National Institute of Occupational Safety and Health, Japan

Japan Organization of Occupational Health and Safety
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Organization

- Department of Administration
- Center for Research Promotion and International Affairs
- Center for Occupational Accident Investigation
- Research Center for Overwork-Related Disorders (RECORDS)
- Center for Risk Management Research
  - Mechanical Safety Research Group
  - Construction Safety Research Group
  - Chemical Safety Research Group
  - Electrical Safety Research Group
  - Occupational Stress Research Group
  - Industrial Toxicology and Health Effects Research Group
  - Occupational Epidemiology Research Group
- Safety Research Area
  - Health Research Area
    - Occupational Hygiene Research Area
      - Work Environment Research Group
      - Occupational Ergonomics Research Group
Mission of JNIOSH

The National Institute of Occupational Safety and Health, Japan (JNIOSH) is the only comprehensive research institute for occupational safety and health in Japan. The JNIOSH actively conducts scientific researches in order to contribute administrating duties for the government and for workers in industries, for risk reduction of industrial accidents and diseases, promoting workers’ health, and creating safer and comfortable work environment.

Management Principles and Priority Research Areas

The National Institute of Occupational Safety and Health, Japan (JNIOSH) develops the research subjects related to industrial safety and occupational health in order to contribute to “ensuring the safety and health of workers in the workplaces”.

Management Principles

We will integrally promote comprehensive and interdisciplinary research that utilizes accumulated research methods and knowledge by collaborating with clinical research carried by Rosai (industrial accident compensation) hospitals in addition to investigation research in the field of industrial safety and occupational health. We will actively participate and contribute to the establishment and revision of laws and regulations concerning occupational safety and health and the formulation of various technical standards by the administrative authorities as the specialized agency. In addition, we will respond accurately to investigate causes of serious or complicated occupational accidents and measures to prevent recurrence in cooperation with the administrative authorities. We will actively promote collaborative studies with universities and public institutions from the viewpoints of effective and efficient implementation of investigation research, securing state-of-the-art technology level, and further activation of research. We will conduct investigation research that accurately reflects the needs of the industrial sites, effectively disseminate the research results to the related organizations and business operators not only by academic presentations at academic conferences but also by various tools, and strive for active technical supports utilizing research results and findings.

Priority Research Areas

1. Research on occupational safety and health problems caused by changes in industrial society

   We will analyze the impact that workplace stress, long working hours, working in shifts, and other matters caused by changes in how people work have on physical and mental health, and conduct research on preventing such problems. In addition, we will conduct research on preventive measures against occupational accidents that result from the handling of new materials and new technologies introduced to the industrial sites due to technological innovation.

2. Research on hazards and toxicity at industrial sites

   We will focus on work and substances that cause frequent occupational accidents, analyze hazards and toxicity in workplaces that result in falling, explosions, and chemical and physical accidents, and conduct research on preventive measures.

3. Research on risk assessment and management in workplaces

   We will establish exposure assessment methods and risk assessment methodologies for hazards and adverse factors in workplaces and conduct research for the development of support tools to make risk management more effective.
Contribution to Industrial Safety and Health Administration

JNIOSH is contributing to the formulation and implementation of government policies through the following activities:

1. Implementation of project research on the priority research areas with high needs of administrative authorities and industrial sites, and transmission of research findings
2. Research on the causes of industrial accidents that have complicated or serious occurrence mechanisms, e.g., fires and explosions in chemical plants, and proposal of measures to prevent recurrence
3. Participation in the establishment and amendment of occupational health and safety related laws and regulations, and the formulation work on structural standards, technical standards, and JIS (Japanese Industry Standards), etc.
4. Implementation of collaborative research in Japan Organization of Occupational Health and Safety (Johas)

In the third medium-term plan, the Japan Organization of Occupational Health and Safety (Johas) has been carrying out collaborative research, which is in cooperation with basic/applied research for prevention of labor accidents at the National Institute of Occupational Safety and Health (JNIOSH) and clinical research at the Rosai hospitals, for expecting maximum integration effects.
In addition, the Johas also includes other research and projects, such as toxicity studies and surveys about chemicals at the Japan Bioassay Center, and preventive medicine model at the Research Center for the Promotion of Health and Employment Support in the Rosai hospital. Therefore, The Johas will encourage collaborative research among multiple facilities of the Johas as well as those between the JNIOSH and Rosai hospitals on the forth medium-term plan.
Themes of the collaborative research in the Johas in the forth medium-term plan are as follows; preventive measures against Karoshi and other overwork-related health disorders, studies on prevention and life support of spinal cord injury, research about health effects and exposure assessment of toxic chemicals, and research about decrease of labor accidents and about promotion of recovery of victim of labor accidents.
Activities of JNIOSSH in Connection with Ministry of Health, Labour & Welfare and Other Institutions

