections (HHW collection day).

These batteries are collected by companies (such as Stablex, Onyx, Clean Harbours, CRI Environnement Matrec) specialized in hazardous household waste. Although business people have shown interest in the past, no company recycles batteries in Québec.

### 4.1.7 Used oil
Only one litre of oil discharged into nature or the sewer system can contaminate 1 million litres of water (surface water, ground water or the water table). Used oil and the metal salts they contain can disturb operations at water treatment facilities and alter the quality of treated water. In Québec, of the 78 million litres of used oil produced, only 48 million have been collected.8

Recyc-Québec and the Société de gestion des huiles usagées (SOGHU), a non-profit organization, have concluded an agreement to manage Québec's used oil (mineral, synthetic or vegetable, as well as plastic filters and containers). Since 2004, recycling workers are paid by the SOGHU. Free containers and tanks are provided to collect this oil.

Since no regeneration plant exists in Québec, collected oils are shipped to Ontario, where they are transformed into new lubricants or fuel-oil to heat greenhouses or cement factories.

To sign up as a collection centre or find your local collection centre, visit SOGHU's site at [www.soghu.com](http://www.soghu.com) or call 1-877 98-SOGHU (987-6448).

---

4.1.8 Unused tires

A tire is made of rubber, metal and fibres. In a dump site, used tires become ideal breeding grounds for mosquitoes, which can carry the West Nile virus. Since they are flammable, used tires are considered to be hazardous materials. A burning tire is hard to extinguish and releases a high concentration of toxic chemicals, including furans, dioxins and polycyclic aromatic hydrocarbons. Recyc-Québec is responsible for collecting used tires, since 2000 when an act forbidding the burial or incineration of tires, was passed. This law also adds a $3 disposal charge for each tire sold in Québec. To facilitate their transportation during collection, tires are stored separately at the dump.9 Recyc-Québec manages Quebec Integrated Used Tire Management Programs: the “annual flux” and the “Emptying of Scrap Tire Storage Sites” programs. Take note that these programs are free for garages and municipalities; the only thing to do is to fill the appropriate form available at www.recyc-quebec.gouv.qc.ca/client/fr/programmes-services/vidage-pneus/formulaires.asp or by contacting Recyc-Québec (1 800 807-0678):

In Québec, close to 8 million unused tires are produced each year. Of these, fewer than 1 million are collected for reuse and resale in Québec or elsewhere, and 7 million are collected, remoulded, recycled or recovered.

Québec has over 9,000 collection centres in 17 administrative regions, as well as 8 Recyc-Québec-certified carriers who ensure the transportation of tires from the collection centre to the treatment centre. Often a retailer or a garage, the collection centre must join the program before carriers can collect their unused tires.

Depending on the state of the tire, it will be:

- Remoulded: A tire in good condition is recovered with a layer of rubber, then baked;
- Recovered for its energy: tires are an industrial alternative to fossil fuel (used in Québec’s cement factories). Particles and contaminants are burnt. Emissions are measured periodically to make sure they are no more harmful than those of fossil fuels;
- Recycled: tires are first shredded. Then, magnets are used to pull away most of the metal wires and the fibre is removed by suction. The rubber is then crushed into granules to make rubber crumb. This can then be used to make:

Flooring underlays;
- Flooring tiles;
- Asphalt and pavement;
- Flower boxes;
- Wheels for roll-out containers;
- Road sign accessories;
- Soccer fields;
- Carpets for arenas, gymnasiums;
- Mudguards;
- Etc.

Over 15 recycling companies exist in Québec. Some make products with recycled material while others sell rubber crumb. For more details, consult the website of the Canadian Association of Tire Recycling Agencies (CATRA), which aims to enhance the effectiveness of scrap tire diversion and recycling across Canada through sharing of information, expertise, and resources (www.catraonline.ca or 709 753-0955).

**Bibliography**

Daigle, É., Blue Storm, Press release, La Mission: zéro déchet électronique is launched, www.ds1.downloadtech.net/cn1067/hosted/rM2IL0zf/ZeroDechet.pdf


5. COMPOSTING: RECOVER YOUR KITCHEN AND GARDEN WASTE! ......................................................... 3

5.1 WHAT CAN YOU COMPOST? ................................................................................................................. 4
5.2 HOW DO YOU COMPOST? ....................................................................................................................... 5
5. Composting: Recover your kitchen and garden waste!

“Composting means Reducing the content of your garbage bag, Reusing organic material by Recycling it into natural fertilizer, thus [Recovering] more than a third of materials that otherwise would be sent to burial sites.”¹

Your table scraps, apple cores, fruit peels and potato peelings fill close to 40% of your garbage bags! These compostable materials are sent to the dump or the incinerator where they take up too much space and release unpleasant smells and methane as they decompose (methane is a greenhouse gas 20 times more powerful than CO₂).

What do we mean by “compostable materials”? Compostable materials are biodegradable: they are “recycled” by Mother Earth when they decompose and turn into humus (also called compost). Composting is an all-natural, organic process by which living material completes its lifecycle by returning back to the Earth.

Since Mother Earth does all the work (with micro-organisms, fungi and bacteria), composting is an easy and efficient solution that requires little investment and greatly reduces the quantity of waste produced everyday — up to 40% of the content of your garbage bags, remember? All you need to do is to put your biodegradable waste into a composter. In so doing, you respect the Earth by reducing your contribution to air pollution (1 pound of rotting materials = 3 m³ of biogas, water pollution and global warming (1 tonne of composted materials = 1 tonne less of greenhouse gas). You also liberate space at the dump and create a usable product (compost).

Your compost can be used in several ways:

- As a quality, non-chemical fertilizer for gardening, lawns, flower beds;
- To control soil erosion;
- In landscaping.

Its benefits are numerous:

- It improves tolerance to drought or low rain periods;
- It helps prevent plant disease;
- It improves root structure;
- It reduces compaction and improves aeration of soils;
- It increases the number of microbes and worms;
- It absorbs heat and warms the soil;
- It increases safety on sports fields.

5.1 What can you compost?

<table>
<thead>
<tr>
<th>Waste 3</th>
<th>Category</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fruits</td>
<td>Citrus peels should be cut into small pieces. Peach and avocado pits can also be composted.</td>
</tr>
<tr>
<td></td>
<td>Vegetables</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coffee beans</td>
<td>Excellent for composting</td>
</tr>
<tr>
<td></td>
<td>Coffee filters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tea bags</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tea leaves</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Egg shells</td>
<td>Must be crushed.</td>
</tr>
<tr>
<td></td>
<td>Seafood shells</td>
<td>If well washed and crushed, can be used as mulch (mulch holds the soil's moisture in).</td>
</tr>
<tr>
<td></td>
<td>Salad</td>
<td>Must not contain fat, dairy products, meat or fish. Otherwise, these products release strong smells and attract animals.</td>
</tr>
<tr>
<td></td>
<td>Soup</td>
<td></td>
</tr>
<tr>
<td>Table scraps</td>
<td>Nut shells</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rice, bread, noodles</td>
<td></td>
</tr>
<tr>
<td>Garden waste</td>
<td>Leaves</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weeds</td>
<td>Weeds add volume to your composter.</td>
</tr>
<tr>
<td></td>
<td>Lawn cuttings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Garden cuttings</td>
<td>Is easily composted.</td>
</tr>
</tbody>
</table>

2 The Miller Group, [www.millergroup.ca/compost/gardening/fact_sheet.html](http://www.millergroup.ca/compost/gardening/fact_sheet.html)

5. Composting: Recover your kitchen and garden waste!

<table>
<thead>
<tr>
<th>Wood waste</th>
<th>Sawdust</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Woodchips Branches</td>
</tr>
<tr>
<td></td>
<td>Decompose slower</td>
</tr>
<tr>
<td></td>
<td>Can be used for mulch.</td>
</tr>
<tr>
<td>Tree trunks</td>
<td></td>
</tr>
<tr>
<td>Bark</td>
<td></td>
</tr>
<tr>
<td>Ashes</td>
<td>Must be mixed with acidic materials (pine cones or oak leaves).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agricultural waste</th>
<th>Manure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Use deer, cow, sheep, goat, chicken or rabbit manure</td>
</tr>
<tr>
<td></td>
<td>Avoid using horse manure.</td>
</tr>
<tr>
<td>Straw and hay</td>
<td></td>
</tr>
<tr>
<td>Harvesting residues</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other</th>
<th>Hair</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Must be moist before being put in the composter.</td>
</tr>
<tr>
<td></td>
<td>Do not use treated hair (dyed or permed).</td>
</tr>
<tr>
<td>Animal hair</td>
<td>Decompose well, but require a high level of humidity.</td>
</tr>
<tr>
<td>Feathers</td>
<td>Untreated burlap, cotton, wool and leather decompose very well.</td>
</tr>
<tr>
<td>Natural fabrics</td>
<td></td>
</tr>
<tr>
<td>Newspaper</td>
<td>If it contains vegetable ink, it can be composted.</td>
</tr>
</tbody>
</table>

Avoid products that will release strong smells and attract animals:

- Meat, fish and bones;
- Fats and oils;
- Dairy products;
- Diapers/tissues.

A centralized composting facility can compost all table scraps (but not diapers) (see below).

5.2 How do you compost?

The composting process is always the same. Just its installation and people’s involvement change.

1) Home composting
   - Installation and ongoing management of a single composter. Residents are responsible for managing their composters.
2) On-site composting
   - For a school, office, restaurant, etc.;
   - An employee is responsible of collecting scraps and managing the composters.

3) Centralized composting
   - Collection and transportation of large quantities of organic materials that are processed in a specialized facility;
   - Composting of most of a community’s organic waste, including tissues, meat scraps, etc.

Let’s take a closer look at these various composting methods.

1. Home composting

Residents are responsible for filling and emptying their own composters. Don't worry: it's very simple and rewarding to see all the leftovers that are not unnecessarily thrown in the garbage.

1.1 Buying or making your composter

These composters cost about sixty dollars. The composter on the right is not recommended: it's expensive (about $200) and poorly made. Since there is no contact with the ground, micro-organisms, bacteria and other worms cannot do their work.

If you would like to build your composter, you can collect and reuse old boards (use untreated, rot-resistant wood such as cedar), bricks or concrete blocks. As you can see below, the structure is very simple. Once it’s built, all you have to do is to cover the structure with carpeting or plastic to keep in the heat and moisture. You could also use a metal or plastic garbage can with holes pierced on the sides and bottom (it's best to completely remove the bottom).
1.2 Installing and using your composter

Put your composter in a well-drained, sunny place, sitting directly on the ground or grass and protected from high winds. Your composter is now ready to welcome your compostable materials as you produce them.

The secret of successful, odourless compost is to alternate one portion of green materials and two portions of brown materials. Green materials consist of table scraps and other moist, nitrogen-rich materials, while brown materials are leaves and other dry, carbon-rich materials.

1.3 Cleaning your compost

- Keep your compost moist. You can add water if necessary (the moisture from a sponge);
- Turn your compost every two weeks. This brings micro-organisms the oxygen they need, thus favouring their work and speeding up decomposition.

1.4 Collecting and using your compost

A compost is ready after 3 to 9 months of ripening. In the winter, the process is slower. In Québec, the composting period stretches from April to November. During the winter, you can put your compostable waste in a container with a lid and place it just outside the door (there’s no need to mix green and brown materials). In the spring, you only need to empty the contents into your composter, following the recipe for one portion of green materials to every two portions of brown materials. Save your raked leaves in the fall: in the spring, you’ll want to alternate them with all the green materials you accumulated during the cold season.

Use your compost as fertilizer for your yard, plants, indoor and outdoor flowers, to control soil erosion, fill holes in your lawn or, simply, to give back to Mother Earth (take it to a nearby forest, etc.)
REMEMBER

- If your compost smells, you might have accidentally put fat, dairy products, meat or fish leftovers. It is also possible that there is too much green materials or moisture. In that case, just add brown materials;
- Always cover the table scraps you add to your compost with brown materials. This will keep away nosy animals;
- The smaller the pieces, the faster and easier they will decompose. It is better to cut big pieces of food leftovers and crush egg shells;
- Let leaves and grass dry before putting them into the composter;
- To make your job easier, keep a container in the kitchen as your compost container. It will be handy when you cook and you can empty it into your composter whenever you like.

2. On-site composting

This composting strategy targets:

- Public institutions (schools, health centre, band councils, youth centres, senior citizens homes, sport centres, arenas, etc.)
- Businesses (restaurants, grocery stores, etc.);
- Streets or neighbourhoods.

One person collects materials and manages the composter. This person will also have to raise employees', clients' or residents' awareness, make sure that compost containers in the building are not contaminated with animal scraps, plastic films, soft drink cans, etc. The composter required will probably be bigger than a home composter.

The following model makes it possible to add onto the composter as needed.

As mentioned above, this composter and its composting strategy can be applied to a street, a neighbourhood or an apartment block. A few residents should take on the management responsibilities. A schedule for collecting residues should be established, so that each home only has to put its compost container out the door. After a few weeks, you will determine if the compost materials are being collected frequently enough or not.
3. Centralized composting

Centralized composting requires a truck that collects and transports the materials for composting. (A trailer could do the job, but it should be closed or covered with a tarp). The collected waste is then taken to a specialized facility where most organic materials can be processed, including paper tissues, paper towels from public buildings, etc.

In our opinion, this type of composting is not economically viable for a community since it requires a high quantity of organic waste and an industrial composting centre. If a neighbouring town already does this type of composting, perhaps you could come to an agreement and share their facilities. Otherwise, you could be the one to start a partnership and start this kind of program.

In closing...

The composting market is booming and various new companies now make composting byproducts products. Some companies offer paper bags to keep in your kitchen and replace your compost container, while others sell compostable plastic bags that save you from washing your compost container. What's our opinion?

**Paper bags**: Although they are affordable (18-24¢/bag), made in Canada and labelled environmentally friendly (they are made of biodegradable and compostable glue and printing ink, and seedlings are planted to replace each tree cut), these bags still use resources unnecessarily. They might be useful for centralized composting, but in other cases, look at our solution below. If you are interested in this product, call 1-800-366-6812.

**Compostable plastic bags**: Although they are affordable (about 10¢/bag), certified 100% biodegradable and compostable by international organizations and made of corn, these bags don't fit with Recyc-Québec's lifecycle analysis: a biodegradable bag uses more raw materials than a traditional plastic bag. But don't use a traditional plastic bag: you will contaminate your compost and harm the environment. Don't forget: a plastic bag takes 200 to 450 years to decompose...
Our solution?
It’s free! Put a newspaper page at the bottom of your compost container. You will keep the container clean (although there is no harm in washing it) and the newspaper will add to your brown materials.

For more information...
- Visit the Composting Council of Canada’s site: www.compost.org;  
- The Institut de technologie agroalimentaire du campus La Pocatière developed an educational site on composting: www.etud.italp.qc.ca/SpoulinComp. The technical composting program offered at La Pocatière is divided into three stages: Introduction to compost management; minimal compost management for more efficient learning; hands-on compost management for extensive skills.

Bibliography


The 4R’s

Safe disposal

6. THE LAST SOLUTION: DISPOSE........................................................................................................3
6. The last solution: Dispose

Before throwing away "garbage," make sure that it really is garbage!

1- Apply the 4Rs. Let's take the example of a single-portion yogurt container:

- **Reduce.** Choose a large format instead single portions: there is less packaging, everything is recyclable and it's cheaper;
- **Reuse.** Use the yogurt container to store your nails and screws, pencils, paperclips, etc. But the large format is more convenient since it has a lid;
- **Recycle.** The cardboard packaging and the container itself (in the case of large sizes, only the container). Less materials means fewer materials to manage;
- **Recover.** Need arts and crafts materials?
- **Dispose.** With the large size, there's nothing to be disposed of. With individual portions, however, you have to remove the "soft lid" covering.

