Volume 37 – October 2010

CONSENSUS

Canada's Standardization Magazine

Established in 1970 – 40 years
Standards Council of Canada
Conseil canadien des normes
Créé en 1970 – 40 ans

Standards in GEAR

Imagine a more accessible world for all...

We help transform vision into reality.

When the Ontario government decided to develop, implement and enforce mandatory accessibility standards, **it turned to CSA**. With our depth of resources, expert knowledge and proven process gleaned from more than 90 years of standards experience, we delivered an innovative solutions approach to address their needs.

The Accessibility for Ontarians with Disabilities Act (AODA) was the first of its kind in Canada. This project helped to deliver policies and regulations with a fresh new thinking applied to the standards process.

To learn more about CSA, go to www.csa.ca.

MAKING STANDARDS WORK FOR PEOPLE AND BUSINESS

CSA STANDARDS

CONSENSUS

Canada's Standardization Magazine

270 Albert Street, Suite 200
Ottawa, Ontario K1P 6N7
tel.: 613 238 3222, fax: 613 569 7808
e-mail: info@scc.ca
www.scc.ca

CONSENSUS is published in English and French editions by the Standards Council of Canada. Information and articles, may be reproduced without permission, providing credit is given to the Standards Council of Canada, and *CONSENSUS* magazine.

CONSENSUS accepts advertising that conforms to the Canadian Code of Advertising Standards. Acceptance does not imply that advertisers are accredited or endorsed by the Standards Council of Canada.

Editor, *Pilar Castro*
Staff writer, *Sean Meagher*
Design and production, *Guy Ethier*
Translation, *Hélène Couturier, Karine Beauvais*

Please direct letters and comments to the editor of *CONSENSUS,* using the information above.

ISSN 0380-1314

Standards Council of Canada
Conseil canadien des normes

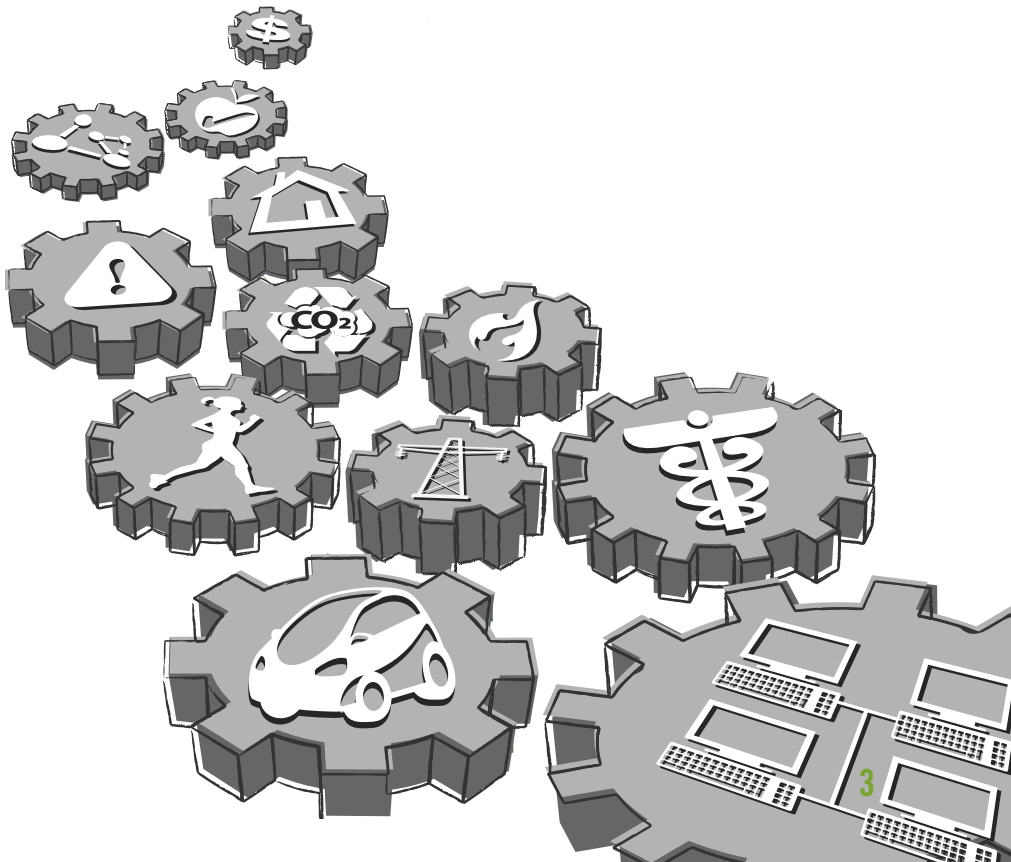
Canada

The Standards Council of Canada is the federal Crown corporation with the mandate to promote efficient and effective voluntary standardization. It is the Canadian member of the International Organization for Standardization (ISO) and sponsor of the Canadian National Committee of the International Electrotechnical Commission (IEC).

We thank the members of Canada's network of standardization experts for their support in the publication of *CONSENSUS*.

Printed in Canada on 50% recycled and 25% post consumer waste paper

In this issue...



Dear CONSENSUS Readers,

In 2010, as part of its milestone 40th anniversary, the Standards Council of Canada is not only taking stock, it is also looking ahead towards the future of standardization activities in Canada.

While largely unnoticed, and in some cases untapped in their potential, standards and conformity assessment play a pivotal role in advancing the national economic growth of various key Canadian sectors and industries.

The articles in this latest issue of CONSENSUS Magazine correspond with the sectors identified as part of a broader *Action Plan on Standardization Activities to support Government of Canada Priorities*, and serve to illustrate the potential for standardization to contribute to increasing Canada's competitiveness while safeguarding the health and safety of its citizens.

We are working on all fronts to better understand the needs and roles of our stakeholders and to unleash the potential for standardization to be a successful driver of Canadian innovation and growth. If you're not already involved, we hope this brings you inspiration to join us as we strive to put "standards in gear" for the benefit of all Canadians.

John Walter
Executive Director
Standards Council of Canada

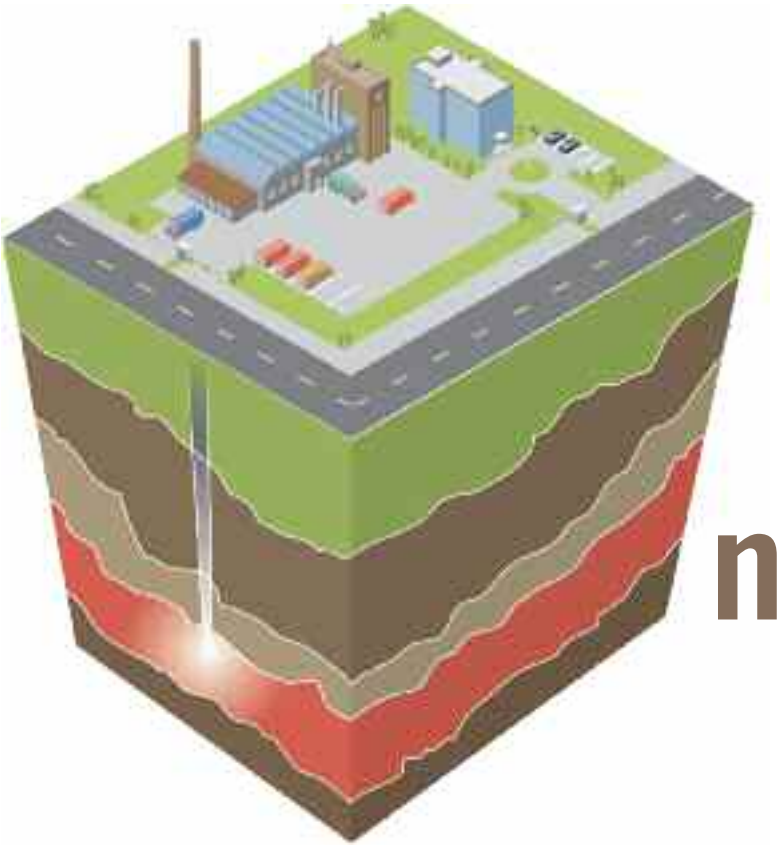
Accessibility for All

Every year on World Standards Day (October 14), the Standards Council of Canada joins the international community in celebrating the importance of standards-related activities and pays tribute to the collaborative efforts of the thousands of individuals that give their time and expertise to this important work.

