

国立研究開発法人

日本原子力研究開発機構

Japan Atomic Energy Agency

Mission

私たちが果たすべき使命

原子力の未来を切り拓き、
人類社会の福祉に貢献する。

Break new ground for the future of nuclear energy, and contribute to welfare of human society

私たちは、安全確保を大前提として、我が国のエネルギーの安定確保及び地球環境問題の解決並びに新しい科学技術や産業の創出を目指した原子力の研究開発を総合的、計画的かつ効率的に行うとともに、成果の普及等を行うことにより、人類社会の福祉及び国民生活の水準向上に貢献を果たします。

On the basic premise of ensuring safety, we will conduct R&D in the field of nuclear energy in a systematic, comprehensive and efficient manner, aiming to secure stable energy supplies, solve global environmental issues and create new science, technology and industry, widely disseminating our R&D achievement, and thus contribute to the improvement of welfare of human society and rise in the national living standards.



Toshio Kodama

President of the Japan Atomic Energy Agency

First of all, I would like to appreciate your understanding and support for research and development projects undertaken by the Japan Atomic Energy Agency (JAEA).

As Japan's sole comprehensive research and development institute in the field of nuclear energy, it is JAEA's mission to contribute to the welfare and prosperity of society through nuclear science and technology. We will strive to fulfill this mission with a strong sense of responsibility. The following are the priority fields we will tackle toward this end in accordance with our medium-to long-term objectives:

- Response to the accident at the Fukushima Daiichi Nuclear Power Plant operated by Tokyo Electric Power Company Holdings, Inc.
- Research into improving nuclear power safety
- Nuclear fuel recycling R&D
- Development of technologies for processing and disposing of radioactive waste

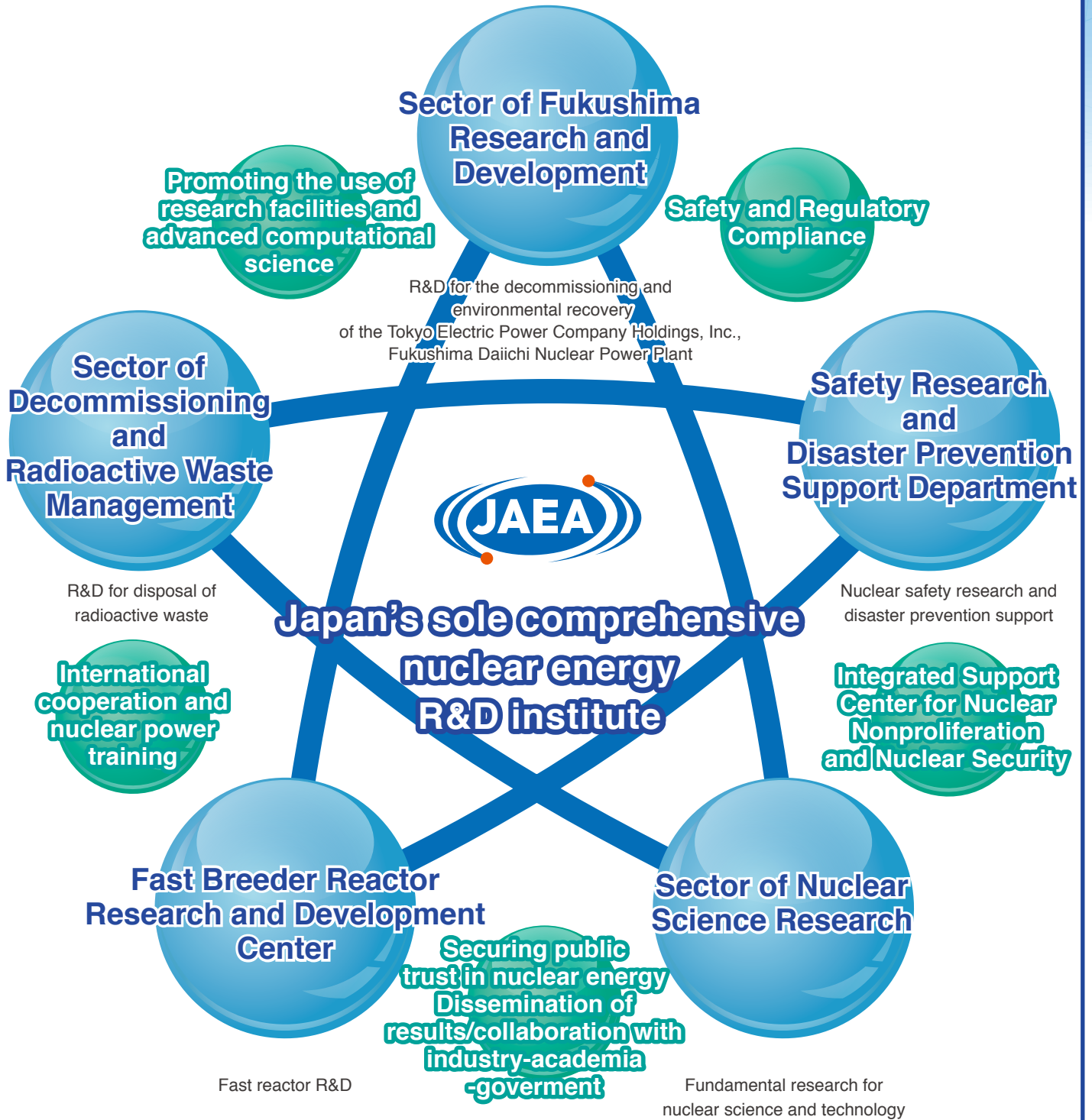
With respect to the effort to address the accident at the Fukushima Daiichi Nuclear Power Plant, restoration of the environment and decommissioning of the plant's reactor facilities are positioned as national issues. We have been conducting, as our responsibility, the R&D necessary to address them with concentrated efforts of the organization, fully applying our scientific and technical expertise, based on a medium- to long-term roadmap for decommissioning and the Basic Policy for Recovery and Reconstruction of Fukushima.

As for the fast breeder reactor Monju, we are going to implement the tasks for the decommissioning of Monju safely and steadily, following "Japanese Government's final decision on the fast breeder reactor Monju" and "The new policy for fast reactor development in Japan" at the Inter-Ministerial Council for Nuclear Power, and the related instructions of the Minister of Education, Culture, Sports, Science and Technology.

In addition, we surely will make contributions to the economic growth of the local communities by working hard on the fast reactor development including sincere interaction with local communities aiming to realize a new plan to develop the region as a center for research and development on fast reactor based on "The new policy for fast reactor development in Japan"

Striving to "maximize R&D achievement," which is the primary objective of national research and development agencies, all JAEA employees will work with aspirations to fulfill the duties, sharing the goal among them and placing the maximum priority on safety.

I appreciate your continued understanding and cooperation for JAEA.





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Fukushima Environmental Safety Center

c/o Fukushima Prefectural Centre for Environmental Creation
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c/o Environmental Radiation Center, Fukushima Prefectural Centre for Environmental Creation 45-169 Sukakeba Haramachi-Kukaibama, Minamisoma-city, Fukushima 975-0036, Japan
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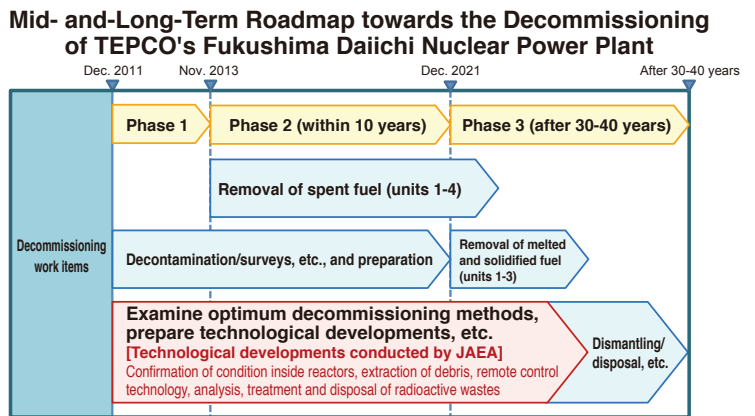
Committed to research and development for the accelerated decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Plant and reconstruction of Fukushima at the earliest possible date.