2- Make sure it is not hazardous household waste. If necessary, reread or refer to Section 4 and 7, then appropriately and safely dispose of the piece of "garbage".

When you have done all you can to reuse or recycle your trash, please do not throw what's left into the street, a park, your backyard, a parking lot, along the highway or the forest!

In 1884, the prefect of Paris, Eugène Poubelle, ordered citizens to put their trash into special containers with a lid. That way, it wouldn't blow all over the street. Municipal services added a task to their list. So use Mr. Poubelle's ingenious invention!
If no garbage can is available for your real waste, keep it in your pocket or bag until you see one! Same thing with your cigarette butts—they take two to five years to decompose. If you don’t like the idea of carrying your butts with you (and this is not a further incentive to quit smoking), a small airtight and washable pouch that goes discreetly into your pocket or handbag can contain up to six cigarette butts. These portable ashtrays are sold even in dollar stores.

Remember:

1 www.letri.com/dechets/dechets-decomposition.shtml
Hazardous Household Waste

Safe disposal

7. HAZARDOUS HOUSEHOLD WASTE........................................................................................................... 3
7. Hazardous Household Waste

Although hazardous household waste (HHW) makes up less than 1% of our waste, it threatens our health and that of the environment. Remember: just one litre of oil discharged into nature or the sewer can contaminate one million litres of drinking water! “Don’t forget that hazardous products used and improperly thrown into nature today can be found on our plates tomorrow.”

- Don’t put anything down your bathroom or kitchen sinks, toilets or sewer: The water treatment plant generally can’t filter these products. Therefore, they end up in our lakes and rivers, intoxicating fish, algae and everything that feeds on them on their way. In addition, corrosive chemicals can damage your plumbing;
- Don’t throw hazardous household waste into the garbage: the incinerator, the dump and the burial site can not safely dispose of them. Waste buried in the ground can infiltrate and contaminate the watertable, while the combustion of hazardous waste can simply spread it over larger areas on the wind!
- Draining hazardous liquids onto the ground can poison land, plants and water;
- Hazardous household waste does not go in the recycling bin either. For recycling or disposal, these materials must be processed according to strict procedures. Only 20% of hazardous products are currently recycled or properly disposed of, remaining a constant threat to the environment.

Despite current trends, more than 75% of various sorts of hazardous household waste can be recycled or recovered if sent to the right facility and kept in a closed and locked place. Here is a list of hazardous household products we saw in Section 4 "Recover“:

- Computers, televisions and other electronic devices (Section 4.1.1);
- Leftover paint (Section 4.1.2);
- Cell phones (Section 4.1.3);
- Printer cartridges (Section 4.1.4);
- Rechargeable batteries (Section 4.1.5);

---

• Car batteries and regular batteries (Section 4.1.6);
• Used oil, oil containers and filters (Section 4.1.7);
• Unused tires (Section 4.1.8);

<table>
<thead>
<tr>
<th>Materials</th>
<th>Recovery process³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used oil and paint containers or filters, aerosol cans, car batteries,</td>
<td>Recycling</td>
</tr>
<tr>
<td>batteries, batteries (button cells and rechargeable batteries)</td>
<td></td>
</tr>
<tr>
<td>Paint</td>
<td>Recovering</td>
</tr>
<tr>
<td>Used oils</td>
<td>Refinement and utilization for energy</td>
</tr>
<tr>
<td>Solvents</td>
<td>Regeneration</td>
</tr>
<tr>
<td>Pesticides and medications</td>
<td>Incinerated in devices specifically designed for hazardous waste that come with appropriate clean-up equipment</td>
</tr>
</tbody>
</table>

In the discussion on cleaning products (Section 1.5), we saw that hazardous household products are part of our daily lives: we find them in our kitchens, bathrooms, basements and garages. We also know that these products are generally identified with specific symbols that help us recognize them. However, several products like car batteries, used oils, batteries and paint aren’t marked with hazard symbols.

<table>
<thead>
<tr>
<th>Poison or Toxic</th>
<th>- Poisonous to humans and animals; - If this product is swallowed, licked, touched or inhaled it can cause illness or death.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosive</td>
<td>- Corrodes or distresses many materials; - This product will burn skin, eyes or throat and stomach, if swallowed.</td>
</tr>
</tbody>
</table>

Finally, in Section 1.5, we saw examples of hazardous household waste frequently found in homes. Here are a few others:\(^4\)

<table>
<thead>
<tr>
<th>Place</th>
<th>Hazardous products</th>
<th>Corrosive</th>
<th>Flammable</th>
<th>Toxic</th>
<th>Reactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basement and cupboard</td>
<td>Solvent-based glue</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Paint removers</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Ammunitions</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Alkyd paint</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Latex paint</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Wood preservative agents</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Batteries</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Solvents</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Varnish</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

\(^4\) Ministère du Développement durable, de l’Environnement et des Parcs et RECYC-QUÉBEC
## Hazardous Products

<table>
<thead>
<tr>
<th>Place</th>
<th>Hydrochloric acid</th>
<th>Aerosol sprays</th>
<th>Antifreeze</th>
<th>Car batteries</th>
<th>Propane tanks</th>
<th>Chemical fertilizers</th>
<th>Pesticides</th>
<th>Used Oils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garage or garden house</td>
<td>✅</td>
<td>✅</td>
<td></td>
<td>✅</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Hazardous Products

- **Corrosive**: 
  - Hydrochloric acid
  - Aerosol sprays
  - Antifreeze
  - Car batteries
  - Propane tanks
  - Chemical fertilizers
  - Pesticides
  - Used Oils

- **Flammable**: 
  - Hydrochloric acid
  - Aerosol sprays
  - Antifreeze
  - Car batteries
  - Propane tanks
  - Chemical fertilizers
  - Pesticides
  - Used Oils

- **Toxic**: 
  - Hydrochloric acid
  - Aerosol sprays
  - Antifreeze
  - Car batteries
  - Propane tanks
  - Chemical fertilizers
  - Pesticides
  - Used Oils

- **Reactive**: 
  - Hydrochloric acid
  - Aerosol sprays
  - Antifreeze
  - Car batteries
  - Propane tanks
  - Chemical fertilizers
  - Pesticides
  - Used Oils

### Expired Medication

You can return expired medications to the pharmacy or health centre for safe disposal.

### Propane Tanks

Propane tanks can be returned to points of sale.

### Mercury Thermometers

A thermometer contains 1 gram of mercury. That's enough to contaminate all the fish in a five-hectare lake (50,000 m²). There is no mercury recycling centre in Québec.

Instead, opt for electronic thermometers. Why? Mercury is extremely harmful and can enter the human body through the respiratory and digestive tracts and skin. Inhaling mercury vapours from a broken thermometer can make your children very sick. You can also contaminate your vacuum cleaner or broom by cleaning it up.

Most Québec cities have methods for collecting hazardous household waste:

- Collection days;
- Mobile units;
- Permanent drop-off centres.

What about your Band Council? Has it done anything?

The environment is everyone’s business!
Bibliography


8. ORGANIZING A ZERO WASTE EVENT ........................................................................................................ 3
8. Organizing a zero waste event

The organizers of zero waste, or environmentally responsible, events take environmental, social and economic concerns into account in the planning and staging of their events. They reduce waste production to a minimum to prevent pollution and reduce the event’s impact on the environment. In addition, the event can cost substantially less! How do they do this? You know the answer: by applying the 4Rs!

Kids’ parties, bingo nights, Band meetings, community meals, Christmas parties, festivals, weddings, social club events, charity suppers, award galas… For any event, planning is key to an environmentally responsible and zero waste event. To plan effectively, put someone on the organizing committee in charge of meeting these goals.

The benefits of applying the zero waste philosophy

Organizers show their:

- Concern and accountability when it comes to protecting and preserving the environment and improving people’s quality life and health;
- Respect of future generations’ right to benefit from natural resources (as we have, at least so far since the climate crisis has just started…);
- Effort to raise participants’ awareness about the management of residual materials;
- Contribution to extending the service life of burial sites;
- Contribution to consolidating collection and recycling activities;
- Good management since organizing and staging their event is cheaper than a similar, non 4Rs event. When the Réseau québécois des femmes en environnement launched its Pour des événements écoresponsables project, it saved $4,000. According to project coordinator Mélanie McDonald, paper use and excessive postering are among the largest expenses when organizing an event.

The concept of zero waste also raises additional interest in the public and media about the event and, as a sign of increased concern for the environment, it contributes to native peoples’ positive image.

Remember: zero waste is an ideal. This goal is intended to reduce as many materials en route to burial as possible by applying the 4Rs. Without increasing your costs, zero waste means including your
suppliers before and after the event. Giving participants and partners information before, during and after the event will make everyone more responsible and make it possible for them to take the little steps that protect our environment and that of the future seven generations everyday.

On average, a conference participant:
• Produces 30 kg of waste in three days. That's five times more waste than in his everyday life;
• Uses over 3,000 litres of water. That's six times more than at home or at work;
• Produces 640 tonnes of greenhouse gases. That's equal to a month of emissions from an average car.¹

Just apply the 4Rs

Reduce
• Market your event and send invitations by email, phone, website, etc. to reduce paper use;
• Registrations and confirmations can also be done electronically;
• Use recycled paper and print on both sides if you print documents for participants;
• Think of non-material items if you give gifts or hold a drawing. These might include: show tickets, restaurant gift certificate and massages;
• Replace tickets to control in and outs with a vegetable-based ink stamp;
• Avoid everything that is single-use and disposable. Instead, use china plates, cutlery, glasses and sustainable napkins (i.e. washable and reusable). You might also be able to ask people to bring their own dishes²;
• Buy food in bulk, not in individual portions (milk, sugar, salt, butter, cheese, ketchup bags, etc.). You can serve milk in pitchers, sugar in sugar bowls, salt and pepper in shakers, etc. Supplying a coffee table this way will cost you 62% less for cream and 50% less for sugar³

¹Pourquoi un événement écoresponsable?, www.evenementecoresponsable.com/content/view/34/61/
² NOVA Envirom, a Quebec company, sells biodegradable and compostable dishes entirely made with natural products (cornstarch, potatoe or sugar can). This solution is interesting, but using washable and reusable dishes remains the best solution both on the environmental and financial aspects!

• Don’t buy bottled water. Instead, put pitchers of tap water on your tables (Section 1.5.5 Bottled water);
• Look for catering services that use of local and seasonal products (this reduces shipping and supports local producers). Specify that you want the least packaging possible and only recyclable packaging;
• Plan food quantities efficiently to avoid throwing away leftovers. Make sure to have reusable containers on hand so that organizers or participants can bring home any leftovers. You can also take them to a soup kitchen or to a family in need;
• Plan transportation (buses, shuttle buses, carpooling, etc.) to reduce air pollution and CO₂ emissions;
• Make sure participants’ accommodations are environmentally responsible!

Reuse
• Provide reusable name tags and collect them after the event (pin or around the neck names tags);
• Use sustainable decorations, which can be used next time, or make decorations with recycled items;
• Use cloth scraps, reusable bags (fabric or paper) or various once-used papers (wrapping paper, newspapers, magazines) to wrap gifts.

Recycle
• Put several recycling bins in strategic and obvious places;
• Favour products that are partly or entirely made of recycled and recyclable materials;
• Sort unavoidable materials (glass, plastic, metal, cardboard, compostable materials);
• Offer school children the opportunity to hold an information booth on the 4Rs.

Recover
• Compost food scraps.

Dispose
• Throw away ONLY what can’t be avoided, recycled or composted.

Present facts about zero waste in your letter of thanks, the seminar acts or other communications. Participants will be pleased to learn that waste was avoided, thus stimulating their actions in the future! For instance, during the First Nations' socio-economic forum, a zero waste event held in Mashteuiastsh from October 25 to 27, 2006:
- 705 kg of recyclable materials were recycled;
- 290 kg of rotting materials, mostly food scraps, were shipped to a composting company;
- Close to 600 non-recyclable coffee cups were reused by a horticultural company for seedlings;
- Only 30 kg of waste (mostly plastic wrap and broken dishes) were produced during the three-day forum of 500 people daily!4

**Why not organizing an event that’s zero waste and zero carbon?**

Greenhouse gases are inevitably produced during your event, if only by participants’ transportation. Organizing a zero carbon event means compensating for its production of air pollutants. By coordinating transportation (buses, shuttle buses, carpooling, etc.), you considerably reduce air pollution and CO₂ emissions. To calculate your compensation, first evaluate the amount of CO₂ produced.

Various CO₂ emission calculators are available online. You can calculate both the emissions from participants’ transportation and from the energy used during the event. We suggest consulting PlanetAir first, mainly because it is the only organization of its kind in Québec (Montréal) and offers the only bilingual calculator.

- PlanetAir (http://planetair.ca/index.php?sel_lang=english)
  - Calculate emissions generated by your car, air travel or home. There are several easy steps for an individual, business or event.

**How can you compensate?**

- You can purchase offset credits to neutralize your pollution on PlanetAir’s website. This money is invested in projects that reduce greenhouse gas emissions by developing new and renewable sources of energy or by saving energy. This means your emissions are cancelled out by the projects’ reductions, giving you a net balance of zero emissions. To ensure that the reductions are effective and your investment properly used, choose offset credits that are certified by Gold Standard. This option is advantageous and facilitates the organization of your event. You can either:
  - Include a memo in participants’ documents to raise their awareness about zero carbon events. Then, explain how participants can neutralize their emissions;

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4 The forum’s Zero waste report can be found in the appendix.
On the registration form, ask participants to reimburse their emissions. After the first day, you can calculate who attended, their means of transportation and their distances travelled, and buy offset credits. These credits can be charged directly to participants or deducted from their travel expense reimbursement.

- Another solution to neutralize greenhouse gas emissions: plant trees!

For more information about organizing and staging a zero waste/zero carbon event:


This document includes “tool cards” that present the steps for following through on your goals:
- Card # 1: Distributing information;
- Card # 2: Transportation;
- Card # 3: Food;
- Card # 4: Participant packet:
- Card # 5: Sorting system for recyclables;
- Card # 6: Data sheets and greenhouse gas calculations;
- Card # 7: Sustainable development enthusiasts;
- Card # 8: Example of distribution;
- Card # 9: Evaluation;
- Card # 10: Provisions for sustainable development;
- Card # 11: Assessment grid of bidders;
- Card # 12: Sample offer of service.

Événement écoresponsable provides consulting services, public or individual training and workshops, conferences, kiosks and awareness tools. www.evenementecoresponsable.com or 514-843-2015 ext. 810953.

Réseau québécois des femmes en environnement, 2001, Guide pour la réduction des matières résiduelles lors d’événements publics (available on Recyc-Québec’s website or at http://www.recyc-quebec.gouv.qc.ca/upload/publications/zrqfe_g224.pdf

Appendix 1
For Youth

APPENDIX 1: FOR YOUTH .......................................................... 3

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Appendix 1: For Youth

The climate crisis requires “fast reprogramming of existing political and economic organization. [...] The change required must happen rapidly and radically [and] can only be shared and collective.”

Education about the environment must incorporate sustainable development. This notion and everything that it implies is essential to younger generations who will more dramatically experience the impacts of climate change. Students from the École Nationale d'Administration française analyzed the issues and the difficulties of the behaviour changes that must be made if we are to face climate change. They identified elements in our societies that must be reconsidered, and they suggest new perceptions:

- Accept that natural resources are limited. Preliminary studies on the global impact of any project are necessary and must be systematic;
- Understand that economic progress must not be mistaken with the “accumulation of goods over social progress and environment preservation”;
- Promote the benefits of sustainable development and growth;
- Consider others (from here and elsewhere) in your own development;
- Value what is not made by humans (large natural spaces, biodiversity, etc.) and recognize its value as our global natural heritage.

