2016 ACTIVITY REPORT

RESEARCH INTEGRITY IN OHS

irsst
Institut de recherche
Robert-Sauvé en santé
et en sécurité du travail

DECLARATION OF DATA RELIABILITY

I declare that I have every reason to believe that the observable facts and measurable data presented in this activity report accurately reflect the situation as at December 31, 2016. This information falls under my responsibility as president and CEO of the Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST). I hereby attest to its accuracy and the reliability of the controls relating thereto.

The indicators retained are developed using reliable and accurate data and allow us to assess the IRSST's production over the course of the year.

Recommended by the members of the Institute's Scientific Advisory Board and approved by the Board of Directors, the 2016 activity report faithfully describes the Institute's mission, vision, and principal achievements.

Marie Larue
President and CEO

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AMONG THE TOOLS THAT I HAVE PROUDLY ADOPTED IN 2016 IS DEFINITELY ONE.
HAD A HAND IN DEVELOPING AT THE IRSST IN RECENT YEARS, THE IRSST POLICY ON INTEGRITY

MESSAGE FROM THE PRESIDENT AND CEO

Among the tools that I have proudly had a hand in developing at the IRSST in recent years, the *IRSST Policy on Integrity* adopted in 2016 is definitely one. Informed by values such as fairness and honesty, the aim of this policy is to earn and maintain a high level of trust and confidence in the Institute's activities, the ways they are conducted, and the people who carry them out. The Policy applies not only to all our personnel, but also to external researchers whose work we fund. In fact, it covers all our activities and applies to everyone, from trainees to awardees, scientists to laboratory technicians, and management team to members of our labour/management bodies and Scientific Advisory Board. It also applies to the social partners who sit on our research project follow-up committees.

The *IRSST Policy on Integrity* is built on a number of principles, with the first reaffirming the purpose of the Institute's activities, which is to advance and disseminate knowledge. The other principles governing integrity include probity, fairness, transparency, sound management, and independence.

Like the biggest knowledge organizations, the Institute has thus equipped itself with an essential tool that guides its activities by implementing a framework of practice to ensure their integrity and provide for appropriate action when breaches of integrity occur. This tool complements a number of others, including the *Scientific Policy*, the *Ethics Policy for Research Involving Humans* and the *Declaration of the IRSST's Principles of Equal Representation*.

Together, these policies provide a framework for the work performed by the many individuals who participate in the IRSST's mission, including those who map out the programs, adopt them, formulate positive opinions, conduct studies, and transfer their results. All this ensures that the Institute's output meets the highest standards, while addressing the needs and priorities expressed by our social, employer, and union partners.

That's how we do things. And we're proud of it!

Marie Larue

2016 IN NUMBERS

173
ACTIVE PROJECTS AND ACTIVITIES

31 projects being developed
38 projects began
(**22** joint, **14** external, and **2** internal)
34 completed projects
70 projects in progress

203
ORGANIZATIONS INVOLVED IN FOLLOW-UP COMMITTEES

104
NEW REQUESTS FOR EXPERTISE

33
EXTERNAL COMMITTEES INCLUDED AT LEAST ONE IRSST REPRESENTATIVE

9 committees of the CNESST and its network, including regulatory committees
11 national and international standards committees
13 other local, national, and international committees

213
EXTERNAL RESEARCHERS

from **29** universities and **32** research centres or other organizations formed part of the IRSST's network of scientific collaborators.

61,616

ENVIRONMENTAL, TOXICOLOGICAL, AND MICROBIOLOGICAL ANALYSES

were performed, including **74.5%** for partners in the prevention-inspection network: CNESST, integrated health and social services centres, and joint sector-based associations. Our laboratories reported a slight increase (less than 1%) in the number of analyses performed compared to the previous year.

8,246

HOURS

hours were devoted to calibrating, maintaining, and repairing direct-reading and sampling instruments, including **69.8%** for the OHS and prevention-inspection network. This represents a **7%** increase in the number of hours over the previous year.

33

GRADUATE STUDIES SCHOLARSHIPS AND POSTDOCTORAL FELLOWSHIPS

were awarded to master's, doctoral, and postdoctoral candidates whose research programs dealt specifically with the prevention of industrial accidents and occupational diseases or the rehabilitation of affected workers.

$369,663

WERE ALLOCATED FOR THE SCHOLARSHIP AND FELLOWSHIP PROGRAM

54

PUBLICATIONS[1]

32 research reports, including 29 in French and 3 in English
22 guides and technical awareness-raising tools, including 21 in French and 1 in English

57

SCIENTIFIC PUBLICATIONS RELATED TO PROJECTS CARRIED OUT OR FUNDED BY THE IRSST

37 peer-reviewed journal articles
12 peer-reviewed articles published in conference proceedings
8 other publications, including books, book chapters, master's and doctoral theses, etc.

100

OTHER PRESENTATIONS

given by IRSST personnel or IRSST-funded researchers at scientific conferences or events organized by partners.

[1] This figure represents the total number of print documents published; four other products produced in electronic format (two videos and two Web tools) were also considered publications by the Communications and Knowledge Transfer Division.

24 SIMPLIFIED ARTICLES + **39** NEWS BRIEFS

published in the *Actualités* column of *Prévention au travail*, the magazine issued jointly by the CNESST and the IRSST.

42 VIDEOS POSTED ONLINE

384,241 SESSIONS ON THE IRSST'S WEB SITES

908,644 UNIQUE DOWNLOADS[2] OF PUBLICATIONS DISSEMINATED ON THE IRSST'S WEB SITES

4,868 SUBSCRIBERS TO *INFOIRSST*, THE INSTITUTE'S ELECTRONIC NEWSLETTER

[2] This large increase in the number of downloads is attributable to the use of Piwik software. The new "unique downloads" figure tallies all requests for documents made on the server, excluding multiple downloads by the same user during a given session. Previously, the number of downloads included only those from one of the IRSST's Web sites. Any other links (search engine or referring site) pointing directly to a PDF document could not be counted.

1

INTEGRITY, RIGOUR, AND QUALITY

Largely inspired by the *Policy for the Responsible Conduct of Research* of the Fonds de recherche du Québec (FRQ) and by policies adopted by other establishments such as Polytechnique Montréal, the Institute adopted its own **Policy on Integrity in 2016**. This policy, which is not intended to substitute for the laws and regulations in force or for the codes of ethics applicable in various disciplines and professions:

1. sets forth the basic principles governing integrity as it pertains to all IRSST activities;
2. formulates expectations regarding integrity for the various members of the IRSST community;
3. defines breaches of integrity;
4. establishes mechanisms for managing allegations of breaches of integrity; and
5. specifies the structure for managing substantiated cases of breaches of integrity.

Enhanced by the opinions formulated by the Scientific Advisory Board and ratified by the Board of Directors, this policy applies to the entire IRSST community, that is, "all individuals who take part in developing, evaluating, making decisions about, conducting, or managing scientific activities led or funded by the IRSST, or in disseminating or transferring the associated results, as well as anyone hired to provide laboratory services." Integrity is governed by a number of fundamental values: honesty, reliability and intellectual rigour, objectivity and independence, fairness, trust, accountability, openness, and transparency. This policy requires all actors to adopt, adhere to, and defend behaviours congruent with these values. Of these basic governing principles, the advancement of knowledge comes first.

“PROJECTS ARE PREDOMINANTLY DESIGNED TO REFLECT PRIORITIES EXPRESSED BY PARTNERS IN CONSULTATIONS IN ORDER TO ENSURE THAT THE TRUE NEEDS OF WORKPLACES ARE MET.”

AN ITERATIVE PROCESS

Given its particular mission and the equal-representation nature of its administration, over time the IRSST has implemented processes for developing and carrying out research projects that are guided by overriding principles: the relevance and priority of its activities, the neutrality and integrity of its personnel, fairness, and scientific merit.

Projects are predominantly designed to reflect priorities expressed by partners in consultations in order to ensure that the true needs of workplaces are met. They must adhere to the Institute’s *2013-2017 Five-Year Plan*, or satisfy requirements arising from emerging problems and comply with the IRSST’s various policies.

Before the Scientific Advisory Board (composed of scientific, employer, and worker representatives) formulates an opinion giving the go-ahead or not, every project is required to undergo an examination and internal validation process. This process allows improvements to be made to the project by ensuring, among other things, that it respects the requirements of science and offers concrete solutions for workplace concerns, while fostering the advancement of knowledge. Research management advisors act as facilitators for external researchers, in particular, by helping them prepare their applications for funding, guiding them in the development of their project, and providing them with administrative support. Collaborative in nature, these many interactions with the internal and external research teams are an original feature that is unique to the Institute. It serves to enhance the study protocols and iron out problems that could interfere with their approval. This translates into a very high project acceptance rate compared to that of other funding organizations.

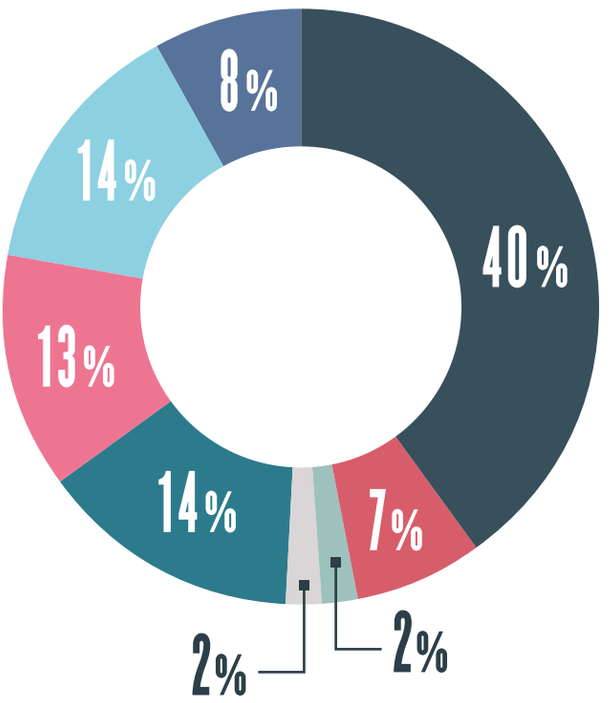
After the first steps have been completed, the project is presented to the Scientific Advisory Board, which assesses its relevance, priority, and scientific merit. If the project has to be conducted in the field as opposed to a laboratory, the IRSST endeavours to support the researchers involved by opening doors to companies and ensuring that the workplace welcomes them. In addition, the project must be carried out using a parity approach (equal labour/management representation) and with the consent and eventual participation of the employer and workers in the company concerned.

