

An Environment for Eco-Towns  
 13, March 2009  
 Bandung Indonesia

# Improvement of Solid Waste Management

- ◆ Collection Service
- ◆ Final Disposal
- ◆ 3R for Ecological Society

**Sampah**

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## Awful Experiences in JAPAN

Lack of space for disposal

↓

Crude dumping  
River, Ocean Dumping

↓

Contamination of Water  
Unsanitary Condition

Filth Cleaning Law was setup in 1900

- Landowner should clean up waste
- SWM is shouldered by Municipalities
- Incineration is encouraged

### Spread of Infectious Disease

No. of dead person & patients by Cholera in Japan  
(8,000 were dead in Osaka annually)

Year	Dead	Patient
1877	~2,000	~5,000
1879	~110,000	~60,000
1882	~35,000	~15,000
1886	~115,000	~45,000
1889	~40,000	~10,000
1895	~45,000	~15,000

# Factors to be minded for Improvement of SWM

## 1. Life and Public Health

- Accidents
- Diseases



**100% Removal & Disposal  
Sound Collection & Disposal**

## 2. Feasibility

- High Cost
- Poor Cooperation



**Efforts for Efficiency-up  
Users Cooperation**

## 3. Global Environment

- Mass Consumption & Disposal
- Global Warming



**3Rs Promotion  
Cooperation, Life Style, etc**

# Collection Service

- Uncollected Garbage are remained in town
- Collection work is the most expensive process among SWM service
- Lack of technical consideration & low priority for improvement
- Existence of difficult access areas for collection service



# Effective vs. Efficient

- Most effective way to improve collection service => **VEHICLES**
- But, it is difficult under financial constrain, then what to do?
- Maximum utilization (efficient) of existing resources by more speedy collection => Addition of one more trip => Expand Collection Coverage/Area

