



**Gay Lea Foods Co-operative  
Limited**

**2008  
Environmental  
Sustainability  
Report**



## Gay Lea Foods Co-operative Limited 2008 Environmental Sustainability Report



Andrew MacGillivray,  
President and CEO

*“As a major processor and marketer of dairy foods in Canada, and as a co-operative with direct links to Ontario dairy farms, we understand the importance of protecting the land and creating an environment that can sustain itself.*

*We recognize that more needs to be done to ensure that our future state is as strong and healthy as the one that supports us today. Efforts to reduce greenhouse gases, support greater recycling and maximize energy related efficiencies will be the foundation of our sustainability programs. We accept responsibility to be better stewards of our environment.*

*Gay Lea Foods is committed to conduct its business today in a way that minimizes our environmental footprint and, most importantly, creates a model that is sustainable and builds a future that our children will enjoy and support.”*

*Andrew MacGillivray, President and CEO*

**For more information, please contact:**



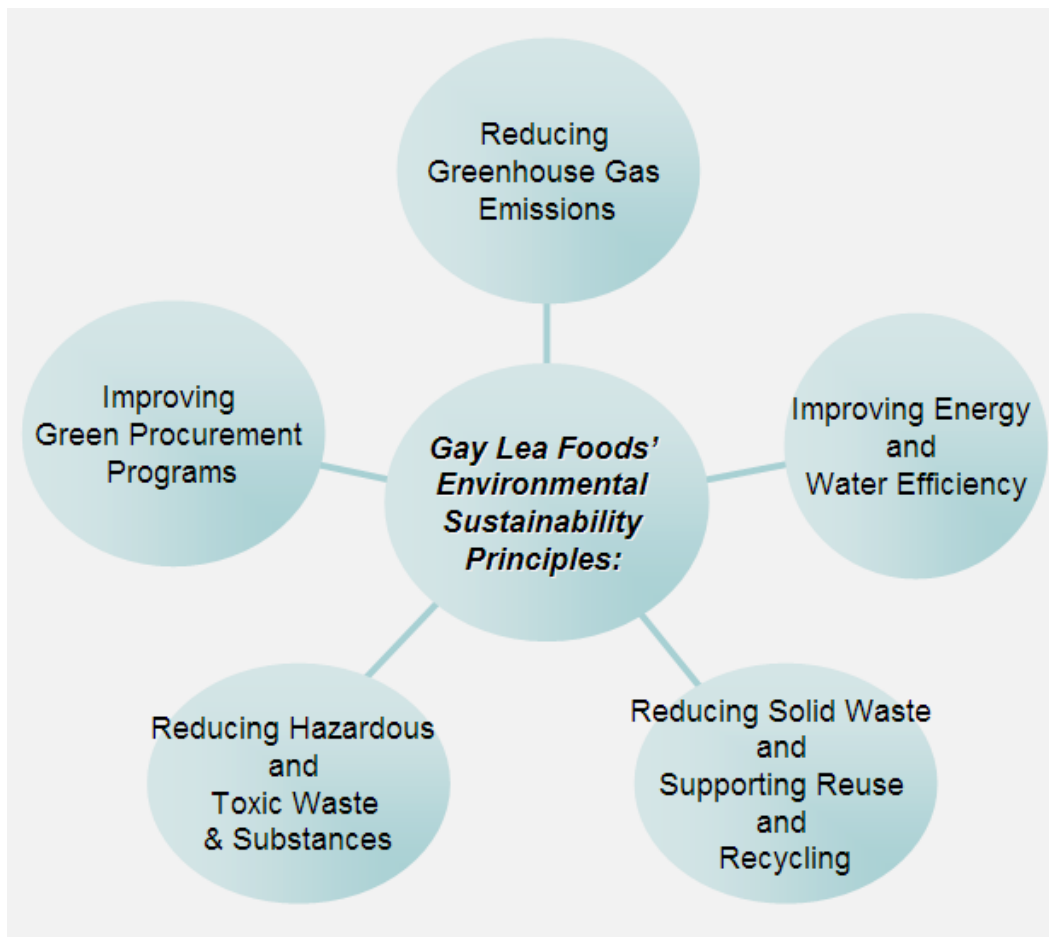
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## 2008 Environmental Sustainability Report

Gay Lea Foods is a major producer of foods, operating in Ontario Canada. Gay Lea Foods is a cooperative owned by over 1200 farmers - approximately one quarter of Ontario's dairy farmers. Its businesses spans over five production facilities in Toronto, Mississauga, Guelph and Teeswater, where it manufacture's milk, dips, cream, butter, sour cream, whipped cream, cottage cheese and skim milk powder.