Even before the project begins, the Institute determines whether a follow-up committee should be formed, depending on the project’s nature. The labour/management composition of this committee varies, but its members are generally chosen because they are representative of the workplace settings affected by the problem under study, able to express opinions on diverse points of view, and capable of playing the role of intermediaries who relay results. The follow-up committee brings knowledge of the workplace to the researchers throughout the process, i.e. during the definition, development, and realization of the

research. The participation of these individuals from the "field," who are representative of the workplace or well-informed about the project's objectives, is an added value. It ensures, among other things, that the results are presented in a form "useful to and usable by the workplaces involved, and [that] the means used to communicate the results are adapted" to the realities of the work world.

In 2016, **102** projects had a follow-up committee. Representatives of **203** different organizations took part in these committees.

ORGANIZATIONS INVOLVED IN FOLLOW-UP COMMITTEES



- **40%** Government departments and agencies (81)
- **7%** Professional orders and associations (14)
- **2%** Liaison and knowledge transfer centres (5)
- **2%** Community associations (3)
- **14%** Employer associations (28)
- **13%** Union associations (26)
- **14%** Private companies (29)
- **8%** OHS professionals and practitioners (17)

PEER REVIEW

Science remains at the core of the peer review process. One component of research conducted or funded by the IRSST consists of submitting protocols and results to peer review.

The Institute's scientific advisors recruit competent, recognized experts in the assessment of scientific merit, and ensure that the research team takes their recommendations into account. In 2016, the Institute recruited **113** peer reviewers from around the world. Thirty-six of them (15 French citizens, 8 Quebecers, 3 Canadians from other provinces, 3 Belgians, 3 Americans, 2 British citizens, 1 Swede, and 1 Brazilian) reviewed research protocols, meaning 3 individuals per protocol, while the 77 others (46 French citizens, 26 Quebecers, and 5 Belgians) reviewed the results presented in reports, which generally speaking meant 2 reviewers for each report.

This process does more than guarantee the quality of the Institute's output. Ultimately, it ensures concrete, evidence-based solutions for workplaces expressing occupational injury prevention and rehabilitation needs to which science can offer an answer.

RESEARCH SPINOFFS

The Institute's knowledge transfer advisors, supported by a firmly implemented framework of practice, ensure that knowledge translation is an integral part of research projects and activities right from the outset. They use this framework to promote continuous interaction between knowledge producers and users whenever feasible. Composed of representatives of organizations interested in the research, follow-up committees are created and remain active throughout the project to ensure a fit between needs in the field and the objectives set by the scientists.

The team of knowledge transfer professionals accompanies researchers and members of the follow-up committees during each of the main stages in the research and knowledge translation cycle. Together, they determine the project's potential for results transfer, choose the type of knowledge transfer products to be developed, and identify priority clienteles and the best ways to reach them.

In 2016, **13** knowledge translation projects were under way. Here are some of the most telling examples.

SAFETY ON LOBSTER BOATS

Launched in Rimouski at the annual meeting of the Comité permanent sur la sécurité des bateaux de pêche du Québec, the **video** titled *Setting the Course for Safety: Preventing Falls Overboard* met with an enthusiastic response from the fishers' representatives, who already plan to use it in training.

The 25-minute video features professional fishers and deckhands who share their knowledge and reveal their "tricks of the trade" to improve prevention of falls overboard. Available in both English and French, this video is the product of research funded by the IRSST at the CNESST's request in the wake of various incidents, notably the death of one fisher who fell overboard.

Fishers' associations are eagerly promoting the video. They regard it as accurately portraying the situations experienced on lobster boats at sea, and its content as offering solutions for better prevention of falls overboard.

SETTING THE COURSE FOR SAFETY

PREVENTING FALLS OVERBOARD

Impressed by the originality of the research on preventing falls overboard and by the quality of the Institute's video, the Center for Maritime Safety and Health Studies of the National Institute for Occupational Safety and Health in the United States sent the video to members of a research committee looking into fisher safety on American lobster boats.

SOLVENT SUBSTITUTION

The Solub Web site supports preventionists involved in solvent substitution projects in the workplace by proposing a systematic process for finding safer replacement products. The suggested process was reinforced by the addition of 12 new technical fact sheets on solvent substitution in 2016.

Designed for specific processes or industrial sectors, these fact sheets concern gluing polyurethane foam (furniture); stripping paint off bathtubs; removing graffiti; stripping paint off wooden furniture; degreasing mechanical parts and brakes (cars); degreasing metal parts (manufacturing and machining); dry cleaning; cleaning asphalt (road pavement); cleaning presses (offset press); cleaning and stripping paint off tanks (paint manufacturing); replacing acetone in the manufacture of fibreglass products; and varnishing floors.

These fact sheets allow users to replace hazardous petroleum-based or chlorinated products or procedures by so-called green products or biosourced procedures.

They present the problem, levels of exposure, and effects of hazardous solvents, as well as possible substitutions, preventive actions, recommendations, and many bibliographic references.

PROTECTION AGAINST FALLS FROM HEIGHTS

In the construction sector alone, the CNESST reports approximately **700** falls a year, some of which are fatal. In 2016, the Institute achieved a double feat. To support preventionists, not only did it produce an update of its *Design of Horizontal Lifeline Systems for Fall Protection* technical guide, but it also designed a software tool integrating the main parameters needed to develop such a prevention device.

The updated version of the guide takes into account amendments to the *Safety Code for the Construction Industry*, among other things. These amendments require equipping lanyards that connect the safety harness to the anchoring system, with an energy absorber. After being validated, a new analytical method for designing a horizontal lifeline system (HLLS) was also proposed to factor in the impact of a number of parameters (span, anchoring system flexibility, cable diameter, sag, etc.).

Intended mainly for engineers designing new active fall protection systems, the software tool can be used to design HLLSs, also called flexible continuous anchorage systems or lifelines. With this application, engineers can easily calculate cable tension and deflection during fall arrest, as well as the clearance required with respect to the cable. Preventionists wishing to verify the compliance of existing systems may also find this software tool useful.

WORK-RELATED TRAFFIC ACCIDENTS

A new folder on work-related traffic accidents (WRTAs) now reinforces the content of the *Statistiques sur mesure* (customized statistics) Web site. While workers who receive compensation following a work-related traffic accident represent only 2% of all those compensated by the CNESST, this type of accident is responsible for no less than **25 to 30%** of all work-related accidental deaths.

Highlighting the results of a study on the characteristics and scenarios of work-related traffic accidents, this microsite presents statistics that may prove very useful for both workplace preventionists and the scientific community.

The folder on work-related traffic accidents provides an overview of the problem. It includes a technical fact sheet comparing traffic accidents that are work-related to those that are not, and presents relevant data and statistics in this regard. The folder also contains a video on the main cause of work-related accidental deaths, whether in Québec, elsewhere in Canada, or in the United States.

HOW TO CHOOSE SLIP-RESISTANT OCCUPATIONAL FOOTWEAR

Choosing slip-resistant work boots and shoes is no simple task. In fact, **8.4%** of work-related accidents compensated in 2015 involved the foot, toes, or ankle as the injury site.

To assist members of occupational health and safety committees and purchasers, the IRSST published a technical fact sheet (in the form of a pamphlet) outlining the steps to follow to choose footwear that provides good grip and adequate protection against other hazards.

Webinar for stress and palliative care practitioners.
Antoine Robitaille (*Le Devoir*), Lise Fillion, Jean-François Desbiens (Université Laval), Céline Gélinas (McGill University), Mélanie Vachon (Université du Québec à Montréal) – **Photo:** Linda Savoie

KNOWLEDGE TRANSFER VIA WEBINARS

The word *webinar* is a blend of the words *Web* and *seminar*. Webinars are one of the means used by the IRSST to promote knowledge transfer, as they convene large numbers of people online at low cost in order to pass on information about a specific subject, while enabling them to participate remotely.

WEBINAR FOR STRESS AND PALLIATIVE CARE PRACTITIONERS

In November, the IRSST organized a Café Scientifique on occupational stress and satisfaction in the palliative care sector. To reach its target public, the activity was held on the 11th *Journée scientifique* of Maison Michel-Sarrazin/ERMOS, an establishment specialized in end-of-life care. The results of studies on psychosocial risk factors associated with occupational stress and satisfaction in palliative care were presented by means of a webinar on this occasion.

Some one hundred people, including nurses, physicians, students, and professionals and managers from the healthcare network, discussed the collaborative approach used to implement workplace support programs in four hospitals.

WEBINAR ON THE *RENDEZ-VOUS DE LA SCIENCE*

The webinar formula was also used to bring the ***Rendez-vous de la science*** (RVSs) within reach of a broader audience. These RVSs, which researchers, preventionists, and partners are invited to attend, foster the transfer of knowledge generated by completed projects or thematic programs in OHS research.

In 2016, the Institute held **12** *Rendez-vous de la science*, five of which were also shared via a webcast. A total of **703** people participated in these events.

WEBINAR ON BIOAEROSOLS

In collaboration with the *Association paritaire pour la santé et la sécurité du travail du secteur des affaires sociales* (ASSTSAS), the IRSST held a webinar in March to promote the use of a user-friendly web tool designed to facilitate the task of choosing respiratory equipment to protect against bioaerosols.

This decision-making support tool, presented to personnel in health sector establishments, proposes a six-step control-banding process based on workers' level of exposure and the hazards associated with bioaerosols. It is designed to support physicians, health professionals, and industrial hygienists who have to choose appropriate means of respiratory protection against bioaerosols in various sectors such as health, agriculture, municipal affairs, and business.

UNDER THE TITLE RENDEZ-VOUS DE LA SCIENCE, THE IRSST IS ORGANIZING LECTURES ON RESEARCH CONDUCTED OR FUNDED BY THE INSTITUTE.

STAY IN TOUCH WITH OHS RESEARCH NEWS BY ATTENDING THESE MEETINGS FOR UP TO ONE HOUR.

OUR LABORATORIES

A new director of the Laboratory Division was appointed in January to fill the vacancy left by the retirement of **Jacques Lesage**, who had worked at the IRSST for 34 years, including 14 as the director of this division. **Martin Beauparlant** was the new appointee. An Institute employee since 2007, he holds a master's degree in chemistry and the professional designations of certified industrial hygienist (CIH) and registered occupational hygienist (ROH) as a specialist in chemical, microbiological, and physical contaminants.

CLAS CERTIFICATION

The Laboratory Division's capacity to perform calibrations at the given Best Measurement Capability was reconfirmed. After reassessing our laboratory processes, the Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) renewed our Laboratory Division's CLAS certification for acoustic calibration and electrical and capacitance calibration. The IRSST is the only Canadian organization to hold such certification in acoustic calibration. Reassessment takes place every two years. The latest certificate is valid until April 2021.

LABPLUS AND CLICLAB

LabPLus, the new laboratory information management system (LIMS), began operation after much effort and a breaking-in/training period for staff. Compared to the old and obsolete LIMS, LabPLus allows for higher analytical productivity, the integration of various databases, and greater access to analytical data.

