



2000ActivitiesReport

NEW NAME
NEW IMAGE
SAME COMMITMENT:
TO OFFER QUALITY RESEARCH
AND SERVICES

INSTITUT DE RECHERCHE
ROBERT-SAUVÉ
EN SANTÉ ET EN SÉCURITÉ DU TRAVAIL



A VISION OF THE FUTURE

Even though the IRSST changed its name in 2000, it remains firmly committed to research that meets workplace needs, as clearly demonstrated by the year just ended.

One of our priorities was to focus on research, which we did in a variety of ways. First of all, we made a considerable effort to boost our scientific production. This operation paid off, as attested by our exceptionally full order book for new research in 2001.

R E P O R T
F R O M T H E C H I E F
E X E C U T I V E O F F I C E R

A VISION OF THE FUTURE

The Institute was also successful in bolstering its ties with partners and collaborators in national and provincial research networks.

Guided by the vision statement it adopted three years ago, the IRSST has since consolidated its position as a useful research organization for its clients and now enjoys widespread credibility.

**T H R O U G H I T S L E A D E R S H I P
IN OCCUPATIONAL HEALTH AND SAFETY RESEARCH, THE IRSST PLANS TO:**

become a **reference centre that is vital for the operations and strategies of the CSST** and its network

be **used by its social partners** in a collaborative context

be **recognized** nationally and internationally

have a firmly established **network of research and development collaborators**

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A VITAL REFERENCE CENTRE

This year, the IRSST was able to establish strong synergies with its principal partner, the *Commission de la santé et de la sécurité du travail* (CSST), concerning a very important component of our research: rehabilitation. Our goal is to accompany the CSST in its quest for solutions adapted to one of its major concerns: preventing the development of chronicity among injured workers and fostering their return to work.

Many of the Institute's researchers and collaborators are addressing this problem from various angles. Some are working to support and equip rehabilitation counselors, whose early intervention can facilitate the rehabilitation process. Others are attempting to shed light on the type, manner and timing of interventions. From another perspective, some of our studies deal with the determinants of chronic disability related to low back pain.

As well, a team of researchers from the PRÉVICAP Clinic at Charles-Lemoyne Hospital has confirmed the fact that the health condition of workers suffering from low back pain can be improved significantly and their return to work expedited through multidisciplinary case management that takes into account the diversity of ergonomic, psychosocial and physical causes of back pain. However, the relative contribution of each of these case management components to the success of interventions is still poorly understood. This is the focus of another research project funded by the Institute, in association with the CSST.

Since several players are involved in rehabilitation, researchers also want to elucidate the process of maintaining the employment relationship in companies, understand the components and organizational determinants of this process, and provide case management tools.

Over the past 10 years, researchers from the Institute and its network have greatly modified their approach to this subject, shifting their focus from the injury to the disability associated with musculoskeletal disorders. However, efforts to prevent these problems and to better understand their root causes should be pursued at the same time. This change in paradigm also affects the approach adopted by our partners.

The participation of many of our researchers in a major international convention on back pain held in New York in November 2000 confirmed the IRSST's credibility in this field and the innovativeness of its approach, which revolves around a partnership with the major players concerned.

To support our partners' strategies and operations, the Institute's researchers were also invited to sit on about 20 CSST committees that amend regulations or plan intervention programs. For example, as part of the revision of the *Regulation respecting the quality of the work environment*, researchers lent their expertise to committee members on the adjustment of permissible exposure values for unusual work schedules and on respiratory protection. They also participated in the revision of the *Safety Code for the Construction Industry* on various aspects of protection against falls from heights.

USED BY ITS PARTNERS

Applying new research knowledge is always a major challenge. For the results of our studies to benefit workers and employers, they must be used by intermediaries who implement them in workplaces. When we compared our experience with that of other research organizations during a retreat on the challenge of knowledge transfer held in April 2000, we discovered that several factors that facilitate this transfer are typical of the Institute's operating procedures. A case in point: the proximity of research applicants who tell us about their needs, the participation of these partners in the research process itself, and the bipartite nature of our work. More than 85% of the 165 projects that were active in 2000 included the direct participation of occupational health and safety partners or workplace representatives.

This close collaboration makes it easier for research results to be accepted and appropriated by the working community. However, the Institute insists that these partnerships extend well into the

dissemination of the results. Hence, many research results were published in close collaboration with the CSST and certain joint sector-based associations. Sometimes, the utilization of our research results depends on the training of intermediaries. This was the case in the field of machine safety, specifically with respect to locking and interlocking devices for hazardous machines, where CSST inspectors were trained by researchers. Other IRSST researchers were invited by the provincial committee on isocyanates to conduct training sessions and facilitate workshops for CSST inspectors as well as nurses and physicians of the occupational health and safety network. In all, some twenty training sessions were offered.

In keeping with our goal of making our research results available to our partners, we also signed two commercial agreements. The first, with *Soft Db inc.*, involved the marketing of the "Ouïe 2000" noise control software. The second, with the *National Optics Institute (NOI)* and *Fiso technologies inc.*, will lead to the development and marketing of a service-life indicator for respirator cartridges.

RECOGNIZED NATIONALLY AND INTERNATIONALLY

The IRSST carved out a significant position for itself on the national stage in 2000.

We signed an agreement with the *Industrial Accident Prevention Association (IAPA)* of Ontario, which will help improve the dissemination of our research results and provide the Institute with access to a network of influential decision-makers who can facilitate entry into certain workplaces and, more importantly, secure the collaboration of intermediaries with a national scope.