Center: Fukushima Tokai (NSRI & NCL) Oarai

R&D for Decommissioning

R&D is steadily progressing consistent with the Mid- and Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Plant.

JAEA conducts R&D with a view to securing and training human resources on the basis of the policy formulated by the Nuclear Damage Compensation and Decommissioning Facilitation Corporation such as strategic plans and medium-to long-term perspective according to on-site requirements. In addition, by providing technical support to the decommissioning site, JAEA will contribute to achieving the highly safe and efficient early decommissioning while enhancing the safety of nuclear energy.

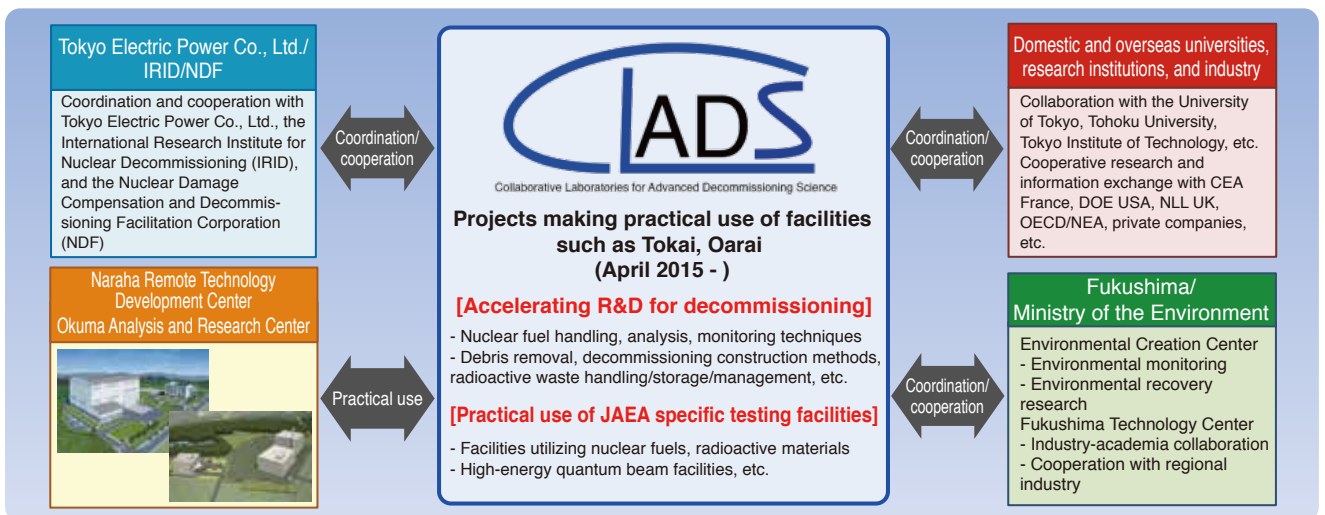


[Source] Reference to current efforts (as of March 2015) at the Fukushima Daiichi Nuclear Power Plant for reactor decommissioning and contaminated water measures - Fukushima Council Secretariat (addendum)

International Collaborative R&D for decommissioning

Promoting R&D for decommissioning TEPCO's Fukushima Daiichi Nuclear Power Plant by concentrated domestic and overseas knowledge.

The Collaborative Laboratories for Advanced Decommissioning Sciences (CLADS) is carrying out R&D into medium-to long-term issues such as fuel debris handling techniques, elucidating accident progression scenario, waste treatment and disposal for decommissioning TEPCO's Fukushima Daiichi Nuclear Power Plant. At the same time, CLADS is promoting R&D and human resources development in unison with industry-academia-government by forming human resource exchange networks with people from domestic and overseas universities, research institutions, and industry, etc.



Construction of R&D Infrastructures for Decommissioning, etc.

Promoting the development of R&D base that are essential for accelerating the decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Plant.

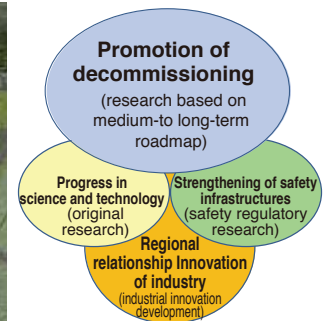
The Fukushima Research Infrastructural Creation Center is developing facilities at both the Naraha Remote Technology Development Center (Remote Control Equipment and Device Development Facility) and the Okuma Analysis and Research Center (Radioactive Material Analysis and Research Facility) as research centers for undertaking the technological developments that are necessary for preparing the removal of fuel debris from nuclear reactors and treatment and disposal of radioactive waste materials generated by the decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Plant. These facilities are primarily intended to promote decommissioning by enhancing science and technology and strengthening regional relationship and safety infrastructures. By transmitting the results of this R&D from Fukushima, JAEA will contribute to the activation of regional industry that will lead to promoting facilities utilization and establishing an international center of excellence for research and development.



Naraha Remote Technology Development Center (Naraha Town, Fukushima)



Okuma Analysis and Research Center (Okuma Town, Fukushima)



Role of new development facility

R&D for Environmental Recovery

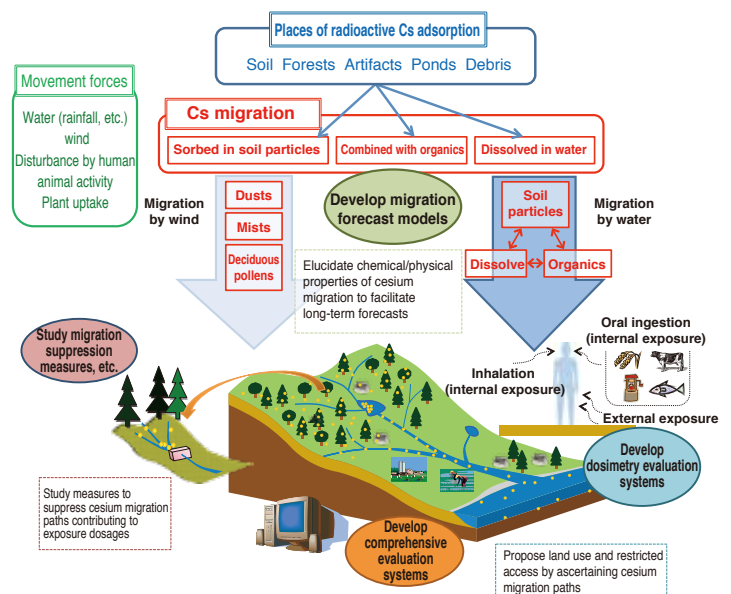
By predicting the behavior of cesium in the environment, JAEA is contributing to local government planning for regenerating agriculture, forestry, etc., and resident repatriation.

JAEA is developing technologies for highly accurate, simple, rapid dose monitoring of expansive areas of mountains, forests, rivers and lakes, which are relatively inaccessible to people, in order to evaluate the future, wide-area impact of radiation by assessing the dynamic behavior of cesium in the environment. In addition, JAEA is investigating rational soil removal methods and reuse strategies that will put these technologies to practical use by elucidating cesium adsorption mechanisms, etc.

Based at the Fukushima Environmental Creation Center, through collaboration with Fukushima Prefecture and the National Institute for Environmental Studies (NIES), JAEA will be providing information based on scientific evidence in a timely and expedient manner regarding future-anticipated cesium dosages and recommending future effective measures from a scientific perspective.

By establishing rational safety measures, JAEA is contributing to local government repatriation programs, etc., and regenerating agriculture and forestry.

JAEA will be putting these research findings into practical use in fields of decommissioning technology and disaster-prevention.





JAEA contributes to safety regulation, emergency preparedness and response etc., by conducting research for evaluating risks that affect nuclear safety.

