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OCCUPATIONAL HEALTH AND SAFETY NETWORKS

PEROSH Profile of the Partnership for European Research in Occupational Safety and Health

(October 2018)



Labour Administration, Labour Inspection and
Occupational Safety and Health Branch (LABADMIN/OSH)

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International Labour Organization, Geneva

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Abbreviations and acronyms

AUVA	Austrian Social Insurance for Occupational Risks
BAuA	Federal Institute for Occupational Safety and Health (Germany)
CIOP-PIB	Central Institute for Labour Protection – National Research Institute (Poland)
ENM	engineered nanomaterial
EU	European Union
EU-OSHA	EU Occupational Safety and Health Agency
FIOH	Finnish Institute of Occupational Health
HSE	Health and Safety Executive (United Kingdom)
HSL	Health and Safety Laboratory (United Kingdom)
ICOH	International Commission on Occupational Health
IFA	Institute for Occupational Safety and Health of the German Social Accident Insurance
ILO	International Labour Organization
INAIL	Italian Workers' Compensation Authority
INRS	National Research and Safety Institute for the Prevention of Occupational Accidents and Diseases (France)
INSST	National Institute of Safety, Health, and Well-Being at Work (Spain)
IST	Institute for Work and Health (Switzerland)
MSD	musculoskeletal disorder
NFA	Det Nationale Forskningscenter for Arbejdsmiljø (National Research Centre for the Working Environment) (Denmark)
NRCWE	National Research Centre for the Working Environment (Denmark); old acronym, no longer in use
OH	occupational health
OSH	occupational safety and health
PEROSH	Partnership for European Research in Occupational Safety and Health
R&D	research and development
SC	Steering Committee (PEROSH)
SME	small to medium-sized enterprise
SSG	Scientific Steering Group (PEROSH)
STAMI	National Institute of Occupational Health (Norway)
TNO	Netherlands Organization for Applied Scientific Research
WHO	World Health Organization

Foreword and acknowledgements

The profile of the Partnership for European Research in Occupational Safety and Health (PEROSH) is published as an appendix to the ILO Working Paper presenting the results of the multiple case-study analysis of six regional occupational safety and health (OSH) networks. The study was initiated in order to inform the modernization of the ILO portfolio of activities in OSH knowledge and information. It benefited from financial support provided under the Partnership Agreement between the Government of South Korea and the ILO 2015-2017 (GLO/15/50/ROK).

The study covers the statutes, roles, functions, governance modalities, financing and challenges of regional OSH networks from Europe, Latin America, Asia and Africa. The results allow a better understanding of how and why OSH agencies, institutions, organizations and experts collaborate with one another. They provide invaluable descriptive information covering the diversity of existing collaborative arrangements and key characteristics of productive regional OSH networks. They highlight similarities and differences in ways of organizing collaboration in OSH and provide new knowledge to support international cooperation which has always been and remains a key role of the ILO. They can be useful to a vast diversity of stakeholders, including policy-makers, expert groups and, of course, active members of the network.

This profile was prepared by Professor Jorma Rantanen as part of the multiple case-study analysis commissioned by the ILO LABADMIN/OSH Branch, with contributions from Mr Jan Michiel Meeuwssen and Dr Dietmar Reinert. Acknowledgements extend to the members of the network who provided comments at various stages of development and revision. To all we wish to express gratitude for their interest and support.

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International Labour Organization

Summary

The Partnership for European Research in Occupational Safety and Health (PEROSH) is a network of 13 European OSH research institutes, founded in 2003 with an agreement between the participant institutions. The aims of PEROSH are collaboration in OSH research; improvement of its quality; dissemination of research results for use in practices; work as a think tank; identification of contemporary and future research needs; and the facilitation of the use of research knowledge for development of healthy, safe, innovative' and sustainable workplaces in Europe. PEROSH maintains a proactive dialogue with the European Union (EU) and other national and international OSH partners, and provides research evidence for support of the European OSH policies and good practices.

The highest governing organization is the PEROSH Steering Committee (SC), which consists of the general directors of the 13 PEROSH member institutes from 12 countries. The SC is responsible for the strategic management of PEROSH. Research collaboration and coordination is delegated to the Scientific Steering Group (SSG) of research and scientific directors of the 13 member institutes. Operational management belongs to the Executive Committee comprising the SC chairperson, vice-chairperson, chairperson of the SSG, and the manager of international affairs. The manager of international affairs supports the activities of the leadership together with a part-time secretary.

The PEROSH strategy draws from the foresight and future research of the network and from the EU- OSH and research policies. PEROSH has identified research priorities in a special Delphi study.

The network activities are financed through agreement-based fees by the member institutions, and the project funding from various sources, including competitive funding from external financiers, and particularly from EU research programme funding.

PEROSH has numerous functions, covering: research; information; training; effective use of research resources through coordinated joint projects; provision of the scientific basis for the EU safety and health development policies and practices; creating foresight for the future; recognition of new risks; and development of methods for prevention.

The PEROSH network effectively utilizes modern media, its e-newsletter, Twitter, Facebook, and LinkedIn, in both internal and external communication between the members, collaborative partners, and other partners. Modern media are also used for the collection and dissemination of research information.

Due to well-planned and coordinated strategies and programmes, PEROSH can show good productivity, which is demonstrated in the continuous publication of high-quality research reports and articles with relevance to OSH policies and practices.

1 Introduction

The European OSH institutes started organized collaboration in the form of the Sheffield Group in 1989. In the last years of the first millennium, a need for more deepened collaboration among the institutions of the EU countries was recognized, and PEROSH was founded in 2003. The OSH institutes of Norway and Switzerland also joined the network. The idea was to strengthen the competitiveness of European OSH research; to strengthen the OSH fields' possibilities to get EU support for OSH projects and programmes, to enable the generation of large research programmes, which would be impossible to implement by an individual country; and to ensure effective OSH research penetration, utility value, and impact. (PEROSH continues collaboration within the frameworks of the Sheffield Group on a broader geographical basis, including with OSH research institutes from Europe, the USA, Canada, Singapore, Japan and the Republic of Korea. Lately, first contacts were also established with OSH Africa).

2 Formal status and constitution

PEROSH is an independent and voluntary inter-institutional network of 13 national and leading OSH research institutions from 10 EU Member States and Norway and Switzerland. PEROSH collaboration is based on the Agreement for the Partnership of European Research in Occupational Safety and Health 2018–22.

