In February 2007, the Public Health Agency of Canada (PHAC) asked the Council of Canadian Academies to appoint an independent expert panel to assess the current science that is relevant to the following questions:

a) How and where are seasonal influenza and pandemic influenza transmitted based on existing reviews, or where needed, original literature generated from seasonal influenza outbreaks and from previous pandemics?

b) Based on the conclusions of this review, what is your assessment of the contribution that N95 respirators or surgical masks will make to the prevention of transmission of seasonal and pandemic influenza?


Seasonal influenza and its complications send, on average, about 20,000 Canadians to hospital every year, and approximately 4,000 die. Pandemic influenza occurs when a new strain of the human influenza virus emerges for which people have little or no pre-existing immunity and that can spread efficiently from person to person and become geographically widespread. It is impossible to predict when the next influenza pandemic might occur or how virulent the virus will be.

*Continued on page 2…*

In November 2007, the Council of Canadian Academies was requested by the Social Sciences and Humanities Research Council (SSHRC) to conduct an assessment of university-based research in Management, Business and Finance. SSHRC asked the Council, “What are the overall, identifiable, strengths and weaknesses of the university-based research community in the areas of management, business and finance, broadly defined, according to appropriate indicators?” An expert panel appointed by the Council will assess Canada’s research performance against both domestic and international metrics. Additionally, it will indicate what opportunities are available for supporting direct research activities and research training, and it will determine the extent and quality of collaboration among researchers across disciplines and with external stakeholders, including the business community.

The findings will assist SSHRC in developing a long-term strategy for investing new funding announced by the Government of Canada in March 2007, in the amount of $11 million per year over five years, to support additional research in management, business and finance.

Moreover, it is expected that the
The expert panel reviewed evidence in relation to the modes of transmission of the influenza virus and the role of protective measures in preventing the spread of the virus. Notwithstanding the lack of definitive evidence, the expert panel sought to agree, where possible, on what was most likely.

Modes of Transmission

In general, the panel concluded that when a person infected with the influenza virus sneezes, coughs, talks, or even breathes, infectious particles of all sizes are emitted in quantities sufficient to cause infection. The expert panel also determined that the influenza virus is transmitted primarily at short range — i.e., less than two metres — principally via inhalation of particles containing the virus. Contact transmission — i.e., transfer of the virus by direct contact (e.g., by kissing) or by indirect contact (e.g., by touching contaminated surfaces) — was also considered by the panel. The report concluded that although the relative importance of the contact route for influenza transmission has not been demonstrated, or indeed studied in humans, contact transmission likely occurs.

Protective Measures

The expert panel recognized that, while the only interventions that have been tried and shown to unequivocally reduce the spread and mitigate the impact of influenza in populations are vaccines and antivirals, a multilayered approach to infection control is vital to effectively reduce the spread of influenza. This multilayered approach is often referred to as the “hierarchy of control” and comprises three categories — engineering controls, administrative controls and personal protective equipment. Engineering controls include physical controls such as ventilation requirements, relative humidity and temperature controls. Administrative controls are procedural and behavioral measures such as hand hygiene, respiratory etiquette and measures to identify individuals who are likely infected and require separation from others. Personal protective equipment (PPE) — e.g., goggles, gloves, gowns, surgical masks and respirators — is considered the “last line of defense” against exposure and supplements engineering and administrative controls. Personal protective respiratory equipment (PPRE) is a sub-category of PPE designed to block inhalation of hazardous airborne contaminants. It was in this sub-category of PPE where the expert panel focused its review. Since the charge from PHAC specifically referenced N95 respirators — i.e., NIOSH-certified, disposable, particulate filtering, half facepiece respirators — these were the only types of PPRE discussed in the report. Surgical masks, although not considered to be PPRE by occupational health and safety practitioners, were also discussed.

