

Safety and your Future with NITE

nite

National Institute of Technology and Evaluation

Institute Profile



Message
from the President



Prof. Fumihiko Hasegawa, Ph.D.

President
National Institute of Technology and Evaluation (NITE)

Challenge of realizing the more affluent society economically and spiritually everyone can be proud of

The National Institute of Technology and Evaluation (NITE) was established originally in February 1928, as the Export Silk Fabrics Inspection Institute. From that time, NITE, as an organization of the Japanese government, has been building a long history of supporting the Japanese industrial policy technically by inspecting such as textile, mechanical and chemical products in order to make sure the reliability of industrial products for export.

In 2001, NITE was reorganized to an Incorporated Administrative Agency under the Japanese government. Since then, NITE has consistently provided technical infrastructures that reduce social risks and sustain economic development and public safety, in various technical fields including consumer product safety, chemical management, biotechnology, and accreditation. Among them, we are immensely proud of having conducted genomic analysis of new actinomycetes in cooperation with Distinguished Emeritus Professor of Kitasato University, Satoshi Omura, who was awarded the Nobel Prize in Physiology or Medicine in 2015.

Designated as an Agency Engaged in Administrative Execution under the Ministry of Economy, Trade and Industry in 2015, NITE reiterated its commitment to support legislation enforcement and industrial policies technically. NITE also contributed to promoting innovation by fully utilizing the technical expertise and knowledge obtained through its responsibilities.

The needs of people and industry in Japan for the government are varying on a daily basis, reflecting incessantly changing in the social and economic situation. Therefore, here at NITE, we should continuously keep up with the changing of such needs for the government without any delay. In this regard, NITE established internally the Global Center for Evaluation Technology (GCET) in 2015. The mission of GCET is to contribute to develop emerging businesses such as large-scale storage batteries and fine bubble technologies by developing testing and evaluation technologies, and international standardization for these emerging businesses. Along with the mission, in 2016, GCET started the operation of the world's largest testing and evaluating facilities for large-scale storage battery systems in Osaka.

In 2014, NITE set its long-term vision for 2030, which described that NITE should challenge for realizing the more affluent society economically and spiritually everyone can be proud of, by generating valuable technological information, developing evaluation standards including aspects of traditional industries and culture, and prevailing them globally, in the field of safety and reliability of industrial products, the environment, and energy. In line with this vision, utilizing our expertise accumulated in NITE for a long time, and challenging new social needs aggressively, we contribute to foster industrial development and strive for the establishment of a safer society.

I sincerely hope that you will understand the missions and activities of NITE and support us in our work.

Safety and your future with NITE



The mission of the National Institute of Technology and Evaluation (NITE)

NITE continually contributes to the safety of society and supports challenges of the future by proven technologies and reliable information.

NITE's long-term vision for 2030

NITE should challenge for realizing the more affluent society economically and spiritually everyone can be proud of, by generating valuable technological information, developing evaluation standards including aspects of traditional industries and culture, and prevailing them globally, in the field of safety and reliability of industrial products, the environment, and energy.

We, NITE should always not only respond to existing social and government's needs, but also contribute to the economic development in the future.

In this regard, in 2014, we established our long-term vision for 2030, based on the results of discussion that all of our colleagues joined in on the future needs and the future role we should play, with social, global, and technical trends reflected.

Keeping this long-term vision in mind, recognizing the direction we should pursue and the role we should play from a long-term perspective, and considering what we can contribute to people and industry, we always challenge for realizing the more affluent society economically and spiritually everyone can be proud of.

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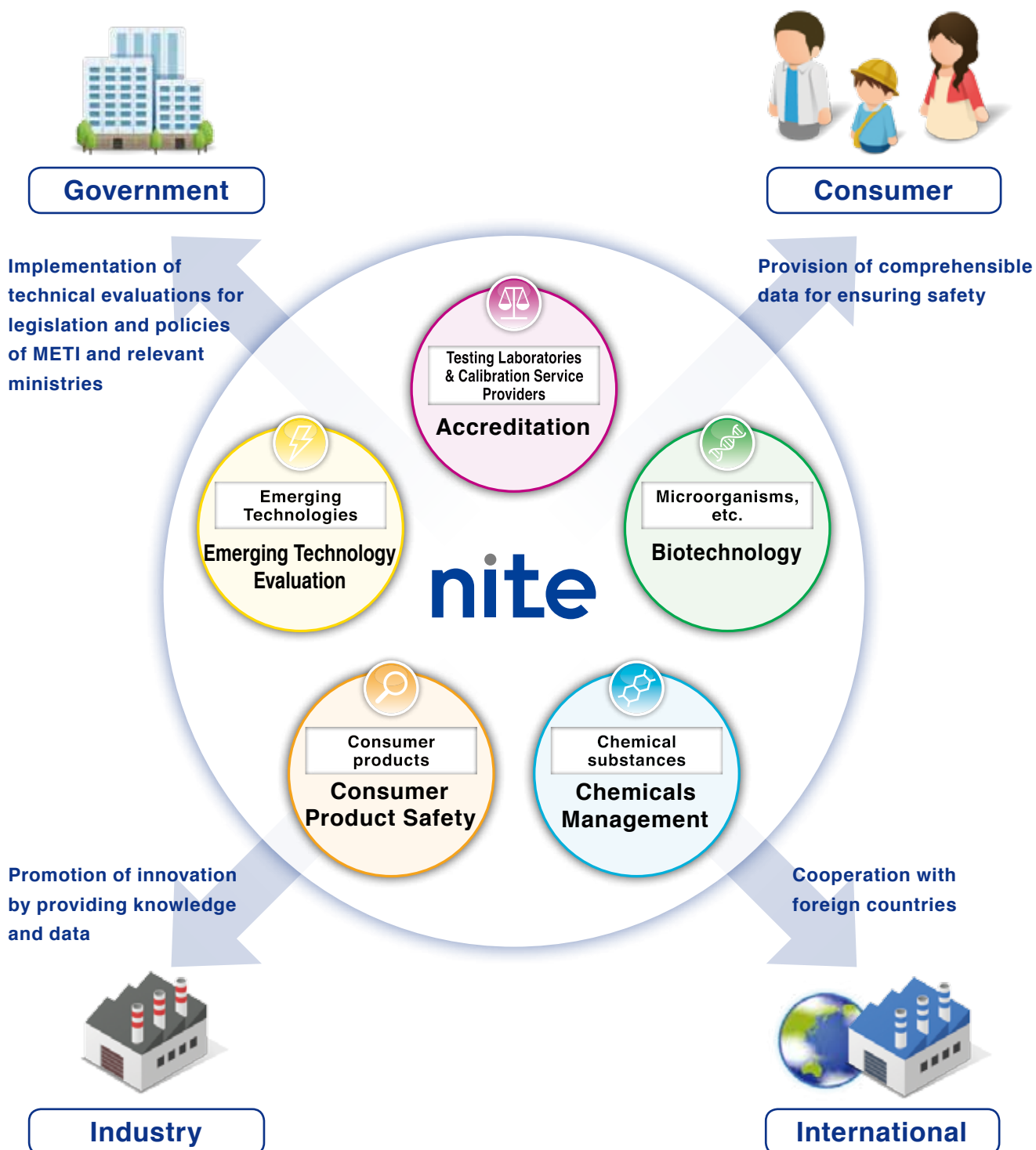
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Business overview

