IRSST - 1999 Annual Report

20 years

"Research is patience in the service of progress."

Robert Sauvé, founding chairman of the IRSST

Robert Sauvé
1931-1998

Instigator and principal architect of Québec's current occupational health and safety system, Robert Sauvé was one of the great reformers who reshaped Québec in the sixties and seventies. After being named president of the *Commission des accidents du travail* (CAT, Occupational accidents commission) in 1977, he and his colleagues took on the task of reforming a compensation system which had become inadequate. Mr. Sauvé felt that the reform would only be successful if it was based on the systematic and rigorous identification and elimination of occupational risk factors. To achieve this, research was essential. Thus, through a remarkable consensus of employers, unions and the scientific community, the IRSST was created in November 1980.

To honour his memory, Robert Sauvé's name will be incorporated into that of the IRSST in November 2000.

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For 20 Years
of Research
and Results,
Thank You!

The IRSST would like to thank its employees

Jean Arteau - Marc Baril - Raymond Baril - Guylaine Beauchamp - Yves Beaudet - Sylvie Beaugrand - Sylvain Beaulieu - Pierre Bélanger - Raymond Bélanger - Carole Bellazzi - Marie Bellemare - René Benoit - Gilles Bensimon - Marie-France Bisson - Jacques Blain - Brigitte Blanchette - Paul-Émile Boileau - Lyne Boivin - Sylvie Bond - Martine Bossé - Bruno-Serge Boucher - Réal Bourbonnière - Madeleine Bourdouxhe - Louis Bousquet - Jérome Boutin - Lise Brière - Bernard Caron - Gabrielle Chamberland - Danièle Champoux - Denise Chicoine - Esther Cloutier - Françoise Cloutier - Lynda Cloutier - Yves Cloutier - Cécile Collinge - Diane Cormier - Mario Cormier - Lise Cyr - Renaud Daigle - Alain Delisle - Ginette Denicourt - Dominique Desjardins - France Desjardins - Pierre Desjardins - Chantal Dion - Élyse Dion - Jean-Claude Dionne - Daniel Drolet - Pierre Drouin - Clémence Duchesne - Bernard Dufour - Claudette M. Dufresne - Patrice Duguay - Joann Dunn - Mireille Duranleau - Zélie Fortin - Ginette Gagnon - Raynald Gauthier - Luc Germain - Michèle Gervais - Denis Giguère - Line Girard - Nicole Goyer - Denise Granger - Laurent Gratton - Rodrigue Gravel - Jean-Charles Guindon - François Hébert - Daniel Imbeau - Marie Laberge - Mireille Lacharité - France C. Lafontaine - Louise Lafontaine - Alain Lajoie - Karine Lalancette - Lambert Laliberté - Sylvie Lalonde - Ghislaine Lamarche - Jean Lambert - André Lan - Diane Landry - Micheline Laperle - Claire Lapointe - Diane Laprés - Jaime Lara - Pierre Larivière - Christian Larue - Gaston Laviolette - Jacques Lavoie - Louis Lazure - Hélène Lebel - Lucie Lebel - Ginette Leclaire - Christine Lecours - Micheline Lefebvre - François Lemay - Carole Leroux - Jacques Lesage - Claude Létourneau - Micheline Levy - Nancy Lionessa - Lucie Locas - Denise Mallette - Geneviève Marchand - Micheline Marier - Yvon Marineau - Jean-Guy Martel - Jean-Claude Martin - Serge Massé - Paul Massicotte - Julie McCabe - Luc Ménard - Christiane Mongeau - Stephan Obarewicz - Claude Ostiguy - Annie Ouellet - Joseph-Jean Paques - Gilles Paradis - Suzanne Paradis - Catheline Pelletier - Jean Pelletier - Carole Pépin - Guy Perrault - Thierry Petitjean-Roget - Daniel Plamondon - Josée Poulin - Johane Prévost - Diane Proulx - Éric Provost - Lucie René - Christiane Richard - Jean-Guy Richard - Lucile Richard - Brigitte Roberge - Jacques Roy - Jean Yves Savoie - Linda Savoie - Henri Scory - Christian Sirard - Marie St-Vincent - Chantal Tellier - Marjolaine Thibeault - Georges Toulouse - Sylvie Tremblay - Ginette Truchon - Manon Truchon - Denis Turcot - Denyse Veillette - Mireille Vennes - Patrick Vincent

The IRSST would also like to thank the many researchers in its external network who enthusiastically met the challenge of setting up an occupational health and safety network whose credibility is now firmly established.

Mission

The Institut de recherche en santé et en sécurité du travail (IRSST) (Occupational Health and Safety Research Institute) was created in 1980 to contribute, through research, to the prevention and rehabilitation of workers affected by industrial accidents and occupational diseases.

Its mandate is to ensure the development and dissemination of the scientific knowledge needed to achieve these goals.

Funded by the Commission de la santé et de la sécurité du travail du Québec (CSST), the IRSST is a non-profit agency whose Board of Directors is comprised of an equal number of employers and workers.

Vision 2002

Between now and 2002, through its leadership in the occupational health and safety field, the IRSST plans to:

- Become a reference centre that is vital for the operations and strategy of the CSST and its network;
- Be used by its social partners, in a context of equal representation;
- Become known both nationally and internationally;
- Have a firmly established network of research and development collaborators.

Message from the Chairman

Mr. Robert Sauvé, Founding Chairman of the Institute, was absolutely right when, in November 1980, he said: "Research is patience in the service of progress." Research cycles often seem long, particularly for clients impatient for results. However, before you can bake your bread, you have to prepare the field, sow the seeds, and wait for the wheat to ripen. But the harvest is worth it since, in our case, it brings concrete solutions to increasingly complex workplace problems. This ability to understand needs and translate them into research projects is the Institute's greatest strength.

For twenty years, the needs and concerns of workplace stakeholders have guided — and even shaped — the Institute's choice of research projects. The IRSST has always given priority to projects likely to yield useful results that can be applied to Québec enterprises and workers and that reflect the needs of its partners. Key among these partners is the CSST, which relies on the Institute as an essential component of its operations and strategic planning process. The IRSST owes its widely recognized scientific leadership to all the researchers whose work has helped the Institute develop the insight, substance and expertise necessary to solve complex problems.

In a world where the stakes are constantly changing, Québec has demonstrated a clear desire to become an active player and make a name for itself. I would like to take this opportunity to thank the IRSST's current Chief Executive Officer, Jean Yves Savoie, who has been named head of a research committee by the presidents of Canada's workers' compensation boards in recognition of his considerable experience. And, of course, I would be remiss, in discussing the Institute's first twenty years, without mentioning the Institute's two previous Chief Executive Officers, Louis Berlinguet and Yves Martin, whose determination helped push the Institute to greater heights.

The new millennium brings new challenges to the workplace. Now that the Canadian government is mapping out a network of health research institutes and has announced its intention to increase research funding, it is essential that we all do our utmost to highlight the importance of occupational health and safety. It is a valuable discipline, given its direct impact on corporate competitiveness, and deserves to receive its fair share of new resources, both in Québec and in Canada.

Research is an invaluable ally to meet the needs of the future. It is used to generate new knowledge and train new researchers, professors and specialists for work in the private sector or in occupational health and safety agencies. I can assure you that the IRSST is more than ready to meet the chalenge.

Trefflé Lacombe

Message from the Chief Executive Officer

20 Years of Research and of Results

Since its creation in1980, the IRSST has made many original and valuable contributions in the field of occupational health and safety research. In fact, its short history is punctuated with numerous projects aimed at finding solutions to specific and often complex problems, and allowing workers and employers to benefit from safer processes, better-controlled products and a healthier environment.