3 Mission and policy

The overall mission of PEROSH is to contribute to healthy, safe, innovative, and sustainable workplaces in Europe. Within the PEROSH framework, the leading European OSH institutes collaborate and coordinate European research and development efforts for OSH. The network institutes all play key roles in their national affiliations to governments and authorities, and to social partners and health and accident insurance systems. PEROSH aims at synergies and efficient use of resources and knowledge from different countries, to improve the effectiveness of OSH research.

The PEROSH Agreement 2018–22 defines the objectives of the network as:

- a) strengthening cooperation on OSH research, and accelerating the generation of knowledge in key areas of OSH;
- b) disseminating and exchanging knowledge and information on OSH issues;
- c) pooling of resources and sharing of knowledge;
- d) Seconding of experts between member institutes by mutual agreement and according to law and regulations of each country
- e) realizing joint research and development (R&D) projects, and collaborating on EU funding programmes (at present the Horizon 2020 Programme or calls for proposals and tenders from the Commission and its agencies);

- f) promotion of the partnership and its activities among European institutions and other OSH stakeholders, internationally and nationally;
- g) work as a think tank for the EU to support OSH in European research calls;
- h) cooperate with external research centres and OSH-related institutions and networks;
- i) preparing conferences and publications on the topics of the joint R&D projects;
- j) hold PEROSH research exchange meetings with senior and junior researchers on actual topics, every two years; and
- k) exchange research results within the network.

PEROSH also maintains a proactive dialogue with the EU and other international and national OSH-partners, to explore paths to optimize the added value to Europe of the research, dissemination, and available human, technical, and financial resources. Important recent policy achievements are the strengthened collaboration with EU-OSHA, EUROFOUND and close contacts with the European Commission and the European Parliament. The PEROSH contact network is also extending to the rest of the scientific community in the form of collaborative partnerships, and through collaboration with the Sheffield Group of international OSH research institutions.

PEROSH aims to ensure quality and effective dissemination and use of research results. The strengths of PEROSH are the strong institutional support based on formal agreement; multidisciplinary collaboration between the member institutes; collaboration with third parties, internationally; and the shared EU research policy.

4 Strategy and programmes

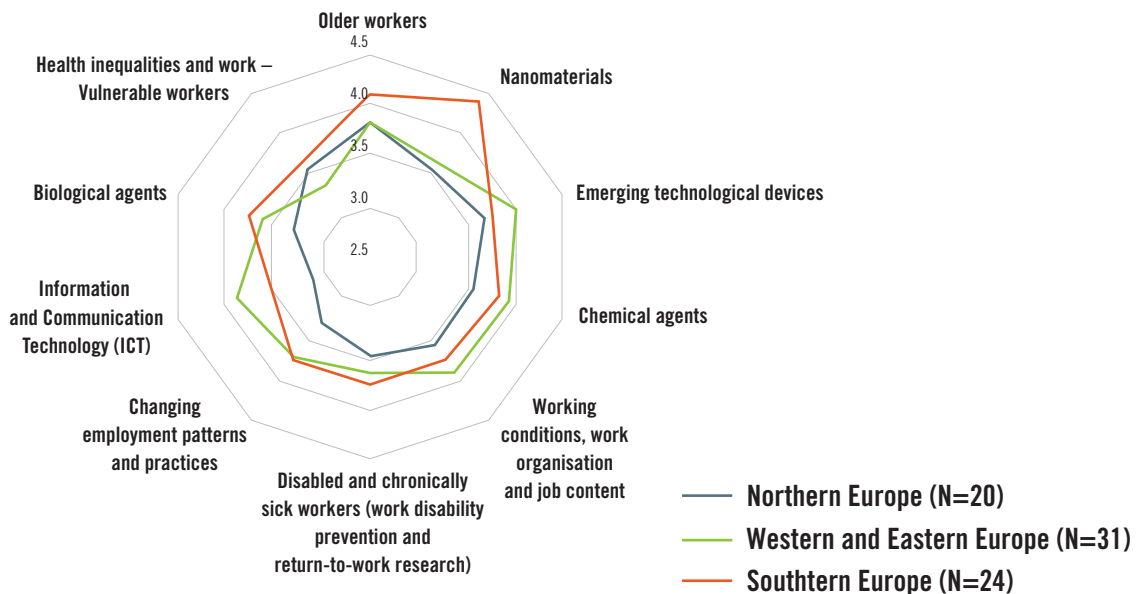
The basis for PEROSH research strategies is laid down by the scientifically-based future foresight. The overall objective is, in line with the EU2020 Strategy, for smart, inclusive, and sustainable growth, to contribute through PEROSH research to the development of healthy, safe, innovative, and sustainable workplaces, and in keeping people healthy and longer at work. By using systematic expert forecasting methods, PEROSH has identified seven future priorities for OSH research, to enable research contribution to the EU strategy (2012).

These research challenges are also considered as the current research priorities in the PEROSH strategy:

1. sustainable employability to prolong working life;
2. disability prevention and reintegration;
3. psychosocial well-being in a sustainable working organization;
4. multifactorial genesis of work-related musculoskeletal disorders (MSDs);
5. new technologies as a field of action for OSH;
6. occupational risks related to engineered nanomaterials (ENMs); and
7. a safety culture to prevent occupational accidents.

This future foresight is further supported by the ongoing PEROSH joint project “Futures”, in which all the member institutions participate, as shown in Figure 1 below:

Figure 1. Prioritization of future challenges in the two-round Delphi study by PEROSH researchers



Source: Istituto Nazionale per l'Assicurazione contro gli Infortuni sul Lavoro e le malattie professionali (state body providing sickness benefit to people injured at work, Italy) (INAIL), 2016. http://www.perosh.eu/wp-content/uploads/2016/09/FACT-SHEET_fin_layout-Rprior_-4-pag_version2.pdf.