The laboratory-client interface was also improved, and the system now allows for specimen traceability right through to the transmission of analytical results to clients. In addition, the IRSST's chemists and microbiologists can now use an encrypted electronic signature, authenticated by the Ordre des chimistes du Québec.

The rollout of LabPLus coincided with that of **ClicLab**, a Web application that allows clients to enter and submit their requests and obtain responses electronically. An online tutorial is also provided to facilitate use of ClicLab.

Québec's Ministère de la Santé et des Services sociaux (MSSS) partnered in this important project, as its Système d'information en santé au travail (SISAT) and LabPLus are interconnected and communicate with each other. Hygienists, nurses, and technicians in the occupational health network can thus submit online requests for analyses or for loans of sampling equipment or direct-reading instruments.

DIESEL PARTICULATE MATTER EXPRESSED AS TOTAL CARBON

Reflecting amendments to Québec's *Regulation respecting occupational health and safety* (ROHS) regarding exposure to diesel engine emissions, a new analytical service (no. 388) is now offered to our laboratory clients. The method, which replicates the NIOSH method (NIOSH 5040), is used to analyze and determine the particulates emitted into the air by diesel engines, expressed as total carbon. The Laboratory Division supported the CNESST in this endeavour by providing it with the necessary expertise for carrying out the air sampling and analysis methods.

Total carbon is the combined total of organic carbon and elemental carbon. It is an indicator of exposure to particulate matter emanating from exhaust gases of diesel engines that is used by various Canadian and American authorities in relation to underground mines.

COMMUNICATION

GOT A MOMENT?

Many studies indicate that people are more receptive to video messages than to text messages. Forrester Research even determined that it takes 1.8 million words to obtain the same effect as a 60-second video. Based on such findings, the Institute launched a new initiative by creating *Research flashes*.

In a nutshell, the author of a study is invited to explain, in front of a camera, the reasons why he or she carried out a given project, what purpose the results can serve, to whom they may be useful, etc.

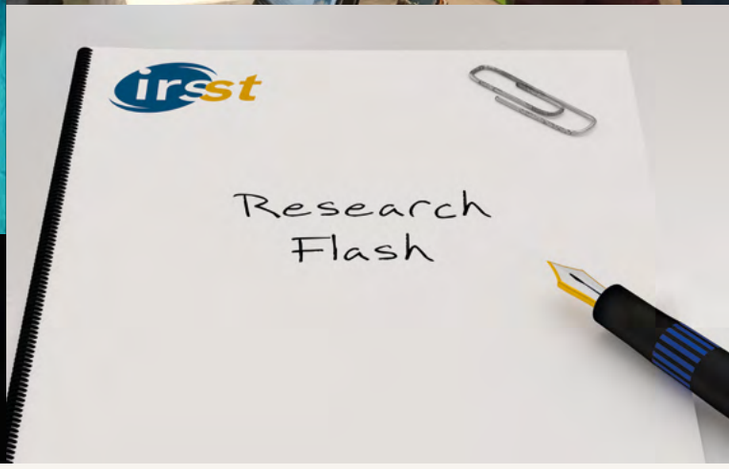
The Institute thereby hopes to spark everyone's interest – particularly that of young people – in the advancement of OHS knowledge by using a mode of communication they can relate to.

PRESENT IN THE FIELD

The Institute communicates with its clients and partners in a variety of ways during the course of a year. Researchers, professionals, laboratory technicians, and communication and knowledge transfer advisors all take part in a number of relation-building activities in order to inform our clients and partners of events, transfer research results, or give lectures.

In 2016, the Institute hosted an information booth at several public events where it interacted with visitors. These events included:

- the 8th edition of the **P'tit Rendez-vous en santé et sécurité au travail** (small-scale meeting on occupational health and safety) held in Montréal in April, a training and networking activity attended by 200 people;
- the **Grand Rendez-vous en santé et sécurité du travail** (major meeting on occupational health and safety) in Québec City in May, with 1,200 participants;
- the **38th Congress of the Association québécoise pour l'hygiène, la santé et la sécurité du travail** (AQHSST) in Shawinigan in May, which brought together 200 hygienists, preventionists, and practitioners around the theme of *Comportements sécuritaires, les tiens, les miens, les nôtres* (safe behaviours: yours, mine, ours);



- the **Journée de la phytoprotection**, held in Saint-Mathieu-de-Belœil in July, which attracted 250 farmers, advisors, and agronomists interested in pesticides and means of preventing the risk of exposure to these substances. To mark the occasion, the Institute designed the special Web page ***La recherche en SST en soutien au secteur agricole*** (OHS research to support the agricultural sector), which highlights studies that may be of use to workers in this sector;
- the **Grand Rendez-vous en santé et sécurité du travail** in Montréal in November, which drew thousands of visitors as it dœs each year and where the Institute hosted two information booths, one promoting its laboratories and the other transferring research results;
- the **2016 Congress of the Association de la construction du Québec** (September 30 to October 1), which represents 17,000 contractors; and
- the **Congress of the Ordre des infirmières et infirmiers du Québec**, attended by 3,000 people in Montréal in November, and where the Institute rolled out its information booth for its first official presence.

THE IRSST AT THE MUSEUM

From March 2016 to April 2017, the Musée de la civilisation de Québec presented *Nanotech: The Invisible Revolution*, in which the IRSST participated as a partner at Prima Québec's invitation.

This exhibition, designed to open the eyes of the general public to nanotechnologies and the major issues they raise, provided the perfect opportunity for promoting the advancement of prevention knowledge, as well as the best practices for managing risks related to nanomaterials, which are the subject of a guide published by the IRSST.

The Museum anticipates that more than 150,000 adults and 90,000 young people will visit this exhibition, whose content was influenced by the Institute through its participation on the event's scientific committee.

BETTER INDICATORS OF OUR WEB SITE TRAFFIC

After launching a new generation of its main Web site in 2015, the Institute introduced a new analytical tool for determining more reliable traffic statistics. Using *Piwik*, the number of document downloads, regardless of the Web site on which the forwarding links are posted, can be analyzed directly from the server. The software excludes multiple downloads by the same user during a given session, thus allowing for a more accurate interpretation of traffic statistics.

2016 HONOUR ROLL

IRSST PRIZE FOR THE BEST ARTICLE – TO MARK THE 35TH ANNIVERSARY OF ITS FOUNDING, THE INSTITUTE RELAUNCHED THE IRSST PRIZE FOR THE BEST SCIENTIFIC ARTICLE IN THE FIELD OF OCCUPATIONAL HEALTH AND SAFETY. AFTER DUE DELIBERATION, A COMMITTEE OF EXPERTS FROM VARIOUS DISCIPLINES CHOSE AN ARTICLE PUBLISHED IN THE

IRSST PRIZE FOR THE NEXT GENERATION – IN PARTNERSHIP WITH THE ASSOCIATION FRANCOPHONE POUR LE SAVOIR (ACFAS), THE IRSST HANDED OUT TWO PRIZES – ONE TO A MASTER'S STUDENT AND THE OTHER TO A DOCTORAL STUDENT – AS AN INCENTIVE TO THE NEXT GENERATION OF OHS RESEARCHERS. WHILE UNDER

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AWARD-WINNING POSTER – A DOCTORAL STUDENT IN TOXICOLOGY AND RISK ASSESSMENT AT ÉCOLE DE SANTÉ PUBLIQUE AND A YOUNG SCIENTIST AT THE IRSST, SABRINA GRAVEL, WAS AWARDED AN HONOURABLE MENTION IN THE BEST

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IRSST PRIZE
FOR THE BEST ARTICLE

To mark the 35th anniversary of its founding, the Institute relaunched the **IRSST prize for the best scientific article** in the field of occupational health and safety. After due deliberation, a committee of experts from various disciplines chose an article published in the scholarly journal *Clinical Infectious Diseases* in 2015. The principal author was **Laetitia Bonifait**, a post-doctoral trainee from the Centre de recherche de l'Institut universitaire de cardiologie et de pneumologie de Québec (CRIUCPQ).

Titled *Detection and Quantification of Airborne Norovirus during Outbreaks in Healthcare Facilities*, this publication, which stems from an IRSST-funded study on the detection of respiratory and enteric viruses in hospitals, constitutes a significant and original contribution to OHS for personnel in the health sector.

The prizewinner received $10,000 for her contribution to this activity and for the quality of the article, written in collaboration with Rémi Charlebois (CRIUCPQ), Allison Vimont (Institut sur la nutrition et les aliments fonctionnels), Nathalie Turgeon (CRIUCPQ), Marc Veillette (CRIUCPQ), Yves Longtin (Lady Davis Institute of Montréal's Jewish General Hospital), Julie Jean (Université Laval), and Caroline Duchaîne (CRIUCPQ).

IRSST PRIZE
FOR THE NEXT GENERATION

In partnership with the Association francophone pour le savoir (Acfas), the IRSST handed out two prizes – one to a master's student and the other to a doctoral student – as an incentive to the next generation of OHS researchers, while underscoring the excellence of their university track records.

The ***Prix Acfas IRSST – Maîtrise*** went to **Vanessa Dion-Dupont**, a student in the research master's program in microbiology, with a specialization in bioaerosols and worker health, at Université Laval. The prizewinner is working on the bacteriological characterization of bioaerosols generated by wastewater treatment plants, ultimately to establish exposure thresholds that will protect workers' health against the effects of the viruses and bacteria present in the ambient air in these workplaces.

The ***Prix Acfas IRSST – Doctorat*** was awarded to **Alexandra Lecours**, a doctoral student in biomedical sciences, experimental medicine option, at Université du Québec à Trois-Rivières. Targeting clienteles that are learning a trade, specifically, students registered in vocational training programs (hairdressing, cooking, secretarial studies, and electromechanics of automated systems), this prizewinner is studying the conditions under which preventive behaviours are taught and learned in order to gain a better understanding of how students develop and incorporate these behaviours during their training and when they enter the labour force.

● Laetitia Bonifait ● Vanessa Dion-Dupont ● Alexandra Lecours

OUR LABORATORIES AND THE AIHA

IRSST microbiologist **Nicole Brassard** was chosen by the American Industrial Hygiene Association (AIHA) to serve as vice chair of its Proficiency Analytical Testing (PAT) Programs Board through a unanimous vote by Board members.

Ms. Brassard, who already sits on the Board, has expertise in medical, environmental, and air microbiology, as well as in laboratory certification and proficiency testing. This board is tasked with establishing objective evidence of a laboratory's capability of producing data that are both accurate and replicable in order to demonstrate its competence. Ms. Brassard's election attests to the scientific rigour and analytical calibre of the personnel of the Institute's Laboratory Division.