The IRSST and the research committee that I chair within the *Association of Workers' Compensation Boards of Canada (AWCBC)* actively encouraged the new *Canadian Institutes of Health Research (CIHR)* to incorporate occupational health into their studies. These efforts were not only productive, but also helped position the IRSST as a leading player in Canada's scientific community.

Thanks to an IRSST initiative, the *Société d'ergonomie de langue française (SELF)* and the *Association of Canadian Ergonomists (ACE)* will, for the first time, hold a joint annual convention in Montréal in October 2001. During this gathering, the IRSST, which is a major partner of the event, will play host to some 500 ergonomists exchanging ideas on the changing workplace and its impact on ergonomics.

This year, in an effort to disseminate the IRSST's research to a wider audience, we increased our presence on national and international scientific platforms. IRSST representatives are also continuing to serve in an expert capacity on eight international standards committees.

Two researchers were rewarded for their exceptional contribution to research. Our colleague Guy Perrault received the *Antoine-Aumont* award from the *Association québécoise pour l'hygiène, la santé et la sécurité du travail (AQHSST)*, in recognition of his contribution to research in industrial hygiene. Micheline Gagnon, a researcher at the Department of Kinesiology at the *Université de Montréal*, who has received IRSST funding for many years, earned a lifetime achievement award from the *Canadian Society of Biomechanics*.

A SOLID NETWORK OF RESEARCHERS

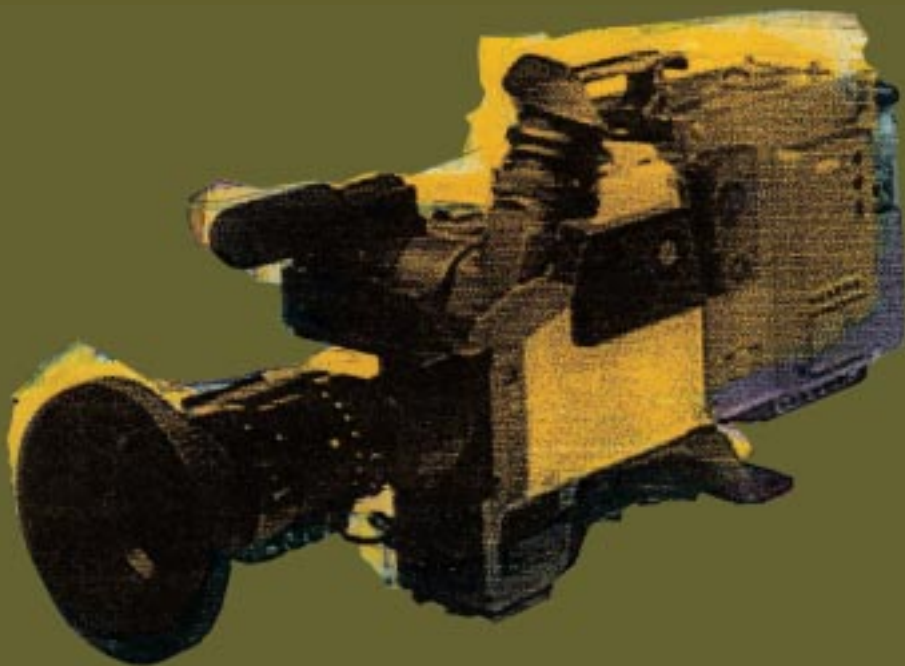
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We have always been able to count on the support of an internal and external network of highly competent researchers. However, requests for scientific studies addressed to the IRSST by our partners and workplace stakeholders are becoming more and more numerous, complex and urgent. This year, we felt that it was essential to develop strategies aimed at maintaining and expanding the current pool of occupational health and safety researchers. Many efforts have thus

been undertaken to attract new researchers and find new sources of funding.

- Thanks to an infrastructure grant from the *Fonds de la recherche en santé du Québec* (FRSQ), a multidisciplinary team of researchers from the IRSST, the *Université du Québec à Montréal* and the *Université de Sherbrooke* was able to collaborate on an occupational rehabilitation project.
- Funded jointly by the IRSST and the *Healnet/Relais Canadian Centre for Excellence*, a multidisciplinary team composed of researchers and other specialists from the Institute as well as from many organizations in Québec, Ontario, Manitoba and British Columbia, is continuing to develop two decision-support systems related to the temporary reassignment of injured workers.
- With the collaboration of the *Réseau provincial de recherche en adaptation-réadaptation* (REPAR-FRSQ), the IRSST has set up an assistance program in the occupational rehabilitation of workers suffering from musculoskeletal disorders. This program should help expand the pool of researchers dedicated to this issue.
- The IRSST has joined forces with the *Canadian Institutes of Health Research* (CIHR) to fund up to six new scholarships for occupational health research that will be awarded to young researchers who have completed their doctoral or post-doctoral studies.
- The revision of our graduate studies scholarship program this year generated an increase of 20% in relevant applications. Over the medium term, this should also help ensure the future of research and consolidate the research network.
- Lastly, the IRSST's Board of Directors approved a significant increase in its research budget for 2001.





2001

MEET IMMEDIATE NEEDS WHILE PREPARING FOR THE FUTURE

For the past 20 years, our research has helped solve many problems in the field of occupational health and safety. By exercising leadership, we have always been able to listen to our partners' needs and to translate them into research projects.

