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# NEWSLETTER

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**THE JAPAN SOCIETY OF WASTE MANAGEMENT EXPERTS**

## Dear Waste Management Experts

In the beginning of the full-bloom cherry-blossom season, a cold front from the continent sometimes runs through the Japan islands. The wind also occasionally carries yellow sands covering most of the islands.

Health problems caused by airborne asbestos become a public concern once again in Japan, and a series of regulations, including the Air Pollution Control Law and the Waste Management Law, was strengthened in 2005 and 2006. A general outline of the asbestos problem these days is reported in this issue.

Thus far, articles on Japan's ODA on Solid Waste management have only included JICA projects. In this issue, for the first time, we introduce an improvement project loaned by JBIC (Japan Bank for International Cooperation). A former expert of JBIC's Environmental Improvement Project for Hai Phong City, Republic of Vietnam, gives a review.

Door-to-door collection is not popular as a municipal solid waste collection system in Japan. Despite that, the City of Chofu, one of the cities on the outskirts of Tokyo, has begun a unique door-to-door collection system instead of the existing container collection system to promote waste reduction and recyclables recovery. This success story is reported in the following pages.

(Hideo Azuma)

## Asbestos Problems in Japan Today

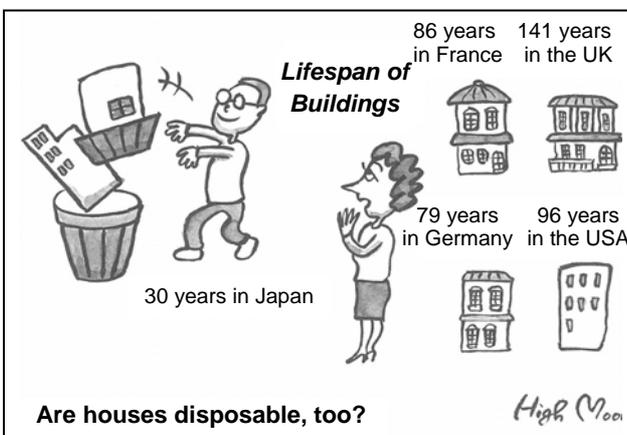
Following the Second World War, a large amount of asbestos was imported in Japan and had been used in a wide variety of applications, especially as building materials. The use of asbestos went to restriction in 1972, after the WHO indicated its hazardous effects and a ban of asbestos spraying was later seen in 1975. Special regulations on airborne asbestos were first implemented in amendments to the Air Pollution Control Law in 1989 and the Waste Disposal and Public Cleansing Law in 1991.

Since the effects of asbestos exposure - known as the "silent time bomb" - can appear some 30 years after initial inhalation, such as mesothelioma and lung cancer, it has been projected that as time goes on the health hazards from asbestos will become more apparent. Hence, in June, 2005, the asbestos problem once again entered the social spotlight as a big issue when newspaper coverage on health hazards included residents living in the surrounding area of an asbestos plant in Amagasaki City, Hyogo Prefecture.

This consequently led to new legislation pertaining to asbestos in 2006, the "Health Hazards Victim Relief Law". Simultaneously, in order to prevent further victims, a string of laws were also amended or strengthened, such as the Occupational Health and Safety Law, Air Pollution Control Law, Building Standards Law and others. As a result, a total ban on asbestos use was implemented expanding coverage of asbestos waste to target content in excess of 1% down to 0.1%.

In this way, amidst heightened social consciousness, the number of asbestos removal work from existing structures has been on the rise, and accordingly, the amount of asbestos designated for disposal also continues to swell. It is estimated that over 40 million tons of asbestos-containing material (ACM) is used in existing buildings. This means that, as they are torn down, over 4 million tons of asbestos waste will be produced every year, with this number expected to peak as the year 2020 approaches.

