

**Greetings from the Chairman of the International Relations Committee**



In May 2010, the executive board of JSMCWM was re-organized and I was handed the position of Chairman of the International Relations Committee, previously held by Prof. Yasushi Matsufuji. Under the new leadership of Prof.

Shin-ichi Sakai, President of JSMCWM, I will do my best to maintain past functions of the Society and to meet newly arising needs.

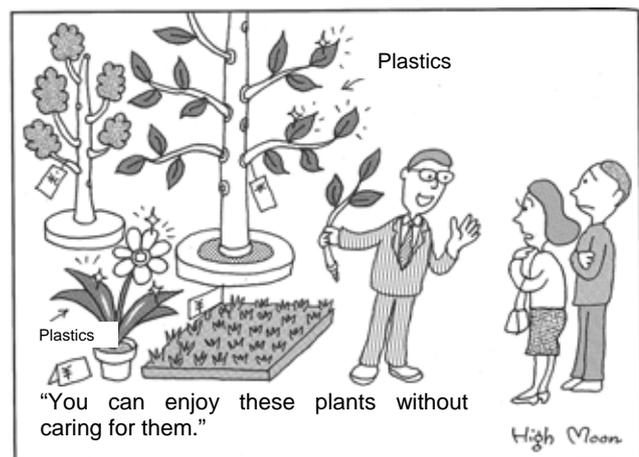
The main responsibility of the International Relations Committee is to strengthen collaboration with experts internationally to cope with solid waste problems, which are becoming more complicated. As the most important task, the committee edits this newsletter as a tool to disseminate information of JSMCWM's research activities, international cooperation projects, Japan's lessons learned, as well as current topics. In order that this newsletter can provide readers with more interesting and useful information, your feedback and comments are most welcome.

As a platform to encourage information exchange, the International Relations Committee is working with the Society of Solid Waste Management Experts in Asia and Pacific Islands (SWAPI) to hold international meetings in Asian countries. In September 2010, the 7th SWAPI meeting was successfully held in Taipei. It was a very impressive meeting, full of hospitality rendered by local experts. In the next meeting, the 8th SWAPI, is scheduled for February 2011 in Tokyo, and the International Relations Committee will do its best to make it a very worthwhile event.

On its own, the JSMCWM is limited in its ability to

tackle all the various solid waste problems in the world, given the diversity of the challenges which are sometimes beyond the expertise of Japanese specialists. However, with cooperation among experts around the world, we can achieve great things. The International Relations Committee hopes to contribute by serving as a bridge between Japanese and other stakeholders around the world who are motivated to mitigate environmental problems.

(Hidetoshi Kitawaki)



Author: Can we call this "Green business"?

**Eco-towns of Yesterday and Today**

An eco-town is an area which aims for "zero emission"—a term meaning that zero waste is generated through the utilization of all of an industry's waste as raw material in another process—by either recycling waste generated from industrial activity or using it as thermal energy. The eco-town system was established in 1997 to promote this "zero emission vision" as the basis to support progressive, environmentally-conscious town planning, and uphold the concept as a central means to regional development. At present, eco-town projects have been approved in 26 regions nationwide. (Figure 1)

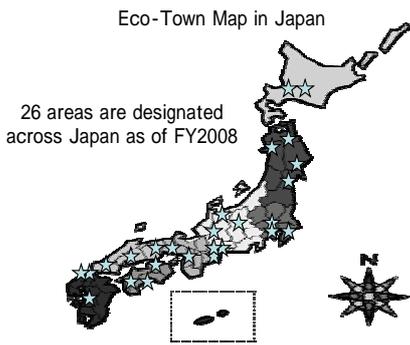


Figure 1

More specifically, plans are formulated by prefecture and city governments or the 12 major cities of Japan (in some cases they are formulated by villages and towns, or even general secretariats, and then endorsed by the prefecture or city) according to the characteristics of each region. If these plans are jointly approved by the Ministry of Environment and Ministry of Economy, Trade and Industry, then based on those plans, local public bodies and private organizations will undertake comprehensive, multi-faceted efforts to implement the projects. (Figure 2) Prefecture and city governments seek to (1) support efforts to increase the understanding of local residents and others on the importance of “closed-loop” businesses, such as recycling, to form environmentally-conscious regional communities, (2) consider the views of stakeholders, such as local residents, concerned groups, and local industries, and (3) create and foster closed-loop businesses by supporting such efforts as the stable procurement of raw materials and cultivating markets for goods produced using those facilities.