The expert panel concluded that only properly fitted and tested N95 respirators can protect against the inhalation of the smallest infectious particles which are invisible to the naked eye. Surgical masks, particularly due to their loose fit, provide no significant protection against the inhalation of these tiny particles. In terms of the larger infectious particles, the report states that N95 respirators will also protect against their inhalation but that the efficacy of surgical masks to prevent against the inhalation of these larger particles is unknown. The report also states that both N95 respirators and surgical masks may play a role in

Assessing Influenza - Transmission and Protective Measures

...Continued from page 1

The assessment panel will help the development of appropriate methodologies for assessing Canada’s strengths in various fields of academic research.

The assessment panel will be chaired by Dr. David Zussman who currently holds the Jarislowsky Chair in Public Sector Management in the Faculty of Social Sciences and the Telfer School of Management at the University of Ottawa. The full expert panel will be identified shortly and will begin its work in early spring. The report of the expert panel is expected to be completed and made public in fall 2008.
reducing the spread of influenza in two ways: (1) by providing a physical barrier between contaminated hands and the mouth and nose and (2) by reducing the amount of infectious material that is expelled by the wearer into the environment.

The Expert Panel

The Expert Panel on Influenza and Personal Protective Respiratory Equipment was comprised of thirteen distinguished Canadian and international experts and included representatives from the fields of infection control, occupational health and safety, medical practice/research and law. Chaired by Dr. Donald Low, Microbiologist-in-Chief at Mount Sinai Hospital in Toronto, the expert panel was assembled to examine the relevant evidence in order to answer the charge posed by PHAC. The consensus conclusions of the report represent a unique and significant achievement on the part of such an interdisciplinary panel.

The Council would like to thank the expert panel for its hard work and dedication throughout the assessment process. Special thanks are also due to the report reviewers, the report review monitor, and a wide variety of contributors who made the report possible.

For more information, or to obtain an electronic copy of the report, please visit the Council’s website www.scienceadvice.ca. Please contact the Communications Manager, Samantha Rae, for hard copies of the report.

PRIVATE SECTOR INNOVATION

In its May 2007 framework to guide Canada’s science and technology (S&T) policy for the future — Mobilizing Science and Technology to Canada’s Advantage — the federal government asked the Council of Canadian Academies to “work with the private sector and academic experts to deepen our understanding of the S&T investment constraints and opportunities facing Canadian firms. This will help the government better support an increased commitment to S&T by Canada’s private sector.” Specifically, the Council was tasked with answering the following questions:

- Why is business demand for innovation inputs (for example, research and development, machinery and equipment, and skilled workers) weaker in Canada than in many other OECD countries?
- What are the contributing factors, and what is the relative importance of these contributing factors?

To answer these questions, the Council has assembled an expert panel, chaired by Mr. Robert Brown, President and Chief Executive Officer of Montreal-based CAE Inc. The full panel has already met twice in person — once in Toronto and once in Montreal. The next full panel meeting is scheduled for May. Meanwhile, subgroups of the panel are meeting to develop positions on the various dimensions of the assessment. Members of the expert panel are listed below.

THE EXPERT PANEL ON PRIVATE SECTOR INNOVATION

Robert Brown - Chair
President and Chief Executive Officer, CAE Inc. (Montreal, QC)

Savvas Chamberlain
Chairman and Founder, DALSA Corporation (Waterloo, ON)

Marcel Côté
Founding Partner, SECOR Inc. (Montreal, QC)

Natalie Dakers
Chief Executive Officer, Centre for Drug Research and Development, UBC (Vancouver, BC)

Meric Gertler (FRSC)
Vice-Dean, Graduate Education and Research, Faculty of Arts and Science; Professor, Department of Geography and Program in Planning; Co-Director, Program on Globalization and Regional Innovation Systems, University of Toronto (Toronto, ON)

Bronwyn Hall
Professor of Economics of Technology and Innovation
University of Maastricht (Maastricht, The Netherlands); Professor of the Graduate School University of California at Berkeley (Berkeley, CA)

André Marcheterre
Company Director; Former President and Chief Executive Officer, Merck-Frosst Canada (Lorraine, QC)

Arthur May
President Emeritus, Memorial University
Chairman of the Advisory Board, Atlantic Innovation Fund (St. John’s, NL)

Brian McFadden
President and Chief Operating Officer, Prestige Telecom Inc. (Baie d’Urfé, QC)
In February 2007 the Council was asked by the Minister of Health — “What is the state of knowledge with respect to existing nanomaterial properties and their health and environmental risks, which could underpin regulatory perspectives on needs for research, risk assessment and surveillance?”