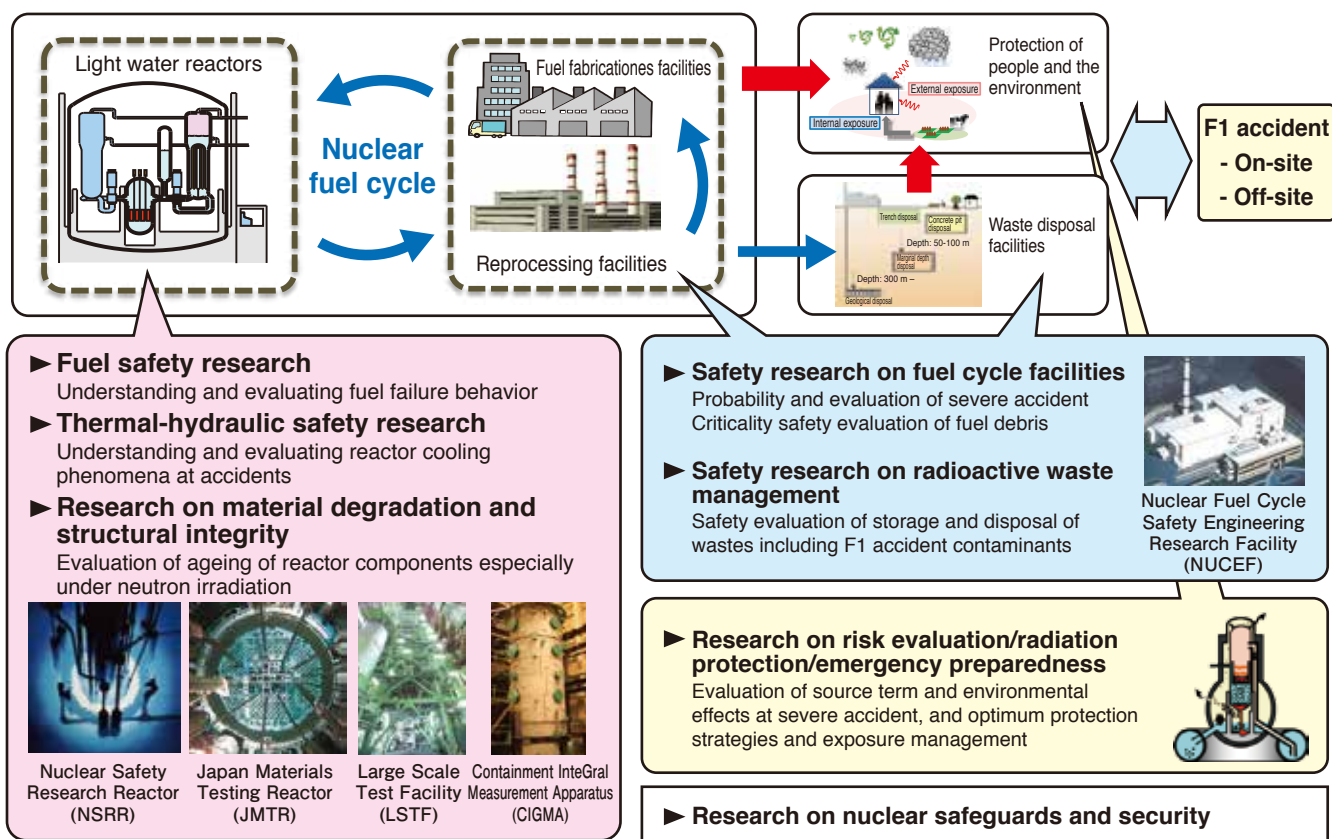
Center: Tokai (NSRI)

Safety research and contribution to nuclear safety regulation

JAEA contributes to continuous enhancement of nuclear safety, such as establishment of scientifically rational regulation criteria, etc.

Consistent with research subjects requested by the Nuclear Regulatory Authority, JAEA is conducting safety research based on lessons learned from TEPCO's Fukushima Daiichi Nuclear Power Plant (F1) accident. JAEA is utilizing these research outcomes as technical sources for scientific safety standards, accident analysis, and safety review of nuclear facilities.

Implementing safety research by using JAEA's various research facilities



Based on practical response to F1 accident as well as knowledge accumulated in the past, JAEA is promoting safety research focused on i) upgrading prevention and evaluation techniques of severe accidents, ii) preparing and responding to emergencies, iii) radiological effects and waste management related to accidents, and iv) the critical safety management of fuel debris at F1.

Technical Support for Nuclear Emergencies

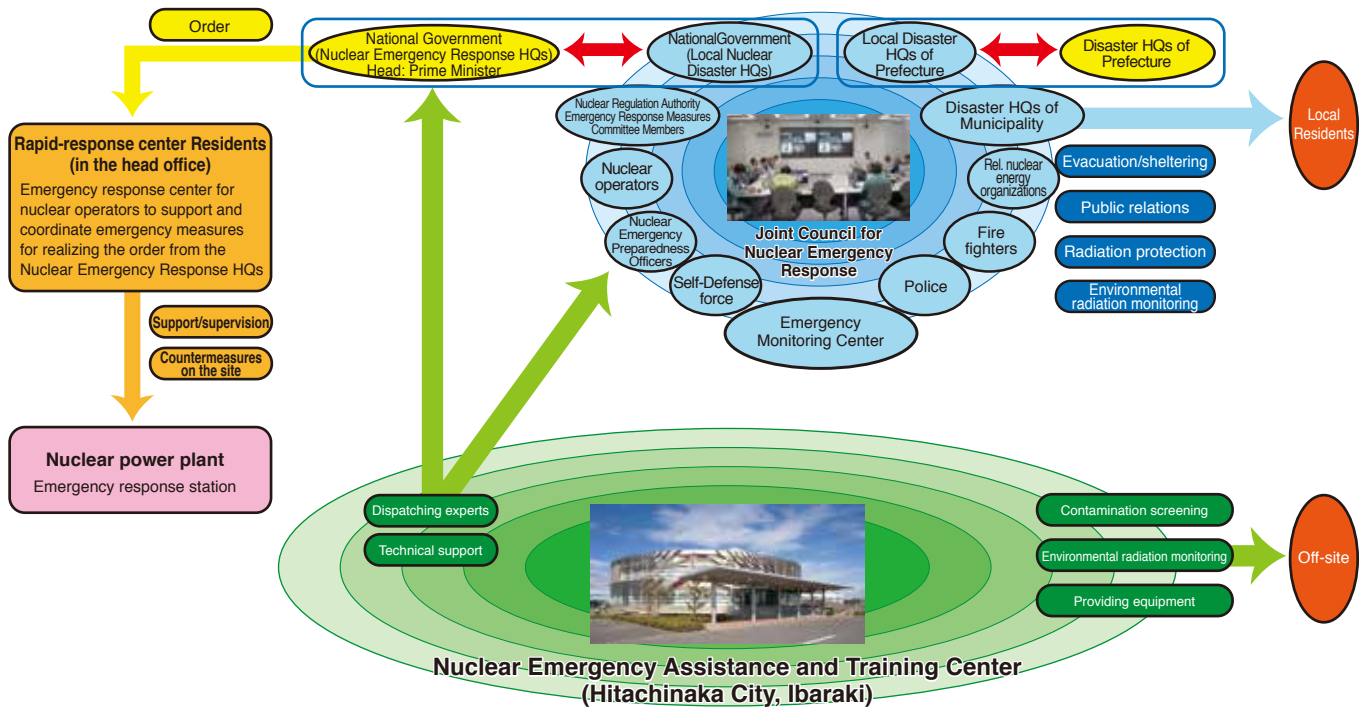


<http://www.jaea.go.jp/04/shien/en/index.html>

Strengthening of nuclear emergency infrastructures.