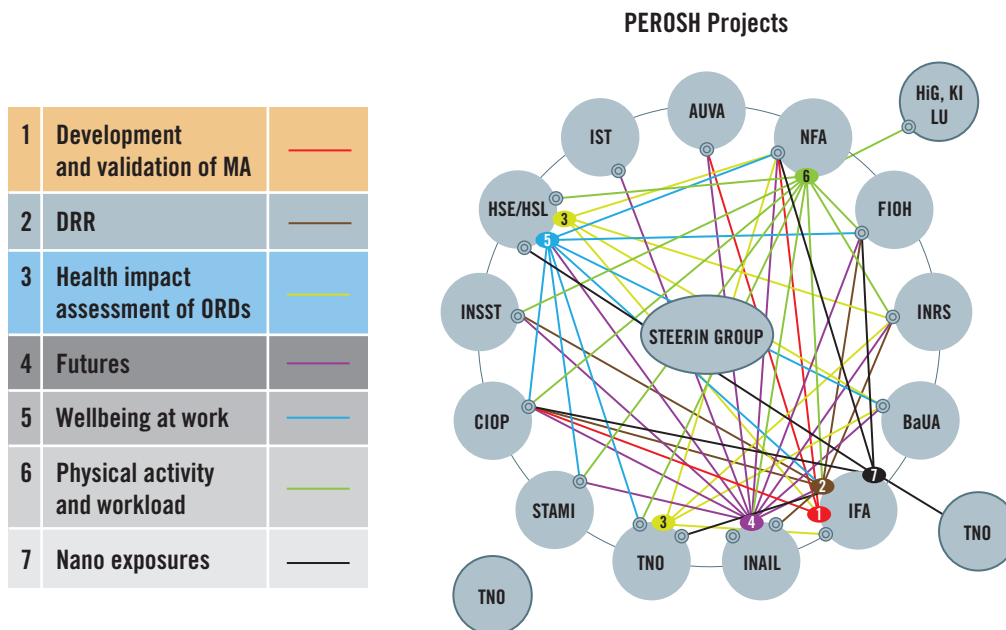
The joint research programmes are the core of the PEROSH activities and can be described as the PEROSH Research Programme. The present project portfolio contains seven simultaneously running joint projects. In some projects all the members take part, as in the Futures project. PEROSH has a rule in its statute that a member can be expelled if it does not contribute to the joint research projects for more than two years. A preliminary chart on connections in the joint projects is shown in Figure 2.

In June 2018, four new joint research projects have been approved by the Steering Committee of PEROSH during its last meeting in Bonn, Germany.

The four new projects are:

- Ergo fire fighter, coordinator CIOP-PIB
- Tonal noise, coordinator CIOP-PIB
- Prolonging Working Life, coordinator NFA
- Waste workers' exposure to microorganisms, coordinator NFA
- Which brings the PEROSH research project portfolio currently to a total of eleven.

Figure 2. Connections between PEROSH members within the joint projects

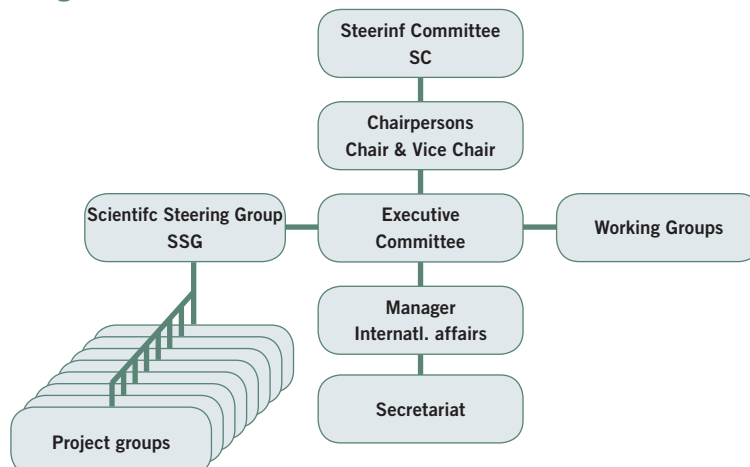


5 Structure, governance, and coordination

5.1 Structure

PEROSH has a strong institutional basis in its 13 national research institutes, in addition to the participants and representatives, plus researchers' individual capacities. This ensures continuity and secures resources for the network. The structure is, as much as possible, horizontal, but still, distinct leadership has been organized with appropriate responsibilities and assignments, as shown in Figure 3.

Figure 3. PEROSH organization



Steering Committee

The highest governing organization is the PEROSH Steering Committee, which consists of the general directors of the 13 PEROSH member institutes from 12 countries. The SC is responsible for the strategic management of PEROSH.

Scientific Steering Group

The SSG consists of the research and scientific directors of the 13 member institutes of PEROSH.

Office and secretariat

The SC is supported in day-to-day operations by an Executive committee comprising the SC chairperson, SC vice-chairperson, chairperson of the SSG, and the manager of international affairs. The manager of international affairs supports the activities of the leadership together with a part-time secretary.

5.2 Governance and coordination

The SC makes decisions on specific knowledge-sharing initiatives, and the promotion of joint research and development projects. It also decides on the inclusion of new members, the appointment of the chairperson and the vice-chairperson, and the establishment and mandate of the SSG and working groups. The SC agrees on the annual budget, and approves the financial report with annual accounts of revenue and expenditures. The SC meets at least once a year, and its chairmanship rotates in two-year cycles (Figure 3 above). The tenures of the appointed officers also have a duration of two years, and they can be re-elected and reappointed once.

The Scientific Steering Group monitors the progress and outputs from agreed PEROSH joint projects. It discusses new research topics and cooperation and proposes decisions to the Steering Committee. The Scientific Steering Group meets at least once a year.

The Scientific Steering Group may take the initiative to invite PEROSH project coordinators to their meetings. The project leaders of the PEROSH joint projects meet at least once a year. This meeting is convened by the chairperson of the SSG and the PEROSH Manager International Affairs.

A PEROSH Secretariat staffed with a part-time assistant is located preferably in the member institute of the chairperson. The PEROSH Manager International Affairs is established by an independent contractor agreement between the institute hosting the Secretariat and a senior consultant/scientist with many years of experience in international OSH affairs. The PEROSH Manager International Affairs reports to the chairperson of the Steering Committee and shall be responsible for the coordination and networking for achieving the overall objectives of the network, and in particular:

- monitoring and support for the development of joint research projects
- communication and promotion of the partnership
- organisation of workshops and conferences

The chair of the SSG coordinates, follows up, and evaluates the research projects, and makes initiatives for new research projects and programmes.

6 Members

The membership of the PEROSH network is defined in the Agreement as key national players in OSH research, associated with ministries, social partners, or health and public accident insurance schemes. The members should carry out OSH research. There is one member per country, but there can be more if two-thirds of the existing members so decide. New members will be approved upon application by two-thirds of the SC. The current members are:

- Austrian Social Insurance for Occupational Risks (AUVA), Austria.
- Det Nationale Forskningscenter for Arbejdsmiljø (NFA) (National Research Centre for the Working Environment), Denmark.
- Finnish Institute of Occupational Health (FIOH), Finland.
- National Research and Safety Institute for the Prevention of Occupational Accidents and Diseases (INRS), France.
- Federal Institute for Occupational Safety and Health (BAuA), Germany.
- Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA), Germany.
- Italian Workers' Compensation Authority – Research Area (INAIL), Italy
- Netherlands Organization for Applied Scientific Research (TNO), Healthy Living, The Netherlands.
- National Institute of Occupational Health (STAMI), Norway.
- Central Institute for Labour Protection – National Research Institute (CIOP-PIB), Poland.
- National Institute of Safety, Health, and Well-Being at Work (INSST), Spain.
- Institute for Work and Health (IST), Switzerland.
- Health and Safety Executive (HSE), United Kingdom.