Our program for 2001 still reflects these concerns, but also prepares for the future. It includes projects on subjects such as the aging of the population, work compartmentalization and the introduction of new technologies and new forms of work.

To face up to these new challenges, we will be relying on the contribution of all our research personnel and our external network. We will also continue our efforts to establish new partnerships with granting agencies or research organizations that share our concerns.

In 2001, we will stay the course. Our vision of the future is becoming more and more relevant to our mission.

Jean Yves Savoie
Chief Executive Officer

H I G H L I G H T S O F 2 0 0 0

RESEARCH

165 projects active in 2000 *

40 started

44 completed

81 continuing

48 projects under development

29 committees of the CSST and its network, including regulatory committees, included at least one IRSST representative

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

22 scholarships granted *

LABORATORY SERVICES

68,145 environmental, toxicological and microbiological analyses, 79% of which were performed for our partners in the prevention-inspection network: the CSST, regional health and social services boards, CLSCs and joint sector-based associations

4,957 hours were devoted to calibration, maintenance and repair of direct reading and calibration instruments used by the prevention-inspection network

6 laboratory methods were developed

DISSEMINATION

35 research reports and guides published by the IRSST

38 articles published by Institute personnel in peer-reviewed research journals or in scientific conference proceedings

90 presentations given by IRSST personnel at science conventions or events organized by partners

25 non-technical articles published in *Prévention au travail*, the joint CSST-IRSST magazine

15,825 publications distributed in response to requests

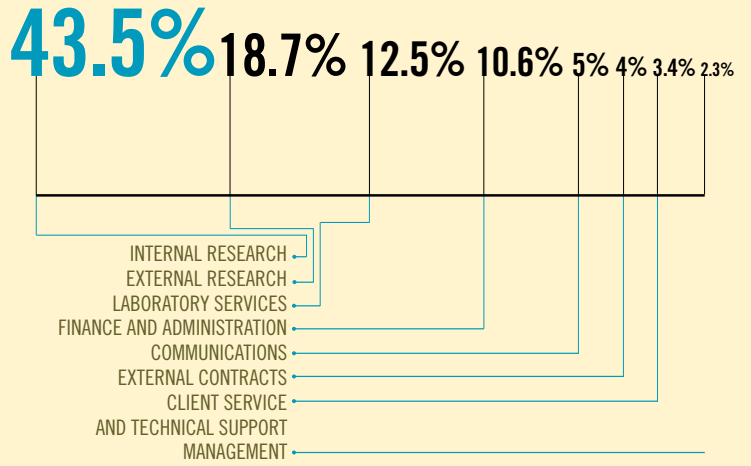
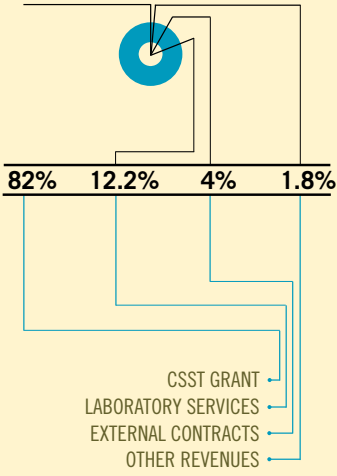
98,712 visits to the Institute's Web site, more than double the number recorded last year

* *The summaries of all projects carried out or sponsored by the IRSST as well as the complete list of scholarship recipients are available on the Institute's Web site: www.irsst.qc.ca.*