Nuclear emergency response systems

JAEA is a designated public institution prescribed in the Disaster Countermeasures Basic Act and the Armed Attack Situations Response Act. In an event of nuclear or radiological incident, the JAEA undertakes a role to support central and local governments in various technical ways. To accomplish these supports effectively, the JAEA launched Nuclear Emergency Assistance and Training Center (NEAT) as activity bases.



Support activities for nuclear emergency preparedness and response

In a nuclear emergency situation, in addition to support activities at the NEAT, JAEA's experts are dispatched and protective equipments are provided for supporting off-site activities.

During normal situations, JAEA supports and participants in nuclear emergency exercises and trains nuclear emergency personnel. Furthermore, JAEA also spreads our knowledge about nuclear emergency preparedness and response to Asian countries.

Emergency



Support activities at the NEAT



Dispatching experts in environmental radiation monitoring, etc.



Dispatch special vehicles and equipments

Normal



Participation in nuclear emergency exercises



Training nuclear emergency response personnel working for regional public agencies



Hosting international nuclear emergency preparedness and response workshops



We devote to produce scientific knowledge and technologies for supporting the nuclear energy utilization and to foster human resources having abilities to produce them.

Center: Tokai (NSRI) Oarai

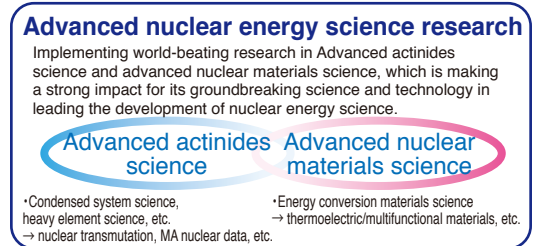
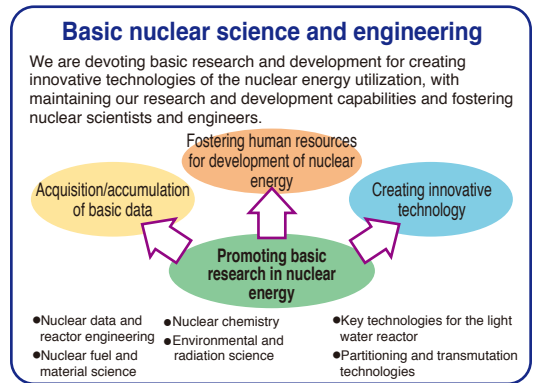
Promoting basic nuclear science and engineering and advanced nuclear science research

We will lead the nuclear science and technologies for supporting nuclear energy utilization.

In our basic nuclear science and engineering, we are devoting ourselves to research activities related to nuclear reactor, improvement of its fuel and material performances, radionuclide behaviors and radiation properties in order to reinforce the technology platform in nuclear science. In addition, considering the public needs, we struggle with issues in the nuclear energy utilization such as reduction of high-level radioactive waste and safety improvements of nuclear reactors, by using the developed technologies.

JAEA's advanced nuclear energy science research is promoting world-leading, advanced research in actinides science and nuclear materials science that is playing a key role in core institutions around the world. JAEA aims to acquire new knowledge that will exceed existing frameworks by discovering new principles and phenomena and creating new materials.

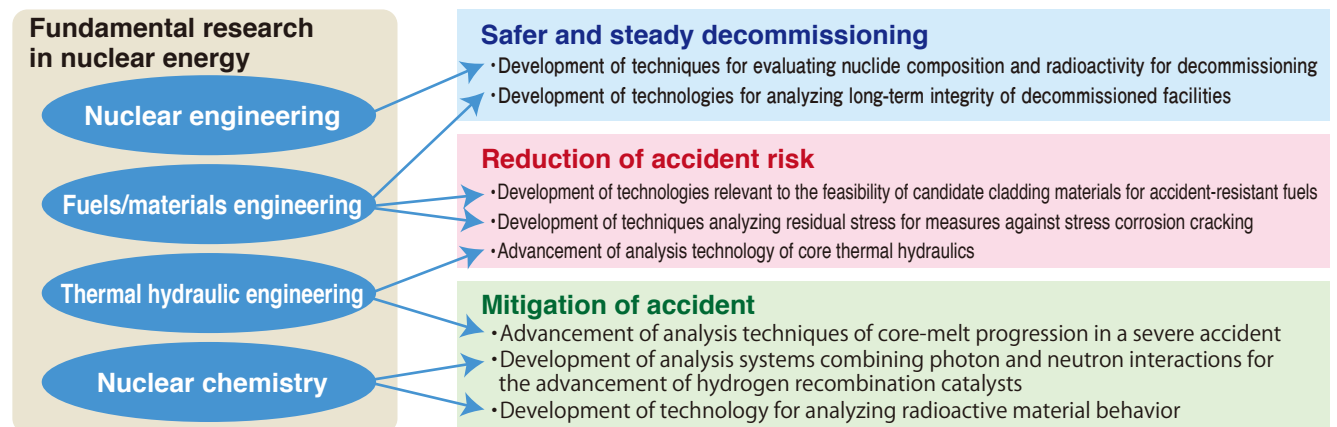
Furthermore, by making full practical use of JAEA's infrastructure facilities, JAEA is committed to the development of researchers and engineers with sophisticated problem-solving capabilities at our R&D sites.



Research for improving safety performance in nuclear energy utilization

We will promote fundamental research and development for improving the safety of light water reactors, and developing technologies for safer decommissioning.

We will improve the safety and reliability of light water reactors, and contribute to technical basis for both the promotion and regulation. For these purposes we will conduct basic researches, such as development of codes and maintenance of database for reduction of accident risk, mitigation of accidents, and safer and steady decommissioning.



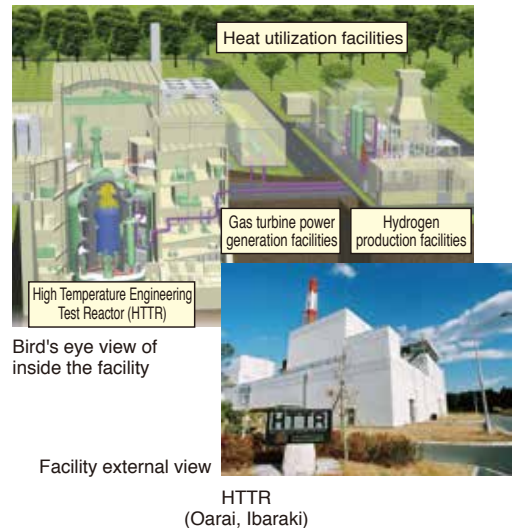
High-temperature gas-cooled reactor and heat utilization technology

Contributing to the advancement of nuclear power generation safety and further diversification of nuclear energy utilization for hydrogen production, etc., through R&D contributing to the practical application of high-temperature gas-cooled reactors.

High-Temperature Gas-cooled Reactors (HTGRs) utilize coated fuel particles that have excellent heat resistance and radioactive material confinement properties for fuel, a highly heat-resistant and large heat capacity graphite moderator, and chemically inert helium gas for the coolant. These characteristics, such as core fuel structure, power density and cooling performance, make it possible to design the HTGRs without risk of causing severe accidents that are postulated for the light water reactor. In addition, the capacity to utilize heat in various ways makes it a next-generation system that is anticipated to contribute to reducing environmental consequence.

JAEA is establishing technologies specific to HTGRs, such as safety validation of HTGRs using a High Temperature Engineering Test Reactor (HTTR) and high-performance fuels, etc.

Furthermore, under the collaboration of industry-academia-government, JAEA will verify the overall performance characteristics of heat utilization facilities, such as hydrogen production facilities and gas turbines, etc., by connecting to the HTTR.