How do we implement such changes in behaviour, habits and values? Like for traditional lifestyles, individual changes come via peer pressure. This increases the value of socially and environmentally friendly behaviours that have an impact on the entire community, society and world. “Peer pressure and pressure from the entire society can get someone involved.”

Get involved to save Mother Earth

Here are some examples of what you can do with your friends, class, school and the whole community to protect the environment and its precious resources.

2 Ibid., p. 48.
3 Ibid., p. 50.
A.1 Start an Environmental or Earth Club

This is a great way to have fun, make friends and make a true difference at school, in your neighbourhood and community! Here are a few suggestions of activities for club members:

- Lead a clean-up of a lake, river or stream;
- Plan and maintain a community garden (vegetables and flowers);
- Launch a recycling program at school, your sports centre, home and community!
- Plant trees;
- Encourage community members (school, Band Council, health centre, etc.) to print on recycled paper and on both sides You can also implement a “paper squad” (www.eav.csq.qc.net/lebac/ref_brigade.html) or launch a “paper study” (ww.eav.csq.qc.net/lebac/ref_enquete.html);
- Organize a green week (see A 1.2).

How can you start an environmental group in your school or community?4

1. There are a few questions to answer before you get started:
   - Do you have a core group of five or six interested teens who want to start the environmental club?
   - Is there at least one adult volunteer (teacher, community leader, etc.) who is willing to help?
   - Are there other organizations, entities or individuals in your community who would be willing to help (technical assistance, transportation assistance, etc.)?
   - Are there any existing youth environmental groups with whom you could join forces or advise? Connecting with an existing group could strengthen your efforts and prevent you from "reinventing the wheel" when there are already tools and methods in action.

2. Partners and preliminary meetings

Once your core group of students and adult volunteers is formed and you have support from the community and the Band Council, call a first informal meeting to talk about your group’s goals. This meeting will help direct the group’s vision and determine its projects and activities as you share ideas.

4 Based on www.earthteam.net/index.php?option=com_content&task=view&id=47&Itemid=80
• Start by asking questions:
  o Why are we here?
  o What do we want to accomplish?
• Briefly inventory your school or community’s most pressing environmental needs;
• Talk about it with other students. They might come up with an idea that you haven’t thought of;
• Get excited and stay excited! Don’t be discouraged if there are only a few members at the beginning;
• Set clear goals. This is important if you want to recruit volunteers and raise funds. If your goals are clear, it will be easier to convince others to join you.

3. First meeting
Advertise! To tell as many people as possible about your group, send flyers (“leaflets”), make an announcement on the community radio station, put posters on bulletin boards at school, at the Band Council, grocery store, health centre, send your announcement to the community newspaper and talk about it! Word of mouth remains the most effective method and it is totally free! Make sure you list contact information so people can call or email if they have questions or want more information. At your first meeting:

• Ask all members to introduce themselves and say why they want to join the club. This first presentation will help you guide your group and understand what people want to get out of their experience;
• Prepare a small buffet (and announce that there’ll be one!). Of course, apply the 4Rs when organizing your meetings (reread Chapter 8, Organizing a Zero Waste Event);
• Rules and leadership: Talk about how the group is going to function and its structure (ex.: Will there be elected administrators?). You can also decide not to have this structure. Instead, you could have a moderator who leads discussions. Consensus is important;
• Create a contact list: All meeting participants should provide their names, grades/ages, addresses, phone numbers and email addresses.
• Take action! At your first meeting, invite participants to talk about the club with at least three potential new members. Your zero waste meeting will also be the opportunity for the first environmental protection activity!
• Don’t forget to continue advertising your group and recruiting members.
4. **Identify your focus projects**

Brainstorm ideas for a year-long community-action project based on your community’s needs and your members’ interests. To begin with, it’s better to focus on one project and to start other ones if all goes well. The project should be group oriented, have a measurable outcome, address a topic that both benefits your school or community and interests group members.

- Look for potential resources: Local non-profit organizations, Natural Resources Canada, Parks Canada, Indian Affairs, Wolf Clubs, the 4-H Club, garden centres, tree nurseries, etc.;

5. **Develop an action plan for your project**

Your project should involve as many people as possible—this will directly raise their awareness, thus making a real difference in your community. Your action plan should include a deadline with descriptions of what needs to be done and a list of who’s in charge of doing what.

6. **Diversify your activities**

To ensure good visibility for your group, you could organize:

- A street clean-up day;
- An environment awareness day in your school;
- Sports events on the theme of environmental issues;
- A composting workshop or a permanent demo site at school to raise awareness and train community members about simple and effective composting;
- Etc.

A.2 **Organizing a green week**

A green week is an event that raises people’s awareness and informs them about the 4Rs, energy efficiency or environmental protection for a day, week or month. Information kiosks, class presentations, skits and documentaries are all excellent ways of communication! You can also take advantage of official days, weeks and months. Here are a few:

- World Water Day (March 22)
- Earth Day (April 22, http://www.earthsite.org/)
- International Composting Week (May 4-10, 2008, www.compost.org)
- World Biodiversity Day (May 22)
• Canadian Environment Week (first week of June, Environment Canada site)
  o World Environment Day (June 5, http://www.unep.org/wed/2008/english/)
  o World Ocean Day (June 8, http://www.worldoceannetwork.org/)
• National Aboriginal Day (June 21, Indian and Northern Affairs Canada site)
• International Day for the Preservation of the Ozone Layer (September 16)
• International Car-Free Day (September 22)
• National Forest Week (End of September, Natural Resources Canada site)
• International Walk to School Day or Week (first week of October)
• World Animal Day (October 4)
• Québec's Waste Reduction Week (mid-October, www.sgrd.org/index.html)
• World Feed Day (October 16)
• International Mountain Day (December 11)

A.3 Form an eco-patrol

An eco-patrol informs people and raises their awareness of the importance of taking every day actions to preserve the environment. Applying the 4Rs, safely managing hazardous household waste, saving drinkable water, turning off idling cars are all issues that eco-patrollers can address:

• In workshops at schools and work;
• By acting as a spokesperson;
• By creating community radio clips;
• By developing awareness tools to be posted in homes or on the Band Council's website;
• Etc.

The Sept-Rivières RCM's eco-patrol biked around their Côte-Nord territory during the summer months of 2006 and 2007.5 In 2007 alone, over 3,000 people received a visit from one of the two eco-patrol pairs.

A.4 School projects

In 2006, a series of educational and awareness-raising activities on recycling and preservation of the environment were hosted by Québec City’s partner organizations specialized in the education and environment field: Gang des 3R and Québec’ERE. Here are a few projects school kids started:

**Reduce**
Projects promoting reduction at the source and responsible consumption:

- No paper day;
- Eco-friendly lunch bag days;
- Information capsules broadcast on the school radio or sent to parents to encourage children and parents to consume differently;
- Chart summarizing the 4Rs to promote best practices at school, etc.

**Reuse**
Projects encouraging students to reuse various objects or materials:

- Making models, posters, placemats or other installations from recycled materials and showcasing them at school;
- Placing scrap paper bins in classrooms so people don’t use new paper;
- Making books from handmade paper;
- Reusing fabric to make new cushions for the library;
- Info capsules or posters on reuse.

**Recycle**
Projects aiming to raise students’ awareness about the importance of recycling:

- Installing recycling bins in daycare centres;
- Recycling cans, batteries, pins and bread fasteners;
- School funding activities;
- Recycling day at school;
- Etc.

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A.5 Educational resources

- **Environnement Jeunesse** (French only) stimulates youths’ environmental consciousness and critical thinking to encourage them to take engaged citizen actions for a viable future.” In other words, the environment for and by youth. ENJEU provides schools with training sessions, innovative projects and educational tools for environment-related education. To join ENJEU, create a regional chapter, etc., visit [www.enjeu.qc.ca](http://www.enjeu.qc.ca) or call 514-252-3016.

- **Green Street** (bilingual) endeavours to provide opportunities to actively engage students and teachers in environmental learning and sustainability education. The program links schools in Canada to reputable environmental education organizations across the country. We aim to deliver credible, accessible and affordable programs that are relevant to students’ concerns, are linked to curriculum, encourage a sense of personal responsibility for the environment, foster a commitment to sustainable living and promote an enduring dedication to environmental stewardship. Student Zone and a Teacher Zone. [www.marueverte.ca/home/index_e.html](http://www.marueverte.ca/home/index_e.html) or 1-866-816-9151.

- **Québec’ERE** (French only) is a non-governmental, non-profit organization that acts as a consultant for environmental learning (EL), popularization of science and scientific interpretation for industry, city and world leaders and provincial and federal departments. Québec’ERE provides customized interpretive and EL tool development services. [...] Its youth section includes a large showcase, practical workshops, educational kits for primary-school and kindergarten students and customized services. The adult section includes a showcase kiosk for the general public and a new travelling exhibition for various audiences (corporate employees, post-secondary educational institution students, etc.) [www.quebec-ere.org](http://www.quebec-ere.org) or 418-524-6661.

- **Learning for a Sustainable Future** (bilingual) is “a non-profit Canadian organization created to work together with educators across Canada to integrate the concepts and principles of sustainable development into school curricula at all grade levels and in both official languages." The youth section asks young people to choose one of the following fields to fight climate change, eradicate extreme poverty and speak out against social injustice: composting, youth commitment, anti-idling, sustainable lifestyles and millennium development goals. An action guide for each of these areas is available online. [www.lsf-lst.ca/en](http://www.lsf-lst.ca/en) or 1-877-250-8202.
• **Evergreen** (bilingual) offers three interesting programs:
  
  o **Learning Grounds**: For school committees and daycare centres. A whole range of integrated services including: starting up, planning, landscaping, choice of plants and funding to make your schoolyard greener;
  
  o **Common Grounds**: Supports and encourages community initiatives, through an online book, toolboxes and workshops, to create vibrant natural areas in public spaces, plant wildflower gardens, regenerate watersheds, etc.;
  
  o **Home Grounds**: Encourages eco-friendly practices for natural landscaping at home for landlords and tenants with large backyards or balconies.
  
    www.evergreen.ca or 514-482-2985.

• **BEAHR** – Building Environmental Aboriginal Human Resources (bilingual). This national initiative aims to increase Aboriginals’ presence in environmental issues through awareness programs for environment-related careers and resources for training and employment, and the recognition of environmental excellence. On the employers section, there are questionnaires to help youth identify their interests, suggestions of career profiles, testimonies from role models and career planning tools. The employment centre provides employment in environment, funding for internships and resources for jobs searches. www.beahr.com or 403-233-0748.

• The **Réseau environnemental des jeunes** (soon bilingual) aims to strengthen the efficiency of the Canadian youth environmental movement by raising awareness about environmental issues and promoting lifestyle changes. The Réseau provides tools, resources and support to youth environmental organizations. It also aims to create links between groups working on Aboriginal rights, social justice and human rights. www.yen-rej.org

• **Mon petit pas** (French) has the goal of raising consciousness among youth of all ages about the environment: What is the environment? Why is it important and how should you take care of it? How do your daily actions and decisions impact the environment? Where can you get information? The site gives everyone the possibility of telling funny or dramatic stories, expressing concerns or sharing ideas on things anyone can do to save the environment. www.monpetitpas.com.

• On the **WWF - World Wildlife Fund's** site, you can order education support tools on climate change, sustainable development waste, eco-citizenship, food, biodiversity, forests, water, oceans, etc. www.wwf.fr/agir/commander_des_supports_pedagogiques or 1-800-26-PANDA.
- Earth Team, an environmental network for teens, teachers and youth leaders, seeks to form a new generation of environmental leaders. This website provides various resources to create an environmental club (see A.1. of this section), to facilitate collaboration between clubs, find resources, take action on air quality, biodiversity, community, energy, 4Rs, pollution, etc. www.earthteam.net (510-704-4030).

- Front commun pour une gestion écologique des déchets, 1995, Plus d’idées pour moins de déchets. Secteur scolaire primaire (Vol.4), FCQGED.

- Recyc-Québec has developed several awareness tools to "educate youth to the potential of precious resources, such as waste." These tools are available in French only in the school section of www.recyc-quebec.gouv.qc.ca/client/fr/gerer/ecole/outils.asp:
  - Activités pédagogiques développées par le mouvement des Établissements verts Brundtland (EVB)
  - Campagne "Tu rapportes, on recycle!"
  - Des watts entre les deux oreilles
  - Déménagez en harmonie avec l'environnement
  - Ensemble, récupérons notre planète
  - Guide pédagogique sur les vêtements et les textiles
    The guide Récupérons - spécial vêtements, written by the social economy company Renaissance, is intended for primary and secondary school students.
  - La Terre dans votre assiette
  - Le BAC
  - Le journal de surveillance des déchets
  - Les aventures de Rafale (MENV)
  - Outil pédagogique - Fiches « Recycler ça rapporte! » à l'intention des élèves du primaire
  - Outil pédagogique - Fiches « Recycler ça rapporte! » à l'intention des élèves du secondaire
  - Outil pédagogique - Guide « Recycler ça rapporte! » à l'intention des enseignants du primaire
  - Outil pédagogique - Guide « Recycler ça rapporte! » à l'intention des enseignants du secondaire
  - Terre comprise (educational kit for a sustainable future with 13 documentaries accompanied by educational activity cards).


A.6 Sample waste verification form

*Use this form to verify your school's waste: garbage put in bins, material sent for recycling and organic materials converted into mulch or compost.*

*Indicated totals by letters G H I J R and C are used for verification count purposes.*

**School population:**

<table>
<thead>
<tr>
<th>Students</th>
<th>Staff</th>
<th>Total</th>
<th>Verification date</th>
</tr>
</thead>
</table>

1. School waste sources:

Please check the boxes below to indicate the source of each type of waste in your school.

<table>
<thead>
<tr>
<th>Type of waste</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Classroom</td>
</tr>
<tr>
<td>Paper and cardboard</td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td></td>
</tr>
<tr>
<td>Plastic</td>
<td></td>
</tr>
<tr>
<td>Cans</td>
<td></td>
</tr>
<tr>
<td>Other metals</td>
<td></td>
</tr>
<tr>
<td>Construction timber</td>
<td></td>
</tr>
<tr>
<td>Garden trimmings</td>
<td></td>
</tr>
<tr>
<td>Food scraps</td>
<td></td>
</tr>
<tr>
<td>Chemicals</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

2. What happens to your school waste?

Please check the boxes below to indicate how your school disposes of each type of waste. In the last column, write the estimated percentage of waste.*

<table>
<thead>
<tr>
<th>Type of waste</th>
<th>Disposal Method</th>
<th>Estimated % of wastes (by weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mainly recycled</td>
<td>Mainly composted</td>
</tr>
<tr>
<td>Paper and cardboard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 1 : For Youth

<table>
<thead>
<tr>
<th>Material</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other metals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction timber</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garden trimmings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food scraps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemicals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Get samples of various sources and weigh all various types of waste.

3. Recycling at your school

<table>
<thead>
<tr>
<th>Recycled Material</th>
<th>Collected Quantity (bags or bins per year)</th>
<th>Estimated Weight (kg per year)</th>
<th>Income ($ per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>N/A</td>
<td>R</td>
<td>I</td>
</tr>
</tbody>
</table>

4. Quantity of garbage your school produces

- How big is the container or bin your school uses? _________ m³
- How many containers or bins does your school use? _________
- How many full containers or bins does your maintenance company collected each week? _________
- How much garbage does your school produce in a week? _________ m³
- How much garbage does your school produce in a year (if a school year has 40 weeks)? _________ m³
- If a square metre of loose garbage weighs about 150 kg, what is the weight of the garbage your school produces in a year? _________ Kg
- How much garbage does each student in your school produce? _________ Kg
- How much organic material (food and garden waste) is composted each week? _________ Kg
- How much organic material (food and garden waste) is composted each year? _________ Kg

5. The total quantity of waste your school produces

<table>
<thead>
<tr>
<th>Disposal Method</th>
<th>Quantity produced per year (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Containers or bins</td>
<td>G</td>
</tr>
</tbody>
</table>

First Nations of Quebec and Labrador Sustainable Development Institute
<table>
<thead>
<tr>
<th>Recycling</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composting</td>
<td>C</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

Each year, your school produces a total quantity of: ____________________ kg or __________________ tonnes.