FUNDING

REVENUES \$18,247,452

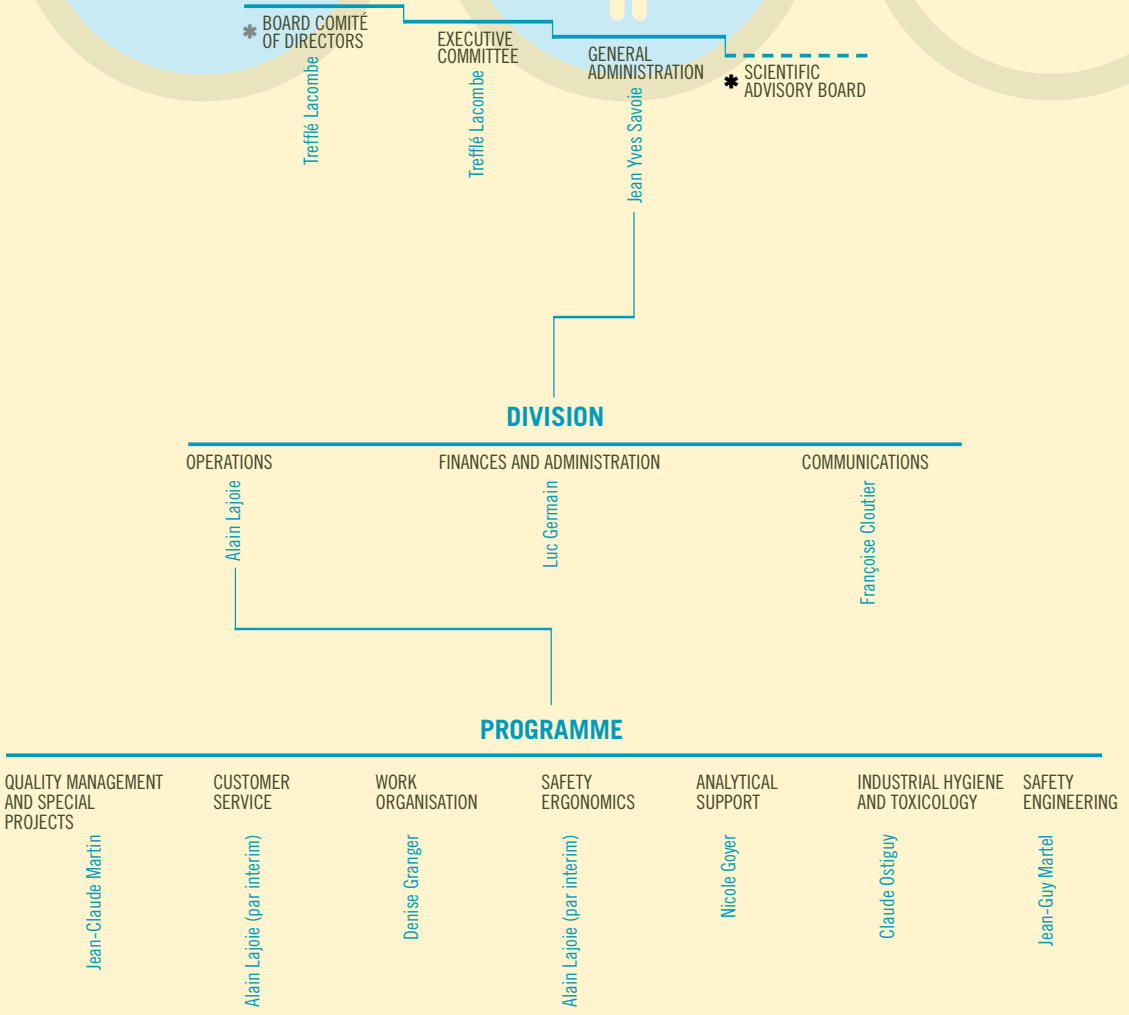
EXPENSES \$18,246,832



OVERVIEW OF THE IRSST

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. THE INSTITUTE'S EXTERNAL NETWORK INCLUDES SOME **130 RESEARCHERS** FROM UNIVERSITIES, RESEARCH CENTRES AND PRIVATE FIRMS.

ORGANIZATIONAL CHART AS OF DECEMBER 31, 2000



* THE BOARD OF DIRECTORS

determines the Institute's orientation, development framework and funding.

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Chairman of the Board
and Chief Executive Officer
Commission de la santé
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OBSERVERS

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Michel Bordeleau
Anne Parent

IRSSST MANAGEMENT

Jean Yves Savoie

* 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.

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Jean Yves Savoie

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Roger M. Laporte
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Dr. Jules Brodeur
Maurice Brossard
Maryse Lassonde
R. Charles Terreault

OBSERVER

Alain Albert

IRSSST MANAGEMENT

Alain Lajoie

LIST OF PUBLICATIONS

ARTICLES PUBLISHED IN PEER-REVIEWED JOURNALS

BOURDOUXHE, M., QUÉINNEC, Y. and S. GUERTIN. "The Interaction Between Work Schedule and Workload: Case Study of 12-Hour Shifts in a Canadian Refinery", In *Shiftwork in the 21st Century*, Hornberger, S., Knauth, P., Costa, G. and S. Folkard [eds.], Frankfurt, New York, Oxford, Peter Lang Verlag, 2000, p. 41-50.

CLOUTIER, E. and D. CHAMPOUX. "Injury Risk Profile and Aging among Québec Firefighters", *International Journal of Industrial Ergonomics*, vol. 25, no 5, 2000, p. 513-523.

DAVID, H., CLOUTIER, E., TEIGER, C. and J. PRÉVOST. "Réflexions sur une expérience interdisciplinaire dans le cadre d'une recherche exploratoire", *Pistes* (Perspectives interdisciplinaires sur le travail et la santé), vol. 2, no 1, mai 2000 [Online] <http://www.unites.uqam.ca/pistes>.

ENGLAND, E.C., KEY-SCHWARTZ, R.J., LESAGE, J., SONG, R., STREICHER, R. and G. CARLTON. "Comparison of Sampling Methods for Monomer and Polyisocyanates of 1,6-Hexamethylene Diisocyanate During Spray Finishing Operations", *Applied Occupational and Environmental Hygiene*, vol. 15, no 6, June 2000, p. 472-478.

FABRIÈS, J.-F., CHOUDAT, D., WROBEL, R., CLOUTIER, Y., DESSANDES, J.-F., VILLETTE, C., DALL AVA, J. and F. CONSO. "Computerized Equipment for the Delivery of Inhaled Doses of Solid Particles in Specific Bronchial Challenge", *Journal of Aerosol Medicine*, vol. 13, no 1, 2000, p. 1-10.

LAN, A., DAIGLE, R. and L. LAFRANCE. "Safe Tarping Systems for Wood Chip Trucks", *Journal of Safety Research*, vol. 31, no 2, 2000, p. 81-91.

LARA, J., MASSÉ, S., DAIGLE, R. and D. TURCOT. "Testing the Cut and Puncture Resistance of Firefighter Safety Shoes", In: American Society For Testing and Materials (ASTM) International Symposium of Performance of Protective Clothing: Issues and Priorities for the 21st Century (7, June 28-30, 1999, Seattle, Washington), *Performance of Protective Clothing: Issues and Priorities for the 21st Century, Seventh Volume*, ASTM STP 1386, C.N. Nelson and N.W. Henry [eds.], American Society for Testing and Materials, 2000, p. 74-84.

LAVOIE, J. "Évaluation de l'exposition aux bioaérosols dans les stations de traitement des eaux usées", *Vecteur Environnement*, vol. 33, no 3, p. 43-50.