"Standards make the world accessible for all" was chosen as the theme for 2010, by the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC) and the International Telecommunications Union (ITU).

As it has done in recent years, the Standards Council of Canada published this Magazine on October 14, and provided copies to attendees of a special World Standards Day event that it hosted in Ottawa. A webcast of the event is available for viewing from www.scc.ca.

In an effort to increase the accessibility of the content it offers online in 2010, the Standards Council of Canada has added the tool, ***BrowseAloud*** *to its website.*



Taking CO_2 to new depths

The concept of disposing carbon dioxide (CO_2) underground is emerging as a serious option in addressing the many environmental challenges associated with increased concentrations of greenhouse gases in the atmosphere.

Since a portion of Canada's energy is derived from CO_2-emitting fossil fuels (coal and oil), and as the Canadian economy depends significantly on the production, export and use of these resources, it is not surprising that Canada has become a world leader in developing CO_2 capture and storage (CCS) technology.

The Canadian federal government has already committed $3 billion to CCS research. Several CCS projects are underway across the country, funded by various government agencies, industry and research institutions, including support for the world's first and largest CCS site. Located in the oilfields of Saskatchewan, Cenovus Energy's Weyburn facility operates an enhanced oil recovery project that has a potential CO_2 sequestration capacity of up to 55 million tons.

CO_2 from a synthetic fuel operation in North Dakota is delivered to Weyburn by pipeline and then injected into an underground oilfield. While some of the CO_2 remains in the depleted portion of the oilfield, other amounts return to the surface to be recaptured and used again to extract more oil from below the ground.

A lingering concern related to CCS technology, however, is whether underground sequestration sites will be safe, secure and environmentally sound over the long-term.

An agreement signed in June 2010 by the International Performance Assessment Centre for Geologic Storage of Carbon Dioxide (IPAC–CO_2) and the Canadian Standards Association (CSA) will go a long way toward addressing that concern. The two organizations have agreed to develop the world's first standard for the geologic storage of carbon dioxide.

Based in Regina, Saskatchewan, IPAC-CO_2 Research Inc. is a non-government organization founded in 2009 to provide independent performance assessment for geologic storage of carbon dioxide.

"IPAC will provide public, regulator and industry confidence in the safety and permanence of geological storage of carbon dioxide," says Carmen Dybwad, IPAC-CO_2's chief executive officer. "We want to make sure that people understand that CO_2 storage is a good tool to keep carbon dioxide out of the atmosphere. We need standards to instil that kind of confidence."

Dybwad believes that establishing public confidence in geologic storage of CO_2 will open up international markets for those companies working in the CO_2 capture and storage field. She expects that this will benefit Canada's energy sector and that it will, by extension, positively impact the Canadian economy.

According to Dybwad, the new standard will deal with screening and selection of potential storage locations, as well as the design, construction, operation, monitoring and closure of sites.

Dybwad explains that a technical committee comprised of an equal number of stakeholders from

Canada and the United States will scrutinize the standard drafted by IPAC-CO_2 and CSA. After a public review, the finalized standard will be presented to the Standards Council of Canada (SCC) for approval as a National Standard of Canada. It is anticipated to become the world's first formally recognized CCS standard for this sector.

Rhona DelFrari, media relations manager for Cenovus Energy says that "(CO_2) sequestration alone is not really an option because there is no financial incentive for companies to do that. It costs a lot of money to capture the CO_2, transport it to an appropriate storage site and inject it into the ground." DelFrari adds that legislation and government support would contribute to CO_2 sequestration being adopted on a larger scale. DelFrari recognizes that better government linkages are needed for certain companies to invest in this method of CO_2 sequestration.

Jeff Walker, the CSA project manager for the CO_2 storage standard process, is confident that this growing technology will sell itself once additional standards are harmonized and Canadians realize the great potential of storing CO_2.

"The standard will ensure that storage facilities are developed and operated in as safe a way as possible," says Walker. "It has not only economic value for the energy industry and for Canada, but also environmental value, and it will provide safety for those living and working near the storage sites."

Walker points to the bi-national nature of the committee addressing the CO_2 geologic storage standard process as creating an increased potential for harmonization with the U.S. and for eventual adoption internationally.

"By harmonizing standards, there are a number of benefits," adds Walker. "If there is one recognized standard across borders, you don't have to deal with different and potentially contradictory guidelines. You also don't have to do the administrative work for different jurisdictions. Common rules also make it easier for companies and individuals to work across borders."

Taking CO_2 capture and sequestration underground will give this made-in-Canada standard a heightened stature, and set the stage for environmental benefits and economic rewards at home as well as internationally. ■

Fuelled-Up and Ready to Standardize

The race to cut harmful emissions in Canada and around the world may be fueled less by the rush of discovery than by the plotting of careful, methodical regulations.

Ry Smith advocates for a different, greener way to propel vehicles along our streets and highways. As the head of Change Energy Inc., an alternative fuel and technology consultancy based in Mississauga, Smith has held key roles in shaping industry standards for the energy sector. He believes it's time for a standards renaissance in Canada.

According to Smith, the lack of standardization in the natural gas vehicle industry prior to the 1990s led to some "real safety concerns". By 2000, Canada had become a world leader in developing the new standards to drive the technology, however priorities have since shifted. Smith contends that Canada is no longer at the forefront.

In terms of standards for natural gas fuel vehicles, Smith cites three main benefits: public safety; consistency of manufacturing; and assistance in overcoming roadblocks in commercialization.

"Although it seems like more work at first, or more onerous in the design/build process", he says. "It really makes more sense to have standards in place."

While standards development may have taken a back seat to other priorities over the past decade, that doesn't mean things have to start at square one, according to Smith. The first generation of work left a legacy of knowledge and experience, and a solid library of information upon which to build. Smith says all that's needed is for government and the private sector to come together. If a multi-party platform of stakeholders—industry, end-users and manufacturers—were engaged, and the necessary secretariats and committees were put in-place, progress could easily be made.

Alicia Milner, president of the Canadian Natural Gas Vehicle Alliance, explains "there currently are no Canadian standards for LNG (Liquefied Natural Gas) vehicles and refueling stations." The association she leads—along with a range of other stakeholders from across Canada—is currently working with Natural Resources Canada on a Deployment Roadmap for Natural Gas in Transportation, an initiative spearheaded in March 2010.

As part of this work on a deployment roadmap, a Codes and Standards Working Group has been established. Milner says that under this group's direction, the Standards Council of Canada is in the final stages of "preparing a matrix that identifies all existing codes and standards and highlights gap areas with perspective on how to address gaps."