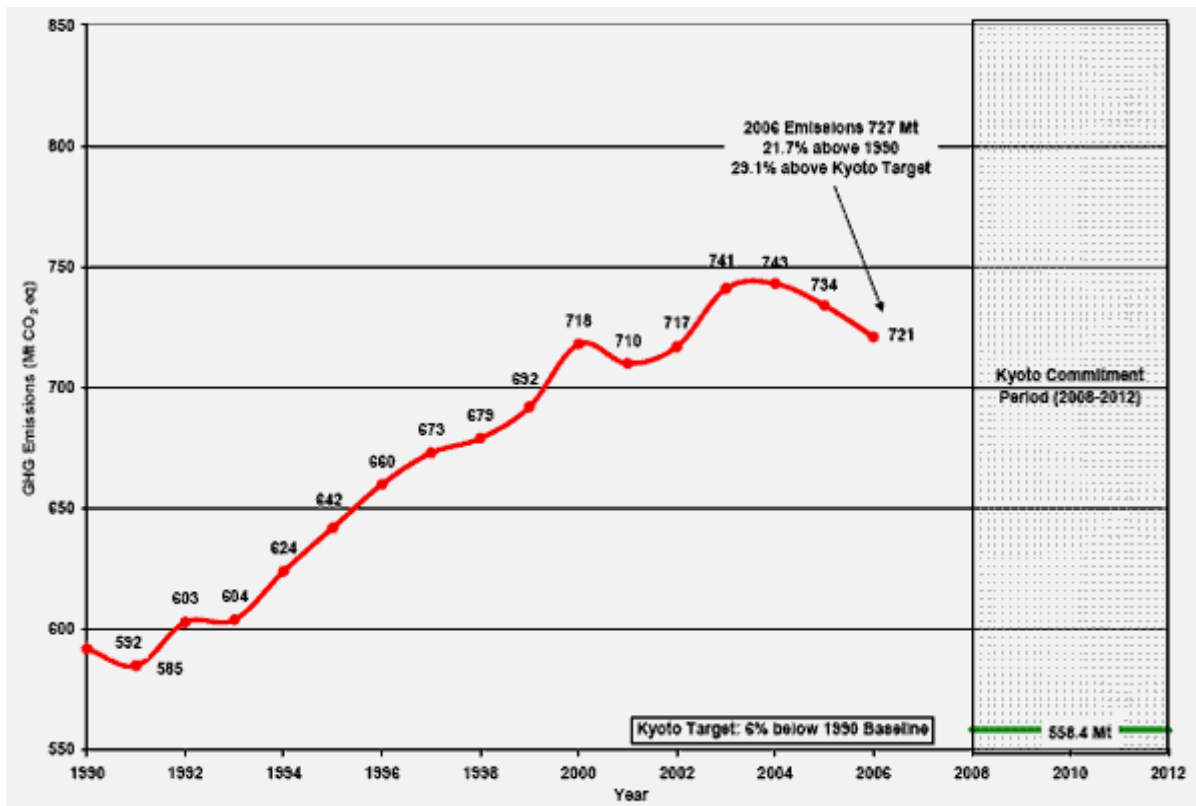
Gay Lea Foods is committed in helping to ensure the needs of future generations are met. The *Brundtland Commission* definition of sustainable development is...“Ensuring that we meet our needs without **compromising** the ability of **future** generations to meet their own needs” (*The Brundtland Commission definition of sustainable development, World Commission on Environment and Development (1987) Our Common Future*).

Committed to continuous improvement, Gay Lea Foods is proud to introduce its *Environmental Sustainability Policy* that reflects the greater need to protect the needs of future generations:



Greenhouse gases are pollutants that we pump into our atmosphere that prevent heat from escaping the earth's surface. For example, the glass of a greenhouse and gases in our atmosphere sustain life by trapping the sun's heat. In the atmosphere these gases allow the sun's rays to pass through and warm the earth, but prevent this warmth from escaping our atmosphere into space. The danger lies in the rapid increase of carbon dioxide and other greenhouse gases that intensify this natural greenhouse effect and is the cause of global warming. The greenhouse gases include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), halogenated fluorocarbons (HCFCs), ozone (O<sub>3</sub>), perfluorinated carbons (PFCs), and hydrofluorocarbons (HFCs).