7 Financing

The PEROSH Agreement stipulates the coverage of the costs of participation in PEROSH activities on an own-account basis. The collective costs and the costs of the secretariat and the manager of international affairs are covered by funding drawn from a bilateral financial agreement that each member makes with the host institute of the secretariat. The membership fee is equal for all partners.

The network's budget will be approved by the SC, and the secretariat submits an annual financial report and statement to the SC for acceptance. PEROSH may apply for financing for joint research projects from the EU research fund or, when appropriate, from other sources.

8 Functions and activities

The tasks of the PEROSH network can be extracted from the three Agreement Document periods (2008–2013 and 2014–18 and 2018-22) as the following:

- a) coordination and cooperation on European OSH research and development;
- b) collaboration between the member institutes in OSH research, and dissemination of information based on research evidence (joint projects);
- c) seconding of experts between member institutes by mutual agreement and according to law and regulations of each country
- d) collaboration in OSH research and dissemination with third parties;
- e) participation in the implementation of EU research programmes (at present the Horizon 2020 Programme or calls for proposals and tenders from the Commission and its agencies);
- f) improvement of the quality of research, and an increase in the EU-wide dissemination of results;
- g) proactive dialogue with the EU and other OSH stakeholders, internationally and nationally; and
- h) promotion of OSH research and PEROSH activities.

PEROSH has numerous functions, covering research, information, training, policy support, effective use of available support, provision of a scientific basis for safety and health development and practices, recognition of new risks, and the development of methods for prevention. The following activities constitute the core of PEROSH programme:

- The functions and activities are research-oriented and research-related. The objective is to facilitate the use of **research results** for the development of OSH in European working life.
- PEROSH focuses on **future foresight activity** to identify new trends in working life and to recognize research needs and priorities.
- The key activities are the **joint research projects**, in which each member is expected to participate (see below).
- The **research clearinghouse** activity serves for this purpose, to promote the use of evidence through high-quality systematic reviews. It is done by collecting systematic reviews on occupational health topics, and exchanging experiences on any aspect of systematic reviews (according to the principles of Cochrane collaboration) (<http://www.perosh.eu/research-projects/perOSH-projects/occupational-safety-and-health-evidence-clearinghouse/database-of-OSH-evidence-systematic-review-clearinghouse/>).
- An ambitious programme for the promotion of **Zero Accident Vision (ZAV)** and its follow-up. The objective is to identify success factors that contribute to accident prevention of

ZAV-committed companies – including good practices and success stories: focus on ZAV commitment; safety communication; safety culture; and safety learning (<http://www.perosh.eu/wp-content/uploads/2017/02/R11506-TNO-Report-DGUV-ZAV-project-617.0-FP-0352-Nov-2015.pdf>).

- **Network meetings.** The SC meets at least once a year, and the SSG at least once a year. The leaders of the PEROSH project groups also meet once a year. Numerous other meetings, both administrative and scientific, may be organized by PEROSH on its own or in collaboration with others. Numerous meetings will be organized by various working groups and project groups. The network meetings are well documented, and the information of the key decisions, agreements, and plans are thus informed. The minutes of the SC meetings are available within one month of the meeting. The meeting information covers the materials from the presentations in the meetings or associated seminars.
- Every two years there is a PEROSH **research exchange meeting** on an actual topic, to enable exchange between PEROSH senior and junior researchers. It is an internal meeting with guests as keynote speakers, and PEROSH researchers present their research and exchange experience. Networking is the key focus of these meetings, with 70 or 80 participants.
- **Newsletter.** PEROSH has so far published 16 newsletters (one to three issues a year) providing information on the PEROSH administration, scientific activities, EU news and events, important events and outputs in member institutions and their countries, international OSH events and activities, and news from other international organizations relevant for OSH (<http://www.perosh.eu/newsletter/>).
- **Social media.** PEROSH is present in Twitter, Facebook, and LinkedIn.



- **Projects.** One of the key activities for PEROSH is joint research, for which the network was originally founded. PEROSH has taken a systematic approach to project activities, following the strategic choice of priorities and contributing, among other things, to EU research programmes. Recent strengthened collaboration with EU-OSHA and the consideration of EU future priorities has further strengthened these contacts. PEROSH's present project portfolio is shown in Table 1.

9 Projects

9.1 Ongoing projects

PEROSH members currently cooperate in the following joint research projects, the topics of which are considered as priorities.

Table 1. Ongoing PEROSH joint projects, 2018

Project	Project leader	Project participants	Aims
Development and validation of a practical monitoring and assessment tool (MAT) for injury prevention at workplaces.	IFA	INRS, AUVA, NFA, and CIOP-PIB	Development of tools to identify practical safety deficits at an early stage and ensure the long-term effectiveness of accident and injury prevention.
Dose-response relationships (DRR) for selected chemical substances.	IFA	CIOP-PIB, FIOH, INAIL, INSSBT, NFA, STAMI	Development of risk assessment and deriving DRRs for selected chemicals.
Health impact assessment for occupational respiratory diseases (ORDs).	HSE, TNO	BAuA, IFA, INRS, NFA	Study the health and economic burden of ORDs; validation of the impact assessment model; study the effect of potential interventions.
Futures project	INAIL	All PEROSH members	Analysis of future perspectives in OSH, in view of: a) demographic change; b) globalization; c) OSH research for safe new technologies; and d) research into new occupational exposures.
Well-being and work	HSE/HSL	CIOP-PIB, INRS, NFA, INSSBT, TNO	Defining well-being at work, identifying methods for enhancement of well-being and preventing ill-health, and supporting return to work.
PEROSH recommendations for procedures to measure occupational physical activity and workload.	NFA	IFA, INSSBT, CIOP-PIB, INRS, STAMI, FIOH, TNO, INAIL, AUVA, HSE Collaborating partners: University of Gävle (Sweden), Karolinska Institutet (Sweden), Lund University (Sweden), German Sport University Cologne (DSS)	Generating a common framework for technical measurements of physical work demands and physical activity and exposures.
Nano exposure and contextual information database (NECID)	IFA	CIOP-PIB, FIOH, HSE, INSSBT, INRS, NFA, TNO Collaborating partners: French Alternative Energies and Atomic Energy Commission (CEA), France Institute of Occupational Medicine (IOM), United Kingdom University Lund, Sweden	Establishment of a nano database of exposures, supporting documentation, exposure measurement, research, exposure modelling, and scenario building and occupational exposure limits, (OELs).

