

*Best Practices and Tangible Achievements
Through RTC Under RAS0079*

Overview of Activity and Fruits
by **JVET** (Team JAPAN) in IAEA-TCP
from RAS0065 (2011-2016) to RAS0079 (2018-2021)

The University of Tokyo
Takeshi IIMOTO

Expert Missions of Japan to Asia-Pacific Countries requested by IAEA

MISSION

Share

Share ideas, experience and expertise for the future improvement of Education Curriculum for Science subject.

Assist

Assist the implementation of the programme by showing model lectures of radiation education for teachers & students. (Train-the-trainers for teachers).

Show

Show and guide the experiment session; how to do the hands-on classes and experiments.

Introduce

Introduce and share teaching-assisted-materials to give variation of teaching mode; by instruction manuals, sub-textbook and movies.

Provide

Provide open communication (face to face interaction) for exchange of information.

Team JAPAN for IAEA-TCP RAS 0065-0079

Takeshi IIMOTO (Leader)	The University of Tokyo	Professor	PhD/Mr
Genichiro WAKABAYASHI	Kindai University	Associate Professor	PhD/Mr
Hiroyuki IIZUKA	The University of Tokyo	Project Specialist	PhD/Mr
Tomohisa KAKEFU	Japan Science Foundation	Manager	Mr
Takehiro TODA	RADO co.,ltd.	Technical Developer	Mr
Rieko TAKAKI (Secretariat)	Energy Communication Planning	Lecturer	Ms
Kayo MAKABE	Japan Atomic Energy Relations Organization	Manager	Ms
Itaru TAKAHASHI	Japan Atomic Energy Relations Organization	Lecturer	Mr
Takayuki KOASHI	Japan Science Foundation	Lecturer	Mr

Framework of Team Japan's Activity

1. Direct Supports to Participant Countries

- ✓ Visiting to 8 countries (PHL, IDN, MYS, THA, LKA, JOR, OMN, and MNG)
- ✓ 2 Train Trainers Workshops (Mar. 2019 and Aug. 2021)

2. Voluntary Activities to Encourage and Support TCP

- ✓ Hosting International Symposium/Seminar/Workshop/Meeting
- ✓ Outreaching and sharing Information in Academic Societies
- ✓ Developing New Educational Tools on Radiation

- Parts of the activity by Team Japan were financially supported by JSPS KAKENHI Grant Numbers* of (a) 25282034, (b)16H01813, and (c)19KK0057.

(a) KAKENHI Grant-in-Aid for Scientific Research (A) in 2013-2015

(b) KAKENHI Grant-in-Aid for Scientific Research (B) in 2016-2018

(c) KAKENHI Fostering Joint International Research (B) in 2019-2021



- Parts of the activity by Team Japan were technically supported by RADi of Japan Science Foundation, which is a web-platform for school radiation education in Japan. (<https://www.radi-edu.jp/>)



Initial Activities to Start Pilot Mission

by Sharing JPN's Experiences with Eight Countries

Cuntries	Dates	Experts from Team JPN	TCP No.
The Philippines	Jan. 21-24 (2015)	limoto, Takahashi	RAS0065
Indonesia	Feb. 13-15 (2015)	limoto, Takaki	
Malaysia	Apr. 20-22 (2015)	limoto, Kakefu	
Thailand	Jun. 20-24 (2016)	limoto, Takaki	
Sri Lanka	Oct. 31-Nov. 2 (2016)	limoto, Toda, Takaki	
Jordan	Jul. 31-Aug. 2 (2017)	limoto, Iizuka, Takaki	-
Oman	Oct. 1-4 (2018)	Wakabayashi, Toda	RAS0079
Mongolia	Oct.8-10 (2018)	limoto, Makabe	

AN EXAMPLE TIME SCHEDULE OF TWO HOURS RADIATION EDUCATION MODULE FOR SECONDARY SCHOOL STUDENTS

Part I Lecture (60 min)

- **5 min** - Program explanation
(purpose, lectures...)
- **45 min** - Basic radiation lecture
 - + Radiation and dose surrounding us
 - + **Radiation application**
 - + Radiation type
 - + Radiation and Radioactivity
 - + Half life
 - + Unit of Bq and Sv
 - + Human effect of radiation
 - + Radiation protection

(Using this lecture duration, supporters are preparing for the Part II experiments in the experimental room.)

- **10 min** - Breaking time

Part II Two Experiments (60 min)

- **20 min** - Cloud chamber observation
(One chamber for one, or at best one chamber for four)
 - + Pouring ethanol (only); 5 min
 - + Cooling time by dry ice; 5 min
 - + Observation; 10 min
- **30 min** - Environmental survey by a small radiation detector
(One detector for one, or at best one for two)
 - + Instruction to use a detector ; 5min
 - ← It is possible to use the cooling time of cloud chamber. It is very reasonable.
 - + Surveying activity; 25 min
- **10 min** - Conclusion

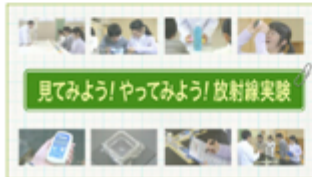
WOW!

Movies on

<http://www.radi-edu.jp/en>

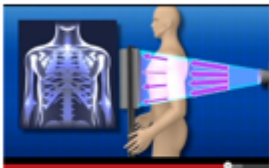
Web platform on Radiation Education Information; “**RADI**”

Let's try radiation experiments by yourself !