Canada's total greenhouse gas emissions in 2006 (721 megatonnes of carbon dioxide equivalent) were about 22% above the 1990 total of 592 megatonnes. This trend shows a level 29.1% above Canada's Environmental (Kyoto) target of 558.4 megatonnes. (*Environment Canada, Canada's 2006 Greenhouse Gas Inventory*)



NOTE: The overall decrease in emissions since 2003 is due primarily due to average Canadian homes and businesses requiring lower amounts of energy for heating because of generally milder winter temperatures (*Environment Canada, Canada's 2006 Greenhouse Gas Inventory*).

Ontario has the second-highest level of greenhouse gases in the country (*Environment Canada (2008). Annex 11*). The majority of Ontario's greenhouse gas emissions come from:

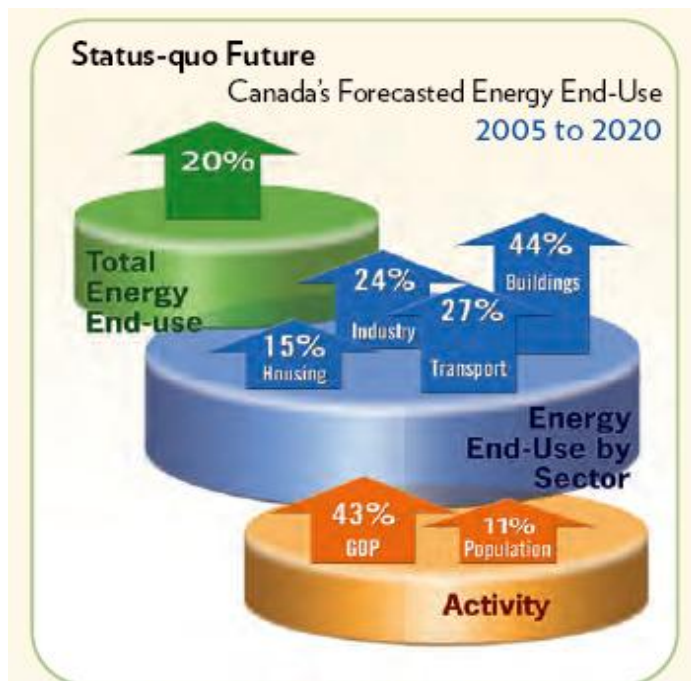
1. Electricity,
2. Heat generation,
3. Personal Vehicles.

All of these burn fossil fuels such as coal, oil and gas which release carbon dioxide and cause climate change. Carbon dioxide is the main contributor to climate change, especially through the burning of fossil fuels. The consequences of climate change we see today are more extreme weather (hurricanes, tornadoes, flooding, drought, etc.), impacts on nature (shifting / loss of species habitat) and even impacts on health (for example smog):

- Rates of childhood asthma have risen dramatically. From 1978 to 1999, the percentage of children with asthma increased four fold from 2.5% to 10.1%; respectively (Health Canada. 2001. *Respiratory Disease in Canada*. Ottawa: HC).
- According to the Ontario Medical Association: Smog kills 5,800 Ontarians each year and costs the province almost a billion dollars.

Furthermore, the total electricity generated in Ontario has increased 20% since the early 1990s, with coal- and natural gas-fired thermal sources increasing by 5.6% and 560%; respectively. (*Environment Canada (2008). Annex 11*).

Looking ahead, Canadian population and economy is expected to continue to grow. This population and activity growth is expected to contribute towards a 20% increase in energy use between 2005 and 2020 (*The Council of Energy Ministers' 2007 Moving Forward on Energy Efficiency in Canada*). This rise of energy will mean that Canada's total greenhouse gas emissions will also rise.



(*The Council of Energy Ministers' 2007 Moving Forward on Energy Efficiency in Canada*).