9.2 Completed projects

PEROSH has completed numerous recent projects, including:

- indIR-UV – exposure of workers to indirect UV- and IR-radiation emitted by arcs, flames, and thermal radiators.
- Dimensional comparability of physical working conditions as covered in European monitoring questionnaires.
- Survey Development and Cross Culture Methodology.
- Exposure measurements and risk assessment of manufactured materials-nanoparticles (Nanodustiness project).
- OSH Evidence – Clearinghouse of Systematic Reviews 2009–2015.
- Safety culture and accidents: Promotion of zero accident vision.
- Ageing of the workforce.
- Determination of Workplace Protection Factors for Respiratory Protective Devices.
- Hazard identification and engineered nanoparticles (NANoREG project).
- Concept of the integration of ambient intelligence solutions for safety and health, towards smart factories.

9.3 Project collaboration with third parties

PEROSH members are also active in a number of other projects with third parties:

- INCLUSIVE – Smart and adaptive interfaces for INCLUSIVE work environment
- InGRID-2 – Integrating Research Infrastructure for European expertise on Inclusive Growth from data to policy
- Back-UP – Personalised Prognostic Models to Improve Well-being and Return to Work After Neck and Low Back Pain
- WOW: Working hours, health, well-being and participation in working life
- Nordic Occupational Register: A tool for estimation of the potential of workplace and population level intervention
- Psychosocial Risk Management (Prima-et), Vocational education and training
- Scale-up Nanoparticles in Modern Papermaking (SUNPAP)
- The European Network on the Health and environmental Impact of nanomaterials (NanoImpactNet)
- A pan-European infrastructure for quality in nanomaterials safety testing (QNano)
- Safety Evaluation of Manufactured Nanomaterials by Characterization of Their Potential Genotoxic Hazard (Nanogenotox)
- Health impact of engineered metal and metal oxide nanoparticles: Response, bioimaging, and distribution at cellular and body level (Hinamox)

- Development of a novel and cost-effective range of nanotech improved coatings to substantially improve NIR (Near Infrared Reflective) properties of the building (COOL Coverings)
- Towards ECNIS Centre for Research and Education on Cancer, Environment and Food (ECNIS2)

10 Outputs

Examples of PEROSH publications

Dimensional comparability of psychosocial working conditions as covered in European monitoring questionnaires. Maren Formazin^{1*}, Hermann Burr¹, Cecilie Aagestad ², Tore Tynes ², Sannie Vester Thorsen ³, Merja Perkio-Makela ⁴, Clara Isabel Díaz Aramburu ⁵, Francisco Javier Pinilla García ⁵, Luz Galiana Blanco ⁵, Greet Vermeylen ⁶, Agnes Parent-Thirion ⁶, Wendela Hooftman ⁷, and Irene Houtman ⁷. Award winning paper which recently won the publisher Elsevier Ltd's best paper award 2017 in the scientific journal Applied Ergonomics.

BMC Public Health, 2014, 14:1251 <http://www.biomedcentral.com/1471-2458/14/1251>
http://www.perosh.eu/wp-content/uploads/2013/06/PEROSH-OSH-Evidence-Methods_Last-update-sep-12.pdf.
http://www.perosh.eu/wp-content/uploads/2013/05/Perosh-Research-Challenges_lowres.pdf.
http://www.perosh.eu/wp-content/uploads/2013/06/PEROSH_Formazin-et-al-2014-comparison-of-7-monitoring-questionnaires-1.pdf.

Futures. Foresight and priority setting in OSH. FACTS. INAIL, PEROSH. http://www.perosh.eu/wp-content/uploads/2016/09/FACTSHEET_fin_layout-Rprior_-4-pag_version2.pdf.

Well-Being and Work. Update of the Project: How to grow a sustainable well-being tree? Project leader: HSE/HSL. Project partners: BAuA, CIOP-PIB, FIOH, IFA, NRCWE, STAMI, TNO. <http://www.perosh.eu/research-projects/perosh-projects/well-being-and-work/>.

The PEROSH Well-Being Group. Physical Exercise and Sedentary Behaviour. Good Practice Check List
<http://www.Perosh.Eu/Wp-Content/Uploads/2014/10/Perosh-Physical-Exercise-Good-Practice-Checklist.Pdf>.

Development of a Nano Exposure and Contextual Information Database (NECID). Johannes Pelzer¹, Wouter Fransman ², Wiho Stöppelmann ¹, Christian Schumacher ¹, Derk Brouwer ², Ismo Koponen ³, Delphine Bard ⁴, Olivier Witschger ⁵, Elzbieta Jankowska ⁶, Tomi Kanerva ⁷, Markus Berges ¹
http://www.perosh.eu/wp-content/uploads/2015/11/IP11_NECIDPoster_2014.pdf.

Concept of Integration of Ambient Intelligence Solutions for Safety and Health Towards Smart Factories. Project leader: BAuA, Project members: CIOP, DGUV, INRS, NRCWE, FIOH, TNO. <http://www.perosh.eu/research-projects/perosh-projects/concept-of-integration-of-ambient-intelligence-solutions-for-safety-and-health-towards-smart-factories/>.

Health Impact Assessment for Occupational Respiratory Diseases. Project leader: TNO and HSL. Project members: BAuA, IFA, INRS, NRCWE.

<http://www.perosh.eu/research-projects/perosh-projects/health-impact-assessment-for-occupational-respiratory-diseases/>.

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PEROSH has contributed actively to numerous European and international research seminars and conferences.

PEROSH organises every two year its own research exchange seminars. Two were held up till now:

- The 1st PEROSH Research Exchange Warsaw, on 21 October 2015, in Warsaw, Poland: <http://www.perosh.eu/events/event/seminar-perosh-research-exchange/>.
- Last year, the 2nd PEROSH Research Exchange meeting was organised, on 14 September 2017, in Sankt Augustin, Germany: <http://www.perosh.eu/events/event/2nd-perosh-research-exchange-meeting-on-14th-september-2017/>.

11 Collaborative partners

According to the PEROSH Agreement, communities, societies, and individual researchers who wish to support PEROSH activities may be accepted as collaborative partners in PEROSH projects. The list below shows some examples of partners PEROSH collaborated with.