In the Waste Management Law, waste that contains highly-airborne asbestos is categorized as specially-controlled waste and the criteria provisions state that it must be double-wrapped in plastic bags or otherwise solidified in concrete. ACM not considered



Comments by High Moon: In this way, construction/demolition wastes are on the rise. Illustrated by Prof. Hiroshi Takatsuki (Taka-tsuki literally means "High Moon").

specially-controlled waste, such as asbestos cement slate, should not be pulverized and divided out with other wastes during its transportation as well. Nevertheless, the large majority of ACM waste discharged has been disposed of in landfills without the use of harmless disposal techniques.

The prevention of asbestos dispersal during the transportation of ACM and the establishment of safety disposal systems are becoming urgent environmental issues. Then the Ministry of Environment revised the Waste Management and Public Cleansing Law in February, 2006, strengthening standards for intermediary disposal by placing a general ban on crushing during this stage, along with requiring a description of asbestos-containing material content added to the industrial waste manifest which was previously obligated. In addition, to promote the development of appropriate asbestos defusing facility such as melting treatment, accrediting system of them by the Environment Minister is being created.

(Hideo Azuma)

**Japan's ODA on Solid Waste Management:  
JBIC STUDY for Hai Phong City  
Environmental Improvement Project (I)  
in the Socialist Republic of Vietnam**

Official Development Assistance (ODA) by the Japanese government is broadly divided into bilateral aid (given directly to developing countries) and multilateral aid, assistance (provided through international organizations). Bilateral aid consists of grants (grant aid and technical cooperation) and concessional loans, etc.. Of these, the former is provided by JICA (Japan International Cooperation Agency) and JBIC (Japan Bank for International Cooperation) provides the latter.

In Vietnam, especially in urban areas, the environmental load is increasing in congruence with population growth and changes in lifestyle due to urbanization and rapid industrialization. Environmental improvement in urban areas has therefore become a significant issue. Under these circumstances, JBIC supports three environmental improvement projects, as ODA, in Hanoi City, Ho Chi Minh City and Hai Phong City.

Hai Phong City, located on the coastline of northern Vietnam (about 100 kilometers east of the capital, Hanoi) is Vietnam's third-largest city, with a population of 1.8 million people in an area of about 1,500 square kilometers. It has also developed as a major international seaport.

As for municipal solid waste, the amount of waste generated in Hai Phong City is increasing according to rising living standards and population concentration in the process of urbanization and rapid industrialization. Meanwhile, the collection rate still remains at 75% and therefore the state of urban sanitation has worsened.

Hazardous wastes are collected together with other waste using handcarts and collection vehicles. The collected waste is then disposed of at two landfill sites, but environmental pollution from bad odors and polluted water has occurred due to the lack of cover soil and leachate treatment facilities. The immediate construction of a new landfill is required because the cumulative amount of disposed waste has already surpassed the designed landfill capacity. Under these circumstances, JBIC gave support of the Hai Phong City Environmental Improvement Project (I) in 2004FY in order to attain the targets of improvement of the urban environment in Hai Phong City.

The implementation of this project would result in an increase in operating and maintenance costs, and therefore became necessary that measures for administrative improvement of Hai Phong Urban Environmental Company (hereinafter, URENCO) be implemented via greater management efficiency and cost recovery. Based on the above standpoint, JBIC agreed with Hai Phong Peoples' Committee (hereinafter referred to as HPPC) and URENCO at the time of the appraisal that the Yen loan would be launched for this project as a sub-project once improvements in administrative efficiency and cost recovery of URENCO could be affirmed. In order to achieve the above administrative improvement of URENCO, this JBIC STUDY was launched in October 12, 2005, to continue until May 31, 2006.

During this study, Fukuoka City Environment Foundation sent three staff members as a study team, one of whom was dispatched from the Fukuoka City office and two of whom are retired Fukuoka City staff. The study team was dispatched 4 times for 83 days running to implement the following 5 main terms: i) Examination and identification of problems in solid waste management administration and the management structure; ii) Produce an action plan proposal for the administrative improvement of both the solid waste management department of HPPC and the implementation unit, URENCO; iii) Set management indicators, and targets for monitoring administrative



Photo: Unhygienic transfer station in urban area

improvement activities; iv) Establish and install a management system based on the PDCA cycle; and v) Execution of surveys in order to realize the above-mentioned terms.