We have come a long way in the past twenty years, often having to blaze our trail in the process. Given the dearth of researchers in its field in the early days, the Institute had to avoid dispersal and improvisation, which would only have diluted its efforts and sapped its resources. Today, we can claim to have met this challenge to the satisfaction of our partners and workplace stakeholders. By involving employers and unions from the earliest stages of our research, we have realized projects whose results are particularly easy to apply, because they reflect our partners' expectations. Our model of knowledge transfer and results application has made us the envy of many research institutes. Our scholarship and research funding programs have supported the training of more than 200 researchers and specialists in a wide range of disciplines related to occupational health and safety. The projects described in this annual report bear testimony to the barriers crossed and progress made.

The IRSST's close collaboration with stakeholders has been crucial along this journey. I would like to draw particular attention to the unwavering support of employer and union associations, regional health and social services boards, CLSCs, joint sectoral associations and, of course, the CSST, with whom we have forged a true partnership aimed at achieving of its strategic and operational goals. I would be remiss if I did not also mention the valuable support of our network of researchers in Québec universities and research centres, without which we would never have been able to meet our goals. Finally, I would like to thank all our personnel, whose devotion, patience and hard work allowed us to implement our innovative approach and match our research projects with actual needs.

After twenty years of research and results, the quality and depth of the IRSST's work, and the application of its results by Québec enterprises and workers have earned it recognition both in Canada and abroad. This scientific leadership has led to a great demand for its participation in national projects. A case in point was the creation, in 1999, in collaboration with other Canadian workers' compensation boards and the Association of Workers' Compensation Boards of Canada (AWCBC), of a research committee, which I had the honour of chairing.

At the dawn of the 21st century, occupational health and safety issues continue to have a major social and economic impact: changes in the labour market and the workforce, as well as the introduction of new technologies, products, processes and forms of work organization have only added to the complexity of a constantly changing environment.

The Institute cannot meet these new challenges alone. In addition to relying on its own resources and the solid network of researchers it has developed over the years, it must embrace new partners from outside Québec. The IRSST has invested considerable effort to ensure that occupational health and safety holds a prominent position in the future network of Canadian health research institutes announced by the federal government. This position would clearly reflect the human, social and economic costs of work-related diseases and accidents.

By pooling our resources, sharing our expertise, and working with new partners, we will be better equipped to face the major challenges on the horizon. When all is said and done, the greater number and variety of applicable research results will benefit workers, employers and the economy as a whole. This is how we will collectively move ahead and succeed in furthering knowledge. The path has been cleared — we have only to follow it.

Jean Yves Savoie

Highlights

Research

Production

129 active projects
37 started
31 ended
61 ongoing

61 projects under development

85% of projects involved our OHS partners or workplace stakeholders

13 operational or regulatory CSST committees (with activities related to the IRSST's mandate) included at least one Institute representative

8 national and international committees invited the IRSST to participate in an advisory capacity

Researcher Training

17 scholarships awarded

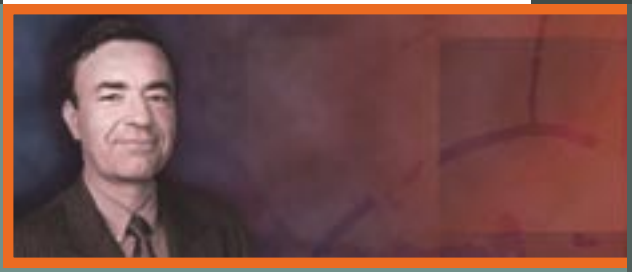
The graduate scholarship program was revamped, to make it more competitive with those offered by other agencies.

Application of Results

3 new framework agreements with Québec universities to promote the application of IRSST-funded research
— École de technologie supérieure
— Concordia University — Université Laval
These agreements define the terms and conditions governing intellectual property and the sharing of obligations and privileges related to the transfer and application of research results.

Renewal of a marketing agreement with Omega Specialty Inc. for the marketing of Iso-Chek™ isocyanate-sampling cassettes.

Ten training sessions offered in cooperation with various associations, including the *Association québécoise pour l'hygiène, la santé et la sécurité du travail* (AQHSST, Québec industrial hygiene and occupational health and safety association), the Association of Canadian Ergonomists (ACE) and the American Industrial Hygiene Association (AIHA).



Jean Nicolas
Vice-Dean, Research, Université de Sherbrooke

"A pioneer in Canada, and in fact, in North America, the IRSST is a visionary research agency, whose activities in the field of prevention have allowed it to become an occupational health and safety reference centre. A decade before networking became a buzzword, the Institute was already promoting the consolidation of research efforts, through its thematic associate research teams. In twenty years, the IRSST has acquired a solid reputation through the in-depth and applied research it has conducted or funded, and whose scientific rigour knows no borders."

Laboratory Services

63,065 environmental, toxicological and microbiological analyses

- **54%** organic compounds
- **16%** toxicological analyses
- **12%** metals and ions
- **11%** dusts
- **4%** microbiological analyses
- **3%** others

80% of these analyses were performed for our partners in the prevention-inspection network, i.e. the CSST, regional health and social services boards, CLSCs, and joint sector-based associations. These laboratory services were provided under the terms of an agreement with a specific annual budget

18% of these analyses were performed under the terms of special contracts with employer and union associations, various agencies and companies

The remaining analyses were performed for research purposes, the development of new analytical methods, or as part of quality control programs.

4,241 hours were devoted to calibration, maintenance and repair of direct-reading devices and sampling equipment used by the prevention-inspection network

The IRSST and the CSST use the results of these analyses to establish prevention priorities.

Diffusion

45 research reports and guides,
4 laboratory methods

20,455 publications distributed in response to requests or at special events

21 easy-to-read articles published in *Prévention au travail* (prevention at work), the joint IRSST-CSST magazine

170 scientific articles and presentations

450 documents made available for downloading from the Institute's website

4,000 monthly hits on the Institute's website

224 people attended the first International Conference on the Safety of Industrial Automated Systems, organized by the IRSST in October 1999, and took pre-conference courses

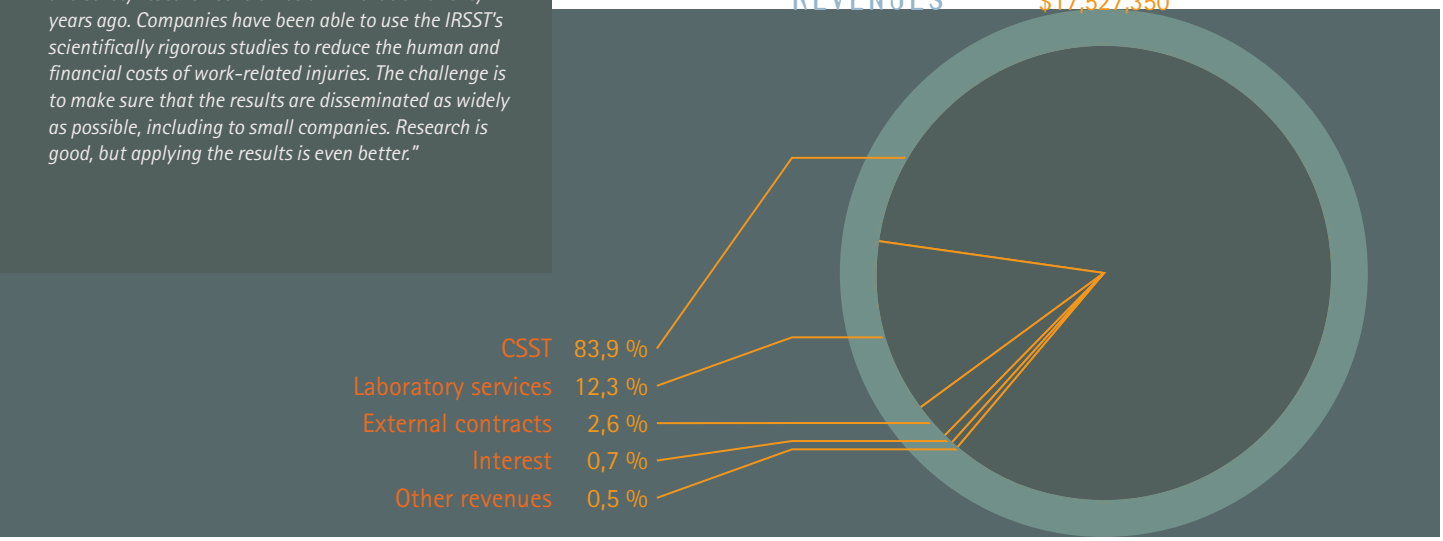
Renée Liboiron
Director, Occupational Health and Safety
Technical Services, *Conseil du patronat du Québec*
(CPQ, Québec Employers' Council)
Employer Representative, IRSST Scientific
Advisory Board

"Québec's decision to create an occupational health and safety research centre was an innovation twenty years ago. Companies have been able to use the IRSST's scientifically rigorous studies to reduce the human and financial costs of work-related injuries. The challenge is to make sure that the results are disseminated as widely as possible, including to small companies. Research is good, but applying the results is even better."