National Institute of Occupational Safety and Health, Japan

Investigation and Research Activities
- Project Research
- Fundamental Research
- Investigation and Research on Industrial Accidents
- Scientific Contribution to Safety and Health Standards etc.

Cooperation with Others
- Contracted Research
- Commissioned Research
- Promotion of Young Researchers and Engineers
- Share of Research Facilities

Research Results
- Occupational Safety and Health Specific Research Report
- Safety and Health Document
- Technical Recommendation
- Industrial Health

Information and Services
- Announcement of Research Results
- Send Information
- Lecture meeting
- Open House of Institute
- Use and Promotion of Patents

Ministry of Health, Labour and Welfare
- Investigation of Accidents
- Enactment of Law and Regulations on Industrial Safety and Health
- Establishment of Constructive Codes for Machinery and Equipment
- Establishment of Technical Recommendations

Workplaces

Academic Institutions and Societies

Others
Center for Occupational Accident Investigation

The main role of this center is the investigation of industrial accidents which is one of our most important missions.

At the request of the Ministry of Health, Labour and Welfare, our center dispatches researchers from suitable research groups to accident sites to examine serious and/or complicated accident mechanisms.

These researchers carefully examine the sites, and bring back, if necessary, materials to the laboratory for further analyses or testing.

Finally, an industrial accident report is submitted to the Industrial Safety and Health Administration and the report is sometimes utilized to amendment and establishment of occupational safety and health regulations and standards.

In addition, we provide expert opinions and assessments from scientific and specialized viewpoints at the request of criminal investigation agencies, such as labour administration bureaus and the police.
Center for Research Promotion and International Affairs

The major mandates of the International Center are to: Collect, analyze and deliver domestic and international information on occupational safety and health issues, Publish international and domestic scientific journals, Contribute to WHO and developing countries as a WHO Collaborating Center in Occupational Health, Promote international collaborative studies on occupational safety and health, Administer the National Conference on the Promotion of Occupational Health and Safety Priority Research, and Manage the library, the computer network and other relevant information services.

International Research Collaboration

The institute currently holds mutual research collaboration agreements with institutions in the USA, the UK, South Korea, China, etc. The institute intends to strengthen its collaboration with ASEAN countries in the near future, as we believe that our long experience in occupational health practice and research can be an important reference for currently industrializing countries, as they tackle emerging occupational health issues.

Publication of the Journal

INDUSTRIAL HEALTH is an international scientific journal currently published by the National Institute of Occupational Safety and Health, Japan. First issued in 1963, it has been providing advanced scientific information for 45 years. The journal is now published bimonthly and covers a wide variety of occupational health and safety topics, including industrial hygiene, ergonomics, human engineering and policy sciences.

OCCUPATIONAL SAFETY and HEALTH, a domestic journal, has been also published since 2008, for the promotion of domestic research on occupational safety and health.

Contribution to WHO

The JNIOSH was first designated in 1977 as a WHO Collaborating Center for Occupational Health in Japan and was redesignated in 2007. The JNIOSH participated in the first (2001-2005) and second (2006-2010) terms of the WHO Global Network Work Plan. JNIOSH has also continued participating in the Global Plan of Action (GPA) which newly started from 2009, and has been collecting and disseminating the latest information on Occupational Safety and Health on a global scale through the research network organized by the WHO Collaborating Centers. The international center acts as an executive office of the WHO Collaborating Center in JNIOSH.
**Research Center for Overwork-Related Disorders**

Research Center for Overwork-Related Disorders (RECORDS) has been established as a new center of the JNIOSH in response to the Act on Promotion of Preventive Measures against Karoshi and other Overwork-related Health Disorders, which came into effect as of 1st November 2014. RECORDS has the mission to conduct biomedical research on the prevention of health disorders associated with overwork.

