



NEWSLETTER

No. 15

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January 1996

THE JAPAN SOCIETY OF WASTE MANAGEMENT EXPERTS

Happy New Year, Waste Management Experts

People say 1995 was not a very good year in Japan; the Great Hanshin Awaji Earthquake, the Sarin gas attack, the sluggish Japanese economy, etc. Within that social context, various measures to promote rational waste management were taken: designation of 13 substances to be defined as hazardous waste, a new standard for shredder dust disposal, disaster waste management, the Packaging Waste Recycling Law, etc.

This year too, various new waste issues will come to the forefront. To begin with, from Jan. 1st, the ocean dumping of most industrial waste is prohibited according to the London Convention. To be sure, this year will be a very unique year for Japanese waste management, especially regarding its exposure to the rest of the world. The 7th Congress of the International Solid Waste Association will be held this October in Yokohama, Japan and will be the first item covered in this issue.

Next, we will show you two unique topics of waste management in Japan, Refuse Derived Fuel and Johkasou, or small scale sewerage. We hope 1996 is a very good year for every one of you and for the global environment through better waste management.

(by Hiroki Hashizume and Koji Hirayama)

Local Governments and International Conferences Related to Waste Management Held in Japan

The year 1995 will most likely be noted for the occurrence of the Great Hanshin earthquake, but a good many other less dramatic events took place. While the quake markedly increased the public's awareness of volunteerism and international cooperation, many local governments stepped forward to sponsor international environmental conferences.

In recent years while many groups, individuals and even local governments have participated in environmental study tours abroad and have dispatched researchers, relatively few international conferences have been held in Japan with local sponsorship. Some of the reasons for this are due to local government's lack of experience in managing conferences and poor contacts with environmental experts in local government in other countries. Many environmental

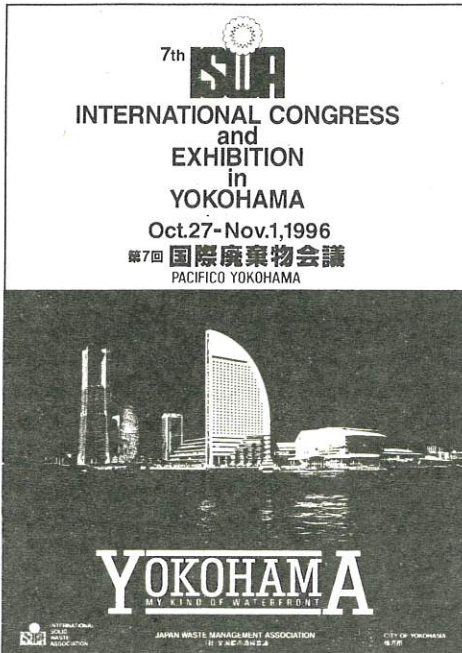
experts in other countries want to get more information sources, make contacts, find places to study, get documentation in English, or find people capable of assisting with technical matters. Still, there are some positive signs. Many municipalities have sister city projects that have given them experience in international communication. This has also spurred the development of documents and video libraries in English and various other languages. Because of this background, many areas have the basic resources for hosting and managing international meetings.

Because Japan is relatively poor in resources and relies heavily on imported materials to fuel its export-oriented economy, it is becoming more and more important for it to share its body of expertise in resource management and pollution control. This is important not only at the national level, but also the municipal level. Hosting international conferences is an excellent way of providing a gateway to this knowledge base. The hosts, in turn, are expected to create an atmosphere that promotes the free exchange of information and the presentation of a wide range of opinions.

In 1995 local governments were either -sponsors or provided some kind of assistance for the following international environmental conferences:

- June 12-13: Earthquake Waste Symposium (at Osaka)
Organizer: Japan Waste Management Consultant Association, JSWME, ISWA, UNEP/TETC
- Oct. 23-27: 6th International Lakes and Marshes Conference (at Tsukuba, Tsuchiura)
Organizer: Ibaraki-Prefecture, International Lakes and Marshes Environmental Committee
- Oct. 24-26: Third Local Government Leaders' Summit on Climate Change (at Omiya)
Organizer: Saitama-Prefecture, the International Council for Local Environmental Initiatives
- Nov. 2-4: World Conference on Local Initiatives for Sustainable Cities (at Yokohama)
Organizer: Environment Agency, Kanagawa-Prefecture, Yokohama-city, UNDP/UNEP