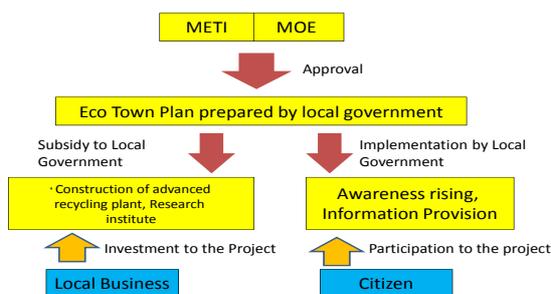


Figure 2

In 2008, ten years after eco-towns were created; research was carried out to lay the groundwork for investigating the role of eco-towns in a sustainable area.

The research showed highly efficient results that, of the approximately 2.2 million tons of recyclable materials going into Japan's eco-towns, about 91% was used to produce goods or raw materials, or utilized as energy. Looking at individual regions, about 59% of the recyclable materials procured by eco-town facilities procured those materials from within the same eco-town plan, and about 40% of goods or energy supplied by the eco-town facilities were procured as products by others within the same eco-town plan; this shows that eco-towns serve a central role in regional “closed-loop” resource circulation. Furthermore, when reduction of the environmental footprint for all eco-towns in the country was calculated, data showed nearly 1 million tons from final disposal and approximately 420,000 tons of CO2 emissions were reduced.

In the years ahead, new efforts will be made to advance the scope from the current regional level, closed-loop eco-towns, to a national level network. One example is the creation of a database that will allow users to view the matching of eco-town materials and products. It is expected that such efforts will advance raw material supply and the sale of recycled goods even beyond current levels and deepen the linkage and communication between the various eco-towns.

(Takashi Miyagawa)

### Issues concerning Fly-Ash Metal Recovery Technology and Future Outlook

Omuta City was formerly a location for Mitsui-Miike Mining coal resources, and flourished with the coal-chemistry industry. However, the conventional coal-related industry waned as the energy sector evolved, and Omuta City subsequently turned its efforts toward enticing enterprises to its environmental recycling industry--especially Refuse Derived Fuel (RDF) power plants--and its industrial

"Technology Park". In 1999, under efforts of the Ministry of Economy, Trade and Industry (METI) to prove fly-ash detoxification-related technologies, Miike Smelting Co., Ltd. began to research the recycling of zinc containing about 8% molten fly-ash generated from the waste disposal facility. In 2002, results showed that minehead reduction technology was possible, and disposal using the half-shaft Mitsui Furnace (hereafter MF-furnace) began. Annual disposal capacity was initially 5,000t, but with the current national disposal amount of about 850,000t of molten fly-ash, nearly half of that, about 40,000 tons, can now be processed.

Flowsheet of MF Process

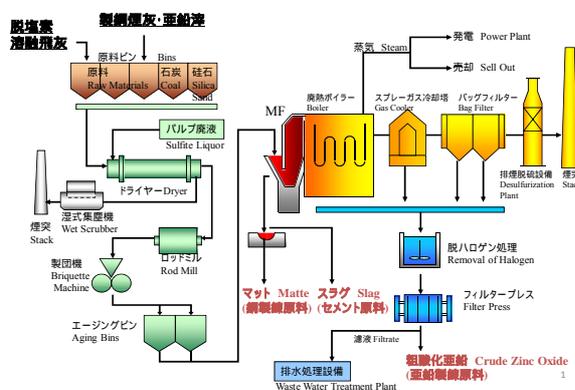


Figure: MF Process



Figure: Slag Notch

Miike Smelting uses the disposal method--the MF process--shown in the diagram below, where molten fly-ash is desalinated (washed), dried, and mixed with raw materials (such as coal, etc.), and then pretreated by the process shown, feeding it into the 1300 MF-furnace to reduce and vaporize the zinc and lead

and recover crude zinc oxide (65% zinc, 10% lead). Also, the molten material is extracted into the settler at the base of the furnace to separate matte and slag.

Like the crude zinc oxide, the concentrated (30%) iron slag and copper matte are used as intermediary materials, shipped domestically and overseas. In addition, the exhaust gas and effluent produced in the disposal process are treated at the respective regulatory standards.

There is little expectation for any great leaps in disposal capability using the current Miike Smelting equipment, but present metal recycling conditions, as shown below, point toward the boost needed to recover base metals such as copper and zinc, which has become a nationwide issue.