NITE is an Agency Engaged in Administrative Execution under the Ministry of Economy, Trade and Industry (METI) based on the Act on the National Institute of Technology and Evaluation, Incorporated Administrative Agency.

Cooperating with METI and other relevant ministries and agencies, NITE currently carries out technical evaluations for legislation and policies of the Japanese government, in the five fields of Consumer Product Safety, Chemicals Management, Biotechnology, Accreditation, and Emerging Technology Evaluation.

Fully utilizing the technical knowledge and data accumulated through its responsibilities, NITE provides them to industries and consumers, as well as cooperates with other countries, establishes international rules to promote innovation, and contributes to building safer societies worldwide.





Consumer Product Safety

Contributing to the Realization of a Safe Society by Promoting Safer Consumer Products

There are a variety of products around us that are essential to our comfortable and convenient lives.

At the same time, fires, injuries, and fatal accidents occur due to reasons including product design and manufacturing failures, improper use, and aging deterioration.

In accordance with relevant laws, NITE Product Safety Technology Center collects, investigates, and analyzes information about these consumer product accidents to identify their causes and assess their risks. NITE also widely disseminates information about product accidents and recalls, and develops standards to help businesses to provide safer products.

In April 2016, NITE Product Safety Technology Center moved its head office to Suminoe-ku in Osaka. NITE is committed to further promoting measures for preventing occurrence or recurrence of product accidents, and contributing sound industrial development by promoting safer consumer products.

● Contribution to the prevention of accidents through utilizing advanced techniques for identifying the cause of accidents

NITE collects information about accidents involving general consumer products such as electric, gas, and oil appliances in accordance with the Consumer Product Safety Act.

NITE receives accident reports from businesses such as manufacturers and local authorities including consumer affairs centers, fire departments, and police departments, investigating the causes of about 3,000 accidents each year in cooperation with relevant organizations. NITE has advanced techniques for investigating causes based on accident data, technical knowledge, experience, and investigation methods developed and accumulated over many years. These techniques cover a wide variety of technologies including techniques for analyzing the mechanical structure and strength of products, electronic circuits, and chemical substances that cause skin damage.

The results of such investigations are utilized to prevent further accidents, helping manufacturers to supply safe products and determine whether to recall products.

For imported products, which have been increasing in



Investigation of causes of product accidents

recent years, NITE collects product recall information issued abroad, checks if such products are distributed in Japan, and provides necessary information to relevant organizations. NITE also cooperates with overseas organizations and shares product risk information with them to improve the safety of imported products.

● Cooperation with distributors to prevent accidents

To enhance efforts to prevent accidents caused by consumer products, NITE collects information about repairs, consumer claims, and accidents in cooperation with distributors including a consumer electronics retailer and a supermarket.

NITE analyzes the enormous amount of data provided from those distributors while referring to data from accident investigations conducted so far, and then provides the analysis results back to the distributors to help prevent product accidents.

● Provision of information collected by NITE to the public

Accident information and recall information collected by NITE are organized in an accident information database and a recall information database respectively. These databases are open to the public via NITE's website so that everyone can easily search accident data or recall data.

NITE provides manufacturers with technical information through seminars and lectures to help them improve the safety of their products. We also provide consumers with alerts and safety information through press conferences, leaflets and school seminars to prevent product accidents caused by improper use and carelessness.



Press conference for preventing accidents caused by consumer products

● Development of standards for safety products

NITE develops technical standards and product test methods for accident prevention by making use of the accumulated technical knowledge, and actively proposes these standards and methods to relevant industries.

NITE provides private organizations with technical assistance so that they can develop standards. And NITE's technical knowledge is also used in many standards including the Japanese Industrial Standards (JIS). Recently, NITE has been developing measuring methods and draft standards for preventing accidents concerning infant products.

NITE also participates in international standardization activities and proposes test methods that it has developed as draft international standards to Technical Committees (TCs) of the International Electrotechnical Commission (IEC).



Testing the slip resistance of shoe soles

● Support of law enforcement through technical evaluation and on-site inspections

By the revision of the system of technical regulations for electrical appliances under the Electrical Appliances and Materials Safety Act, JIS and other public standards have been adopted as harmonized standards. Accordingly, the electrical appliances handled by businesses that meet these harmonized standards are regarded as meeting the technical regulations by the law.

At the request of METI, NITE technically evaluates draft harmonized standards submitted by industry associations from the perspective of their conformity to the technical regulations.

NITE also contributes to the reliable enforcement of regulations by conducting on-site inspections of manufacturers and importers under the four product safety acts (the Electrical Appliances and Materials Safety Act, the Consumer Product Safety Act, the Act on the Securing of Safety and the Optimization of Transaction of Liquefied Petroleum Gas, and the Gas Business Act), by the request from METI.

Through these responsibilities, NITE acts as an important role in economic and industrial policy of the Japanese government.



Chemicals Management

Promoting Risk Assessment and Safety Management of Chemical Substances

Every product in our daily lives is made of chemical substances, and approximately 100,000 types of them are also said to be currently on the market. They are essential for everything from our daily lives up to industries.

At the same time, chemical substances can be released into the environment and absorbed into our bodies at the various stages, such as manufacturing, distribution, use, and disposal. If their quantity in our bodies or the environment exceeds a certain level, they can cause harmful effects on our health or the ecosystem.

The NITE Chemical Management Center supports evaluations such as the safety of chemical substances from a technical aspect based on the law. At the same time, the Center contributes to the proper management of chemical substances by assessing the risk of them and providing their safety information.