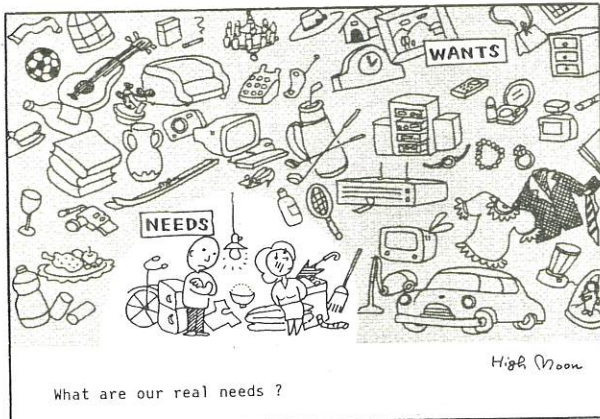
is co-organized by ISWA and the Japan Waste Management Association, which is an organization of MSW management bodies of local governments in Japan.



Addendum

Lest our readers think that environmental awareness at the municipal level is only a recent phenomenon, and that most cities are neophytes in the international arena, we would like to cite the cases of a couple of pioneering cities. Some of the cities most severely afflicted by pollution problems in the 60's not only solved their own problems, but set up organizations to help other cities both within and outside of Japan with similar problems. Kitakyusyu City set up the Kitakyusyu International Technology Association (KITA) in 1980 and later founded the KITA Environmental Cooperation Center. In 1990, UNEP honored Kitakyusyu with a "Global 500" Prize. Yokkaichi City created the International Environmental Technology Transfer Research Center in 1990 and opened a UNCRD branch in 1993. In 1995, UNEP honored Yokkaichi with a "Global 500" Prize.

(by Kenji Kakeda and George Crane)

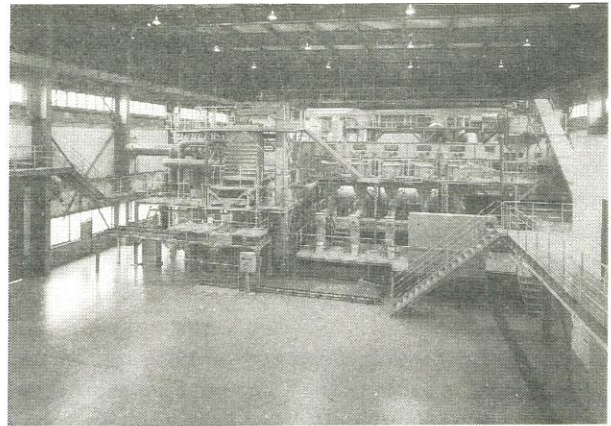


Aren't we surrounded by too many things that we really don't need?

By Courtesy of Prof. Hiroshi Takatsuki

Japanese Municipalities on the Move (7) RDF Becoming a Boom among Japanese Municipalities

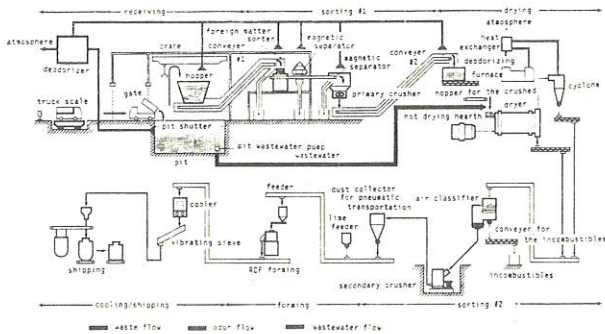
Japan is a small island country with a large population and a very active economy; therefore, the reduction and stabilization of waste are vital issues. To achieve this, Japan's waste management has been relying heavily on incineration, using various facilities and equipment to burn waste. As recycling has become another key issue in waste management in Japan, some incineration plants have started generating electricity and/or supplying heat to the community utilizing the incineration heat (see JSWME's NEWSLETTER #7, '93). However, because heat utilization is limited to facilities with relatively large capacity, municipalities, small- and medium-sized municipalities in particular, are seeking a way of recycling combustible waste in addition to separate collection of bottles, cans, etc. One of the possible answers to this need, refuse derived fuel (RDF) seems to be getting the attention of municipalities these days.