Compared to the lead recycling rate (about 70%), the recycling rate for copper, zinc and the like is still at a low level at nearly 20%.

The amount of molten fly-ash recycled will remain around 85,000 tons per year of the (estimated) 300,000t/yr produced nationally.

(Yasushi Matsufuji)

### The 8<sup>th</sup> Expert Meeting on Solid Waste Management in Asia and Pacific Islands

In Asia-Pacific region, drastically increasing waste has become a serious concern along with resource circulation.

High-level, proper waste management is imperative.

The Expert Meeting on Solid Waste Management in Asia and Pacific Island has been held every year since 2005 for formation of networks between experts to facilitate proper waste management and 3R in Asia and Pacific Islands region.

- Date: Feb 21 (Mon) – Feb 23 (Wed), 2011
- Venue: Toshi Center Hotel (2-4-1, Hirakawa-cho, Chiyoda-ku Tokyo)
- Organizer: Society of Solid Waste Management Experts in Asia and Pacific Islands (SWAPI)
- Supported-by Japan Society of Material Cycles and

Waste Management (JSMCWM) & Ministry of the Environment, Japan (Promotion Program for Scientific Research about establishing a Sound Material-Cycle society)

■Participants: Experts of Solid Waste Management from Asia-Pacific region

■Program (Tentative)

Expert Meeting, International Advisory Board, Technical Visit

Open Seminar regarding

- waste statistics; data collection and processing
- hazardous waste management
- biomass waste utilization
- solid waste disposal
- waste to energy
- CDM in the waste sector
- appropriate technology for municipal waste

■Deadline: Abstract (1 page): November 15, 2010 and Full paper (max. 4 pages): January 15, 2011. Both papers should be submitted to the secretariat by e-mail (see below).

■Secretariat: Japan Environmental Sanitation Center  
[kokusai@jesc.or.jp](mailto:kokusai@jesc.or.jp)  
10-6 Yotsuyakami-Cho, Kawasaki-Ku, Kawasaki-City,  
210-0828 JAPAN

(Takashi Miyagawa)

**The Study for the Development of an Integrated Solution related to Industrial Waste Management in the Industrial Pole of Manaus in Brazil**

"The Study for the Development of an Integrated Solution related to Industrial Waste Management in the Industrial Pole of Manaus" was a Japan International Coordination Agency (JICA) Development Study conducted from February 2009 to August 2010.

The Government of Brazil established the Manaus Free Trade Zone (hereafter, MFZ) to realize sustainable development without needlessly exploiting the valuable natural resources of the Amazon. The chief platform for the MFZ is the Industrial Pole of Manaus (hereafter, PIM), which directly employs 116,000 people and another half a million people indirectly. The population of the City of Manaus, the capital of Amazonas State where PIM is located, was

310,000 in 1970 immediately after the (1967) establishment of MFZ, but that swelled six-fold to 1.71 million by 2008. In other words, the massive increase in population was redirected from the Amazon forest and almost entirely absorbed by PIM. As such, there has been only minimal reduction of the forested area in Amazonas State, maintaining an extremely high ratio of 97.9% of the total State area. However, despite this contribution of maintaining the Amazon forest, degradation of the local environment due to PIM activities has been reported. The study clarified the current conditions and related issues concerning industrial waste management (IWM) in PIM and the surrounding area, and a Master Plan (M/P) was formulated with a target year of 2015 aiming to resolve those issues.

During the study, the Brazilian counterpart organizations led the formulation of the M/P and a policy was held to reflect the opinion of as many stakeholders as possible in order to make the plan a practicable one. To do so, 26 weekly meetings were held over the course of the study, with a sum total of 646 concerned parties participating. In addition, 7 workshop and seminar events were held, attended by a sum total of 665 stakeholders. In this way, at the initiative of the Brazilian counterpart, the study's resulting M/P was formulated on the underlying consensus of stakeholders.

During the study, in-depth interview surveys were conducted at 187 of the 440 PIM factories in order to investigate the current conditions of on-site IWM, at factories where industrial waste (IW) is generated. By the same token, the conditions of IWM after waste is discharged from the factories—off-site IWM—was investigated through face-to-face surveys of 90 waste service companies (WSCs) which were selected through information from government and factory sources. (See figure below.) As a result, the following issues were clarified.

1. In October 2002, factories were obligated to submit a waste inventory (WI) of their industrial wastes, but only one-fourth had complied. Furthermore, of the WI submitted, hardly any of the data was aggregated or analyzed by the responsible government organization.