The study team implemented the above terms through participatory procedures utilizing the CBS (Card Brain Storming) method, management by objective and the PDCA management concept based on past experience in the solid waste management field of Fukuoka City in consideration of the capacity development of URENCO.

Based on the results of several CBS workshops and site investigations, the action plans, including management indicators and management targets, were set up under the following terms: i) Enhancement of related legal systems to clarify the responsibility of waste generators for treatment in order to realize appropriate solid waste management; ii) Increase of income; iii) Cost saving; iv) Improvement of operation and maintenance of equipment; and v) Other actions to promote streamlining. In order to ensure the effectiveness of the action plans, the study team took into consideration the “6Ms”, which are money, manpower, material, maintenance, management and motivation, as well as the autonomy of URENCO staff when setting the action plan process.

In the end, URENCO was able to achieve the targets in effect due to the method adopted by the study team and top-down efforts made by URENCO staff. Consequently, the launch of the ODA sub-project for waste management system has been approved by JBIC.

(Hiroshi Matsugu)

**Municipalities on the Move**  
**Waste Reduction and Recycling Promotion by Chofu City**  
**- from Station Collection to door-to-Door Collection -**

Chofu City, located in the western Tokyo Metropolitan Area - known as the Tama Area - is a municipality with a population of 213,000 and 104,000 households. In 2004, it reviewed the manner of separate collection of household waste and changed the collection method from station collection to door-to-door collection using plastic bags designated by the city. It also introduced a charge for household waste collection service. As a result, Chofu is now achieving outstanding success in waste reduction and recycling in Japan.

The change in waste collection policy goes back to 1992, when the Regional Waste Disposal Association in the Tama Area required its member municipalities (25 cities and one town) to strictly comply with a rule on disposal amount allocation. At that time, Chofu found itself in a disgraceful situation since its waste reduction rate was often the worst among the members and demanded urgent and drastic policy reform. The city finally came to a decision to divert recyclables from waste in a more thorough manner.

The waste for incineration, which was collected three times a week, contained 52-53% of paper and textile waste, which should have been recycled. Therefore, the frequency of waste collection for incineration was reduced to two times a week and weekly collection of paper and textile waste was started. Further, the collection frequency of bottles and cans was increased from biweekly to weekly, in addition to an increase in the number of recycle stations from about 1,500 to 3,500. The manner in which waste is separated in Chofu is shown in the table below. In order to encourage waste reduction at home, subsidies for the purchase of compost units for kitchen waste and the lending of nets to prevent animal scavenging were introduced. In addition, various measures to raise public awareness were taken such as recycling promotion campaigns in front of rail stations and distribution of waste collection calendars and leaflets explaining the proper method to put out separated wastes for pick-up.

Table: New separate-collection list in Chofu City

Classification	Items (example)	System
Combustibles	Kitchen waste, plants, diapers, etc.	Door to door
Incombustibles	Metal, glass, small appliances, etc.	
Hazardous waste	Fluorescent lights, dry cell batteries, etc	
Plastics	Snack packages, plastic trays, etc.	
Used papers	Newspaper, magazines, cardboard, etc.	
Textiles	Clothes, towels, blankets, sheets, etc.	
Glass bottles	Glass bottles for beverage and food	
Cans	Cans for beverage and food, spray cans	
PET bottle	PET bottles for beverage and food	
Beverage cartons	Cartons for milk, soft drinks, etc. (without aluminium coating)	
Bulky wastes	Furniture, Futon, etc.	Call on
* Collection fee is charged except blue-collared items.		

The purpose of the introduction of door-to-door collection was to ensure proper waste separation by households. The city does not collect waste placed outside the front door if it is not properly separated, therefore enhancing citizens' consciousness of waste separation. It was expected that charging for waste collection along with free collection of separated recyclables would bring economic incentives to both reduce waste and promote recycling.