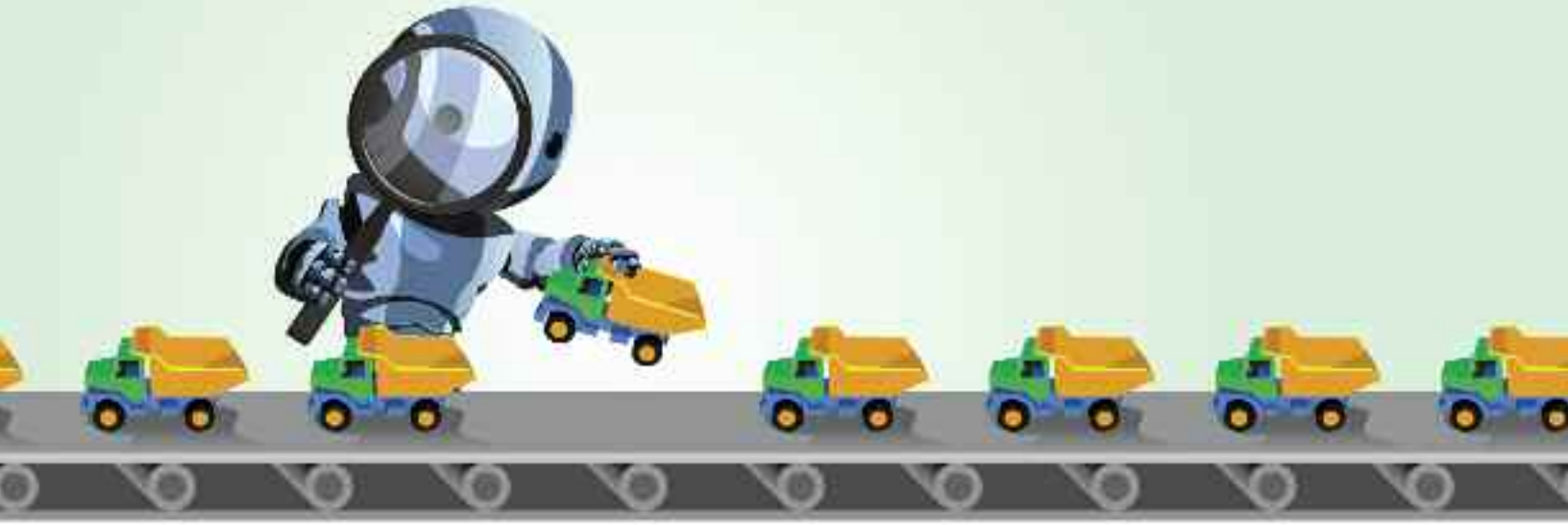
"Of great importance for the natural gas vehicle industry in Canada is a re-initiation of formerly active codes and standards committees to ensure that gap and issue areas are addressed and that a lack of standards does not become an impediment to market development," says Milner.

The market won't have to be built from scratch. Steve Steinebach is the business development manager at IMW Industries Ltd., a B.C.-based supplier of compressed natural gas (CNG) equipment for vehicle fueling and industrial applications. Steinebach notes that the standards developed in Canada are helping manufacturers of natural gas vehicles and station-related equipment from North America find markets worldwide.

"Standards form the basis upon which all development takes place," says Steinebach. "In fact, over the last 15 years, Canadian and U.S. CNG standards have been widely used as a starting point for the development of CNG infrastructures in other countries without their own existing standards," he explains. "Or as the starting point for their own standards development," he adds.

"This has enabled North American products, technology and expertise in this field to be deployed all over the world," says Steinebach. ■

Playing the *Product Safety Field*



Health Canada's website contains a list of products recalled or deemed to be unsafe for Canadian consumers—a list that is constantly getting longer. Toys with unsafe amounts of lead, injury-prone drop-side cribs, dangerous garden torches and an array of other household consumer products are being added every day.

Unfortunately it's not until a toy breaks, a light-bulb malfunctions or products cause harm that Canadians realize how important standardization really is to safety. Safeguarding against potential dangers associated with products is an important aspect of standards and their application (i.e., product certification). Reference to standards in regulation is one way for governments to help ensure that consumer health and safety is consistently being protected.

Standardization ensures accountability, instills trust, and contributes to building consumer confidence in products. Many products on Canadian shelves currently do not adhere to any sort of safety standards; that lack of public awareness is putting Canadians at even greater risk.

"The problem in this country is that most people think that everything they buy is being protected by our government," says Mel Fruitman, vice-president of the Consumers' Association of Canada, adding that product-wide standards protection is an illusion in today's marketplace.

In Canada, current product certification practices are somewhat fragmented, addressing each of the various components of any given product individually. Any sort of electrical component in a toy, for example, needs to be tested and certified against the specific standards corresponding to each of that toy's electrical parts.

Traditionally, Canada's approach to product safety has been different from that of other countries, some of which have adopted a more holistic hazard-based approach to addressing product safety.

To address lead poisoning, sharp corners, skin irritants or electrical-based dangers, some countries adopt standards for each potential hazard. Whether they are using their own national standards or adopting/adapting international standards, one approach seems to be to develop a certification scheme that outlines all of the applicable standards relating to an industry e.g. toys, and to then certify products as safe for use, based on that certification scheme.

For this very reason, Health Canada is revisiting its approach to consumer product safety and looking to Canada's National Standards System to help address the gaps. Proposed legislation, in the form of the *Canadian Consumer Product Safety Act* (CCPSA) or Bill C-36, is intended to address out-of-date product safety laws and to enable the federal government to better protect Canadians from unsafe consumer products.

"Without standards, we don't know what we're getting," says Fruitman, adding that Canada's Bill C-36, when/if passed into law, will be beneficial for Canadians and

manufacturers in making voluntary standards for consumer products mandatory. "Canadians would ultimately be better protected in the marketplace."

Fruitman agrees that standards are the backbone of consumer product safety, but recognizes the importance of Canadian legislation in helping to ensure that standards are effectively applied. "A standard is useless, if you have no means of enforcing it," he adds.

If Bill C-36 becomes law, consumers may take comfort in knowing that a mechanism for the enforcement of voluntary standards relating to product safety is finally available. An important step towards establishing the required certification schemes to address the safety of specific industry products.

"When the Act goes through, it's going to make very significant the fact that these voluntary standards exist and whether or not a manufacturer has used them," says Dr. Elizabeth Nielsen, member of the Standards Council of Canada's Consumer and Public Interest Committee. She adds that one of the ways that a supplier can demonstrate that they have taken all the reasonable steps to ensure that a product is safe, is by complying with existing voluntary standards.

Nielsen says legislation will level the playing field and reward those Canadian manufacturers who do take the time and apply the necessary resources to ensure that their products adhere to the correct standardization processes.

Making it mandatory for product manufacturers and suppliers to use specific standards and certification schemes could help reduce the amount of unsafe, counterfeited, low-quality, un-certified products available for purchase, according to Nielsen.

"There is potential for a greater dependence on the certification by manufacturers because then they have proof that they have taken all these simple steps to produce a safe product," says Nielsen.

"The problem in this country is that most people think that everything they buy is being protected by our government," says Mel Fruitman, vice-president of the Consumers' Association of Canada.

The Standards Council of Canada (SCC) plays a significant role in the accreditation of organizations that conduct the testing and certification of a range of products. To become accredited and maintain their accreditation status, SCC-accredited certification bodies must demonstrate that they have the right people, expertise and evaluation procedures to ensure that products bearing their certification marks are performing according to the applicable standards.

