JSWME

NEWSLETTER

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THE JAPAN SOCIETY OF WASTE MANAGEMENT EXPERTS

Dear Waste Management Experts

In an instant, one of the most densely populated areas in Japan became a disaster area on January 17. The predawn Great Hanshin Earthquake killed more than 5,200 people and injured 27,000. More than 150,000 houses and buildings were destroyed, badly damaged or burnt down, and have therefore generated a huge amount of waste, estimated at 12 million tons. The earthquake is making us really recognize how waste management is important in our life and economy. You can see what has happened and is happening in our next issue.

In December 1994, the Basic Environment Plan, one of the most important developments in Japanese environmental policy was announced. The plan is reviewed by one of our editorial members. We also have a report on a symposium at the society's 5th annual conference, which was held on November 7 – 9 and attended by some 1,300 people.

We would like to call your attention to the planned change of policy regarding the society's international membership from fiscal 1995 (April '95 to March '96). Finally but not the least, all thanks to the people who have helped those who have suffered from the earthquake.

(by Hiroki Hashizume)

Basic Environment Plan Approved by Cabinet

Background

In December 1994 the cabinet meeting approved the Basic Environment Plan (herein referred to as BEP), which was prepared according to the Basic Environment Law enacted in 1993. Similar national environmental plans have been prepared in other countries including Holland, the United Kingdom, Canada, France and Australia.

The BEP was drafted by the Environment Agency through hearings of the Central Environment Council. The draft plan was then made public and opinions were gathered from the citizens, the business community, NGOs and local government. Over 3,000 comments were sent to the Agency.

4 Key Words of BEP

BEP has the following 4 key words:

1. **Cycle** (Establishment of a low environmental load society through material cycling)
2. **Co-habitation** with nature
3. **Participation** (in environmental protection by all sectors of society including government, polluters and citizens)
4. **International collaboration** to tackle global environmental problems

Major Waste Management Targets and Policies

BEP has the following targets and policies:

1. Creation of a zero-waste society
2. Priority for waste management should be given in order of waste prevention, reuse, recycling, energy recovery from incineration and disposal.
3. Introduction of economic measures such as a deposit refund system, waste tariff based on waste generation quantity, reflection of recycling costs on product prices
4. Promotion of recycling through standardization of recycled products, development of new uses for recyclable materials, collection and recycling of packaging, R & D on new recycling technologies including plastic to oil, melting and solidification of incineration ash, waste to energy, collection of large refrigerators by manufacturers, etc.
5. Simple wrapping and packaging
6. Product life cycle assessment and development of products with longer life span
7. Introduction of corporate environmental planning, implementation and auditing

Comments on BEP

BEP is comprehensive and covers all important issues discussed in the past. Major comments on BEP often presented in newspapers by the public include the following:

1. BEP does not show numerical targets and indices by which improvement can be quantitatively monitored.
2. BEP does not have concrete measures for implementing the plan. BEP should be accompanied with an action plan that shows the responsibilities of the respective parties and clear time frames.
3. BEP lacks a clear strategy with respect to international cooperation. BEP should have prioritized areas of international cooperation by identifying areas in which Japan has experience and technology relevant to other countries. Examples of relevant technology include low cost on-site night soil treatment, semi aerobic type sanitary landfills which contribute to the acceleration of waste decomposition and stabilization; prevention of environmental pollution including mercury contamination, and energy saving technologies.

However, BEP can be highly appreciated in the sense that this is the first comprehensive national environment plan in Japan which drew attention of all kinds of communities. BEP is undoubtedly an important step towards strengthening of the national commitment for better environmental management.

(by Kiichiro Sakaguchi)

JSWME'S Symposium: LCA and PA

New methodologies for waste management, such as life cycle assessment (LCA) and product assessment (PA), are becoming well known. A symposium entitled "How Can LCA and PA Contribute to Better Waste Management?" was held at the 5th annual JSWME conference.