The Expert Panel on Nanotechnology — chaired by Pekka Sinervo, Dean, Faculty of Arts and Science, University of Toronto — is comprised of fifteen experts representing a broad range of perspectives from academia, industry and non-governmental organizations. The panel is expected to assess the novel risks to health and the environment potentially arising from nanomaterials with the intent of informing the future development of appropriate, evidence-based regulations.

The panel recently arranged for a Public Call for Evidence, via the Council’s website, to solicit views pertaining to the assessment question. Responses, which will be fully considered by the expert panel, were received until January 11, 2008.

The Expert Panel on Nanotechnology met in Toronto on January 21 and 22 for its third in-person meeting, and again on March 25 and 26 for its fourth in-person meeting.

EVALUATING THE RISKS OF NANOTECHNOLOGY

Walter Mlynaryk
Executive Vice-President, Kruger Inc. (Montreal, QC)

David Pecaut
Senior Partner and Managing Director, Boston Consulting Group (Toronto, ON)

Charles Ruigrok
Former CEO, Syncrude Canada Ltd. (Calgary, AB)

Jim Roche
Company Director; Former President and Chief Executive Officer, CMC Microsystems (Ottawa, ON)

Jim Stanford
Economist, Canadian Auto Workers (Toronto, ON)

Andrew Sharpe
Executive Director, Centre for the Study of Living Standards (Ottawa, ON)

Guthrie Stewart
Former Partner, Edgestone Capital Partners (Montreal, QC)

Alexandre Taillefer
Co-Founder, Stingray Digital Group Inc. (Montreal, QC)

John Thompson
Chairman, TD Bank Financial Group (Toronto, ON)

The Expert Panel on Nanotechnology
(left to right)

Günter Oberdörster, Robert Slater, Peter Grütter, Warren Chan, Nigel Walker, Sabin Bailey, Andrew Maynard, Jo Anne Shatkin, Pekka Sinervo (Chair), Meng-Dawn Cheng, Christopher Haarman, Conrad Brunk, David Castle, Richard Gold

Missing: Lorraine Sheremeta
The Council of Canadian Academies has been asked by the Minister of Natural Resources — “What is needed to achieve sustainable management of Canada’s groundwater resources, from a science perspective?”

In order to effectively address this question, the Council — under the guidance of the Scientific Advisory Committee — appointed the Expert Panel on Groundwater. This panel, chaired by James P. Bruce, FRSC, is composed of fifteen experts from Canada and the U.S. who are recognized as authorities in the principal aspects of groundwater science, management and policy. The interdisciplinary make-up of the panel has ensured its ability to address the multifaceted aspects of sustainable management of groundwater in the Canadian context.

The panel recently arranged for a Public Call for Evidence on what is needed to achieve sustainable management of Canada’s groundwater. Responses were received until November 2, 2007. The Expert Panel on Groundwater recently met in Toronto on April 10 and 11 for its third in-person meeting.

The report of the panel is expected to be released in the fall of 2008.
The National Science Advisor, Dr. Arthur Carty, retired from the public service at the end of March. The Office of the National Science Advisor (ONSA) will be phased out and the new Science Technology and Innovation Council will function as a single external committee, providing the government with independent and integrated advice on science and technology.

Throughout his illustrious career, and with different hats, Dr. Carty has been an inspirational and influential figure in Canada’s science community. I would like to acknowledge, in particular, the tremendous contribution that Dr. Carty made to the creation of the Council of Canadian Academies and the continued support that both he and his staff have provided our organization since its inception. Without Arthur Carty’s effort, it is unlikely that the Council would have come into being through the government’s founding grant in 2005. His seminal role predated that. In 1999, as NRC President, Dr. Carty headed a Canadian delegation of twenty at the World Conference on Science in Budapest. There, Dr. Carty, along with other attendees, was struck by the fact that most of the developed countries present had publicly funded “national” academies that spoke on behalf of the sciences, while Canada did not.