- **5 min** short movie × **6 stories**
- **Movie instruction manual** on experiments
- Preparation for experiment, or **showing these movies to students in the class in place of doing experiments**
- **English subtitles are ready.**

Basic lecture on radiation



- **20 min** movie
- **Q&A attractive talk-show** between students and an expert
- Focusing on the radiation keywords
- in **junior high school textbook**
- Showing the movie to students in place of teachers' explanation

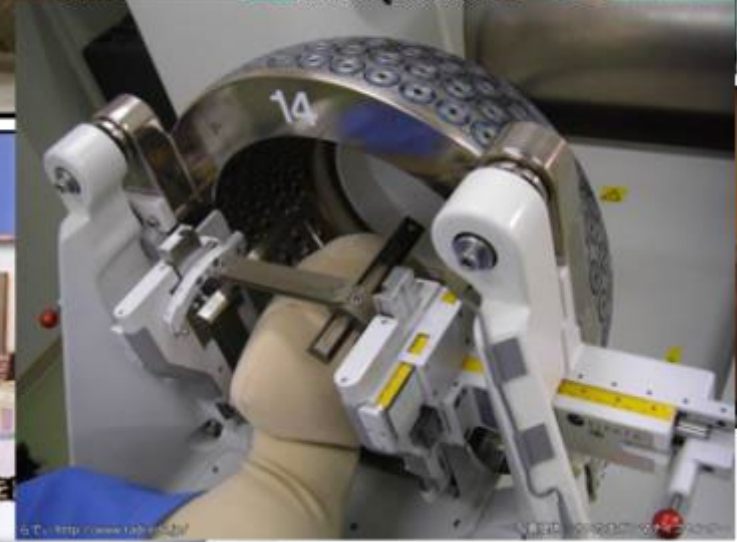


Short stories on radiation

Radiation Application 放射線の利用

Effective Use of Radiation in Various Fields

- **30 min** movie, recommended officially by MEXT in 2010
- **Junior high school students reports** the real situation of radiation usage in industry, medical, agriculture, archaeology, and other fields.
- Radiation-related **experiments** by experts
- **Q&A attractive talk-show** between students and an expert
- Showing the movie to students in place of teachers' explanation



LET'S TRY RADIATION EXPERIMENTS BY YOURSELF !

■ Theme (1)

Cloud Chamber

- Let's observe tracks of radiation

■ Theme (2)

Measurement of Natural Radiation

- Let's measure radiation
using a small detector



Theme (1)

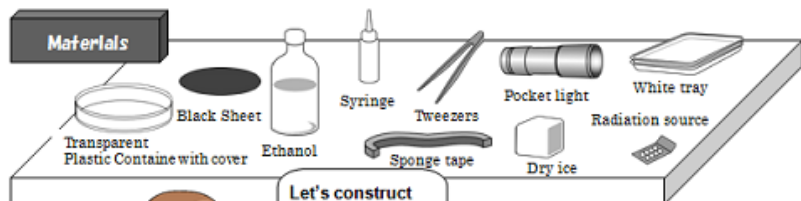


Theme (2)



How to

Construct Cloud Chamber



Let's construct a cloud chamber following this instruction!

- Before your experiments,
- (1) Let's enjoy experiment with adults.
 - (2) Do not drop a plastic container. It is fragile.
 - (3) Do not touch dry ice directly by your hand.
 - (4) Do not use ethanol near fire.

1

Put sponge tape inside of plastic container

- Spread black sheet in the container.
 - Put and paste sponge tape on the top of the inside of the container.
- Cover of the container must fit tightly.

2

Infiltrate ethanol into sponge tape

- Infiltrate ethanol using a syringe into the sponge tape fully.

fully...

3

Cover the container and illuminate inside

- Put radiation source on the black sheet and cover the container.
- Put the container on dry ice.
- Illuminate inside of the container from a side.

Do not touch dry ice directly by hand!

4

Observation of track of radiation

- After around three minutes, you can see some white tracks like vapor trails of airplane.



Let's Observe Tracks of Radiation using Cloud Chamber

Unfortunately, we cannot see radiation itself.

We can observe "tracks" of radiation when we use a tool called "Cloud chamber".

The radiation tracks are like vapor trails of airplane in the sky.

Cause of the track clouds

Cloud is a small drop of water, as a result of gathering of vapor in air. Dust in the sky would be nuclei of the cloud.

When vapor in the sky is cooled down immediately and the air is over-saturated by vapor, the radiation track clouds could be easily generated.

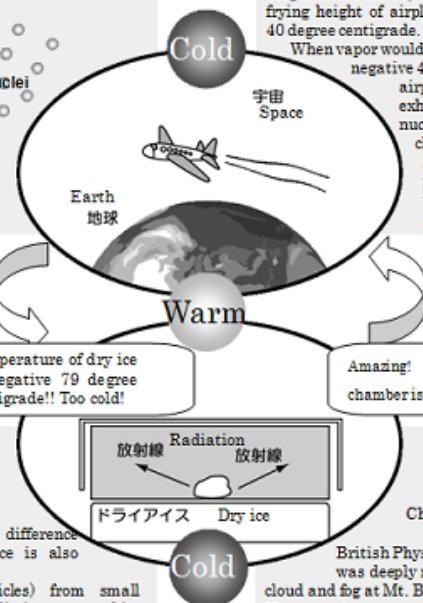


Cause of vapor trails of airplane

Vapor trails are not exhaust gas from airplane. The trails are tracks of water vapor. These are clouds of water.

Temperature would decrease 0.6 degree centigrade at the height interval of the 100 meters. Therefore, temperature at the height of around 10,000 meters, which is the flying height of airplane, is about negative 40 degree centigrade.

When vapor would be cooled down in the negative 40 C environment, airplane flies in this, exhaust gas becomes nuclei, then vapor trail cloud is generated. Sky air needs to be filled with water vapor to generate vapor trail.



Temperature of dry ice is negative 79 degree centigrade!! Too cold!

Amazing! Tracks of cloud chamber is like vapor trails!!

In cloud chamber

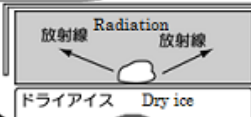
In place of water vapor, ethanol gas is used in cloud chamber.

Extreme temperature difference between air and dry ice is also important.

Radiation (alpha particles) from small monazite rock as a radiation source hits molecular in the container and generates ions. These ions would become nuclei of cloud. Then we can see radiation tracks as this cloud.