LAZURE, L. "Evaluation of a Local Exhaust System Used in the Manufacture of Small Parts Made of Reinforced Plastic", *Applied Occupational and Environmental Hygiene*, vol. 15, no 9, p. 681-685.

MASSÉ, S. "Design of Multipoint Anti-Kickback Fingers for Woodworking Machines", *Transactions of the Canadian Society for Mechanical Engineering (CSME)*, vol. 24, no 1 A, 2000.

MIRZA, T., GÉRIN, M. BÉGIN, D. and D. DROLET. "A Study on the Substitution of Trichloroethylene as a Spot Remover in the Textile Industry", *American Industrial Hygiene Association Journal*, vol. 61, no 3, 2000, p. 431-438.

MONSO, E., CLOUTIER, Y., LESAGE, J., PERRAULT, G. and J.-L. MALO. "What is the Respiratory Retention of Inhaled Hexamethylene Diisocyanate", *European Respiratory Journal*, vol. 16, no 4, October 2000, p. 729-740.

PERRON, G., BAHN, T.N., PELLETIER, L., DESNOYERS, J.E. and J. LARA. "Volumetric and Swelling Techniques for Studying the Permeation of Protective Gloves to Solvents", In: American Society For Testing and Materials (ASTM) International Symposium of Performance of Protective Clothing: Issues and Priorities for the 21st Century (7, June 28-30, 1999, Seattle, Washington), *Performance of Protective Clothing: Issues and Priorities for the 21st Century, Seventh Volume*, ASTM STP 1386, C.N. Nelson and N.W. Henry [eds.], American Society for Testing and Materials, 2000, p. 377-390.

ROBERGE, B. "Effect of Varying the Combustion Parameters on the Emissions of Carbon Monoxide and Nitrogen Oxides in the Exhaust Gases from Propane-Fuelled Vehicles", *Applied Occupational and Environmental Hygiene*, vol. 15, no 5, 2000, p. 421-428.

ST-VINCENT, M., TOULOUSE, G. and M. BELLEMARE. "Démarches d'ergonomie participative pour réduire les risques de troubles musculo-squelettiques: bilan et réflexions", *Pistes* (Perspectives interdisciplinaires sur le travail et la santé), vol. 2, no 1, mai 2000 [Online] <http://www.unites.uqam.ca/pistes>.

TRUCHON, G., BRODEUR, J., DROLET, D. and T. PETITJEAN-ROGET. "La variabilité biologique dans l'excrétion urinaire du mercure: influence sur la prise de décision en matière de retrait préventif", *Travail et Santé*, vol. 16, no 2, juin 2000, p. S7-S10.

TRUCHON, M. and L. FILLION. "Biopsychosocial Determinants of Chronic Disability and Low Back Pain: A Review", *Journal of Occupational Rehabilitation*, vol. 10, no 2, 2000, p.117-142.

ARTICLES PUBLISHED IN PEER-REVIEWED CONFERENCE PROCEEDINGS

ALLARD, D., BELLEMARE, M., and D. BERTHELETTE. "Implementation and Evaluation of a Participative Ergonomics Program", In: Congress of the International Ergonomics Association (IEA) and Ergonomics Society (14, July 29–August 4, 2000, San Diego, California), *Proceedings of the XIVth Triennial Congress of the International Ergonomics Association and Ergonomics Society: Ergonomics for the New Millennium, July 29 through August 4, 2000, San Diego, California, USA*, vol. 2, 2000, p. 688-691.

BARIL, R. and D. BERTHELETTE "A Theoretical Model of the Implementation of Early-Return-To-Work Measures", In: Physical Medicine Research Foundation and The Occupational and Industrial Orthopaedic Center, *Proceedings of the Conference on Back Pain and Disability: Unraveling the Puzzle*, (November 30–December 2, 2000, New York, New York, USA), 2000, p. 65-66.

BELLEMARE, M., MARIER, M., MONTREUIL, S., PRÉVOST, J. and N. PERRON. "From Diagnosis to Transformation: How Projects are Implemented in a Participatory Framework", In: Congress of the International Ergonomics Association (IEA) and Ergonomics Society (14, July 29–August 4, 2000, San Diego, California), *Proceedings of the XIVth Triennial Congress of the International Ergonomics Association and Ergonomics Society: Ergonomics for the New Millennium, July 29 through August 4, 2000, San Diego, California, USA*, vol. 2, 2000, p. 724-727.

BOILEAU, P.-É. and S. RAKHEJA. "Characterization of the Vibration Response of Urban Buses", In: UK Group Meeting on Human Response to Vibration (35, September 13-15, 2000), *Proceedings of the 35th Group Meeting on Human Response to Vibration, September 13-14, 2000, Southampton, England*, p. 305-316.

CLOUTIER, E., LEFEBVRE, S. and C. CHATIGNY. "Mentoring as a Source of Motivations for Experienced Workers", In: Congress of the International Ergonomics Association (IEA) and Ergonomics Society (14, July 29–August 4, 2000, San Diego, California), *Proceedings of the XIVth Triennial Congress of the International Ergonomics Association and Ergonomics Society: Ergonomics for the New Millennium, July 29 through August 4, 2000, San Diego, California, USA*, 2000, p. 4-91 - 4-94.

