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**Greeting from the president of JSMCWM**



I took over the role of president of JSMCWM in May 2014; becoming the 13<sup>th</sup> president almost a quarter century since this position was established. Over this time our target issues have broadened and become more complicated, and

social trends have changed significantly. A quarter century ago waste issues were only a small part of civil engineering, and few researchers, who mostly knew each other, were conducting research. Since then academic research into waste management issues has been growing and now involves various stakeholders: local authorities, manufacturers, consultants and citizens. However, since the turn of the century, our membership numbers have been decreasing; therefore we need to find a new direction for our activities.

When I became president, I authored an opinion piece. In it I discussed three subjects: 1. Direction of JSMCWM, 2. Human resources development, and 3. Financial review of JSMCWM. As for the first subject, the dissemination of information about the society has started, however it is still one directional and is not yet interactive. Compared to pure sciences, waste management is targeting social systems. As an academic society it is essential

that we fully grasp the needs of society, and take a leading role in society by responding and contributing to those needs. As for 2. Human resources development, when JSMCWM was first started, I was a young researcher and learned a great deal from leading scholars. JSMCWM does not need to be an aging society. Young researchers should be given posts to encourage their research and so that they can play a central role in JSMCWM for its sustainability. Human resources are our biggest asset. As for 3. Financial review, in the last few years JSMCWM has been suffering from financial problems. Contracted research activities have been contributing to income, however it is required to establish a healthy financial system by analyzing income and expenditure, and reviewing the various activities of JSMCWM.

The above were – and still are – my convictions when I became President of the society. I would like to add one more: “creating a new platform”. There are 10 research task groups in JSMCWM. The more specialized each groups becomes, the more independent they become of each other, and communication thus suffers proportionately. For example, it is important to think in an integrated manner, such as by integrating ideas of planning, recycling, incineration and landfilling for disaster waste issues. In reality such issues are hardly integrated. It seems that once an “organization” is created, it tends to become independent in Japan. This is the same even outside of our society; manufacturers, consultants, local authorities and so on all, have their own groups. They hold symposiums or seminars on similar themes and with similar speakers, and face similar difficulties in attracting participants. This is extremely wasteful. Therefore I would like to try increasing collaboration, such as by holding joint symposiums, and will intensively focus resources to this end.

(Toshihiko Matsuto)



3R is important, but don't forget about the principle of waste management.

**UNCRD special session on 3R Policy Issues in Asia and the Pacific and Needs for Scientific Cooperation at 3RINCs 2014)**

The UNCRD Special Session on *3R Policy Issues in Asia and the Pacific and Needs for Scientific Cooperation* was organized on 10 March 2014. The special session was facilitated by Prof. Shinichi Sakai of Kyoto University and Mr. Choudhury Rudra Charan (CRC) Mohanty, Environment Programme Coordinator, United Nations Centre for Regional Development (UNCRD).

A keynote was delivered by Prof. Hideshige Takada, an expert member of the Regional 3R Forum, on the issue of plastics in coastal and marine environments. The presentation covered an overview and scientific evidence of plastics in coastal and marine environments that the 3R Forum had also flagged as a critical concern considering growing volume of plastic wastes in coastal cities of Asia and the Pacific and their harmful impacts on coastal and marine ecosystems that provide important livelihood security to small island communities.

Plastic litter is a major pollution issue in Pacific coastal and marine environments. Plastics are a modern waste stream which is typically discharged from the land during runoff events. Plastics usually float and can travel long distances across oceans, and often accumulate in ocean gyres where they can become more numerous than zooplankton.

Plastics in the marine environment progressively break-down into micro-plastics making their management increasingly difficult. Plastics can have a range of impacts in the marine environment including smothering, entanglement, physical effects arising from plastic ingestion, and from the transfer of hydrophobic persistent organic pollutants (including PCBs, DDTs, and HCHs) from the plastic when it is

ingested. Research says more than 180 species of animals are known to have ingested plastics debris, including birds, fish, turtles and marine mammals. Birds with high levels of ingested plastic exhibit reduced body condition and increased contaminant load.

The transferred POPs may cause endocrine disruption and reproductive impacts in affected animals and birds. As a consequence, marine plastics should be classified as a hazardous waste and reducing the loss of plastics from the land is essential to manage this growing threat. This can be practically achieved by implementing 3R policies and programs in an effective way.

CRC Mohanty, UNCRD, introduced the history of the Regional 3R Forum in Asia and the Pacific, including the major outcomes of the Hanoi 3R Forum (2013) and Surabaya 3R Forum (2014). Apart from the Hanoi 3R Declaration, the key messages of Hanoi 3R Forum include – i) sustainable resource use will be instrumental for Asia to ensure socio-economic development in a world in which resources are more constrained and the absorptive capacity of ecosystems is decreasing rapidly; ii) the region is faced with a number of critical challenges when it comes to integration of resource efficiency in overall policy, planning, and development; iii) many Asia-Pacific countries have become net importers of raw materials (fossil fuels, metals, timber, and other natural resources), the rapidly increasing volume and changing characteristics of urban and industrial waste, rising population, increasing consumption and per capita waste generation have posed serious challenges for the sustainability of the region; iv) challenges for public policy to achieve a transition to a Green Economy enabled by resource efficiency and systems innovation, and change will not occur spontaneously but will require well designed policies; v) 3Rs, as recognized in CSD-18/19 and Rio+20, are powerful tools to enable resource efficiency in regional development; and vi) 3Rs and resource efficiency measures provide employment and green job opportunities.

