

# at the source



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## The Focus of this Issue

Health care institutions are a powerful symbol of health and recognized as community leaders. Health care professionals have an ethical responsibility, embodied in the Hippocratic Oath, to "above all, do no harm". It is incompatible with the mission of the institutions devoted to healing to be significant consumers of resources and sources of environmental harm through air and wastewater emissions, hazardous and solid waste generation, greenhouse gas emissions and toxic chemical usage. Thus, reducing health care's environmental impact has both a symbolic and practical significance. This issue of *at the source* will focus on the health care sector and some of the initiatives Canadian organizations and hospitals are undertaking to promote pollution prevention and sustainability.

### St. Mary's Hospital: Winner of the Ontario Hospital Association P2 Award

by Peter Fisher, an Associate of the Canadian Centre for Pollution Prevention

St Mary's General Hospital, Kitchener is the winner of the first annual Green Health Care Award for Pollution Prevention (P2) made by the Ontario Hospital Association (OHA) and the Canadian Coalition for Green Health Care. The award recognizes leadership and excellence in reducing health care's environmental impact and, in particular, St Mary's leadership role in pollution prevention. The award was presented at the OHA 2001 Awards Dinner on November 4, 2001.

St Mary's staff is excited by the award. "It's public and peer recognition of our efforts to 'go green'," says Shannon-Melissa Dunlop, St Mary's Environmental, Health and Safety Specialist.

In 2000, St Mary's Board of Trustees approved the hospital's first Environmental Policy. The policy is formally reviewed with all staff, contractors and suppliers and is available for viewing by patients, visitors, volunteers and the public. "At St Mary's, environmental education is a priority and one of the keys to successful policy implementation," says Dunlop.

In September 2001, St Mary's Environmental Management System (EMS) was registered under the ISO 14001 Standard. The EMS provides St Mary's with the means to proactively manage and minimize negative environmental impacts from its operation and to implement P2 programs wherever possible. The hospital's P2 Implementation initiatives and results include the following:

- *Proper waste segregation* has significantly reduced air emissions, particularly those from non-biomedical materials. No longer using hospital incinerator.
- *A reduction in biomedical waste* of 35% since 1998 – despite an 8% increase in day surgeries – has saved \$9,000 in disposal costs.
- *A new recycling program* has increased the amount of recycled waste by 33% and decreased the amount of waste sent for disposal.
- *Development of a Code Brown Procedure for spills*, hospital spill teams, and spill kits have improved spill prevention and response, as well as environmental protection and employee safety.

### Contents:

- Winner of OHA P2 Award
- Ecological Footprint of a Hospital
- Energy Dollars to Health Care Dollars
- Mercury Thermometer Take-Back Program
- Across Canada

St. Mary's General Hospital is an acute care facility with 900 employees and 168 beds. St. Mary's is only the second hospital in North America after Cambridge Memorial Hospital, to formally develop and register their Environmental Management System to the ISO 14001



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- *Replacement of pesticides for grounds care* with natural pest and weed control methods has lessened adverse pesticide impacts on grounds and ground water.
- *Reduction and elimination of mercury use* has reduced mercury loss to the environment.
- *Decreased air pollution* has resulted from promoting alternative transportation, e.g., walking, cycling and public transit, for staff work trips,
- *Energy conservation* is increasing due to a five-year objective involving significant changes in facility design and operation, together with staff training for improved energy awareness and hospital wide window replacement budgeted for 2002/2003.
- *Chemical recycling and substitution* where possible, have prevented or reduced pollution and improved employee health and safety and have reduced St Mary's liability exposure.
- *Green Purchasing* to minimize adverse environmental impacts – coupled with an expectation that suppliers and contractors will do the same – is reducing pollution and, can save money.



Social benefits of these P2 initiatives include: improved staff and community relations; greater environmental awareness amongst staff and contractors; and, improved staff morale.

For St Mary's, the benefits of its P2 initiatives are real and ongoing. St Mary's staff can rightly be proud of their accomplishments, continuing leadership role in pollution prevention and the OHA P2 Award.

For more information on St Mary's Hospital, contact Shannon-Melissa Dunlop (Environment, Health and Safety Specialist) at: 519-749-6406 or [sdunlop@stmaryshosp.on.ca](mailto:sdunlop@stmaryshosp.on.ca).