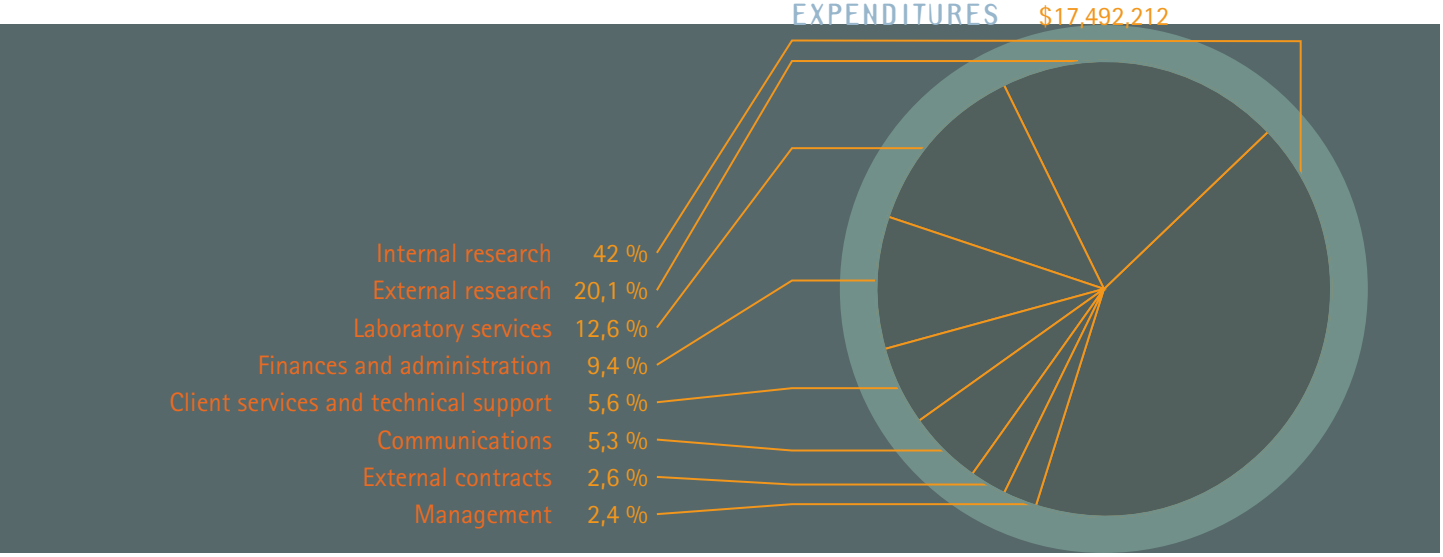
Funding

In 1999, the Institute's total revenues were $17,527,350, including a grant of $14,709,800 from the CSST. Expenditures over the same period were $17,492,212.

REVENUES $17,527,350



EXPENDITURES $17,492,212



Organization

The Institute's organizational structure is designed to ensure that all its activities form part of a consistent and well-defined continuum, from the analysis of client or partner needs to the delivery of results, in the form of research, expertise, immediate-response or service.

The IRSST team comprises 138 people, including a scientific staff of 104 researchers, professionals, and technicians from various disciplines, such as ergonomics, industrial hygiene, chemistry, physics, engineering, sociology, anthropology and demographics. In 1999, 135 researchers from its external network, i.e. from universities, research centres or private companies, worked on subsidized projects.

Serge Trudel
Director, Occupational Health and Safety Department, Québec Federation of Labour
Worker Representative, IRSST Scientific Advisory Board

"Where the IRSST really differs from other research institutes is in the important role played by its Scientific Advisory Board, which establishes research priorities. The combination of positions expressed by employers, unions and scientists has also contributed to the IRSST's credibility. By winning the confidence of employers and workers, it ensures that both parties are more open to using the results of its research, thus facilitating knowledge transfer."

Organizational Chart as of December 31, 1999

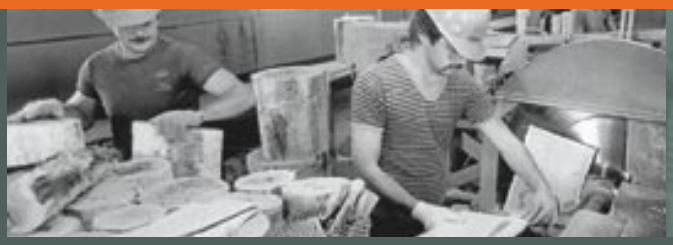
René Benoît
IRSST

Joseph-Jean Paques
IRSST

Serge Massé
IRSST

Chantal Tellier
IRSST

Jacques Tardif
Université de Sherbrooke



From shingle saws to Automated Industrial Systems

Every cloud has a silver lining

Let's admit it. Serious accidents often trigger new ways of looking at problems, a point illustrated by shingle saws, which are a major cause of finger amputations. It took a hand injury to an Abitibi worker in the eighties for attitudes to change.

Raymond Bélanger
IRSST

Réal Bourbonnière
IRSST

Gilles Bouchard
FACCE +

Carl-Éric Aubin
École Polytechnique

François Gauthier
Université du Québec
à Trois-Rivières

Jean-Guy Martel
IRSST

A simple way to build a custom solution

Solving safety problems related to the use of shingle saws seems relatively simple: the saws are not particularly complicated to operate, and the entire industry uses the same equipment, which means that solutions can be easily applied on a wide scale. With the help of employers, workers and CSST inspectors, IRSST researchers rapidly proposed modifications to the shingle push-board which isolated the saw-blade from the worker's hand, rendering the saws safer. The last step was to find a way to implement these changes in a manner consistent with the nature of the work and companies' ability to pay for the modifications. A prototype was lab-tested, refined in the plant, and mass-produced. The necessary information was then provided to all employees... it was that easy! And now, people no longer say that you can tell how experienced shingle-saw operators are by counting the number of fingers they're missing...

A dead-end approach

Researchers were happy to have solved the shingle saw problem... but there are thousands of other dangerous machines out there. The IRSST quickly realized that this type of spot intervention was not the answer. What was really needed was a generally applicable strategy, especially since it was impossible to keep track of every single machine. Then an idea came up....