**Figure 2: Between 2005 and 2020, total energy use in Canada is expected to rise by 20%, while energy use in every sector is expected to increase at different rates. The increase will be attributable mainly to increases in GDP and population.**

## Principles 1 & 2: Reducing Greenhouse Gas Emissions & Improving Energy and Water Efficiency

Gay Lea Foods is committed to reduce greenhouse gas emission and improving energy and water efficiency through *Design for environment (DfE)* methodology. *Design for Environment (DfE)* entails the process of integrating environmental considerations into the product design and development, thereby making it environmentally friendly. All machinery, equipment, processes (those involving hazardous materials) and any company infrastructure changes are assessed for their environmental impacts (air, land and water pollution). Furthermore, the *Design for environment (DfE)* assesses and designs for ENERGY EFFICIENT TECHNOLOGY by reducing greenhouse gasses by reducing energy consumption and improving water conservation. For example, the better insulated a steam pipe is, the less energy is needed to maintain that temperature. This in turn will lower the emissions of greenhouse gases versus a non-insulated steam pipe. Other examples that Gay Lea Foods' *Design for environment (DfE)* for ENERGY EFFICIENT TECHNOLOGY are installing when possible:

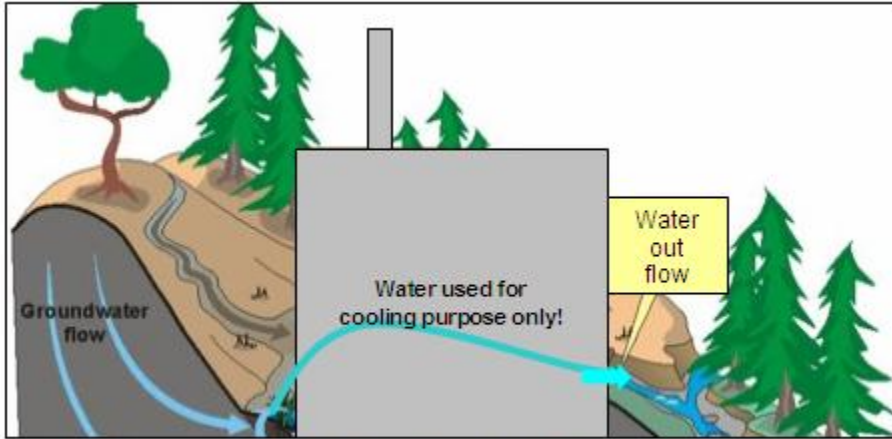
- ✓ Recovery Systems (to reduce heat, water, & chemical usage)
- ✓ High-efficiency motors, fans, and pumps
- ✓ General Insulation
- ✓ High Efficiency Building design:
  - highly efficient windows
  - high-efficiency lighting
  - Automatic lighting controls to turn lights on only when needed.
  - Low flow faucets and showerheads.
- ✓ In addition, investigating and looking at opportunities for renewable energy sources (wind, solar, geothermal and biomass)\*.

\*The following are definitions from *Public Works and Government Services Canada, Office of Greening Government Operations*:

- **Wind** power uses wind to turn turbines that generate electricity.
- **Solar** technologies trap the heat of the sun and use it directly for heating or lighting, or it is stored in a battery for later use.
- **Geothermal** technologies use the Earth's natural heat (thermal) energy, to heat or cool buildings and homes. A series of underground pipes are placed in the soil or submerged in a pond or lake. A fluid circulates in these pipes that absorbs the earth's heat in winter and carries and releases it into the building (the process is reversed in the summer to remove excess heat from the building and sent to the soil or lake). Geothermal can also generate electricity.
- **Biomass** energy involves the conversion of organic material (e.g. biosolids, wood or peat) into useful forms of energy such as heat, electricity, liquid fuels or biogas production.

### Non-contact Cooling

Gay Lea Foods' Teeswater division has improved energy conservation and reduced greenhouse gas emissions (related to lesser greenhouse gas emissions released into the atmosphere through electricity generating stations) through the use of non-contact ground water for cooling purposes. The non-contact cooling water is derived from an on-site well. The non-contact cooling water is used for processes to remove excess heat and then sent back to the water system. Since the water is non-contact, there are no changes to the groundwater chemistry (NOTE: the water quality is continuously monitored):



Note: Background drawing from Natural Resources of Canada

This natural cooling has resulted in a decrease of 35% energy consumption, which equates to a total savings of approximately 2,073,710 kWh per year (a savings of \$180,000/year) and a reduction of over 500 tonnes in greenhouse gas emissions / year (*Ontario Grid Electricity: 0.24 tonnes of green house gas per 1000 kWh; www.ecogenenergy.ca*).

A reduction of 500 tonnes of  
greenhouse gas emissions is equal to  
the amount of emissions released from  
**400\*** Canadian homes in one year!