LCA is a method to evaluate "the whole life of a product", that is all the stages of a product, such as raw materials acquisition, manufacturing, distribution and retail, use, reuse and maintenance, recycling and waste management, in order to create less environmentally harmful products. LCA consists of three parts (Fig. 1): inventory analysis (selecting items for evaluation and quantitative analysis, Fig. 2), impact analysis (evaluating impacts on ecosystem), improvement analysis (evaluating measures to reduce environmental loads).

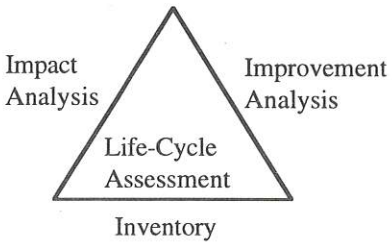


Fig. 1 Sub-systems of LCA

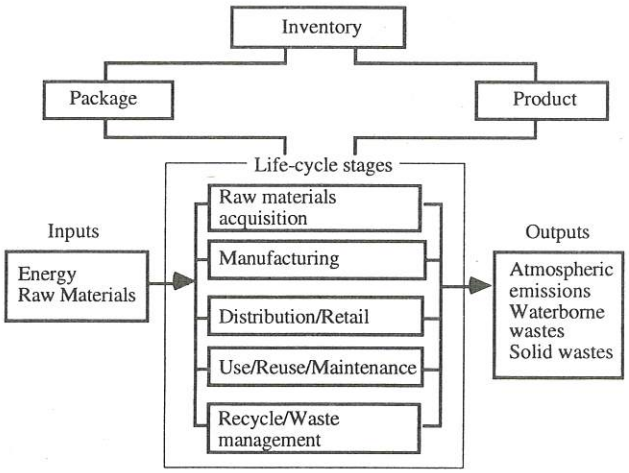


Fig. 2 Procedure of Life-Cycle Inventory

On the other hand, PA evaluates the difficulty of treatment/disposal of a product when it is discarded. PA is rather qualitative and likely to depend on the analysts' subjective views, while LCA is quantitative and objective. However, these two methods are not fully established yet.

Dr. Yasui of the University of Tokyo gave an example of the process from a waste management perspective. "In the case of glass, if the transportation distance becomes longer, less energy will be demanded to dispose of it on the spot than to recycle it at a distant location. Though it is not easy to decide which is more desirable from an environmental standpoint, for example recycling by expending more energy or disposal by consuming too much landfill space, waste management experts should be responsible for answering this question."

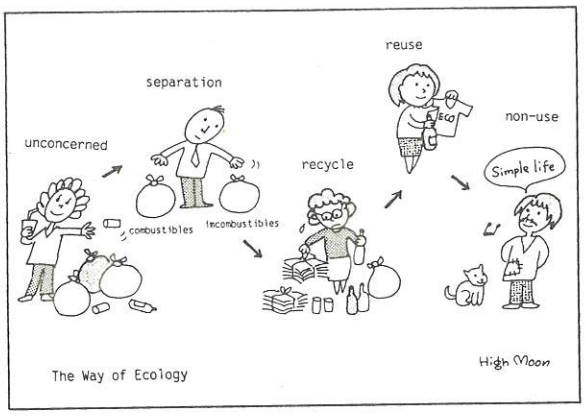
Symposium on LCA and PA

Mr. Sano from Ajinomoto Co., a food manufacturing company, discussed the four criteria for choosing packaging for environmental conservation, that is, 1) minimizing materials that are hazardous to human health and the environment, 2) minimizing raw materials consumption, 3) selecting recyclable materials, 4) selecting materials easy to be treated when they are discarded.

Mr. Fukushima of Hitachi Co., an electric appliance manufacturing company, explained how to design products for ease of recycling: 1) unifying and simplifying materials and moving toward the use of recyclable materials, 2) reducing the number of parts, 3) classifying recyclable and unrecyclable materials to make products easy to disassemble.