Swimming upstream

The Institute continues to make, and in fact will never stop making, interventions like that involving shingle saws. Similar Institute projects have looked at safety issues related to:

- edgers, chipper-canters and debarkers
- range-limiting devices on cranes and concrete pumps
- remotely controlled mining trucks
- safety devices on metal presses
- the use of dissipation effects to detect humans
- safety guards on industrial mixers
- safety devices for fork-lifts, garbage trucks, farm tractors and all-terrain vehicles
- loading-dock anchoring devices

But in a major change of tack, researchers are now focusing on ways to integrate occupational health and safety considerations into the design process and the training of designers. The Institute is therefore encouraging engineers, consultants and suppliers to make occupational health and safety a part of machine design. This will help eliminate hazards at source and, above all, encourage workplace stakeholders to manage prevention. Companies and industries that adopt this approach find custom solutions that take into account

Richard Lapointe
Toxicology and Research Consultant,
Alcan Electrolysis and Chemicals
Employer Representative, IRSST Scientific Advisory Board

"In recent years, the IRSST has adopted a total-quality approach that has enhanced its credibility. By emphasizing synergy and exchanges between partners, scientific rigour and the application of results, it strives for excellence both in terms of its procedures and its results. This shift is extremely encouraging."

all aspects of their production processes. This information campaign will stimulate the development of ingenious protective devices to reduce work-related injuries.

Major research in the pulp and paper industry

Influencing design is good, but training designers is even better. The IRSST has been exploring this avenue with the pulp and paper industry, after conducting an interdisciplinary study on the effect of automated production equipment on occupational health and safety. The results indicate that rigorous and effective equipment design optimizes productivity and improves safety. Together with the *Association de santé et de sécurité des pâtes et papiers du Québec* (ASSPPQ, Québec pulp and paper health and safety association), the *Fédération des travailleurs et travailleuses du papier et de la forêt* (federation of paper and forestry workers, affiliated with the CNTU), and the Communications, Energy and Paperworkers Union of Canada (affiliated with the QFL), the Institute has developed customized training programs which present engineers with complex problems drawn from their professional experience. Participants are thus able to design solutions that are well-adapted to the realities of their workplace, thereby improving their skills. The challenge is to ensure that companies remain at the cutting edge of occupational health and safety by eliminating hazards at source, i.e. during project development.

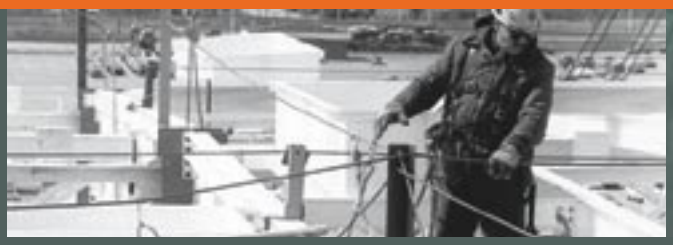
CSST inspectors have been trained to identify problems and help companies correct them, and the first group of engineers will be trained in early 2000. And there's more to come: the sawmill sector has already expressed interest in launching a similar initiative.

From an Abitibi plant to an international conference

The research results were so promising that the IRSST proposed organizing the First International Conference on the Safety of Industrial Automated Systems. Held in Montreal in 1999, the conference was attended by scientists, experts and company representatives from a dozen North American, European and Asian countries. The conference afforded attendees the opportunity to review current knowledge related to the safe design of control systems for industrial processes, machinery, production lines and protective devices. Sponsored by several internationally recognized research associations and institutes, the conference was a success, confirming once again the IRSST's status as an international reference centre. We have come a long way in only twenty years.

André Lan
IRSST

Jean Arteau
IRSST



Down With Falls

The IRSST's interest in falls from heights dates back to the early eighties. At that time, the CSST had hired an industrial designer to design a fall-arrest harness. Before marketing this protective equipment however, it was necessary to establish whether it met safety standards. The Institute was therefore mandated to evaluate the harness's effectiveness. After developing a test method, researchers concluded that the harness was inadequate. Marketing efforts were abandoned, but the Institute continued to pay close attention to falls from heights, especially since the number and severity of fall-related injuries were constantly increasing.

Although the Institute had only begun to reflect on the problem, standardization agencies drew on the method it had developed as part of the test protocol to improve international standards.

If there's no anchor...

Preliminary investigation revealed that there were other problems besides the effectiveness of the harnesses themselves. For example, harnesses could very well be robust but remain inappropriate for certain work situations. Realizing that an adapted product had to be designed in keeping with the entire work context, including the task to be accomplished and movements by workers, researchers began to take a wider perspective. A safe harness is vital, but it still has to be safely attached to an anchor point.

The special case of high-steel workers

At the time, many people believed in good faith that it was completely impossible to adequately protect high-steel workers. Only a few dissidents insisted that there must be some way to protect them.

The Boisbriand challenge

In 1988, General Motors (GM) was faced with the daunting task of protecting the 200 high-steel workers building its paint shop in Boisbriand. The odds seemed ridiculous: assembling, in six months, eleven thousand tonnes of epoxy-coated steel beams that had been transformed by snow into aerial skating rinks. To meet this challenge, IRSST researchers developed design criteria for a system of lateral safety cables, based on a solution that had already been applied on a Chicago construction site, and provided them to a manufacturer and the framing contractor. When used with a system of vertical cables, the lateral cables provide high-steel workers with a mobile anchor point that allows them to move around freely and perform all their tasks.

The success of this intervention was primarily due to the fact that researchers took into account four essential elements: effectiveness, reliability, user acceptance, and work context. Before entering the GM construction site, workers received specialized training on how to use the new equipment without it affecting their work. Although five falls from heights did occur, the safety cables prevented any serious or fatal accidents. After that amazing demonstration, claims that it was impossible to protect high-steel workers against falls from heights were silenced. The government of Québec amended its Construction Safety Code to take these new developments into account, and Ontario now obliges high-steel workers to protect themselves against falls from heights.

By broadening the scope of inquiry to issues other than the resistance of the harness itself, researchers met the challenge posed by the unique nature of high-steel work, and made the work safer. And what is effective in one setting will be effective in others...

Applications in other settings

Having won its spurs in the construction sector, the IRSST began to apply its expertise in related areas. For example, researchers designed a safety-cable system for workers erecting billboards for Mediacom, and refined and validated it in the field. The device proved so effective that Mediacom did not hesitate to modify the design of its billboards across the country to facilitate the use of the safety-cable system, thus combining aesthetics and safety. Other groups — including linemen and tree-pruners — anxious to benefit from this research, have also requested the IRSST's help.

Alain Albert
Vice-President, Planning and Consulting,
Commission de la santé et de la sécurité du travail du Québec (CSST, (CSST, Québec occupational health and safety commission)
Observer, IRSST Scientific Advisory Board

"The CSST and the IRSST were both created in 1980. Over the past twenty years, they have followed similar courses, developing along the way a solid partnership that has allowed them to adapt their health and safety services to the new needs of the workplace. The leverage effect of the IRSST's scientific advances on the CSST's operations is crystal clear. And when all is said and done, I'm convinced that the real winners are workers and employers."

Research on falls from heights are an eloquent example of collaboration between the Institute, the CSST and workplace stakeholders, and illustrates the extent to which the IRSST is seen as a reference centre. Its concrete results have influenced national and international standardization agencies and helped provide workers with better protective equipment. And that's only the beginning...

Nicole Goyer
IRSST

Jacques Lesage
IRSST

Guy Perrault
IRSST

Isocyanates: A Little Molecule That Has Come a Long Way

In 1986, when a CSST inspector faced with a case of occupational asthma in a paint shop turned to the IRSST for help, it did not take the researchers long to see the magnitude of the task at hand. The complexity of the problem was glaring: sampling tools were inadequate or virtually non existant, the etiology of occupational asthma is not always obvious, and the number of workers potentially at risk of developing isocyanate allergies was daunting. To get to the bottom of the matter, the IRSST asked its researchers to develop a global approach grounded in industrial hygiene.

Claude Ostiguy
IRSST

Yves Cloutier
IRSST

Huu Van Tra
Université du Québec
à Montréal

Jean-François Boivin
Professor, McGill University
Scientific/Technical Representative,
IRSST Scientific Advisory Board

"In Québec, we can count on an inter-university network of researchers and partners with solid expertise in occupational health and safety. These groups have flourished in large part because of the IRSST. But what strikes me the most is the emphasis the Institute places on research that so closely reflects the day-to-day concerns of workers and employers. This model is so different from the university culture, which often addresses more abstract issues."