Similarly, apart from the Surabaya 3R Declaration on the Promotion of Multilayer Partnerships and Collaboration for the Expansion of Reduce, Reuse and Recycle (3Rs) in Asia and the Pacific, the key messages and recommendations emerged from the Surabaya 3R Forum include – i) wastes and emissions are intrinsically linked with overall resource use; natural resources and ecological assets are being used at increasing rate enabling economic growth and fuelling unprecedented grow of cities; ii) the goal of improving resource efficiency and reducing the waste and emission intensity for Asia-Pacific economies has become a significant driver of government policies and programs; iii) establishing new forms of

cooperation and partnerships between governments, businesses, communities will underpin successful implementation of 3Rs; iv) 3Rs needs to be linked to other policy domains such as climate mitigation and adaptation, energy and water security, urban air pollution, and supply security of critical natural resources; v) one of the critical challenge is city level policies that mostly focus on end-of-pipe solutions rather than waste prevention and minimization; vi) eco-parks and eco-towns need to encompass a range of eco-initiatives including biodiversity and resource efficiency and promote 3Rs across the Asia-Pacific region; vii) triangular cooperation (Government-Scientific-Private) is key to develop viable and effective business models in 3Rs and waste management; and through the adoption of the Surabaya 3R Declaration, Asia-Pacific countries recognized the role of multilayer partnerships and cooperation for advancement and implementation of 3Rs in the region; viii) establishment of research, innovation and practice (RIP) parks in the region should be established and support Waste to Resource (W2R); and ix) sustainability and resiliency of cities, and thereby the role of 3Rs, are critically important in post-2015 development agenda.

UNCRD urged the importance of scientific cooperation in addressing the 33 goals of the Hanoi 3R Declaration (2013-2023).

Dr. Akio Takemoto, Director, Asia-Pacific Network for Global Change Research (APN) Secretariat addressed the role of APN in enhancing scientific capacity to promote region-wide 3R activities in the Asia-Pacific. APN is an inter-governmental network of 22 countries in the Asia-Pacific region with an objective of providing funding to foster global change research. Financial contributions come from four donor countries: Japan (MOEJ & Hyogo), USA, Republic of Korea, and New Zealand, and has an operating budget of more than 3 million US dollars. APN provides research funding support in four core areas – i) climate change and climate variability; ii) ecosystems, biodiversity, and land use; iii) changes in the atmospheric, terrestrial, and marine domain; and iv) resource utilization and pathways. As a proposal, APN presented three key areas for 3R cooperation such as – (i) promotion of research in various science agenda (i.e., low carbon, adaptation, biodiversity & ecosystem services) is key for expanding 3R initiatives throughout the Asia-Pacific region; (ii) provision of capacity building support for scientists through proposal development and research implementation ; and (iii) promotion of South-south and triangular cooperation through partnerships between APN and international/regional/national organizations.

A JICA representative presented the Environmental Policy of 3Rs and Implementation of 3Rs Pilot

Projects by Local Authorities in Sri Lanka under JICA Technical Corporation Project. Local authorities in Sri Lanka still face many issues such as high SWM costs, illegal dumping, low recycling rate, difficulties in landfill siting and poor technical capacity on landfill operation, despite the introduction of numerous acts, regulations and strategies related to SWM, and technical and financial support through donor-oriented projects. In close collaboration with the Ministry of Environment & Natural Resources, Ministry of Health, and Central Environment Authority (CEA), JICA is providing technical support to the National Solid Waste Management Support Centre (NSWMS) of Sri Lanka for the promotion of 3Rs. Currently, NSWMS's policy strategy focuses on – i) waste minimization; ii) resource recovery; iii) segregation of recyclables at all generation sources; iv) home composting of domestic waste by residents; v) centralized composting of commercial waste by local authorities; and vi) sanitary landfills. JICA pilot project covered a number of municipal and local authorities such as – Kuliyaipitiya (2010), Matara (2010), Badulla (2010), and Nawalapitiya (2011). Some of the pilot activities include - liquid waste management using coconut fibers in which both sludge and effluent were recycled; and construction of composting facilities and marketing of composts through public awareness raising by volunteers. Greater emphasis needs to be given to encouraging proper policy decisions, affordable and applicable technology for final disposal sites, proper financial facilitation of 3Rs, and awareness programs to overcome current and future issues.



