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**New year message from the chairman of International Relations Committee, JSMCWM**

**Food Loss Issues**

The food loss issues have become one of the major challenges in the material cycles and waste research field. In collaboration with Kyoto City, our research group has conducted a long survey on detailed municipal solid waste (MSW) compositions. The results show that food waste accounts for 40% (wet weight ratio) of total MSW, and 40% of food waste is due to food losses (i.e., untouched food and left-over foods). Therefore, now, there is a natural movement to target food loss in order to reduce total MSW. Professor Munosue et al. of Tokyo Institute of Technology suggested that 6.3 million of



under-nourished people (7.4 % of the total) in developing countries can be saved if developed regions reduce food waste and loss by 50 percent during the stages of food production, delivery and consumption. We should actively discuss this issue in the Asia Pacific region.

**3R Policy Developments and Cooperation with Academic Societies**

Japanese government has taken initiative to successfully promote 3R policies in the international community. We can say that the Regional 3R Forum in Asia and the Pacific Region hosted by UNCRD and MOEJ has contributed to the development of 3R across the world. One of our priority issues is to provide a solid scientific basis for 3R policy strategy. Since the 5<sup>th</sup> 3R Forum in Surabaya, Indonesia, the development of indicators and a 3R whitepaper for the Asia-Pacific region has begun. Thorough examinations are required to make reliable indicators and whitepapers. Academic societies should actively work on such tasks.

I believe that a scientific journal can serve as a key tool for verification of reliable indicators. Through a solid peer-review process, we can positively disseminate useful information for the future. It is desirable to utilize such tools to discuss and share information among peers. Our academic society has published an English Journal, Journal of Material Cycles and Waste Management (JMCWM) from Springer Co. since 1999 (<http://www.springer.com/engineering/civil+engineering/journal/10163>). This journal introduces a web-based submission and peer-review system. It holds an Impact Factor evaluation and has been recognized as an international academic platform in the fields of material cycles and waste management.

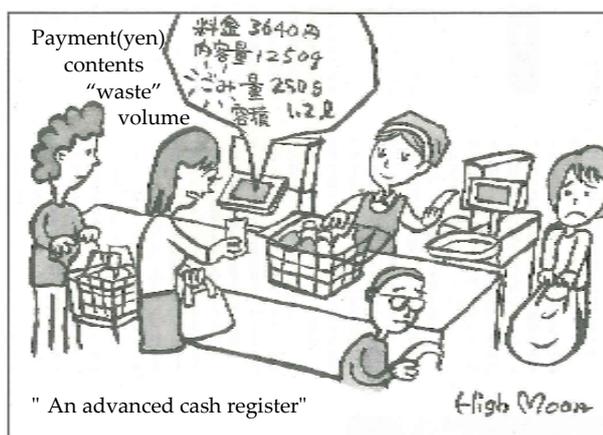
**The 1<sup>st</sup> 3RINCs in Kyoto and the next conference to be held in Daejeon**

The 1<sup>st</sup> 3R International Conference on Material Cycles and Waste Management (3RINCs) held in Kyoto in March 2014 was jointly hosted by JSMCWM and KSWM. The aim of this conference is to provide an academic exchange platform for researchers in 3R and waste management research fields. The 1<sup>st</sup> conference was attended by about 400 members from 28 countries around the world, mainly from Asian countries. The 2<sup>nd</sup>

3RINCs will be held in Daejeon, Korea, on May 21-23, 2015. The secretariat has already started to call for abstracts on the following website: <http://www.3ri2015.org/>

I hope we can again share ideas and have discussions with as many members as possible at the next conference.