Our principal aim is to perform case analysis and root cause analysis to understand the current situations of overwork-related disorders. We also conduct original studies to examine fatigue and health effects of overwork. Another essential task of RECORDS is to find effective countermeasures against health deterioration due to working excessively in terms of both quantitative (e.g., long work hours) and qualitative (e.g., psychosocial demand) aspects. To accomplish our goals, we are actively collaborating with relevant universities and institutions the world over.

**Research activities in Research Center for Overwork-Related Disorders (RECORDS)**

**< Database for overwork-related disorders >**

- Storage of compensation claims about overwork-related diseases, “Karoshi”
- Developing electronic database of “Karoshi”
- Publication of analytical results using “Karoshi” database

**< Experimental study at RECORDs >**

- The experiment image of cardiovascular burden under simulated long working hours
- The continuous hemodynamic monitor for evaluating the blood pressure and the peripheral vascular pressure
- Experiment image measuring cardiorespiratory endurance using an air bike

- Utilize research results at lecture meetings and educational training
- Public lecture about research results at public open lecture
The center performs research on and develops tools for risk management and occupational safety, measures to prevent industrial accidents caused by human error, and statistical analysis of occupational accident data.

There are seven primary fields on which our center focuses: 1) health and safety promotion in small and medium-sized enterprises (SMEs); 2) industry-based development of risk management tools and techniques; 3) research on prevention measures for occupational accidents caused by organizational failures and human error; 4) criteria development based on scientific evidence that covers tools, equipment, manual material handling equipment, and automated material handling equipment used in the labor-intensive tertiary sector, construction industry, and land transportation industry; 5) research on personal protective equipment reliability and credibility; 6) psychological research on workers’ risk perception; and 7) safety education and training program establishment.

Our center enhances cross-departmental collaboration.

This enables our researchers to work together across departmental and disciplinary boundaries.
Mechanical System Safety Research Group

To prevent machine and equipment related accidents, the Mechanical System Safety Research Group investigates the fatigue strength of machine components, uses numerical analysis for fractured surfaces, and conducts research on control methods for safe man-machine systems.

Clamping force measurement of wire grips.

Stress measurements of a wheel crane boom.

Measurement of human tolerance to mechanical stimulus.

Stripe pattern observed on fatigue fracture surface by scanning electron microscope.

Two dimensional blanking system for press work.
The Construction Safety Research Group studies the requirements for the safe conduct of construction work and to improve methods for the working environment at construction sites. The main subjects of the research are safety in temporary work, safety in earthwork, prevention of accidents involving falls, and safety assessment of newly developed methods of construction work.

Wind tunnel tests for prevention of collapsing of temporary structures due to strong winds.

Geotechnical centrifuge testing apparatus (NIIS-Mark II).

Full scale model tests on identification of potential threat of slope failure by monitoring of sensors.

Performance test of temporary structures.

Study on prevention measures of overturning of heavy construction machineries on unstable ground.
The aim of the work in the Chemical Safety Research Group prevents industrial accidents by decrease of explosion and fire risks during chemical process. We also publish an accessible database of explosion accident histories in industries which are useful references for evaluating explosion risks in chemical process. The contents of the database are renewed in order.

Adiabatic reaction calorimeter for evaluating exothermal behavior.

Flammability test of Magnesium.

Capture system for explosion products (Left:Success, Right:Failure).

Accessible database of explosion accident histories in industries.
The Electrical Safety Research Group is dedicated to the prevention of industrial hazards caused by electrical energy and to the development of electric, electronic, and information technologies that can be applied for industrial safety purposes. The group is currently involved in ventures such as the investigation of the ignition mechanism caused by electrostatic discharges, development of antistatic applications, prevention of malfunctions of electronic equipment and systems caused by electromagnetic noises, prevention of electric shock hazards, and development of safety measures by utilizing image processing technology and ICT (information and communication technology).

The study of static electricity in an experimental facility.

High-voltage facility for the prevention of electric shock hazards.

Modeling of electrostatic phenomena and application to electrostatic hazards.