OUR LABORATORIES AND THE ISO

Another accolade was earned by the IRSST's laboratories when one of its chemists and industrial hygienists, **Simon Aubin**, saw his expertise formally recognized by the International Organization for Standardization (ISO), of which he has been an active member for over 10 years.

Following a vote, he was elected convener of the working group on organic vapours of the technical committee ISO/TC 146/SC 2WG4, for a three-year term. This ISO committee develops standardized methods for analyzing organic vapours in the workplace, and is composed of roughly a dozen experts from Germany, the United States, France, the United Kingdom, and Sweden.

BEST ORAL PRESENTATION

Carol-Anne Villeneuve, an IRSST trainee working under the supervision of microbiologist Geneviève Marchand, received the student prize for the best oral presentation at the annual AQHSST Congress. Her presentation concerned the assessment of occupational exposure to bioaerosols during the use of biological degreasing fountains in mechanical maintenance shops.

AWARD-WINNING POSTER

A doctoral student in toxicology and risk analysis at Université de Montréal's École de santé publique and a young scientist at the IRSST, **Sabrina Gravel** earned honourable mention in the "best student poster contest" at the international Epidemiology in Occupation Health Conference (EPICOH) in Barcelona.

Two of her colleagues – epidemiologist **France Labrèche** and leader of the Chemical and Biological Hazard Prevention research field **Joseph Zayed** – co-authored the poster titled *Are green jobs safe jobs? Identifying research gaps on chemical and biological hazards*.

The prize was handed to the doctoral student by Mr. Malcolm Sim, director of the Monash Centre for Occupational and Environmental Health in Melbourne, Australia, and editor-in-chief of *Occupational and Environmental Medicine*.

- Nicole Brassard
- Simon Aubin
- Carol-Anne Villeneuve
- Sabrina Gravel

RECOGNITION

Bertrand Perron (ISQ) and Marie Larue (IRSST) – **Photo:** Pascale Prud'homme

The IRSST's "exceptional" contribution to the *Québec Longitudinal Study of Child Development* (QLSCD), led by the Institut de la statistique du Québec, (ISQ), was publicly commended at the 84th Acfas Congress.

On behalf of the IRSST, president and CEO **Marie Larue** received a certificate of recognition from the ISQ, which highlights our personnel's contribution to this important study.

By partnering in this survey, the Institute was able to incorporate a new series of questions on employment and OHS, particularly on work-study balance. The survey provided a first descriptive overview of young people aged 15 who hold a job during the school year, as well as an assessment of occupational injuries and of ways to raise awareness about OHS risks.

ANDRÉE BOUCHARD SCHOLARSHIP

With a master's degree in environmental hygiene and bachelor's degrees in biology and legal sciences, most of **Andrée Bouchard**'s working life was spent defending workers' rights, particularly with regard to OHS.

She worked for the Confédération des syndicats nationaux (CSN) beginning in 1984, where she served, among other things, as secretary of the confederal health and safety committee. She was also appointed to the IRSST's Board of Directors in that same year.

A Board member for over 30 years, she distinguished herself for her avid interest in research, particularly in women's health in the workplace.

Andrée Bouchard – **Photo:** Jacques Millette

In recognition of all her accomplishments and to perpetuate her legacy, the IRSST created the **Andrée Bouchard Scholarship** for research on gender, work, and health.

This thematic scholarship (master's, doctoral, or postdoctoral level) is awarded, upon the recommendation of a committee of experts, to a candidate whose research project incorporates the notions of gender and sex that influence OHS.

The creation of a scholarship bearing Andrée Bouchard's name is also a fitting way for the Institute and its personnel to offer her their thanks. So in a word, thank you!

PARTNERSHIPS

President and CEO of CTT Group, **Jacek Mlynarek**, and IRSST president and CEO, **Marie Larue**, signing a new partnership agreement in November 2016. Photo: Philippe Lemay

GroupeCTTGroup

SMART TEXTILES AND OHS

CTT Group, a technology transfer centre specialized in the research, development, and testing of technical and smart textiles, signed a collaborative agreement with the IRSST. Over a four-year term and through joint efforts with industrial partners, the agreement is designed to promote the development and implementation of studies aimed at improving personal protective equipment (PPE) that guards against falls as well as chemical and biological hazards in the workplace.

Based on the properties of smart textiles, improvements could be made to the resistance, efficacy, and even performances of PPE to better protect the health and safety of workers exposed to mechanical, chemical, or biological stressors.

The projects submitted by CTT Group will have to meet the IRSST criteria of relevance, priority, and scientific merit.

Concordia UNIVERSITY

FILTRATION OF PARTICULATE MATTER AND GASES

The IRSST and **Concordia University** signed a 10-year agreement providing for the joint use of the research platform on the filtration of particulate matter and gases. Hosted by the university, this platform consists of two laboratories that were used by the researchers in 2016 during two joint IRSST-Concordia studies: *Elimination of toxic gases and vapours by oxidation – laboratory development of a methodology for evaluating air purification techniques*, and *Development of a procedure for evaluating the performance of filters used in ventilation systems and industrial vacuums to filter out particulate matter measuring less than 300 nm in diameter.*

NIOSH®

THE ECONOMY AND OHS

Under a framework agreement binding the two organizations, the IRSST and **NIOSH** in the United States held a jointly organized workshop in September on the cost of occupational injuries. Some 20 economists from Université du Québec à Montréal, Ontario's Institute for Work and Health, NIOSH, and the IRSST took part. Discussions focussed on methodological aspects of assessing occupational injury costs and of applying results, and new possible avenues for research were identified.

International Isocyanate Institute

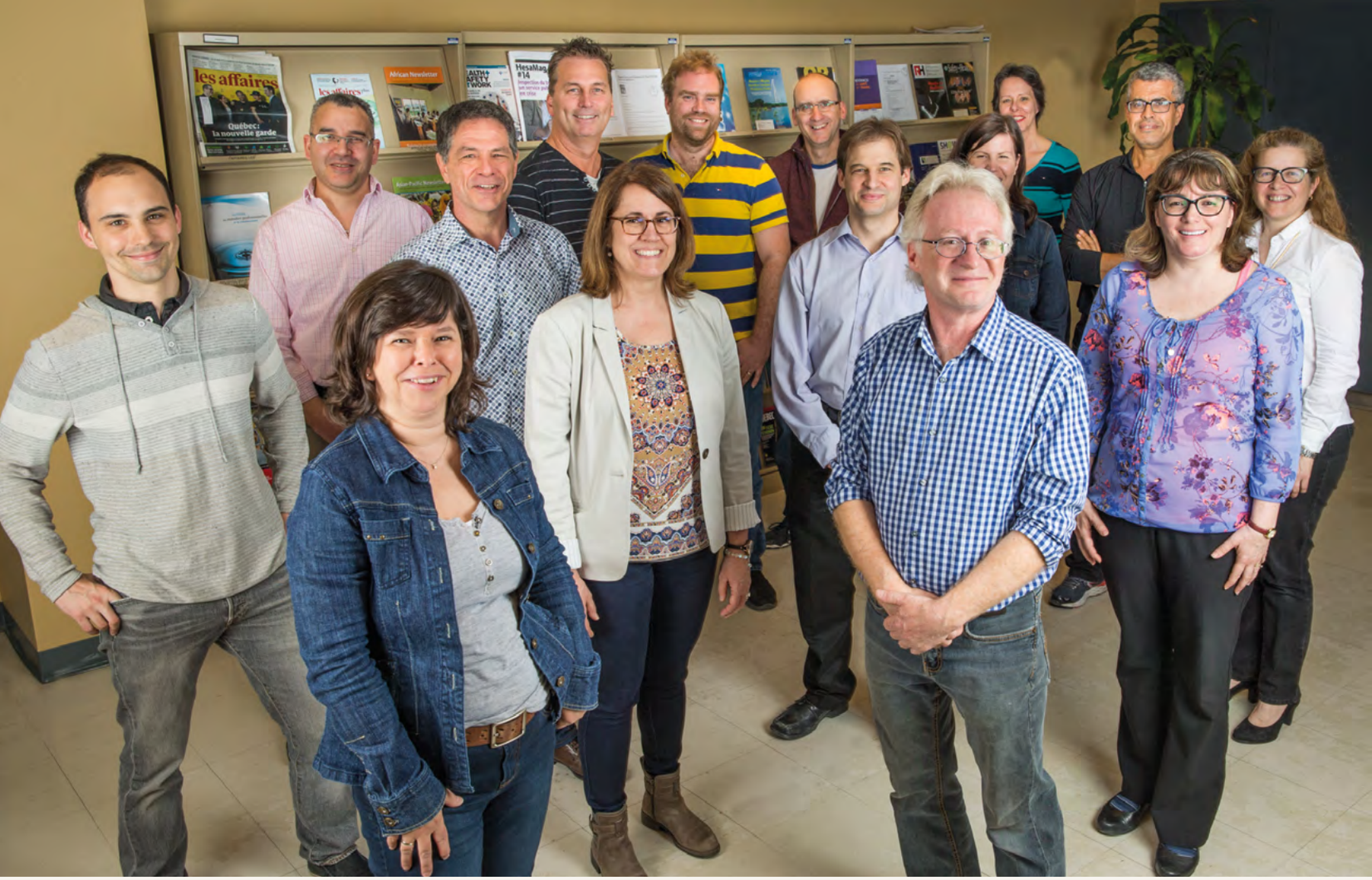
SAMPLING ISOCYANATES

Created in 1972 to support industry in its prevention efforts, the International Isocyanate Institute (III) signed an agreement with the IRSST regarding the sampling of vapours of methylene bis (4-phenyl isocyanate) (MDI) and toluene diisocyanate (TDI). The agreement provides for a comparative study of various methods of sampling MDI and TDI isocyanate vapours, methods in which the IRSST has recognized expertise.

Palais des congrès de Montréal

MONTRÉAL, A SCIENCE HUB

The IRSST and Montréal's **Palais des congrès** signed a collaborative agreement to promote the hosting of national and international scientific events in the metropolis. The two partners will coordinate their efforts to attract large-scale scientific gatherings to Montréal, which in turn will spread the word about OHS research and increase the intellectual and tourism spin-offs.



STEWARDSHIP

The Institute's personnel – its main asset – have expertise in disciplines as wide-ranging as chemistry, physics, engineering, ergonomics, industrial hygiene, psychology, sociology, anthropology, and demography. As at December 31, 2016, the Institute had **140** staff members, two-thirds of whom were scientific personnel, including **20** researchers, **42** professionals, and **28** technicians.

During the course of the year, the IRSST hired 16 individuals to meet specific temporary needs and 10 new permanent employees, including a new director of Finance and Physical Resources.