DELISLE, A., GAGNON, M. and P. DESJARDINS. "Effect of Container Characteristics on the Kinematics and Kinetics of Freestyle Lifting", In: Proceedings of the XXVth Conference of the Société de biomécanique in conjunction with the XIth Conference of the Canadian Society of Biomechanics, (August 23-26, 2000, Montréal, Québec), *Archives of Physiology and Biochemistry*, vol. 108 no 1-2, April 2000, p. 21.

GAGNON, M., DELISLE, A. and P. DESJARDINS. "Biomechanical Differences Between Best and Worst Performances in Repeated Free Asymmetrical Lifts", In: Proceedings of the XXVth Conference of the Société de biomécanique in conjunction with the XIth Conference of the Canadian Society of Biomechanics, (August 23-26, 2000, Montréal, Québec), *Archives of Physiology and Biochemistry*, vol. 108, no 1-2, April 2000, p. 191.

LARA, J. and S. MASSÉ. "Evaluating the Cutting Resistance of Protective Clothing Materials", In: NOKOBETEF 6 and 1st European Conference on Protective Clothing (May 7-10, 2000, Stockholm, Sweden), *Ergonomics of Protective Clothing: Proceedings of NOKOBETEF 6 and 1st European Conference on Protective Clothing, Stockholm, Sweden, May 7-10, 2000*, Kalev Kuklane and Ingvar Holmér [eds.], Stockholm, p. 145-149.

LARA, J. and S. MASSÉ. "Testing the Cut-Resistant Fabrics", In: International Conference on Safety & Protective Fabrics (2, April 26-28, 2000, Arlington, Virginia), *Proceedings of the Second International Conference on Safety & Protective Fabrics, April 26-28, 2000, Arlington, Virginia, USA*.

LARA, J., PERRON, G. and J.E. DESNOYERS. "Dynamic Elongation Test to Evaluate the Chemical Resistance of Protective Clothing Materials", In: NOKOBETEF 6 and 1st European Conference on Protective Clothing (May 7-10, 2000, Stockholm, Sweden), *Ergonomics of Protective Clothing. Proceeding of NOKOBETEF 6 and 1st European Conference on Protective Clothing, Stockholm, Sweden, May 7-10, 2000*, Kalev Kuklane and Ingvar Holmér [eds.], Stockholm, p. 230-234.

LARA, J. and C. TELLIER. "A Case Study on the Selection and Development of Cut Resistant Protective Gloves for Household Appliance Assembly Industries", In: NOKOBETEF 6 and 1st European Conference on Protective Clothing (May 7-10, 2000, Stockholm, Sweden), *Ergonomics of Protective Clothing. Proceedings of NOKOBETEF 6 and 1st European Conference on Protective Clothing, Stockholm, Sweden, May 7-10, 2000*, Kalev Kuklane and Ingvar Holmér [eds.], Stockholm, p. 218-221.

MONTREUIL, S., BELLEMARE, M. and J. PRÉVOST. "From Training in Ergonomic Diagnosis to Finding Solutions: Assessment of Work Teams that Used Participatory Ergonomics", In: Congress of the International Ergonomics Association (IEA) and Ergonomics Society (14, July 29–August 4, 2000, San Diego, California), *Proceedings of the XIVth Triennial Congress of the International Ergonomics Association and Ergonomics Society: Ergonomics for the New Millennium, July 29 through August 4, 2000, San Diego, California, USA*, vol. 2, 2000, p. 688-691.

MONTREUIL, S., BELLEMARE, M., and D. BERTHELETTE. "The Process of Ergonomic Training and its Impact: From the Analysis to the Transformation of Work Situations", In: Congress of the International Ergonomics Association (IEA) and Ergonomics Society (14, July 29–August 4, 2000, San Diego, California), *Proceedings of the XIVth Triennial Congress of the International Ergonomics Association and Ergonomics Society: Ergonomics for the New Millennium, July 29 through August 4, 2000, San Diego, California, USA*, vol. 2, 2000, p. 646.

PAQUES, J.-J. and R. BOURBONNIÈRE. "Formation sur mesure des inspecteurs de la Commission de la santé et de la sécurité du travail au Québec sur les dispositifs de verrouillage et d'interverrouillage associés aux machines industrielles", In: International Symposium of the International Committee of the International

Social Security Association (ISSA) for Education and Training in Accident Prevention (June 30 to July 2, 1999, Mayence, Germany), *Proceedings of the International Symposium of the International Committee of the (ISSA) for Education and Training in Accident Prevention: Training of Occupational Health and Safety Experts: Issues and Perspectives*, 2000, p. 219-224.

PAQUES, J.-J. and J.-G. MARTEL. "L'analyse des risques reliés aux machines: signe avant-coureur d'une émergence en prévention en Amérique du Nord?", In: Conference 2000 - International Symposium of the International Committee of the International Social Security Association (ISSA) for Machine and System Safety: Work and Prevention for Tomorrow (May 2-3, 2000, Lucerne, Switzerland), [*Conference Proceedings*], 2000, p. 190-202.

ST-VINCENT, M., LABERGE, M. and M. LORTIE. "Analysis of the Difficulties Encountered by the Participants in a Participatory Ergonomic Process", In: Congress of the International Ergonomics Association (IEA) and Ergonomics Society (14, July 29–August 4, 2000, San Diego, California), *Proceedings of the XIVth Triennial Congress of the International Ergonomics Association and Ergonomics Society: Ergonomics for the New Millennium, July 29 through August 4, 2000, San Diego, California, USA*, vol. 2, 2000, p. 680-683.