According to Nielson, products that are not subject to such thorough verification could be potentially dangerous for consumers.

Despite the current gaps in product safety, Canada is not leaving consumer protection to chance. Through the incorporation of standardization into various government initiatives, Canada's network of standardization experts is working to establish a more safeguarded product environment that reduces the dangers of playing in the product safety field. ■

Working for a Healthy Living

Christina Antoniou has worked at Pfizer Canada for five years. During that time, she has seen a kinesiologist, consulted with a dietician and doctor, and exercised and attended fitness classes at the gym several times a week. She's done it all onsite thanks to her company's health and well-being program, VIVA.

Pfizer Canada launched VIVA, which focuses on disease prevention, awareness of healthy living and employee support, in May 2007. It also promotes healthy lifestyle habits in the areas of nutrition, physical activity, work-life balance, and stress management.

"I have probably used most, if not all, of the VIVA program's offerings," the corporate communications manager says. "Having all these conveniences at the office makes a healthy lifestyle much easier to achieve."

In May 2009, Pfizer Canada took its successful health-and-wellness program one step further when it obtained the Healthy Enterprise – Elite certification from the Bureau de normalisation du Québec (BNQ).

The BNQ created the Healthy Enterprise certification program in collaboration with the Group for Prevention and Promotion Strategies (GP2S). Officially launched in February 2008, *Prevention, Promotion and Organizational Practices for Health in the Workplace* (BNQ 9700-800) is the first occupational health standard of its kind in the world. It is part of Québec's *Action Plan to Promote Healthy Life Habits and Prevent Weight-Related Problems, 2006-2012* and is also consistent with the main principles set out by Health Canada for Workplace Health Promotion.

The Healthy Enterprise standard is a reference document made available to any enterprise or organization, large or small, wishing to implement and maintain a structured approach of prevention, promotion and organizational practices contributing to workplace health for its employees. It offers two levels of certification *(Healthy Enterprise, and Healthy Enterprise – Elite)* and encourages companies to adapt their management in four areas of activity recognized by the scientific and medical community for having a significant impact on the health of employees: employee living habits, work-personal life balance, working environment and management practices.

Focusing on what an enterprise can do to encourage people to contribute to their own health, the standard reaches beyond already existing standards for occupational health and safety (OHS) that focus on preventing physical injuries in the workplace. Daniel Langlais, BNQ's coordinator of the Healthy Enterprise standard, says it actually complements the existing OHS standards by addressing the mental and physical well-being and prevention of disease through a global approach to health in the workplace.

Studies show that eliminating a single health risk for an employee increases productivity at work by nine per cent and reduces absenteeism by two per cent. They also show that a physically active employee is 12 per cent more productive than a sedentary employee.

Studies show that eliminating a single health risk for an employee increases productivity at work by nine per cent and reduces absenteeism by two per cent.

Canadian companies that have integrated health programs based on good habits and improved working environment figures show that each dollar invested in these programs brings a return of $2.75 to $4.00 in increased productivity over the first five years of these programs. Overall, the return on investment is far greater when the money saved in the healthcare system is taken into account.

"Bad health represents 17 per cent of overall payroll in days missed, under-productivity, and high cost of insurance. That doesn't take in the effect on the person," says Roger Bertrand, chair of the board of directors of GP2S. "Québec spends 43 per cent of its budget on healthcare. We have to invest in health promotion and prevention. Why do we need to do that? Because 70 per cent of illness comes from factors we control."

GP2S scientific adviser, Dr. Mario Messier, believes that it is well known that working conditions can contribute to the creation or the prevention of stress and psychological problems among workers. He quotes studies that show stress and anxiety cause more frequent sickness leaves than physical problems; that employers spend more on depression than high blood pressure, diabetes, heart diseases and back pain, all together; and that nearly 50 per cent of sickness leaves in the workplace are related to mental health problems.

"Good programs and effective interventions that will improve working conditions will most likely have a significant impact on the well-being of workers," says Messier. ■

Better Food-Safe than Sorry

Getting to the root of food safety issues may require tracing its origins all the way back to that small seed that was planted in the soil. The way food is grown, processed, manufactured, packaged and delivered is all part of an intricate system affecting the safety of what we eat as Canadians.

A review of the "farm to fork" or "bean to belly" journey of many food products reveals the potential dangers, as well as the stages at which standardization can be better used to ensure safety. Standards and conformity assessment play a pivotal role in the scrutiny, objectivity and transparency of our food safety systems.

"Standards are important because they allow the farmers, primarily, to show all of the good practices that they're putting in place to prevent the food from becoming contaminated and it's helping them to provide reassurance to their customers," says Heather Gale, the national program manager at the CanadaGAP Program.

The CanadaGAP Program is an on-farm food safety program for producers, packers and storage intermediaries of horticulture crops. The program is officially recognized by the Global Food Safety Initiative (GFSI) and is administered and maintained by the Canadian Horticultural Council.

Even though food industry safety standards are deemed as voluntary, many food distribution groups such as grocery stores or food vendors will not distribute products without the assurance provided by certification to a specific standard.

"The market makes it mandatory rather than our association," says Gale, adding how Canadians buying from commercial grocery stores are in many cases already purchasing products that have been certified by an organization which has received accreditation from the Standards Council of Canada (SCC).

As is the case in many other sectors, in food safety, keeping up with and ensuring standards account for technological advancements within the food industry, can be a real challenge for participants. "Science is always changing and there's research going on all the time in produce food safety; it's an area of growing interest so we definitely need to keep pace with any changes," explains Gale.

The flow of goods between countries also lends an added dimension to questions of food safety. The harmonization of standards and certification schemes with other countries and regions is among the mechanisms for addressing these questions.

"As the world shrinks in terms of import/export, there is a need to have a common language so you can speak to the issues and standards provide that language," says Dr. Trevor Smith, an Adjunct Professor at the University of Guelph's Food Sciences department and Chair of the SCC Advisory Committee on Standards.

Better Food-Safe than Sorry (continued on page 14)

Innovative EVery Mile of the Way

The popularity of going "green", which has coincided with an accelerated buzz for Electric Vehicles (EVs) in Canada, is showing no signs of letting its foot off the gas. By 2018, it is estimated there will be at least 500,000 highway-capable electric-drive vehicles on Canadian roads. The expected amount to be sold in Canada would suggest a demand for standardization practices to support this growing technology.

In order to ensure effective and trustworthy vehicles, these innovative machines must be built, distributed and operated, according to specific standards.

"Electrical Vehicles are being adopted by most industrialized nations globally," said Al Cormier, executive director of Electric Mobility Canada. Canada currently does not have complete standards for EVs, only standards for internal combustion vehicles which are automobiles run solely on conventional fuels such as gas or diesel.

"Everybody is getting in the game so they're coming, but they can't easily come to Canada until the standards are developed and adopted so they can be sold here," said Cormier. EVs are expected to have a large impact on the way Canadians view the transportation sector and its effects on the environment. Energy security, countering oil stock depletion, as well as reducing gas emissions, are just a few of the reasons why EVs are quickly becoming so popular.

"If it's a plug-in electric vehicle, it can probably reduce emissions by as much as 80 per cent," said Cormier, adding that the current hybrid cars on the market can already reduce emissions by up to 50 per cent, depending on travel patterns.