Sampling method

At that time, requests for compensation for occupational disease were increasing in paint shops using isocyanate-based paints. Isocyanates are highly toxic molecules suspected of inducing asthma. The IRSST faced a formidable challenge: the analytical methods then available were unable to detect isocyanates in shops in which asthma cases were occurring. To correct this problem, researchers developed and patented a dual-filter sampling cassette that captures both isocyanate aerosols and vapours, and allows rapid sampling and highly sensitive physical and chemical characterization of isocyanates. The cassette, bearing the IRSST's name, is now distributed in 22 countries under the Iso-chek™ brand name.

Performance criteria for better ventilation in shops

Armed with an effective measurement tool, researchers could now evaluate painters' exposure to isocyanates. In response to requests from stakeholders, the IRSST also evaluated the ventilation systems of automobile paint shops, where several cases of asthma had been diagnosed. In collaboration with the joint sector-based association for the automobile services sector, Institute researchers collected preliminary data in ten companies concerning the dispersion of isocyanates in air. The results indicated that concentrations were lower in cabins equipped with vertical-flow ventilation than in those equipped with horizontal-flow ventilation. The researchers then analyzed every available type of vertical-flow cabin, in order to establish performance criteria which could eventually be used to control other contaminants present as aerosol or vapour. These criteria have already been adopted by one of the leading manufacturers of paint cabins in Québec.

Better diagnosis of occupational asthma

Pulmonologists must decide whether there is a link between a given case of asthma and isocyanate exposure. To support their efforts, researchers focused on the issue of diagnosis. At that time, the exposure chambers used by doctors for bronchial challenge tests – which demonstrate sensitivity to a substance – did not allow rigorous control of the isocyanate concentrations and exposed both patients and staff to a number of hazards. Together with researchers at Sacré-Coeur Hospital, the IRSST developed a chamber which allows workers to be safely exposed to controlled concentrations of dust, vapour and aerosol during bronchial challenge tests. Québec pulmonologists funded by the IRSST were among the first to establish that asthma can be caused by exposure to isocyanate oligomers as well as monomers. These exposure chambers can also be used to test prototypes and calibrate direct-reading instruments.

A new concept in personal protection

In another example of the Institute's attentiveness to the needs of workplace stakeholders, researchers explored a new concept in protective equipment. To date, painters have preferred to use chemical-cartridge masks, even though they are not NIOSH-approved, as they are more practical than supplied-air respirators, which are composed of a cumbersome hood attached to an air-supply hose. This situation may change, however, as the IRSST is developing a new type of mask that affords better protection against inadvertent exposure by virtue of a chemical indicator allowing workers to verify that their cartridge is still working. The prototype has been patented and the IRSST is seeking a manufacturer to market the device and undertake NIOSH-certification procedures.

A highly sensitive sampling technology

In 1996, the CSST, searching for ways to safely reassign asthmatic workers, asked the IRSST to develop a method for the measurement of occupational exposure to low concentrations of isocyanates. This was quite a challenge, as workers suffering from allergic asthma can suffer attacks if isocyanates are present at concentrations well below permissible levels. The IRSST's response: an innovative method one thousand times more sensitive to isocyanates than previously available methods. This technology has caught the attention of manufacturers of isocyanate-containing products, as it allows them to detect residual levels of these chemicals, whose industrial application is constantly growing.

Safe usage

This series of projects reflects both workplace problems observed by the IRSST and the growth of scientific knowledge. Isocyanate use is increasing at an annual rate of approximately 10%, and research must keep pace. The Institute has recently embarked on a new adventure by beginning research on the influence of various surface-contamination parameters on cutaneous absorption of isocyanates.

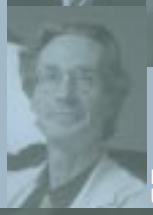
In light of the increasing prevalence of isocyanates, the IRSST is also producing a guide for the safe use of these substances that will provide employers and workers with important information on the dangers of isocyanate exposure and how to use them safely.

Many beneficial effects and breakthroughs

Not only does research on isocyanates result in the creation of tools and solutions that are well suited to the day-to-day reality of Québec companies, it helps reduce the number of claims and the costs associated with occupational diseases. As a bonus, the breakthroughs achieved by Québec researchers have earned the province a solid international reputation in the fields of occupational medicine and industrial hygiene.

Lucien Abenhaim
Université McGill

Patrick Loisel
Hôpital Charles-Lemoyne



Richard Leclaire
Université de Montréal

Back Problems and Worker Rehabilitation: An Innovative Approach to Case Management

The Spitzer report: shock therapy

In the early eighties, the CSST, concerned by the human and financial costs associated with back problems, asked the IRSST to undertake a comprehensive investigation of the problem of low back pain. Among the issues involved was the existence of significant inter-institutional variations in the duration of treatment of similar pathological conditions.

Lise Gosselin
Centre de recherche clinique de l'Hôpital Charles Lemoyne

Raymond Baril
IRSST

Manon Truchon
IRSST

Susan Stock
Régie régionale de la santé et des services sociaux de Montréal-Centre

Clermont Dionne
Université Laval

Marie Josée Durand
Université Laval

The Institute therefore mandated a group of international specialists, headed by Dr. Walter O. Spitzer, to review the literature and evaluate the effectiveness of methods used to diagnose and treat back problems. The Report of the Québec Task Force on Spinal Disorders, published in 1986, was the first tool of its kind in the world to provide practitioners with a validity table of various diagnoses and treatments. Furthermore, it shed light on the magnitude of the costs related to chronic back problems, revealing, among other things, that 7% of cases accounted for 77% of compensation costs. Several of the report's conclusions were quite shocking:

- Clinical examination is usually adequate to identify most patients requiring therapy; radiography is of limited value.
- Bed rest should not exceed two days, and may have negative consequences if prolonged.
- It is in patients' interest to return to suitable employment despite residual pain.

The report paved the way for new research initiatives related to the rehabilitation of workers having suffered back injuries. It targeted chronicity as the main problem and proposed a solution of early and comprehensive case management. Not only did this report attain international renown at the time of its publication, but its recommendations have not been contradicted in the intervening years. In fact, its astonishing results were confirmed ten years later by the United States Department of Health and Human Services, and subsequently by a team of British researchers.

Growing research

In the late eighties, the IRSST gave a new boost to research on back problems by funding a mega-program with three main themes:

- Performance of epidemiological studies to obtain indicators of incapacity and relapse, and document the use of medical services;
- Development of evaluation tools, diagnostic checklists, questionnaires and pain scales, and descriptors of clinical status;
- Evaluation of the medical and social case management of back pain.

The Institute's work has borne fruit and research has blossomed. The complexity of the problem demands an interdisciplinary approach, and the increase in the number and diversity of researchers has created the critical mass necessary to better understand back problems.

Interdisciplinary approach and early management

An innovative and systematic approach to the management of back problems was validated by a study funded by the IRSST in the wake of the Spitzer report. The research was conducted by a team at the *Centre hospitalier universitaire de Sherbrooke* (Sherbrooke University hospital centre), in collaboration with 31 companies and the CSST's regional office. Encouraging results, published in 1996, demonstrated that early intervention that takes into account a wide range of ergonomic, psychological, social and physical factors responsible for low back pain helps cut the period of absence from work by more than half and improve workers' health. This approach, which draws on clinical medicine, occupational medicine, ergonomics and rehabilitation, hinges on a "Therapeutic return to work", supervised by an interdisciplinary team and made in collaboration with employers. The fact that the study was a randomized clinical trial rendered it highly credible and bolstered its international reputation.