***Monazite rock**

Monazite is one of natural rocks. The rock exists naturally in Japan as well as in other countries. Thorium and Uranium existing naturally in monazite rock emit radiation.



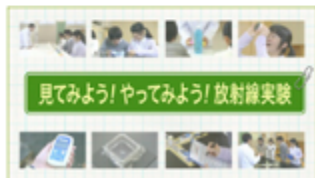
Novel Prize

Charles Thomson Rees Wilson, British Physicist (1869-1959) was deeply moved by beautiful cloud and fog at Mt. Ben Nevis (1,344m). He started new experiments on cloud and fog generation, and succeeded in developing a cloud chamber.

Radiation is invisible. However, we can see tracks of radiation by using cloud chambers. His cloud chamber became extremely important tool for researchers on radiation and nuclear physicists. Dr Wilson received Nobel physics prize in 1927 by his achievement relating cloud chamber.

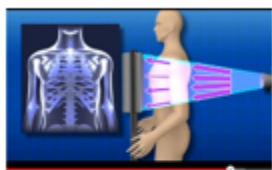
Movies on Web platform on Radiation Education Information; “RADI”

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Short stories on radiation

Memories of Team JAPAN Activities in Initial Cooperation with Pilot Countries

The Philippines (2015)

Indonesia (2015)



Memories of Team JAPAN Activities in Initial Cooperation with Pilot Countries

Malaysia (2015)



Thailand (2016)



Memories of Team JAPAN Activities in Initial Cooperation with Pilot Countries Sri Lanka (2016) Jordan (2017)



Memories of Team JAPAN Activities in Initial Cooperation with Pilot Countries

Oman (2017)



Mongolia (2018)



Side EVENT at the GC 2016

“Introducing Nuclear Science and Technology to Secondary Schools”

26 Sep. (2016), 1400-1500H, Room C4



Introducing Nuclear Science and Technology in Secondary Schools

Monday 26 September 2016
14:00-15:00, Room C4, C Building, 7th Floor

Showcasing a pilot initiative to introduce nuclear science and technology in secondary schools in the Asia and the Pacific region

Programme

- Opening
- Dr. John Zerwas, member of the Texas Legislature
- Dr Takeshi Jimoto, Associate Professor, Division for Environment, Health and Safety, University of Tokyo
- Dr Adrian Paterson, Chief Executive Officer, Australian Nuclear Science and Technology Organisation (ANSTO)
- Panel presentation of success stories
 - Ms Elizabeth Castendon, first graduate of POWER SET group at Palacios High School, USA
 - Ms. Micah Pacheco, Head of the Science Department, San Francisco High School, Philippines (a pilot country)
 - Ms. Habibah Adnan, Information and Publication Officer, Malaysian Nuclear Energy (a pilot country)

Moderated by Ms Janice Dunn Lee, Deputy Director General, Department of Management, IAEA
All are invited to the coffee reception on C04 after the event



[International Symposium]



Today and Future on Radiation Education by International Viewpoint

- Improvement of Risk Literacy Based on STEM Education -

**Dec. 6 (2016), 9:15am – 0:30pm,
Japan Science Foundation**



Moderator Energy Communication Planning Rieko TAKAKI

Opening Address (15min)

The University of Tokyo Takeshi IIMOTO

Session 1 Special Lectures (80min)

- 1-1 Framework for International Cooperation/Supporting Activity of Japan on Radiation/Nuclear Education in Secondary Schools (20min)
The University of Kyushu Kazuhiko KUDO (Japan)
- 1-2 Latest Status of Radiation/Nuclear Education in Secondary Schools of the Philippines and Establishment of Sustainable Framework - From the Viewpoint of a Supervisor (30min)
Regional Science Supervisor Ms. Micah PACHECO (The Philippines)
- 1-3 Latest Status of Radiation/Nuclear Education in Secondary Schools of the Philippines and Experiences/Practices in Classes - From the Viewpoint of a Science Teacher (30min)
Physics Teacher Ms. Mazshahdah Bt Mohd SHAH (Malaysia)

Break(15min)

Session 2 Short Presentations (50min)

- 2-1 International Cooperation and Support for Asian Countries (5min each)

MOFA	Akihiro TSUJI
MEXT	Hiroyuki KAMAI
- 2-2 Progress of Various Education Activities in Japan (5min each)

MEXT	Youichi KIYOHARA
METI	Teruko SUYAMA
CAA	Hajime Ishikawa
Tomioka Town, Fukushima Pref.	Hiroki ABE
NCCJ	Hiroshi FUJII

Session 3 Panel Discussion (30min)

- 3 "Radiation" as a Material/Tool for Improving of Risk Literacy

Facilitator	T. IIMOTO
Panelers	M. PACHECO, M.B.M.SHAH, Y.KIYOHARA, K.KUDO, H.FUJII

Closing Address (5min)

JAIF Keiko KITO



Improvement of Risk Literacy Based on STEM Education

-Focusing on Radiation-

Mar. 29 (2017), 2:00pm – 5:30pm, The University of Tokyo

Session 1 Special Lectures (80 min)

- 1-1 International Framework to Assist Asian Activities of Radiation/Nuclear Education Based on IAEA-RAS0065-TCP and Its Future Scope
IAEA, Asia and the Pacific Section 2, Technical Advisor, Dr Sunil Sabharwal
- 1-2 Support to Pilot Countries by Experts in IAEA-RAS0065-TCP
Australia, ANSTO, Manager External Relations, Ms Cassandra Casey
- 1-3 How to Insert Risk Information in the STEM Education in Secondary Schools
USA, Texas A&M University, Director of Outreach and Development,
Dr Valerie Garcia Segovia

Break (20 min)

Session 2 Asian Activities (75 min)

Thema : Latest Status of Radiation Education in Secondary Schools and Establishment of Sustainable Framework