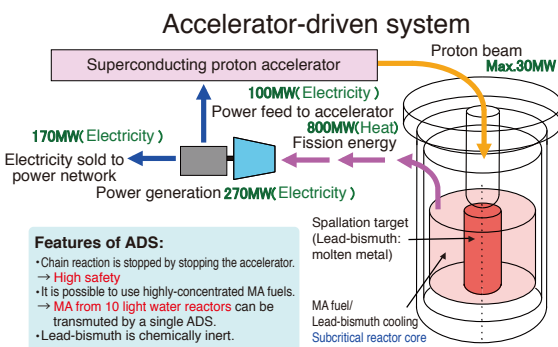


R&D aimed at volume reduction and mitigation of degree of harmfulness of high-level radioactive waste by nuclear transmutation using an accelerator

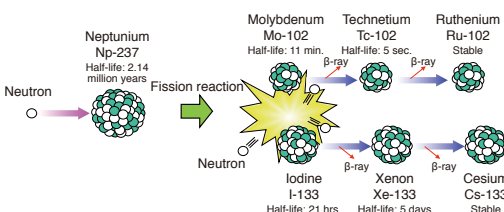
Developing systems for incinerating minor actinides contained in spent fuel using an accelerator.

Highly radiotoxic, long-lived minor actinides (MAs) are contained in high-level radioactive waste generated by reprocessing of spent fuel from nuclear power plants. We are developing technology to convert these MAs into low-toxicity, short-lived nuclides or stable nuclides that do not emit radiation (this technique referred to as 'nuclear transmutation') by using an accelerator-driven system (ADS). ADS can transmute MAs efficiently, and can be operated safely because chain fission reaction can be easily stopped by stopping the accelerator.

In addition, we are aiming to construct a Transmutation Experimental Facility for promoting R&D on ADS.



Transmutation Experimental Facility (image)



Nuclear transmutation of minor actinides (MAs)

Nuclides such as MAs can be transmuted into different nuclides by neutron bombardment and subsequent reaction, primarily fission reaction in case of MAs. This process is referred to as nuclear transmutation. By using the nuclear transmutation technology long-lived nuclides can be converted to short-lived ones or stable ones that do not emit radiation. (An example is shown in the left-hand side figure. A variety of nuclides are produced after nuclear fission reaction.)



Working on world-leading R&D with neutron and synchrotron radiation.

Center: Tokai (NSRI) Harima

Promoting cutting-edge research by J-PARC

Supporting the development of science, technology and academia and promotion of industry as as a global center of neutron science research.

The Japan Proton Accelerator Research Complex (J-PARC) is a joint project between JAEA and the High Energy Accelerator Research Organization. By utilizing a variety of secondary particles, such as neutrons, muons, and neutrinos, etc., which are generated by the world-class proton accelerator, J-PARC is creating results for cutting-edge research from basic science to industrial applications together with users of the system. In addition, J-PARC is advancing R&D for further strengthening the accelerator in order to maintain global cutting-edge research in the future.



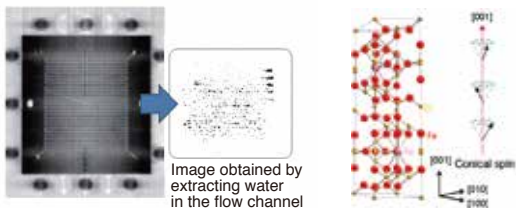
J-PARC
(Tokai, Ibaraki)

Neutron and synchrotron radiation applied research and development

By full use of JAEA owned neutron and synchrotron radiation applied advanced structural and functional analysis tools, we promote materials sciences research which contributes to nuclear science and utilization of nuclear energy.

We develop and upgrade neutron and synchrotron radiation applied advanced analysis tools and create innovative results and seeds in a wide range of science and technology and academic fields. Moreover, we provide new findings obtained by the advanced analysis tools to nuclear science and engineering research and advanced nuclear research, and then accelerate the promotion of the research.

Neutron sciences

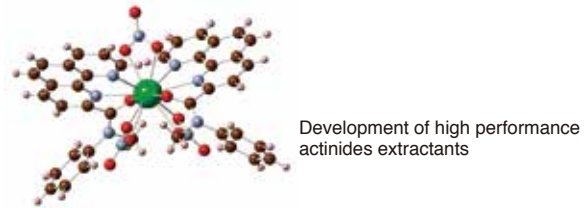


We upgrade micro-structural analysis techniques, which take advantage of the unique properties of neutrons such as high penetration, high sensitivity to hydrogen, and magnetism. We perform experiment to visualize water distribution inside a fuel cell (left) and analyze complex magnetic structure of the magnetic material underlying the magnetic device (right).



Research reactor JRR-3 reactor room(left) and beam hall (right)

Synchrotron radiation sciences



Development of high performance actinides extractants

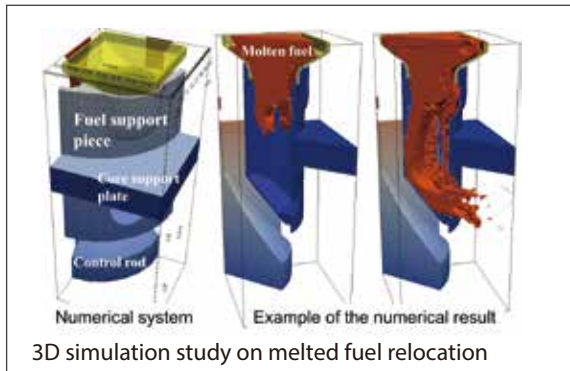
Based on experiment techniques using synchrotron radiation, we are investigating the development and/or mechanism elucidation of the functionalities of state-of-the-art materials used in nuclear energy sciences. These information are also applied to the developments of the high performance actinides extractants in the fuel cycles and the ecologically friendly and energy-saving materials.



Large synchrotron radiation facility SPring-8

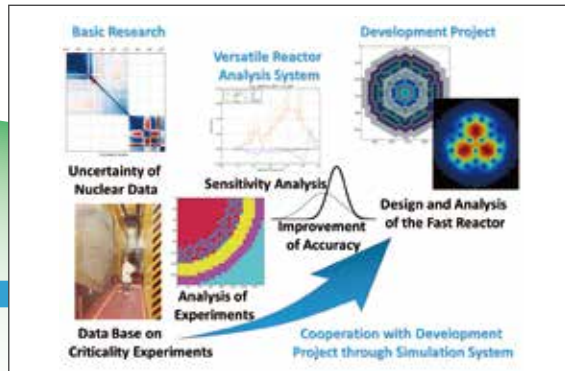
By devoting basic nuclear science and engineering research, we are making technological advancement of wide fields and supporting various JAEA's R&D projects in nuclear energy utilization.

Nuclear safety



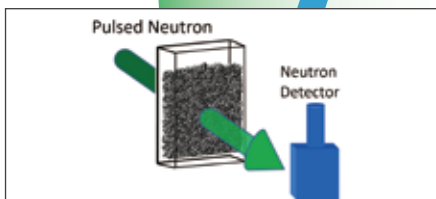
Numerical simulation methods for melt relocation behavior and failure behavior of reactor pressure vessel lower head at severe accident of light water reactor has been developed in cooperation with the Nuclear Safety Research Center.

Development of fast reactors



Simulation system for the fast reactor has been developed as nuclear characteristics analysis system in cooperation with Advanced Fast Reactor Cycle System Research and Development Center

Nuclear security



Research and development for the practical use of accurate quantification methods for samples with an irregular shape has been conducted as part of nuclear material accountancy in cooperation with Integrated Support Center for Nuclear nonproliferation and nuclear security.

Basic science and engineering

Support for R&D projects or activities by devoting basic nuclear science and engineering research

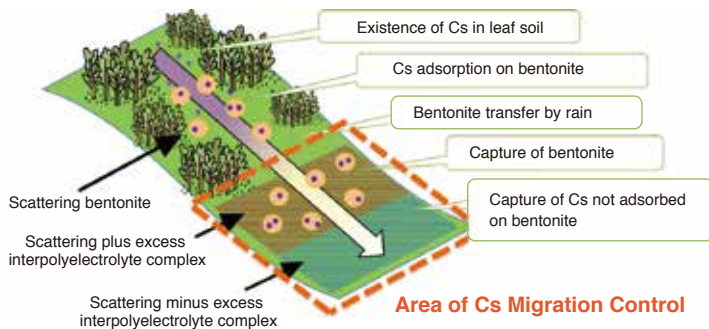
Decommissioning and waste treatment



A non-destructive measurement system using fast neutron direct interrogation method had been developed for measuring uranium in a waste drum in collaboration with Ningyo-toge Environmental Engineering Center. At present, it is put into operation for the material accountancy of uranium in actual waste drums.