The center also promotes international collaboration in the area of chemicals management with foreign countries.

● Supporting safety evaluations and risk assessments of chemical substances

The aim of the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Chemical Substances Control Law; CSCL) is to prevent pollution to the environment caused by chemical substances that may be hazardous to human health and/or the environment. In accordance with this act, newly manufactured or imported chemical substances are evaluated their safety, and risk assessments of chemical substances are conducted based on the information regarding their hazard and manufacture/import quantities and use categories reported by manufacturers/importers.

Anyone who newly manufactures or imports chemical substances is required to notify to the government authorities before such substances are launched on the market. NITE provides technical supports to the implementation of the CSCL by the Government as well as contributes to optimize the burden for manufacturers/importers about the compliance of the CSCL, by serving consultation and communication with manufacturers/importers, closely examining safety test data and documents for evaluation, promoting Quantitative Structure Activity Relationship (QSAR) models which estimate the correlation between the structure of a chemical substance and its biological activity, and proposing rationalization of evaluation processes. In addition, NITE carries out on-site inspections for Good Laboratory Practice (GLP), and to manufacturers/importers who were confirmed about “intermediates, etc.” or “small volumes (less than 1t/year)” by the government.

“Risk assessment” here means predicting the possible adverse effects of chemical substances on human beings and creatures in the environment. NITE conducts risk assessments of chemical substances by utilizing the collected information, for example, through notification from manufacturers/importers under the CSCL, investigations, the pre-marketing evalua-



Joint council of the Ministry of Economy, Trade and Industry, the Ministry of Health, Labour and Welfare, and the Ministry of the Environment

tion, and other technical knowledge. NITE also proposes and improves risk assessment methodologies.

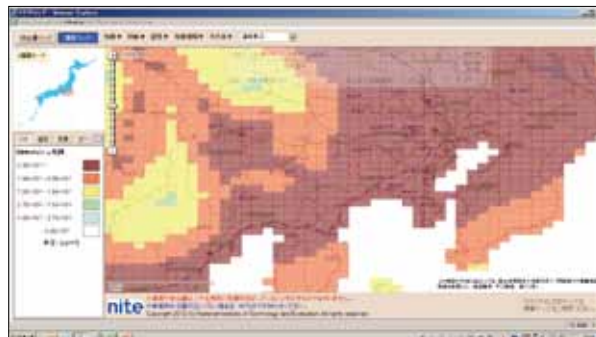
The risk assessment results are used to select chemical substances targeted for regulation under the CSCL and to determine the necessary levels of regulation. In addition, NITE provides the information necessary for conducting risk assessments on the NITE website, so that manufacturers/importers can conduct their own risk assessments of chemical substances by themselves.

New chemical substances that are notified pursuant to the CSCL or the Industrial Safety and Health Act are published in the Official Gazette after a certain period of time. Such chemical substances are named in accordance with the IUPAC nomenclature of chemistry. To prevent substances that have identical chemical structures from being given different names, NITE makes proposals on the names of chemical substances to both the CSCL and the Industrial Safety and Health Act, and contributes to the introduction of commonality rules for nomenclature.

● Promoting voluntary management and communication of risks relating to chemical substances

The objective of the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof is to promote voluntary management of chemical substances handled by business operators and prevent environmental pollution. The act is enforced with the PRTR system and SDS system as its pillars.

NITE records and aggregates data in the PRTR system, in which business operators should notify the quantities of chemical substances released into the environment by them. NITE also improves convenience for business operators who conduct notification by technical supports and operating the on-line notification system. The data aggregated under the PRTR system is shown on the NITE website as the PRTR map, which indicates the locations, release quantities, and atmospheric levels of chemical substances on a map of Japan at scales of 5 km or 1 km. The PRTR map en-



PRTR map at a scale of 5 km

ables anyone to recognize at a glance the locations and quantities of chemical substances released.

By providing such information, NITE promotes voluntary management by business operators and facilitates communication among all concerned with chemical substances regarding the risks and management methods relating to chemical substances, with the goal of better understanding of chemicals management.

● Working with other countries by organizing and providing chemicals information

In recent years, business operators have been required to understand domestic and foreign laws and regulations relating to chemical substances and respond appropriately. The promotion of global collaboration on chemical management systems is critical for Japan.

To help business operators comply with the laws and regulations and gather chemical safety information of CSCL, NITE operates the ASEAN-Japan Chemical Safety Database (AJCSD), which stores information on the laws and regulations concerning chemicals management in Southeast Asia countries which are enacted rapidly, and the NITE Chemical Risk Information Platform (NITE-CHRIP), which provides information about domestic and foreign laws and regulations and hazard information on chemical substances. NITE also manages the Japan Chemicals Collaborative Knowledge database (J-CHECK) in order to widely disseminate safety information on chemical substances subject to the CSCL.



NITE has concluded a Memorandum of Understanding (MOU) with the Safety and Health Technology Center in Taiwan



NITE's global chemicals management network

NITE is committed to building international networks by participating in the activities of the Organization for Economic Co-operation and Development (OECD) Environment, Health and Safety Programme in cooperation with METI and developing bilateral cooperation on chemicals management with relevant organizations in Asia, Europe, and America.

NITE is also witness to on-site inspections conducted by the Organisation for the Prohibition of Chemical Weapons (OPCW) in accordance with the Act on the Prohibition of Chemical Weapons and Control, etc. of Specific Chemicals.



Biotechnology

Utilizing Biological Resources for Industrial Purposes

Biological resources including microorganisms (e.g. bacteria, yeasts, and fungi) as well as plant and animal cells are widely used in bioindustrial production such as antibiotics, antibody pharmaceuticals, enzymes and fermented foods (e.g. miso, soy sauce, and sake). Those biological resources are essential for industrial activities.

However, discovering and preserving biological resources is costly. Furthermore, compliance with the Convention on Biological Diversity (CBD) must be ensured when collecting and using overseas biological resources and living modified organisms.

Biological Resource Center, NITE (NBRC) serves users by collecting and providing biological resources, maintaining safe and secure preservation of those resources, providing functional information and related technology, fostering development of international networks, and supporting the legitimate industrial use of living modified organisms. By serving these functions, NBRC promotes the industrial use of biological resources and thus contributes to the development of bioindustry.

● Collection, Preservation, and Distribution of Useful Biological Resources

NITE has so far collected collects nearly 80,000 strains of biological resources of bacteria, actinomycetes, archaea, yeasts, fungi, microalgae and bacteriophages from various environments inside and outside Japan. The collected resources are classified, characterized and long-term preserved at specially designed facilities.