Explaining successes and failures

Along with this research, the IRSST funded a preliminary study on the social and occupational reintegration of workers undergoing rehabilitation. This study analyzed the complex and poorly documented phenomena of rehabilitation and occupational reintegration, and described the effects that industrial accidents (regardless of type of injury) and the consequent loss of employment can have on workers'

social, family and personal lives. Although it elucidated the factors responsible for the success and failure of rehabilitation, the study's main contribution was to show the importance of maintaining the employment relationship with the original employer, a strategy that the CSST promotes.

Another IRSST-funded research project is now trying to understand the components and organizational determinants of measures aimed at maintaining the employment relationship.

Similarly, the IRSST, in collaboration with the HEALNet/Relais Canadian Centre for Excellence, is conducting a series of studies that will evaluate how workers cope with musculoskeletal problems and create decision-support tools that help maintain workers' employment relationship.

The Prévicap clinic at the Charles-Lemoyne Hospital (affiliated with the Université de Sherbrooke) is not only applying and constantly refining the interdisciplinary approach to case management, but has also begun a vast research program entitled Partners in the Return to Work. The goal of this project is to identify and understand the factors responsible for the success of interdisciplinary case management, in order to reliably reproduce clinics similar to Prévicap.

Major benefits

Over time, the focus of research has shifted from a purely clinical model to an early-case-management model incorporating social and occupational dimensions. This evolution should help employers make informed choices, and help workers coping with musculoskeletal injuries to maintain their employment relationship.

The Spitzer report was the starting point for this progress and inspired a series of studies whose concrete consequences are starting to be felt. Québec has become one of the foremost research centres on back problems and occupational rehabilitation, and the IRSST's leadership has been instrumental in achieving this record.

Lise Harvey
Director, Occupational Reinstatement
Compensation and Rehabilitation
Vice-Presidency, Programs and Consultancy
Commission de la santé et de la sécurité du travail du Québec (CSST, Québec occupational health and safety commission)

"The CSST had questions about disability management and conducted an in-depth review of its procedures in this area. The IRSST's research proved very useful throughout this process, since much of it supports the key elements in our approach, such as the importance of intervening early to promote the return to work or the impact of factors other than those of a medical nature on the chronicity of injuries. The IRSST is a valuable ally for us in this field."


Jean-Guy Richard
IRSST


Lina Forcier
IRSST

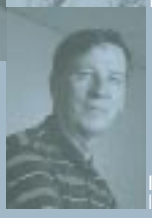

Louis Patry
Université McGill
Direction de la santé publique
Montréal-Centre

By Dint of Repetition

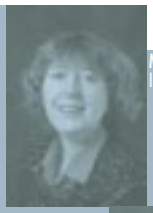
Since time immemorial, the medical profession has been grappling with repetitive work injuries, from "writer's cramp" to "pianist's cramp" to "seamstress' finger" to "keyboard syndrome". However, it is only recently that musculoskeletal problems of the upper limbs attributable to repetitive work have raised some concerns and even fears. Here, as in other fields, the problem has been developing quite dramatically, although its relation to work has not always been obvious or easy to prove.

Serge Simoneau
ASP – Secteur fabrication de produits en métal et de produits électriques

Denise Chicoine
IRSST



Ilkka Kuorinka
IRSST



Marie Bellemare
IRSST

Marie St-Vincent
IRSST

Daniel Imbeau
IRSST

Beyond hunches

Ill-equipped to cope with the slew of "itis" diseases at the workplace – tendinitis, bursitis, epicondylitis, tenosynovitis and others – Québec companies came knocking on the Institute's door. It should be recalled that in the late eighties, confusion reigned in this field. Etiological relationships were not always evident, as symptoms developed gradually and insidiously. Repetitive work initially causes discomfort, fatigue and pain, and does not degenerate rapidly into an incapacity and, ultimately, a handicap. The mounting toll of injuries and compensation costs only served to raise suspicion and fear among companies. The relationship between musculoskeletal problems and work was at the heart of the debate. In contrast to many occupational diseases, such as asbestosis, musculoskeletal problems do not have clear-cut etiological agents. Intuitively, specialists are convinced that musculoskeletal problems affecting the upper limbs are often the result of repetitive movement, even if the causal relationship is indirect and the conditions are, by definition, multifactorial.

A fruitful collaboration

In the autumn of 1990, the CSST's Lanaudière office, worried about an increase in its cases of musculoskeletal problems, turned to the Institute. A poultry-rearing company looking for expert advice opened its doors to researchers, allowing them to observe and learn about the work, and identify possible preventive measures. As knowledge at that time was rudimentary and tools inexistent, the researchers chose to rely on employers' and workers' practical knowledge.

Researchers also benefited from full and direct collaboration with the electrical products manufacturing sector, which also sent out a cry for help. This collaboration resulted in the preparation of a guide for the prevention of musculoskeletal injuries through participatory ergonomics-based workstation analysis. The CSST later used this guide as the basis for its special intervention program for inspectors.

But pressure from the workplace remained intense to find solutions rapidly. Over the years, in collaboration with the CSST, researchers oversaw a broad spectrum of interventions that were always based on participatory ergonomics. This research would have been considerably less meaningful without the IRSST's partnerships with companies, workers, union associations, the CSST, joint sector-based associations and regional health and social services boards.

Québec at the head of the pack

Along with its efforts in the field to develop intervention models and tools, the IRSST mandated an international working group, headed by Dr. Ilkka Kuorinka, to evaluate the entire subject. The resulting reference document on work-related musculoskeletal injuries was translated into English and has been an unqualified success among both scientists and front-line occupational health and safety workers. The Institute also supported the efforts of attending physicians by developing diagnostic guides on three types of injuries: carpal tunnel syndrome, De Quervain's tenosynovitis and shoulder tendinitis. A self-study module was also developed for general practitioners in Québec, in collaboration with their provincial association, the FMOQ.

The IRSST's extensive work in this area has made it an international leader. Case in point, the Institute organized the Second International Scientific Conference on the Prevention of Work-Related Musculoskeletal Injuries, held in 1995, called PREMUS 95. The conference attracted more than 500 researchers and prevention specialists from twenty countries, and provided

Alain Plourde
Director General, *Association paritaire pour la santé et la sécurité du travail – Secteur fabrication de produits en métal et de produits électriques*
(joint sector-based health and safety association, metal and electrical product manufacturing sector)

"Over the past twenty years, I've been witness to the constant growth of the IRSST. It has made significant breakthroughs and developed a network of competent researchers. The scientific rigour of its research is recognized here and abroad. In the field, researchers have learned to work with joint sector-based associations, which allows them to better understand our needs. This partnership has also resulted in the joint development of tools adapted to the needs of workers and employers."

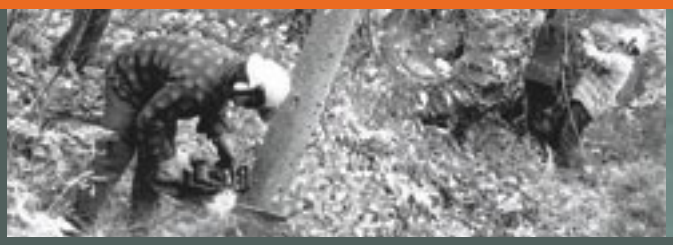
Québec scientists with an opportunity to demonstrate their leadership in the development of new approaches to research and field interventions for the prevention of musculoskeletal injuries.

Continuing the fight against musculoskeletal injuries

Looking back, it is clear that considerable progress has been made in our understanding of musculoskeletal injuries and the successful use of research results by workplace stakeholders. For instance, it is now possible to effectively intervene in the field, given the right set of circumstances. The approach has been documented and the tools exist. CSST inspectors have been trained and are consequently better equipped to intervene and support companies in their prevention management efforts. Research has allowed considerable progress to be made, but there is still a way to go before lasting and generally applicable solutions can be found. Despite progress to date, musculoskeletal injuries remain such a problem that the CSST considers them a priority. Researchers are however confident that new strategies, especially those involving the ergonomic design of equipment and facilities, and the use of quality programs such as ISO 9000 as the basis for the implementation of occupational health and safety activities, will yield the desired results.