(Shin-ichi Sakai)



An excellent consumer pays attention to the amount of waste

### Survey of disaster waste and recycling

#### Field survey of stricken cars

After the 11 March 2011 Great East Japan Earthquake and tsunami, my office at the Graduate school of International Cultural Studies Tohoku University, Department of Interregional Environmental System, conducted research on the removal, appropriate treatment and recycling (rematerializing) of tsunami- and earthquake-stricken cars as they were hindering the transport of relief supplies, disaster waste treatment and infrastructure recovery work. Since the aforementioned cars were seriously damaged and some were contaminated by radiation, it was very difficult to identify the owners and transport them to temporary disposal sites. Therefore it is necessary to make guidelines for transportation, proper treatment and recycling of disaster-damaged vehicles.

#### Interview survey

Soon after the 11 March 2011 earthquake, we conducted an interview survey to the officers of local authorities in Miyagi Prefecture, and also conducted field surveys of temporary disaster waste storage sites and investigated appropriate methods of treating and recycling such waste. We found, during site visits in 2011-2012, that the initial response, disaster waste management plan and installation of incinerators were

smoothly conducted in Sendai City, with the support of other cities and academic societies, while some municipalities were facing difficulty in separating disaster waste at the initial stage, which was causing more problems, and others required a long time to gain the agreement of their neighbors regarding temporary locations to store their waste before treatment.

In addition to Miyagi Pref. we also visited Iwate and Fukushima prefectures. While municipalities took the initiative for disaster waste management in Miyagi Pref., the prefecture government took the initiative in Iwate pref. as many small municipalities had suffered extensive damage. In Fukushima Pref., the national government took the initiative due to difficulty posed by radiation contamination from the Fukushima-daichi nuclear power plant meltdowns.



Field survey of stricken cars and appropriate removal and disposal methods, Takajo City, Miyagi Pref., April 2011



Field visit of disaster waste, Watari-cho, Sept. 2011

#### Field survey of coastal area

We visited the coastal area of Sanriku of Iwate to Fukushima pref. from Feb. to April 2014. At the time of the survey, debris removal was already completed and rehabilitation had started in Iwate and Miyagi prefectures; however, debris removal had not yet finished in Fukushima due to the effect of the nuclear power plant accident. The radioactive waste was

packed into special flexible container bags and stored in temporary locations. Such waste is supposed to be incinerated to reduce its volume and the condensed radioactive waste is then supposed to be stored forever. Areas where radioactive waste removal activities had been delayed were still littered with disaster waste three years after the earthquake. For the revival of Fukushima, it is very clear that support will be needed over many generations.



*Temporary disaster waste storage  
(Tomioka-cho, Fukushima, Feb. 2014)*

### **Supporting disaster recovery education**

Our proposal for “supporting disaster recovery education” was selected by the Ministry of Education in 2011. We are conducting special classes for primary schools in Ishinomaki City, Miyagi Pref. that suffered the most human casualties in the prefecture. Through the board of education of Ishinomaki City, we conducted classes on the treatment and use of waste for 4<sup>th</sup> grade children at eight primary schools in Sep. 2012. In Japan, only 4<sup>th</sup> grade primary pupils learn about waste in their social studies classes; after which waste is not included in school curriculums (until tertiary level). In the special classes, we joined the children in thinking about issues not included in their text books such as the real meaning and the actual situation of reusing and recycling, and the global resource circulation of packaging waste and used cars.



*Special class at a primary school,  
Ishinomaki City, Miyagi Pref. Sep. 2012*

We also discussed appropriate disposal and recycling of disaster waste in Ishinomaki City – equivalent to roughly 100 years of municipal waste – and about future community development.

### **“Dust My Broom Project”**

We have established the “Dust My Broom Project” to keep supporting the area devastated by the 11 March 2011 tsunami. In this project, we conducted surveys and special lectures. We had conferences to disseminate information on this Project in June 2012 and 2014 in Sendai, Japan, and in November 2014 in Seoul, South Korea. We also are also holding the abovementioned special classes for primary school children in Ishinomaki City as an ongoing initiative. Another activity of the project was the dismantling and removal of a huge (11 m high) metal tank, which was washed some 300 m by the powerful tsunami from a seafood processing factory on the Ishinomaki coast. This project is introduced on Tohoku University’s website “Reconstruction Action 100+”. (<http://www.idrrr.tohoku.ac.jp/en/action100puls/>) .