- University of Gävle, Gävle, Sweden
- Karolinska Institutet, Stockholm, Sweden

- German Sport University Cologne (DSHS), Köln, Germany
- Lund University, Skane Medical Services, Department of Laboratory Medicine, Occupational and Environmental Medicine, Lund, Sweden
- French Alternative Energies and Atomic Energy Commission (CEA), France
- Institute of Occupational Medicine (IOM), United Kingdom
- European Foundation for the Improvement of Living and Working Conditions, (EUROFOUND), Ireland
- University Dresden (Germany)
- University Bologna (Italy)
- The Occupational Safety Research Institute (VÚBP), Czech Republic.
(<http://www.vubp.cz/about-us>)
- Institut de Recherche Robert-Sauvé en Santé et en Sécurité du Travail (IRSST), Canada.
(<http://www.irsst.qc.ca/>)
- The National Institute for Occupational Safety and Health (NIOSH), USA.
(<https://www.cdc.gov/niOSH/about/>)

Other partners

PEROSH has created policy and practical partnerships with several bodies:

- European Commission, Directorate General Employment, Social Affairs and Inclusion.
(<http://ec.europa.eu/social/home.jsp>)
- European Commission Directorate General, Research and Innovation.
(<http://ec.europa.eu/research/index.cfm?pg=dg>)
- European Parliament (representatives of the EP Future strategies and the main parliamentary groups).
(<http://www.perosh.eu/summary-report-on-esip-perosh-breakfast-discussion-at-ep-now-available/>)
(<http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+REPORT+A8-2015-0312+0+DOC+XML+V0//EN>)
- EU- OSHA, Bilbao, Spain.
(<https://osha.europa.eu/fi>)
- European Foundation for the Improvement of Living and Working Conditions (Eurofound), Dublin, Ireland.
(<https://www.eurofound.europa.eu/fi>)
- The Sheffield Group – an international network of OSH research institutions, convening annually and including PEROSH members and respective institutions from the USA, Canada, Japan, Singapore, and the Republic of Korea.

12 Future challenges

PEROSH has identified seven key OSH challenges (2012 publication):

1. Sustainable employability to prolong working life.
2. Disability prevention and reintegration.
3. Psychosocial well-being in a sustainable working organization.
4. Multifactorial genesis of work-related MSDs.
5. New technologies as a field of action for OSH.
6. Occupational risks related to ENMs.
7. Safety culture to prevent occupational accidents.

Another activity is the PEROSH production of position papers. So far, three position papers have been produced:

1. “The Challenge for Europe in a Changing World – Inclusive, Innovative, and Reflective Societies.”
2. “Leadership in Enabling and Industrial Technologies.”
3. “Health, Demographic Change, and Well-Being.”

ANNEX 1.

Members of the PEROSH network

The membership of the PEROSH network is defined in the PEROSH Statute as key national players in OSH, associated with ministries, social partners, or health and public accident insurance schemes. The members should carry out OSH research. There is one member per country, but there can be more if two-thirds of the existing members so decide. New members will be approved upon application by two-thirds of the SC. At present PEROSH has 13 members:

Austrian Social Insurance for Occupational Risks, Vienna, Austria

(https://www.auva.at/portal27/auvportal/content?navigationalstate=JBPNs_r00ABXcnABJzd210Y2hDb250cmFzdE1vZGUAAAABAAR0cnVIAAdfX0VPRI9f&viewmode=content&portal:componentId=gtnc94c56bc-e53c-4f41-808e-96956e740f3a&switchContrastMode=true)

Austrian Social Insurance for Occupational Risks (AUVA) is the Austrian social security institution, providing social security services, occupational health services, and first aid, plus rehabilitation services for insured workers, aiming at successful returns to work and the promotion of work ability of employees. The AUVA also has a legal duty to carry out relevant research on safety and health at the workplace. Both aspects are equally represented, as are prevention of risks; health care; research on chemical substances and radiation; occupational workloads; heat, noise, and vibration, and new risks. An important topic is first aid and emergency medicine to support practical services in emergencies (a legal obligation of AUVA). AUVA participates in several research projects within the PEROSH framework and was leading the PEROSH project UV Indirect: Exposure of Workers to Indirect UV- and IR-Radiation Emitted by Arcs, Flames, and Thermal Radiators.

National Research Centre for the Working Environment (Det Nationale Forskningscenter for Arbejdsmiljø), Copenhagen, Denmark

(<http://www.arbejdsmiljoforskning.dk/en/om-os>)

The National Research Centre for the Working Environment (NFA) is a national research institute under the Danish Ministry of Employment. Its mission is to carry out research and professional activities in order to provide consultancy services within the institute's core areas:

- a) to carry out research activities at the highest international level;
- b) to communicate research-based knowledge to workplaces, authorities, social partners, and health and safety consultants;
- c) to participate in the training of researchers, and in educational activities at universities within its core areas;
- d) to perform tasks for the authorities;
- e) to perform development work that has a clear social mission.

The NFA mission is also to provide training that will enable the development of a safe and healthy working environment in Denmark. The NFA has been an active PEROSH member since its foundation. Currently, the institute coordinates one PEROSH research project on the measurement of physical workload and is a participant in four other projects. Moreover, it will coordinate two new PEROSH research projects this year.

Finnish Institute of Occupational Health, Helsinki, Finland

(<https://www.ttl.fi/en/>)

The FIOH is one of the founding members of PEROSH. It is an independent legal entity in the jurisdiction of the Ministry of Social Affairs and Health. It is a multidisciplinary research institute that carries out research; disseminates information; provides expert services for government, enterprises, and institutions; and provides training for OSH specialists, employers, and workers. The institute's mission covers the improvement of OSH in Finland at the level of individuals, the working population, enterprises, and society at large, through the development of safe and healthy working conditions, work environments, and work communities. FIOH currently participates in six out of eight PEROSH research projects.

National Research and Safety Institute for the Prevention of Occupational Accidents and Diseases, Paris and Nancy, France

(<http://en.inrs.fr/>)

The National Research and Safety Institute for the Prevention of Occupational Accidents and Diseases (INRS) is an institution within the French social security organization, assigned for research, services, training, education, and information in OSH. The governance of the institute is bipartite – the French Employers' Organization and five national federations of trade unions. The scope of the INRS is widely multidisciplinary, covering safety, toxicology, psychology, physiology, ergonomics, technical issues, and risk prevention. The headquarters, medical department, and information and training centres are in Paris; the technical departments and laboratories are in Nancy. The INRS is a founding member of PEROSH, and currently participates in five PEROSH projects

Federal Institute for Occupational Safety and Health, Dortmund, Germany

(<http://www.baua.de/en/Homepage.html>)

The Federal Institute for Occupational Safety and Health (BAuA) is a public-law institution based in Dortmund with branches in Berlin and Dresden, plus a field office in Chemnitz. The BAuA is a federal authority, directly responsible to the Federal Ministry of Labour and Social Affairs (BMAS).