CanmetENERGY of Natural Resources Canada (NRCan) represents a team of researchers and scientists working to develop advanced battery technology and related vehicle components for hybrid and electric vehicles. The goal of CanmetENERGY is to develop safety, codes and standards which play a large role in moving the technologies into the market.

The importance and value of standardization is recognized by many Canadian EV professionals working to establish a nation-wide form of certification for this technology. "Most countries have adopted very strong programs and policies regarding accelerated electric vehicles. And most are working on required standards to make them happen," said Cormier.

If the sale of hybrid cars across the country is any indication, it is clear Canadians are moving towards more environmentally-friendly lifestyles. "I think a lot of it fits into the direction and the policy of our government and that is to be a greener society and a smarter society," said Cliff Rondeau, the Project Manager for Alternative Energy Vehicles at the Canadian Standards Association.

"Everybody's coming out with Hybrids. All the auto-makers have some form of electric-type vehicle now so just based on that, the popularity is there and I think it's going to continue to increase over the next little while," added Rondeau.

Before the expected flood of electric cars hits the Canadian market, the recently released electric-hybrid autos are acting almost as transitional vehicles, offering a mixture of a conventional internal combustion engine, along with an electric propulsion system. Regardless of whether the technology is electric or electric-hybrid, standardization will help motor this sector towards greater efficiencies for Canadian consumers.

A strong infrastructure for a new generation of automobiles will require establishing safety regulations to ensure consumer confidence when investing in this technology. "What standardization does is it certainly addresses the safety issues because now you're dealing with potentially, in some cases, lethal voltages," says Rondeau. "If you're a consumer plugging it in at night you want to be safe," he adds.

An industry standard—entitled, *Recommended Practice for Measuring the Exhaust Emissions and Fuel Economy of Hybrid-Electric Vehicles, Including Plug-in Hybrid Vehicles (SAE J1711)*—was developed in August 2010 by the Society of Automobile Engineers (SAE) to address the measurement of emissions and the fuel economy of hybrid vehicles. The standard is expected to be used for government-mandated laboratory tests conducted by the U.S. Environmental Protection Agency, as well as by NRCan. SAE J1711 was developed to more accurately evaluate vehicles under a wider range of cycles.

"Our course of action is to look to the U.S.," explains Rondeau. "To come up with a harmonization plan so we have one set of standards across North America." Rondeau envisions Canadian standardization practices becoming more involved in the years to come.

"The neat thing about Electric Vehicles is that the energy source is here, and it's now. We use electricity everyday," says Rondeau. Availability combined with the current popularity of driving green are among the many factors propelling EV innovation: to go all the way. ■

Better Food Safe than Sorry (continued from page 12)

While much of his work revolves around international standards for quality management & quality assurance, Smith recognizes the significance of harmonization for food safety as a mechanism to ensure the healthiness and safety of the foods we consume.

"Having this internationally shared systems language is important," he adds. Although most of Canada's food safety operations have been relatively effective in keeping consumers safe, Smith believes there is room for improvement.

The international standard known as *Food safety management systems – Requirements for any organization in the food chain* (ISO 22000), defines the requirements of a food safety management system covering all organizations in the food chain. According to Albert Chambers, the Vice-Chair of the Canadian advisory committee on food products (CAC-ISO TC 34), the international standard's impact in Canada has been limited, but he expects that will change as the North American food supply chain increases their expectations.

For food manufacturers, a complete food safety certification scheme exists in the form of the Food Safety System Certification (FSSC 22000), which is also recognized by GFSI and is based on the ISO 22000 standard and other existing standards for certification. The Standards Council of Canada is among the national bodies recognized by GFSI to offer accreditation to FSSC 22000.

"We're going to see the ISO 22000 family of standards evolve over the next few years," says Chambers. Understanding how food safety methods operate in Canada will shed light on where the industry is headed and how Canadians will be protected against possible contamination.

"There's a really strong commitment inside the ISO system in keeping this family of standards at the forefront in terms of innovation and being up to date with changes and approaches," adds Chambers.

The future of food processing and distribution is a journey which requires reliance on standardization to ensure food safety. Whether Canadians are "better safe than sorry" is largely dependent on Canada's ability to plant the seeds of quality and implement the appropriate standards. ■

Building a Brighter, Greener Future

Imagine a city powered entirely by solar energy. Picture thin-film panels, solar reflectors and thermal radiation devices being used in almost every residential building and urban home—instead of electricity, and without the need for any additional heating or cooling generators. Using sunlight as a primary source of energy, gives new meaning to the notion of a brighter, greener future for Canadians.

Although this greener vision of the future has been slow to manifest, solar energy technology has been making its way into our everyday lives in the form of battery chargers, flashlights, outdoor lighting, wind-up radios and even vehicles. The stage is set and lit for the innovative changes ahead.

The Ontario government announced in January 2010 an agreement that will lead to more than 16,000 green energy jobs over six years while bringing $7 billion in renewable generation investment. This step towards green efficiency is making believers out of various energy professionals who see Ontario as an incubator for what can take place in Canada.

"Canada is a leader in these areas, especially in the district of heating using solar energy," says Josef Ayoub, senior planning advisor in Energy Science and Technology at Natural Resources Canada. "Nobody does it better than Canada," he adds.

Demonstrating a leadership role within this sector also requires research and development to update current solar equipment standards so that they align with building structure requirements. The potential for widespread advancements of Canadian innovation relating to solar panel technology has no boundaries, according to Ayoub.

"We are an exporting country, so we can export our knowledge and we can export our know-how but at the same time we can help industry to develop new products that we can export," he says. Ayoub believes that the renewable energy industry is one of the world's major growth sectors.

Rae Dulmage, Standards department director at ULC Standards, believes this global trend within the energy sector will require consistent dedication from Canada. Constant updating of existing standards, harmonizing various codes and regulations while raising awareness are all ways in which Canada's building energy efficiency can be measured.

"Every other country of any significance is going down the exact same path, so if we don't keep pace and lead, we will be behind," says Dulmage.

The technology for solar panels is more common in smaller homes than larger ones, according to Dulmage who points to all kinds of options for harnessing the sun's power and converting it into energy. Despite solar energy being relatively new to Canada, the technology is already going in innovative directions, making the importance of standardization all the more apparent.

"Standards establish the rules for product design, product testing, integrating with other related building systems and new technologies, and they also lay out rules for conformity assessment," says Dulmage, adding that in order to have consistency, it's essential to have a common, safety standard. Among the most widely used to address the safe application of this technology is the ULC's *Flat Plate Photovoltaic Modules and Panels* (ULC/ORD-C1703-01), which is deliberately harmonized with its American equivalent.

Although still costly at the moment, Dulmage believes the use of solar panels in building construction is going to increase simply because the technology has been proven as effective and efficient, time and again, and because it will create jobs in a new area of technical expertise.

Increasing awareness about Canada's expanding green buildings envelope is also a positive way for Canada to maintain its position amongst the global industry players. Many schools across the country are already implementing various aspects of solar or photovoltaic systems into their curricula.

"From our perspective, that's the way you get change because the children of the next generation are going to see that and start learning about it themselves rather than just being told about it," says Dulmage. ■

Clear Skies Ahead for Cloud Computing

Definitions of cloud computing can vary depending on who's describing this evolving technology.

One way to look at it is by imagining it as a bank of ATMs that hold financial and personal information about various peoples' accounts.

In essence, the bank is the "cloud" where information is stored; ATMs act as the computers used by consumers, individuals or organizations. The data is stored for a large group of people in one database (the cloud) that can be accessed anytime, from any computer module with the proper user information.