(CRC Mohanty)

**NIES special session: Appropriate Leachate Management in Tropical Asia**

From the viewpoint of sustainable development, appropriate waste management is crucial for conserving the local and global environments. Improvement of waste management in developing countries must directly relate to preventing environmental pollution and expanding public health

services. Appropriate waste management contributes to reducing not only the emission of water/atmospheric pollutants and odors, but also to reducing GHGs emissions. Waste landfills are recognized as major GHG emission sources in developing countries. GHG emissions as landfill gases (LFG), which strictly means the direct emission from the waste landfill body, would be reduced by the introduction of new landfill management technology. While the boundary for project evaluation was limited to direct LFG emissions and projected duration, the project seems to be successfully implemented. But in order to evaluate the net effect of the social development as a result of project implementation, the long-term influence on global and regional environment through the introduction of the new landfill technology and management must be adequately assessed.

Behavior of leachate production from the landfill body is highly dependent on the landfilled waste, landfill operation and management, and climate situation. Tropical Asian cities would face problems regarding the quality and quantity of landfill leachate. Advanced water treatment technologies are neither fundamental nor concrete solutions to the huge amount of and highly variable quality of landfill leachate in this region. Sustainable leachate management that causes a lower impact from leachate on the natural environment over the entire landfill lifetime must meet the following conditions: easy operation, low maintenance, low cost and non-labor intensive, effective reduction of leachate impact, etc. The objective of this session was to share the current state of innovation and reverse engineering of leachate management technology in Tropical Asia.

The session opened with an introductory speech by Dr. Tomonori Ishigaki (NIES) who stressed the importance of the issue. Presentations related to studies of constructed wetlands by Mr. Yuta Fujii (Osaka University) and Dr. Yuka Ogata (NIES) evaluated the applicability of this technology for landfill leachate in Tropical Asia. Constructed wetlands were generally considered to be a technology that is operated with low cost and easy maintenance for managing landfill leachate. Mechanisms of pollutants removal by plants was considered to be a combination of migration of water in media and uptake by plants. It indicated that effective removal of pollutants from landfill leachate would be achieved by the appropriate operation of the constructed wetland. Effects of reduction of leachate volume by constructed wetlands were proposed, and it might be developed as the low cost and easy maintenance technology.

Recent developments in the microbiological treatment of landfill leachates were also discussed. Ms. Polngam Praewpimon (Kasetsart University) reported that the combination of the membrane bioreactor (MBR) and

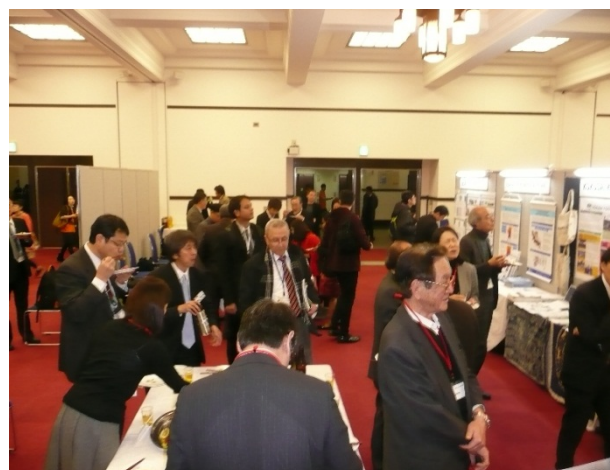
reverse osmosis (RO) processes could contribute to reducing aquatic pollution by landfill leachate. Dr. Fumitake Nishimura (Kyoto University) reported that the use of Anammox microbes should be highly feasible in the treatment of landfill leachate, which might include several potential inhibitors for microorganism. Low environmental impact will be achieved by a combination of the use of semiaerobic landfills and constructed wetlands as well as by using “LFG [landfill gas] to Energy” technology and advanced leachate treatments.

Finally, the presenters discussed the feasibility and sustainability of long-term landfill management coupled with leachate management in the context of technology application under the climate conditions of Tropical Asia. The utilization of local materials could be helpful in the rapid and inexpensive procurement of resources. Ease of operation and the use of reverse-engineered technology is the first prerequisite for the sustainable management of landfills; over-engineered technology should be avoided. Innovative technologies that are able to reduce maintenance operations are an attractive alternative to the current leachate management because they can contribute to reduced energy and labor inputs, as well as lower costs.



(Tomonori Ishigaki)

### At 3RINCs 2014





### Upcoming events

**The 25th Annual Conference of JSMCWM**  
**15-17, September 2014 in Hiroshima**  
<http://jsmcwm.or.jp/international/>

**Ecobalance 2014**  
**27-30, October 2014, Tsukuba, Japan**  
<http://lcaj.sntt.or.jp/EcoBalance2014/>

**International Conference of Asian Environmental**  
**Chemistry 2014 (ICAEC)**  
**24-26, November, 2014, Bangkok, Thailand**  
<http://www.primo-pco.com/icaec2014/index.html>

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#### Current Members of JSMCWM as of July 31, 2014

Regular Members	2,248
Fellow	37
Senior	30
Honorary member	2
Students	239
Public Institutions	86
Supporting companies	115
NPOs	5
Individual	13
<b>Total</b>	<b>2,775</b>

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