Do More  
by Less

Present: 2 Trips / day



Future: 3 Trips / day



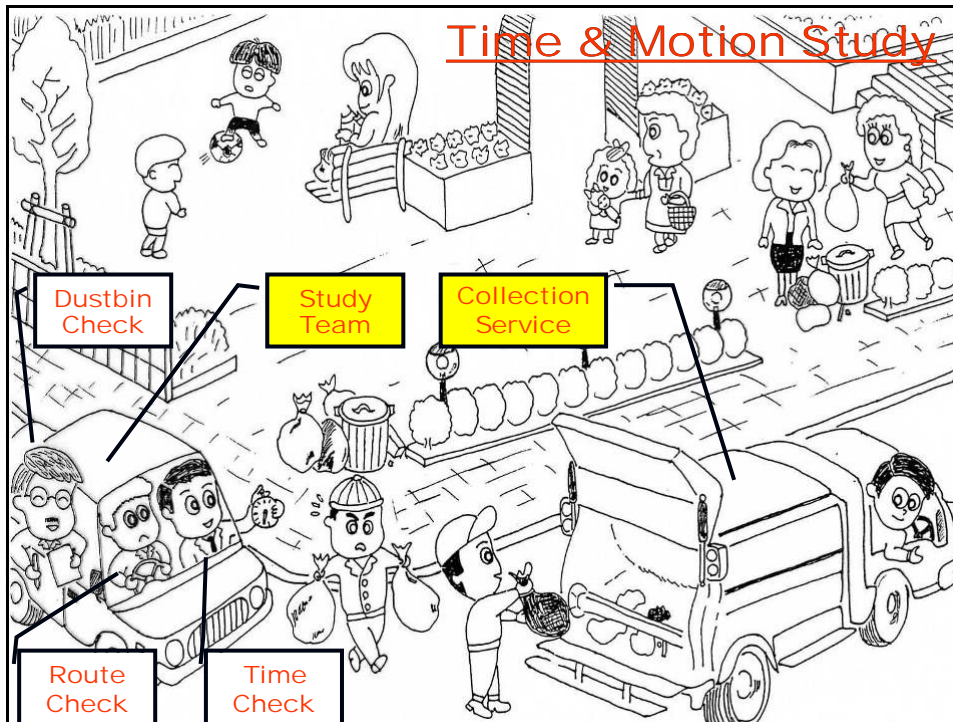
Expand  
Collection  
Coverage

# Ideas for Speedy Collection

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>● Collection Point</li> <li>● Standardization of Dustbin</li> <li>● Users' co-operation</li> <li>● Collection Route Design</li> <li>● Transfer Station</li> <li>● Use Shift</li> <li>● Dump Site Improvement</li> <li>● Collection Frequency</li> <li>● Crew Behavior</li> </ul> | <ul style="list-style-type: none"> <li>● Collection Time Schedule</li> <li>● Road Condition</li> <li>● 3R. Promotion</li> <li>● Preventive maintenance</li> <li>● Communal Dustbin</li> <li>● Privatization</li> <li>● Operation Control</li> <li>● Safe Operation</li> <li>● Selection of Equipment</li> </ul> |
|---|---|

## Improvement Procedure:

- Combination of ideas to speed up collection service
- Time & Motion Study as a Tool for
  - Present situation study for Problems finding from various aspects
  - Problems and Causes Analysis and
  - Decision Making



## Final Disposal

- Open dump sites have concentrated problems especially health risks
- Various / feasible ideas should be combined for its step-by-step improvement





## Compaction of Dumped Waste and Soil Cover

### ■ Compaction

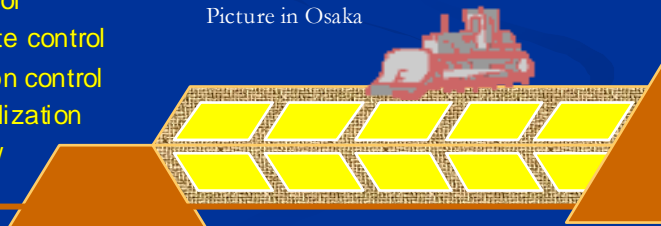
- Stable Formation
- To reduce waste volume
- Expand landfill life

### ■ Soil Cover

- Insect pest control
- Wild Fire control
- Scatter of waste control
- Dust generation control
- Landfill gas utilization
- Aesthetic View



Picture in Osaka



# Leachate Treatment

**Aerobic condition can promote fast decomposition of dumped waste, that minimize bad quality of leachate as well as landfill gas generation.**