That experience was one of the factors that, in 2004, motivated Dr. Carty, as National Science Advisor, to encourage then Prime Minister Martin to approve funding that would give life to the Canadian Academies of Science (later renamed the Council of Canadian Academies). At the time, the Council was only a “shell” company that had been incorporated in 2002. His efforts bore fruit in October 2004 when the Prime Minister announced that the government would fund a Canadian Academies of Science (CAS). Former Prime Minister Martin has credited Dr. Carty’s persistent and persuasive advocacy as the principal reason he decided that the CAS should be supported. In the February 2005 budget, the government provided a $30 million founding grant to support core operations of the CAS for ten years.

On a personal note, I have known Dr. Carty for many years, and have always had deep admiration for his contributions to science and technology in Canada and abroad. Whether in his role as National Science Advisor, President of the National Research Council, or as a Director of the Fields Institute for Research in Mathematical Sciences (in which capacity I first met Dr. Carty), Arthur Carty has demonstrated selfless dedication to the cause of science in this country.

We wish Arthur Carty all the best, and look forward to benefiting from his wise advice in the future.

Peter J. Nicholson
President
Council of Canadian Academies
Dr. Howard Alper stepped down as Chair of the Board of Governors of the Council in November 2007 in light of his new position as Chair of the Government’s recently created Science, Technology and Innovation Council (STIC). At its meeting on December 1, the Board selected Dr. Elizabeth Parr-Johnston as the new Chair.

Dr. Alper is one of Canada’s most eminent chemists and in 2000 was the first recipient of the Gerhard Herzberg Canada Gold Medal, the most prestigious award in Canada for science and engineering. Dr. Alper was President of the Royal Society of Canada from 2001 to 2003 and in December of 2006 he was appointed Co-chair of the InterAcademy Panel (IAP), which consists of academies of science from ninety countries. He played a key role throughout the period leading to the creation of the Council of Canadian Academies and served as Board Chair throughout its formative years. The Council would like to thank Dr. Alper for his exceptional contributions and extend our best wishes as he assumes his new role.

The Council’s new Board Chair, Dr. Elizabeth Parr-Johnston,
is the former President of the University of New Brunswick (1996-2002) and before that served as the President of Mount Saint Vincent University (1991-1996).

Dr. Parr-Johnston is an economist and has very extensive and senior experience in corporate governance, currently as a director of The Bank of Nova Scotia, Emera Limited, and also of the Social Research and Demonstration Corporation and the Canadian Millennium Scholarship Foundation.

Dr. Parr-Johnston is the past chair of the Association of Atlantic Universities and a past member of the Social Sciences and Humanities Research Council. She was also a member of the government’s Expert Panel on Equalization and Territorial Formula Financing.

Dr. Parr-Johnston became a member of the Council’s Board in 2005 having been elected, as a Governors’ appointee, by the Governors who had been chosen by the three member academies. The Council and its Board are fortunate to have as Chair someone with Dr. Parr-Johnston’s broad experience in government, business, academia and corporate affairs.

COMINGS AND GOINGS AT THE COUNCIL

The Council would like to welcome Ms. Tracey McKinlay to its staff. Tracey joined the Council on January 31, 2008 as the Executive Assistant to the President. Tracey majored in psychology at Carleton University with a minor in Law (1996). She is presently working towards her M.B.A at the Telfer School of Business at the University of Ottawa. As the former Executive Assistant to the National Science Advisor, Tracey brings a thorough familiarity with the Canadian science community as well as a keen interest in scientific research. Before joining the Office of the National Science Advisor, Tracey spent two years with the Privy Council Office where she honed her skills as an analyst.

The Council would also like to thank Dr. Marc Saner, Executive VP and Director of Assessments, who left the Council in October, 2007 to pursue other interests. After Dr. Peter Nicholson, Dr. Saner was the first employee of the organization and the Council would like to thank him for his many contributions to the Council’s development thus far. Dr. Saner can be reached at his permanent email address marc@saner.ca.