- 2-1 The Phillipines Department of Education, Supervisor, Dr Maria Pilar O. Capalongan
- 2-2 Indonesia Ministry of National Education, Manager Curriculum Division,
Ms Sri Hidayati
- 2-3 Malaysia MOE Malaysia, Assistant Director, Ms Nor'aidah Nordin
- 2-4 Thailand Institute for Promotion of teaching science and technology, Educator,
Dr Preeda Patcharamaneepakorn
- 2-5 Sri Lanka Ministry of Education, Director fo Science Education,
Mr Vipulasena Pathiraja

Future Scope and Closing Address (10 min)

IAEA, Asia and the Pacific Section 2, Section Head, Dr Jane Gerardo-Abaya



[International Workshop]
 for the Preparation of Standard Education Programmes and Modules
 on Nuclear Energy and Radiation Application for Secondary Schools
 Mar. 26-31 (2017), The University of Tokyo

Purpose of the WS

- ✓ To discuss and prepare standard education programmes and modules on nuclear energy and radiation application for secondary schools, which will be used in the next stage of IAEA-TC project from 2018
- ✓ To share the real programmes and modules for secondary school education in one hour (minimum) to 4 hours (maximum) among participant countries
- ✓ To discuss the inclusion of contents having the “WOW factors” as well as risk information in the programmes/modules
- ✓ To discuss the evaluation of the effect of the programmes/modules to education in secondary level.

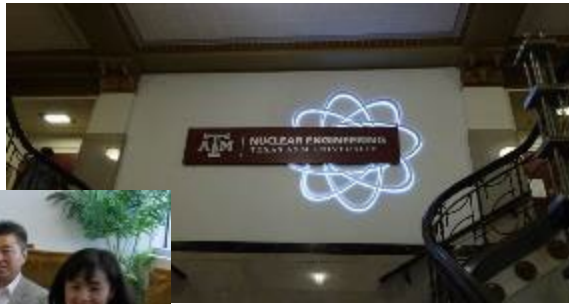
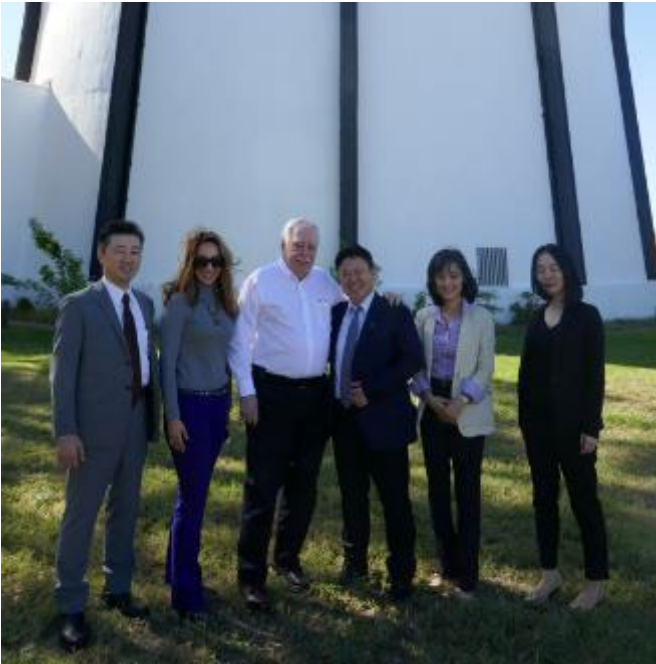
This Int. WS including Int. Open Seminar (Mar. 2017) as well as Int. Symposium (Dec. 2016) were held in the vacant period of IAEA-TCP between RAS 0065 and RAS 0079, which were suggested and arranged by Prof. Imoto of Team JPN. The fruits became the basic concept for the activity of RAS 0079.

10 Invited Participants

- ✓ 2 experts from IAEA
- ✓ Experts from Australia, USA, and Japan
- ✓ Science officers for secondary school education (or teacher) from The Philippines, Indonesia, Malaysia, Thailand and Sri Lanka

Voluntary Info.-Exchanging Meeting with Experts in **Texas A&M Univ. (USA)** Oct. 29- Nov. 2 (2017)

科研費
KAKENHI



The 5th Asian and Oceanic Congress on Radiation Protection

(AOCR-5) - Melbourne (AUS) May. 20-15 (2018)

The four presentations from PHL, USA, AUS, and JPN were suggested and arranged by Prof. Iimoto of Team JPN. They shared the fruits of RAS 0069 and the plan of RAS 0075 with RP experts in the Asian and Oceanic region.

SESSION 3.2

PHIL, AUS, USA, AND JPN SYNERGIZE FOR NUCLEAR/ RADIATION ASIAN TEACHER/STUDENT DEVELOPMENT

Kent Gregory
Takeshi Iimoto

ROOM 104

ACTIVITIES UNDER THE IAEA- TCP 2012-2017

Rhodora LEONIN
Philippine Nuclear Research Institute-DOST, Philippines

ANSTO'S CHALLENGES ON HRD AND EDUCATION FOR NUCLEAR SCIENCE AND TECHNOLOGY

Cassandra CASEY
Australian Nuclear Science and Technology Organisation, Australia

OUTREACH TO STUDENTS AND TEACHERS – KEY TO HUMAN RESOURCE DEVELOPMENT

Valerie SEGOVIA
Nuclear Power Institute, Texas A&M University, USA

DEVELOPMENT OF RADIATION EDUCATION TOOLS BASED ON FEEDBACK FROM ASIAN COUNTRIES' ACTIVITIES

Takeshi IIMOTO
The University of Tokyo, Japan



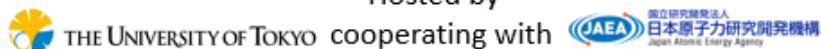


IAEA International Workshop of
Regional Training Course for Teachers to Introduce
Nuclear Sciences in Secondary Schools through
Innovative Approaches

