

Guidelines for the Management of Basic On-site Domestic Wastewater Services

— Presentation for the Activities of ISO/TC224/WG8

XINBI YANG

Japan Education Center of Environmental Sanitation

Background^(1/2) Water Services in Developing Countries

- **Millennium Development Goals**

- Target 7.C:

- Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation

- ⇒ Over 240,000 people a day gained access to improved sanitation facilities from 1990 to 2011.

- ⇒ Despite progress, 2.5 billion in developing countries still lack access to improved sanitation facilities

Source: UN Website

Background^(2/2) Water Services in Developing Countries

- **Lack of Knowledge/systems of Management**
 - Lack of knowledge on appropriate treatment of sanitary waste (i.e. black water and/or gray water)
 - Lack of systems for maintenance and desludging
 - Lack of training system for technicians
 - Lack of education for users



Development of ISO/TC224/WG8 (1/4)

- **Kenya proposal for a new TC**

“Domestic and Communal Wastewater Sanitation”

KEBS, ISO/TS/P216, 2010.09

Scope

- Standardization in the field of domestic and communal wastewater sanitation
- Including but not limited to amenities for the safe disposal of human waste and gray water (e.g. septic tanks, eco-sanitation, dry toilets, etc.)
- Including treatment of the waste and sanitation during emergency situation by natural disasters.
- Excluding municipal and industrial wastewater
- Result of voting (Jan. 2011):
7 approvals, 5 disapprovals and 5 abstentions
⇒ **rejected**

Development of ISO/TC224/WG8 (2/4)

- **Kenya proposal for a new TC (2010.09)**
“Domestic and Communal Wastewater Sanitation”

Issues arising

- Scope: requires to be clarified to avoid risk of duplication
- Definition of terminologies: domestic wastewater, onsite versus offsite, low technology etc.
- Clearly check for overlaps: ISO/TC 224 (ISO 24510, 24511, 24512), ISO/TC 253, EN 12566 series of CEN/TC 165, statutes of Finland, 542/2003)
- Methods and technologies vary widely depending on geographical, economic and socio-cultural orientation.

Development of ISO/TC224/WG8 (3/4)

- **New WG under ISO/TC224 (2011.05)**

“On-site Domestic Wastewater Management Using Low Technology”

- Date: 8th plenary meeting of ISO/TC224, 2011.05.20

- Ref No. ISO/TC224 N497

- Resolution 2011/05: the need to address the subject under ISO/TC224, adopted unanimously

- Resolution 2011/06: **new WG8 to be opened**. To write a supplement to ISO 24511

- Convenorship: Kenya & Austria

- Secretariat: KEBS

Development of ISO/TC224/WG8 (4/4)

- **Structure of the ISO/TC224**

"Service activities relating to drinking water supply systems and wastewater systems - Quality criteria of the service and performance indicators"

- WG 01 "Terminology"
- WG 02 "Services to users" (Closed) ⇒ ISO 24510 ✓
- WG 03 "Drinking water" (Closed) ⇒ ISO 24512 ✓
- WG 04 "Wastewater" (Closed) ⇒ ISO 24511 ✓
- WG 05 "Examples of the application of 2451X Standards"
- WG 06 "Asset management"
- WG 07 "Crisis management of water utilities"
- **WG 08 "Onsite domestic wastewater management using low technologies"**
- WG 09 "Decision support systems" Functions