According to Dr. Gotoh of the National Institute for Environmental Studies, "The real purpose of LCA and PA is not to evaluate the environmental loads precisely but rather to obtain some information for decision-making for the gradual improvement of waste management and recycling methods."

(by Ryoko Sugiyama)



note : The final step requires a real change.

By courtesy of Prof. Hiroshi Takatsuki, Kyoto Univ.

A Brief Note on Solid Waste Management in Japan (12)
Industrial Waste Treatment Facilities and Methods

Generators' Responsibility: In accordance with the Polluter Pays Principle of industrial waste generation, industrial waste in Japan is normally managed by generators themselves or contractors used by the generators.

Standards, Guidelines and Manifest: There are standards for industrial waste disposal and guidelines for use by contractors for industrial waste disposal. There is also a manifest system which encourages generators of industrial waste to prepare a manifest concerning movement and disposal conditions of waste, through which monitoring and control of movement of industrial waste are carried out.

Industrial Waste Management Contractors: Table 1 shows the number of permits issued for industrial waste management contractors. As of April 1992, 75,305 permits were issued, of which 92 % were for collection and haulage service, 1.2 % for intermediate treatment, and 0.5 % for final disposal.

Table 1 Industrial Waste Management Contractors (April 1992)

Contractors' Type of Services	Number of Permit Issued	(%)
1. Collection & haulage	69,070	(91.7)
2. Intermediate treatment	863	(1.2)
3. Final disposal	360	(0.5)
4. Collection/haulage + Intermediate treatment	3,121	(4.1)
5. Collection/haulage + final disposal	1,302	(1.7)
6. Intermediate treatment + final disposal	65	(0.1)
7. Collection/haulage + treatment + final disposal	524	(0.7)
Total	75,305	(100)

Type and Number of Treatment Facilities: Table 2 shows types of industrial waste treatment facilities and the number of facilities by type. The reason why there are so many sludge treatment facilities including dehydration, desiccation and incineration is attributed to the fact that sludge accounted for as much as 42.1 % of total industrial waste generation in fiscal 1991. Sludge volume is decreased by 80 % through intermediate treatment.

Facility Construction Permit: Any organization that wishes to construct industrial waste treatment facilities of a capacity specified in Table 2 must obtain a construction permit from the prefectural governor including mayor of the city that has a public health center.

Technical Standards for Facilities: There are technical standards concerning the design and operation of treatment facilities. There are standards commonly applied to all the facilities as well as separate standards by facility type.

Table 2 Types and Number of Industrial Waste Treatment Facilities (April 1992)

Facility Type (Capacity)	No. of Units
1. Sludge dehydration facilities ($10\ m^3$/day or larger)	6,109
2. Sludge desiccation facilities (machine) ($10\ m^3$/day or larger)	221
3. Sludge desiccation facilities (sunlight) ($100\ m^3$/day or larger)	86
4. Sludge incineration facilities ($5\ m^3$/day or larger)	570
5. Facilities for separation of oil and water from waste oil ($10\ m^3$/day or larger)	280
6. Waste oil incineration facilities ($1\ m^3$/day or larger)	527
7. Waste acid and alkali neutralization facilities ($50\ m^3$/day or larger)	248
8. Waste plastic crushing facilities (5 t/day or larger)	244
9. Waste plastic incineration facilities (0.1 t/day or larger)	1,804
10. Concrete solidification facilities (Any capacity)	69
11. Facilities for incineration of mercury-containing sludge (Any capacity)	2
12. Cyanogen dissolution facilities (Any capacity)	280
Total	10,440

Source: Ministry of Health and Welfare
Note: A permit must be obtained for construction of facilities that has capacities specified in parentheses.

Industrial Waste Management Expert: Any treatment facility operator must have an industrial waste management expert who is qualified in accordance with an ordinance of the Ministry of Health and Welfare.