Environmental restoration of Fukushima

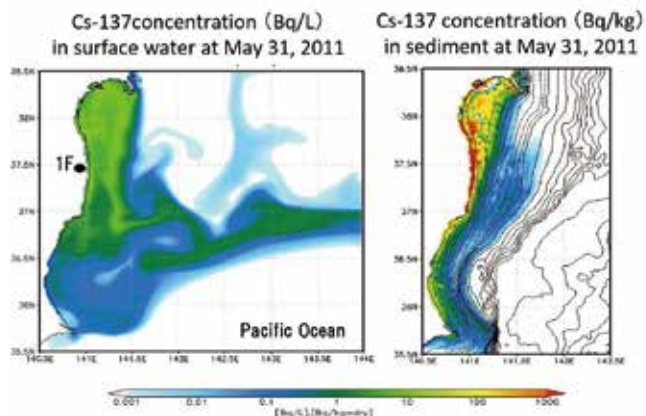
R&D for the environmental restoration of Fukushima such as elucidation of migration mechanism of radioactive cesium and environmental impact assessment has been conducted in cooperation with Sector of Fukushima Research and Development.



Bentonite: A kind of clay consisting mostly of montmorillonite whose surface is negatively charged.

Interpolyelectrolyte complex: Self-assembling gel of polyelectrolytes having opposite charges to each other

Development of new technology for cesium migration control



Migration mechanism of Cs-137 in the ocean



Committed to developing technology for decommissioning, processing and disposal of radioactive waste by underground disposal projects for wastes from research facilities.

- Center:
- Tokai (NCL)
 - Tsuruga
 - Horonobe
 - Tono
 - Ningyo-toge
 - Aomori

R&D on disposal technologies of high-level radioactive waste

Steadily promoting fundamental R&D required for achieving disposal and enhancing reliability of long-term safety of geological disposal technologies.

R&D on geological disposal

In order to enhance the safety and reliability of the geological disposal, Nuclear Fuel Cycle Engineering Laboratories (NCL) has been proceeding fundamental R&D steadily such as research on deep geological environment, improvement of disposal technologies and development of advanced safety assessment methods. The verification of engineering technology and safety assessment methods has been being conducted in deep underground at the Horonobe Underground Research Center.

Research on the deep geological environment

In Japan, the two major rock types (crystalline and sedimentary rocks) are widely distributed and thus, it could control deep geological environment such as characteristics of groundwater flow. For the purpose, the Tono Geoscience Center and the Horonobe Underground Research Center have conducted comprehensive R&D activities utilizing their underground facilities (Crystalline rock: Mizunami Underground Research Laboratory, Sedimentary rock: Horonobe Underground Research Laboratory).

Study for long-term stability of the geological environment

JAEA has conducted research in the Tono Geoscience Center aimed at establishing techniques for estimating long term evolutions of geological environment by characterizing Neotectonic events and processes such as crustal movements and volcanic activities etc. in Japan.

Horonobe Underground Research Center (Horonobe, Hokkaido)

- Horonobe Underground Research Laboratory(sedimentary rock)



Surface facilities



(Image)



Underground facilities

Tono Geoscience Center (Mizunami, Toki, Gifu)

- Mizunami Underground Research Laboratory (crystalline rock)



Surface facilities



Underground facility

- Toki Research Institute of Isotope Geology and Geochronology



Pelletron Tandem Accelerator Mass Spectrometer (date measurement system)

Nuclear Fuel Cycle Engineering Laboratories (NCL) (Tokai, Ibaraki)

- ENTRY (Engineering Scale Test and Research Facility)
- QUALITY (Quantitative Assessment Radionuclide Migration Experimental Facility)



Technological Development for Reprocessing Spent Fuel

Contributing to establishing systematized decommissioning techniques and steady implementation of solidification and stabilization of plutonium solutions and high-level radioactive waste.

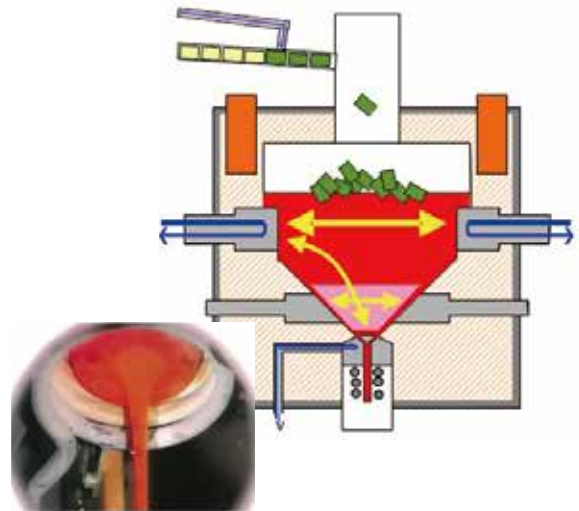
As a preparation for decommissioning of Tokai Reprocessing Plant(TRP), JAEA presented basic direction not to use some parts of TRP process such as shearing and dissolution.

To promote the formulation of decommissioning programs systematically, JAEA tries to identify the decommissioning processes, time periods, and practical interim utilization of the facilities.

JAEA makes an effort to comply with the new regulation standard for the management of spent fuel and wastes stored in TRP. JAEA tries to promote the solidification and stabilization of plutonium solutions and high-level radioactive liquid waste in order to enhance the safety effectively by reducing of potential hazards.

To improve vitrification techniques, JAEA has been obtaining and evaluating the data to determine the behavior of platinum-group elements and designing a new model melter for Tokai Vitrification Facility (TVF).

Through these initiatives, JAEA will contribute to ongoing echnological cooperation with a commercial reprocessing plant and establish systematized decommissioning techniques for reprocessing facilities.



Vitrification furnace (conceptual drawing) and glass run-off

Systematic Implementation of Decommissioning of Nuclear facilities and Radioactive Waste Management and Technological Development on Decommissioning and Radioactive Waste Management

JAEA conducts decommissioning actions safely and cost effectively and transmits information on technological developments throughout Japan and overseas.

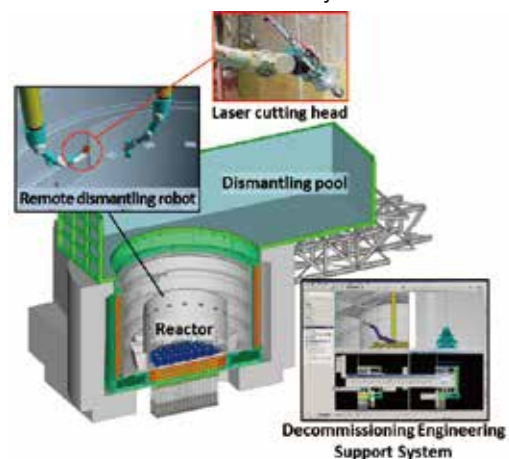
JAEA formulates a comprehensive decommissioning policy including priority of the facilities to be decommissioned and intermediate state of decommissioning in consultation with experts who belong to external organizations. The decommissioning activities are undertaken in accordance with the policy.

JAEA conducts systematically Low level radioactive waste management which includes intermediate storage, segregation, pretreatment, and treatment for volume reduction and stabilization. And JAEA will conduct subsequent conditioning in consideration with the dismantling schedule of the nuclear facilities to be decommissioned and delivery schedule of waste packages to the disposal site.

JAEA promotes technological advancements and cost reduction in decommissioning and radioactive waste management through cooperation with relevant domestic and overseas organizations.