(Picture of residential homes from: *Understanding Sprawl*, David Gurin)

\*The average residential home emits 1.25 tonnes of GHG emissions per year for comfort heating and appliances. If we divide 40 Mt GHG emissions per year by 32 million people (*Environment Canada: Canada's 2006 Greenhouse Gas Inventory - A Summary of Trends*) we get about 1.25 tonnes of GHG emissions per residential home for 2006.

### Gay Lea Foods Delta Facility – Water conservation

In 2003, Gay Lea Foods commissioned one of the country's largest dairy installations in Guelph, Ont. This installation called the 'Delta' facility was designed with high energy building efficiency. An example of Delta's efficiency is in water conservation. Each day, the plant in Guelph takes in 650,000 litres of raw milk and separates it into skim milk and cream. The skim milk is dried to produce skim milk powder, of which water is a by-product. Each day 200,000 litres of water is generated and is used for: 1) *Cleaning-In-Place (CIP)* systems designed to automatically clean and disinfect product lines; 2) Boiler usage; and 3) External washing (washing of equipment and floors). On average, the total volume of water conservation at the Delta plant is about 73 million litres per year.

**73 million litres of water is conserved each year!**

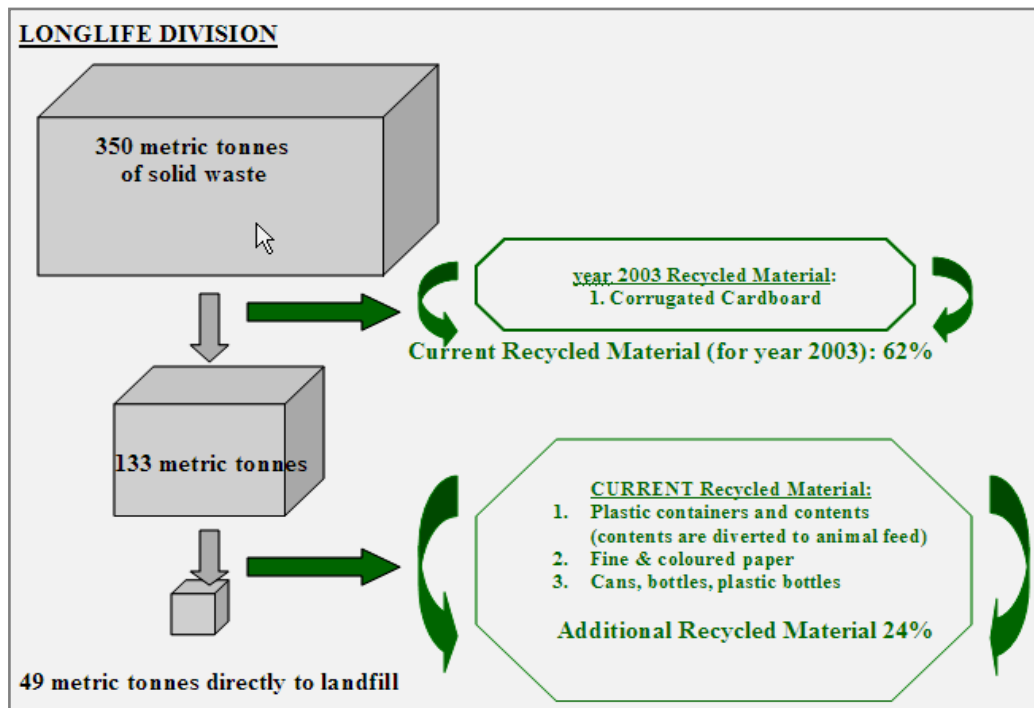
**That is equivalent of supplying water for one year for over 600\* homes!**

\*In 2004, average residential water use per person was 329 litres per day (Environment Canada, 2007, *Municipal Water Use Report: 2004 Municipal Water Use Statistics*).

### Principles 3: Reducing Solid Waste and Supporting Reuse and Recycling

Gay Lea Foods is committed in reducing solid waste and supporting reuse and recycling programs. Products containing recycled content divert solid waste from landfill and can reduce energy use by re-processing recycled materials into a new product. Furthermore, recycled materials reduce environmental impacts by reducing the consumption of earth resources.

Gay Lea Foods has numerous environmental activities that are designed to reduce solid waste directed to landfill through implementation of reuse and recycling initiatives. For example, Gay Lea Foods' Longlife division has increased its recycling program by 24% since 2003.