Development of vison based protective devices (VBPD).
Occupational Stress Research Group

The main role of this research group is to investigate methods for assessing workers’ health conditions and health management. Effects of working conditions such as working hours, rest periods, physical work environment and work stress are assessed mainly from psychosocial and physiological points of view. The group also investigates technical methods for occupational health management and work organization, to help make the workplace more comfortable. This includes the development of assessment technology, in conjunction with designing optimal working conditions which more carefully match the various physical requirements of the working populations.

Experiments on water requirement during heat exposure using the climate chamber.

Assessment of stress by using salivary hormone.

Work schedules and sleep disturbances.

Situation of workers’ accident compensation for mental disorders.
The overall objective of this research group is to provide the scientific basis and technological means to understand how occupational diseases are induced by exposure to chemical substances and other hazardous factors in the workplace. Research is conducted mainly based on laboratory experiments, focusing on the mechanisms of poisoning due to chemical substances including the interaction with individual traits of workers, e.g. sex, age and genetics. Another objective is the development of biomarkers, i.e. monitoring tools for the early detection of hazard exposure and adverse health effects.

An inhalation exposure system using in toxicology research field.

Histopathological assessment of health effects of chemicals in laboratory animals.

Assessment of the effects of chemicals on higher brain functions using operant conditioning in mice.

 Comet assay for detecting early DNA damages caused by industrial chemicals.
Occupational Epidemiology Research Group

In this research group, the following is conducted: the assessment for chemical and physical agents and their potential hazards in workplaces, the evaluation of effective and practical measures for preventing health hazards induced by occupational exposures in workplaces, and the epidemiological analysis of health hazards and occupational exposures in workplaces. Research priority is given to urgent and important issues in occupational safety and health: practical intervention studies for preventing work-related diseases (musculoskeletal disorders, cardiovascular disorders and so on), surveillance studies for work-related diseases and occupational exposures, epidemiological studies of mortality among asbestos-exposed workers, epidemiological analyses of occupational diseases and injuries, and so on.
To prevent workers' acute and chronic illnesses from various kinds of chemical substances and physical hazards, work environments should be controlled through periodic measurements and evaluations. Development and improvement of these measuring and evaluation methods are undertaken at our research group in order to achieve the above objectives for existing and new chemical substances and physical factors. Development of characterization methods for various hazardous dusts and fumes in the workplace and also anticipated hazards of new materials such as nano-particles are intensively studied. Synthesis of new adsorbents applicable to respirators and treatment for ventilation exhaust, and performance evaluation of LEV has been continually studied.

Particle counters: Differential Mobility Analyzer.

SEM photographs of carbon nano tube (top) and asbestos fiber from asbestos cement tube (bottom).

SEM pictures of adsorption media.

Measurement and hazard evaluation of optical radiation.

Local Exhaust Ventilation.
Occupational Ergonomics Research Group

For the purpose of reduction and prevention of the work-related diseases, we carry out investigations by using ergonomic methods in the field of occupational health. The activities include physical, physiological and psychological studies on the health effect of whole-body vibration, local vibration of the hand and arms, low-frequency content in noise, heat strain, optical radiation, carrying heavy load, and so on. Using the results of these researches, we perform development and evaluations of tools for protection, such as occupational safety glasses, protective clothing and anti-vibration gloves.

Subjective response experiment using 6-DOF whole-body vibration test rig: subjective scaling of ride discomfort given as a function of the vibration acceleration.

Heat mitigation techniques using mist

Heat working environment at summer outdoor
# History of JNIOSH

## National Institute of Industrial Safety (NIIS)

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<th>Year</th>
<th>Event</th>
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<tr>
<td>1942</td>
<td>The Research Institute of Industrial Safety (RIIS) was founded in Tokyo by the Ministry of Welfare</td>
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<tr>
<td>1943</td>
<td>Opened the Industrial Safety Museum</td>
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<tr>
<td>1947</td>
<td>Transferred to the Japanese Ministry of Labour</td>
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<tr>
<td>1961</td>
<td>Opened the Industrial Safety Exhibition Center in Osaka</td>
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<tr>
<td>1966</td>
<td>Branch laboratory established in Kiyose, Tokyo</td>
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<tr>
<td>1971</td>
<td>Reconstruction of the headquarters building</td>
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<tr>
<td>1971</td>
<td>Opened the Industrial Safety Museum in the new headquarters building</td>
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<tr>
<td>1992</td>
<td>Completion of a new headquarters building with a material and new technology laboratory in Kiyose, and integration with the laboratory</td>
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</table>
| 1995 | English name was changed from "Research Institute of Industrial Safety(RIIS)" to "National Institute of Industrial Safety(NIIS)"
| 2001 | The institute was transferred to the Japanese Ministry of Health, Labour and Welfare |
| 2001 | The Institute became an independent administrative institution |