6. The total cost of waste disposal for your school

<table>
<thead>
<tr>
<th>Disposal Method</th>
<th>Yearly Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Containers or bins</td>
<td>H</td>
</tr>
<tr>
<td>Recycling</td>
<td></td>
</tr>
<tr>
<td>Composting (tools, fertilizers for bins)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>J</td>
</tr>
</tbody>
</table>

Count the net cost for waste disposal by deducting the **Total I** (Table 3) from **Total J** (Table 6).

The net cost for waste disposal for your school is $ __________________ per year.

(Developed by **Briter Solutions** peter@briter.com.au. Available on [www.wrwcanada.com/francais/activitiesS_Fr.htm](http://www.wrwcanada.com/francais/activitiesS_Fr.htm))
A.7 Riddles, true or false and other materials for kids

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Which recycled material can be made into a fleece jacket?</td>
<td>A) Old clothes</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>B) Plastic soft drink bottles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C) Glass containers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D) None of the above</td>
<td></td>
</tr>
<tr>
<td>2 – How many tonnes of waste are produced every minute in Québec?</td>
<td>A) 1 tonne</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>B) 5 tonnes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C) 20 tonnes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D) 50 tonnes</td>
<td></td>
</tr>
<tr>
<td>3 – Aluminium can be easily recycled. How many times do you think a soft</td>
<td>A) Once</td>
<td>C</td>
</tr>
<tr>
<td>drink bottle can be transformed into new products?</td>
<td>B) Five times</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C) Indefinitely</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D) None of the above</td>
<td></td>
</tr>
<tr>
<td>4 – Why is recycling important?</td>
<td>A) To protect the environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B) To save our natural resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C) Because we can make useful products from</td>
<td></td>
</tr>
<tr>
<td></td>
<td>recycled materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D) All of the above</td>
<td></td>
</tr>
</tbody>
</table>

Answers: 1-B, 2-C, 3-C, 4-D

---

7 Home page of the Section jeunesse of the Recyc-Qc site, January 16, 2007
How Can You Help?

This crossword puzzle holds the clues to answer that question. Be sure to read the poster and the glossary. Once you’ve filled in all of the puzzle, check out the instructions at the bottom of this page. That’s where you’ll discover how you can help.

ACROSS
2. Natural resources include water, trees, and _______.
5. When your family is done reading the _______, you can recycle it.
6. A recycling _______ is where used paper is recycled into new products.
7. A kind of metal that we use a lot—and recycle a lot too.
9. After paper is recycled and processed, it becomes material for the manufacture of new products.
10. This kind of paper, which you might use in school, can be recycled.
13. Once your report _______ have been reviewed by your parents, you can recycle them too!
14. If you purchase a recycled product, you are completing the recycling _______.
15. A _______ is a kind of natural resource that helps other things grow.
16. These containers can be clear, green, or brown; and they can be recycled.
18. When you recycle, you are taking _______ to help our environment.
19. Paper mixed with water becomes this stuff.
20. Containers made of this substance are lightweight; many kinds can be recycled.

DOWN
1. The first step in the recycling _______.
3. If you have newspapers, plastic, and glass all mixed up, you usually have to _______ them before recycling anything.
4. A kind of forestry that keeps a healthy balance in forests.
8. The second step in the recycling loop.
11. The third step in the recycling loop.
12. When you buy products made from recycled paper, you are playing an important _______ in recycling.
13. Paper for recycling needs to be _______ and free of contaminants like food.
15. Kinds of resources supplied by Earth and its processes.
17. Going to a birthday _______ soon? Wrap the gift in recycled paper!

Take the first letter of each “Across” answer, in order, to fill in the blanks below.

I • C _ _ _ _ _ _ _ K E _ _ _ _ E _ Y _ _ I _ _ _ H _ _ _ 

Nature Recycle Coloring Book, Produced by Wisconsin Department of Natural Resources
http://www.dnr.state.wi.us/org/caer/ce/eeek/cool/NRcolBk.pdf
Secret Code A

Find out what Recycle Rex wants to tell you by decoding the message below.

\[ H \]

\[ \square \text{Ω} \quad \Rightarrow \quad \bigcirc \bigcirc \bigcirc \bigcirc \downarrow \downarrow \& \downarrow \downarrow \] 

\[ \text{♭} \text{♭} \quad \Rightarrow \quad \bigcirc \bigcirc \bigcirc \bigcirc \downarrow \downarrow \& \downarrow \downarrow \] 

\[ \bigcirc \bigcirc \quad \Rightarrow \quad \bigcirc \bigcirc \bigcirc \bigcirc \downarrow \downarrow \& \downarrow \downarrow \] 

\[ \triangle \& \text{☆} \quad \bigcirc \downarrow \# \# \downarrow \downarrow \& \downarrow \downarrow \] 

\[ \downarrow \# \# \downarrow ! \]

DIRECTIONS
1) Decode the recycling message using the Secret Code Box. Find the letters that match the symbols.
2) You can write the matching letters on a piece of paper or you can print out this page, then write the matching letters above the symbols.
3) Follow the example.

SECRET CODE BOX

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
<th>Q</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;</td>
<td>&gt;</td>
<td>△</td>
<td>☆</td>
<td>$</td>
<td>♦</td>
<td>@</td>
<td>%</td>
<td>↑</td>
<td>=</td>
<td>&amp;</td>
<td>#</td>
<td>!</td>
<td>?</td>
<td>~</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

State of California, Department of Conservation
http://www.consrv.ca.gov/DOR/rre/kids/Pages/aip.aspx
Once you figured out who the mystery recycler is, your next step is to find out where he can take all his recyclable aluminum cans. Use the secret code box to find each letter in the words below. Print out this page and write the letter that is beneath the same picture in the code box above the same picture in the secret word. They will tell you where you can take all your aluminum cans. But be careful, there’s one place you should never take your aluminum cans. Good luck!

State of California, Department of Conservation
http://www.consrv.ca.gov/DOR/rre/kids/Pages/aip.aspx
Unscramble the following words:

EPARP
TSEWA
SALGS
CYERGINLC
DLFLNAIL
CPILTSA
MULUMIAN
SRUEE
TLOCCLE
UEDERC
TAEHR
SATRH

Use the letters in the boxes to complete the sentence:

"Don't trash it - __________ it!"

(Answer on the following page)
UNSCRAMBLE

word answers

EPARP

TSEWA

SALGS

CYERGINLC

DLFLNAIL

CPILTSA

MULUMIAN

SRTUEE

TLOCCLE

UEDERC

TAEHR

SATRH

PAPER

WASTE

GLASS

RECYCLING

LANDFILL

PLASTIC

ALUMINUM

REUSE

COLLECT

REDUCE

EARTH

TRASH

Use the letters in the boxes to complete the sentence:

"Don’t trash it - __CASH__ it!"
## Detecting Definitions

See if you can match the following words with their correct definitions.

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste</td>
<td>A. Materials made by nature that are necessary for life (also called raw materials).</td>
</tr>
<tr>
<td>Resources</td>
<td>B. A specially constructed site for disposing of garbage. The less garbage we throw away, the less we need this.</td>
</tr>
<tr>
<td>Conserve</td>
<td>C. Made from raw or recycled materials, consumers buy these every day.</td>
</tr>
<tr>
<td>Products</td>
<td>D. Although it protects products before they are bought, some products, like fresh produce, don’t need any. Look for products with less of this.</td>
</tr>
<tr>
<td>Recyclable</td>
<td>E. This can be collected in your community and made into a new product by a manufacturer.</td>
</tr>
<tr>
<td>Composting</td>
<td>F. Nature’s way of recycling food scraps and yard trimmings.</td>
</tr>
<tr>
<td>Landfill</td>
<td>G. Something that can harm people or the environment if not disposed of properly is called this.</td>
</tr>
<tr>
<td>Toxic</td>
<td>H. To use wisely, avoiding waste.</td>
</tr>
<tr>
<td>Packaging</td>
<td>I. Metal comes from this mineral or rock in the ground.</td>
</tr>
<tr>
<td>Ore</td>
<td>J. Food scraps, soiled paper, and other things you throw away.</td>
</tr>
</tbody>
</table>

(answers on the following page)
Answers

Detecting definitions,

Waste J
Resources A
Conserve H
Products C
Recyclable E
Composting F
Landfill B
Toxic G
Packaging D
Ore I

The City of San Diego
An item used to make something else is called a raw material. Some raw materials are easy to spot, but many require a bit of detective work. For example, leather looks and feels like the animal’s skin. But a plastic toy is made from oil, and it doesn’t feel slimy! Follow the trail from the raw materials and their clues to the raw of possible suspects below. Draw a line from the material to what it becomes.

Clue: What once grew in the soil can become new soil, right in your own backyard!

Clue: From rocks in the ground, ore turns into a can in your hand.

Clue: Some people measure seconds of time by pouring sand through an hourglass which itself is made of sand!

Clue: Your pencil is usually made of wood, but you can use this for drawing, too!

(answers on the following page)
The City of San Diego

First Nations of Quebec and Labrador Sustainable Development Institute
Appendix 2 : At Work

The climate crisis requires “fast reprogramming of existing political and economic organization. [...] The change required must happen rapidly and radically [and] can only be shared and collective.”

Education about the environment must incorporate sustainable development. This notion and everything that it implies is essential to younger generations who will more dramatically experience the impacts of climate change. Students from the École Nationale d’Administration française analyzed the issues and the difficulties of the behaviour changes that must be made if we are to face climate change. They identified elements in our societies that must be reconsidered, and they suggest new perceptions:

- Accept that natural resources are limited. Preliminary studies on the global impact of any project are necessary and must be systematic;
- Understand that economic progress must not be mistaken with the “accumulation of goods over social progress and environment preservation”;
- Promote the benefits of sustainable development and growth;
- Consider others (from here and elsewhere) in your own development;
- Value what is not made by humans (large natural spaces, biodiversity, etc.) and recognize its value as our global natural heritage.

How do we implement such changes in behaviour, habits and values? Like for traditional lifestyles, individual changes come via peer pressure. This increases the value of socially and environmentally friendly behaviours that have an impact on the entire community, society and world. “Peer pressure and pressure from the entire society can get someone involved.”

- By appointing someone to be an environmental leader;
- By forming a green committee;
- By creating a 4Rs squad.

---

2 Ibid., p. 48.
These initiatives:

- Will encourage team spirit;
- Will help the planet and the environment;
- Will reduce waste;
- Will maximize returns on operating costs.

How to proceed

The environmental leader or environment squad should:

1) Assess or quantify paper, energy and water use;
2) Determine what is thrown away and what could be recycled or avoided, and set reduction goals and deadlines;
3) Give people means of reaching these goals: awareness-raising meetings, recycle bins in each office, small posters reminding workers to turn off the lights when leaving the room or to print on both sides of a paper, etc.;
4) Encourage your colleagues, reminding them of the goals and the importance of their involvement;
5) After one to three months, assess whether or not the strategy is working. You will find overview templates (one with words, another one with figures) at www.eav.csq.qc.net/lebac/org_bilan.html. On this site, you can also learn about how to implement a policy for printing on both sides of the sheet of paper.

This section summarizes a few key things to look out for in your workplace. However, we recommend you read most sections of this guide. You might also read the Energy Efficiency section on the FNQLSDI website at www.iddpnl.ca.

Reduce

- Use cups for hot beverages and glasses for cold ones. Avoid using Styrofoam coffee cups. Similarly, buy 1 or 3-litre milk and cream jugs and bags of sugar instead of individual sugar packs or milk cups;
- Chose to walk, bike or carpool to work (Section 1.3 Alternative Transportation).

The tab "Déplacements domicile-travail" on Transport Québec’s site (www1.mtgou.v.qc.ca/fr/covoiturage/index.asp) provides employers with tools to
minimize their employees’ car trips, number of cars in the parking lot, etc. To help employees who would like to put this program in place, the Minister developed a flyer and information kits with ten info sheets. Implementing these measures will require little investment. Rather, the “price” is often the effort of making the program meet the needs of both employer and employees.

- Print only when necessary;
- Review the delivery method of mail. Messages written on paper and other memos can certainly be sent by email;
- Conference calls, web conferences, video conferences and other web broadcasts reduce considerably impact on the environment, travel costs and expense while increasing productivity.
  - On Bell’s site, you will find a “green meeting calculator” that helps assess the reductions in greenhouse gases when you choose green meetings: [http://www.conferences.bell.ca/en/conferencing_solutions/?taq=en](http://www.conferences.bell.ca/en/conferencing_solutions/?taq=en)
- Water-free urinals exist. An organic product, placed at the bottom of the bowl, neutralizes odours;
- Choose suppliers and manufacturers who keep packaging to a minimum;
- Buy only non-hazardous cleaning products (or make your own as described in Section 1.5 Cleaning Products);
- Hand towel or hand dryer? A study by an environmental resource management consultant concluded “that the hand dryer provides a better environmental balance from the life-cycle analysis (LCA) perspective.” This conclusion was based on using fossil energy to power the dryer (gas, oil, fuel oil, etc.). “Therefore, the verdict is even clearer in the case of Québec where most energy comes from hydropower.”
- NOVA Envirocom, a Québec company, sells biodegradable and compostable dishes made entirely from natural products (cornstarch, potato or sugarcane). This solution is interesting but washable and reusable dishes are still the best solution, both environmentally and financially! The Nova Envirocom’s Bio-vaisselle collection can be an interesting environmental alternative for fastfood or take-out restaurants. For more information about their products call 1-866-898-6682.

3 A. Beauchamp, Vision Durable ([www.visiondurable.com/article-i105943-Serviette-de-papier-vs-sechoir-a-main.html](http://www.visiondurable.com/article-i105943-Serviette-de-papier-vs-sechoir-a-main.html))
Reuse

- Use cups for hot beverages and glasses for cold ones;
- Print on both sides of a sheet of paper and train your colleagues to do so, too;
- Use recycled ink cartridges;
- Use pencils, adhesive tape dispensers and other office supplies that can be reused by recharging/refilling them.

Recycle

- Have bins for recyclable materials (paper, glass, plastic, metal) and for hazardous wastes (batteries, ink cartridges, etc.; see Sections 4.1.4 and 4.1.5, if necessary);
- Make sure you give away or compost any food left over from big business meetings;
- Use paper with post-consumer fibres; an office worker who uses only virgin fibre paper causes 12 to 19 trees to be cut every year!
- Do not throw away your old electronic devices! Companies are collecting and recycling them! (Section 4.1.1 Electronic Devices).

In closing

- Adopt and promote an environmental and responsible purchase policy by setting standards so that purchases (recycled paper, biodegradable pencils, fluocompact light bulbs, toilet paper with recycled fibres, fair trade tea, coffee and sugar, etc.) show a willingness to balance financial resources with environmental and social values. For example, favour suppliers with environmental friendly practices (Section 4Rs, Logos, Symbols and Certifications);
- Heat, air condition and light efficiently by planning and implementing an energy-efficiency improvement plan: turn off computers, lights and other energy-using devices when you're not using them, turn down the heat by 3°C when you leave the office; etc. See the Energy Efficiency section on the FNQLSDI's website at www.iddpnql.ca.