Several positions were filled to address the gaps left by retirements and various other needs. These new hires meant that the overall average age of the Institute's staff dropped from **49 years** in 2015 to **47.5 years** in 2016. The average age was 52.8 years for senior management and 47.8 years for researchers.

In addition to these new resources, the Institute welcomed the following to its offices and laboratories: **36** trainees, including 4 students at the bachelor' level, 10 at the master's level, 3 at the doctoral level, and 9 at the postdoctoral level, as well as 10 collaborators, some of whom were newcomers to the OHS field.

OUR EMPLOYEES' OHS

In light of its mission, the Institute is intent on offering its staff a clean, healthy, and safe environment. For the **third** year in a row, its assessment rate at the CNESST was lower than the unit rate paid by other organizations operating in the same activity sector.

The Institute reported **no industrial accidents or occupational diseases** in 2016 and no first-aid interventions. Only seven incidents were recorded in the first-aid register.

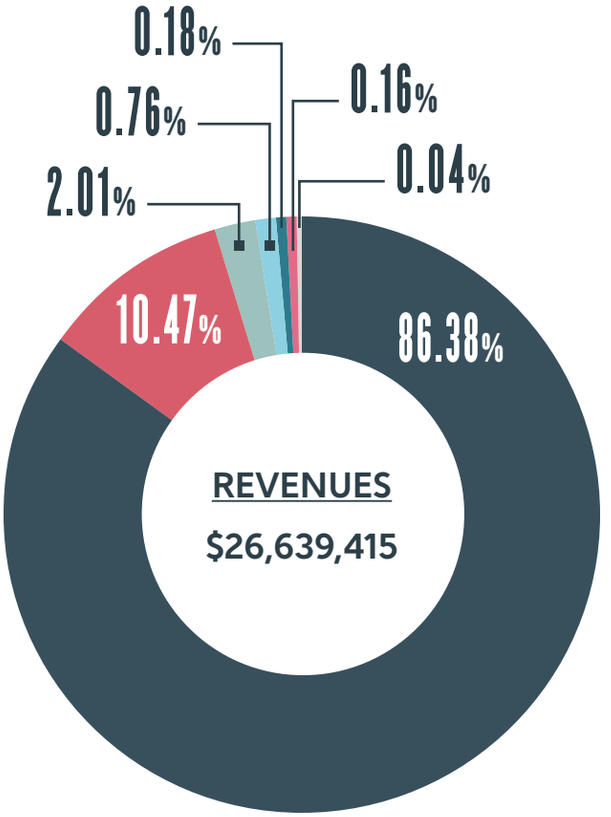
One employee and one trainee received appropriate training on how to adjust, maintain, and properly use respiratory protection equipment. In this regard, 34 employees and 3 trainees participated in respirator mask fit tests. Six ergonomic studies were also carried out, and several employees took training on the transportation of hazardous materials with respect to biological and radioactive hazards. The laboratory fume hoods are evaluated twice yearly to check whether they comply with standards. A new software program on the management of hazardous materials was purchased to manage and update the safety data sheets (formerly known as material safety data sheets) for products used in our laboratories.

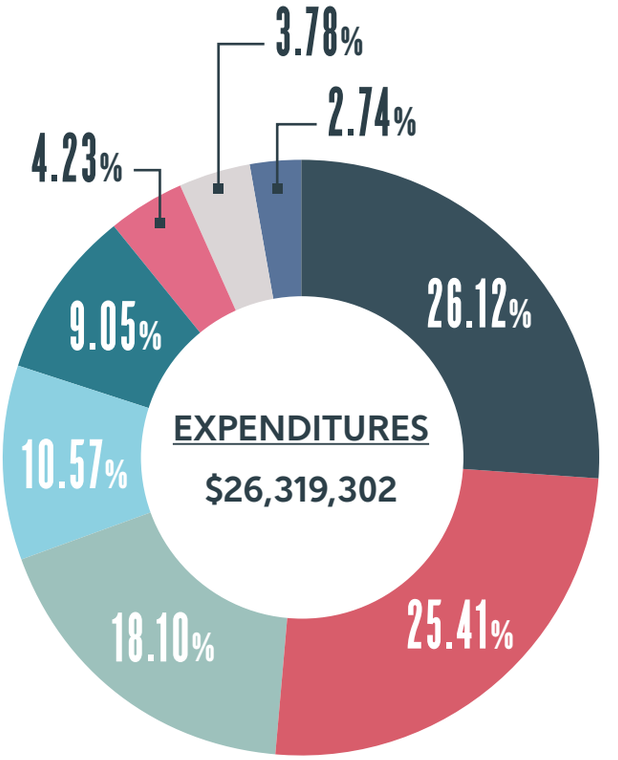
Dedicated to preserving the health and safety of IRSST staff members, the occupational health and safety committee met **nine** times in 2016.

"FOR THE THIRD YEAR IN A ROW, ITS ASSESSMENT RATE AT THE CNESST WAS LOWER THAN THE UNIT RATE PAID BY OTHER ORGANIZATIONS OPERATING IN THE SAME ACTIVITY SECTOR."

FINANCIAL OVERVIEW

AS AT DECEMBER 31, 2016, THE FINANCIAL RESULTS WERE AS FOLLOWS:





THE REVENUES BROKE DOWN AS FOLLOWS:

- **86.38%** Grant from the CNESST
- **10.47%** Laboratory services
- **2.01%** Special projects
- **0.76%** External contracts
- **0.18%** Beryllium project
- **0.16%** Interest income
- **0.04%** Other

THE EXPENDITURES BROKE DOWN AS FOLLOWS:

- **26.12%** Internal research
- **25.41%** Laboratory services
- **18.10%** External research and grants
- **10.57%** Finance and administration
- **9.05%** Scientific support for internal and external research
- **4.23%** Knowledge transfer service
- **3.78%** Executive Office
- **2.74%** Communications and institutional events

GOVERNANCE

BOARD OF DIRECTORS

The Board of Directors (the Board) is composed of seven representatives each of worker and employer associations, and a chair, and is based on the principle of equal (labour/management) representation. Appointed by the Québec government, its members manage the Institute's affairs, including its strategic orientations, development framework, and budget. The members of the Board and those of the Executive Committee met on **six** occasions respectively in 2016.

Chair
Manuelle Oudar*

Worker representatives
Martin l'Abbée, Denis Bolduc, Serge Cadieux*, Alain Croteau, Jean Lacharité, Francine Lévesque, Yves Ouellet

Employer representatives
Martine Bélanger, Yves-Thomas Dorval*, France Dupéré, Stéphane Forget, Martine Hébert, Patricia Jean, Norma Kozhaya

IRSST representative
Marie Larue

Observer
Jean Poirier

Appointments
Martine Bélanger, Denis Bolduc, Stéphane Forget, Norma Kozhaya

Departures
Françoise Bertrand, Andrée Bouchard, Carmel Laflamme, Lucie Levasseur, Daniel Roy

SCIENTIFIC ADVISORY BOARD

The Scientific Advisory Board (SAB) is a tripartite advisory body composed of six members of the scientific and technical community, four worker representatives, and four employer representatives. Chaired by the Institute's president and CEO, it formulates opinions on the relevance, priority, and scientific merit of internal and external research programs and projects. The SAB met **nine** times in 2016.

Chair
Marie Larue*

Employer representatives
Daniel Demers, Jean-Pierre Devost, Denis Mailloux, Ana Maria Seifert

Worker representatives
Lionel Bernier, Dominique Malo, Gilles Rousseau, Marie-France Turcotte

Representatives of the scientific and technical community
Léonard Aucoin, Louis Cloutier, André Dufresne, Benoit Lévesque, Alain Rondeau

Observer
Claude Sicard, CNESST

Appointments
Daniel Demers, Jean-Pierre Devost

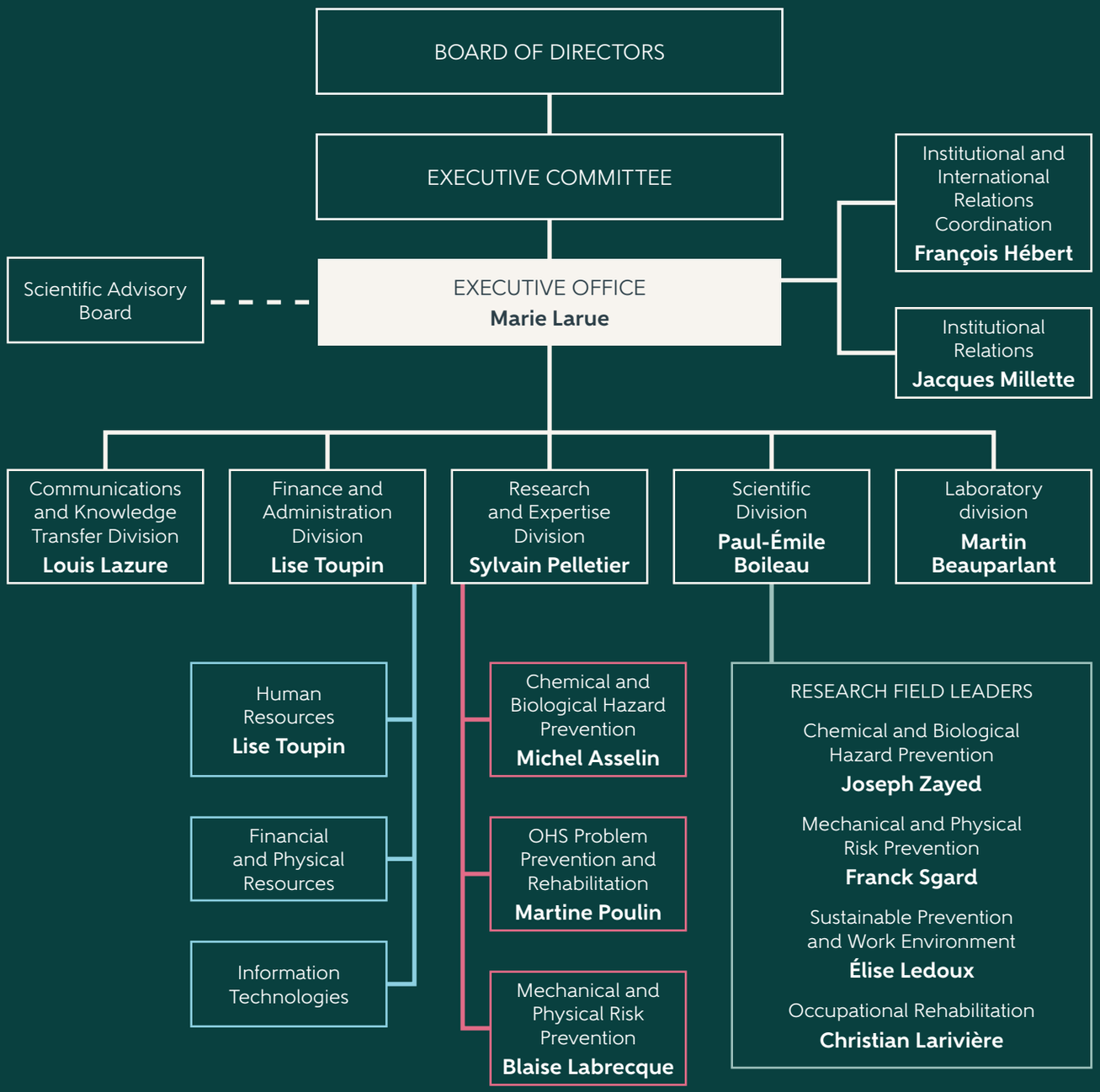
Departures
Louise Dandurand, Jean Dussault, André Grandchamps

* Members of the Executive Committee

DEATH OF M^ME LOUISE DANDURAND

"She was one of ours, but not for long enough. We will always remember her as a lively, attentive person of great integrity. Louise Dandurand had research engraved on her heart. Whether it was at the IRSST, Acfas, UQÀM, Concordia, the NSERC, OECD or UNESCO, this courageous woman was a crusader for scientific research throughout her brilliant career, both in Québec and the rest of Canada and on the international scene, because she genuinely saw the advancement of knowledge as a means of fostering the progress of the human race and society. She was truly a great lady of research," affirmed IRSST president and CEO, Marie Larue, on behalf of the members of the Scientific Advisory Board.