Green Health Care awards were also given in three other categories of achievement and include:

- Overall Leadership: Cambridge Memorial Hospital (Cambridge, Ontario)
  - became the first hospital in North America to receive ISO 14001 certification for its environmental management system
  - achieved a 28% reduction in the total volume of waste generated over a seven-year period (1993-1999).
- Energy Conservation: Norfolk General Hospital (Simcoe, Ontario)
  - energy conservation initiatives include: lighting alternatives, occupancy sensors, use of timers on hot water pumps, replacement of three boilers and a chiller and cooling tower have reduced energy demand and consumption
  - using 1991 as a baseline, the hospital has sustained energy savings of at least \$132,000 per year, every year since 1995
- Personal/Individual Achievement: Valerie O'Grady, Hospital for Sick Children (Toronto, Ontario)
  - demonstrated leadership in the health care sector by sharing successes with colleagues from all over the country



Case studies of these and other Canadian hospitals are featured on Healthcare EnviroNet at: <http://www.c2p2online.com>, click on the Healthcare EnviroNet logo.

As part of this website, environmental health care practitioners can join the on-line forum dedicated to the sharing of environmental information within the health care sector ([healthcare@c2p2online.com](mailto:healthcare@c2p2online.com)). Participants are connected electronically and share successes, available resources, key contacts and opportunities for cooperation on environmental issues within the health care sector. Subscribers send and receive information with their existing e-mail accounts. To participate, simply asked to be subscribed to the healthcare list by sending an e-mail to

[info@c2p2online.com](mailto:info@c2p2online.com). Past discussions are archived and will be available for viewing at: [www.c2p2online.com](http://www.c2p2online.com) This service is provided free of charge and is sponsored by Environment Canada-Ontario Region and is delivered by the Canadian Centre for Pollution Prevention.

# Determination of the Ecological Footprint of a Hospital

by Susan Germain MD



Although it has long been suspected that the health care system in Canada might be affecting ecosystems (and, therefore, potentially human health), there have been few analyses of its environmental impact. To this end, I recently carried out the first Ecological Footprint (EF) of a hospital for the Canadian Association of Physicians for the Environment (CAPE) and the Canadian Coalition for Green Health Care.

An EF represents the land required to produce the resources and absorb the wastes for a population or action. The average Canadian EF is over 7 hectares (ha) per person, even though there is only 1.5 ha per person available on Earth (assuming equitable land distribution). This indicates that North American lifestyles are not sustainable.

Lions Gate Hospital (LGH) in North Vancouver is a mid-size hospital with about 591 in-patients, half of whom are long-term care patients. Although the hospital itself has no environmental policy, many staff members are committed to being environmentally responsible. Details concerning energy use, consumption of goods, construction and incinerated waste were examined. The EF of LGH was calculated to be 2918 ha: this corresponds to an area 739 times larger than its physical footprint, and an EF of 4.9 ha per inpatient if the EF is attributed solely to inpatients. These figures give us an idea of the scale at which hospitals consume however do not give us a complete picture.

Like other companies, hospitals record the financial costs of goods, not the actual resources consumed. Also, LGH has multiple accounting systems for incoming products; for example, kitchen goods and furniture were not included in the provided Purchase Orders. Manufacturers would not provide product information for this study, even though little detail was requested, such as 'percent metal' in an item. Finally, EF analysis does not determine the environmental effects of chemicals such as cleaning agents, pharmaceuticals and dioxins.

The data that were available concerning the incoming goods demonstrate the potential environmental impact of hospitals. Some examples include:

- over 1.7 million pairs of gloves were used in the year studied, accounting for 35 tonnes of waste
- plastic bags for intravenous solutions weighed over 17 tonnes, while the packaging weighed 7 tonnes
- about 426,000 diapers were used, almost all for adults: together with the incontinence pads, they accounted for 58 tonnes of waste.

The energy footprint for LGH was quite large at 2493 ha. However, the EF was calculated using data for British Columbia electricity, 90% of which is derived from hydroelectricity. If the same amount of energy were consumed in an area that produces electricity from natural gas, the energy footprint would have been 4045 ha, while the use of coal would have increased the energy footprint to 4896 ha.

Despite being an underestimate, the EF analysis of LGH can be used in a number of ways. It illustrates the extent to which hospitals are not operating in a sustainable manner. As well, the environmental impact of changes in operations can be assessed by calculating the footprint before and after the action. It also identifies energy consumption as a large contributor to the EF for hospitals, and therefore an area where environmental gains could be achieved. Finally, it will be interesting to calculate the EF of other hospitals for comparison.