*The tank of a seafood processing factory in Ishinomaki City,  
Sept. 2011*



*Dust My Broom Project presentation, Seoul, Korea Nov. 2014*

We have been conducting activities for the revival of the tsunami-devastated area from a “waste” perspective. To truly revive the area, it is essential to have both human-centric or “soft” development as well as “hard”

development of infrastructure. We pledge to continue to do our best to bring about such a revival.

(Yu, Jeongsoo)

**New Recycling Scheme  
of Small Electronic Appliances in Japan**

**1. Introduction**

“Act on Promotion of Recycling of Small Waste Electrical and Electronic Equipment (Small Electronic Appliances\* Recycling Law)” was put into effect in April 2014. It is based on the concept that profits on sales of useful metals recovered are spent for recycling of end-of-life small electronic appliances. It is a promotion orientated law to encourage stakeholders to cooperate with each other to recycle small electronic appliances adjusting the way of collection and recycling to their local conditions. It is particularly important that many municipalities take initiative to recover small electronic appliances, and that stakeholders work together to collect them effectively and region-wide for the continuing recycling.

\* small electronic appliances: most small electric and electronic appliances other than air-conditioners, refrigerators and freezers, TV sets, washing machines and washing dryers which are target of Home Electric Appliances Recycling Law.

**2. Participation of Municipalities**

Participation of many municipalities is badly needed in order to make the new scheme workable. A questionnaire by the Ministry of the Environment as of Apr. 1, 2014 on whether municipalities are participating in small electronic appliance collection/recycling found that 1,031 municipalities (59.2% of all municipalities) were “participating” or “preparing to participate”, compared to 635 municipalities (36.5%) that responded likewise in Apr. 1, 2013. This clearly illustrates the growth of small appliance recycling. [Table 1]

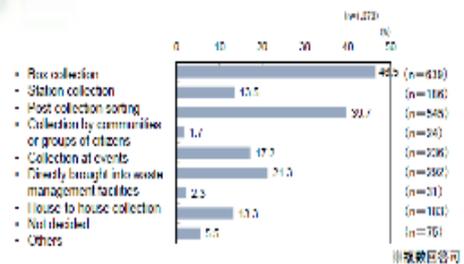
[Table - 1. Participation of Municipalities]

		Participating	Preparing to participate	Not decided but inclined to participate	Not decided but inclined not to participate	Will not participate	Total
May 2014 survey 1,741 effective answers	Municipalities	754	277	342	211	157	1,741
	Ratio of participation (%)	43.3%	15.9%	19.6%	12.1%	9.0%	100%
	Ratio on population level	64.0%	14.0%	14.3%	3.9%	3.0%	100%
May 2013 survey 1,742 effective answers	Municipalities	341	294	670	331	106	1,742
	Ratio of participation (%)	19.6%	16.9%	38.5%	19.0%	6.1%	100%
	Ratio on population level	26.1%	22.2%	35.3%	8.1%	2.9%	100%

It also shows that appliances are collected; 1) at the collection boxes permanently placed at public and commercial facilities (box type collection) and, 2) city workers pick up small appliances from waste collected as incombustibles or bulky waste (pick up type collection) [Figures 1, 2].



【Figure 1, Collection by Municipalities (1)】



【Figure 2, Collection by Municipalities (2)】

In order to encourage municipalities’ participation, the national government has been conducting demonstration projects to establish collection systems at municipalities without one since fiscal 2012. Some 400 municipalities have participated or are participating. At the same time the government is using the opportunity to disseminate information on effective and efficient collection.

**3. Authorization of Recycling Businesses**

A business operator who wants to recycle small electronic appliances can submit a recycling business plan to the national government. Upon being authorized, he can collect and recycle appliances in the planned area without having to obtain permission of waste management business from the local government. Thirty-eight businesses have been authorized by the government as of the end of Nov. 2014.