## National Institute of Industrial Health (NIIH)

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<tr>
<td>1949</td>
<td>The Silicosis Laboratory (KEIHAISHIKENSHTIU) was founded in Kinugawa, Tochigi Prefecture, as an institution attached to the Industrial Health Division, Ministry of Labour, at the same location as the Kinugawa Silicosis Hospital</td>
</tr>
<tr>
<td>1957</td>
<td>In accordance with the Ministry of Labour Organization Act, the forerunner of the National Institute of Industrial Health (NIIH, the ROUDO EISEI KENKYUSHO), was established in Nakahara-ku, Kawasaki, Kanagawa Prefecture</td>
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<tr>
<td>1963</td>
<td>The international scientific journal entitled &quot;INDUSTRIAL HEALTH&quot; was first published</td>
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<td>1976</td>
<td>The National Institute of Industrial Health (SANGYOU IGAKU SOUGOU KENKYUSHO) was opened in Tama-ku, Kawasaki City</td>
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<td>1977</td>
<td>The WHO Collaborating Center for Occupational Health was introduced</td>
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<td>1990</td>
<td>His Majesty the Emperor Akihito visited the NIIH</td>
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<tr>
<td>2000</td>
<td>The report entitled &quot;Occupational Health Research Strategies in the 21st Century&quot; was published by the Ministry of Labour</td>
</tr>
<tr>
<td>2001</td>
<td>The institute was transferred to the Japanese Ministry of Health, Labour and Welfare</td>
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<tr>
<td>2001</td>
<td>The Institute became an independent administrative institution, and the &quot;National Conference on the Promotion of Occupational Health Priority Research&quot; was organized</td>
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<tr>
<td>2003</td>
<td>The NIIH International Center was founded</td>
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<th>Year</th>
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<tr>
<td>2006</td>
<td>The NIIS and NIIH were combined to create the National Institute of Occupational Safety and Health, Japan (JNIOSH)</td>
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<tr>
<td>2016</td>
<td>The JNIOSH was amalgamated to the Japan Organization of Occupational Health and Safety.</td>
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Outline of Building Facilities

Headquarters, Kiyose District
Area : 35,302m²

Kawasaki District
Area : 22,942m²
[Headquarters, Kiyose District]
Umezono 1-4-6, Kiyose, Tokyo 204-0024, JAPAN
TEL: +81-42-491-4512
FAX: +81-42-491-7846

[By Public Transportation]
Take the Seibu Ikebukuro line to Kiyose station and use the south exit
From the south exit of the station take the Seibu bus from the No. 2 bus stop (5 minutes)
Get off the bus at the National Tokyo Hospital North bus stop (1 minute walk)

[By Taxi]
Take a taxi from the Seibu Ikebukuro line Kiyose station,
the Seibu Ikebukuro line Akitsu station,
or the JR Musashino line Shin-Akitsu station (5 minutes)

[On Foot]
You can walk from the Seibu Ikebukuro line Kiyose station (15 minutes),
the Seibu Ikebukuro line Akitsu station (30 minutes),
or the JR Musashino line Shin-Akitsu station (30 minutes)

[Noborito District]
Nagao 6-21-1, Tama-Ku, Kawasaki 214-8585, Japan
TEL: +81-44-865-6111
FAX: +81-44-865-6124

[By Public Transportation]
Take the JR Nambu line to Noborito station and take the Kawasaki city bus (10 minutes)
Get off the bus at the Goshozuka bus stop and walk up the hill (8 minutes)
Take the Odakyu Line to Mukogaoka-yuen station and use the south exit
From the south exit take the Tokyu bus bound for Kajigaya station (10 minutes)
Get off the bus at the Goshozuka bus stop and walk up the hill (8 minutes)

[By Taxi]
Take a taxi from either Mukogaoka-Yuen station,
or Noborito station directly to the institute (10 minutes)

[On Foot]
You can walk from the JR Nambu line Kuiji station,
or Shukugawara station (20 minutes)