Instead of purchasing and installing software on their own computers, consumers rent computer software, processing power and data storage from a service provider's servers to access it over the internet. In Canada, cloud computing is still new and while the definitions may be somewhat cloudy, its potential has people talking.

"The hype-curve on cloud computing is very high," says Paul Cotton, Partner Group Manager at Microsoft, and Chairman for the Canadian Advisory Committee of *Distributed application platforms and services* (ISO/IEC JTC1 SC38). "It's what everybody describes they're doing whether you're a commercial software company or you're a public servant trying to figure out where your IT systems are going to be in five years," adds Cotton.

The international Sub-committee (SC38), which includes a study group on cloud computing, met for the first time in May 2010 and has already begun to gather standardization requirements for this technology. At a subsequent meeting held in Beijing, the group discussed additional issues such as data ownership and interoperability. The meeting represents a positive step towards addressing data privacy issues and how the cloud technology can remain safe and efficient for Canadian users.

"When it's hyped like that, you get a lot of surface waves but you don't know what the currents are underneath," says Cotton. "Multiple standards with overlapping functionality are appropriate for cloud technology as it advances rapidly and has standards that are repurposed to support that innovation," he adds.

Standardization for this fast-growing technology is becoming increasingly important each day. Ensuring transparency and accountability, standards make cloud computing more efficient for Canadian users and technology suppliers. The issue of storing data in a single cloud for access by multiple users raises issues of information security. Cotton acknowledges those concerns but contends that, as with any new technology being introduced into the marketplace, there will be skeptics.

"There are some good reasons for privacy and data protection," says Cotton. "In many cases you could do a much better job from an efficiency point of view if you could share those computing resources," he said.

Even with its growing popularity in Canada, many of the associated regulatory issues with this service relate to concerns of privacy rights and information ownership because of the border-less nature of this technology.

"When you look at cloud computing, one of the big issues, especially when you're talking about standards, is the whole issue of how countries treat information," says Chris Moore, the Chief Information Officer for the City of Edmonton.

Clear Skies Ahead (continued on page 20)

Power Grids Smarten Up

Electricity delivered from suppliers to consumers using two-way digital communication is more than just a smart idea, it is the latest in green energy deployment. Smart grid technology uses intelligent monitoring devices and systems to keep track of electricity flows, while enhancing reliability and improving energy efficiencies.

At peak times of energy consumption, the grid can turn off selected home appliances to reduce demand and the amount of wasted electricity. By using sophisticated communications systems that allow for quick, automatic responses in the event of a massive blackout, this technology will also connect independent energy producers. This greater re-generating capacity is not found in outdated systems.

This change reduces the burden on utilities that traditionally have had to bear the cost of all the systems development, installation and maintenance on their own.

"Hardly a day goes by without somebody talking about the pros and cons of smart grids," says Ed Tymofichuk, Vice-President of Transmission at Manitoba Hydro. Tymofichuk says that a well thought out and timely development of smart grid applications should contribute to a reduction in carbon emissions.

Monitoring daily energy use is just one way consumers can save money with a smart meter. The smart grid is programmed to shut off specific energy consumption outlets to save the Canadian-consumer money on their electricity bills at the end of each month.

Tymofichuk is aware of the potential and envisions Canada moving in the right direction at a rapid pace, regardless of lengthy efforts needed to establish standardization.

"I think it's fair to say that the development of standards, historically and usually, is a relatively slow-

moving process," he says. "We can now say unequivocally that industry people are really moving quickly on smart-grid standards, faster than traditional development of other standards, and that tells a story."

The Manitoba Hydro smart grid is aligned with Saskatchewan, Ontario and the U.S. which means overlapping standards across North America will help unify smart grid services.

"When you look at this from a high level, you've got to have standards, because grids are inter-connected," says Tymofichuk.

The combination of smart grids and the promotion of harmonization interoperability are expected to help lower costs while providing better service, an especially appealing benefit during the current economic downturn. The reliable deployment of green energy can only happen with the development and implementation of universal standards. Switching to a new technology will always have its challenges, but putting the necessary standards in place to address these grid changes, will help ensure a smoother transition.

"Without the right standards, the industry can stumble so we need to get it right and to get it out there because the world will pass us by if we take too long," adds Tymofichuk.

By adopting harmonized standards, Canada, the U.S. and other countries will be able to maximize the value of a shared grid. Technology that overlaps into other sectors and regions is especially dependent on standardization practices which take into account the differences between countries. Smart grid installations have the potential to impact and improve other new related technologies.

Electric Vehicles will benefit from having a readily available power source when travelling far away from their primary plug at home, by using smart grid power to regenerate.

According to Don Tench, Director of Market Assessment and Compliance at the Independent Electricity System Operator, who manages Ontario's Smart Grid Forum, the potential for smart grid technology to apply to a range of sectors shows just how much research and development is being done to ensure sustainability.

"Whatever is implemented, we have to think about the future and do it in a way with IT infrastructure and so on, that is flexible and scalable," says Tench. He adds that where there are standards, the ability to bring products to market and integrate them is accelerated.

As Canadians move towards greener forms of energy consumption and cleaner sources of power, the North American Smart Grid has the potential to power that sustainability for generations to come. ■

Nanotechnology Branches-out

Manipulating matter at the nanoscale was once restricted to the realm of scientific research and academic discussion. Today, nano-engineered products, while not obvious to most consumers, are becoming increasingly prevalent in the marketplace.

From everyday items like clothing which contain nanoparticles that render fabric stain-free, to larger scale applications for water treatment—where nanoscale water filtration allows industry to re-use recycled water and, consume less fresh water—there are countless applications of nanotechnology including many significant ones within the drug delivery arm of medicine.

Nanotechnology is an umbrella term that refers to any process, technique or technology that involves the manipulation of matter between one and 100 nanometres. A nanometre (nm) is equal to one-billionth of a metre. A red blood cell is a million times larger than one nm and a single DNA strand measures just two nm's wide.

Canada is in a unique position, due to its distinct geographical landscape and abundant natural resource supply, to further integrate nanotechnology and capitalize on its vast potential to support the forestry sector.

Canada's landscape is made up of almost 400 million hectares of forest, housing 10 per cent of the world's forests. As the world's largest exporter of forestry products, this industry makes up 1.7 per cent of Canada's GDP (2009, Natural Resources Canada). Recently, the federal government and the province of Québec pledged $20 million to go towards the Domtar Corp. pulp and paper mill in Windsor, Québec. The investment will facilitate the integration of nanotechnology into the forestry industry.

Dr. Richard Berry, a leading nanotechnology scientist at FPInnovations and Domtar partner says "nanotechnology in the forest sector will diversify the market for cellulosic materials and allow the use of cellulose in a new wide range of products and in new types of paper."

"The value of these specialty products will complement the traditional commodity uses of pulp to enhance the profitability and the growth of those forest sector companies who participate in these opportunities," he says.

Nanoscience is a relatively new domain that is interested in the different behaviours and unique properties

that materials can take on at the nanoscale. The resulting change in behaviour is the key to why scientists are interested in nanotechnology—using existing materials to create new products that are better, lighter, stronger and at times, cheaper to produce.

"Nanotechnology will play an important role in ensuring the efficiencies of our firms through better process technologies, better sensor technologies and better materials for our industrial production capabilities—whether in exploiting wood fibres, or producing manufactured products from the wood itself," said Dr. Clive Willis, the chair of the terminology working group of the international technical committee responsible for developing standards on nanotechnology (ISO/TC 229).