In addition JAEA promotes knowledge and technical skills transfer to successor as a part of HR training. JAEA will make a contribution to the rehabilitation and dismantling of the Tokyo Electric Power Co., Ltd. Fukushima Daiichi Nuclear Power Plant in application of results of abovementioned activities.

Furthermore, JAEA steadily takes actions required to promote the disposal project for low level wastes arising from research, industrial and medical facilities. JAEA implements technological studies for basic design of the disposal facilities and coordination for transportation system of waste packages.



Remote dismantling of the reactor by laser cutting (conceptual drawing)

Committed to R&D by making comprehensive safety and regulatory compliance our top priority.

Safety Initiatives

Raising awareness of our individual employees and developing a safety-first mindset.

Fostering a Safety & Security Culture

JAEA is fostering safety-first mindset by advancing JAEA's projects by placing the utmost priority on ensuring safety and conducting safety culture development activities. And, JAEA is promoting autonomous and continuous improvements of safety activities by management reviews, nuclear safety audits, etc. In addition, JAEA is committed to nuclear security development activities and strives to ensure nuclear security.

JAEA implements workplace risk assessments, all types of security education, and health and safety patrols as general safety initiatives.

Crisis Management Capability

JAEA is working to improve the crisis management capability of its individual employees by implementing regular education and training in order to implement rapid reporting and emergency response at the time of an accident or incident.

In addition, JAEA implements various safety measures at each of its facilities as countermeasures against a nuclear facility disaster accompanying a major earthquake.



Power supply vehicle connection drills



Outdoor contamination-control drills



Major earthquake response drills
(local emergency response HQ)

Compliance Initiatives

JAEA is actively committed to compliance as an organization that is trusted by local residents and citizens.

To be an organization that is trusted by society, JAEA is committed to preventing R&D misconduct and unfair trading practices by promoting compliance activities.

Specifically, JAEA sets activity policies to foster compliance consciousness and effective communication in all its directors and employees, implements ethics seminar for technical and research personnel, compliance seminar at each center, small group workshops at each section/office, and distributes compliance-related email newsletters.



Engineer and researcher ethics seminar



JAEA aims to become a COE, center of excellence, for domestic and international nuclear non-proliferation and nuclear security by conducting cutting edge R&D, capacity building support projects for Asian countries, and so on.

Supporting Nuclear Non-proliferation and Nuclear Security Fields

Contributing to strengthening nuclear non-proliferation and nuclear security in Japan and overseas.

Technological developments

JAEA is setting targets for development themes based on domestic and international issues and requirement in the field of nuclear non-proliferation and nuclear security, and is carrying out technology development that is expected to be utilized by international agencies, such as the IAEA, in cooperation with research institutes in Japan, US and Europe.

JAEA is developing various fundamental technologies that will contribute to enhancing safeguards and nuclear proliferation resistance for future nuclear fuel cycle facilities, and establishing technologies requisite to the strengthening nuclear security, such as nuclear materials detection and measurement, and nuclear forensics, etc.

Policy research

JAEA is conducting policy research based on technical knowledge in keeping with international trends for nuclear non-proliferation and nuclear security. JAEA is compiling databases of accumulated information and data, and disseminating information, such as ISCN newsletters featuring topics related to nuclear non-proliferation and nuclear security, and international and domestic trends, etc.

Supporting human capacity building

JAEA is committed to supporting human capacity building by developing curriculums and implementing training, seminars, and workshops, in addition to facilities improvement, for educating the importance of ensuring nuclear non-proliferation and nuclear security in order to foster human resources in mainly Asian countries.

Contribution to the CTBT International Verification Regime

JAEA is contributing to international nuclear non-proliferation by operating international monitoring system facilities for domestic radionuclides prescribed in the Protocol to the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and a national data center for analyzing and evaluating monitoring data, in addition to developing associated verification technologies for nuclear tests.



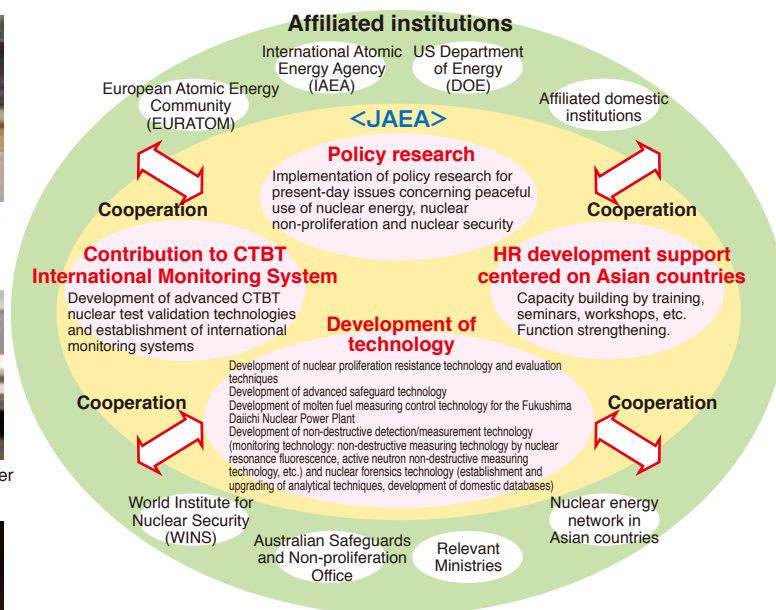
Compact NDA system incorporating a helium-3 substitute ceramic scintillator developed by



Surface ionization mass spectrometer for use in nuclear forensics



International forum



On-site practical facilities training using computers by invited specialists from relevant domestic and overseas agencies.



Nuclear security in virtual facilities using Virtual Reality (VR) System



Takasaki Radionuclide Station based on CTBT International Verification Regime

JAEA works to promote mutual understanding with the public through disseminating the results of its R&D to diverse stakeholders, public consultations, public relations, and dialog activities, etc.

Transmission of information to diverse stakeholders

JAEA actively disseminates information to diverse stakeholders by staying in tune with society's needs through public hearings, public relations, and dialog activities.

By actively providing and disclosing information relating to JAEA's R&D findings, accidents, and incidents, etc., JAEA ensures transparency of its operations. In addition, by taking into consideration the viewpoints of returning these R&D findings and communicating risks with society through deferential public consultations, PR, and dialog, JAEA is able to deepen mutual understanding with the public and local communities and connect this to securing trust.

Furthermore, by paying heed to diverse stakeholder and public view points, JAEA utilizes advice from third-parties in order to contribute to these activities more effectively.



JAEA briefing session



Public consultation, PR, and dialog activities at an exhibition



Briefing about radiation

Internet-based dissemination of results

Transmitting information via the internet for widespread dissemination of results.



Official social media accounts list:
<http://www.jaea.go.jp/sns/>

Actively releasing the latest information and R&D findings via SNS.

JAEA Channel:
http://www.jaea.go.jp/english/jaea_channel/

Introduction to R&D findings by 'Project JAEA' visually easy-to-understand videos.

Brochure:
<http://www.jaea.go.jp/english/about/#pamphlet>

Brochure introducing activities performed by each department and R&D findings.

Events guide:
<http://www.jaea.go.jp/english/news/#cs>

Introduction to various events staged at each center and visitor tours.

Newsletter:
<http://www.jaea.go.jp/english/publication/#other>

Introduction to R&D findings by 'GENKI' and 'graph JAEA' newsletters.



JAEA aims to maximize the effects of its R&D results for creating innovations with information dissemination, results-sharing and collaboration between industry, academia and government

Promoting collaboration with industry – academia – government

JAEA contributes to creating new values for returning its R&D outcomes to society.

JAEA promotes collaboration with industry, academia and government such as joint research, technical co-operation for creating new values. JAEA introduces its intellectual properties with showing production samples at the academic meetings, industrial exhibitions etc. In addition, JAEA R&D results, i.e. technical reports, journal articles and patents are accumulated in database and provided through JAEA web site.