TTWS2019 

February 18 to March 1 (2019)
- Tokyo, Tokai, and Fukushima -

Hosted by

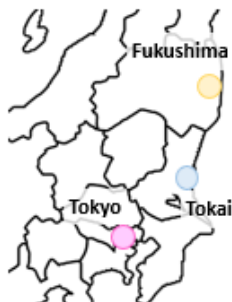


Nuclear Research Reactor (JRR-3)

<https://jrr3.jaea.go.jp/>



Akamon Gate



Yasuda Auditorium



TEPCO Fukushima Daiichi Nuclear Power Plants

<https://photo.tepco.co.jp/en/date/2018-e/201811-e/181107-01e.html>

Lectures and Activities in TTWS 2019 JPN

Feb. 18- Mar. 1 (2019)

<15 lectures>

- Overview of **Nuclear Applications**
- Basics of **Nuclear Physics**
- Radiation **Biology**
- Radiation **Measurement** and Dosimetry
- **Social Viewpoint** on Nuclear Application
- Overall Review of Radiation Basics
- **Radiation Protection** Concept
- Radioactive **Waste Management**
- Nuclear Non-Proliferation and **Nuclear Safeguards**
- Types of **Nuclear Reactors** and Their Safety & Security
- Types of **Accelerators** and Its Application
- **Extracurricular Activities** of Nuclear S&T
- Fukushima Daiichi NPP Accident and **Way to Recovery**
- Radiation Education in **Various Subject** Classes
- **Recent status** of Fukushima Daiichi NPP and Future Scope

<3 experiments >

- **Cloud Chamber** Observation
- **Shielding and Distance Experiments** with Hand-made Air GM Tube
- **Natural Radiation Survey** with KIND

<2 Nuclear Site Visits>

- TEPCO **Fukushima** Daiichi NPP
- JRR-3, J-PARC and others in **JAEA**

and

- 3 days **PEDAGOGY**

Memory Photos of TTWS 2019 JPN

Opening Ceremony



Lectures in UTokyo



Memory Photos of TTWS 2019 JPN

Lectures in JAEA-Tokai

Experiments



Memory Photos of TTWS 2019 JPN

Activity in Pedagogy Session

Site/Culture Visit to Fukushima NPP & Spa

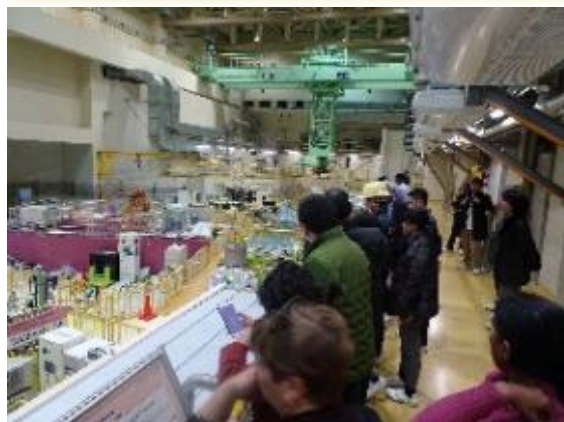


Memory Photos of TTWS 2019 JPN

Site Visit to JAEA



Culture Visit to UTokyo, Ueno/Asakusa, Tokyo



Memory Photos of TTWS 2019 JPN

Culture Visit to Mito-Kairakuen

Closing Ceremony





**TTWS2021JPN-RP,
Training Trainers Workshop, 2021, Japan**



IAEA RAS0079TCP,
Educating Secondary Students and Science Teachers
on Nuclear Science and Technology,

**Virtual Regional Training Course
on NST specialized Programme
in the Field of Radiation Protection**

5 August – 1 September 2021



Hosted by

Science and Technology
Information Forum(STIF), Japan

Supported by

The University of Tokyo
(Div. for EHS, UTokyo)

Opening Ceremony Participants



Lectures in TTWS 2021 JPN-RP Aug. 5- Sep. 1 (2021)