**4. Situation of Recycling**

According to surveys and reports by the authorized businesses, 13 thousand tons of appliances were collected by the businesses in fiscal 2013. While the Basic Policy of Small Electronic Appliances Recycling established at the time of enforcement of the law set a target of 140 thousand tons of small appliances to be recycled by fiscal 2015, the collection in fiscal 2013

was mostly in line with this projected target.

The amounts of resources recovered in fiscal 2013 were: 6,600 tons of iron, 500 tons of aluminum, 400 tons of copper, 494 kg of precious metals (including 46 kg of gold). This accounts for 700 million JPY. Five hundred tons of plastics were recycled and 3,000 tons of plastics were thermally recycled. Most of the thermally recycled plastics have a negative market value. How to reduce such plastics as well as intermediate treatment residues is a challenge that needs tackling in the future.

This is a brief review of the situation one year on from promulgation of the law. There are still many challenges on the road towards sustainable and stable recycling of small appliances in Japan. Some of the most important challenges will be to develop policies to enhance recycling of small electronic appliances including increasing the efficiency and quality of recycling by the authorized businesses and conducting educational activities to consumers in addition to inviting further participation of municipalities and increasing the number of appliances collected by each municipality. (Yuzo Yagai)

## 2<sup>nd</sup> 3RINCs 2015

Welcome to Daejeon, National Science City in Korea!

We are very pleased to announce the 2<sup>nd</sup> 3R International Scientific Conference on Material Cycles and Waste Management from May 21<sup>st</sup> to 23<sup>rd</sup>, 2015 in Daejeon, Korea.

Waste management is a great challenge worldwide, especially in the Asia-Pacific's megacities, which are currently experiencing substantial economic growth. From the perspective of the social structure and background of waste generation, it is our mission to promote proper waste management and spread the concept of the 3R principle (Reduce, Reuse, and Recycle) in our societies. It has become a common goal for the international community to minimize both raw material consumption and establish a society with a minimal environmental load by minimizing waste generation and encouraging cyclic use and proper waste treatment and disposal. The basic concept of 3R is to establish a Sound Material-Cycle Society and at the same time aim to preserve resources and control hazardous substances.

The aim of 3R International is to provide, and serve as

a platform for, academic activities that promote a 3R society. A wide range of academic fields, including physics, chemistry, engineering, medicine, policy science, economy, and law, need to serve as keystones that support 3R development. It is essential that we strengthen mutual ties and have interdisciplinary discussions across these areas.

We are holding the 2<sup>nd</sup> 3R International Conference on Material Cycles and Waste Management (3R International) as an open academic platform in Daejeon, Korea. We are calling for scientifically and academically based presentations from all stakeholders in the management of material cycles and waste management, including product designers, operators, suppliers, environmental authorities, and academics internationally, but especially in Asia and the Pacific Islands.



Please come and join the 2<sup>nd</sup> 3R conference and have a wonderful time sharing your knowledge and experience with people from academia, municipalities, and industry. Please refer to <http://www.3ri2015.org/> for the details.

(Prof. Jinwon Park, Chairman of organizing committee Prof. Jae-Hyuk Hyun and President of KSWM, Korea)

## Report of the International Session of the 25<sup>th</sup> Conference of JSMCWM

The 25<sup>th</sup> conference of JSMCWM, consisting of a Japan-South Korea international symposium and an International Hybrid Session, was held on September 15, 2014 at Hiroshima Institute of Technology, Hiroshima. The following day, September 16, there was a technical tour visiting some recycling facilities in Fukuyama City.

### 1. International Symposium

The theme of the lectures was “Plastic Recycling”. This theme had been decided upon after discussions

between the Japanese and South Korean societies. There were four speeches, two each from the Japanese and Korean societies. The respective chairpersons were Professor Shin-ichi Sakai, Kyoto University and Professor Jai-Young Lee, University of Seoul.