Additional resources

Appendix 3

In the Community

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Appendix 3: In the Community

The climate crisis requires “fast reprogramming of existing political and economic organization. [...] The change required must happen rapidly and radically [and] can only be shared and collective.”¹

Education about the environment must incorporate sustainable development. This notion and everything that it implies is essential to younger generations who will more dramatically experience the impacts of climate change. Students from the École Nationale d’Administration française analyzed the issues and the difficulties of the behaviour changes that must be made if we are to face climate change.² They identified elements in our societies that must be reconsidered, and they suggest new perceptions:

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How do we implement such changes in behaviour, habits and values? Like for traditional lifestyles, individual changes come via peer pressure. This increases the value of socially and environmentally friendly behaviours that have an impact on the entire community, society and world. “Peer pressure and pressure from the entire society can get someone involved.”³

² Ibid., p. 48.
³ Ibid., p. 50.
Remember: the Québec Residual Materials Management Policy, 1998-2008 aims to recover, recycle and reuse:

- 60% of glass, plastic, metal, fibres (paper and cardboard), bulky items and rotting matter (food scraps and green waste);
- 80% of non-refillable beer and soft drink bottles;
- 50% of textiles;
- 20% of non-recyclable metals;
- 75% of oils, paints and pesticides (hazardous household materials);
- 60% of all other hazardous household materials.

**In industry, business and institutions**

- 70% of plastic and fibres (paper and cardboard), wood and textiles;
- 95% of metals and glass;
- 60% of rotting matter (food scraps and garden trimmings);
- 85% of tires (consumers’, industries’, businesses’ and institutions’ out-of-service tires).

**In the construction, renovation and demolition industry**

- 60% of all recoverable materials.⁴

To reach these goals, you need a residual material management plan.

### 3.1 Residual material management plan

“A residual material management plan is a tool that guides actions to take in the integrated management of residual materials for a specific territory. In addition to stating the main practices for managing waste generated on any given territory, it sets out the objectives to be reached and describes the techniques, programs and service levels that must be implemented to meet these goals. All steps must be in keeping with sustainable development.

A residual material management plan will respond to local or regional issues whether political, geographic, environmental, social or economic. Since waste contains materials that can be processed separately for their value, the quantity of dumped resources is reduced to a maximum.\textsuperscript{5}

Your community’s residual material management plan must:

1) Sketch a portrait of the current situation (services available, quantities collected, etc.) for management:
   - Waste (Section 6);
   - Recyclable materials (Sections 1, 2, 3 and 4);
   - Rotting materials (green wastes and food scraps; Section 5);
   - Hazardous household waste (Section 7);
   - Construction, renovation and demolition waste (Section 3.2.5);
   - Municipal wastewater sludge and septic tanks;
   - Bulky objects (appliances, furniture, etc.; Section 2).

2) Draw up a list of actions to be taken:
   - Door-to-door canvassing, questionnaires or a general assembly to assess the populations’ awareness and interest in the 4Rs;
   - Awareness-raising about sorting waste. Students and teachers can participate in this awareness-raising and education;
   - Explanations of what is recyclable, how to sort waste, collection days, who does the recycling (a scrap metal seller, where paper will be sent, etc.). Develop one brochure for residents and another for companies and institutions;
   - Giving information over the radio about the project, results, progress, goals, etc.;
   - Implementing the 4R program;
   - Etc.

Unfortunately, long distances separate most communities from recycling centres, resulting in major transportation costs, which, combined with the price of basic equipment needed to start up a recycling program, often override the financial benefits generated by recycling. A recycling centre in Québec

\textsuperscript{5} Wendake, economic development (technical services), \textit{Plan de gestion des matières résiduelles}, www.wendake.ca/nation/fr/pdf/gestion-mat-res.pdf
becomes beneficial when it processes 25,000 tonnes of recyclable materials per year. Therefore, most communities have to send their recyclable materials to a third party. Another possible option would be to create a regional recycling centre. Nevertheless, when considering the costs and the economic, social and environmental benefits of a recycling program, you will probably find that it is better to divert these materials that otherwise would be sent to the dump or incinerator. This is especially the case when you implement a system where members drop-off their glass, metal, hazardous materials, cans and construction waste.

3.2 Ecocentre, waste sorting and recovery centre or container park
Regardless of what you call it, you must establish a drop-off location where community members, institutions and businesses can bring:

- Bulky items: furniture, appliances, construction and metal wastes, etc. (Section 3.2.5 Construction, Renovation and Demolition Debris);
- Hazardous waste: paint, oil, batteries, solvents, pesticides, fluorescent tubes, fluocompact light bulbs, etc. You should have a permanent and lockable shed (Section 7 Hazardous Household Waste);
- Recyclable materials: paper, plastic, glass and metal, if door-to-door collection is too expensive. These materials will be sorted and stored before being collected by or sent to a processing centre.

Your waste sorting and recovery centre can have a double function: a place to store, transfer and restore furniture, and to sell recycled and reusable materials. When you centralize, you increase tenfold the potential of collecting, reusing, recycling and recovering resources!

Based in Whistler, British Columbia, the Get Bear Smart Society has developed recycling containers that are bear-resistant. A few models are shown below. For more details, visit their website at www.bearsmart.com/aboutUs, call them at 250-266-2327 or email them at bearawareucluelet@ukeecable.net.
3.3 The Wemindji example: Winners of the 2007 Environment Phoenix Award

“For the members of the Cree community, the Earth must not be used as a dump site.”

Johnny Mark, Community Councilor

In 2006, the Cree community of Wemindji implemented a selective collection and recycling system. This community of 1,300 residents has since shown that a collection and recycling system can work, even on a small scale and far from large urban centres.

Implementing selective collection made it possible to collect close to 50% of the community's waste. The incinerator is now used only three or four times a week instead of five or six times. “Just like anywhere else, not everyone recycles but the community response was good,” says Mr. Mark. Containers for selective collection have been distributed to residents and companies. The recycling is done in Chibougamau. Schools and teachers participated in community awareness and education. This program also made it possible to hire community members. Their approach was recognized in 2007 with the Environmental Phoenix Award.

But long before this recognition and the implementation of its selective collection, the community conducted a study on its sustainable waste management plan and identified two possibilities: Drop-off by residents or door-to-door collection by truck.

Option 1: Residents bring their reusable, recyclable or compostable waste to a drop-off centre

- Grocery store or general store;
- Community garage;
- Container(s) designed for these materials;
- Waste sorting and recovery centre;
- A mix of these drop-off centres.

---


First Nations of Quebec and Labrador Sustainable Development Institute
Pros:
- A drop-off centre system is usually the first step in raising community members’ awareness about recycling;
- This system is inexpensive because it does not require a sorting centre (materials are already sorted);
- Since Public Works employees can limit their collection to one collection per week and sometimes even one collection per month (for batteries), the system is not expensive.

Cons:
- Normally, people recycle less with a drop-off centre system than with door-to-door collection.
- Volunteer contribution depends on individual will, and so education, backed by repeated awareness-raising activities, is essential. A regulation and even fines can also be necessary.

After collection
- Metal and glass collectors come pick up the collection. Depending on the accumulated volume, this collection can be done annually or every two to three years;
- Hazardous household waste is sent to companies specialized in this type of recovery;
- Cellular phones, printer cartridges and other electronic waste are sent to specialized companies that recycle them (Sections 4.1.1, 4.1.3 and 4.1.4).

Pros:
- No risk of losing money;
- Cost-free if workers don’t have to do overtime.

Option 2: Door-to-door waste collection by truck
- Requires a truck or a trailer attached to a garbage truck;
- Recycling can be collected on the same day as garbage or on a different day;
- To help sorting at the source, you can provide households with:
Coloured bags ($9,600/year): blue bags for recycled materials (dry waste) and black bags for other materials (wet garbage);

- Stickers ($1,500/year): residents use any bags and identify those with recyclable materials with the proper sticker;
- Roll-out containers ($22,400). Don’t need a bag.

Pros:
- Easier for residents;
- Higher participation and collection rate;
- Helps in collection;
- A recycling centre can come and pick up bags every two weeks at a charge (about $400 depending on the distance). Sorting is done at the recycling centre and not by the community (is this a benefit or a lost job?);
- In the case of an unsuccessful project, money is not lost on roll-out containers (although they could be used in other ways and even resold);
- Significantly reduces the volume of waste to bury or incinerate (75%).

Cons:
- Requires new equipment (trailers or trucks, coloured bags or recycling bins for every house);
- Normally, the community provides residents with bags for the first year at no charge. There are chances that people will not buy the bags the following year or will use them for other purposes;
- Educate people on what can be recycled;
- Of course, door-to-door service is more efficient, but collection and transportation costs must be considered.

After collection
Door-to-door collection must go to a sorting centre, where employees sort the collected materials, and then bale them for storage.
- Unrecyclable materials and glass are set aside;

---

8 1 blue bag/week/household = 3 boxes of 20 bags/household. $9.99/box X 3 box X 320 households = $9,590.40
9 320 rolling containers X $70 = $22,400.
10 1 blue bag/week/household = 3 boxes of 20 bags/household. $9.99/box X 3 boxes X 320 households = $9,590.40
Plastics, metal and fibres (paper and cardboard) are gathered and baled (“baler” is shown in the photo to the right). All recycling centres accept bales of mixed materials
  - Except for soft drink cans, which are collected in bags provided by Boissons Gazeuses Environnement.11 Put into plastic containers, these bags can be placed in restaurants, grocery stores, Council offices, arenas and schools (though soft drinks should not be allowed in schools for obvious health reasons!). Citizens are reimbursed 5¢ per can. Retailers—or a community—will receive 7¢ for each can returned (2¢ is reimbursed for handling fees);
  - Obviously, glass cannot be baled. Instead, it is put in boxes, which are piled on pallets
    - Except for beer bottles: The Band Council or citizens should receive 10¢ per bottle

Pros:
- You do not have to wait for a whole bale’s worth of one kind of material (after three months of storage, paper and cardboard are deteriorated and can no longer be stored);
- Is no trouble or not very much trouble for sorters;
- Labour is less expensive than when each material must be separated.

Cons:
- Possible technical difficulties with the bale press.

What do you do with your bales?

Option 1: A recycler comes to get the bales, which are stored in a container, and leaves an empty container behind.

Pros:
- Very simple...

11 Non-profit organization created by Québec's soft drink industry to administer the consignment system for one-time use soft drink containers and to enforce the law, the regulation and the Entente portant sur la consignation, la récupération et le recyclage des contenants à remplissage unique de boissons gazeuses. By calling 1-877-Canette, restaurant owners and other retailers who do not have a returnable container service can:
  - Register their establishment on a collection circuit;
  - Order collection bags and plastic containers.
• Possibility of using the empty container to ship merchandise in the community when the full container is collected;
• No need for a storage space (the container is the storage space);
• The bale press can be rented.

Cons:
• Can be expensive in the long run;
• Training needed to repair the bale press;
• If the partner goes bankrupt, to whom will the community turn? Think about it...

Costs (according to the Wemindji study):
• Storage of recycling operations: $30,000
• Bale press rental: $3,000$/year
• Rental of two containers: $300/month ➔ $3,600/year
• Fork lift: Free (use the one from the community garage or Public Works)
• Part-time worker (10 hr/wk., $10/hr, 50 wk/yr): $5,000
• Shipping and processing the bales of mixed recyclable materials (100 tonnes/year: about five trips between Wemindji and Chibougamau): five trips at $2,139 = $10,700 - 100 tonnes sold at $35/tonne: $7,200/year.

TOTAL : $48,800 ($18,800 of recurring fees in the following years. Costs for sorting at the source—colour-coded bags, labels or rolling containers—not included).

Option 2 : Bales are shipped by truck to a recycling centre

Pros:
• Can change recyclers if the business relationship is not satisfactory;
• No need to rent containers.

Cons:
• Requires more coordination;
• Requires storage;
• Is a more complex operation (from the sorting centre to storage then to the truck).
Costs:

- Sorting centre: $30,000
- Bale press: $21,000
- Fork lift: Free (use the one at the community garage or Public Works)
- Part-time worker (10 hr/wk, $10/hr, 50 wk/year): $5,000
- Storage:
  - 40-metre container: $5,000
  - 60-metre Abri Tempo (four seasons): $8,625;
- Five trips at $1,200: $6,000/year;

TOTAL: $75,500 ($19,500 of recurring fees in the following years. Costs for sorting at the source—colour-coded bags, labels or rolling containers—not included).

Regardless of the option you choose, any initiative should “be part of setting up safe storage for hazardous materials and a recuperation centre for construction materials, and implementing Recyc-Québec programs for used oils, paint, returnable bottles, rechargeable batteries and used tires […]. These measures are inexpensive and require very little infrastructure. Establishing this program also raises [members of the First Nations’] awareness of recycling standards, even before household recycling is collected”\(^\text{12}\).

## Wemindji Communications Plan

<table>
<thead>
<tr>
<th>Event</th>
<th>Deadline</th>
<th>Things To Do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiosk on the 4Rs</td>
<td></td>
<td>Teach people how to sort their waste and provide them with information.</td>
</tr>
<tr>
<td>Questionnaire about recycling</td>
<td></td>
<td>Door-to-door canvassing to assess people’s awareness and interest in the 4Rs.</td>
</tr>
<tr>
<td>Ad about door-to-door collection of bulky items* and metal</td>
<td></td>
<td>Inform residents that communities have to hire wreckers to remove metal from the dump, and that metals will be collected on such and such a date.</td>
</tr>
<tr>
<td>Presentation at the General Assembly</td>
<td></td>
<td>Presentation on what has been accomplished and what will be done about waste management; justify the project (maintenance costs, increasing population, land-fill costs, environmental costs, economic benefits, etc.).</td>
</tr>
<tr>
<td>Make flyers</td>
<td></td>
<td>Explain what will be recycled, how to sort trash, what the collection days will be, etc.</td>
</tr>
<tr>
<td>Make posters</td>
<td></td>
<td>Posters for local business and institutions (arena, Council, school, health centre, etc.).</td>
</tr>
<tr>
<td>Booklet/brochure for participants</td>
<td>One month before the first collection</td>
<td>Explain the importance of recycling and what is recyclable (one brochure for residents and another for companies and institutions).</td>
</tr>
<tr>
<td>Letter from the Chief announcing the launch of the 4Rs program</td>
<td>One week before the first collection</td>
<td>Thank people for participating in the project for the future well-being of the community.</td>
</tr>
<tr>
<td>Distribution of equipment (bags, roll-out containers, stickers, etc.)</td>
<td>One week before the first collection</td>
<td>Distribution accompanied by a door-to-door information campaign to answer residents’ questions and reexplain how collection works.</td>
</tr>
<tr>
<td>Radio ads; Interviews with the local paper</td>
<td>One week before the first collection and every day for the first month</td>
<td>Humorous sketches on the radio; short articles on the project, results, progress, objectives, etc.</td>
</tr>
<tr>
<td>Campaign in school and at the Council</td>
<td>Once the program is launched</td>
<td>The school and the Council will be ambassadors to the community for the 4Rs; They must systematically be involved and consulted (containers for paper in every room, well-labelled containers for other materials. And don’t forget composting!).</td>
</tr>
<tr>
<td>Recycling and 4R day</td>
<td>Once the program is launched</td>
<td>Workshops on recycling.</td>
</tr>
<tr>
<td>Short film for schools</td>
<td>Once the program is launched</td>
<td>Make a short movie: how waste should be sorted, the impact of waste on the immediate environment, etc. Young people and teachers will surely have ideas to share!</td>
</tr>
<tr>
<td>Reminder</td>
<td>Once the program is launched</td>
<td>Remind residents how to sort their waste and use the equipment.</td>
</tr>
<tr>
<td>Prizes</td>
<td>After one month</td>
<td>Only households that recycle are eligible.</td>
</tr>
</tbody>
</table>

* Bulky items include old carpets, mattresses, sofas, cookstoves, etc.
Questionnaire on Recycling in Wemindji

Name: ______________________ (optional)

1. Do you know what recycling is?
   Yes / No

2. Would you support a recycling program if the community started one?
   Yes / No

3. Would you participate in a recycling program by sorting your waste (garbage)?
   Yes / No

4. Would you like someone to explain recycling to you?
   Yes / No

5. Would you like to see a recycling program implemented and started?
   Yes / No

6. Do you recycle already?
   Yes / No

7. When would you like recyclables to be collected?
   A) The same day as the garbage;
   B) A separate collection on a different day;
   C) Not important.