These preserved biological resources are distributed to businesses and research institutes for R&D and industrial use. Some of our resources are designated by the Japanese Industrial Standards (JIS) and the Japanese Pharmacopoeia for official testing methods which are used for quality control. The lists of the biological resources are available on the NITE website.

Taking advantage of our technology associated with long-term preservation and management of biological resources, NITE provides backup preservation services to reduce the risk of losing users' valuable biological resources due to natural disasters and



Sampling for microorganisms on Iriomote Island



Scanning Electron Microscope image of Penicillium



Samples of biological resources for distribution

also to avoid users' additional expense incurred to preserve their resources.

● International Collaboration for the Sustainable Use of Biological Resources

In Japan, many organizations, including businesses and research institutes, have been using unique microbial resources collected from various environments of foreign countries for industrial purposes in the fields of pharmaceuticals, food production, and biochemistry.

In order to access such overseas microbial resources, it is essential to observe the fundamental Access and Benefit-sharing (ABS) principles and procedures according to the CBD, which entered into force in 1993. For the Japanese users' legitimate access to and sustainable use of microbial resources, NITE has been working especially with Asian countries to enhance bilateral relationships in which fair and equitable benefit-sharing is attained, benefitting both providers and users.

In the multilateral arena, we facilitated the establishment of an Asian microbial community in 2004 —the “Asian Consortium for the Conservation and Sustainable Use of Microbial Resources (ACM)”. This community has supported in areas such as the development of human resources and promotion of microbiology in Asia. With the collaboration of governmental and semi-governmental institutions in 13 Asian countries, ACM continues to demonstrate win-win best practices for the sustainable utilization of Asian microbial resources.



Annual meeting of the ACM

● Promoting the Use of Biological Resources



Microbiota analysis of environmental DNA samples



Rapid identification of microorganisms using a protein mass spectrometer

NITE plays an important role in promoting the industrial use of biological resources. NITE is observing industrial needs for biological resources especially health

care, biological production, and environmental remediation. Based on the observation, NITE works with businesses and public institutes in supporting research and commercialization associated with biological resources.

NITE also provides the following online databases to facilitate the effective use of microorganisms and their genetic information:

- MiFuP: a database to search microorganisms based on their useful functions for industrial use.
- DoBISCUIT: a database summarizing secondary metabolite biosynthetic gene clusters of actinomycetes.
- DOGAN: a database providing annotated genomic information of microorganisms as well as protein expression analyzed by NITE.

● Biomolecular Analysis to Ensure the Safety of Consumer Products

Taking advantage of our expertise in biomolecular research, including protein and metabolomics analysis, NITE conducts the investigation of household products, mineral or industrial products, and cosmetic ingredients and also promotes the development of technical standards and evaluation protocols.

Examples include the analysis to identify allergens in household products and studies to determine the causes

of health issues associated with hydrolyzed wheat ingredients present in soap products.

Furthermore, responding to the problem of the distribution of mislabeled cashmere textiles that are blended with other animal fibers, NITE has also been focusing on developing methods that utilize protein analysis techniques to discriminate fabric contents.

● Supporting the Safe Industrial Use of Living Modified Organisms

In Japan, the use of living modified organisms (LMOs) is regulated by a domestic law based on the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, which is called the Cartagena Law. To ensure the safe and legitimate use of LMOs by users, NITE supports METI by conducting preliminary reviews of application documents based on the Cartagena Law, serving as a help desk for users, and conducting on-site inspections to verify compliance with legal and regulatory requirements. NITE also contributes to the smooth implementation of the Cartagena Law by submitting proposals to METI for the efficient administration.

● Patent Depository Authority of Microorganisms

Under the Patent Act, NITE operates two patent depositories: NITE Patent Microorganisms Depository (NPMD) and NITE International Patent Organism Depository (NITE-IPOD), specified by the Commissioner of the Japan Patent Office. When filing a patent, the microorganism, plant or animal cells involved in the invention must first be deposited to one of these depositories. NITE accepts such biological resources for deposit and conducts viability tests and purity check, storage, and furnishing of the samples deposited, and thus helps the protection of intellectual property rights of the inventors.

NPMD and NITE-IPOD are also designated as International Depository Authorities (IDAs) under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure.



Accreditation

Ensuring the Reliability of Products Through Accreditation to Promote Industrial Activities and Contribute to Realizing a Safe Society Development

Laboratories and product certification bodies conduct various testing, calibration, and product certification activities at the request of manufacturers. The reliability of testing, calibration, and certification results is critical for demonstrating product performance and safety, and can affect not only manufacturers and industries but also the public and society at large.

The third-party assessment of the competence and management systems of the laboratories and product certification bodies carrying out such testing, calibration, and certification is called “accreditation”. IAJapan (International Accreditation Japan) conducts assessments in a fair and neutral manner from an impartial standpoint, and grants accreditation to laboratories and product certification bodies to demonstrate the reliability of their results of testing, calibration and certification. Accreditation bodies (ABs) all over the world have worked together to establish international organizations such as the International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF). IAJapan also participates in these international organizations to maintain multilateral recognition arrangements (MRA/MLA) with other accreditation bodies so that results from accredited laboratories can be accepted by participating ABs in other economies.

● Demonstrating the reliability of calibration and measurement to support public safety and economic activities -Japan Calibration Service System (JCSS)-

JCSS is an accreditation scheme for calibration laboratories established in accordance with the Measurement Act and relevant international standards to demonstrate the reliability of the measuring instruments utilized in many fields of industry.

Calibration laboratories are assessed for their personnel, calibration methods, equipment, facility measurement traceability, and management systems. Accredited laboratories are allowed to issue calibration certificates with the JCSS accreditation symbol for calibrated instru-

ments to demonstrate the reliability of calibration under the Measurement Act. As of April 2015, there were nearly 240 accredited calibration laboratories; and more than 480,000 JCSS calibration certificates are issued per year.

The JCSS accreditation scheme ensures the competence of calibration laboratories to demonstrate the accuracy of measuring instruments. Consequently, it ensures the reliability of measurement results in scientific research and development, industrial production, and daily life.

● Fostering confidence in quality and safety of products -Japan National Laboratory Accreditation (JNLA)-

JNLA is an accreditation scheme for testing laboratories conducting tests based on the Japanese Industrial Standards (JIS) regarding such as architecture, textiles, electricity, and steel in accordance with the Industrial Standardization Act and relevant international standards.