RDF Plant at Nanto Recycling Center

In 1990, Fukumitsu Town, Juhana Town and Inokuchi Village, in the Tonami region of Toyama Prefecture, which is located in central Japan along the Sea of Japan, started a reconstruction study for an old incineration plant that had been in operation for 20 years. The three municipalities, having global environmental problems in mind, planned to adopt a system to utilize waste and a system without a stack. After an experiment producing fuel from waste from the three municipalities and an experiment in burning the RDF, the plan was approved by the Ministry of Health and Welfare and construction of the RDF plant started in February 1994. It was the first RDF plant subsidized by the Ministry. The Figure is a flow diagram of the plant (28 tons/7hr.) which started operation on June 1, 1995.

The RDF is utilized in boilers. The plant has a boiler producing 300,000 kcal/hr (300 tons of RDF per year) for in-plant heat use. Also, in Fukumitsu Town's old-age home, a new boiler using RDF for heat and hot water supply was constructed.



RDF Processing System at Nanto Recycling Center

While the technology to make RDF is relatively simple, there are some issues to be carefully studied when a municipality selects an RDF system. For example, hydrogen chloride may be discharged when RDF is burned. To cope with it, exhaust gas treatment equipment may be necessary or perhaps a more careful source separation or separate collection of waste may be necessary. Some people suggest that a public company should generate electricity on a prefectural basis using RDF produced by municipalities.

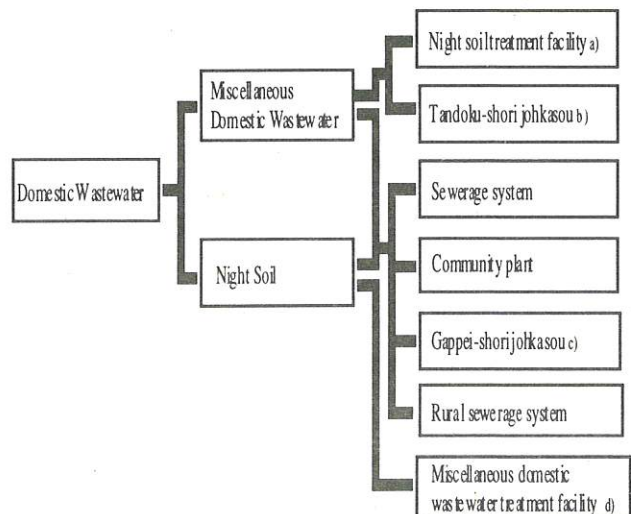
In December, another RDF plant with a capacity of 32 tons a day is scheduled to begin operation in Tsukumi City, Oita Prefecture. Municipalities which are interested in RDF should carefully study these cases and possible implications of the newly enacted Packaging Waste Recycling Law, and figure out the best way to fit RDF into their own waste management situation.

(by Hiroki Hashizume)

A Brief Note on Solid Waste Management in Japan (13)
 - The Johkasou System for Treatment of Domestic Wastewater -

Several methods are practiced to treat flush toilet wastewater and gray water, but there is no universal way for the application. In Japan one can summarize the domestic wastewater treatment system as in the Figure according to the type of wastewater, facility size, and administrative support. Among these we mainly have three systems which are: public sewerage, johkasou, and night soil treatment facilities which serve 42%, 28%, and 28% of the population respectively. If we want to use flush toilets in districts without public sewerage, we must install on-site wastewater purifying facilities called "johkasou" to treat black water independently or mixed with gray water.

Johkasou systems, developed in Japan, are now commonly used throughout the country. Johkasou spread rapidly in the 1960s with strengthening demand for flush toilets. This spread was also made possible by the development of mass manufacturing technologies using fiberglass reinforced plastics (FRP) and promoted by the establishment of structural standards for johkasou systems.



- a) Night soil treatment facilities also treat sludge collected from tandoku-shori johkasou and sewerage systems in rural areas.
- b) "Tandoku-shori johkasou" are facilities that only treat black water. Many are installed in individual homes.
- c) "Gappei-shori johkasou" are facilities that treat both black and gray water. Though not many facilities are installed in individual homes, the number is growing.
- d) This includes facilities to treat sludge from simple sedimentation chambers for miscellaneous wastewater treatment.