The BAuA serves as a major governmental research institution, and advises the Federal Ministry of Labour and Social Affairs in all matters of safety and health, and on the humane design of working conditions. As a federal institution with R&D functions, the institute operates at the interface between science and politics and renders transfer services from the science system

into policy, corporate practice, and broader society, and vice versa. The BAuA's tasks range from policy advice, the performance of sovereign duties, and knowledge transfer into corporate practice, through to educational and instructional work done by the DASA Working World Exhibition. The R&D activities of the current programme relate to the following strategic fields:

- a) ensuring the safe use of chemicals and products;
- b) adapting working conditions to the needs of humans;
- c) avoidance of work-related diseases, and the promotion of health and workability; and
- d) understanding the impact of a changing working world and developing further OSH instruments.

The BAuA is an active founding member of PEROSH and participates in two PEROSH research projects.

Institute for Occupational Safety and Health of the German Social Accident Insurance, Sankt Augustin, Germany

(<http://www.dguv.de/ifa/index.jsp>)

The Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA) is an institute for research and testing of the German Social Accident Insurance. It is located in Sankt Augustin, near Bonn. The IFA is one of the main departments of the German Social Accident Insurance, DGUV. It supports the German Social Accident Insurance institutions and their organizations, particularly in solving scientific and technical problems relating to safety and health protection at work; with the following activities:

- a) research, development, and investigations;
- b) testing of products and material samples;
- c) workplace measurements and advice;
- d) participation in standardization and regulation setting bodies; and
- e) technical information and expertise.

The IFA also works on behalf of manufacturers and companies within the framework of product testing and certification, and the certification of quality management systems.

The IFA's competence areas cover a wide scope of work aspects, including information technology, risk management, chemical and biological hazards, physical hazards, ergonomics, epidemiology, accident prevention, and product safety.

The IFA is a founding member of PEROSH and is currently the chair for the whole PEROSH network. It is also coordinator of two PEROSH projects and a participant in four other PEROSH projects.

Italian Workers' Compensation Authority, Rome, Italy

(<https://www.inail.it/cs/internet/multi/english.html>)

The National Institute for Insurance Against Accidents at Work (INAIL) is a public, non-profit entity that safeguards workers against physical injuries and occupational diseases. INAIL's objectives are:

- a) to reduce the number of work-related injuries;
- b) to protect workers who do hazardous jobs; and
- c) to facilitate the return to work of people injured in the workplace.

The INAIL integrated system of protection ranges from preventative actions at the workplace to medical services and financial assistance, to the rehabilitation and reintegration of victims of workplace accidents or work-related diseases.

The insurance – compulsory for all employers hiring subordinate and para-subordinate workers in activities that the law defines as risky – protects workers and provides compensation for work-related accidents and occupational diseases. The insurance releases the employer from liability resulting from damage caused by employees.

In order to help reduce workplace accidents, INAIL also realizes some important initiatives aimed at continuous monitoring of employment and injury trends, providing training and advice to SMEs in the field of prevention, and funding companies that invest in security.

INAIL performs multidisciplinary research activity characterized by continuous updating, based on priorities and emerging risks. The research projects are mainly focused on injury prevention, workplace safety, health protection in living and working environments, training, and the promotion of a safety culture. It cooperates internationally with research institutions of other nations by promoting a common system of scientific and technical reference for the implementation of European Community policies.

INAIL is the Italian focal point of the European agency for workplace safety and health, and the Italian focal point for the WHO in the field of safety and health at the workplace. It provides the ICOH secretary's office and was the National Occupational Safety and Health Information Centre (CIS) of the ILO. INAIL is an active PEROSH member, and coordinates one PEROSH project and participates in two other projects.

Netherlands Organization for Applied Scientific Research, The Hague, The Netherlands

(<https://www.tno.nl/en/>)

The Netherlands Organization for Applied Scientific Research (TNO) works for sustainable development of innovative industry and health, including OSH, defence, safety and security, urbanization, and energy.

The TNO is an institute of applied research and consultancy that aims to assist companies and governmental agencies in improving sustainable employability regarding:

- a) psychosocial and physical workload, and the development of assessment tools and interventions;
- b) vitality, engagement, and mental and physical health, including musculoskeletal disorders;
- c) health management in companies, and strategies and controls for health care providers;
- d) OSH, risk assessment, and work and health cataloguing;
- e) monitoring, trend studies, future scenarios, and cost benefit analyses; and
- f) knowledge on special topics such as postponing retirement, and older and chronically ill workers' employability.

In the near future, TNO will focus on:

- a) creating positive psychology – inspired and engaged;
- b) tackling violence, harassment, and other occupational risks in the service economy;
- c) sustainable employability and postponing retirement;
- d) stimulating and promoting the integration of public and occupational health topics, policies, and services;
- e) advising the government, employers, employers' organizations, and others on sustainable employability policies, and monitoring trends in the Dutch workforce and in OSH, and doing policy research;
- f) supporting partners – companies and public agencies – in developing and evaluating strategies and policies on sustainable employability;
- g) supporting service providers in improving their quality, by organizing networks of expertise and by developing tools;
- h) participating in national and international formal networks like PEROSH and Body At Work;
- i) monitoring trends in working conditions in the Netherlands, for national government (the data being used for policy evaluation and for international comparisons);
- j) carrying out scientific research by relating survey data to national register data, to get a deeper insight into the relationship between labour conditions, health, absenteeism, hospital admissions, and diagnoses, as well as labour productivity;
- k) developing tools such as the “Happy Worker” game (serious gaming for management), ALERT (assessment of workload), DIX (assessment of sustainable employability), and the cost-effectiveness tool on harassment at the workplace; and
- l) promoting the integration of public and occupational health by organizing a prestigious international conference sponsored by the WHO.

TNO is an active founding member of PEROSH and participates in several projects.

Central Institute for Labour Protection – National Research Institute, Warsaw, Poland

(<https://www.ciop.pl/en>)

The Central Institute for Labour Protection – National Research Institute (CIOP-PIB) is the main research institution in Poland, comprehensively dealing with improving working conditions according to human psychophysical abilities. The institute conducts research and development work, leading to new technical and organizational solutions in the field of labour protection, OSH, and ergonomics. It also carries out other tasks essential for reaching the goals of the state's socio-economic policy in this field.