Testing laboratories are assessed for their management systems and technical competency to carry out tests in accordance with JIS standards.

Accredited JNLA test laboratories are allowed to issue JNLA test certificates to demonstrate the reliability of test results. For example, accredited JNLA test laborato-

ries test the antibiotic properties of sanitary products and the brightness of LED bulbs, and JNLA supports the reliability of such test results.



On-site assessment (image)



Testing the antibiotic properties of sanitary products in an accredited JNLA test laboratory

● **Ensuring the reliability of atmospheric dioxin measurements**
-Measurement Laboratory Accreditation Program (MLAP)-

MLAP is an accreditation scheme for laboratories that measure micro-existent substances like dioxins in accordance with the Measurement Act.

Environment measurement laboratories are assessed for their technical competence to measure extremely low concentration micro-existent substances under rel-

evant laws and ordinances.

Highly sophisticated technology is required in order to accurately measure substances like dioxins, which are very toxic even in small amounts. The act requires laboratories to obtain MLAP accreditation in order to provide measurement results regarding dioxins.

● **Delivering confidence in the reliability of railway signal systems and facilitating international transactions**
-Accreditation System of the National Institute of Technology and Evaluation (ASNITE)-

The Accreditation System of the National Institute of Technology and Evaluation (ASNITE) is an accreditation scheme for calibration and testing laboratories, reference material producers, and product certification bodies, which is not covered by JCSS, JNLA, and MLAP.

Calibration and testing laboratories, reference material producers, and product certification bodies are assessed in accordance with the relevant international standards and requirements.

ASNITE-accredited laboratories, reference material producers, and product certification bodies are allowed to issue certificates to demonstrate confidence in their calibration, testing, reference material production and product certification results. For example, certificates issued by ASNITE-accredited product certification bodies are accepted as proof of the safety of railway signal systems and compliance with international standards. Thus ASNITE facilitates international trade and the development of new markets.



Signal system certified by the ASNITE-accredited certification body (Photo courtesy of Nippon Signal Co., Ltd.)



Sample ASNITE accreditation certificate

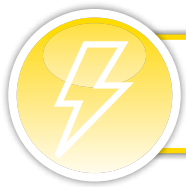


Accreditation symbols indicating IAF Multilateral Recognition Arrangements

● **Facilitating the export of product accreditation results through multilateral recognition**

To ensure the certificates issued by accredited bodies are valid in other economies, IAJapan participates in international organizations such as ILAC (International Laboratory Accreditation Cooperation), APLAC (Asia Pacific Accreditation Cooperation), IAF (International Accreditation Forum), and PAC (Pacific

Accreditation Cooperation), and has signed the Multilateral Recognition Arrangement (MRA/MLA). Thus, the test results or certificates issued by accredited bodies are accepted in international transactions, eliminating the need for products to be tested or certified again in foreign markets.



Emerging Technology Evaluation

Contribution to the Development of New Businesses and Industries by Establishing Testing and Evaluating Technologies for Emerging Technologies

To promote development of emerging technologies, products and systems, it is important to establish testing and evaluating technologies whereby third parties can evaluate their performance, safety and reliability. The Global Center for Evaluation Technology (GCET) is committed to establishing such testing and evaluating technologies for emerging technologies such as large-scale battery energy storage systems, fine bubble technologies and electric power safety technologies—the markets for which are widely expected to grow in the future.

● Operation of testing and evaluating facilities for large-scale battery energy storage systems



National Laboratory for Advanced Energy Storage Technologies (NLAB)



NLAB Large Chamber

Large-scale battery energy storage systems including lithium-ion batteries are regarded as essential for full-scale introduction of renewable energy sources and also power backup source in case of power failures. These systems also attract much attention globally, as they may be developed for further use of frequency response and voltage support. In order for such new products and systems to be diffused worldwide, testing and evaluating technologies should be established. The testing and evaluating for such large-scale products and systems, however, demand extensive facilities that are beyond the means of the private sector. Thus, in April 2016, NITE launched the National Laboratory for Advanced Energy Storage Technologies (NLAB) in Osaka's Bay Area—Japan's first testing and evaluating facility for large-scale battery energy storage systems.

As one of the world's largest testing and evaluating facilities for large-scale battery energy storage systems, NLAB Large Chamber enables to conduct propagation testing of large-scale battery energy storage systems, and operation testing of safety devices such as fire extinguishing equipment of those large systems. NLAB Testing Facilities can

also be utilized to conduct various testing such as vibration testing by simulating seismic waves and vibration in transportation, charge/discharge and external short-circuit testing under temperature-variable conditions.

NLAB offers testing services that meet the various needs of enterprises, universities and research institutes for research, development and actual commercialization. NLAB also develops new testing and evaluating technologies to ensure performance and safety requirements.

NITE will also establish appropriate systems to enable the data obtained at NLAB to be efficiently utilized for certification. Furthermore, NITE supports international standardization of large-scale battery energy storage systems, and expands the market for such systems in cooperation with enterprises and research institutes.



Vibration testing

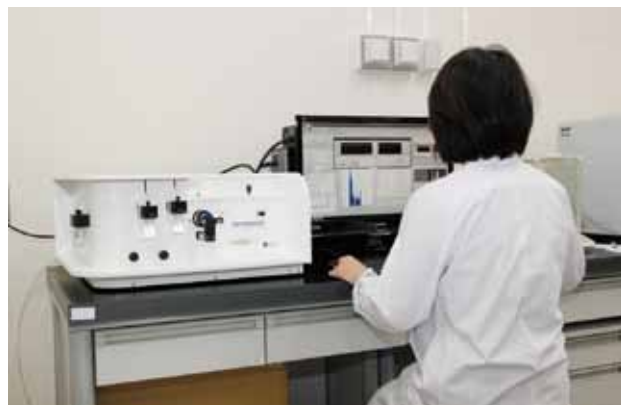
● Support for the establishment of testing and evaluating technologies for fine bubbles

Fine bubbles are defined as very small bubbles contained in liquids typically in sizes of less than 100 micrometers. The technology has been utilized in various applications such as cleaning bridge piers and restrooms, promoting the speed of plant growth in hydroponic horticulture and preventing oxygen deficiency in fish farms. This potential that can be widely applied has attracted considerable attention and interest.