In addition, Gay Lea Foods has other initiatives to reduce solid waste and increase recycling by an additional 10% by 2010:

- Purchase multi-use units which consolidate many types of operational requirements (printer, scanner, photocopier, and fax) to reduce # of ink cartridges.
- Donate when possible old computers to charities that can re-build them for use in other countries or use them for spare parts.
- Purchase appropriate products in bulk or in concentrated forms to reduce packaging waste.
- Implement a **green office**, which aims to:
  - Reduce, reuse, and recycle waste.
  - Conserve energy and water.
  - Improve indoor air quality.
  - Reduce and recycle paper, and reuse packaging.

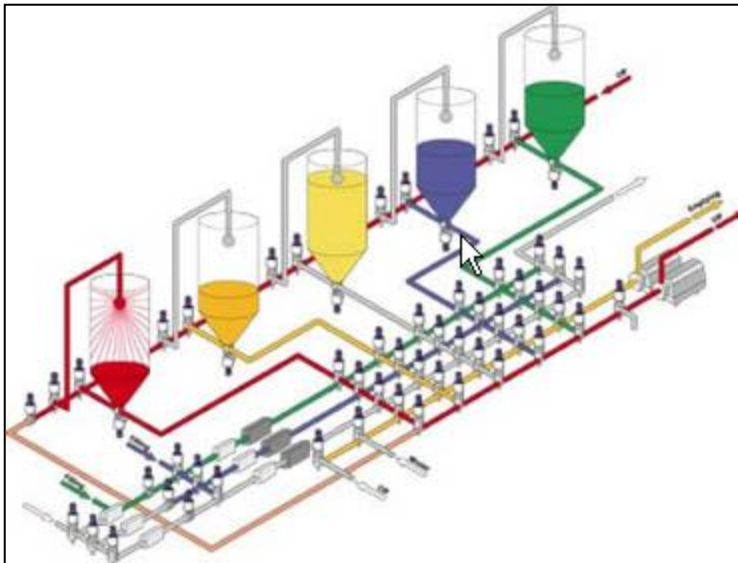
#### **Principles 4: Reducing Hazardous and Toxic Waste and Substances;**

Gay Lea Foods is committed in reducing hazardous and toxic waste and substances. *Hazardous* and *toxic* materials are those materials that are dangerous to human health and can pose a safety risk (e.g. explosive, flammable, corrosive, poisonous, etc.). At Gay Lea Foods, each product purchased is checked for hazardous and toxic material content using Material Safety Data Sheets (MSDS), found through the Workplace Hazardous Materials Information System (WHMIS). In addition, the MSDS provides detailed information on risks and precautions to be taken to safely use, store and dispose of such products. This information is used to ensure that the product is safely used and disposed properly.

In addition, Gay Lea Foods *Design for environment (DfE)* looks at replacement options that contain no hazardous or toxic materials. If non-hazardous options are not practical, than alternative options are looked at to see if other products are available that have lower hazardous material content.

#### **Cleaning-In-Place (CIP)**

Gay Lea Foods has continuously reduced toxic and hazardous chemicals and substances each year. Each manufacturing plant throughout Gay Lea Foods uses a *Cleaning-In-Place (CIP)* system. A *Cleaning-In-Place (CIP)* system is designed to automatically clean and disinfect product lines to meet stringent hygiene regulations in the food & dairy industries. Furthermore, a modern CIP system recycles cleaning solutions and reduces water loss; which in turn saves money in terms of significant cleaning and water savings.



Typically modern CIP (Cleaning-In-Place) system (adopted from GEA Process Engineering Inc.)

The following chart summarizing how much water and cleaning solution Gay Lea Foods recycles and conserves; respectively, each year through *Cleaning-In-Place (CIP)* reclaim systems:

<b>GAY LEA FOODS MANUFACTURING PLANT</b>	<b>CLEANING SOLUTIONS RECYCLED EACH YEAR (litres)</b>	<b>WATER CONSERVED EACH YEAR (million litres)</b>
Clayson	120,682	12.2
Delta	247,229	31.4
Guelph	24,336	2.4
Longlife	37,000	2.8
Teeswater	77,000	11.0
<b>TOTAL:</b>	<b>506,247 litres</b>	<b>60 million litres</b>

**Summary:**

- 1) 60 million litres of water is conserved each year.
- 2) 506,247 litres of cleaning solution is recycled each year.