Lecture 1 was “Future of Plastic Recycling Adapted to the Characteristics of Plastics” by Professor Toshiaki Yoshioka, Tohoku University. The lecture was about the numerous plastic materials, current situation and future direction of plastic recycling in Japan. Though mechanical recycling is the priority method in Japan, chemical and thermal recycling is also conducted. Especially for plastic containers and packages, feedstock recycling is an important technology.

Lecture 2 was “Current status of waste plastic recycling management in South Korea” by Mrs. Hyein Heo of Korean Ministry of Environment. The lecture covered waste management in South Korea, the manufacture, disposal and treatment of plastics, and regulations about waste plastic and plastic recycling industries. Annually 6,000,000 tons of waste plastic is generated in South Korea, 66 % from industries and 34 % from households. Recycling rate is 57 % at industries, and 50 % at households. Efforts are currently underway in Korea to try to increase this recycling rate.

Lecture 3 was “Assessment of Recycling Systems for Waste Plastics focusing on Containers and Packaging” by Professor Yuichi Moriguchi, the University of Tokyo. Current disposal and flow of plastic containers and packages, main recycling methods and results of LCA were presented. For future direction, recycling methods must be chosen for each material or products based on evaluation of environmental burden, and technology and system must be developed to achieve these methods.

Lecture 4 was “Determination of recycling rates of waste plastics using material flow analysis in South Korea” by Professor Yong-Chul Jang, Chungnam National University. His lecture covered calculation and amendment of plastic recycling in South Korea based on research, flow analysis and international comparisons.

## 2. International Hybrid Session: Short Oral Presentations

The short oral presentations for the poster session were chaired by Dr. Atsushi Terazono (NIES). Each presenter was given 90 seconds to explain the poster using only one slide. There were 47 presentations, 31 were from KSWM and 12 from the Japanese side (including foreign students), and one from Sweden. By category, 22 were about 3R/waste management, nine were about recycling, ten were about thermal treatment, three were about treatment technology and landfilling and three were about hazardous waste.

Some presenters were not able to explain in 90 seconds, although most were able highlight the main points of their posters within the allotted time. The presentations enabled the participants to narrow down and more easily find the posters they were interested in.

After the short oral presentations, the poster presentations were held in another room. There were many participants from the general session, citizen groups and private companies. There was also a vote on the best posters, with three posters of the international session winning awards.

## 3. Technical Tour for KSWM

The technical tour for the international symposium participants was conducted on September 16, visiting the Bingo Eco Town including RDF production factory in Fukuyama City, Fukuyama Recycle Power-generation Corporation and FP Corporation.

In total 25 members participated, of them, 21 were from the South Korean side, including the chairman of KSWM. Lastly, we would like to express our appreciation of the kind cooperation of all the staff of the facilities for enabling our visit.



*The participants of technical tour*

(Misuzu Asari and Naofumi Sato)

## The 14<sup>th</sup> Expert Meeting on Solid Waste Management in Asia and Pacific Islands

An expert meeting on Solid Waste Management in Asia and Pacific Islands (SWAPI) has been held every year since 2005 in order to establish network of experts to promote sound waste management and 3R (Reduce, Reuse and Recycle) in Asia and Pacific Islands. It has been supported by the Ministry of the Environment of Japan with the Environment Research and Technology Development Fund.

The 14th SWAPI meeting is held with the participation of some 15 experts from Asia and Pacific, Feb. 23-24, 2015 in Tokyo, Japan. A presentation session of research projects on sound material cycle society under

the Environment Research and Technology Development Fund will be held in the afternoon of Feb. 23. A special session on mercury waste will be held on Feb. 24 with invited experts from Japan. No registration fee. We expect participation of many of you who are interested in waste management and 3R. International students studying in Japan from Asia and Pacific Islands are welcome.