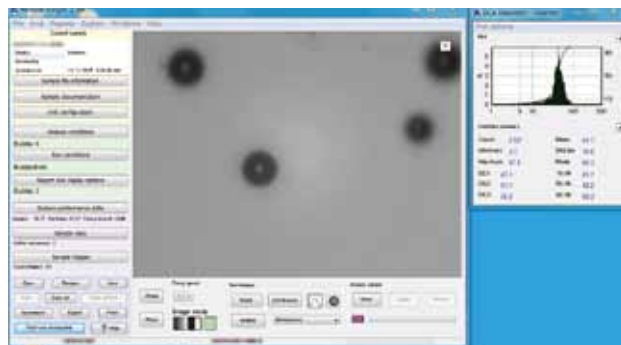
The techniques for measuring fine bubbles, however, are still immature, which has become a major barrier to the further dissemination of related products and technologies.

NITE has made efforts in cooperation with industry and academia to further develop testing and evaluating methods. NITE also supports to establish an accreditation system that encourages the introduction of these related products to the market.

The technologies and test data developed by NITE have been utilized widely to develop testing and evaluating technologies for fine bubble-related products as well as for international standardization activities. All of these contributions help the fine bubble-related industry to thrive further.



Measuring fine bubbles (in sizes of less than 1 micrometer) with one of our measuring instruments



Measured data of fine bubbles (in sizes of 1 to 100 micrometers)

● Support for maintaining and developing electric power safety

Regarding electrical facilities including power generating/transforming facilities owned by electric companies, and private power generating facilities and solar power generating facilities located at factories or large-scale commercial facilities, their design, production, installation, maintenance and operation for safety are regulated in compliance with Electricity Business Act.

The upcoming nationwide Electricity System Reform will liberalize the power generation and sales markets and separate electrical power production from power distribution and transmission. Thus, this reform will encourage newcomers to enter the power supply market in the near future.

NITE contributes to the society in close corporation with METI and related organizations, to ensure safety and establish the regulatory systems over electrical facilities, after the Electricity System Reform.



Example electrical facilities

NITE generates innovation by comprehensive approach through internal and external collaboration.

① Prevention of dermatitis caused by consumer products (Consumer Products Safety, Biotechnology, and Chemicals Management)

Some commodities and textile products can cause dermatitis by contacting with consumers to the products. Most are called allergic contact dermatitis which causes an allergic response then inflammation for sensitive people to certain causative substances contained in such products during repeated contacts. For example, some antibacterial agents, dyeing agents, and monomers of synthetic fibers are identified as substances causing dermatitis.

To prevent them caused by such products, the substances responsible for those cases must be identified.

NITE's Product Safety Technology Center, Biological Resource Center, and Chemical Management Center work together, using the collected information on product accidents involving allergic contact dermatitis. NITE uses mass spectrometers to analyze the substances contained in products that cause allergic contact dermatitis and in other similar products, identifies the chemical substances that have structural formulas that cause allergic contact

dermatitis, assesses the risks of such substances, and finally investigates the causes.

The results of such investigations are provided to manufacturers, etc. and are published on the NITE website to alert consumers and thereby contribute to the prevention of dermatitis caused by such products.



Analyzing substances causing skin dermatitis

② Contribution to the revise of the regulation of potentially carcinogenic dyeing agents (Consumer Products Safety, Biotechnology, Chemicals Management, and Accreditation)

Some "azo dyes" used to dye fabric products such as clothes can produce "specific aromatic amines" which may cause carcinogenesis, when they are decomposed through the reaction of bacteria on the surface of the skin through prolonged skin contact. Although the industry has developed and implemented voluntary standards regarding textile products containing azo dyes, the Cabinet Orders and the Ministerial Ordinances of the Act on Control of Household Products Containing Harmful Substances were revised and business operators were no longer allowed to sell textile products containing a certain level of azo dyes.

For the revision process, NITE's Product Safety Technology Center, Biological Resource Center, and Chemical Management Center worked together with IAJapan (International Accreditation Japan) to provide technical support. Specifically, NITE identified how specific aromatic amines are produced from azo dyes, analyzed what types of textile products produce specific aromatic amines, and determined the names of the specific aromatic amines specified in the ministerial

ordinance taking into account consistency with other laws and regulations. NITE is also committed to accrediting laboratories in accordance with the Industrial Standardization Act in a prompt manner to demonstrate the reliability of private laboratories that analyze the content of specific aromatic amines at the request of manufacturers.



Analyzing specific aromatic amines produced by azo dyes

③ Investigation of the causes of health problems resulting from inhaling chemical substances (Hokuriku Regional Office and the Chemicals Management)

Inhalation exposure to chemical substances released into the air by daily products such as commonalities or furniture can cause symptoms such as dizziness, headaches, and nausea.

NITE's Hokuriku Regional Office and Chemical Management Center work together to be engaged in investigating the causes of health problems resulting from inhalation exposure to chemical substances. They do this by using the large chamber to determine the emissions of Volatile Organic Compounds (VOCs) from various household products and assess the risks of these substances.

The measurement data and assessment results are re-

ported to industrial organizations and relevant ministries via external expert committees and are published on the NITE website so they can be widely used by industry, etc.



Using the large chamber to measure the emission rates of volatile organic compounds

④ Support for the development of local brand products by isolating microorganisms from local resources (Biotechnology, local governments, public research and development institutes, universities, etc.)

Biological Resource Center, NITE (NBRC) collaborates with local governments, public research and development institutes, and universities and supports the development of local brand products through the isolation of microorganisms from local resources using its techniques and knowledge.

In a joint project with Kamaishi City, the Kamaishi Research Laboratory, Kitasato University Research Organization for Infection Control Sciences, and the Kamaishi Otsuchi Industrial Research Development and Training Center in Iwate Prefecture, NITE successfully isolated Kamaishi Hamayuri Yeast from “Hamayuri”, the city flower of Kamaishi. This yeast can be used in food products, so now some local companies in Iwate Prefecture are using it to produce local brand foods such as beer and bread.

In a joint project with Ninohe City, the Executive

Committee for the Ninohe Brand Program, and the Iwate Industrial Research Institute in Iwate Prefecture, NITE isolated microorganisms from flowers of the “Johoji lacquer tree”. Ninohe is the leading producer of Japanese lacquer. These microorganisms are expected to be used in the production of local brand products which will be sold not only in Japan but also in overseas.

In the regional revitalization program conducted by Kimitsu City in Chiba Prefecture, NITE isolated yeasts from calla lilies, which are the specialty flower of Kimitsu. The isolated yeasts will be utilized by local companies in Kimitsu to produce local brand products such as foods.