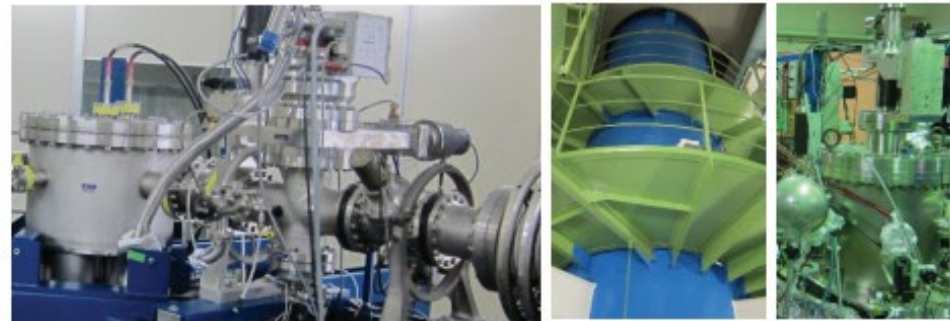
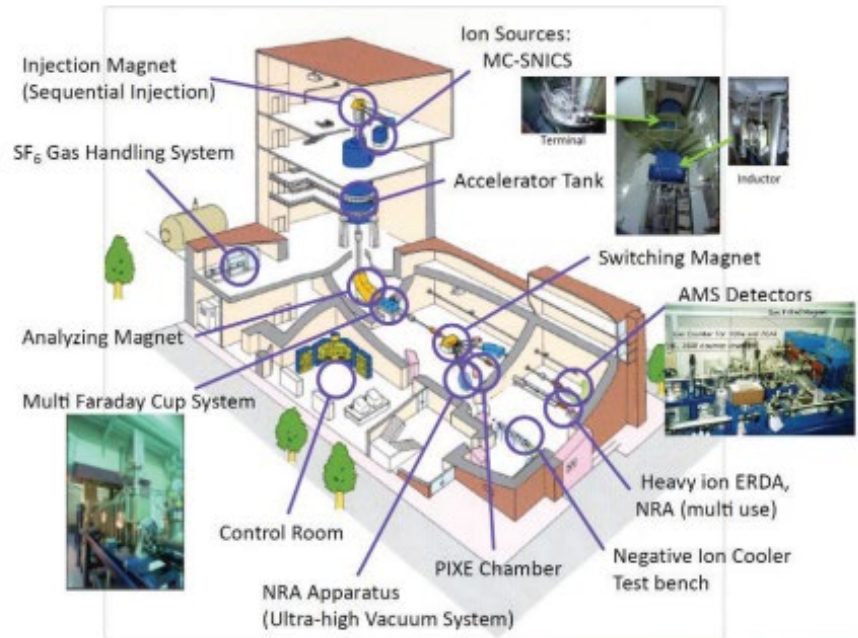
Lecture No.	Lecturer	Title	Organization	Theme	Level
1	Takeshi IIMOTO	Prof.	Division for Environment Health and Safety, The University of Tokyo	RP as a secondary teaching theme: its wide scope and infinite possibility	Basic
2	Noriko HOSOYA	Assoc. prof.	Graduate School of Medicine, The University of Tokyo	Latest consensus in radiobiology	
3	Michiya SASAKI	PhD	Central Research Institute of Electric Power Industry	Latest consensus in radiation epidemiology	
4	Hiroyuki A. TORII	Assoc. prof.	School of Science, The University of Tokyo	Nuclear physics, radiation physics and chemistry	
5	Hiroyuki MATSUZAKI	Prof.	The University Museum, The University of Tokyo	Radiation measurement and accelerator science	
6	Reiko KANDA	PhD	National Institutes for Quantum and Radiological Science and Technology	Risk communication in radiation protection	
7	Keitaro TANOI	Prof.	Graduate School of Agricultural and Life Sciences, The University of Tokyo	Radiation protection in food	Academic
8	Takeshi IIMOTO	Prof.	Graduate School of Frontier Sciences, The University of Tokyo	RP system and protection for natural radiation and radioactivity	
9	Takumi SAITO	Assoc. prof.	Graduate School of Engineering, The University of Tokyo	Protection on radioactive wastes	
10	Tatsuhiko OGAWA	PhD	Research Group for Radiation Transport Analysis, Japan Atomic Energy Agency	Analytical understanding of radiation behavior	
11	Hiroshi YASUDA	PhD	Hiroshima University	Advanced understanding of radiation units	Advanced
12	Fumiaki TAKAHASHI	PhD	Nuclear Science and Engineering Center, Japan Atomic Energy Agency	External exposure dosimetry and its practice	
13	Kotaro TANI	PhD	National Institutes for Quantum and Radiological Science and Technology	Internal exposure dosimetry and its practice	
14	Shogo HIGAKI	Assistant Prof.	Isotope Science Center, The University of Tokyo	Management and radiation protection practice of radiation facilities	Application
15	Makoto Hashimoto	PhD	Oarai Research and Development Institute, Japan Atomic Energy Agency	Management and radiation protection practices in nuclear facilities	
16	Kazumasa SHIMADA	PhD	Nuclear Safety Research Center, Japan Atomic Energy Agency	Radiation protection of the public in emergencies	

Virtual Visits to Radiation Facilities (1)

Guided by **Junior Experts**
(Graduate students of UTokyo)



MALT (Micro Analysis Laboratory,
Tandem accelerator, The University
of Tokyo), Bunkyo, Tokyo



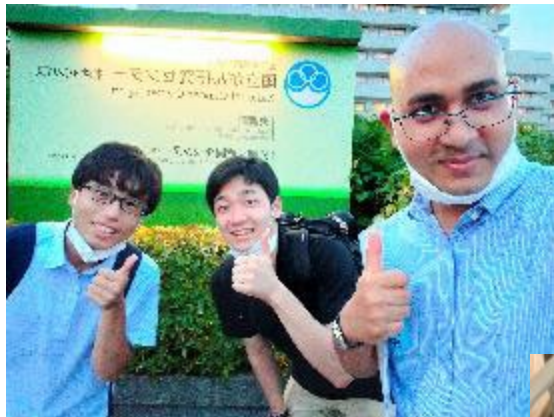


国立がん研究センター
東病院
National Cancer Center Hospital East

National Cancer Center Hospital
East, Kashiwa, Chiba

Virtual Visits to Radiation Facilities (2)

Guided by **Junior Experts**
(Graduate students of UTokyo)



<https://www.ncc.go.jp/en/ncce/about/index.html>

TTWS2021 JPN

TTWS2021JPN-RP, Training Trainers Workshop

Virtual Regional Training Course on NST specialized Programme in the Field of Radiation Protection

Self Introduction

JORDAN

1. T. Chathu Sri L...

2. Zamhari AZMAN, Ma...

Hiromi KOIKE

Hiromi KOIKE

IIMOTO Course...

IMOTO Course Director

16. Chathu Sri L...

Radio Exercise

30. Kanokrat Singnu, Th...

16. Manjivade Hongda

17. Manjivade Hongda

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27. Manjivade Hongda

28. Manjivade Hongda

29. Manjivade Hongda

30. Manjivade Hongda

Certificate and Award

TTWS2021 JPN

Certificate of participation

IAEA International Workshop Series

Zamhari AZMAN
Ministry of Education Malaysia, MALAYSIA

東京大学環境安全本部
Tokyo University of Environment and Safety

IN RECOGNITION OF THE SUCCESSFUL COMPLETION OF THE VIRTUAL TRAINING IN THE
IAEA International Workshop
on Nuclear Science and Technology focused on Radiation Protection
for Secondary School Teachers
5 August - 1 September 2021

Hosted by
SCIENCE AND TECHNOLOGY INFORMATION FORUM
STIF (Science and Technology Information Forum) 2021

and technically supported by the
UNIVERSITY OF TOKYO

Jane GERARDO-ABAYA
Director, Division for Asia and the Pacific
Department of Technical Cooperation
International Atomic Energy Agency