The forestry industry has faced serious economic challenges and a general decrease in the demand for wood-based products in recent years, due to the economic downturn. Forestry-related advances in nanotechnology could help alleviate some of those challenges by enabling the production of materials that are more efficient to manufacture and subsequently, more cost-effective to purchase.

The potential of nanotechnology in the forestry industry can be seen in the production of nanocrystaline cellulose, an abundant biological renewable and sustainable nanomaterial that can be extracted from trees. This material, in one form or another, can be used in dozens of sectors from the making of cosmetics, to construction materials and even bio-plastics.

Treating wood with nano-sized coatings and laminate particles can prevent natural enemies such as decay, moisture and harmful UV rays from normal wood deterioration, increasing the material's longevity.

Other commercial applications include the ability to manufacture specialized paper products. Producing electricity-conducive paper using nanotechnology can be used in the manufacturing of electronic equipment such as transistors and other communication devices. The use of 'smart' paper in these devices would drive down production costs.

Industry standards for nanotechnology are proving more complicated to develop, given that nanotechnology affects so many other industries and sectors. According to Dr. Willis, before industry-specific standards can be produced, determining the language will be crucial, which establishes a foundation to build international standards and regulations that can be harmonized worldwide.

"It is essential to the emergence of a coherent scientific literature in the field, to the description and patenting of new discoveries, to all the legal contracting required for commerce in industries using nanotechnology, and for the development of governmental regulations of products containing nanomaterials so that public safety is ensured," said Willis.

Canada plays a unique role as a participating member in the international nanotechnology committee (ISO/TC 229). The chair of Canada's advisory committee, Dr. Roland Hosein explains that while the standards development process is an open and transparent one, since nanotechnology is an evolving science, developing standards for it presents a unique set of challenges.

"Creating the language takes time because [the science] is evolving. Every scientist has an opinion and these have to be considered before you can tighten and peg terminology," said Hosein. "A lot of companies are already putting out products enhanced by nanotechnology. The industry is moving forward, and we have to find a faster way to develop standards."

Willis believes Canada's nanotechnology strategy must take advantage of its strengths.

"Given the importance of standards in today's world trade, Canada's leading capacity for participating in the setting of international standards will be important to our unique position in developing nanotechnology," added Willis. ■

Clear Skies Ahead (continued from page 16)

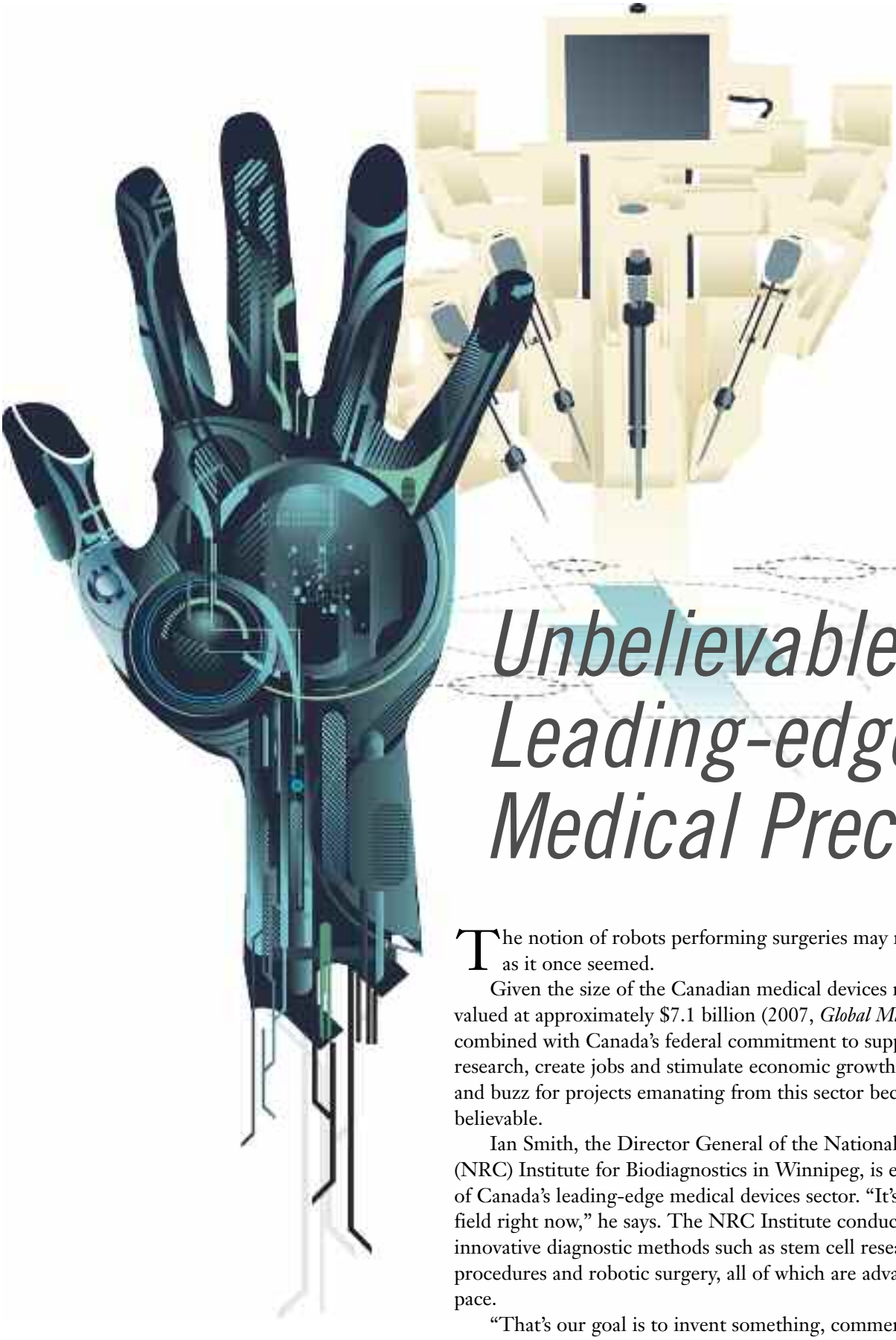
The City of Edmonton has been using cloud computing for about four years and has seen positive results from implementing the technology.

"The benefit for us, is the ability to quickly put in place a technology-based service," says Moore, adding how current cloud computing providers such as Microsoft, Google and Amazon, are making the services more user-friendly. "It's more than just infrastructure as a service, it's really an application as a service," he says.

Cloud computing offers users the advantage of getting any amount of information posted on a website quickly, efficiently and ready for public use.

"We don't have to maintain the infrastructure so it's a combination of cost-savings, cost-avoidance and speed, but for us, it's mostly speed," adds Moore.

The future of cloud computing remains bright, as many different technology suppliers, corporations, organizations and IT professionals praise its evolution—an evolution which will pave the way for the next wave of internet growth. ■



Unbelievable Leading-edge Medical Precision

The notion of robots performing surgeries may not be as far-fetched as it once seemed.

Given the size of the Canadian medical devices market, which is valued at approximately $7.1 billion (2007, *Global Markets Direct*), combined with Canada's federal commitment to support scientific research, create jobs and stimulate economic growth, the momentum and buzz for projects emanating from this sector becomes increasingly believable.