**60 million litres of water conserved is equivalent to supply water for one year for 500 Ontario homes.**

\*In 2004, average residential water use per person was 329 litres per day (Environment Canada, 2007, *Municipal Water Use Report: 2004 Municipal Water Use Statistics*).

**BOD (Biological Oxygen Demand)**

Reducing waste not only reduces environmental impacts but also saves money in terms of significant waste reduction in waste treatment costs. In the manufacture of milk, majority of waste comes from milk components that are lost during process and enter the floor drains. This waste can be determined by a number of different measurements, including BOD (Biological Oxygen Demand). BOD is a measure of the amount of oxygen needed to degrade organic matter during a five-day incubation period. BOD is expressed in milligrams per liter (mg/l).

In Toronto, the TORONTO MUNICIPAL SEWER CODE sets limits for Sewer Discharge of BOD to 300mg/L. In the event that the discharge exceeds the limit, with respect to BOD, than an industrial waste surcharge (pursuant an agreement) is imposed.

“Surveys show 1 pound of BOD in wastewater means at least 9 pounds of milk have been lost” (*Dairy Processing Methods to Reduce Water Use and Liquid Waste Load*. Kent D. Rausch, G. Morgan Powell). By reducing waste, a plant reduces the amount of product that is lost into the sewer, which reduces surcharges and ultimately increases profits.

At Gay Lea Foods significant efforts to monitor and control waste have been and are continuously being made. For example, at the Longlife facility, waste load reduction initiatives have resulted in a current \$200,000 a year savings compared to 2002 waste treatment costs. These initiatives include the following:

1. Installing reclaim systems on all filling equipment, processors and milk receiving areas.
2. Optimizing product lines through proper design and installation to allow optimal drainage and collection of product into these reclaim systems rather than into floor drains.
3. Improving maintenance programs to prevent leaks from valves, piping, and equipment.
4. Ensuring tanks are completely drained before cleaning.
5. Training employees to prevent and reduce waste discharge by minimizing spills and improving maintenance.

### Waste Reduction at Gay Lea Foods Longlife Facility:

#### Year 2004-2005:

1.4 million litres of reclaim was collected and prevented from entering waste stream.



**157% INCREASE  
in diversion!**

#### Year 2007-2008:

3.6 million litres of reclaim was collected and prevented from entering waste stream.

### Principles 5: Improving Green Procurement Programs

Gay Lea Foods is committed in improving Green Procurement programs. Green Procurement is the goal of purchasing 'environmentally preferable' goods and services "that have a lesser or reduced impact on the environment over the life cycle of the good or service, when compared with competing goods or services serving the same purpose (Public Works and Government Services Canada; Office of Greening Government Operations)".

Purchasing green products and services that are made with less harmful materials and thus lesser impact to the environment can be achieved by assessing the *life cycle* of products and services. A *life cycle approach* identifies both opportunities and risks of a product or technology, all the way from raw materials to disposal (United Nations Environment Programme. *Why Take A Life Cycle Approach?* 2004).

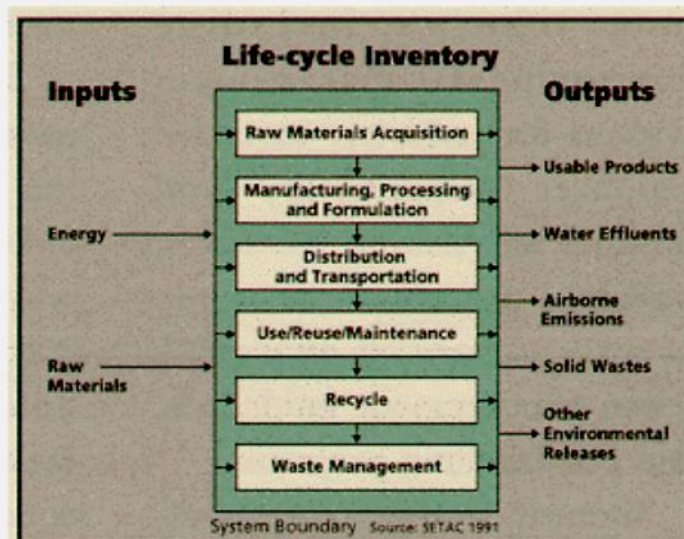
## Green Procurement How does it work?

To achieve *Green Procurement* associated with various goods and services...