- There are serious vulnerabilities in the administrative system for IWM. Although there is a license management system for WSCs, it was unclear what kind of activities many of them are conducting. Therefore, regulation for unlicensed WSCs and improper disposal by WSCs is insufficient.
- None of the final disposal sites that serve as final destination for the majority of IW generated by PIM possess an operation license. The Manaus City landfill, where a large amount of IW is disposed, has set its disposal fee at "zero", i.e. it is free-of-charge.

Under such conditions, with fierce competition amongst WSCs and prohibitively low disposal costs, the business environment for IW services does not encourage appropriate treatment and disposal. The M/P, then, was formulated with the following policies in order to improve these conditions and establish an appropriate treatment and disposal system.

- First, the government will strengthen the IWM system in order to enforce related rules and regulations. To do so, related government organizations are strengthened and they develop essential systems and tools to conduct appropriate management. With an established system being maintained, the administration will enforce regulations for IWM.
- Through the enforcement of regulation and adherence by waste generators (factories) and WSCs, inappropriate disposal will taper off naturally. Moreover, the administration will promote and offer instruction on appropriate disposal and 3R techniques to waste dischargers and WSCs, cooperating closely with both and establishing an IWM system.

Based on the above policies of the M/P, the counterpart in the study collaborated with the Japanese team to develop two management systems along with their respective databases: (i) a waste inventory database (WI\_DB), and (ii) a waste service company database (WSC\_DB).

The former database, when used according to the WI\_DB system, makes it possible for factories to produce a waste inventory and not only get a clear picture of the amount and types of waste generated,

but also map out the situation of factory IWM as on-site and off-site industrial waste streams, as shown in the figure below. It is also possible for the government to easily grasp IWM conditions in any industrial district, or even the city, state or national level, by using the WI\_DB system to aggregate the waste inventory data which factories input, and mapping each of those on-site/off-site waste streams.

The latter database separates waste service companies (WSCs), which were previously lumped in with other business categories, into its own licensing management system. Using this system allows the administration to centrally manage WSCs, and for factories that outsource their wastes to those companies to access reliable company data contained in the WSC\_DB and select a company to entrust their waste treatment and disposal.

Measures to strengthen each government administration, as recommended in the M/P, are already being carried out. This outcome is primarily in thanks to the understanding and cooperative relationship of the various organizations dealing with IWM that participated in the weekly meetings to formulate the M/P.

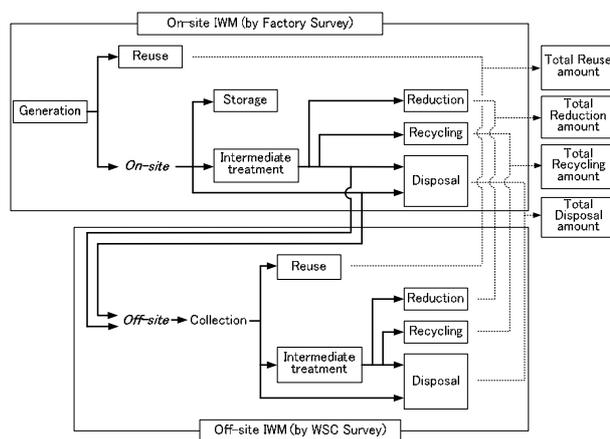


Figure: Waste Stream of On-site/Off-site IWM

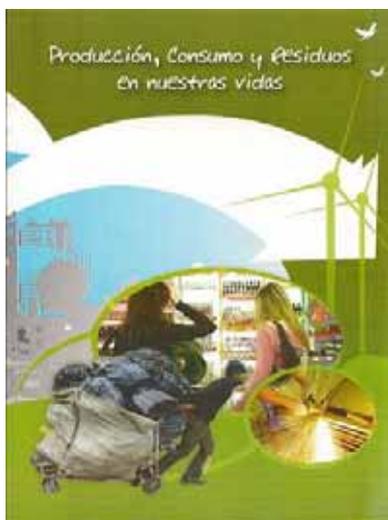
(Susumu Shimura)

**Supplementary textbook for solid waste education at secondly school**

As soon as I arrived in Buenos Aires last October to work at the NGO, “Generación Par”, as a JICA Senior

Volunteer, my project counterpart, Mr. Juan José Galeano, suggested we try making a supplementary textbook for school children and carry out a model lesson at a several schools. Eventually, we completed the first book for solid waste education at secondly school in Argentina shown below, titled, "Production, Consumption and Waste in our Lives", (Spanish title: *Producción, consumo y residuos en nuestras vidas*).