TCHERNYCHOUK, V., RAKHEJA, S., STIHARU, I. and P.-É. BOILEAU. "Study of Occupant-Seat Models for Vibration Comfort Analysis of Automotive Seats", In: International Body Engineering Conference and Exhibition (IBEC), (October 3-5, 2000, Detroit, Michigan) **Proceedings of the International Body Engineering Conference and Exhibition (IBEC), October 3-5 2000, Detroit, Michigan, USA.**

TOULOUSE, G., BÉLANGER, C., IMBEAU, D., SAVOIE, M., PÉLOQUIN, V., VINCENT, J.-Y. and F. BILODEAU. "Démarche d'intégration de la gestion de la santé et sécurité aux normes d'assurance qualité ISO-9000", In: Congrès de la Société d'Ergonomie de Langue Française (SELF) (35, 20-22 septembre 2000, Toulouse, France). *XXXV^e Congrès de la Société d'Ergonomie de Langue Française (SELF): Communication et travail, Toulouse, les 20, 21 et 22 septembre 2000*, Bernard Mélier and Yvon Quéinnec [eds.], 2000, p. 604-614.

OTHER PUBLICATIONS

D. DENIS. *Développement et évaluation d'une stratégie d'observation des conditions à risque pour la maintenance*, PhD thesis, McGill University.

STOCK, S., DEGUIRE, S., BARIL, R. and M.-J. DURAND. *Obstacles and Factors Facilitating Return to Work of Workers with Musculoskeletal Disorder: Summary of the Report on the Quebec Qualitative Study in the Electric and Electronic Sector of Work-ready Phase 1*, Montréal, Direction de la santé publique, Régie régionale de la santé et des services sociaux Montréal-Centre, janvier 2000, 24 p.

IR SST PUBLICATIONS

BARIL, R. and D. BERTHELETTE. *Les composantes et les déterminants organisationnels des interventions de maintien du lien d'emploi en entreprises*, Research Report, 159 p., Research Summary, 59 p., Montréal, IRSST, 2000 (Études et recherches, R-238 and RR-238).

BARIL, R. and D. BERTHELETTE. *Components and Organizational Determinants of Workplace Interventionals Designed to Facilitate Early Return to Work*, Research Report, Montréal, IRSST, 2000, 159 p. (Études et recherches, R-263).

BEAUCHAMP, Y., LAGACÉ, D. and M.C. NORDMAND. *Adaptation et validation d'un harnais de manutention pour les ambulanciers*, Research Report, Montréal, IRSST, 2000, 17 p. (Études et recherches, R-250).

BÉLANGER, R., MASSÉ, S., BOURBONNIÈRE, R., TELLIER, C. and C. SIRARD. *Friction Clutch Press - Determining the Location of Two-Hand Controls*, Technical Guide, Montréal, IRSST, 2000, 11 p. (Études et recherches, RG-236).

BÉLANGER, R., MASSÉ, S., BOURBONNIÈRE, R., TELLIER, C. and C. SIRARD. *Press with a Full-Revolution Clutch - Determining the Location of Two-Hand Controls*, Technical Guide, Montréal, IRSST, 2000, 9 p. (Études et recherches, RG-237).

BENZAOUA, M. and T. BELEM. *Investigation de la stabilité chimique et son impact sur la qualité des remblais miniers cimentés*, Research Report, 156 p., Research Summary, 16 p., Montréal, IRSST, 2000 (Études et recherches, R-260 and RR-260).

BOILEAU, P.-É. and S. RAKHEJA. *Caractérisation de l'environnement vibratoire dans différentes catégories de véhicules : industriels, utilitaires et de transport urbain*, Research Report, Montréal, IRSST, 2000, 133 p. (Études et recherches, R-242).

BRODEUR, J., TRUCHON, G. and D. DROLET. *Quantification de la variabilité dans l'excrétion urinaire du mercure*, Research Report, Montréal, IRSST, 2000, 30 p. (Études et recherches, R-241).

BRODEUR, J., VYSKOCIL, A., TARDIF, R., PERRAULT, G., DROLET, D., TRUCHON, G. and F. LEMAY. *Adjustment of Permissible Exposure Values to Unusual Work Schedules*, Research Report, Montréal, IRSST, 2000, 31 p. (Études et recherches, R-259).

DION, C. and G. PERRAULT. *Évaluation de la concentration de fibres d'amiante émises dans l'air ambiant de bâtiments scolaires*, Research Report, Montréal, IRSST, 2000, 14 p. (Études et recherches, R-256).

DION, C., PERRAULT, G., CHAMBERLAND, G. and J. MCCABE. *Contrôle de la qualité de la numération des fibres*, Research Report, Montréal, IRSST, 2000, 16 p. (Études et recherches, R-240).

DIRECTION DES OPÉRATIONS. *Guide d'échantillonnage des contaminants de l'air en milieu de travail*, 7^e éd. rev. et mise à jour, Technical Guide, Montréal, IRSST, 2000, 153 p. (Études et recherches, T-06).

DIRECTION DES OPÉRATIONS. *Sampling Guide for Air Contaminants in the Workplace*, 7th Ed. Rev. and Updated, Technical Guide, Montréal, IRSST, 2000, 160 p. (Études et recherches, T-15).

DIRECTION DES OPÉRATIONS. *A Guide to the Adjustment of Permissible Exposure Values (PEVs) for Unusual Work Schedules*, Technical Guide, Montréal, IRSST, 2000, 22 p. (Études et recherches, T-22).