The key guideline for the institute's activity is the strategic National Programme for Improvement of Safety and Working Conditions. The present Phase III is the continuation of phases I and II, approved by the Polish government. The results of phases I and II have been positively evaluated by the Ministry of Labour and Social Policy, and the Ministry of Science and Higher Education. The programme's results are expected to significantly add to the reduction of occupational risk.

CIOP_PIB is an active, founding member of PEROSH, and participates in six PEROSH projects.

The National Institute of Occupational Health, Norway

(<https://stami.no/en/>)

The National Institute of Occupational Health (STAMI) is a multidisciplinary governmental research institute funded by the Ministry of Labour and Social Affairs. STAMI works to facilitate good working environments, and to prevent illness and promote good health. The institute has over 100 employees, who create and promote knowledge on occupational health. STAMI has an interdisciplinary research environment, consisting of experts from various professional backgrounds such as medicine, physiology, chemistry, biology, and psychology. STAMI participates actively in several PEROSH projects and is a founding member.

National Institute of Safety, Health and Wellbeing at Work (Instituto Nacional de Seguridad y Salud en el Trabajo), Madrid, Spain

(www.insht.es/)

The National Institute of Safety, Health and Wellbeing at Work (Instituto Nacional de Seguridad y Salud en el Trabajo (INSST)), founded in 1978, is the specialised scientific and technical institute in the field of OSH under the Ministry of Employment and Social Security. INSST comprises four National Centres, each one specialised in different fields of OSH research. The mission of INSST is **the analysis and study of the health and safety conditions in the workplace, as well as their promotion and provide support for their improvement**. To meet its objectives, it establishes the necessary cooperation with bodies of the Autonomous Communities (regions) and the State Administration involved with health and safety at work, as well as with social partners.

The INSST has, among others, the following functions:

- Concerning research, its primary mission is to analyse and study health and safety conditions at work, in order to determine the causes of occupational illnesses and injuries, and to recognise new and emerging occupational hazards to be able to prevent them. The INSST also promotes and coordinates a health and safety at work research network of public institutes.
- To provide the required specialised and differentiated technical support to public bodies, employers and employees organisations, as well as the necessary technical assistance in developing legal and technical regulations on the prevention of occupational risks, at both national and international level.
- To promote awareness of occupational risk prevention, acting as a driving force, and carrying out training, information, research, study and dissemination activities in the field of occupational risk prevention.
- To promote and support the integration of OSH training in all programs and educational levels, actively participating in specialised training in this field and developing support elements, training materials, and specialised documentation.

At the international level, the INSST collaborates with Governments and Institutions of other countries in the development of health and safety at work, and forms part of different European specialised networks – among others is the National Reference Centre for Institutions of the European Union. In addition to those already mentioned, the functions of the INSST are any others which may be necessary for the achievement of its end goals and which may be assigned to it within the scope of its competencies.

The INSST is active in PEROSH and participates in six PEROSH projects.

Health and Safety Executive, UK

(<http://www.hse.gov.uk/>)

(<http://www.perosh.eu/members/country-members/>)

The UK Health and Safety Executive (HSE) regulates workplace health and safety in Great Britain through a risk-based, goal-setting regulatory framework that has helped make Britain one of the safest places in the world to work. HSE's scientists and analysts provide high-quality evidence that informs and underpins HSE's regulatory regime, and are vital for ensuring effective and proportionate risk management that protects workers and safeguards the public while enabling productivity, innovation, and growth.

The HSE Science and Evidence Strategy is at the heart of the HSE's approach to developing the evidence base in support of its regulatory policy. In this strategy, the HSE's chief scientific adviser, Professor Andrew Curran, sets out the HSE research approach:

The UK Health and Safety Laboratory (HSL) is an in-house agency of the HSE. The HSL is a founding member of PEROSH. Its vision is "Using our brains to save and improve the lives of workers" and its mission is "To maximize our contribution to the health and safety system". The HSL's main role is to provide HSE with the scientific assistance it needs to meet its enforcement and other statutory duties. This covers a wide range of work activities including factories, farms,

hospitals, and the services sector, as well as chemical plants, refineries, and offshore gas and oil installations. Additionally, about 20 per cent of the HSL's work is for other public- and private-sector organizations.

The HSL has three operating groups:

- a) health improvement, which is focused on the health and safety of workers;
- b) hazard reduction, which is focused on the safety of industrial plants; and
- c) human factors, which is focused on individual human and social-group interactions that affect either workers or plant safety.

Within these three groups, research and development work is undertaken across a wealth of disciplines. Capabilities for work on occupational health and safety include: toxicology; microbiology; clinical activities; immunology; epidemiology; occupational hygiene; organic and inorganic measurement; psychology, including work on human and organizational factors; risk assessment; risk communication; ergonomics; personal protective equipment; noise and vibration; pedestrian safety; metallurgy and materials; fire and explosions; mechanical engineering; and “futures”.

Work undertaken includes:

- a) understanding the causes of accidents and ill-health;
- b) investigating accidents and ill-health;
- c) informing policy-making activities;
- d) informing the development of guidance and advice for industry and inspectors;
- e) promoting health and safety through disseminating information to, and engaging with, stakeholders such as health and safety professionals; and
- f) identifying new challenges to health and safety.

HSE participates in several PEROSH joint projects.

Institute for Work and Health, Lausanne, Switzerland

(<http://www.i-s-t.ch/en/home/>)

(<http://www.i-s-t.ch/en/research/fields-of-research/>)

The Institute for Work and Health (IST) is a foundation under Swiss private law, primarily supported by the cantons of Vaud and Geneva. The institute in practice is a national institute of occupational health, as its role in the promotion of occupational health in the country is so crucial. The missions are research, teaching, analysis, and consulting.

The foundation's Board of Trustees is made up of prominent individuals from academia, professional bodies, and the private sector. Both supporting universities, Lausanne and Geneva, are represented. The Scientific Advisory Board is made up of world-renowned scientists in the field of occupational health. Its role is to assist the director and the Board of Trustees with any problematic issues concerning science.

The IST's research is directed to the following priority areas covering exposure research, environmental engineering, medical research, and human factors. The institute carries out applied research in its principal fields of expertise on occupational health. The fields fall within the domains of exposure sciences, environmental engineering, occupational medicine, and the psychophysiology of emotions and performance in terms of human factors.

A part of the IST's mission as a research organization is to disseminate information about occupational health, and to contribute to the scientific community's research knowledge and data on OSH, including toxicology and occupational hygiene, occupational medicine, and occupational psychology. The IST also provides analytical and others services for regional and national authorities and other actors in the field of OSH and working environments. IST is one of the newest PEROSH members.

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