8. Would you be interested in joining a monthly discussion group on recycling?
   Yes / No

Thanks for participating!
3.4 Other examples

3.4.1 Pikogan
The community of Pikogan joined the city of Amos, which is 3 km away. Each Algonquin household now has a blue roll-out container for recyclable materials and a green roll-out container for garbage.

The following document, equipped with a magnet, was given to all residents to stick on their refrigerators. “Recycling rules” were also sent out to community members, accompanied by the following tip to facilitate recycling: Put a paper grocery bag next to you trash can and use it to collect recyclables. When it is full, just empty it into the blue container. The paper bag can be recycled, too, but it’s best to use it several times first.
16      A 4R's Guide – For the First Nations Communities of Quebec

First Nations of Quebec and Labrador Sustainable Development Institute
# Guide de Récupération

## Pikogan

<table>
<thead>
<tr>
<th>Préparation</th>
<th>Catégorie</th>
<th>Description</th>
<th>Bac</th>
<th>Bac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Détailler le papier des autres matériaux non récupérables</td>
<td>PAPIER</td>
<td>Album de photos</td>
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<td>Lorsque les matières sont souillées, les déposer dans le bac vert</td>
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<td>Pot d'épices, beurre d'arachides</td>
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<td>Pot de fromage parmesan</td>
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<td>Stores horizontaux, verticaux</td>
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Et plus ...
3.4.2 Uashat mak Mani-Utenam
On January 29, 2008, the members of the Uashat mak Mani-Utenam Band Council approved an intercity agreement between their community and Sept-Îles for the collection and shipping of recyclables and waste. Over seven years, the costs for the first year are estimated at $1,375,000, including the acquisition of eight new trucks, three of which are front loaders and five of which are side loaders.

“The signing of this agreement means a lot to us since it shows the possibility of establishing a constructive relationship with the municipality,” said Chief Georges-Ernest Grégoire. “This agreement is a great example of partnership between the two communities,” echoes Ghislain Lévesque, Mayor of Sept-Îles13.

3.4.3 Recykamekw Project: An integrated waste management service in Opitciwan
In November of 2005, the Atikamekw Council of Opitciwan submitted a business plan for the establishment its own recycling service.14 For economic, social and environmental reasons, and given the community’ small amounts of residual waste, the Council chose to group the team and infrastructure under the same organisation (Recykamekw) to combine the management of residual waste with that of recyclable materials. Supervised by the (new) Opitciwan environmental services, the primary activities targeted by the community facilities division of the Recykamekw Project, include the management of:

- Garbage;
- Old tires and cars;
- Construction debris;
- Contaminated soils;
- Hazardous household waste;
- Recyclables and returnable bottles;
- Materials with resale value.

Thanks to its residual waste management plan, the Recykamekw Project also intends to establish an environmental complex to dispose of and manage at the same location (the community’s current dump site) all the household waste listed below.

Among the Project’s objectives and advantages:

- Educate, make accountable and mobilize the community around the 4Rs and their benefits;
- Create sustainable and quality jobs;

Recognize the value of recyclables and the benefits of their resale (locally and regionally);
Reduce waste disposal and shipping costs;
Increase the lifespan of land-fills and reduce the creation of new concrete-walled trenches;
Participate in the community's sustainable development.

The primary partners involved in the Recykamekw Project are:

- Entreprise de transport d'Opitciwan: Shipping of recyclables to sales points (it is also possible to use a refueling truck by filling it with recyclables, since it's always empty on the home stretch!);
- Groupe action environnement Kakakew: Responsible for marketing the Recykamekw Project, community awareness, and Research and Development;
- Recyc-Québec: Assistance in launching the project;
- Collecte sélective Québec: Funding residents’ 360-litre, roll-out recycling containers (given the number of people per household and the presence of stray dogs). Like a municipality, the Council can apply for financial aid from the Collecte sélective Québec, thus partially covering the costs of equipment and an awareness campaign during the implementation of a selective collection program;
- Federation of Canadian Municipalities: Funding for Recykamekw's infrastructures, particularly an industrial work space that is 1,200 ft² and divided into two sections: one that is heated for sorting and another that is unheated for storing the pressed bales;
- First Nation Infrastructure Fund: A new fund from Indian and Northern Affairs Canada that, through its solid waste management branch, aims to build, renovate or improve infrastructures to improve the management of household waste.

Recykamekw chose the option of door-to-door selective collection and voluntary drop-off at the Centre (the future Opitciwan environmental complex) for the residential, institutional, commercial and industrial sectors. Human and material resources are:

- A pick-up truck equipped with a hydraulic lever arm;
- Collected materials will be poured manually onto a sorting table;
- A sorting team will separate the materials;
- Each category of materials will be put into an identified roll-out container. There are eleven containers: writing paper (office, higher value), mixed paper, cardboard, ferrous metals, non-ferrous metals (aluminium), textiles, expendable materials and four containers for the four types of plastic (1, 2, 4 and 3, 5 and 7 together);
- The contents of the containers will then be baled by a vertical press to facilitate storage and loading (with a front-end loader) onto the trailer beds that ship materials to their points of sale.
Recykamekw also intends to put regulations into effect to the recuperation and recovery of:

- Left-over paint and paint normally thrown away;
- Used oils, containers of oil or liquids, and used filters;
- Old tires.

The recovery of this residual waste is free in Québec.

As for returnables, the only food store in the community does not collect bottles and cans. Recykamekw intends to rectify this situation.

Recykamekw is financially viable thanks to income from recuperated material sales, the cost of the employees of the future Opitciwan environmental complex and, especially, funding to purchase the necessary materials and infrastructure. Finally, there is a great non-monetary value to this project, since it favours the social insertion of young people in the community and increases the quality of life.

It is important to mention that Opitciwan organization leaders were consulted and all were willing to participate. The population also confirmed its support through a survey. As the Recykamekw business plan points out, all sorting centres do not have the same objectives. Unlike the mission of a private company, the mission of Recykamekw is both environmental and social since it creates local jobs by establishing the Opitciwan environmental complex.

In closing, we must remember that a residual waste management plan is an essential step before launching a waste management project. This plan is “a tool that, in addition to stating the main practices for managing waste generated on any given territory, sets out the objectives to be reached and describes the techniques, programs and service levels that must be implemented to meet these goals.”15 Therefore, it will allow you to see an overview of the community’s collection activities, design an environmental complex and establish awareness programs.

3.5 Potential sources of funding

User fees
The program for selective collection (Act 102) collects a user fee for each metric tonne of waste sent for disposal. This regulation allows users to collect the amounts they need to launch waste recovery activities, thanks to a green fund managed by the Ministère du développement durable, de l'environnement et des parcs (MDDEP). Although this program targets municipalities that reduce their garbage, nothing says that communities can not benefit from this financial support, except if elimination is done in concrete-lined trenches. This user fee program shares the costs of collecting recyclables with the companies that produce these materials.

- $10.41/tonne (indexed each year) of waste dumped in land-fills, subsurface containment, dry disposal sites, construction or demolition debris sites or incinerators;

The compensation depends on the weighted costs of private contracts or their equivalents. Therefore, the costs of collection, shipping, sorting and conditioning of recyclables are considered. According to the agreements with municipal associations and the governmental decree:

- 85% of sums collected are redistributed to municipalities to support the implementation of residual waste management plans (more than 50 million dollars);
- Redistribution according to performance criteria;
- Neutral effect for municipalities until 2010.

Admissibility criteria

- Dispose waste according to the Regulation respecting the Charges payable for the disposal of residual materials;
- Establish by regulation a compliant residual waste management plan and have sent the MDDEP a funding request;
- Provide documents required for accountability (the assessment of an external auditor, if amounts spent for implementing the residual waste management plan equal or exceed the funding);
- An interpretation provision of the Program indicates that a First Nation community that fulfills the same conditions is eligible for funding, as if it had municipality status.
- Note that the application review process takes at least two years.

For more information: [www.mddep.gouv.qc.ca/matieres/redevance/index.htm](http://www.mddep.gouv.qc.ca/matieres/redevance/index.htm).
Compensation regime (for municipalities)

For First Nation communities, admissibility to the compensation regime—up to 50% of the costs of a collection program—is discretionary and should be discussed with the parties concerned, particularly Éco Entreprises Québec (1-877-987-1491 or www.ecoentreprises.qc.ca). Established in 2003 after Act 102, this non-profit NGO represents businesses that put “containers and packaging” and “printables” on the Québec market. Éco Entreprises collects monies due and returns them to RECYC-QUÉBEC in trust. The organization also negotiates with known municipal federations to come to the total net costs of municipal services that ensure the recuperation and recovery of “containers and packaging” and “printables”.

- Industries that put designated products on the market (Québec brand holders or primary suppliers) are required to compensate up to 50% of the net costs assumed by municipalities;
  - Written media = annual contribution of 1.3 million dollars in goods and services (publicity) until March 2010;
- The overall net costs and the criteria for distributing the compensation between municipalities is negotiated between municipal federations (UMQ, FQM) and certified organizations that represent the industry (Éco-Entreprises Québec).

Funding program for out-of-home recycling

Launched on February 4, 2008, this program optimizes the selective collection of all recyclables generated in two sectors: public indoor and outdoor municipal/community spaces (parks, arenas, etc.) and Québec's hotels, bars and restaurants. The program has three parts:

1) Financing equipment for public municipal areas;
2) Financing roll-out containers so that hotels, bars and restaurants participate in selective municipal collection;
3) Financing the implementation of selective collection of recyclables from hotels, bars and restaurants by entrepreneurs.

Together, program partners have brought in 6 million dollars in three years. Funding is distributed each year on a first-come, first-serve basis, until annual budgets are depleted (2.2 million). For more information: www.tablehorsfoyer.ca or 1-866-931-1263.
First Nation Investment Fund (FNIF)

Expenses and projects likely to be considered:

- Planning (residual waste management plans);
- Recycling equipment;
  - Roll-out containers;
- Skills development;
  - Training community leaders in residual waste management;
- Communications;
  - Informing members and raising their awareness;
- Other activities connected with residual waste.

Carbon exchange

Municipalities can transform their efforts into carbon credits on the Chicago Climat Exchange (CCX). On the verge of forming in Québec and Canada, a Canadian carbon exchange will probably offer a per-tonne price that is higher than the CCX’s $3US/tonne. This exchange will encourage municipalities to double their efforts to reduce materials sent to the land-fill.

In sum...

- Recyc-Québec helps launch your project;
- Collecte sélective Québec funds household recycling containers. Like a municipality, the Council can apply for financial assistance from Collecte sélective Québec, thus covering part of the costs of recuperation equipment and an awareness campaign during the implementation stage of selective collection;
- Federation of Canadian Municipalities funds infrastructures (sorting centre, storage space, etc.);
- First Nations Infrastructures Fund from Indian and Northern Affairs Canada, through its solid waste management section, helps build, renovate or upgrade infrastructures to improve the management of household residual waste.

Grants

For the first year of their pilot project, the Mohawk community of Kahnawake received $40,000 from Indian Affairs. For the first five years, only newspapers, soft drink cans and bottles were recycled. The community also received financing to train their recycling team. Today, they have bi-weekly collection.

Environnement Canada and Recyc-Québec can also provide funding.
3.6 A few last points to consider

- Changing community members’ behaviour will take time, patience, instruction, determination and repetition!
- Encouragement and support are essential for your program's success;
- The collection of household residual waste should be supported by installing ecological trash cans for recyclable materials in public places;
- A discussion group on the 4Rs should be organized. This group should be made up of individuals interested in environmental issues, and should include at least one young person, elder and someone who works in:
  - Communications;
  - Health;
  - Public safety;
  - Economic development;
  - Social development;
  - Community services.
- Eventually, a “recycling squad” should be established.

The Comité sectoriel de main-d’œuvre, économie sociale et action communautaire has a six-month certified training program in residual waste management. For more details on becoming a “recoverer,” go to www.csmoesac.qc.ca or call 1-886-259-7714.

- Social economy or environmental companies: A social economy company is managed by like a regular business. It produces goods or services sold on the market. However, legally constituted as a non-profit organization or a cooperative, it manages its activities and uses its profits according to social and community interests. In general, social economy businesses stem from large-scale community development strategies that involve citizens, governments, the volunteer and community sector, businesses, teaching establishments, etc.

  Social economy is seated in democratic values and is aimed to improve communities' social, economic and environmental conditions, most frequently to the benefit of the least privileged.

  Social economy business are a flexible and viable tool that helps communities reach their particular objectives, such as:
  - Creating jobs and honing skills;
  - Strengthening the community’s social support;

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Appendix 3: In the Community

- Supporting economic development and neighborhood revitalization;
- Protecting the environment.

Reference documents


A non-profit organization, AOMGMR strives to provide technical support to elected official and municipal administrators, by sharing information and municipal expertise in residual waste management.

The Fédération Québécoise des Municipalités has a website entirely dedicated to residual waste management plans. You will find all the information MRCs need to effectively develop a management plan. First Nation communities can certainly be inspired... www.pgmr.qc.ca.


Leblanc, A., août 2005, Guide sur le fonctionnement et l’optimisation des écocentres au Québec, Université de Sherbrooke, Centre universitaire de formation en environnement, 85 pages.


17 Site Internet : www.aomgmr.com

First Nations of Quebec and Labrador Sustainable Development Institute
Centre d'expertise sur les matières résiduelles, www.cemr.ca/reception.html (514-728-3999). The Centre offers practical means for businesses and organizations to rise to the residual waste management challenges they encounter in their specific contexts and in developing sustainably. Includes commercial, general audience and scientific sections. The Centre strives to become a global leader and reference in residual waste management.

Recycling in Canada, Natural Resources Canada, www.recycle.nrcan.gc.ca/default_e.htm

Compo Recycle. A Québec company that developed a Système Compo Recycle clé-en–main. Collecte-à-3Voies' integrated management is solidified with the Compo Recycle team’s involvement in all the administrative, operational and communicational aspects of a project. Compo Recycle supports Collecte-à-3Voies users with products, tools, advice and live assistance to constantly inform and motivate them to take a step further in their recycling. information@comporecycle.com www.comporecycle.com.

The Réseau des ressourceries du Québec promotes social-economy companies, non-profits and cooperatives that are focused on the 4Rs and on creating sustainable jobs. Information exchange, goods and tools, and services for communities that want to establish a resource centre www.reseauressourceries.org

Evergreen (bilingual site) offers three interesting programs (www.evergreen.ca):

- Green classroom: A wide range of services for school or daycare committees, including start-up, planning, installation, choice of plants and funding for greening your schoolyard;
- Green community: Support and encouragement via an online registry of toolkits and workshops, community initiatives for naturalizing public spaces, creating wildflower gardens, regenerating water basins, etc.;
- Green homes: Encouragement for ecological home landscaping practices for homeowners and renters with yards or balconies.
Appendix 4
On the Territory

APPENDIX 4: ON THE TERRITORY........................................................................................................................................3

4.1 “LEAVE NO TRACE”: THE OUTDOOR ETHIC ........................................................................................................3
4.2 BUILDING A PERMANENT CAMP ..........................................................................................................................4
Appendix 4: On the Territory

Litter left behind in nature can have serious consequences:

- A piece of broken glass or a shiny bit of foil could magnify the sun’s rays enough to start a forest fire.
- Animals could be injured scavenging in garbage.
- A single litre of used oil can contaminate a million litres of water.
- Biodegradable soaps are pollutants – use moderately…
- Etc.

All garbage must be packed out and brought back to the community to be disposed of properly according to 4Rs practices.

