AWARENESS WORKSHOP ON NErudp

INSTITUTIONAL AND REGULATORY SYSTEM FOR
SEP'TAGE MANAGEMENT IN JAPAN

Aizawl, INDIA

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NIGHT SOIL AND DOMESTIC WASTEWATER TREATMENT SYSTEMS IN JAPAN

Sewerage system

Rural sewerage system

Johkasou system

Tandoku-shori johkasou

Night soil storage tank

wastewater treatment facility

Night soil treatment facility
Treatment plant for treating collected night soil and johkasou sludge.

Night soil treatment and organic waste recycling center
Treatment plant for treating and recycling collected night soil, johkasou sludge and other organic wastes.
# CURRENT CONDITIONS OF NIGHT SOIL – JOHKASOU SLUDGE TREATMENT IN JAPAN (1)

## FLOW OF NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT

<table>
<thead>
<tr>
<th>Generated Waste</th>
<th>Collection and Storage</th>
<th>Conveyance</th>
<th>Treatment - Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households - Large buildings</td>
<td>1. Sewer systems</td>
<td>1. WWT Treatment Plant → Sludge → main sludge disposal method: dewatering + incineration + landfilling</td>
<td></td>
</tr>
<tr>
<td>2. Decentralized Wastewater Treatment → 2 types of facilities when discharge of effluent.</td>
<td>2. &amp; 3. Night Soil Treatment Facility (biological treatment) Night soil Treatment and Organic Waste Recycling Center → main sludge disposal method: same as above</td>
<td></td>
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</tr>
<tr>
<td>2.1 Discharge of black water only: Flush toilet + Tandoku-shori johkasou</td>
<td>3. Vault toilet + storage tank</td>
<td></td>
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</tr>
<tr>
<td>2.2 Discharge of grey and black water: flush toilet + johkasou</td>
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<tr>
<td>3. When effluent not discharged: Vault toilet + storage tank</td>
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</tr>
<tr>
<td>From Tandoku-shori johkasou and johkasou</td>
<td>Tandoku-shori johkasou and johkasou</td>
<td>Vacuum truck</td>
<td></td>
</tr>
</tbody>
</table>
| Johkasou Sludge | | | Night Soil Treatment Facility
• Night soil Treatment and Organic Waste Recycling Center |

**Tandoku-shori johkasou** = treatment of black water only

**Johkasou** = treatment of black water + grey water

**Johkasou sludge** = sludge generated in tandoku-shori johkasou or johkasou
CURRENT CONDITIONS OF NIGHT SOIL – JOHKASOU SLUDGE TREATMENT IN JAPAN (2)
RESULTS OF NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (FY 2009)

Population equipped with public sewerage: 87.8 million
Population equipped with flush toilets: 116.6 million
Total Population: 127.4 million
Population covered by Johkasou & T-SJ: 28.8 million
Population connected to dry toilets: 10.8 million
Population included in Night Soil collection plan: 10.6 million
Population with individual management: 0.14 million

Domestic + Industrial Wastewater (Black + Grey Water)
Wastewater (Black or/and Grey Water)

WWT Treatment Plants
Johkasou
NS Treatment Facilities
61,213 tons/day
38,327 tons/day

Waste Compost Facilities
158 tons/day
114 tons/day

Methanation Facilities
75 tons/day
62 tons/day

Septage treated in WWT Tr Plants
3,465 tons/day
2,219 tons/day

NS/Sludge Recycling in Agricultural Land
90 t/d
64 tons/day

Others
127 tons/day
83 tons/day

Individual Management
279 tons/day
29 tons/day

Night Soil & Sludge Volume Treated
65,128 t/d

Night Soil (Black Water)
24,259 tons/day

(FY2009)
CURRENT CONDITIONS OF NIGHT SOIL – JOHKASOU SLUDGE TREATMENT IN JAPAN (3)

VOLUME OF COLLECTED NIGHT SOIL AND JOHKASOU SLUDGE

NOTE

**public sector 1**: night soil /johkasou sludge are collected and transported by officials from local government.

**public sector 2**: night soil /johkasou sludge are collected and transported by staff of private companies. In that case, local governments conclude a contract with a private company and remunerate them for the provided service. However, all the responsibility for the collection remains to the local governments.

**private sector**: private companies with permission from local governments collect and transport night soil/johkasou sludge on a business base.

<table>
<thead>
<tr>
<th>Officials involved in septage management in local governments (FY 2009)</th>
<th>7,228</th>
</tr>
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<tbody>
<tr>
<td>Number of private companies related to septage management business (FY 2009)</td>
<td>5,341</td>
</tr>
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</table>
CURRENT CONDITIONS OF NIGHT SOIL – JOHKASOU SLUDGE TREATMENT IN JAPAN (4)

COST OF NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT

**Cost for:**
- Implementation of facilities
- Operation and maintenance
- Activities of private sector
- Municipal employees

**Financing Resources**
- Budget of local government
- National subsidy – tax
- Prefectural financial support
- Municipal bond
- Treatment charge

**Example of Desludging Fee for 5 PE Facility**
- Desludging fee for johkasou: 26,000 JPY/year
- Desludging fee for vault toilet: 2,000 JPY/op. (usually 3 times/year)
## OUTLINE OF LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT

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<td>• License for domestic waste disposal and treatment business</td>
<td>• Master plan for waste disposal and treatment facilities (implementation of night soil treatment facilities - night soil treatment and organic waste recycling centers)</td>
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<td><strong>2. WATER POLLUTION CONTROL LAW</strong></td>
<td><strong>2. JOHKASOU LAW</strong></td>
<td>• License for collection and transport business</td>
<td>• Master plan for solid waste treatment (implementation of landfill sites)</td>
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<td>• Performance of johkasou to be installed (scale, areas)</td>
<td>• Desludging frequency of johkasou for individual households (storage period)</td>
<td>• License for johkasou desludging business</td>
<td>• Training of O&amp;M technicians</td>
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<td>Application – validation</td>
<td>• Capacity of night soil storage tank</td>
<td>• Regulation for discharged effluent</td>
<td>• Performance requirements</td>
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<td>• Building certification</td>
<td>• Desludging frequency for medium and large scale johkasou (desludging plan)</td>
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<td>• Completion inspection</td>
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<td><strong>Installation of sanitation equipment in buildings</strong></td>
<td><strong>Technical standards for performance of sanitation equipment</strong></td>
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  - Desludging frequency for medium and large scale johkasou (desludging plan)  
  - License for johkasou desludging business  
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</table>
I. Steps for generated waste (1)

2. Water Disposal and Public Cleansing Law

• Inside the municipal area, domestic wastewater treatment (including night soil/johkasou sludge) becomes local government/municipality’s responsibility.

• Municipalities must create a standardized plan for domestic wastewater treatment inside their area. This plan is called ‘Master Plan for Domestic Wastewater Treatment’.

• The ‘Master Plan for Domestic Wastewater Treatment’ needs to enable the selection of either the sewerage system, johkasou, and vault toilets to respond to local specifics for efficient domestic wastewater treatment.
LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (1)

I. Steps for generated waste (2)

2. Water Pollution Control Law, etc.

• johkasou with capacity over 50m³/day have to comply with the regulation on water quality regulation/standards from the Water Pollution Control Law

• Johkasou installed in areas targeted by the Law concerning Special Measures for the Conservation of Lake Water Quality and other related laws, must include advanced treatment performance to remove nitrogen and/or phosphorous.
LEGAL AND REGULATORY SYSTEM FOR
NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (1)

I. Steps for generated waste (3)

3. Building Standard Law

Application – validation
- building certification
- completion inspection

Implementation of sanitation facilities
- flush toilet
- johkasou
- night soil storage tank

Performance – structure
- structure of vault toilet
- structure of NS storage tank
- technological standards for treatment, performance of domestic wastewater
- structure of johkasou / size determination (JIS)

Type approval
- certification for type conformity (NS storage tank, tandoku-shori johkasou, johkasou), johkasou performance evaluation test
I. Steps for generated waste (4)

4. Johkasou Law

Legal construction procedures

- application for installation
- registration for construction business
- technical standards for construction
- certification of installation workers
LEGAL AND REGULATORY SYSTEM FOR NIGHT SOIL AND JOHKASOU SLUDGE TREATMENT (2)

2. Storage and collection stages

1. Building Standard Law
   - Performance – structure of building equipment
     - Capacity of NS storage tank

2. Johkasou Law
   - Desludging frequency for individual households
     - Johkasou (storage period/collection interval)
     - Desludging frequency for medium and large scale Johkasou (sludge removal plan)
   - License for desludging business,
     - Technical standards for desludging
3. Transport stages

1. Waste Disposal and Public Cleansing Law

   • License for domestic waste treatment/disposal business

   • License for collection and transport business
4. Treatment - disposal stages

1. Waste Disposal and Public Cleansing Law
   - Master plan for waste disposal and treatment facilities
     (night soil treatment facilities & night soil treatment and organic waste recycling centers)
   - Master plan for waste treatment (implementation of landfill sites)

2. Water Pollution Control Law
   - Regulation for discharged effluent quality (night soil treatment facilities and others)

3. Performance of NS treatment facilities & NS treatment and organic waste recycling centers – Guidelines for operation and maintenance (O&M)

4. Structure for training of O&M technicians
NIGHT SOIL TREATMENT AND ORGANIC WASTE RECYCLING CENTER

- Night soil and johkasou sludge treatment

- Organic waste

**Resource recovery process**

- Crushing sorter
- Mixer
- Methane fermenter
- Dehydrator
- Generator
- Composter
- Gasholder

Centralized treatment systems
CONCLUSIONS

1. When considering the preservation of public health and water environment, it is highly important to well establish and enforce laws and related regulations at all stages of septage management, including sludge generation, storage and collection, transport, treatment and disposal.

2. Regulations on sanitation equipment in buildings that ensure the volume and quality of generated waste on-site facilitate the planning and implementation of septage management.

3. To establish a sustainable septage management system nationwide, a framework for O&M technicians training by regulations is important.

4. To promote the recycling of septage and other organic wastes, a framework for financial support and regulations is necessary.
The Japan Sanitation Consortium (JSC) was launched on 16 October 2009.

JSC consists of the 4 main national agencies managing on-site and off-site sanitation in Japan.

JSC aims to utilize Japan’s advanced experience in sanitation and successful models from other countries to solve related issues in the region.

- JSC collaborates with ADB and other Donors Agencies, international organizations, NGOs, etc. for regional sanitation improvement.

- **JSC MEMBER ORGANIZATIONS**
  
  **Off-site Sanitation**
  Sewerage Business Management Centre
  Japan Sewage Works Association

  **On-site Sanitation**
  Japan Environmental Sanitation Center
  Japan Education Center of Environmental Sanitation
JSC Sanitation KnowledgeHub, Japan
Regional Water Knowledge Hub for Sanitation

- **JSC Expertise**
  - Member of a regional network of water specialists, committed for sanitation development in the Asia-Pacific region
  - On-site and off-site sanitation specialized organization

- **JSC Services**
  - Networking, Information Gathering & Sharing, Knowledge Dissemination, Support to International Donor Organizations

- **JSC Partners**
  - ADB, JICA, Japan Water Forum, UNICEF, etc.

Thank you for your attention