However, for a solid waste education expert like myself promoting the 3Rs, I don't place much importance on the the completion of this book. Plus, a project such as this is always difficult to assess as output. In this case, the important thing is the process one takes in reaching the result.



(The book is available to print and read at the following

URL: <http://www.generacionpar.org.ar/manual.php>)

For this book I set out by making a rough draft, primarily in English with a smattering of kids' Spanish, and pasted in some pictures and illustrations. However, as a single rule, the counterpart, Juan, had insisted we thoroughly discuss the book with as many people as possible who are involved in environmental education in Argentina.

In honoring that rule, I admit I felt slightly melancholy that the resulting product bore little resemblance to the first draft I had made. Also, as promised, countless meetings had been held. In particular, the staff of—Environmental Information Communication Center of the Buenos Aires City intently reviewed each page, drinking many cups of *yerba mate* tea and discussing the book until it exceeded all expectations.



Figure: The final meeting of the working team.

When creating this book, Juan and I both noted that we'd gotten a direct sense of the solid waste management problems of Buenos Aires. Therefore, we decided to try the work of the so-called "Cartoneros", the neighbourhoods' recyclable collectors. Through that experience, we were convinced that the effort of these people is essential to solving the waste problems in Buenos Aires. We, therefore, poured a great deal of appreciation toward "Cartoneros" in the book.

In the future, we are planning to use the book for model lessons at 10 model schools around the country, so we've also made an accompanying teacher's manual. There is still a formidable amount of work ahead of us as we deal with each model school to negotiate how this will be carried out. However, as long as there is the same receptive rapport I discovered amongst those involved in environmental education at the Ministry of Environment, Ministry of Education, City of Buenos Aires and NGOs in making this book, I am confident that the road ahead will be all right.

(Hisakazu HIRAI)

#### International events information

November 4-6, 2010

**JSMCWM21th Annual Conference**

<http://jsmcwm.or.jp/international/event.html>

November 8-11, 2010

**IWWG International Waste Working Group**

**3rd International Symposium**

**on Energy from Biomass and Waste**

<http://www.venicesymposium.it/>

31 May to 2 June 2011

The ISWA Conference "Solid Waste Treatment and Disposal: Leading Edge Technologies" will run simultaneously with the WasteTech trade fair in Moscow.

[http://2011.sibico.com/files/iswa\\_nl\\_en.pdf](http://2011.sibico.com/files/iswa_nl_en.pdf)

**Material Cycles and Waste Management Research  
Vol. 21, No.2 (March, 2010)**

Preface

*Japan Initiative for Sustainable Society*

Hiroshi Komiyama

Special Issues: Development of End-of-life Vehicle Recycling

*Review of the Automobile Recycling Act and Future Directions*

Yasuharu Ueda

*The Current Scenario of ELV Recycling Systems in Asia: Focus on Operation Status in Korea and Trend Analysis in China*

Jeong-soo Yu

*Global Resources Cycles in End-of-life Vehicle Trade*

Masaaki Fuse

*Recycling and Chemical Management of End-of-life Vehicles*

Shin-ichi Sakai

*A Real-world Example of EPR Policies: Recycling of Motorcycle in Japan – How the Producers' Voluntary Approach Achieves EPR Goals and What Are Issues to Be Considered?*

Atsushi Yoneyama and Tsunako Matsumoto

Short Report

*Promotion of Recycling and its Effects on Global Warming*

Akito Toi

Activity Reports

*Report on the Seminar for Citizens and Students in 2009*

**Material Cycles and Waste Management Research  
Vol. 21, No.3 (May, 2010)**

Preface

*How to Make the Narrative of Waste?*

Kimiko Ozawa

Special Issues: Garment and Waste- Fashion and Environment

*The Question of Clothing Disposal: Is Recycling the Answer?*

Kayo Iwaji

*The Current Status and Issues concerning Consumption, Disposal and Circulation of Clothing*

Teruo Kimura

*Current Status of LCA for Textiles and Other Related Issues*

Asako Takada and Kiyotaka Tahara

*A New Step forward in Clothing Recycling*

Masayoshi Tokoro

*Sustainable Fashion in the US*

Megumi Tanaka

*The Important Keywords of Sustainable Cloth Recycling System: Loose Segregation and Export*

Naoki Asai

*Financing the Building of Photovoltaic Systems with Proceeds from Second-hand Clothes Shops*