ORGANIZATION CHART 2016

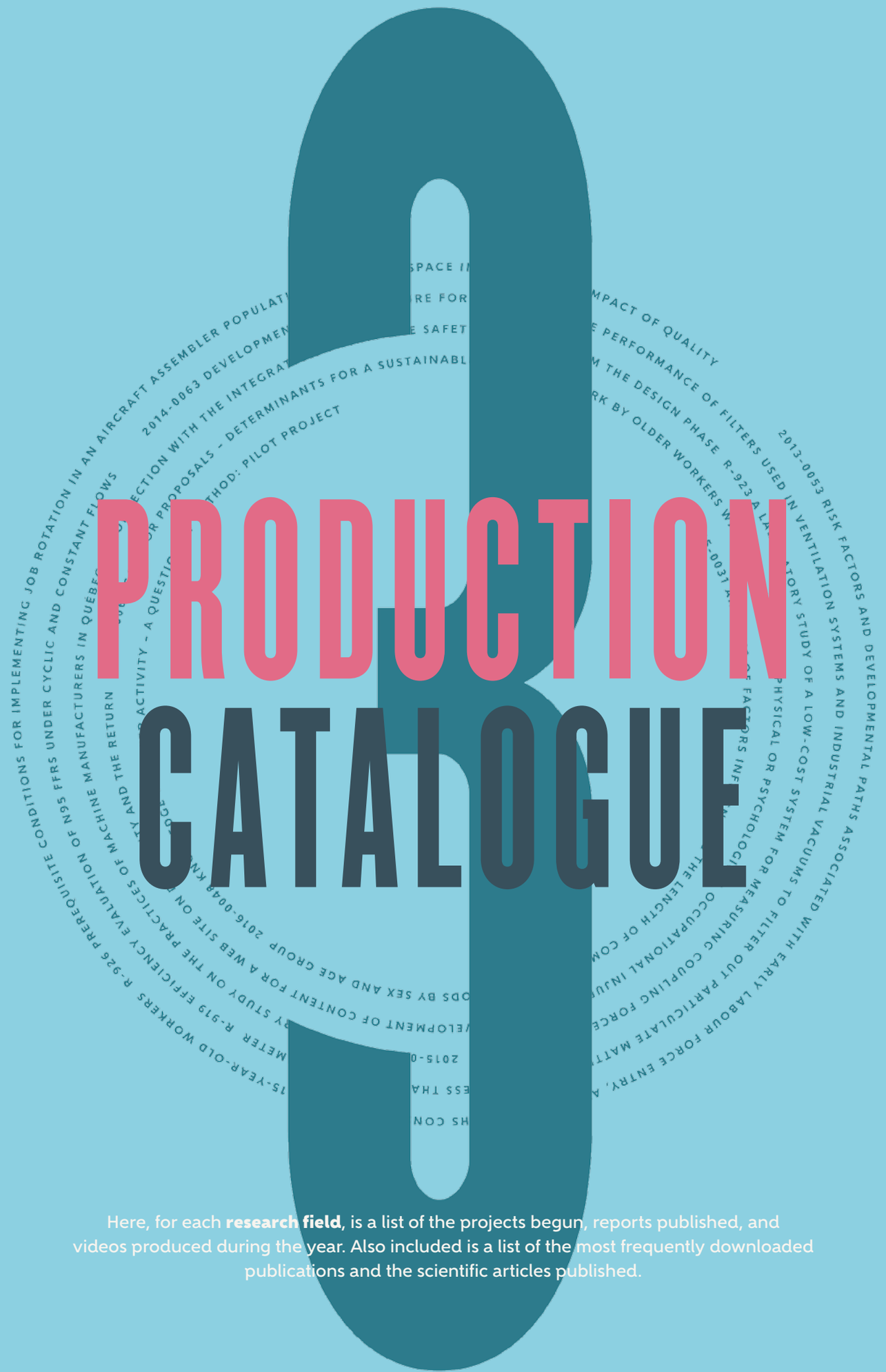


RETIREMENT OF PAUL-ÉMILE BOILEAU

The retirement of Paul-Émile Boileau in December 2016 brought about changes in the organization chart. Louis Lazure was appointed Interim Director of the Scientific Division, vacating the post of Director of the Communications and Knowledge Transfer Division, which was filled by Charles Gagné on an interim basis. On behalf of all Paul-Émile Boileau's colleagues, I wish to thank him for his invaluable contribution to OHS research.

– Marie Larue

PRODUCTION CATALOGUE



Here, for each **research field**, is a list of the projects begun, reports published, and videos produced during the year. Also included is a list of the most frequently downloaded publications and the scientific articles published.

SUSTAINABLE PREVENTION AND WORK ENVIRONMENT

THIRTEEN PROJECTS AND ACTIVITIES FOR WHICH WORK BEGAN IN 2016

1. **2013-0053** Risk factors and developmental paths associated with early labour force entry, at age 13, and OHS consequences for 15-year-old workers

2. **2014-0044** Analysis of the concept of margin of manœuvre in ergonomics from the standpoint of human motor skill control

3. **2014-0045** Towards the application of a biomechanical model of the shoulder to estimate exposure to physical risk factors for musculoskeletal disorders in the workplace

4. **2014-0070** Perceptions and attitudes about work-related driving among on-duty police officers and police recruits

5. **2015-0017** Seasonal employment and occupational health: a review of the knowledge and the feasibility of an analytical method for monitoring musculoskeletal disorders

6. **2015-0020** Guide to best prevention practices related to office automation

7. **2015-0067** Call for proposals – Work-related traffic accidents: what about pedestrian workers?

8. **2015-0069** Call for proposals – Multiplication of bicycle delivery services and health and safety issues of working cyclists: developing best practices

9. **2015-0079** Exploration of nurses' ethical dilemmas in connection with occupational health and safety

10. **2015-0082** Knowledge transfer activities – Video: Floor-covering installer occupational hazards

11. **2016-0017** Updating and validating the content of the guide "Occupational Health and Safety: Ideas and Concepts of Use to WOTP Instructors"

12. **2016-0033** Knowledge transfer activity – Highlights: Ambulance Technicians Study

13. **2016-0037** Knowledge transfer activity – Café Scientifique webinar to present the results of the *Towards the improvement of end-of-life services and care* study

SEVEN RESEARCH REPORTS

1. **R-897** Effets de la posture de travail sur les patrons musculaires de la région lombaire lors d'une tâche répétitive (06-01-2016)

2. **R-898** Les conditions d'une intégration sécuritaire au métier – Un regard sur le secteur minier québécois (29-02-2016)

3. **R-900** Solutions visant l'amélioration des conditions de SST des poseurs de revêtements de sol (24-03-2016)

4. **R-904** Estimation du chargement au dos – Développement d'une méthode ambulatoire intégrant la cinématique du dos et de l'électromyographie (08-03-2016)

5. **R-905** Portrait du travail et de la SST chez les jeunes de 15 ans au Québec (30-03-2016)

6. **R-921** Conditions facilitant l'appropriation de démarches préventives en santé psychologique au travail par les gestionnaires (27-05-2016)

7. **R-926** Prerequisite Conditions for Implementing Job Rotation in an Aircraft Assembler Population in the Aerospace Industry – The Impact of Quality Requirements on Development of Versatility and the Learning Process (14-06-2016)

SIX PRESENTATIONS AND LECTURES ON VIDEO FILE

1. **Biron, C.** (May 27, 2016). Faciliter les démarches préventives en santé psychologique au travail. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100310.

2. **Côté, J.** (March 16, 2016). Effets de la posture de travail manuel répétitif sur les patrons musculaires indicateurs de troubles musculosquelettiques. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100284.

3. **Denis, D.** (May 4, 2016). Conditions préalables à l'implantation de la rotation chez une population d'assembleurs-monteurs du secteur de l'aéronautique. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100296.

4. **Laberge, M.** (April 26, 2016). Les événements imprévus au travail – Risques pour la SST ou opportunité d'apprentissage pour les adolescents apprentis en métier semi-spécialisé? [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100294.

5. **Plamondon, A.** (April 18, 2016). Estimation du chargement lombaire au moyen de modèles biomécaniques articulaires – Évaluation et application. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100293.

6. **Prud'homme, P.** (March 30, 2016). Portrait du travail et de la SST chez les jeunes de 15 ans au Québec. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100308.