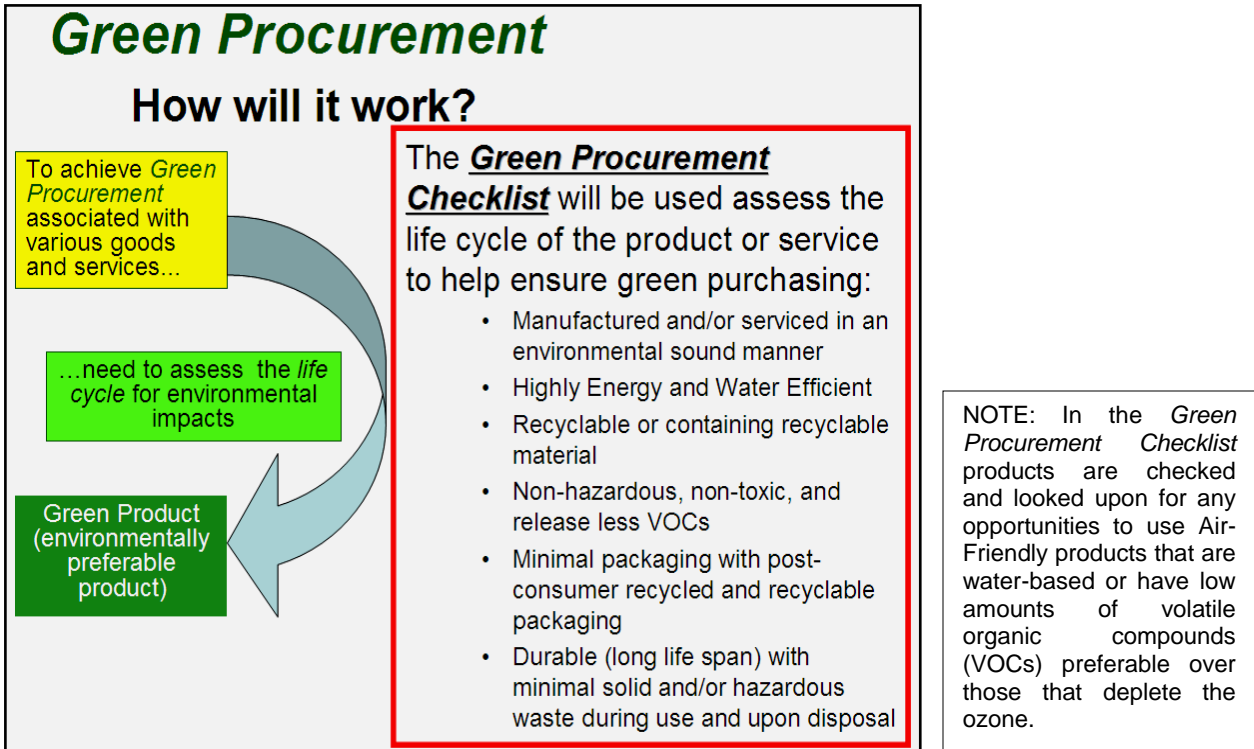
...need to assess the *life cycle* for environmental impacts

Green Product (environmentally preferable product)

### LIFE CYCLE OF A PRODUCT:



Gay Lea Foods will be using its *Green Procurement Checklist* to help assess the life cycle of the product or service to help ensure green purchasing.



### Looking ahead...

Gay Lea Foods is committed to make a difference in protecting the environment and natural resources. Gay Lea Foods believes that its' greatest asset is its people and each change no matter how small can make a difference.

In summary, Gay Lea Foods' Environmental Sustainability goals are as follows:

1. In year 2009 implement the following:
  - *Design for the Environment* (DfE) to help reduce greenhouse gas emissions, **and** improve energy and water efficiency.
  - *Green Office Program* to reduce solid waste and support reuse and recycling.
  - *Green Procurement Checklist* to improve Green Procurement programs.
2. In year 2010-2011 implement the following:
  - By 2010 increase the 3Rs (reduce, reuse, recycle) by an additional 10%.
  - Energy and Hazardous / Toxic Waste Management: improve our processes, modernize equipment & improve our facilities by decreasing waste and chemical usage.

## **In Conclusion**

"In nature everything is connected to everything else. Plants put oxygen into the air. Bacteria filter water that percolates through the ground. Decaying animals and plants create topsoil that grows our food. This is the web of life and we are part of it. (*David Suzuki*)".

Together, we can make a difference.