**Date:** Feb. 23 (Mon) – 25 (Wed), 2015

**Venue:** Surugadai Memorial Hall, Chuo Univ.

3-11-5 Kandasurugadai, Chiyoda-ku, Tokyo 101-8324, Japan Tel: (03)3292-3111, Fax: (03)3219-6190

**Organizers:** Society of Solid Waste Management Experts in Asia and Pacific Islands (SWAPI)

Japan Society of Material Cycles and Waste Management

**Programs:** Expert Meeting, Special Session I (Management of Mercury Waste (tentative)), Special Session II (Status Quo and Challenges of Waste Management in Asia and Pacific (tentative), Technical Tour

**Secretariat:** Japan Environmental Sanitation Center (JESC)

Please refer to <http://www.jesc.or.jp/> for the details.

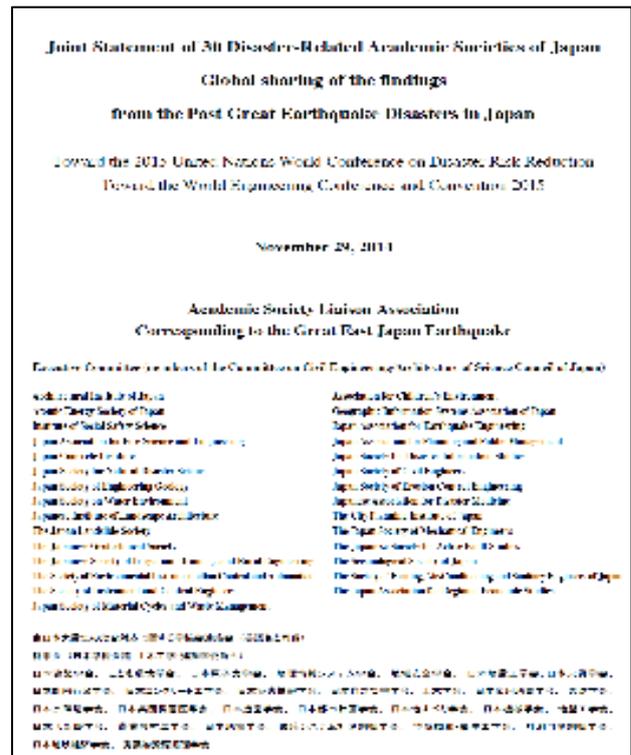
(Takashi Miyagawa)

**Joint Statement of 30 Disaster-Related Academic Societies of Japan: Global sharing of the findings from the Past Great Earthquake Disasters in Japan**

An Academic Forum “how the experiences of the Great East Japan Earthquake and the Great Hanshin-Awaji Earthquake should be internationally shared” was held by the Science Council of Japan, Nov. 29, 2014. Following five presentations by academic societies on the topic, “Joint Statement of 30 Disaster-Related Academic Societies of Japan: Global sharing of the findings from the Past Great Earthquake Disasters in Japan” was presented. It was developed by 30 disaster-related academic societies in Japan including JSMCWM toward the 2015 United Nations World Conference on Disaster Risk Reduction, and the World Engineering Conference and Convention 2015.

For the details, please refer to;

[http://jsmcwm.or.jp/wp-content/uploads/2014/12/Joint\\_Statement\\_of\\_30\\_Societies\\_20141129.pdf](http://jsmcwm.or.jp/wp-content/uploads/2014/12/Joint_Statement_of_30_Societies_20141129.pdf)



**Manual for analysis of radiation and radioactivity in wastes and related samples (2nd edition)**

Manual for analysis of radiation and radioactivity in wastes and related samples (2nd edition) was revised and published by the Japan Society of Material Cycles and Waste Management (JSMCWM) in July 2014. In the revision, description of the manual is aligned to the guidelines published by the Ministry of the Environment, and items about analysis of related media and procedures for quality control of testing, which are not described in the guidelines, are also enriched by adding the recent findings. Since investigation and analytical procedures for individual media are fully documented in the guidelines, the manual focuses on the important matters. The important results obtained by “Consignment of research for the analytical method of radiation and radioactivity in waste and related samples”, which was entrusted by JSMCWM from the ministry of environment during FY2011 to FY2013.