CHEMICAL AND BIOLOGICAL HAZARD PREVENTION

FOUR PROJECTS AND ACTIVITIES FOR WHICH WORK BEGAN IN 2016

1. **2014-0001** Potential exposure to antineoplastics in a hospital environment: Pilot study on cleaning and sanitation tasks

2. **2014-0003** Acid gas respirator cartridges – Determining laboratory performances under various environmental conditions where sulfur dioxide is present

3. **2014-0063** Development of a procedure for evaluating the performance of filters used in ventilation systems and industrial vacuums to filter out particulate matter measuring less than 300 nm in diameter

4. **2015-0008** Evaluating unintentional occupational exposure to nanometric particles

NINE RESEARCH REPORTS

1. **R-918** Détection des microorganismes par fluorescence / RAMAN UV dans des aérosols, des suspensions ou sur des surfaces – Étude exploratoire (14-04-2016)

2. **R-919** Efficiency Evaluation of N95 FFRs under Cyclic and Constant Flows (23-06-2016)

3. **R-924** Développement d'un nouveau dispositif d'échantillonnage des aérosols de diisocyanate-4-4' de diphénylméthane (MDI) (13-07-2016)

4. **R-927** Méthode d'analyse des protéases de type subtilisine et évaluation des concentrations de l'air ambiant de cinq centres hospitaliers (25-10-2016)

5. **R-930** Bilan du programme de contrôle de la qualité de la numération des fibres de 1992 à 2011 (23-09-2016)

6. **R-932** Évaluation de l'efficacité d'un filtre N95 contre des particules ultrafines, dont les nanoparticules, en mode de débits d'air constant et cyclique simulant la respiration des travailleurs (23-06-2016)

7. **R-933** Mesure de l'efficacité des gants de protection contre les nanoparticules dans des conditions simulant leur utilisation en milieu de travail (11-10-2016)

8. **R-936** Développement et application d'une approche toxicocinétique pour l'évaluation de l'exposition des travailleurs agricoles aux pyréthrinoïdes (25-10-2016)

9. **R-941** Prévention des risques liés aux pesticides chez les producteurs de pommes – État des lieux et actions à mener pour une meilleure protection individuelle (07-12-2016)

TWELVE GUIDES, FACT SHEETS, AND TECHNICAL OR AWARENESS-RAISING TOOLS

1. **RF-906** Fiche de substitution des solvants par utilisation – Nettoyage de presses – imprimeries offset

2. **RF-907** Fiche de substitution des solvants par utilisation – Remplacement de l'acétone dans la fabrication d'objets en fibre de verre

3. **RF-908** Fiche de substitution des solvants par utilisation – Collage de mousse de polyuréthane – Meubles

4. **RF-909** Fiche de substitution des solvants par utilisation – Vernissage de planchers

5. **RF-910** Fiche de substitution des solvants par utilisation – Dégraissage de pièces métalliques

6. **RF-911** Fiche de substitution des solvants par utilisation – Nettoyage d'asphalte – Asphaltage de rues

7. **RF-912** Fiche de substitution des solvants par utilisation – Nettoyage et décapage de cuves – Fabrication de peinture

8. **RF-913** Fiche de substitution des solvants par utilisation – Décapage de graffitis

9. **RF-914** Fiche de substitution des solvants par utilisation – Nettoyage à sec

10. **RF-915** Fiche de substitution des solvants par utilisation – Dégraissage de pièces mécaniques et de freins

11. **RF-916** Fiche de substitution des solvants par utilisation – Décapage de meubles en bois

12. **RF-917** Fiche de substitution des solvants par utilisation – Décapage des baignoires

THIRTEEN PRESENTATIONS AND LECTURES ON VIDEO FILE

1. **Bouchard, M.** (October 25, 2016). Mesure de l'exposition aux pesticides. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100233.

2. **Champoux, D.** (December 7, 2016). Contextes de travail et pratiques d'utilisation des pesticides et des équipements de protection par les producteurs de pommes québécois – Une étude terrain de l'IRSST. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100320.

3. **Chavez, M., Bahloul, A.** (July 7, 2016). L'effet des édifices adjacents sur la dispersion des émissions des bâtiments – Une approche numérique (CFD) et expérimentale en soufflerie. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100306.

4. **D'Amours, M.-F., Charrette, M.** (January 12, 2016). Utilisation sécuritaire des fontaines biologiques de dégraissage. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100279.

5. **Debia, M.** (June 16, 2016). Nanomatériaux – Guide de bonnes pratiques favorisant la gestion des risques en milieu de travail (Deuxième édition). [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100303.

6. **Debia, M.** (June 16, 2016). Approche intégrée pour une conception et une manipulation sécuritaires des nanomatériaux – Un programme basé sur une concertation entre l'industrie et les évaluateurs de risques sanitaires. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100304.

7. **Gagné, S.** (July 12, 2016). Dispositif d'échantillonnage pour prélever les aérosols de MDI. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100312.

8. **Lavoie, J.** (March 24, 2016). Bras assisté – une activité de valorisation et de transfert des résultats de la recherche. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100289.

9. **Lavoué, J.** (December 6, 2016). Outils informatiques pour l'interprétation des mesures d'échantillonnage. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100318.

10. **Tardif, R., Rodriguez, M.** (June 8, 2016). Évaluation de l'exposition des travailleurs aux sous-produits de désinfection en piscine intérieure au Québec. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100302.

11. **Tuduri, L.** (December 7, 2016). Prévention des risques chimiques liés à l'usage des pesticides chez les producteurs de pommes québécois. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100321.

12. **Vincent, R.** (December 6, 2016). Nouvelle norme européenne EN689 sur l'analyse de risque en milieu de travail. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100317.

13. **Zayed, J.** (December 6, 2016). L'expologie – Avancées et applications – Mot de bienvenue et objectifs de la journée. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100316.

MECHANICAL AND PHYSICAL RISK PREVENTION

THIRTEEN PROJECTS AND ACTIVITIES FOR WHICH WORK BEGAN IN 2016

1. **0099-5290** Soil classification and selection of shoring systems for trench excavation

2. **2013-0001** Knowledge transfer activity – Update of the Protective Gloves Selection Guide

3. **2013-0020** Development of a methodology for assessing the performance of anti-vibration gloves in reducing vibrations while considering dexterity and grip strength

4. **2014-0031** Exploratory study of risks and risk-reduction measures during the cleaning and disinfection of machines in the agrifood sector

5. **2015-0015** Study of equipment lockout/tagout practices

6. **2015-0033** Physiological and physical constraints associated with wearing a P100 respirator, by intensity of physical work and ambient conditions

7. **2015-0060** Exploratory study on the practices of machine manufacturers in Québec in connection with the integration of machine safety starting from the design phase

8. **2015-0075** Development of a microphone antenna incorporating an optical system to identify the position of the noisiest sound sources in an industrial setting

9. **2015-0078** Evaluating winter work shœs: comparison of methods for determining slip resistance on icy surfaces

10. **2016-0009** The effect of wearing hearing protectors and safety helmets on the perception and sound localization of reverse alarms

11. **2016-0020** Design of artificial ears for the study of noise attenuation and the effects of earplug occlusion, using MRI images

12. **2016-0028** Analysis of the application potential of smart textiles in occupational health and safety

13. **2016-0032** Knowledge transfer activity: risk assessment tool for confined space interventions

NINE RESEARCH REPORTS

1. **R-901** Développement d'outils et de méthodes pour mieux évaluer et améliorer la protection auditive individuelle des travailleurs (12-04-2016)

2. **R-902** Conception des cordes d'assurance horizontales pour la protection contre les chutes de hauteur – Mise à jour du guide technique (28-04-2016)

3. **R-903** Résistance des matériaux de protection aux agresseurs mécaniques multiples – Coupure et perforation simultanées (12-04-2016)

4. **R-920** Étude en laboratoire d'un système à faible coût permettant de mesurer les forces de couplage à l'interface main-poignée d'outils portatifs vibrants (03-06-2016)

5. **R-923** A laboratory study of a low-cost system for measuring coupling forces (03-06-2016)

6. **R-925** Étude sur le vieillissement, la dégradation et la durée de vie des équipements de protection contre les chutes – Cordes d'assurance (23-08-2016)

7. **R-928** Développement d'un outil d'analyse du risque et de catégorisation des interventions en espace clos (22-09-2016)

8. **R-937** Reproduction d'environnements sonores industriels en vue d'applications aux études d'audibilité des alarmes et autres signaux sonores pour la SST – Preuve de concept (11-10-2016)

9. **R-940** Sécurité des machines – Expérimentation pratique de paramètres et d'outils d'estimation du risque (25-10-2016)

THREE GUIDES, FACT SHEETS, AND TECHNICAL OR AWARENESS-RAISING TOOLS

1. **RF-943** Comment choisir une chaussure de travail antidérapante – Fascicule 1

2. **DF-029** Cap sur la sécurité – Prévenir les chutes par-dessus bord – Document de référence

3. **DF-030** Setting the course for safety – Preventing falls overboard – Reference document

THIRTEEN PRESENTATIONS AND LECTURES ON VIDEO FILE

1. **Arteau, J.** (June 8, 2016). L'impact des recherches menées sur la protection contre les chutes de hauteur. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100301.

2. **Beaugrand, S.** (February 22, 2016). Ceintures de sécurité pour chariots élévateurs – Un regard sur la protection et l'aisance d'utilisation. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100282.

3. **Burlet-Vienney, D.** (September 22, 2016). Qu'est-ce qu'un espace clos? [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100314.

4. **Charette, M., Ouellet, F.** (January 12, 2016). Choisir une soufflette efficace et sécuritaire. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100280.

5. **Chinniah, Y.** (March 3, 2016). Étude sur la sécurité des machines lors des interventions en mode vitesses et/ou efforts réduits. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100283.

6. **Galy, B.** (April 28, 2016). Comment protéger les travailleurs contre les chutes de hauteur? [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100311.

7. **Gauthier, F.** (December 7, 2016). Expérimentation pratique d'outils d'estimation du risque appliquée à la sécurité des machines. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100323.

8. **Lan, A.** (August 23, 2016). Étude sur le vieillissement, la dégradation et la durée de vie des équipements de protection contre les chutes – Cordes d'assurance. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100313.

9. **Marchand, D.** (January 5, 2016). Quantification des paramètres biomécaniques et sensorimoteurs qui affectent la réponse biodynamique du système main-bras lors de l'utilisation d'outils vibrants. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100278.

10. **Marcotte, P.** (June 6, 2016). Développement d'un système de mesure des forces de couplage à l'interface main-poignée d'outils portatifs vibrants pouvant être utilisé sur le terrain. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100300.

11. **Marcotte, P.** (June 3, 2016). System to measure the coupling forces at the interface between the hand and the handle of portable vibrating tools. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100309.

12. **Ouellet, F.** (March 24, 2016). Le transfert des connaissances et la création d'un espace d'échanges entre partenaires – Le cas des soufflettes sécuritaires. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100288.

13. **Ouellet, F., Gauvin, C.** (December 5, 2016). Comment choisir une chaussure de travail antidérapante? [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100322.