**Construction of Ditch on the bottom of landfill site**

**Leachate Collection pipe: Perforated Pipe with stone band filter**

**National Oxidation Ponds**

**Aerator to promote oxidation**

**Pictures in the Philippines**

# Degassing Facility

**Excavation of surface of landfill site**

**Sectional View Degassing Pipes**

**Landfill Gas**

**Blue Sheet**

**Soil Cover**

**Perforated Pipe**

**Perforated Pipe**

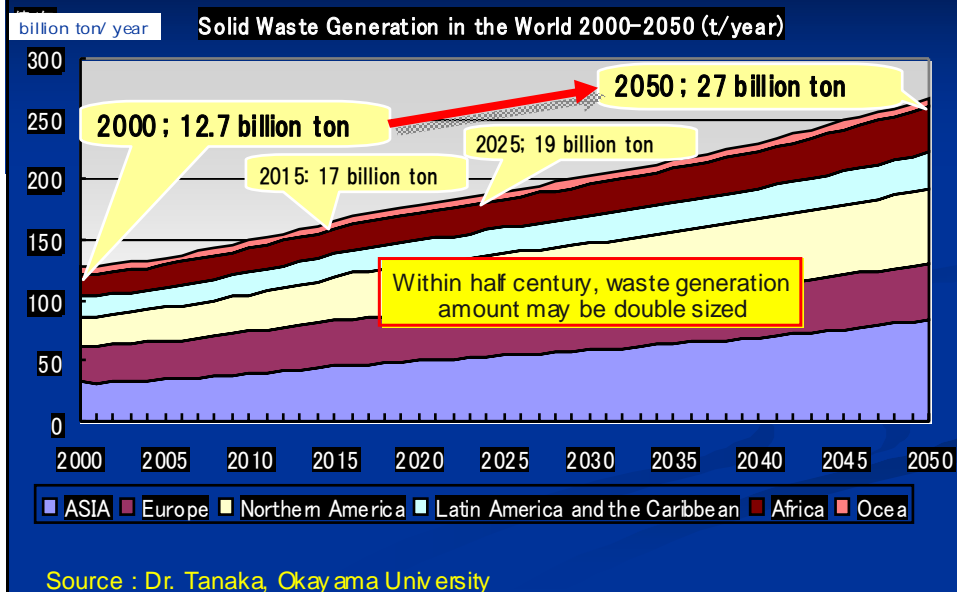
**Stones**

**Waste**

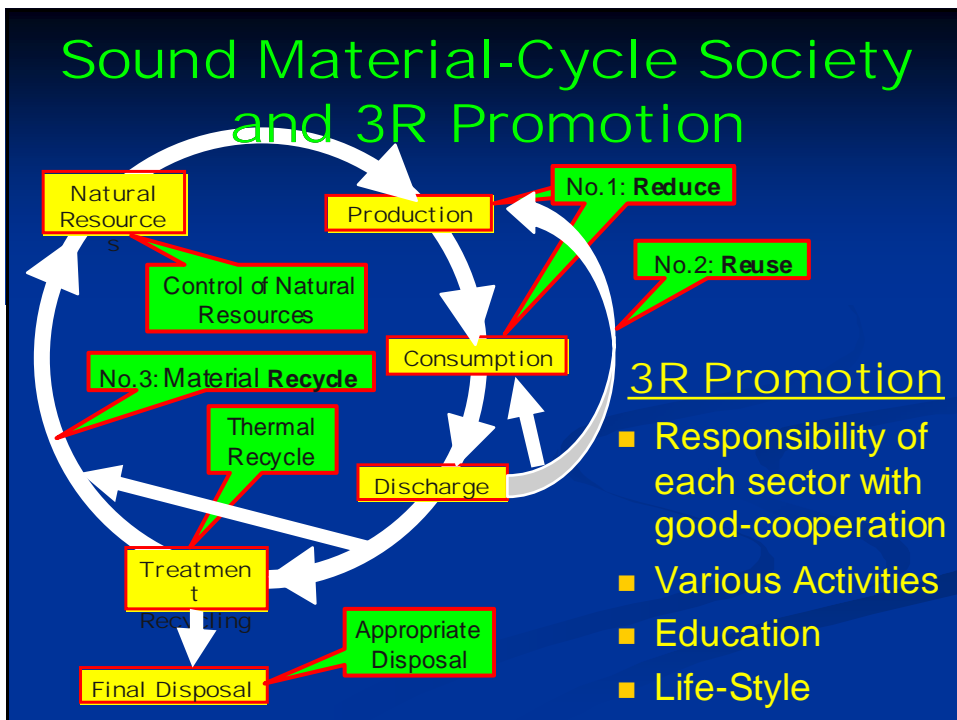
**Pictures in the Philippines**

**Picture in Osaka**

## Waste Generation in the World until 2050



## Sound Material-Cycle Society and 3R Promotion



# Role of Each Sector on SWM in Japan



Sector	Role
National Government	Basic Policy, Criteria for Waste Treatment, Criteria for Treatment Facility, Technology Development, Information gathering
Prefectural Government	Formulate Waste Disposal Plan, Licenses to Waste Disposal Business, Give Policy Order
Municipalities	Formulate MSW Disposal Plans, Implement MSW Management, Give Policy Instructions
Dischargers Citizen/Business	Cooperate with Municipalities, Reduce and Reuse of Waste + Sorting
Manufacturers, Wholesalers	Material Recycling, EPR: Expanded Producers Responsibilities

## Japanese Dolls in Girls' Day



Terima kasih for your attention.  
For your inquiries and requests,  
contact below:

**Ryo HIRAGA**