In April 2016, NBRC established a new office in Osaka to promote the further collaboration of local brand products with local industry, academia, and government.



NITE Databases Providing Useful Information

NITE openly distributes our information as databases on the NITE website. These databases help users to easily find necessary information.

Consumer Product Safety

Product Accident database

The database provides the findings of product accident cause investigations conducted by NITE from 1996 onward. Providing information on more than 48,000 accidents, this is one of the largest databases of its kind in Japan.

Users can search items under 14 categories including “Product name,” “Date of accident,” “Accident details,” “Cause of accident” and “Measures to prevent recurrence of accident.” by entering up to three keywords. Users can also download and save search results in tabular (CSV) format.

The database is useful for searching past product accidents in order to prevent further accidents and to collect accident information concerning familiar products.



Recall Information database

The database provides information on more than 1,900 company announcements as well as recall information collected by NITE from 1989 onward.

Users can search items under 5 categories including “Product name,” “Company name” and “Details of company announcement.” by entering up to three keywords. Users can also download and save search results in tabular (CSV) format.

The database is useful for searching recall information concerning familiar products in order to prevent accidents resulting from the use of recalled products.



Accreditation

List of IAJapan Accredited Bodies

The list includes more than 750 bodies in total that are registered and/or accredited under JCSS, JNLA, and ASNITE programs. Users can find calibration, testing laboratories, product certification bodies, and reference material producers by program.



Examples of best practices utilizing Japan Calibration Service System (JCSS)

Users can see examples of best practices utilizing JCSS such as concentrated reference materials, JCSS calibration service and overseas regulations.

These materials can be referenced when developing business models utilizing JCSS calibration service.



Chemicals Management

NITE Chemical Risk Information Platform (NITE-CHRIP)

NITE-CHRIP is one of Japan's largest databases of information on chemical substances, such as laws and regulations concerning chemicals management and the hazard, maintained by NITE.

More than 220,000 chemical substances can be searched by CAS number or chemical substance name, from lists of regulated chemical substances, or hazard information.

This database is useful for ensuring compliance with laws and regulations on chemical substances and promoting voluntary management of chemical substances.



ASEAN-Japan Chemical Safety Database (AJCSD)

The AJCSD is an epoch-making database co-developed by Association of South East Asian Nations (ASEAN) countries and Japan, which stores information on laws and regulations relating to chemical substances provided directly by each government. NITE started to open the AJCSD on its website as the operator from April 2016. The AJCSD allows users to easily search and compare the information on hazards as well as laws and regulations on chemical substances in Japan and ASEAN countries. The AJCSD is useful for such as gathering the above information and ensuring compliance when trading chemical substances with ASEAN countries and Japan.



Biotechnology

NBRC online catalogue

The database provides the features and related information of over 20,000 strains of microorganisms (NBRC strains) that NBRC preserves. Users can search for the information on such as scientific name, country of origin, conditions of cultivation, isolation source, industrial applications, genetic information and reference articles of the microorganisms.

The database helps users to search for appropriate microorganisms by their features and cultivation methods.



Microbial Functional Potential (MiFuP)

The database provides more than 90 functions and related gene information of approximately 300 microorganisms. Users including non-experts can search for microorganisms based on their useful functions such as environmental remediation, bioplastics production, and antibiotic tolerance.

Users can also easily search for functions the microorganisms may possess based on their genomic sequences and functions by combining multiple genes.



●NITE website

Press releases, announcements of exhibitions, alerts regarding product accidents, and information about NITE's works and systems are shown on the NITE website in a timely and easily comprehensible manner.



●Email newsletters (in Japanese)

NITE issues the following email newsletters to offer the latest information on the fields shown below. You can subscribe to these newsletters via NITE website. Also, you can find back issues on the NITE website.

Biotechnology



**“NBRC News”
(Issued on the first day
of every even-numbered
months)**

The NBRC News provides technical information related to microorganisms such as methods of preservation and cultivation, genome analysis and new findings of microbiology. If you are interested in the latest information of microorganisms, please subscribe to the newsletter.

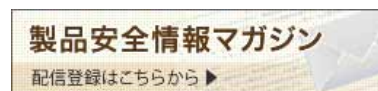
Chemicals Management



**“NITE CHEMIMAGA (Chemical
Management Center’s Magazine)”
(Generally distributed every
Wednesday)**

The NITE CHEMIMAGA provides up-to-date information related to chemicals management such as seminars and government’s council meetings concerning laws and systems, What’s New on chemicals management including press releases by public organizations and other reliable resources, etc. This newsletter is useful for such as businesses who are wishing to follow latest trends in chemicals management.

Consumer Product Safety



**“Product Safety (PS) Magazine”
(Issued on the second and
fourth Tuesdays of every
month)**

The Product Safety (PS) Magazine provides up-to-date product safety information such as examples of product incidents, recalls, and product safety seminars. Targeting both businesses and consumers, this newsletter is a useful resource for obtaining information about product safety.

●Dispatching experts and hosting courses of lectures

To increase awareness of NITE activities, we send our staff-members as experts to give lectures, classes, and seminars and to attend exhibitions.

We also host courses and workshops.

● Press releases and media relations

In order to inform alerts on accidents caused by consumer products and outcomes of our activities of public promptly, we publish press releases, hold press conferences.

We also provide information and video clips to the news media, write reports, and offer technical support to increase awareness of our activities.



A NITE staff member being interviewed by a TV reporter



Press conference on prevention of consumer product incidents



Videos of experiments reproducing accidents caused by an oil heater (left) and a wall socket (right)

● Public tours of NITE Head Office, and the NITE Friendship day (the open day)

To raise awareness of NITE, we introduce our works in each field at NITE Square in NITE Head Office (Shibuya-ku, Tokyo). Visitors can enter NITE Square free of charge. Groups wishing to visit are advised to contact us in advance.

Once in Every summer, NITE Head Office is opened to the public on the NITE Friendship day. The visitors are familiarized with NITE's activities and gain further understanding through various workshops and exhibitions.