Figure: Various Systems for Domestic Wastewater Treatment (quotation from "JOHKASOU SYSTEM FOR TREATMENT OF DOMESTIC WASTEWATER, Japan Education Centre for Environmental Sanitation)

Early systems were designed for treating only black water. The spread of this type caused many water bodies to be polluted. On the other hand, the recently developed compact johkasou facilities to purify both black and gray water can be installed in individual houses to purify wastewater to less than 20 mgBOD/L. The Johkasou Law that mandated this system in 1983 stipulates integrated regulations for (1) manufacture, installation, maintenance and cleaning, (2) the official registration of johkasou installers and maintenance operators, and (3) the licensing of johkasou cleaning agents. In 1987 the Ministry of Health and Welfare established a system of national subsidy to help people install small scale Johkasou facilities.

The capital cost of johkasou facilities are as little as 1/3 as much as for public sewerage systems without a pipe system. This johkasou system is the most suitable system in sparsely populated rural areas.

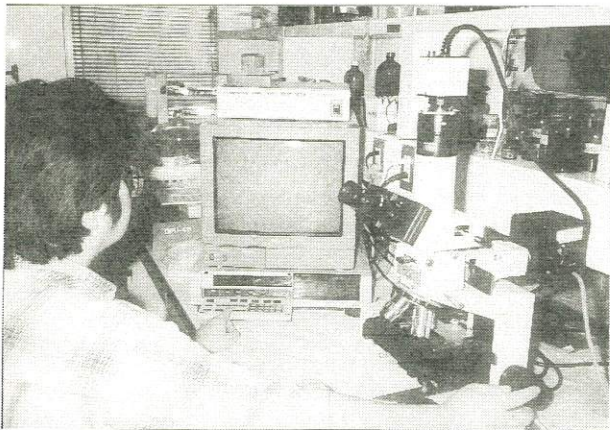
(by Yuzo Inoue)

Introduction of Universities with Programs Related to Waste Management in Japan (5)
Sanitary Engineering Laboratory,
Department of Architecture and Civil Engineering,
Toyohashi University of Technology

Toyohashi University of Technology, a new national university specialized in engineering was established in October 1976. It is located in the city of Toyohashi, which is halfway between Tokyo and Osaka with a population of 340 thousands.

Its research on waste management is mainly conducted in the Sanitary Engineering Laboratory, Department of Architecture and Civil Engineering with 2 doctoral candidates, 5 master's students and a visiting researchers. Related study is also carried out in the Department of Ecology Engineering by Associate Professor Yoshiaki Kiso, who is also a collaborative researcher.

The goal of our research is to remedy problems and to protect the water environment. The following projects are currently being carried out: 1) development of high performance treatment systems for night soil and domestic wastewater including aerobic/anaerobic film systems, membrane and/or filtration separation bioreactors, coagulation-membrane separation systems, etc., and 2) development of solid waste processing technology such as composting and rapid thickening of sludge by cross flow filtration.



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The volume contains the following technical papers.
(written in Japanese with English abstract)

Vol. 6 No.6 (November '95)

Performance and Methodology of an Environmental Audit for Paper Flow in an Office (a Social System)

by Kohji Hayase, Hiroshi Akai, Akimichi Hatta and Hideki Wada

Leaching Test of Metallic Compound in Fly Ash of Solid Waste Incinerator - Availability Test and PH-dependant Test -

by Shin-ichi Sakai, Satoshi Mizutani, Hiroshi Takatsuki and Takuo Kishida

A Study on Elimination of Mercury in Flue Gas Using Grain and Powder from Fly Ash

by Masaki Takaoka, Nobuo Takeda and Shigenobu Okajima

Theoretical Consideration on Free Convection in a Sanitary Landfill Layer

by Hideki Yoshida, Nobutoshi Tanaka and Hitoshi Hozumi

The Quantity and Quality of Waste Excess Sludge through Cleaning Discharged from Small-scale Domestic Wastewater Treatment Systems

by Takehiko Ogawa, Masaharu Tadokoro and Shigeru Ohno

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