4.1 “Leave No Trace”: The outdoor ethic

“Leave No Trace” is a program that seeks to prevent and minimize the impact on the outdoors by increasing awareness and accountability among outdoor enthusiasts. Maintaining the integrity of campsites relies on promoting appropriate practices based on the program’s seven principles:

1) Plan ahead and prepare;
   - Choose a mode of travel that minimizes resource damage, e.g. canoeing or hiking.
   - Repackage food to minimize waste (sections 1.2.1 “Plastic bags” and 1.2.2 “Over-packaging”)

2) Travel and camp on durable surfaces;
   - Concentrate use on existing trails.
   - Keep campsites small. Focus activity in areas where vegetation is absent.

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3) Dispose of waste properly:
   - Keep gasoline drums and oil containers to be safely disposed of later (section 4.1.7 “Used oil”).
   - To wash yourself or your dishes, carry water 70 meters away from watercourses or lakes and use small amounts of biodegradable soap.
   - Manage your waste according to the 3Rs = Reduce, Reuse, Recycle.
   - Empty bags can be placed inside each other and packed out for reuse at home.
   - Always pack out your waste and hygiene products. Use toilet paper sparingly and use only plain, white, non-perfumed brands. The most widely accepted methods of backcountry human waste disposal are the cathole (at least 200 feet from water, 6-8 inches deep) and packing it out. Obviously, natural toilet paper remains the best solution: e.g. stones, vegetation and snow.
   - Proper disposal of tampons requires that they be placed in plastic bags and packed out. Do not bury them because they do not decompose readily and animals may dig them up.

4) Leave what you find;

5) Minimize campfire impacts:
   - Ensure fires are thoroughly extinguished and that the ashes are cold to the touch.

6) Respect wildlife;

7) Be considerate of other visitors.

Aventure Écotourisme Québec provides a two-day “Leave No Trace Trainer” course. “Leave No Trace” workshops are also available for schools, camp monitors, territory managers, etc. For more information, write to info@aventure-ecotourisme.qc.ca or call 1 866 278-5923.

4.2 Building a permanent camp

The Opitciwan Atikamekw Council sponsors the Groupe action environnement Kakakew (Kakakew Environmental Action Group), a non-profit organization whose mission is to preserve the earth, water
and air quality on Atikamekw territory by creating a healthy environment using the principles of sustainable development. The Kakakew group produced an ecological guide to cottage building for the members of the Opitciwan community (Guide sur la gestion écologique de nos chalets sur le territoire atikamekw d’Opitciwan). This guide covers the protection of watercourses and trees, the location of a latrine, installing running water, a wood-burning stove, a septic tank, a field disposal system, and a propane cylinder, and more. It also focuses on vulnerable and threatened species found in the area as well as protected habitats. Last but not least, it deals with waste management, water safety, and storing petroleum products and other hazardous materials. The following paragraphs summarize some of the subjects discussed in this guide.

Waste management

It's important that one person be put in charge of all aspects of waste management, both hazardous and non-hazardous. Everyone involved in construction must know where the waste disposal containers are located. The waste management plan should include:

- Raising awareness among workers regarding the consequences of dumping or burning waste in the environment.
- Providing a clearly-marked disposal bin within easy reach of the workers and replacing it when necessary.
- Avoiding fertilizers and pesticides (section 1.7 “Lawn and flower bed care”).
- Raking the grounds when work is finished to collect any waste left behind.

The open burning of waste or using a burn barrel produces pollutants, contrary to an incinerator (with a combustion temperature of over 1000°C). The best solution is to bring your waste back with you!

Sawmill activities

A large quantity of sawdust “can cause serious environmental problems if not removed"; decomposing softwood sawdust absorbs nutrient materials beneficial to plants, thus affecting the growth of

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2 Ibid., p. 13.
neighbouring plants. As for the bark, it releases oils and resins which, when carried away by rainwater, contaminate watercourses. What is the solution to these problems?

- Locate the main sawmill as far away from the water as possible (at least 30 metres).
- Once the work is completed, collect as much sawmill residue as possible – remember, everything is combustible!

Petroleum products

“Before starting any construction work, the supervisor must establish a system to manage the transportation, storage and disposal of petroleum products”\(^3\). To store the gas and oil needed for your equipment and vehicles, build a shed in a non-traffic zone and at least 15 meters from the sawmill and riparian areas. Choose a shady spot and remember that a single litre of used oil can contaminate a million litres of water.

- Report any major oil or gas spill.
- Keep absorbent materials, such as sand or granular sorbent, shovels and buckets readily available on the construction site to clean up a spill and collect the contaminated soils.
- Do not pour any petroleum product onto the ground or into a watercourse. Do not burn longer than necessary. The discharge will filter into the soil and end up entering the ground water and neighbouring watercourses.
- Inspect your containers and tanks: they should be free of all defects and show no sign of leakage.

Latrine (dry pit)

To prevent rainfall washing human waste away, locate your latrine 10 meters away from the nearest watercourse. For more information on latrine construction and operation, see section 1.5.2. “Dry toilets”.

Septic tank and disposal field systems

By-laws vary from one municipality to another, but certain minimum distances must be maintained:

- 15 meters from a well, a watercourse, a spring or a reservoir
- 1.5 meters from any building or structure
- 3 meters from property lines

Appendix 4: On the Territory

As for the disposal field’s distribution system, it should not be less than:

- 15 meters from a well whose watertight casing extends to a depth of at least 6 meters below ground level
- 30 meters from a drinking-water system or a well
- 5 meters from any building or structure
- 3 meters from property lines
- 15 meters from a watercourse, a reservoir or a spring that is not used for drinking water.

If the surface of the disposal field is higher than the natural ground level, the proposed setback widths must be increased by 2 meters horizontally for each additional meter of height.

Maintain your septic system with regular pump-outs. Be careful not to overload the septic system with too much water, especially if you have a dishwasher or hot tub that drains into it, or a big crowd for a weekend. “Working the system too hard shortens its life, and can send some unpleasant things seeping toward the lake”4.

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Aventure écotourisme Québec, (see “Leave No Trace” section), http://www.aventure-écotourisme.qc.ca/index_en.asp

Leave No Trace Canada, www.leavenotrace.ca

Appendix 5
The Zero Waste Approach
Report from the
First Nations SocioEconomic Forum
FIRST NATIONS SOCIOECONOMIC FORUM

Held in October 2006

Zero Waste Report

PRESENTED BY

THE HERITAGE, CULTURE AND TERRITORY DIVISION OF THE COMMUNITY OF MAShteuiatsh

LE COMITÉ DE L’ENVIRONNEMENT DE CHICOUTIMI

AND

THE FIRST NATIONS OF QUEBEC AND LABRADOR SUSTAINABLE DEVELOPMENT INSTITUTE

January 2007
I  THE MISSION

The Assembly of the First Nations of Quebec and Labrador (AFNQL) organized the 1st First Nations Socioeconomic Forum (FNSEF), held from October 25 to 27, 2006, in the community of Mashteuiatsh. The main objective was to launch and support a series of actions and measures susceptible to improve effectively, truly and in a viable manner, the socioeconomic conditions of First Nations. Applying the First Nations’ Sustainable Development Strategy was one of the issues discussed during the Forum.

Waste management is an environmental issue for which Quebec society is trying to find lasting solutions. In view of the Quebec Residual Materials Management Policy, 1998-2008, the regional county municipalities (RCM) must have a waste management policy in place that is expected to achieve a 65 percent reduction in the waste sent to landfill by 2008. This willingness to cut down on waste is leading event organizers to implement Zero Waste activities.

The Chicoutimi Environmental Committee (CEC), which has extensive expertise in waste management, suggested that the FNSEF organizers hold a Zero Waste event in partnership with the Heritage, Culture and Territory Division of the Community of Mashteuiatsh (DPCTCM) and the First Nations of Quebec and Labrador Sustainable Development Institute (FNQLSDI). The DPCTCM and FNQLSDI were clearly interested in the proposal and everyone accepted the idea with much enthusiasm.

II  THE BENEFITS OF APPLYING THE ZERO WASTE PHILOSOPHY

Several positive results emerged from introducing this event. By taking concrete action, the organizers made their communities aware of the concern and responsibility they bear regarding the preservation of their natural environment. They proved that they are involved in improving the communities’ quality of life and health by implementing measures aimed at reducing pollution, and that they respect the rights of future generations to enjoy our natural resources. Furthermore, the organizers aroused the attention of the public and the media, raised the participants’ awareness in waste management, and helped extend the lifespan of local landfills. They also played a part in consolidating the activities of various garbage and recycling collection companies, in addition to promoting the development of various partnerships with Aboriginal and non-Aboriginal organizations. In short, the event organizers helped project a positive image of Aboriginals who are increasingly concerned about protecting their natural environment.

III  THE ZERO WASTE PHILOSOPHY

A lot of waste can be produced during conferences, forums, and related activities like meals, which then ends up in landfills. For example: one place setting in a family-style restaurant produces an average of 2.81 kg of waste daily, which is made up of 59.7% biodegradable, 16% plastic and 11% paper and cardboard materials. Different waste reduction methods were tested during the Forum, including source reduction and sorting waste materials, and are described later in this document.
IV THE CARBON NEUTRAL COMPONENT

Given the distance between the participants’ homes, hotels and conference site, a shuttle service providing transport to the participants aimed to reduce the greenhouse gases (GHG) produced during the Forum.

V THE FIRST NATIONS SOCIOECONOMIC FORUM

All through the Forum, the CEC, DPCTCM and the FNQLSDI worked together to make the Zero Waste event a success. At the same time, they tried to reduce greenhouse gases as much as possible.

5.1 The process

Here are the main stages of the process used to implement the Zero Waste philosophy:

- Writing a proposal for the organizing committee of the First Nations Socioeconomic Forum
- Presenting the proposal to and obtaining the approval of the Forum’s organizing committee
- Identifying the waste to be handled during the Forum
- Contacting suppliers to ensure their compliance in reducing waste at the source
- Raising the awareness of suppliers and their teams
- Raising the awareness of exhibitors
- Implementing an on-site waste management system
- Establishing a shuttle service for participants
- Preparing communication material for participants
- Sensitizing the participants
- Collecting and measuring the waste produced and recovered
- Managing the waste
- Producing a report and doing a follow-up

5.2 Zero Waste Component

We should bear in mind that Zero Waste is a goal that is visionary; in fact, the approach aims to reduce to the utmost the waste sent to landfills. This is achieved by utilizing the basic rules of event planning, from logistics to strong relationships with suppliers, and a waste management system. Simply put, the 4Rs methodology comes into play – that is, reduce, reuse, recycle, and recover the materials produced by the Forum’s activities. Measures were taken to implement each of these themes.
5.2.1 Prior to the Forum

Creating working groups

The partnership established by the CEC, CPCTCM and the FNQLSDI played up the strengths of each organization, creating an alliance that made this event such a success. Thanks to the “heritage council” members and the collaboration of the Mashteuiatsh elementary school teachers, we were able to find eager youngsters, perhaps tomorrow’s ambassadors of sustainable development, to help us promote and ensure the smooth running of the Zero Waste event.

The team of territorial agents also joined in the project. Their involvement not only helped the Zero Waste committee fulfill its tasks, but also raised the agents’ visibility.

Recommendations

The CEC suggested to the representatives of the Mashteuiatsh community, as hosts of the Forum, to create a Zero Waste event back in 2005, which they did through their proposal to the organizing committee of the Forum. However, for various reasons, it was only a few weeks prior to the start of the Forum that the CEC was invited to present their bid for such an event.

Consequently, the CEC recommends that:

1. If, following the creation of an organizing committee, or as soon as possible thereafter, the decision is made to apply the Zero Waste philosophy, a person must be designated to coordinate the process. This person will then have sufficient time to pull together an experienced team, draw up an effective strategy, and determine the tasks to be carried out. Furthermore, all the suppliers of goods and services are to be informed right away so that they too can plan their actions. Any extra expense incurred by the Zero Waste team members as a result of their involvement will be minimal, since they won’t need to attend every meeting of the organizing committee. Moreover, all the event’s promotional material should highlight the Zero Waste goal, which should translate into added benefits if we take into account the public’s growing concern about waste management.

Reduce and reflect

Residual materials that haven’t been produced don’t need to be managed. This is why it’s important to choose your goods and service suppliers wisely and explain to them the Zero Waste event concept. Ensure you obtain their cooperation in order for the event to succeed, otherwise the results will be less than desired.

Here are some examples of how waste reduction was accomplished at the many activities held during the Forum:
The metal utensils and porcelain dishes used for all the on-site meals were reusable, in contrast to the disposable supplies generally found at such events. The catering service was no doubt the element that contributed the most in reaching such tremendous results.

After discussion, the arena’s canteen representatives agreed to remove Styrofoam dishes and waxed carton containers and cups – all of which, plus the covers, are not recyclable or biodegradable – for the duration of the Forum. We firmly asked the manager that these items not be used during the Forum and suggested that, ideally, they not be used at all.

All individually packaged foods such as jams, butter, milk, coffee, sugar and mayonnaise were eliminated. Typically, such packaging will end up in the garbage or even in compost bins, leading to contamination of the compost material. Instead, the jam was served in jam pots, the butter in a butter dish, the sugar in a sugar bowl, all made of porcelain, and from which everyone could serve themselves.

Recommendations

It was important not to use disposable utensils and dishes for the meals served in the community hall, located on the second floor of the arena. The banquet was the sole meal to be held on the arena floor. The caterer installed a dishwasher in a secluded spot in the arena. The dirty dishes were put in plastic garbage bags, which were then placed in milk crates, and brought to the dishwasher. This method was used to prevent leftover food from falling to the ground. The used plastic bags were later found in garbage bins, seeing as they could not be reused, recycled or reclaimed.
Consequently, the CEC recommends that:

2. Plastic bins equipped with lids (e.g. Rubbermaid) should be used to transfer dirty dishes so as to avoid using plastic bags.

5.2.2 During the Forum

Reuse, separate and raise awareness

Thirty 360-litre recycling bins were placed in strategic areas to collect recoverable materials, such as paper, soft drink cans, plastic water bottles and so on. Grouped in twos, one bin was designated for paper and the other for plastic and metals. The press room had bins only for paper and plastic bottles. Garbage bins were few so as to encourage people to separate their recyclables.

At the beginning of the Forum, we noticed that participants were not so keen on separating their litter, which could be explained by the fact that they were not used to this practice at large-scale events, but managed to change their conduct. We observed some people hesitating and putting recyclables in the wrong bin. This raised the importance of clearly labelling each bin. The Zero Waste team’s surveillance work was particularly crucial, especially at the very start of the event. They had to direct and inform the participants and sort the items dropped in the bins. After a few hours, when the bins were partly filled, the participants were able to figure out what product belonged in which bin!

Before an event even starts, it's necessary to get an idea of what materials will make their way onto the site. For instance, we noted that some exhibitors offered services we never even thought of, such as the one who sold coffee in the exhibitors’ tent. The problem was that he used cups that were not recyclable or biodegradable. Our aim was not to tell him he could not sell his coffee. Had we known ahead of time, we would have encouraged him to use recyclable or reusable cups. Given the large amount of non-recoverable cups found in the bins, we decided that, instead of throwing them out, we would see if they could be reused. We contacted a horticultural company that accepted to take them to plant their seedlings. We were thus able to resolve the dilemma of the non-recyclable coffee cups, which included those brought in by the participants in the morning.
Obviously the success of such an event depends not only on the team of coordinators, but also on the participants and especially all the goods and services suppliers. As a result, we organized a meeting with the catering team in order to explain our waste management system. We showed them where to put the organic waste, and the recyclable glass, plastic and paper products. It was also crucial to explain the purpose of the bins to the arena staff. It was equally important that the location of the bins and the recycling system be appropriate for the providers' operations to ensure timely service and consistent use. Because, if the system incurs extra work or slows down operations, people won't use it and our objective for a waste management strategy would not be achieved.