Ian Smith, the Director General of the National Research Council (NRC) Institute for Biodiagnostics in Winnipeg, is excited to be a part of Canada's leading-edge medical devices sector. "It's a very fascinating field right now," he says. The NRC Institute conducts research on innovative diagnostic methods such as stem cell research, MRI procedures and robotic surgery, all of which are advancing at a rapid pace.

"That's our goal is to invent something, commercialize it and make jobs to hire people who are graduating from our universities instead of

shipping them off to other countries," says Smith. He explains that the institute's Calgary location already has the prototype for a mechanical device that performs various surgeries, while the human surgeon guides it along.

"An increased use of internationally recognized standards, such as those listed on the Medical Devices Bureau website, ensures that patients in Canada have timely access to safe, effective and quality devices," says Stephane Shank, a senior advisor for Media Relations at Health Canada.

"You know exactly where you're going, you know exactly what you've done as soon as you've done it and you've taken (away) any uncertainty due to wobbly hands," he says, praising the device's usefulness for neural surgery where even the smallest mistake can lead to severe brain damage.

Medical robots have a surgical accuracy of less than 1 millimetre. The da Vinci robot, which is being used for cardiac surgery at the London Health Sciences Centre, in London, Ontario, is just one example of this field's sophistication. "I think this is going to go lots of places because of the accuracy," says Smith.

As with any field experiencing rapid growth, the need for standards and testing becomes acute, in particular with regards to product safety and quality assurance.

In Canada, the sale of medical devices is regulated by Health Canada. Federal regulations specify that class 1-4 medical devices must be manufactured or distributed under a certified quality management system (QMS) that meets the criteria of the international quality management systems standard for medical devices (ISO/IEC 13485:2003). The program operated by the Therapeutic Products Directorate of Health Canada for Canadian Medical Devices Conformity Assessment System (CMDCAS), requires organizations that certify the management systems of medical device manufacturers or distributors to be accredited by the Standards Council of Canada.

"An increased use of internationally recognized standards, such as those listed on the Medical Devices Bureau website, ensures that patients in Canada have timely access to safe, effective and quality devices," says Stephane Shank, a senior advisor for Media Relations at Health Canada.

Since these regulations were introduced in 1998, Canadian efforts to harmonize medical device regulations with those of our international trading partners have continued. By requiring that medical devices sold in Canada be designed and manufactured under a certified QMS that conforms to international standards (ISO/IEC 13485:2003), there is greater assurance of product safety in terms of the import and export of these types of products.

"Harmonization of standards is important when technologies change rapidly and when manufacturers supply markets around the world, as well as in Canada," says Shank.

The complexity of these devices combined with their impact on the health of Canadians further enhances the need for harmonization. "Standardization establishes internationally recognized, essential safety and effectiveness criteria, to ensure users of the safety and quality of the device," adds Shank.

Part of Health Canada's role is to monitor technology compliance of medical devices with Canadian regulations and guidelines before allowing these products to become available on the Canadian market.

"In addressing leading-edge devices, standards must avoid setting restrictions on design or application that would impede the advancement of the new technology," says Mary Jo Haddad, President and CEO of the Hospital for Sick Children (SickKids).

Advances in technology are certainly being put to good use at SickKids, which received an investment of $10 million in March of 2010 from the federal government to strengthen its position as a leading centre for medical research in Southern Ontario.

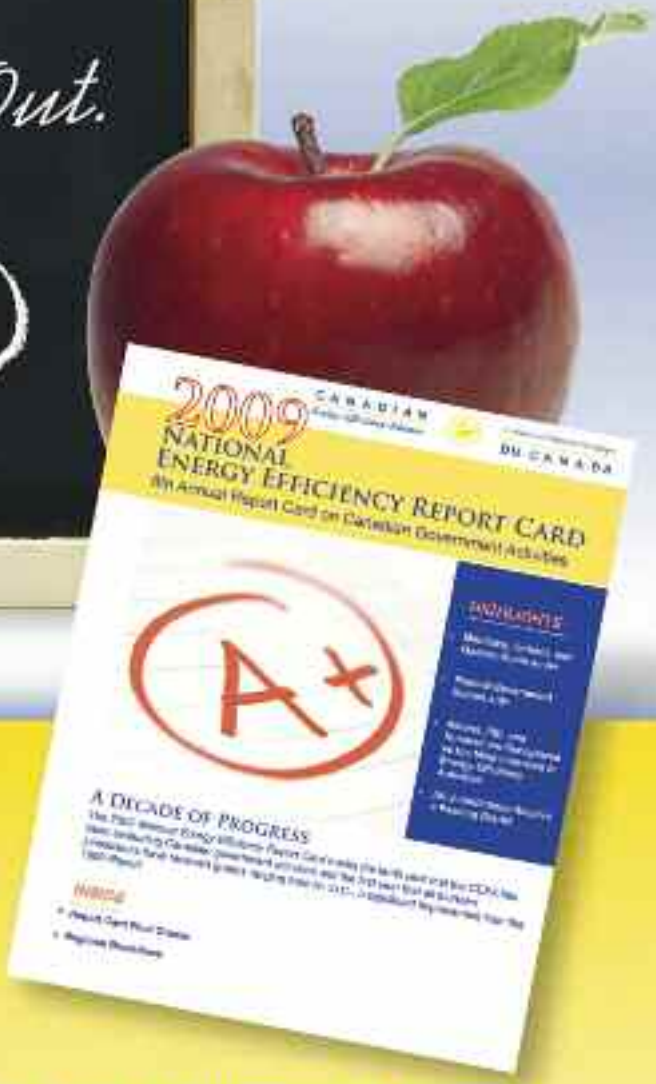
"This is a prime example of how research and technology can be transformed into clinical application, which leads to improved health outcomes for our children," says Haddad. Surgical robots, medical imaging and simulation technologies are being developed for the care of children and babies thanks to the federal grant.

The astounding potential of medical devices is obvious from the rapid pace of the industry and the many innovative applications being proposed. Robots performing delicate surgery, biosensors used to detect bioterrorism agents in food and water, as well as new optical imaging techniques that could greatly improve procedures such as angioplasty are a few examples.

As the application of leading-edge medical devices continues to expand, Canadians will witness an array of ground-breaking technologies that would not be possible without the application of standards. ■

Canada's 2009 Energy Efficiency Report Cards are Out.

And the News is Good.



In conjunction with national leadership initiatives of the Standards Council of Canada, and in concert with collaborative efforts of like-minded organizations from coast-to-coast, the **Canadian Energy Efficiency Alliance** (CEEA) is pleased to announce that, for the first time since its *National Energy Efficiency Report Card* was launched in 1999, all jurisdictions have received passing grades!

CEEA's 2009 *Report Card* on energy efficiencies related to government practices and activities throughout Canada clearly demonstrates significant progress over the past decade.

2009 HIGHLIGHTS INCLUDE:

A+	**Manitoba, Ontario and Québec**
B+	**Federal Government**
Most Improved	**Alberta, PEI and Nunavut**

REAL-WORLD PROGRESS IN ENERGY EFFICIENCY STANDARDS FOR PRODUCTS

Natural Resources Canada's Office of Energy Efficiency has determined that product standards amendments implemented prior to 2010 have already saved users 34 PJ of energy – enough to power 306,000 homes. Moreover, proposed amendments to product standards in future are projected to save 156 PJ by 2020 – equivalent to the power consumption of 1.4 million homes – saving Canadians an estimated $4 billion.

The 2009 *Report Card* is available online at energyefficiency.org.

CANADIAN
Energy Efficiency Alliance

L'Alliance de l'Efficacité Énergétique
DU CANADA