Total industrial waste generation is estimated at 398 million ton/year. The final disposal amount is reduced to 91 million ton/year, 23 % of the original amount, through various intermediate treatment and recycling.

(by Yasushi Sakai & Kiichiro Sakaguchi)

Introduction of Universities with Programs Related to Waste Management in Japan (2)

Dept. of Urban Engineering, Faculty of Engineering, University of Tokyo

The University of Tokyo, a center of excellence in science and education established in 1877, is the oldest university in Japan. It consists of 10 faculties including the Faculty of Engineering. The Department of Urban Engineering is

one of the 21 departments of the Faculty of Engineering. The Department has 21 faculty members (11 professors and 10 associate professors). About 100 undergraduate students and 75 postgraduate students, including foreign students, are enrolled.

The aim of the Department is to give students a definite background in planning, design and management of the urban community. The programs offered are designed to help meet the widespread need for specially-educated people in the field of urban planning and environmental engineering. The Department is composed of an urban planning course and an environmental and sanitary engineering course. In addition, INTEP (International Environmental Planning Center) has been established in the Department to educate and carry out research activities on international cooperation for environmental management. INTEP publishes and distributes the "INTEP Newsletter" in English free of charge with the aim of disseminating Japanese environmental management know-how to the international community.

Dept. of Urban Engineering, University of Tokyo

Recent research topics conducted by faculty members belonging to the environmental and sanitary engineering course are shown in the following:

PROFESSORS:

- Fujita, Kenji, D. Eng.: Water Treatment, Filtration Technology, Membrane Filtration, Solid Waste Treatment
- Hanaki, Keisuke, D. Eng.: Global Environmental Issues, Biological Wastewatar Treatment Management of Material Flow in Urban Areas
- Matsuo, Tomonori, D. Eng.: Hydrodynamics in Water Treatment, Biological Wastewater Treatment, Water Pollution Control, Global Environmental Engineering
- Nakanishi, Junko, D. Eng.: Environmental Risk Management, Sewerage Planning
- Ohgaki, Shin'ichiro, D. Eng.: Environmental Kinetics Reaction, Water Quality Control, Virus Inactivation
- Sakurai, Kunitoshi, D. Eng.: International Environmental Planning, International Technical Cooperation, Solid Waste Management in Developing Countries

ASSOCIATE PROFESSORS:

- Ichikawa, Arata, M. Eng.: Methodology for Comprehensive Planning for River Basins, Planning and Management of Sewerage Works
- Kitawaki, Hidetoshi, D. Eng.: Appropriate Technology for Water Supply and Sanitation, Composting
- Mino, Takashi, D. Eng.: Environmental Microbiology, Biological Wastewater Treatment
- Takizawa, Satoshi, D. Eng.: Advanced Wastewater Treatment, Environmental Management
- Yamamoto, Kazuo, D. Eng.: Membrane Technology, Biological Wastewater Treatment, Environmental Data Analysis

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

Vol. 5 No. 5 (November 1994)
Studies on Organic Substances in Leachate from Landfills – Extractable Organic Substances from Polyvinyl Chloride Sheets
by Hiroshi Fukui, Katuhiko Tanaka, Nobuo Awaji, Naoyuki Hirabayashi, Tomiharu Ito and Yukio Kojima

Extraction of Chrome, Copper, and Arsenic Compounds from Waste Preservative-Treated Wood
by Yoshinori Kanjo, Atsuko Kimoto and Atsuhiro Honda

Decomposition of Dioxins in Fly Ash by Hydrothermal Treatment
by Hiroshi Yamaguchi, Eiichi Shibuya, Naoki Furuno, Shouichi Suda, Atsushi Morishige, Kiyoshi Uyama, Nakamichi Yamasaki and Mamoru Nishioka

Recovery of Phosphoric Acid from Waste Phosphate Sludge by Dissolution Using Ion Exchange Resin by Tadashi Nishino

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