Denise Granger
IRSST

Esther Cloutier
IRSST



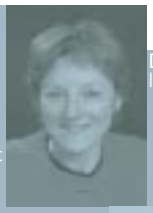
Accidents: A Better Understanding for More Effective Action

When the IRSST was created in 1980, it started out looking for a way to establish research priorities. The method adopted was a survey of fifty opinion leaders for their "perceptions": these leaders represented employers and unions in sectors the CSST judged of highest priority. The resulting consensus concerning several occupational health and safety problems oriented researchers' efforts.

François Hébert
IRSST

Diane Berthelette
Université du Québec
à Montréal

Jean-Pierre Brun
Université Laval



Danièle Champoux
IRSST

Madeleine Bourdhouxe
IRSST

To complement this approach, demographers drew up sectoral and occupational profiles of risks to which workers were exposed. Periodic updates of these profiles allowed these health and safety indicators to be tracked and promising avenues of research to be identified, leading to the targeting of specific occupations and industrial sectors.

The best source of information: the field

By analyzing various facets of work — especially tasks, workstations, schedules, conditions and workplaces — directly in the field, researchers have been able to develop a conceptual framework that clearly illustrates the dependence of industrial accidents on various organizational factors. Furthermore, research on the way accidents occur and the best way of preventing them has shown that it is impossible to dissociate factors related to the technical organization of work from those related to its human organization.

IRSST researchers have used this type of analysis to identify accident scenarios associated with specific industrial sectors (e.g. forestry, sawmills, construction) or high-risk occupations (e.g. garbage collectors, firefighters, linemen). With these results, it is possible to pinpoint machines, tools and protective equipment that are directly involved in accidents, setting the stage for future research.

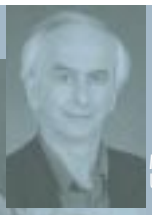
Using the conceptual framework set up by the Institute's researchers, a Canadian standardization committee has established a national model for the identification and collection of accident data that can be used for prevention purposes. This recognition confirms once again the relevance and originality of the Institute's approach.

Effective management of prevention

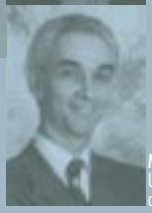
As our understanding of accidents improves, the need to identify the most effective prevention management mechanisms and strategies seems equally clear. Several studies on this subject have been conducted to date in many sectors, including the manufacturing, metal and electrical products, sawmill, and construction sectors.

In 1998, the Institute gave concrete expression to its concern in this area by providing financial support for the creation of a Chair in Occupational Health and Safety Management at Laval University. The university and the Institute share an interest in the problems faced by small and medium-sized businesses, which record many accidents but often lack adequate occupational health and safety resources.

Georges Toulouse
IRSST



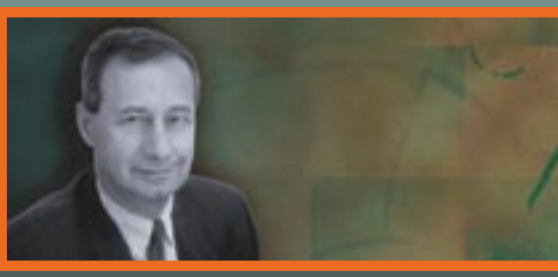
Michel Vézina
Université Laval



Marcel Simard
Université
de Montréal

Jacqueline Dionne-Proulx
Université du Québec
à Trois-Rivières

Several new dimensions of work organization also have an effect on accidents: aging of the workforce, technological change, new forms of work organization, and major restructuring, as in the healthcare sector. All these have significant repercussions that must be evaluated. Over the past twenty years, the understanding of the accident process has improved immensely, thanks to the collaboration of interdisciplinary teams.



Waguih Geadah

Engineer / Coordinator, *Association paritaire pour la santé et la sécurité du travail – Secteur fabrication d'équipement de transport et de machines*
(joint sector-based health and safety association, machinery and transportation equipment manufacturing sector)

"Thanks to the standing liaison committee, we enjoy a special relationship with the Institute. Not only are we kept up to date on the progress of its activities, but our requests are duly considered and transformed into concrete projects. The IRSST's decision to emphasize applied research and offer consulting services that facilitate the application of the results of its research has helped us meet our responsibilities to workers and employers in our sector."

Charles Prévost

Confederation of National Trade Unions (CNTU)
Worker Representative, IRSST Scientific Advisory Board

"The key to the IRSST's success in identifying workers' and employers' true needs is the ongoing involvement of employers, unions and researchers within the Scientific Advisory Board. Without this firm commitment by all parties, the Institute would not be able to provide research results that truly reflect health and safety concerns, much less see them applied in a universally acceptable manner."

Élyse Dion et Carole Leroux
IRSST

Daniel Drolet
IRSST

Clémence Duchesne
IRSST

Laboratories: Key to Research Development

The Institute's laboratories make vital contributions to scientific research in industrial hygiene and play a special role in linking workplace stakeholders and researchers. Located within the Institute, they respond to requests for analysis from the CSST and its partners, as well as from other health and safety specialists, and are responsible for repairing, maintaining and calibrating the direct-reading instruments and sampling equipment used by the occupational health network.

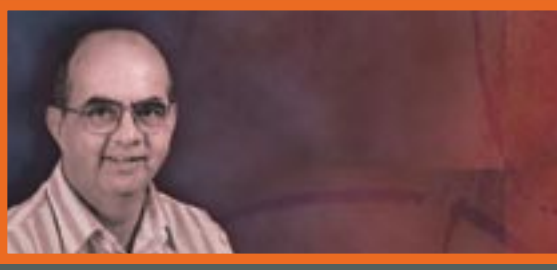
Chantal Dion
IRSST

Ginette Truchon
IRSST

Lambert Laliberté
IRSST

Geneviève Marchand
IRSST

Guylaine Beauchamp
IRSST



Guy Maltais
Inspector, *Commission de la santé et de la sécurité du travail du Québec* (CSST, (CSST, Québec occupational health and safety commission)
Chicoutimi Office

"The quality analytical and calibration services offered by the IRSST's laboratory are indispensible for inspectors. I also appreciate the help offered by Institute personnel, who don't hesitate to come into the field to resolve situations that are sometimes critical by explaining complex subjects such as microbiology."

In twenty years, this considerable responsibility has necessitated the development of more than 300 analytical methods and 40 calibration methods, several of which have been adopted by other laboratories as benchmarks. The reliability of the laboratories' analyses and calibrations is monitored through quality control programs and validated by the various accreditations and certifications obtained from Canadian and American agencies.

Leading-edge expertise and scientific development

The huge demand for industrial hygiene and toxicology analyses has allowed the laboratories to develop a high level of expertise and recognized know-how, which are now widely used to advance research. Thus, a detailed understanding of the operating principles, performance and limitations of direct-reading monitors has led to several scientific breakthroughs, including: the development of new instruments (especially for the measurement of electromagnetic fields), the modification of existing equipment, the development of usage strategies, and the creation of control and sampling systems.

Without specialized laboratories with considerable industrial hygiene expertise, none of these developments would have been possible. In twenty years, the IRSST's laboratories have made undeniable and essential contributions to research development. They should be commended for their achievements.

Adjustment of permissible exposure limits

Occupational exposure standards are based on a traditional work schedule of eight hours per day, five days per week. In order to ensure that all workers receive the same protection, IRSST specialists, in collaboration with an international group, have developed a method to adjust permissible exposure limits to non-traditional schedules. The contribution made by toxicologists and chemists to this expert endeavour allowed for an adjustment category to be established for every substance listed in **Appendix A** of the **Regulation Regarding the Quality of the Work Environment**. A guide has been published to explain the method to users. All workers can now benefit from the same level of protection, regardless of their work schedule. The new version of the IRSST's sampling guide integrates this new element into the day-to-day operations of the CSST, its partners, and other occupational health and safety specialists. This type of research is greatly facilitated by the detailed knowledge of workplace stakeholders' needs that laboratory scientists have developed in carrying out their work.