Through this approach, the city succeeded in reducing waste for incineration by 6,373 tons and waste not intended for incineration by 4,221 tons in the fiscal year 2004 compared to the previous year. The recycling rate, calculated as [(recyclables collected by the city + recyclables sold by community organizations + recyclables sorted from waste by the city) / total waste amount], increased from 36.8% to 42.8% (and 43.6% in 2005), which is the highest in the Tama Area and the second highest nationwide among cities with a



Separated combustible waste and waste cans



Separated combustible waste and waste bins

population of 100,000 – 500,000. From a financial viewpoint, expenditure increased by 467 million yen mainly due to the change in waste collection procedures, but charging for waste collection by selling the designated bags for collection increased revenues up to 830 million yen.

By recognizing the maximum use of recyclable materials as a responsibility of humans living on this planet, Chofu City intends to continue contributions to global environmental conservation by working closely with people for waste reduction and recyclables separation.

(Yutaka Akiba)

**Journal of the Japan Society of Waste Management Experts, Vol. 18, No.2 (March 2007)**

Recent issues of the Journal of JSWME contain the following articles. The articles are written in Japanese with the abstract in English.

Paper

***Study on Leachate Purification and Waste Stabilization at a Seaside Land Reclamation Site Using a Leachate Circulation System Pilot Plant***

Seiichi Ishikawa, Toshikazu Oba, Yoshio Nomura, Kenichi Ichida, Yoshio Sakazaki, Tsutomu Kojima, Maki Fukumoto, Manabu Suzuki, Ryuji Yanase, Ayako Tachifuji, Yasushi Matsufuji, Kiyoshi Mitsui, Junji

Nakanishi and Shinichi Maeda

***Sludge Reduction Performance of Aerobic Digestion Reactors for Johkasou System***

Tsuyoshi Ichinari, Kohji Takahashi, Kohji Hasegawa, Keiji Teduka and Yoshiaki Kiso

***Characterization of Shredder Residues Derived from End-of-Life Vehicles and Home Electrical Appliances***

Toshihiko Matsuto, Shohei Nakajima, Yasumasa Tojo, Yoshitada Kakuta and Takayuki Matsuo

***Utilization of Buckwheat Husks through a Two-stage Cooking and Carbonization Treatment***

Yasuo Kojima and Yumiko Obara

***Novel Anaerobic Digestion System Using Hyper-Thermal Anaerobic Hydrolysis Bacteria***

Jun Tsubota, Toshiaki Tsubone and Hiroshi Tsuno

Note

***Test Melting Experiment to Investigate Melting Conditions for Asbestos and Wastes that Contain Asbestos***

Masayoshi Minakami, Akihiro Noda, Hiroyuki Takei, Yoshio Kataoka and Mitsuhiro Sakajiri

**Waste Management Research  
Vol. 18, No.2 (March, 2007)**

Preface

***Consensus Building Under Trade-off --Beyond Everything in Black and White--***

Masashi Kato

**Special Issues: Countermeasure Against Illegal Dumping of Waste and Environmental Revitalization**

***Status Quo and Measures for Illegal Dumping of Industrial Waste***

Kuniaki Makiya

***A Comprehensive and Systematic Approach to Addressing Illegal Dumping of Waste***

Toru Furuichi, Noboru Tanikawa, Kazuei Ishii and SangYul Kim

***Countermeasures Against Illegal Dumping of Industrial Waste in Kyoto Prefecture: Status Quo and Outlook***

Yoshihide Iwaki

***Making Pollution Control Top Priority: How Aomori Prefecture Responded to Illegal Dumping of Waste on the Aomori-Iwate Prefectural Border***

Keiichi Kamata

***Aiming at Environmental Regeneration and Relapse Prevention by Early-stage Full Removal: Iwate Prefecture's Approach to Illegal Dumping of Industrial Waste at the Aomori-Iwate Prefecture Border***