飯本武志
Takeshi IMOTO
Professor, Division for Environment, Health and Safety,
The University of Tokyo
Course Director, TTWS2021JPN

TTWS2021 JPN

Most Proactive Participant Award

Presented to
Zamhari AZMAN
Ministry of Education Malaysia, MALAYSIA

This award is in recognition of your proactive participation in the TTWS2021JPN

IAEA International Workshop of
Virtual Regional Training Course on NST specialized Programme
in the Field of Radiation Protection
Awarded on September 1st, 2021

Takeshi IMOTO
Professor, Division for Environment, Health and Safety, The University of Tokyo
Director, TTWS2021JPN

東京大学環境安全本部
Tokyo University of Environment and Safety

飯本武志

TTWS2021JPN-RP, Training Trainers Workshop

Virtual Regional Training Course on NST specialized Programme in the Field of Radiation Protection

Closing Ceremony



TTWS2021JPN-RP, Training Trainers Workshop

Virtual Regional Training Course on NST specialized Programme in the Field of Radiation Protection

Participants

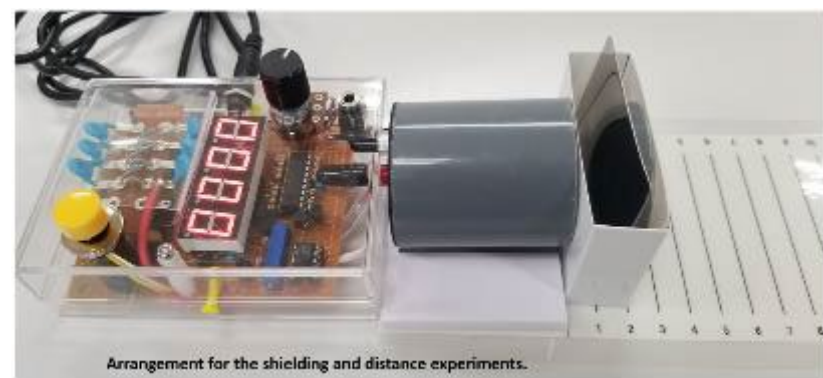
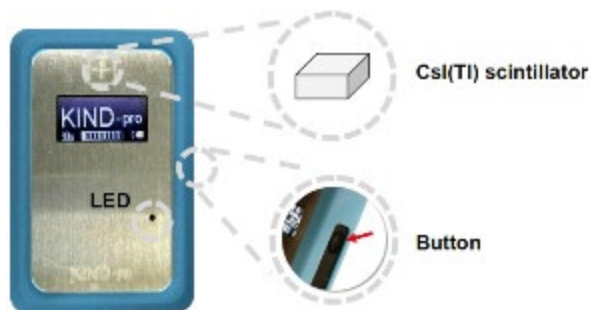


Host Team Members



Education Tools Developed by Team JAPAN

Survey Meter / Cloud Chamber / GM tube



Prizes, given by Academic Societies

The 4th Asian Conference on Safety and Education in Laboratory (ACSEL 2017) - Singapore city

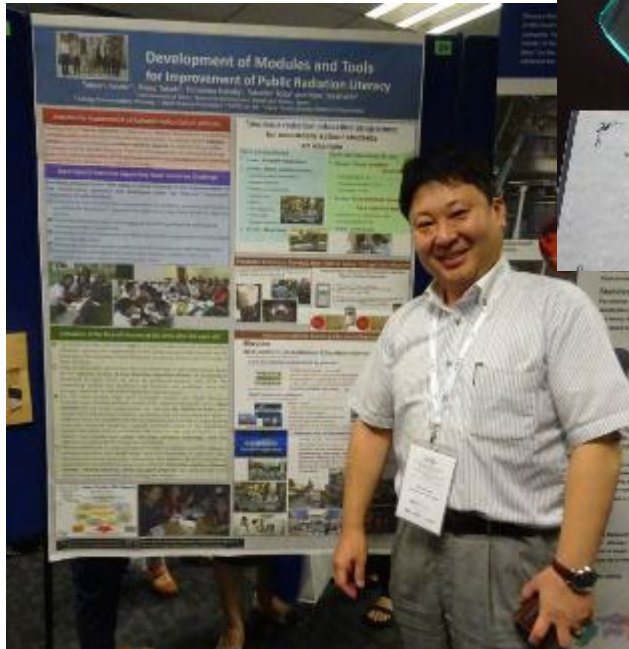
Development of Modules and Tools for Improvement of Public Radiation Literacy
 Takeshi Iimoto, Rieko Takaki, Tomohisa Kakefu, Takehiro Toda and Itaru Takahashi

2020 Annual Meeting of Japan Health Physics Society -Osaka

Development of Risk Literacy Improvement Model Based on the Experience of Nuclear Science Technology Education
 R. Takaki, T. Iimoto

Best Presentation Award (General)

Best Poster Award 2017



リスクリテラシーと安全文化の視点

NST教育の中に、「安全文化」の視点を導入・強調することで、リスク評価の必要性に対する理解とリスクリテラシーの層の浸透・定着をわらう

リスクリテラシー

リスクを認知し、それが利益に対し許容可能な大きさが評価できる力



安全文化

継続的にリスクを小さくよとする姿勢・態度*



試み事例 2 - 「放射線」/ 大学生向け

従来の内容 (サイエンス枠内内容が主) ✓用語解説 ✓身の回りの放射線 ✓放射線の歴史・性質 ✓放射線利用例 ✓人体への影響、防護の原理 WOWファクター ✓簡易放射線測定器 ✓書籍の作成・観覧	試みポイント 利益とリスクのバランス ✓サイエンス的事実を踏まえてリスクを評価し、それが暮らしや環境に対して「許容できる」かどうかを、数値を算出して考える。 ✓現状から90%リスクを下げ、利益を益を大きくすることを、費用(費用・労力等)対効果も高めて考える。 課題に入るリスク 放射線法(放射線計測器、放射線計測器) 人工衛星(放射線計測器、放射線計測器) 放射線計測器(放射線計測器)
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トレーニング例、他分野への展開案