OCCUPATIONAL REHABILITATION

TEN PROJECTS AND ACTIVITIES FOR WHICH WORK BEGAN IN 2016

1. **2013-0024** Preliminary assessment of a rehabilitation program designed to promote the return to work of people suffering from musculoskeletal pain and depression

2. **2014-0010** Development of content for a Web site on disability and the return to work

3. **2014-0011** Development of possible supervisors actions to support the sustainable return to work of workers who have suffered from work-related musculoskeletal disorders

4. **2015-0029** Post-traumatic disorders in police officers and 911 emergency call centre workers – A comparison of the cost-effectiveness of usual and innovative interventions

5. **2015-0034** Prospective, randomized, single-blind pilot study comparing the effectiveness of ultrasound-guided fenestration with that of open surgery, in the treatment of chronic insertional tendinopathy of elbow extensors

6. **2015-0059** Call for proposals – Return-to-work trajectories, resources and quality of life in workers ages 45 and up in the health and social services sector

7. **2015-0062** Call for proposals – Determinants for a sustainable return to work by older workers who have suffered a physical or psychological occupational injury

8. **2016-0025** Determinants of gender differences in work absence duration for non-traumatic work-related musculoskeletal disorders (REPAR/FRQS – IRSST)

9. **2016-0026** Reducing occupational disability by developing a self-management program for the continued employment of workers suffering from chronic low back pain (REPAR/FRQS – IRSST)

10. **2016-0048** Knowledge transfer activity – A question of method: pilot project

SIX RESEARCH REPORTS

1. **R-896** Programme de prise de décision entre l'ergothérapeute et le travailleur ayant une incapacité due à un trouble musculosquelettique persistant (06-01-2016)

2. **R-931** Travailleurs avec déchirure de la coiffe des rotateurs et asymptomatiques – Corrélation entre des paramètres morphoanthropométriques et d'imagerie diagnostique et la fonction de l'épaule (14-10-2016)

3. **R-934** Pratiques des grandes organisations au Québec en regard de la coordination du retour au travail (21-10-2016)

4. **R-935** Développement préliminaire d'une règle de prédiction clinique pour dépister les patients ayant une lombalgie non aigüe répondant favorablement à un programme d'exercice de stabilisation lombaire (11-10-2016)

5. **R-938** Validation du questionnaire *Obstacles au retour au travail et sentiment d'efficacité pour les surmonter* auprès de travailleurs avec un trouble mental courant ou un trouble musculosquelettique (13-10-2016)

6. **R-939** Déterminants cliniques et neuromécaniques du développement de l'incapacité lombaire chez les travailleurs (25-10-2016)

TWO PRESENTATIONS AND LECTURES ON VIDEO FILE

1. **Desmeules, F., Roy, J.-S.** (March 18, 2016). Les lésions professionnelles à l'épaule chez les travailleurs. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100285.

2. **Gaudreault, N.** (June 29, 2016). Bilan des connaissances sur les facteurs de risque de l'arthrose du genou et sur les outils d'évaluation et les interventions en matière de soins et de services. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100305.

SPECIAL PROJECTS

ONE ACTIVITY FOR WHICH WORK BEGAN IN 2016

1. **2015-0031** Analysis of factors influencing the length of compensation periods by sex and age group

ONE RESEARCH REPORT

1. **R-922** Évolution des indicateurs annuels de lésions professionnelles indemnisées au Québec de 2007 à 2012 (27-05-2016)

THREE GUIDES, FACT SHEETS, AND REFERENCE OR AWARENESS-RAISING DOCUMENTS

1. **DS-015** Évolution des lésions professionnelles – Indicateurs annuels 2007-2012

2. **DS-016** Les accidents routiers au travail – Une vue d'ensemble

3. **DS-017** Les accidents routiers – Comparaison entre les accidents liés au travail et ceux qui ne le sont pas

EIGHT OTHER PRESENTATIONS AND LECTURES ON VIDEO FILE

1. **Boucher, A.** (December 7, 2016). Indicateurs annuels de santé et de sécurité du travail au Québec, 2007-2012. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100319.

2. **Dagenais, C.** (March 23, 2016). Le transfert des connaissances issues de la recherche – Quelle place pour le chercheur ? [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100287.

3. **Gagné, C.** (May 25, 2016). Une approche participative pour favoriser le transfert des connaissances – Le cas des centres d'appels d'urgence 9-1-1. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100298.

4. **Gingras, Y.** (May 20, 2016). Les publications scientifiques et la mesure de l'impact des recherches – Portée et limites. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100290.

5. **Larivière, V.** (May 20, 2016). Nouvelle génération d'indicateurs de l'impact de la recherche. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100299.

6. **Larue, M., Boileau, P.-É.** (July 4, 2016). L'impact des recherches – Mesures, approches et application au domaine de la SST. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100286.

7. **Plouffe, L.** (March 21 2016). Les retombées vers les milieux – Dans quelle mesure l'évaluation du transfert des connaissances est-elle possible ? [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100291.

8. **Robitaille, J.-P.** (July 4, 2016). Analyse des données bibliométriques des recherches en SST. [Video file] Retrieved from http://www.irsst.qc.ca/publications-et-outils/video/i/100307.

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1. Conditions facilitant l'appropriation de démarches préventives en santé psychologique au travail par les gestionnaires, R-921, 27-05-2016

2. Effets de la posture de travail sur les patrons musculaires de la région lombaire lors d'une tâche répétitive, R-897, 06-01-2016

3. Conception des cordes d'assurance horizontales pour la protection contre les chutes de hauteur – Mise à jour du guide technique, R-902, 28-04-2016

4. Développement d'un outil d'analyse du risque et de catégorisation des interventions en espace clos, R-928, 22-09-2016

5. Développement d'outils et de méthodes pour mieux évaluer et améliorer la protection auditive individuelle des travailleurs, R-901, 12-04-2016

6. Évaluation de l'efficacité d'un filtre N95 contre des particules ultrafines, dont les nanoparticules, en mode de débits d'air constant et cyclique simulant la respiration des travailleurs, R-932, 23-06-2016

7. Évolution des indicateurs annuels de lésions professionnelles indemnisées au Québec de 2007 à 2012, R-922, 27-05-2016

8. Sécurité des machines – Expérimentation pratique de paramètres et d'outils d'estimation du risque, R-940, 25-10-2016

9. Solutions visant l'amélioration des conditions de santé et de sécurité des poseurs de revêtements de sol, R-900, 24-03-2016

10. Validation du questionnaire Obstacles au retour au travail et sentiment d'efficacité pour les surmonter (ORTESES), R-938, 13-10-2016

11. Nettoyage à sec – Fiches de substitution des solvants par utilisation, RF-914, 09-10-2016

12. Les conditions pour une intégration sécuritaire au métier – Un regard sur le secteur minier québécois, R-898, 29-02-2016

13. Efficiency Evaluation of N95 FFRs under Cyclic and Constant Flows, R-919, 23-06-2016

14. Portrait du travail et de la santé et de la sécurité du travail chez les jeunes de 15 ans au Québec, R-905, 30-03-2016

15. Dégraissage de pièces métalliques – Fabrication et usinage – Fiches de substitution des solvants par utilisation, RF-910, 09-06-2016

MOST FREQUENTLY DOWNLOADED PUBLICATIONS

IN FRENCH

1. Manuel d'ergonomie pratique en 128 points – Organisation du travail, Bureau international du travail, Association internationale d'ergonomie, IRSST, 2006

2. Donner un sens au travail – Promouvoir le bien-être psychologique, R-624, Estelle M. Morin, Charles Gagné, Benoit Cherré, 2009

3. Lésions professionnelles indemnisées au Québec en 2005-2007. Profil statistique par industrie – catégorie professionnelle, R-749, Patrice Duguay, Alexandre Boucher, Marc-Antoine Busque, Pascale Prud'homme, Daniel Vergara, 2012

4. Sécurité des machines: Prévention des phénomènes dangereux d'origine mécanique – Protecteurs fixes et distances de sécurité, RG-552, Laurent Giraud, 2008

5. Guide de prévention – Le travail de manutention et le service à la clientèle dans les magasins-entrepôts, RG-484, Marie St-Vincent, Denys Denis, Maud Gonella, Roselyne Trudeau, 2007

6. Procédure d'intégration professionnelle à l'usage du conseiller en réadaptation, B-023, Claire Lapointe, 1991

7. Guide d'échantillonnage des contaminants de l'air en milieu de travail, T-06, Daniel Drolet, Guylaine Beauchamp, 2012

8. Guide pratique de protection respiratoire, R-319, Jaime Lara, Mireille Vennes, 2002

9. Manuel d'ergonomie pratique en 128 points, publication complète, 2006

10. Étude exploratoire des facteurs de la charge de travail ayant un impact sur la santé et la sécurité – Étude de cas dans le secteur des services, R-668, Pierre-Sébastien Fournier, Sylvie Montreuil, Jean-Pierre Brun, Caroline Bilodeau, Julie Villa, 2010

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1. Machine Safety – Prevention of Mechanical Hazards, Fixed Guards and Safety Distances, RG-597, Laurent Giraud et al., 2009

2. Work-Related Musculoskeletal Disorders (WMSDs) – A Better Understanding for More Effective Protection, R-126, Serge Simoneau, Marie St-Vincent, Denise Chicoine, 1996

3. Heavy Vehicle Tire Blowout and Explosion, R-590, René Benoit, Langis Lafrance, Dominique Malo, Julie Breton, 2009

4. Sampling Guide for Air Contaminants in the Workplace, T-15, Daniel Drolet, Guylaine Beauchamp, 2013

5. Safeguarding of Hydraulic Power Press Brakes, RF-651, Damien Burlet-Vienney, Sabrina Jocelyn, Renaud Daigle, Serge Massé, 2010

6. Prevention Guide – Safe Handling of Hazardous Drugs, CG-002, Working Committee on the Safe Handling of Hazardous Drugs – ASSTSAS, 2008

7. The Costs of Occupational Injuries – A Review of the Literature, R-787, Martin Lebeau, Patrice Duguay, 2013

8. Engineered Nanoparticles – Current Knowledge about OHS Risks and Prevention Measures, R-656, Claude Ostiguy, Brigitte Roberge, Catherine Woods, Brigitte Soucy, 2010

9. Exploratory Study to Identify Workload Factors that Have an Impact on Health and Safety – A Case Study in the Service Sector, R-701, Pierre-Sébastien Fournier, Sylvie Montreuil, Jean-Pierre Brun, Caroline Bilodeau, Julie Villa, 2011

10. Horizontal Plastic Injection Molding Machine – Safety Checklists, RG-687, Sabrina Jocelyn, Serge Massé, Christian Sirard, 2011


MACHINE SAFETY – PREVENTION OF MECHANICAL HAZARDS, FIXED GUARDS AND SAFETY DISTANCES, RG-597, 2009
WORK-RELATED MUSCULOSKELETAL DISORDERS (WMSDS) – A BETTER UNDERSTANDING FOR MORE EFFECTIVE PROTECTION, R-726, 1996
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HEAVY VEHICLE TIRE BLOWOUT AND EXPLOSION, R-590, 2009
A CASE STUDY IN THE SERVICE SECTOR, R-701, 2011
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- contributes to researcher training in occupational health and safety;
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