Yoshiaki Takikawa

***Civil Engineering Technologies being Implemented in a Remediation Project for the Illegal Dumping Site***

***at the Aomori Prefectural Border: Present State and Future Outlook***

Kazufumi Aoyama

***Status Quo and Future Prospects of Applying Leachate-Treatment Technology for the Environmental Restoration of Illegal Dumping Sites***

Yasuo Horii

Report

***Trends in Food Waste Recycling***

Takasei Kusube and Hiroshi Takatsuki

**Journal of Material Cycles and Waste Management,  
Vol. 9, No.1 (2007)**

Special Feature: Selected Papers in the International Symposium on EcoTopia Science (ISETS05): Waste and Emission Management

***Foreward***

H. Itoh

Review Article

***Waste Management for a Sustainable Society***

M. Tanaka

Original Articles

***Desulfurization of Coke Oven Gas from the Coking of Coking Coal Blended with a Sorbent and Waste Plastic***

Z. Rongfang, Y. Shufeng, X. Yusheng, C. Yunfa

***Influence of H<sub>2</sub> on the Decomposition of Halides by Nonthermal Plasma Incorporated with in situ Alkaline Absorption***

T. Fujita, T. Kawano, L. Huang, Y. Kojima, H. Matsuda, K. Ushiroebisu

***Reductive Decomposition of Waste Gypsum with SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub> and Fe<sub>2</sub>O<sub>3</sub> Additives***

N. Mihara, D. Kuchar, Y. Kojima, H. Matsuda

***Recycling Process for Yttria-stabilized Tetragonal Zirconia Ceramics Using a Hydrothermal Treatment***

M. Kamiya, Y. Mori, T. Kojima, R. Sasai, H. Itoh

***Resource Recovery Treatment of Waste Sludge Using a Solubilizing Reagent***

T. Nomura, S. Araki, T. Nagao, Y. Konishi

***Reaction Mechanism and Pathway for the Hydrothermal Electrolysis of Organic Compounds***

M. Sasaki, K. Yamamoto, M. Goto

***Recent Trends in the Decomposition of Chlorinated Aromatic Hydrocarbons by Ultrasound Irradiation and Fenton's Reagent***

J. Liang, S. Komarov, N. Hayashi, E. Kasai

***Individual and Simultaneous Degradation of Brominated High Impact Polystyrene and Brominated Acrylonitrile-butadiene-styrene and Removal of Heteroelements (Br, N, and O) from Degradation Oil***

***by Multiphase Catalytic Systems***

N.M.M. Mitan, M. Brebu, T. Bhaskar, A. Muto, Y. Sakata

***Co-processing of DVDs and CDs with Vegetable Cooking oil by Thermal Degradation***

N.M.M. Mitan, M. Brebu, T. Bhaskar, A. Muto, Y. Sakata, M. Kaji

***Characterization of Air Emissions and Residual Ash from Open Burning of Electronic Wastes During Simulated Rudimentary Recycling Operations***

B.K. Gullett, W.P. Linak, A.Touati, S.J. Wasson, S. Gatica, C.J. King

***Simple Removal of Dioxins by Injecting Combustion Gas into Water***

H. Kawabata, B. Yabunaka, M. Tanabe, T. Usui, K. Marukawa, S. Hara, T. Tanaka

***A Simple and Convenient Empirical Survey Method with a Soil Electrical Conductivity Meter for Incineration Residue-derived Soil Contamination***

M. Nagamori, Y. Watanabe, T. Hase, Y. Kurata, Y. Ono, K. Kawamura

Current Members of JSWME as of March 31, 2007  
(The figures in parenthesis indicate the difference from November 30, 2006)

Regular Members	3,170	(-146)
Students	266	(-68)
Non-Japanese Member	86	(-16)
Public Institutions	106	(-4)
Supporting Members	151	(-12)
Individuals of NPOs	4	(0)
Total	3,783	(-246)

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