時間活用 1日の24時間をどう使う? 睡眠...健康維持 食事...向上 通学...通勤に何が出来る? 勉強...将来の自分のため 家の手伝い...家庭環境に依存 趣味・遊び・友達も大事 	金銭感覚 月の小遣いをどう使う? マンガ・ゲーム 友達との飲食 映画・カラオケ 趣味の道具 貯金 準備費(プレゼント代など) 	化学分野 新薬の開発 病気の治癒効果 コスト 副作用
共通目標 総合的に考えて「現状を容容可能な状態にする」あるいは「さらによくなる」という姿勢を浸透・定着させる → 安全文化の基盤		



Main Papers Related with The Activities of Team JAPAN

- ✓ **Development of Radiation Literacy Among Secondary School Students in SRI LANKA** [10.11162/daikankyo.E18PROCP37] Nirodha Ranasinghe, Uththara Perera, Prasad Mahakumara, Nirasha Rathnaweera, Priyanga Rathnayake, Takehiro Toda, Takeshi Iimoto; Journal of Environment and Safety 10(2) 37-40 (2019)
- ✓ **Application of a Hand-made Air GM Counter as a Radiation Education Training Material for Secondary School Education** [10.5453/jhps.54.206] Estiner W. Katengeza, Nirodha R. A. C. RANASINGHE, Satoru OZAKI, Takeshi IIMOTO, Japanese Journal of Health Physics 54(4) 206-211 (2019)
- ✓ **EVALUATION AND STATISTICAL ANALYSIS OF THE USE OF INFOGRAPHICS IN RADIOLOGY EDUCATION**[10.1093/rpd/ncz102] Ryuta Takashima, Mari Ito, Takanori Chida, Toshiyuki Watanabe, Takahiko Toyama, Taira Yaginuma, Takahiro Anzai, Toru Hiyama, Takeshi Iimoto, Hirofumi Fujii, Radiation Protection Dosimetry 184(3-4) 543-546 (2019)
- ✓ **RESULTS AND DISCUSSION ON JAPANESE PUBLIC OPINION SURVEYS (2006–17)**
- ABOUT NUCLEAR AND RADIATION APPLICATIONS**[10.1093/rpd/ncz127] Takeshi Iimoto, Ryuta Takashima, Hiroshi Kimura, Kazuhisa Kawakami, Hironori Endo, Hiroshi Yasuda, Natsuki Nagata, Noriaki Sakai, Yumiko Kawasaki, Makoto Funakoshi; Radiation Protection Dosimetry (2019)
- ✓ **Development of a Peltier Type Cloud Chamber with Wide View Field** [10.1093/rpd/ncz106] T. Toda, M. M. Hasan, Y. Igarashi, E. W. Katengeza, T. Iimoto; Radiation Protection Dosimetry 184(3-4) 539-542 (2019)
- ✓ **PRELIMINARY EVALUATION OF A HAND-MADE RADIATION MONITOR'S POTENTIAL FOR PROVIDING ENERGY INFORMATION AS AN ADDITIONAL FEATURE FOR SECONDARY LEVEL RADIATION EDUCATION** [10.1093/rpd/ncz076] Katengeza E, Ozaki S, Kato T, Kakefu T, Iimoto T, Radiation Protection Dosimetry (2019)
- ✓ **Activities and Development for NS&T HRD Focusing on Secondary School Levels in Asia Pacific Region _Case of Japan;** Takeshi IIMOTO, Tomohisa KAKEFU, Rieko TAKAKI; Journal of Radiation Emergency Medicine 8(1) 33-38 (2019)

MOFA-JPN official Movie

on Japanese Activities for the 61st IAEA General Conference (2017)

The activity of **Team JAPAN** in RAS0065-TCP was mainly introduced in the **MOFA Japan official movie (7min)**, presented in the **61 General Conference** of IAEA held in Sep., 2017.

Japan's Contribution toward
"Atoms for Peace and Development"



Ministry of Foreign Affairs of Japan

This became one of strong sources for our additional motivation to continue our activity in RAS0079 with all of you.

Statement by Ambassador HIKIHARA Takeshi at the IAEA Board of Governors Meeting starting on Monday, 7 June 2021, Item 3: Strengthening of the Agency's technical cooperation activities: Technical Cooperation Report for 2020

2021/6/7

Thank you, Madame Chair, Japan highly appreciates the excellent work of DDG Liu and his team for producing the substantial Technical Cooperation Report, which illustrates well the wide-ranging cooperation among Member States and the Agency. We welcome the successful provision of PCR testing equipment by the Secretariat to help address the COVID-19 pandemic globally, as well as the valuable contributions by Member States in this regard. Japan highly values the Agency's efforts to promote the peaceful uses of nuclear technology in achieving the SDGs. We also continue to strongly support the ZODIAC initiative. ...

(Educational Projects)

Madame Chair, Japan continues to place great importance on education and human resource development in the fields of nuclear science and technology. Under the project entitled “**Educating Secondary Students and Science Teachers on Nuclear Science and Technology**”, **Japanese experts led by Professor. IIMOTO Takeshi** played a central role in achieving the goal of reaching one million students by early 2020. ...

CONTINUOUS CHALLENGES

Strong cooperation and dialog between **education sector and NS&T expert team**, and between **challenging countries and expert countries**, needed and crucial to continue the mission sustainably

- How to propagate the “**WOW Factor**” in NS&T Education
- How to **empower** busy teachers with appropriate resources
- How to enhance **skills** of teachers and experts
- How to establish **sharing platforms** on effective information/tools/programs

★ **Two-way activity,**
“Sharing and Feedback”