NITE Friendship Day



Reproductive experiment of a cooking oil fire



Workshop for extracting DNA from strawberries

National Institute of Technology and Evaluation (NITE)

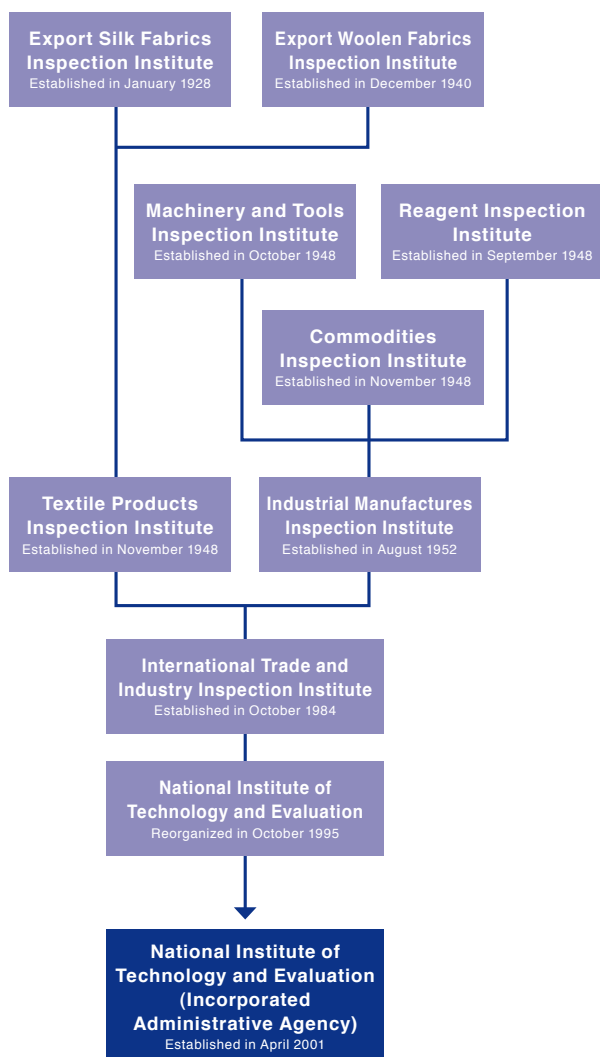
History

NITE started operation in 1928 as the Export Silk Fabrics Inspection Institute, and was engaged prior to the Second World War in quality inspection of silk fabrics, which were major export items at that time in Japan. After the war, some inspection institutes for various industrial products such as the Machinery and Tools Inspection Institute were also set up to inspect the quality of Japan's increasing numbers of export items. In the 1970s, the institutes began operations under the Industrial Standardization Act and legislations relating to product safety by using the testing and evaluating technologies that had been developed up until that time. The 1980s saw the start of operations relating to chemicals management. In October 1984, the Textile Products Inspection Institute and the Industrial Manufactures Inspection Institute were integrated into the International Trade and Industry Inspection Institute.

In the 1990s, this institute started operations relating to biotechnology and accreditation which accredits the technical competence of businesses. In October 1995, it was reorganized into the National Institute of Technology and Evaluation.

In April 2001, it became National Institute of Technology and Evaluation (Incorporated Administrative Agency) administrated by METI. Designated as an Agency Engaged in Administrative Execution in April 2015, NITE started new operations such as the evaluation of large-scale storage battery systems.

Since its foundation in 1928, NITE has been contributing to industrial development and the creation of a safer society by utilizing its testing and evaluation technologies and knowledge regarding industrial products, and by striving to appropriately respond to changing government and social needs.



Shikoku Office

Takamatsu Daiichi Seimei Building 5F,
1-3-2, Kotobuki-cho, Takamatsu-shi,
Kagawa 760-0023 Japan
Phone: +81-87-851-3961
Fax: +81-87-851-3963



Chugoku Office

No.3, Hiroshima Joint Government
Building, 6-30, Kamihacchobori,
Naka-ku, Hiroshima-shi, Hiroshima
730-0012 Japan
Phone: +81-82-211-0411
Fax: +81-82-221-5223

Kyushu Office

2-1-28, Shiobaru, Minami-ku,
Fukuoka-shi, Fukuoka 815-0032
Japan
Phone: +81-92-551-1315
Fax: +81-92-551-1329



Locations

● Tohoku Office

4-5-18, Higashisendai, Miyagino-ku,
Sendai-shi, Miyagi 983-0833 Japan
Phone: +81-22-256-6423
Fax: +81-22-256-6434



● Hokkaido Office

No.1, Sapporo Government
Office Building, 2-1-1,
Kita 8-jo Nishi, Kita-ku,
Sapporo-shi, Hokkaido
060-0808 Japan
Phone: +81-11-709-2324
Fax: +81-11-709-2326

● Hokuriku Office

Kanazawa Station West
Joint Government Building,
3-4-1, Sainen, Kanazawa-shi,
Ishikawa 920-0024 Japan
Phone: +81-76-231-0435
Fax: +81-76-231-0449



● Product Safety Technology Center Product Fire Investigation Center

3-7-4 Tsutsumi-cho, Kiryu-shi, Gunma
376-0042 Japan
Phone: +81-277-22-5471
Fax: +81-277-43-5063

● Head Office

2-49-10, Nishihara,
Shibuya-ku, Tokyo 151-0066
Japan
Phone: +81-3-3481-1921
Fax: +81-3-3481-1920



● Biological Resource Center, NITE (NBRC) (Kisarazu) NITE Patent Microorganisms Depository (NPMD) NITE International Patent Organism Depository (NITE-IPOD)

2-5-8, Kazusakamatari, Kisarazu-shi,
Chiba 292-0818 Japan
Phone: +81-438-20-5760
Fax: +81-438-20-5766



● Product Safety Technology Center, Head Office

● Global Center for Evaluation Technology (GCET), National LABoratory for advanced energy storage technologies (NLAB)

● International Accreditation Japan (IAJapan) (Kansai)

● Chemical Management Center, Safety Technology Division

● Biological Resource Center, NITE (NBRC), Kansai Biotechnology Office

1-22-16, Nankokita, Suminoe-ku, Osaka-shi, Osaka 559-0034 Japan

Phone: +81-6-6612-2065 Fax: +81-6-6612-1617 *Moved from Chuo-ku, Osaka in April 2016



● Chubu Office

● International Accreditation Japan (IAJapan) (Nagoya)

No.2, Nagoya Joint
Government Building, 2-5-1,
Sannomaru, Naka-ku, Nagoya-shi,
Aichi 460-0001 Japan
Phone: +81-52-951-1931
Fax: +81-52-951-3902

National Institute of Technology and Evaluation

2-49-10, Nishihara, Shibuya-ku, Tokyo 151-0066 Japan

Phone: +81-3-3481-1921

Fax: +81-3-3481-1920