All through the Forum, the participants had to be informed and reminded of the Zero Waste philosophy. Thus, at the start of each day's activities, the host presented an update on what had been collected in recyclables the day before, along with some statistics and words of encouragement to motivate participants to continue their recycling efforts.

**Recommendations**

Waste that hasn't been produced doesn't need to be managed. The Zero Waste philosophy focuses on source reduction. Disposable coffee cups and bottled water ought to have been excluded. Over one thousand water bottles were recovered by the end of the event, imposing significant economic costs to the organizers as well as having an environmental impact.

Consequently, the CEC recommends that:

3. Anyone participating in a Zero Waste event receive a reusable cup along with the documents provided upon registration. To further reduce their environmental impact, participants could be asked to bring their own cups.

4. Water be served in pitchers instead of “single-use” plastic bottles, which made up the bulk of the recovered material.

5.2.3 After the Forum

**Recover and reclaim**

The residual materials, already separated, are delivered to the treatment centre where metal, plastic, glass, returnable containers, paper and cardboard are separated and sent for recycling and organic matter for composting.
When recyclables are picked up, it can be rather discouraging to see everything that had been so carefully separated into individual bins (glass, plastic, paper and cardboard) thrown all together into the collection truck, only to be separated again at the recycling facility. However, if the recyclables were all thrown into one common bin, the participants would likely confuse them with the garbage bins. Most people use visual clues to know what to recycle and what to throw away. What is important to understand is that if the recyclable items are contaminated by non-recyclable or other waste materials, the contents of the bins would be automatically diverted to landfills; in addition to negatively affecting the Zero Waste results, we would also have to pay to have them buried. The same rule applies to organic matter. It is therefore extremely important to remain alert and constantly make participants aware of the Zero Waste philosophy.

5.3 Carbon neutral component

5.3.1 Shuttle service

A shuttle service during an event such as the First Nations Forum is double beneficial. On the one hand, the shuttle ensures the reduction of greenhouse gas (GHG) production; on the other, it helps minimize traffic and congestion in the parking lot.

Recommendations

Few people used the shuttle service during the Forum. Perhaps the incentive was not strong enough? To make people more aware of the service, we asked the Forum host to promote it. This still had no visible effect. We could maybe have taken advantage of the situation by having a special parking fee for carpool users. Since the parking lot is quite small and not many people used the shuttle, we might have considered imposing a sliding scale with parking fees getting progressively lower for cars with more people in them and made carpooling a more interesting option.

VI FINAL RESULTS

Applying the Zero Waste philosophy to the First Nations Socioeconomic Forum consisted in implementing the 4Rs program. This involved, first and foremost, preventing residual materials from being produced. It is only when such materials have been created that an attempt must be made to keep them away from landfills by reusing, recycling and reclaiming them. Achieving this goal is what the three partner organizations, committed to the Zero Waste philosophy, attempted to do prior to and during the event. The results are both noteworthy and encouraging, especially as they do not include residual materials as they were not created. What we were able to achieve is largely due to the close collaboration of the caterers, Ms. Louise Cleary of Mashteuiatsh and Mr. Ludovic Paradis of Banquets chez Ludovic.
Here are the final results of the residual materials that were either recovered, reclaimed, reused or buried:

- Some 600 cups were reused by a horticultural company
- 705 kg of recyclable material were delivered to the Roberval recycling facility
- 290 kg of organic matter, obtained primarily from the meals served during the Forum, were brought to a composting company in the Chicoutimi borough
- Only 30 kg of garbage, composed mainly of plastic wrap and pieces of porcelain from dishes broken during the event.

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Appendix 6
Practical Guide:
Cleaning and Handling Hazardous Products
In Abandoned Mining Exploration Sites in Nunavik
This document will serve as a guide to Nunavik communities concerned by the presence of abandoned mining exploration sites and contaminants, and willing to carry out the remediation and clean-up of these sites. The document presents a safe and effective methodological approach related to the handling of hazardous products, the storage of these products and the transportation of materials in order to diminish existing environmental impacts. Consequently, the remediation of the sites will improve public and environmental safety.

INTRODUCTION

During the Kativik Regional Government’s (KRG) two-year project of the survey of abandoned mining exploration sites conducted during 2001-2002, 193 sites were visited. Out of the 193 assessed sites, 90 were characterized and classified abandoned mining sites. Hence, there are nearly 300 other potential sites distributed on the Nunavik territory.

Environmental impacts are present and the safety of both public health and surrounding ecosystems are in threat especially on major sites locations. For these evident reasons, it is imperative to take action to clean up these sites and set up effective procedures for remedial measures. It is also important to involve Nunavik communities, which are knowledgeable of the land and, virtually all abandoned sites locations.

Both expertise techniques and the knowledge of local communities will be put into use throughout all stages of execution and daily decision-making. The transfer of knowledge, techniques and skills will take place both informally during clean-up efforts, as well as formally as each community team will be instructed on how to safely manage and perform hazardous waste removal.

The guide is addressed to Nunavik communities ready to participate in remediation efforts on abandoned mining exploration sites. During the KRG’s 2001-2002 abandoned sites inventory, in several cases it showed that the use of local knowledge proved to be more reliable than any other documentation in region where the territory is well known by Inuit communities. It is expected that local populations will be a vital source of information for issues related to weather and travel, but they are also expected to provide knowledge and expertise important to remedial efforts performed on abandoned sites.

The main objectives of this guide are:

- To transfer an expert knowledge, to involve the communities and bring close support in the coordination, the prioritization and carrying out remedial efforts;
- To carry out safe and effective remedial measures for abandoned exploration mining sites in accordance with applicable laws and regulations;
- To reduce threats to the fragile arctic ecosystem, particularly where it impacts the food chain and human health;
To remove as much debris and hazardous materials from the land as environmentally and logistically possible. Any debris left from mining exploration activities is contrary to Inuit and Naskapi respect for the land;

To treat contaminated areas with the help of experts in order to restore their biodiversity;

The present document has been prepared by the KRG’s Renewable Resources Department and synthesized information extracted from KRG’s report, Assessment and Prioritization of Abandoned Mining Exploration Sites in Nunavik. The content of this guide is purely indicative, is subject to change at any time according to applicable laws, regulations, and evaluation of proposed remediation methodology and has no legal value whatsoever. Further improved editions of this guide will eventually be distributed to communities as the methodology and remedial measures performed on different sites demonstrate its efficiency and prove to be safe for both public and environment health.

The guide gives general procedures concerning remedial measures of abandoned sites following these steps:

1. Indication, location and evaluation of abandoned exploration mining sites
2. Delimitation of the site
3. Remedial measures
   3.1. Treatment of materials
      3.1.1. Hazardous materials
      3.1.2. on-hazardous materials
4. Transportation of materials to local communities
5. Storage and final transportation of materials to treatment centers
6. Recovery of debris, recycling
7. Treatment of contaminated soils

1) INDICATION, LOCATION, EVALUATION OF ABANDONED EXPLORATION MINING SITES.

Every new abandoned mining exploration site presence should be communicated to the Renewable Resources Department of the Kativik Regional Government (KRG) in order to evaluate a proper remediation strategy to limit environmental impacts.

Each abandoned exploration mining site indication should include its precise location (on map or GPS location), an approximate evaluation of the site surface, and a complete and detailed inventory of the buildings, materials, debris and products observed on-site. A visual detection of any presence of soil and water contamination is crucial to report. Pictures, if possible, are also useful to complete the site description.
2) DELIMITATION OF THE SITE

Once an abandoned site is reported, a delimitation of it should be done by indicating its presence with ribbons, visible flags or other markers in order to avoid any public hazards. A quick inspection of the site, will determine any hazardous outcropping metal debris, wires, or other elements dangerous for public safety (ex. snowmobiles circulation).

3) REMEDIAL MEASURES

The designated abandoned exploration mining sites should be cleaned systematically in the following way:

1- Removal of all hazardous materials from the site (hydrocarbons, chemical products, paints, solvents…)
2- On-site burning of all combustible, non-toxic debris (wood, paper, cardboard…)
3- Recovery of materials for recycling where possible
4- Treatment or removal of contaminated soils to eliminate as much as possible their environmental hazard and restore biological feasibility
5- On-site waste disposal established in accordance with the Environment Québec (MENV) approval. When not possible, as much as possible of the remaining debris will be carried out to the nearest municipal disposal sites or sent to the south for proper treatment.

In all cases, the authorities responsible must, before any remedial work carried out, inform and reach an agreement with the KRG and the MENV on the measures to be taken and the monitoring to be provided. Training activities to be organized by the MENV shall be held at the start of implementation of the fieldwork in order to give all the communities participants details on the remediation work plan and procedures.

3.1) TREATMENT OF MATERIALS

3.1.1 Hazardous materials

The main hazardous materials found in Nunavik are:

A-Petroleum products: diesel, motor oil, grease, airplane/helicopter fuel (jet-B)
B-Batteries and chemical products: acids, bases, fire extinguisher powder, paints
C-Electrical transformers, heavy equipment, generators, propane tanks etc.

A-Petroleum products

As petroleum hydrocarbons are the main contaminants on the abandoned exploration mining sites, their remedial measures are required to ensure the protection of the environment and wildlife health. Remedial measures may be applied directly on site.

Petroleum products, barrels and pails contaminated by rust are no longer usable. As they constantly decay and are very often located near water, the time recovery of the petroleum products is crucial.
Rusty barrels conditions have to be carefully evaluated so as to prevent any additional hydrocarbons from leaking while handling the barrels. Any residual products will have to be placed in appropriately sealed containers and properly identified with proper labels. They will be subsequently safely carried off the site and either transported to an authorized hazardous waste management site in southern Quebec. IT IS REQUIRED TO HAVE AN EXPERT PRESENT ON SITE TO OBTAIN ALL THE AUTHORIZATIONS, THE APPROPRIATE CONTAINERS AND LABELS, AND GIVE TRAINING TO THOSE INVOLVED IN THE CLEAN-UP AND THE MANAGEMENT OF HAZARDOUS PRODUCTS.

B- Batteries and chemical products

These products will also have to be placed in appropriately sealed containers, properly packaged and identified, then safely carried off the site and transported to an authorized hazardous waste management site in southern Quebec. It is prohibited to place chemical products and related hazardous products in local and municipal disposal sites (waste dumps).

Where there are hazardous chemical products, it is required to have a specialist present on site to obtain the required disposal and transportation authorizations, the appropriate containers, to prepare hazardous materials for transport, and take charge of them until their delivery to an authorized hazardous waste management site in southern Quebec. The specialist will also have to instruct those involved in the clean-up actions and the hazardous chemical products management.

C- Electrical transformers, heavy equipment, generators, propane tanks etc.

Like the treatment of diesel barrels, and other hydrocarbon products, it is important to empty and remove all residues from these items. The residues should be placed in appropriate and well-labeled containers. The residues should be safely transported to authorized hazardous waste treatment centre in southern Quebec or recycled within local communities.

It is improbable that it will be possible to dismantle abandoned heavy equipment to the point that they can be completely carried back to a municipal waste disposal site. Vehicles, heavy equipment and large waste debris should be managed in such a way as to clean and secure sites against environmental and public threat. The large items should be placed, as much as possible, in nearby disposal sites where topography, soil composition and distance from water sources permit. Such sites must be managed following MENV recommendations and approval.

3.1.2 Non-hazardous materials

Large volumes of non-hazardous debris and materials are found on different sites. Their management will be related to their capacity for burning without generating toxic substances. The main materials found on abandoned sites are:

A- Combustible, non-toxic debris
B- Non-combustible, non-toxic debris
C- Dwellings, cabins, sheds...
Appendix 6: Practical Guide – Cleaning of Abandoned Mining Exploration Sites

**A- Combustible, non-toxic materials**

These materials (wood frames, floors, sheds, canvas…) can be safely burned on-site. However, authorization must be requested from the MENV to burn any combustible debris on-site. Such combustion may take place in empty, abandoned tanks or empty drums. Given that the materials being burned have no chemical ingredients, ashes will be non-toxic and can be left at the site where they are burned.

**B- Non-combustible, non-toxic materials**

One nearby disposal site should be set up with MENV approval. All non-combustible debris should be brought and properly piled to that site. If transport is feasible, the debris may be carried back to the local community and, with authorization, placed in the local municipal waste disposal dump.

Crushing, compacting empty barrels and secure storage ready for transportation

All transportable debris should be securely placed, considering harsh weather conditions (wind, snow precipitations…) in one single location at a secure minimum distance from water and ready to be carried off the site. Empty barrels previously washed with proper chemical absorbents and, where possible, some heavy equipment and non-combustible debris are to be compacted prior to be transported to a municipal dump or approved local waste disposal site. Where there are many empty barrels (>50), appropriate equipment will be provided to remedial measures teams in order to decrease volume of debris and to ease the transportation of the barrels. The above procedures require the instructions of a specialist who will elaborate and supervise a safe procedure concerning all the actions taken in the processing of the barrels (washing fluids and contaminated materials management).

**C- Dwellings, cabins, sheds**

If the structures are in good condition and titleship of the owner of the land has lapsed, it should be up to the community whether they are interested in taking over the management for hunting/camping purposes. However, all dwellings, cabins and sheds will have to be cleaned of waste. If the dwelling is in poor condition, unsafe and unsalvageable, the structure should be torn down and its components dealt with according to the above guidelines.

**4) TRANSPORTATION OF MATERIALS TO LOCAL COMMUNITIES**

Contaminated materials (empty compacted barrels) and hazardous materials, such as petroleum and chemical products, will first be transported in secured, appropriately sealed containers to the nearest local community. Collection and transportation of the secured hazardous materials and non-combustible debris will take place in winter. In most cases, the debris will be carried out by local team members by snowmobiles/qamutik. Sites which are over 150 km round-trip will require a Twin-Otter depending of the location of the site and its access.
5) SECURE STORAGE OF MATERIALS AND FINAL TRANSPORTATION TO TREATMENT CENTERS

Once transported to the local community, the materials will be temporarily securely and properly stored before being delivered by boat to the previously contacted authorized hazardous waste management site or treatment center in southern Québec for the final elimination of the hazardous materials. The community storage space must first be authorized by the MENV. The transportation, the storage and management of the hazardous materials and contaminated debris will also be subject to the supervision of the MENV specialist for each procedure until the materials are definitively sent south.

Once the elimination of the hazardous materials done in southern Quebec, a valid proof (invoice, bills...) of the procedure must be communicated to the MENV.

6) RECOVERY OF METAL DEBRIS, EQUIPMENT FOR RECYCLING

In some cases where the metal debris and equipment collected from the abandoned mining exploration sites are still useable, it would be helpful if they could be claimed by residents of local communities for recycling.

7) TREATMENT OF CONTAMINATED SOILS

Petroleum residue leaking onto soil results in contamination of the local environment and, consequently, the capacity to sustain soil microorganisms and plant life. Remediation can be achieved through soil bio-remediation. Such treatment involves the biodegradation of the petroleum compounds by indigenous bacteria in the presence of the appropriate nutrients and water concentrations. This treatment has proved to be successful on other sites in Nunavik.

Soil bioremediation treatments should be performed on-site by an environmental expert in soil remediation with the help of local communities. To be most effective, treatments should be carried out in the spring and early summer when the soil has thawed.

Each site will require an individual analysis to determine the optimal approach to implementing a clean-up strategy. Residents of nearby villages who have visited the abandoned sites know the area well. They will be directly involved in this process. Scientists and specialists understand the specific challenges and their implications and will provide the necessary knowledge to carry out the safe and effective remediation of these abandoned mining exploration sites. The objective of the remedial measures applied to the subarctic environment of the region north of the 55th parallel to return the ecosystem to its original condition. This practical guide takes into account the sensitivity of the environment and the impact of such remedial measures. If they are more damaging to the environment than leaving the contaminants in place, or if it proves technologically impossible, some or all of the abandoned materials may should be left in place.
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