GAGNÉ, J.-P., TRAN QUOC, H., DENIS, S. and M. LEBLANC. *Rapport sur la conception de signaux sonores et sur la mesure inductive de la capacité de localisation auditive des avertisseurs sonores de danger en milieux industriels*, Research Report, Montréal, IRSST, 2000, 110 p. (Études et recherches, R-248).

GERVAIS, M., CHICOINE, H. and D. GRANGER. *Une banque de solutions : un outil pour les bâtisseurs*, Research Report, Montréal, IRSST, 2000, 82 p. (Études et recherches, R-262).

GILBERT, R., LEBLANC, D. and S. NADEAU. *Analyse comparative des principales méthodes d'évaluation des risques de maux de dos et préparation d'une grille d'identification des facteurs de risques*, Research Report, Montréal, IRSST, 2000, 71 p. (Études et recherches, R-261).

HÉBERT, F., CLOUTIER, E., GERSVAIS, M., GRANGER, D., LEVY, M. and P. MASSICOTTE. *Les accidents de travail en forêt : analyse de scénarios d'accidents survenus entre le 1er juin 1997 et le 31 mai 1998*, Research Report, 174 p., Research Summary, 55 p., Montréal, IRSST, 2000 (Études et recherches, R-245 et RR-245).

LALIBERTÉ, L. *Guide pour la mesure des champs magnétiques statiques et alternatifs autour des barres d'alimentation et des redresseurs dans l'industrie électrochimique*, Research Report, Montréal, IRSST, 2000, 53 p. (Études et recherches, R-244).

LAPLANTE, N. *Innovations organisationnelles et sécurité du travail dans le secteur du textile*, Research Report, Montréal, IRSST, 2000, 70 p. (Études et recherches, R-247).

LARA, J., TURCOT, D., DAIGLE, R. and S. MASSÉ. *Mise au point des méthodes d'essai pour évaluer la résistance à la perforation et à la coupure des chaussures de protection utilisées pour la lutte contre les incendies*, Research Report, Montréal, IRSST, 2000, 26 p. (Études et recherches, R-246).

LARIVIÈRE, P., OSTIGUY, C., PERRAULT, G. and M.-A. LAVOIE. *Élaboration d'une stratégie d'échantillonnage et d'analyse pour les principaux procédés produisant ou utilisant des dérivés du chrome hexavalent, notamment les chromates, au Québec*, Research Report, Montréal, IRSST, 2000, 17 p. (Études et recherches, R-251).

LAVOIE, J. *Évaluation de l'exposition des éboueurs aux bioaérosols*, Research Report, Montréal, IRSST, 2000, 24 p. (Études et recherches, R-255).

LEMIÈRE, C. *L'expectoration induite comme méthode non invasive permettant d'augmenter la sensibilité du diagnostic d'asthme professionnel en laboratoire hospitalier*, Research Report, Montréal, IRSST, 2000, 16 p. (Études et recherches, R-254).

MASSICOTTE, A., BOUDRIAS, S. and F. QUIRION. *Conditions optimales d'utilisation des nettoyeurs à plancher : une approche globale*, Research Report, Montréal, IRSST, 2000, 81 p. (Études et recherches, R-258).

OSTIGUY, C., CORMIER, D., LARIVIÈRE, P. and A. LAJOIE. *Présentation des résultats d'analyses produits à l'IRSST en 1998*, Report, Montréal, IRSST, 2000, 72 p. (Bilans de connaissances, B-060).

PAQUES, J.-J. and R. BOURBONNIÈRE. *Protective Shield for Mixers for the Use of Pastry-Cooks*, Technical Data Sheet, Montréal, IRSST, 2000, 10 p. (Études et recherches, RF-239).

PERRAULT, G., GOYER, N., HÉBERT, F., DUGUAY, P., OSTIGUY, C., TRUCHON, G., ARCAND, R., GÉRIN, M., BÉGIN, D., BONVALOT, Y., CARRIER, G., LEFEBVRE, P. and S. PALLAGE. *Étude préliminaire sur l'évaluation de l'impact d'un abaissement des valeurs d'exposition admissibles pour le formaldéhyde*, Research Report, Montréal, IRSST, 2000, 177 p. (Études et recherches, R-257).

QUIRION, F. and P. L'HOMME. *Conditions optimales d'utilisation des nettoyeurs à plancher : huile à moteur et hydraulique sur le béton*, Research Report, Montréal, IRSST, 2000, 41 p. (Études et recherches, R-249).

ROY, M., GUINDON, J.-C. and C. PELLETIER. *Équipes semi-autonomes de travail - Description et préoccupations de 12 entreprises manufacturières québécoises*, Research Report, Montréal, IRSST, 2000, 65 p. (Études et recherches, R-252).

TRUCHON, M. and L. FILLION. *Les déterminants biopsychosociaux de l'incapacité chronique liée aux lombalgies : une recension des écrits*, Research Report, Montréal, IRSST, 2000, 46 p. (Études et recherches, R-253).

VÉZINA, N., PRÉVOST, J. and A. LAJOIE. *Élaboration d'une formation à l'affilage des couteaux dans six usines d'abattage et de transformation du porc : une étude ergonomique*, Research Report, Montréal, IRSST, 2000, 48 p. (Études et recherches, R-243).

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Production: Communication Division, IRSST

Editing and coordination: Linda Savoie

Translation: Le Dernier Mot

Graphic Design: Devant le jardin de Bertuch

Illustration: Monika Suteski

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