For more information on EF, please contact Dr. Susan Germain at [angusgermain@telus.net](mailto:angusgermain@telus.net). *Dr. Germain is a General Practitioner who has practiced in British Columbia for 8 years. Last year, she returned to school for a diploma in Environmental Science; she carried out the EF analysis with Dr. Bill Rees (the originator of the method) as part of her degree requirements. Dr. Germain has an interest in issues that involve the environment and human health, and is currently working on a project to enable communities to be proactive in the protection of their drinking water. She also serves on the Board of Directors of CAPE.*

The ecological footprint is an accounting tool for ecological resources. Categories of human consumption are translated into areas of productive land required to provide resources and assimilate waste products. The ecological footprint is a measure of how sustainable our lifestyles are.

For more background information on the ecological footprint visit:  
<http://www.ire.ubc.ca/ecoresearch/ecoftr.html>

*at the source*, a newsletter produced by the Canadian Centre for Pollution Prevention, highlights pollution prevention programs and provides up-to-date information on Canada-wide activities

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## Energy Dollars to Health Care Dollars - A Healthy Transition

by Kent Waddington, Canadian College of Health Services Executives

Founded in 1970 and currently serving approximately 3,000 members throughout 18 regional chapters, the Canadian College of Health Service Executives (CCHSE) offers training, networking, publications and certification to Canadian health service managers and executives. The CCHSE strongly believes that excellence in health services management can be achieved through partnerships and collaborative ventures with other professional organizations and associations, health services providers, universities, governments and corporations that have a common interest in advancing leadership and research in health management.

One such partnership that has been having a very positive impact on both the health of the environment and the physical characteristics of Canada's aging health care facilities infrastructure has been with Natural Resources Canada's (NRCan) Office of Energy Efficiency (OEE). For nearly four years, CCHSE has been assisting OEE in the recruitment of Canadian health care facilities into the Energy Innovators Initiative.

The Energy Innovators Initiative is a voluntary federal programme designed to encourage facilities to consciously look at lowering their energy consumption and to assist them in changing their usage patterns to reduce hazardous greenhouse gas emissions. Lower operating costs from reduced consumption translates into more money for clinical programmes, lab equipment and patient care. In short, CCHSE and OEE are "helping turn energy dollars into health care dollars ... for a healthier planet"

Registered Energy Innovators have access to a variety of tools and services including:

- financial incentives of up to \$250,000;
- help in developing a corporate Energy Management Action Plan;
- customized technical expertise and audits;
- assistance in implementing and monitoring energy savings;
- advice on alternative financing options for retrofit projects;
- customized energy efficiency workshops;
- information on developments in energy-efficient technologies; and
- opportunities to promote your organization's achievements.



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Membership in the Innovators is completely voluntary. Registration involves the sending of a brief registration letter to the Minister of Natural Resources Mr. Ralph Goodale. A copy of the letter, together with other information on the Innovators can be found on the CCHSE web site at: <http://www.cchse.org>.

Through both the members of its Energy Efficiency Advisory Committee and its Energy Efficiency Coordinator, CCHSE has helped the government of Canada increase energy efficiency awareness and activities in the sector and have encouraged over one hundred and twenty health care facilities, regions and districts to become Energy Innovators. The combined energy savings potential for these Innovators is in the tens of millions of dollars. This translates into a very significant reduction in harmful greenhouse gas emissions.

In the first eighteen months of the Pilot Retrofit Incentive Programme, NRCan estimates 65 kilotonnes of emissions savings/year as a result of 52 funded projects.

To date, several health care organizations including London and Hamilton's Health Sciences Centres, Southwestman Regional Health Authority (Manitoba), and Toronto's Hospital for Sick Children have taken advantage of this incentive and have received more than \$1.2 million in financial inducements. As a result of this initiative, these organizations will collectively realize more than \$3.4 million in annual energy savings and over 20,000 tonnes in annual CO2 emissions reductions. And this is just the beginning.

In total there are over nine hundred registered Energy Innovators drawn not only from the health care sector but also from the commercial, industrial and retail sectors, colleges, universities and schools.

To learn more about how you too can qualify for federal incentives, get involved in helping all Canadians reduce harmful greenhouse gas emissions and improve the quality of life on our planet, contact CCHSE's Energy Efficiency Coordinator at 1-613-756-0435 or 1-800-363-9056 (ext 36).