.....
 Contact the Intellectual Resources Management and R&D Collaboration Department for further information at: tenkai-ir@jaea.go.jp

Utilization of intellectual properties
 JAEA aims to create innovations such as the development of new products using JAEA's patents, etc., by implementing practical joint research with industry.

Heat stroke monitoring and warning device

Laser light shade curtain



Practical development
 JAEA aims to promote the practical utilization of technology that is highly sought after by industry, such as high sensitivity gas analyzers and radiation measuring instruments, in various fields of manufacturing, medical care, and animal husbandry.

High sensitivity gas analyzers
 Odor monitoring

Radiation measuring instruments
 Background reduction



Dissemination of R&D results and transmission of information

JAEA will contribute to disseminating its R&D results relative to nuclear science and technology by extensive collecting, compiling, and providing of information pertaining to nuclear energy in Japan and overseas.

The JAEA library collects and provides a broad spectrum of domestic and overseas academic information, such as specialized books, scientific journals, and technical reports, etc., concerning nuclear science and technology. In addition, JAEA is actively committed to the transmission of information through its activities as the national center for the IAEA INIS (International Nuclear Information System), and by collecting and releasing information related to the accident at TEPCO's Fukushima Daiichi Nuclear Power Plant through its Fukushima Nuclear Accident Archive (FNAA).



JAEA Library

JAEA library OPAC

http://library-documents.jaea.go.jp/opac/eng/br_search.asp

Search JAEA library collections (books, journals and reports)



JAEA Originated Papers Searching System

<http://jolisrchr-inter.tokai-sc.jaea.go.jp/search/servlet/interSearch>

Search and browse JAEA R&D results (JAEA reports and journal articles).



Fukushima Nuclear Accident Archive

<http://f-archive.jaea.go.jp/index-s.php?locale=eng>

Providing Fukushima nuclear accident information and the related JAEA R&D results.





Promoting effective and efficient R&D through close cooperation with overseas research institutes and international agencies.

Global cooperation and contribution

Aiming to actively promote international cooperation and make a wide variety of international contributions.

JAEA is actively promoting cooperation with overseas research institutes and international agencies for advancing R&D by incorporating wisdom from other countries. In addition, JAEA is proactively promoting the dispatch of specialists overseas, presentations at international meetings, and international use of JAEA's research facilities in order to contribute to the development of global nuclear science and technology through JAEA's technological know-how and experience.

Bilateral cooperation

Cooperation with the USA on advanced reactor and nuclear non-proliferation technology, and cooperation with France on fast reactor and decommissioning technology, etc.

● ... Principal cooperating partners based on bilateral cooperation arrangements

International use of research facilities

Promoting international use of the Japan Proton Accelerator Research Complex (J-PARC) and research reactors

Multilateral cooperation

Promoting cooperation in multilateral cooperative framework (Generation IV International Forum (GIF) for next generation nuclear energy systems) relative to advanced reactor R&D, etc.

Contributing to international agencies

Dispatch of specialists to the International Atomic Energy Agency (IAEA) and Organisation for Economic Co-operation and Development Nuclear Energy Agency (OECD/NEA), etc.

Contributing to Asia and developing countries

Promoting activities for nuclear HR development and technological support in new nuclear energy generating nations

International meeting

IAEA (Vienna)

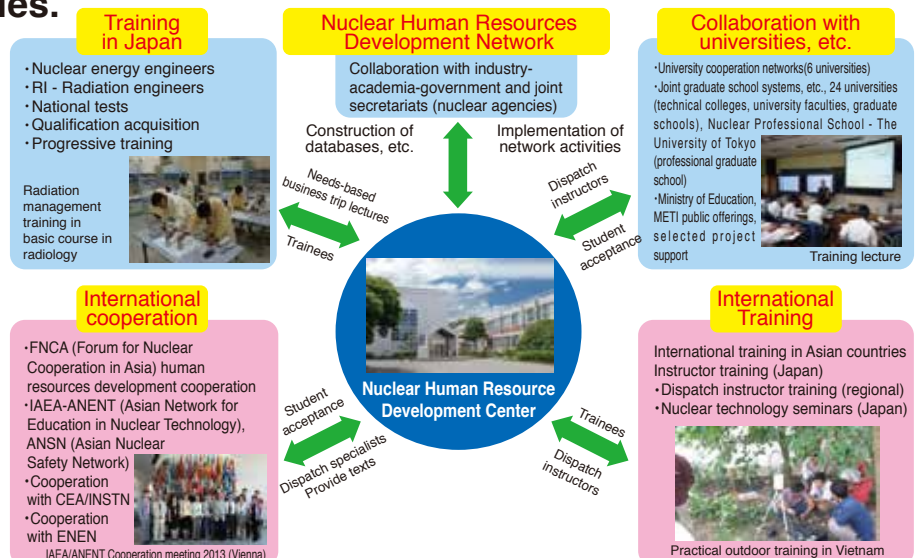
Overseas exhibition

Committed to developing human resources in nuclear energy fields to play an active role in Japan and overseas to meet society's needs.

Developing international nuclear human resources

Cooperating with domestic and overseas nuclear energy general training programs and universities.

JAEA is developing engineers in nations that are new to nuclear energy generation through cooperation with national training programs and university education. Both inside and outside of Japan with the growing importance of fostering human resources in the field of nuclear energy, JAEA is committed to expanding and improving the quality of training by understanding society's needs and establishing internationalized courses for domestic nuclear human resources.





Establishing facilities utilization systems for external utilization of JAEA's advanced large research facilities.

Promoting external utilization of research facilities

Contributing to creating innovations in materials and medical care fields and academic research through external utilization of facilities.

JAEA's research facilities and equipment, which are defined as public assets, are available to external users inside and outside of Japan for their R&D and industrial applications, etc.

At the MLF (Materials and Life Science Experimental Facility) in the J-PARC (Japan Proton Accelerator Research Complex), JAEA is working to promote utilization as a specific neutron beam facility in compliance with laws pertaining to the promotion of public utilization of the specific advanced large research facilities. By utilizing the world's highest performance neutron beam, it is expected to promote the creation of new technologies such as the development of new materials and pharmaceuticals, etc.



Facility external view

No.1 Experimental Hall
Neutron beam lines



J-PARC Materials and Life Science Experimental Facility (Tokai, Ibaraki)

High performance computing helps create scientific and technological knowledge on nuclear energy



Supporting nuclear energy R&D by advanced computational science

Supercomputer is indispensable in tackling complex issues in nuclear energy R&D

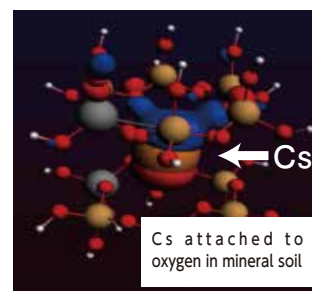
In nuclear energy R&D, computer simulations are becoming useful tools for understanding and predicting critical issues in extreme environments that cannot be studied in experiments. In particular, simulations of complex systems, where various factors are interacting with each other, play a key role in establishing innovative solutions for important issues related to the accident of TEPCO's Fukushima Daiichi Nuclear Power Plant, such as environmental recovery in Fukushima and assessing impacts of contaminated water on the ocean environments.

JAEA has been promoting R&D for advanced simulation via supercomputers, and has started to address new challenges of simulating complex systems by incorporating results of various observations and experiments.

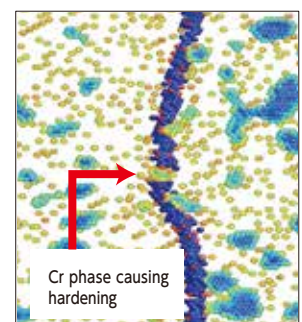
The developed software is released for use by academia and industry.



Supercomputer system



Simulation of soil adsorption of cesium



Furnace construction material deformation simulation

Examples of simulation using a supercomputer



国立研究開発法人日本原子力研究開発機構
Japan Atomic Energy Agency
<http://www.jaea.go.jp/>