Microbiology

It was while studying the quality of air in office buildings in 1986 that the Institute developed an interest in the presence of microorganisms in the workplace. The approach it has adopted is grounded in the tenets of industrial hygiene — risk anticipation, identification and measurement — with the ultimate goal of preventing and controlling exposure. A microbiology laboratory was created, and advances in the field were applied to the development of new methods to characterize and quantify various microorganisms. Armed with the most sophisticated tools with which to evaluate biological agents present in the workplace, the IRSST is able to control and prevent hazards associated with exposure to bioaerosols. This has rapidly made it a leader in the field. The Institute's expertise has proved useful on many occasions, especially in workplaces in the environmental (waste collection, sorting and composting, municipal wastewater treatment) paper, textile, and agricultural (pork-rearing) sectors. Now well-established, the microbiology laboratory is expanding to reflect the research needs of the workplace and the need for new knowledge.

Clémence Duchesne
IRSST

Brigitte Roberge
IRSST

Gilles Paradis
IRSST

Better protection against silica dust

Faced with an ever-increasing number of cases of silicosis, a disease that irreversibly damages workers' health and compromises their future, the IRSST's laboratories turned their attention in 1995 to abrasive-blasting workers, who are particularly exposed to silica. Although these workers are protected by a hood connected to an air supply, some of them nevertheless develop silicosis. To determine whether the hood offers adequate protection, laboratory scientists developed sampling systems and direct-reading manometers that could function within the confines of the hoods. The results indicated that under certain conditions and despite the use of protective equipment, workers were exposed to concentrations exceeding standard limits. The laboratory's ability to precisely measure silica dust infiltration allowed researchers to propose an array of corrective measures resulting in improved protection for workers.

Eddy Pellerin

Industrial hygienist, *Centre local de services communautaires* (CLSC, local community services centre) Katéry

"The IRSST's distinctive feature is its ability to constantly adapt to new issues. By refining its methods and techniques, it has been able to respond to increasingly complex requests. I've always appreciated the availability of IRSST personnel, whose cutting-edge expertise allows them to respond to the multiple requests they receive. The easy access to this network of recognized expertise is a huge advantage for everyone who works in the field of industrial hygiene."

Jean-Pierre St-Georges

Industrial hygienist, *Régie régionale de la santé et des services sociaux de Lanaudière, Direction de la santé publique* (regional health and social services board, Lanaudière region, public health division)

"The IRSST has always been straight with me. If there's one thing I appreciate, it's the reliability of their results, because my credibility in the field often depends on the quality of the information they give me. So, it's reassuring to know that I can count on the expertise of their certified laboratories. What's more, their employees are flexible and quite accessible."

Members
of the Board of Directors
December 31, 1999

The Board of Directors determines the Institute's orientation, development framework and funding. It is made up of the Chairman, seven employer representatives and seven worker representatives, who also form the Board of Directors of the Commission de la santé et de la sécurité du travail du Québec (CSST) (Québec Occupational Health and Safety Commission).

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Trefflé Lacombe
Chairman of the Board of Directors
and Chief Executive Officer
Commission de la santé et de la sécurité
du travail du Québec

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Secretary
Confederal Health and Safety Committee
Confédération des syndicats nationaux (CSN)
(Confederation of National Trade Unions)

Gilles Charland
Québec Director
Canadian Union of Public Employees
Vice-President
Fédération des travailleurs et travailleuses
du Québec (FTQ)
(Québec Federation of Labour)

Arnold Dugas
Québec Director
Syndicat des métallos
Vice-President of the FTQ

Claude Faucher
Vice-President
Centrale des syndicats démocratiques (CSD)
(Congress of Democratic Unions)

Jean Lavallée
Managing Director and Secretary-Treasurer
Interprovincial Brotherhood of Electrical
Workers
Vice-President of the FTQ

Marc Laviolette
President
Confédération des syndicats nationaux (CSN)

Henri Massé
President of the FTQ

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General Manager
Legal and Public Affairs – Québec
General Motors of Canada Limited

Franco Fava
Secretary
Neilson Excavation Inc.

Michel Guillemette
President
Prévexel Inc.

Gaston Lafleur
President and Chief Executive Officer
Conseil Québécois du commerce de détail
(Québec Retail Council)

François E. Pelletier
Vice-President, Operations & Management
Québec-Cartier Mining Company

Gilles Taillon
President
Conseil du Patronat du Québec (CPQ)
(Québec Employers' Council)

Sylvain Lebel
Senior Counsel
Dion, Durrell & Associés inc,

Chief executive officer*
Jean Yves Savoie
IRSST

Observers
Maurice Poulin
Director, Public Health Protection and
the Quebec AIDS Coordination Centre
Department of Health and Social Services

Christiane Barbe
Assistant Deputy Minister, Planning,
Research and Administration
Department of Labour

Departures in 1999
Clément Godbout
Honorary Chairman of the FTQ

Members of the Executive Committee
Trefflé Lacombe, Chairman
Henri Massé
Gilles Taillon

Jean Yves Savoie*

* In an advisory capacity only.

Members
of the Scientific Advisory Board
December 31, 1999

The Scientific Advisory Board provides counsel to the Chief Executive Officer. Its mandate is to express an opinion on the relevance, importance and scientific quality of internal and external research projects and programs. The Board's opinions on the scientific quality of research is generally based on the analyses and recommendations of committees of specialists recruited from scientific communities.

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Jean Yves Savoie
Chief Executive Officer

Employer representatives
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Medical Consultant, Standard Life Assurance Company
Medical Consultant, Sun Life of Canada

Richard Lapointe
Manager, Environmental Toxicology
Alcan Primary Metal Group

Roger M. Laporte
Vice-President, Administration
Nova Pb Inc.

Renée Liboiron
Director, Occupational Health and Safety Technical Services
Conseil du Patronat du Québec (CPQ)
(Québec Employers' Council)

Worker representatives
Daniel Flynn
Union Representative, Occupational Health and Safety
Syndicat québécois des employées et employés de service, section locale 298, (FTQ)
(Québec Service Employees' Union, Local 298, FTQ)

Charles Prévost
Confederation of National Trade Unions (CNTU)

Serge Trudel
Director, Service de la santé et de la sécurité du travail
Fédération des travailleurs et travailleuses du Québec

Claude Rioux
Coordinator
Fédération des travailleurs et travailleuses du papier et de la forêt (CSN)
(Federation of Paper and Forest Workers)

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Chairman of the Board
National Optics Institute

Jean-François Boivin
Professor
Department of Epidemiology and Biostatistics
McGill University

Maurice Brossard
Administrator

Gilles Dussault
Director
Department of Health Administration
Université de Montréal

Maryse Lassonde
Professor
Department of Psychology
Université de Montréal

R. Charles Terreault
Consultant in Technology Management

Observers
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Vice-President, Programs and Consultancy
Commission de la santé et de la sécurité du travail du Québec (CSST)

Alain Lajoie*
Director, Operations Division
Institut de recherche en santé et en sécurité du travail (IRSST)

Departures in 1999
Jacques Guénette
Occupational Hygienist, Occupational Health
CLSC Montréal-Nord

Denyse L. Dagenais
Professor
Institut d'économie appliquée (Institute of Applied Economics)
École des Hautes Études Commerciales

* In an advisory capacity only.

IRSST 20 years

IRSST

Institut de recherche en santé
et en sécurité du travail
505, de Maisonneuve Blvd West
Montréal (Québec) Canada
H3A 3C2

Tel.: (514) 288-1551
Fax: (514) 288-7636

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