### **Benefits of an Energy Efficiency Programme in your Facility**

- Reduced energy consumption;
- Reduced energy costs;
- Reduced hazardous greenhouse gas emissions;
- Improved indoor air quality;
- More comfortable workplace/patient-care environment;
- Protection of the environment from negative impact of air and water pollutants;
- Fewer emissions of atmospheric pollutants;
- Stimulated local economy through project-related employment;
- Overall improvement in the quality of the environment;
- Evidence of efficient spending of public monies;
- Improved facility infrastructure;
- Improved public image through prudent use of public monies;
- Enhanced knowledge and increased employee skill set;
- Increased employee and client awareness;
- Improved job security;
- Potential access to incentive funding;
- Benchmarking for energy consumption comparison to other facilities;
- Demonstrated environmental thoughtfulness; and
- Acknowledgement as leader in environmental stewardship.

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### **Mercury Thermometer Take-Back Program**

Fever thermometers containing mercury continue to be distributed to the Canadian public, despite the availability of alternatives such as digital thermometers. Environment Canada is engaged in a voluntary program with the pharmaceutical sector to accelerate the reduction of the number of mercury thermometers sold in Canada, and developing a program that will provide the public with a convenient way to return their thermometers to pharmacies. Environment Canada is conducting a joint pilot scale Mercury Fever Thermometer Take Back Program. This Pilot Program would ask the public to return used mercury-containing fever thermometers to participating retail pharmacies in Thunder Bay, London, and Ottawa Ontario. The Pilot Program is planned for February, 2002.

Environment Canada is also actively engaged with Canadian retailers and distributors to demonstrate the feasibility of curtailing the sale of mercury-filled thermometers to the general public. Discussions with large chain drug stores are currently underway to encourage them to discontinue the sales of mercury thermometers.



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# Across Canada

## Pollution Prevention Activities and Events



### **OHA Opens Green Lane for Exhibitors**

*Toronto, Ontario (November 5-7, 2001)*

This year's Ontario Hospital Association Convention and Exhibition featured green exhibitors. The Green Lane is an exciting new innovation that featured exhibitors whose products or services can be shown to have a clear environmental benefit. In other words, a product or service that improves energy efficiency, reduces resource consumption and waste production, prevents pollution, reduces the use of toxic substances or in other ways helps to reduce the environmental impact on the health care system. Exhibitors featured in the Green Lane include: B. Braun Medical Inc., Canadian Centre for Pollution Prevention, Canadian Coalition for Green Health Care, Cogent Environmental Solutions, Delta Marketing, Environment Canada - National Office of Pollution Prevention, Fluorescent Lamp Recyclers Inc., Interface Canada, Medical Waste Management Inc., Natural Resources Canada-Office of Energy Efficiency, and ZSI Environmental.

### **Health Care Information Resources**

Health care professionals have access to many quality Canadian web-based resources. For instance Healthcare EnviroNet (<http://www.c2p2online.com>, click on the Healthcare EnviroNet logo) profiles the pollution prevention efforts of urban and rural hospitals from across Canada. Another valuable resource is Environment Canada's Pollution Prevention Success Stories website (<http://www.ec.gc.ca/pp>). This site features newly written

stories on Canadian hospitals such as the **Winnipeg Health Science Centre** and the **Cape Breton District Regional Health Authority**. Health care organizations can also be part of a broader movement to green the health care sector by participating in the initiatives posted on the Canadian Coalition for Green Health Care website (<http://www.greenhealthcare.ca>). The Coalition has recently published the document entitled *Green Hospitals: Success Stories of Environmentally-Responsible Health Care* which is available via request at: [feedback@greenhealthcare.ca](mailto:feedback@greenhealthcare.ca).

### **P2 Workshops for Health Care Sector**

*Toronto, Ontario*

*November 12 or November 15, 2001 (1-5 pm)*

On July 6, 2000, Toronto City Council passed the new Sewer Use By-law No. 457-2000. This By-law has since been incorporated into the Municipal Code, Chapter 681, Article I, which requires Pollution Prevention Planning by industries discharging subject pollutants. The City of Toronto, Environment Canada - Ontario Region, and the Canadian Centre for Pollution Prevention (C2P2) have organized two, half-day workshops for the health care sector. These workshops will assist hospitals, medical laboratories, & other health care organizations in this sector in preparing their Pollution Prevention (P2) Plans. This free workshop is open to all facilities affected by the By-law in this sector in the City of Toronto. It will take you through the process of filling out the P2 Plan and P2 Plan summary required for the City of Toronto Sewer Use By-law.

Contact Vijay Ratnaparkhe, City of Toronto at 416-394-8455, E-mail: [vrathna@city.toronto.on.ca](mailto:vrathna@city.toronto.on.ca); Internet: <http://www.city.toronto.on.ca/involved/wpc/health.htm>.

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