This manual was edited by many persons involved in waste disposal and analysis of radioactivity. The society wishes to thank the authors, reviewers and all concerned in the editing of the manual.

(Takashi Yamamoto)

**A new comprehensive technical book on the testing methods for waste-related materials**

The testing methods for hazardous waste (officially specially controlled waste), as stipulated by the Japanese Environment Ministry (Notification of the

Japanese Environment Agency No.13 of 1973, JLT13: *Verification methods for industrial wastes containing hazardous substances such as heavy metals*), was revised greatly in 2013. The Japan Society of Material Cycles and Waste Management (JSMCWM) took part in this revision. Following this revision JSMCWM now plans to publish a new comprehensive technical book on the testing methods for waste-related materials. The book is to contain information on the regulatory leaching test (JLT13), testing methods for contaminated soils, recycled materials and end-of life products such as waste electronic equipment. It is to include flowcharts, precise procedures and important technical issues that need to be taken into consideration to help chemical analysts or technicians in the analysis of waste-related materials. JSMCWM hopes this book will be a useful resource for a wide variety of sectors such as public administration, waste management (incineration, landfilling), construction (relating contaminated soil clean-up, usage of recycled materials), as well as analysts and technicians.

(Akiko Kida)

#### Upcoming events

#### The 2<sup>nd</sup> 3R International Scientific Conference on Material Cycles and Waste Management (3RINCs)

Date: 21 -23 May, 2015

Venue: Daejeon, Korea.

<http://www.3ri2015.org/>

#### The 14<sup>th</sup> Expert Meeting on Solid Waste Management in Asia and Pacific Islands (SWAPI)

Date: 23-25 Feb., 2015

Venue: Surugadai Memorial Hall, Chuo Univ.

<http://www.jesc.or.jp/>

#### Material Cycles and Waste Management Research Vol.25, No.5 (September, 2014)

##### Preface

Mission of Our Society Toward a Changing Society

*Takayuki Shimaoka*

##### Special Issues: Chemical Analysis of Waste-related Materials-various Leaching Tests Including JLT13

History of the Japanese Leaching Test (JLT13) and Recent 2013 Revisions

*Akiko Kida*

JSMCWM to Publish Testing Method and Procedures Manual for Wastes and Related Materials

*Hiromi Sakamoto*

Examination for Waste/Soil Leaching Test: Technical

Examination/Quality Assessment through Interlaboratory Comparison for Environmental Measurement Certification Business Operators in Hokkaido by Local Independent Administrative Agency Hokkaido Research Organization Industrial Research Institute  
*Keiichi Tomita and Motoomi Wakasugi*

Some Problems on Metal Analysis by ICP-AES and ICP-MS in the Amended Japanese Leaching Test (JLT13)  
*Eiji Fujimori*

Possible Solution for Problem in Organochlorine Compound Testing Method  
*Go Inoue*

Current Status and Topics Surrounding the Leaching Test: Official Methods and Trends in International Standardization  
*Hirofumi Sakanakura*

Technical Issues Relating to Leaching Test Methods for Soils

Current Members of JSMCWM as of Nov 30, 2014	
Regular Members	2,267
Fellow	37
Senior	30
Honorary member	2
Students	238
Public Institutions	86
Supporting companies	116
NPOs	5
Individual	14
Total	2,795

*Toru Inui and Takeshi Katsumi*

##### Technical Report

Application of a New Acidic Gas Treatment Chemical for the Treatment of Incinerator Flue Gas and Fly Ash  
*Kentaro Yoneyama, Takeshi Yamasaki, Mitsuhiro Mashiko and Kenji Kowata*

##### Conference Report

Report on the Korea-Japan Special Symposium and Session 2014 in Korea

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Readers can find the latest issue of the NEWSLETTER and recent back issues at the JSMCWM webpage noted above.<sup>8</sup>