Kinuyo Shindo

*Current Status of Textile Waste Recycling in Korea*

Sang-Yul Kim

*A Designer Reveals the Harmonious Coexistence between Ecology and Fashion: An Interview with Mr. Unsetu of UNSETSU INTERNATIONAL*

Akiko Minami

Activity Reports

*Eco-Hiiki (Pro-environmental) Activity of CATALOGHOUSE Co., Ltd.*

Takahisa MATSuo

Symposium Reports

*Report on the 2009 Symposium of JSMCWM: Current Status of Waste Treatment Project Geared toward Low-Carbon Societies*

**Journal of the Japan Society of  
Material Cycles and Waste Management  
Vol. 21, No.2 (March, 2010)**

***Study on Moisture Movement in Solid Waste  
Landfill with Cover Soil Layers***

Takayuki Shimokawa, Teppei Komiya, Naoko komiya,  
Kentaro Miyawaki and Masataka Hanashima

***Local Governmental Environmental Load Reduction  
by Program for Certification of Recycled-Material  
Products: A Case Study in Fukuoka Prefecture***

Suehiro Otoma, Nozomu Kuba and Tohru Futawatari

***Evaluation of Long-term Stability of Metal-chelate  
Compounds in Treated Melting Furnace Fly Ash by  
Using Excavated Samples from Landfill***

Hiroko Tsujimoto, Ning Wang, Hirofumi Sakanakura,  
and Masahiro Osako

***Properties and Categories of Non-biodegradable  
Waste Items found in Beach Litter***

Tamon Okano, Motoki Yasumoto and Shigeki Andou

***Policies and Measures to Promote of Waste Biomass  
Utilization***

Yoshio Nakura and Hisashi Kudo

***Current Status of Biomass Energy Utilization***

Takahiro Miura

***Significance and Future Perspective of Biomass  
Utilization***

Kinya Sakanishi

***Challenges for the Efficient Utilization of Biomass  
Energy***

Mikako Kokitsu and Jun Tsubota

***Current State of Waste Biomass Utilization and  
Regional Technology Research in Local  
Governments***

Kazuo Naka

**Journal of the Japan Society of  
Material Cycles and Waste Management  
Vol. 21, No.3 (May, 2010)**

***Low-temperature Methane Fermentation of Swine  
Excrement with Unpowered Mixing in Once-a-day  
Feeding Condition***

Shine Abe, Taira Hidaka and Hiroshi Tsuno

***Quality Control Index for Recycled Paraffin Used as***

***a Modifier Agent in Asphalt***

Fumihiro Miramura, Yutaka Igarashi, Toyoshi  
Yonemura, Katsuhiko Arai, Syuichi Tanoue and  
Hideo Matihara

***Study on Nonwoven Fabric Made from Waste  
FRP-derived Glass Fibers***

Takashi Hirose, Tomohiro Ichikawa, Youichi Iwasaki,  
Daiji Ogasawara, Kazushi Saito, Hiromi Tsushima  
and Katsuji Shibata

***Temporal Interpretation of Environmental Pollution  
around Landfill Site Using Core of Bottom  
Sediments from Pond***

Kazuo Kamura, Maki Ishiwata, Nobuharu Kihou and  
Masanori Kurihara

Current Members of JSMCWM  
as of August 31, 2010  
(The figures in parenthesis indicate the difference  
from July, 2010)

Regular Members	2,609	(3)
Students	230	(0)
Non-Japanese Member	88	(2)
Public Institutions	93	(-1)
Supporting Members	120	(-1)
Individuals of NPOs	6	(0)
Total	3,146	(3)

**NEWSLETTER NO.74, October, 2010**

Published by: Prof. Shin-ichi Sakai, President,  
Japan Society of Material Cycle and Waste Management  
Edited by: Prof. Hidetoshi Kitawaki, Chairman,  
International Relations Committee  
Edited by: Tsunako Matsumoto, Yuko Aoki  
Translation and Design: Kokusai Kogyo co. ltd.

Buzen-ya Bldg. Shiba 5-1-9, Minato-Ku,  
Tokyo 108-0014, Japan  
Phone: (+81) 3-3769-5099  
Fax: (+81) 3-3769-1492  
<http://jsmcwm.or.jp/international/>  
e-mail: international@jsmcwm.or.jp

Readers can find the latest issue of the NEWSLETTER and  
recent back issues at the JSMCWM Homepage noted above.