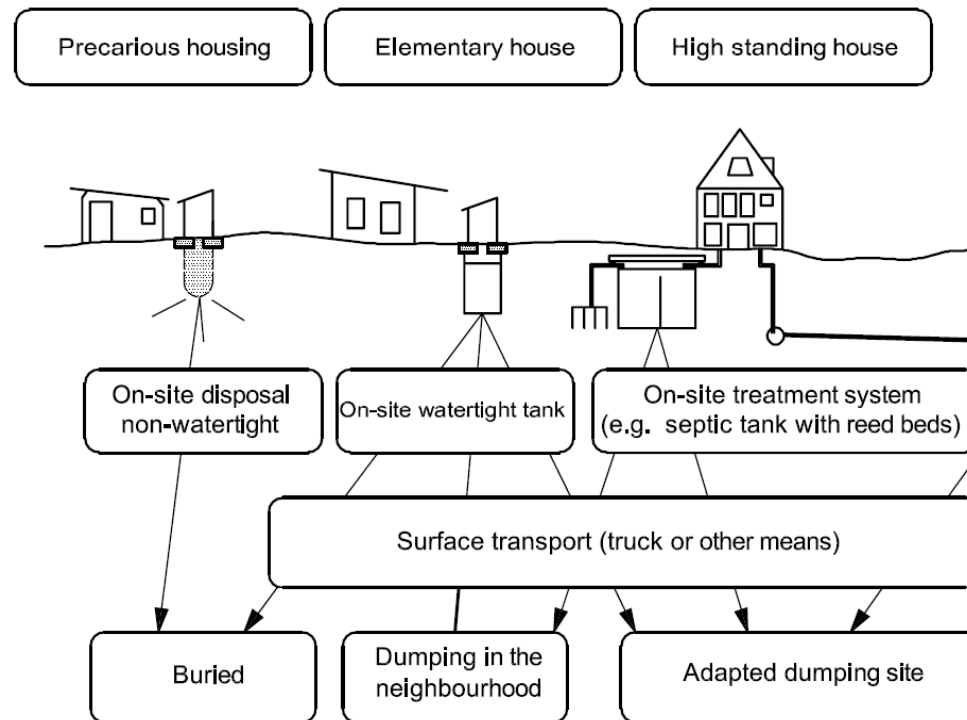
Activities of the WG8

- **1st Meeting (Nairobi, 2011.11)**
 - ✓ Launch of GW8, TGs
 - ✓ Discussion on the Title and the Scope
- **2nd Meeting (Vienna, 2012.06)**
 - ✓ Making Contents of the WD
- **3rd Meeting (Lisbon, 2013.02)**
 - ✓ 1st reading of the WD, discussing and disposal of the comments submitted from WG8 members
- **4th Meeting (Nairobi, 2013.10)**
 - ✓ Restart to make an ISO standard (ISO 24521)
 - ✓ Amendment of the Title and the Scope
 - ✓ 2nd reading of the WD, discussing and disposal of the comments submitted from WG8 members

Contents of WG8 Document (1/15)

- Title

“Guidelines for the Management of Basic On-site Domestic Wastewater Services”



Different types of basic on-site domestic wastewater systems

Contents of WG8 Document (2/15)

● Scope

- These ISO guidelines are applicable to publicly and privately operated sanitary (black and grey water) basic on-site domestic wastewater services, for one or more dwellings but do not favor any particular operational model.

NOTE 1

Management of on-site domestic wastewater, especially in rural areas/ areas under development is sometimes provided by the owners of the premises where wastewater is generated. In such cases the owners of the premises execute the management of domestic wastewater by themselves. Therefore, the term "services" in these ISO guidelines includes also "self-services" of the owners of the premises.

Contents of WG8 Document (3/15)

● Scope

- These ISO guidelines provide guidance for the management of basic on-site domestic wastewater services using technologies in their entirety at any level of development, as applicable.
- These ISO guidelines are supplement of ISO 24511 and 24510, as applicable.

Contents of WG8 Document (4/15)

● Scope

- These ISO guidelines include
 - guidelines for the management of basic on-site domestic wastewater services from the operator's perspective including maintenance techniques, training of personnel and risk considerations;
 - guidelines for the management of basic on-site domestic wastewater services from the users' perspective;
 - advises for design and construction of basic on-site domestic wastewater systems (see annexes);
 - guidelines for the education of the user and operator of basic on-site domestic wastewater systems.

Contents of WG8 Document (5/15)

● New terms and definitions

- 2.54 **Basic Service** ⇒ to be created
- 2.55 Clustered On-site Systems:
- 2.56 Collection - Storage - Treatment
- 2.57 Disposal - Reuse
- 2.58 Excreta
- 2.59 Functional Group
- 2.60 Land Treatment,
- 2.61 Technologies
- 2.62 Transportation
- 2.63 User Interface
- 2.64 Wetland

Contents of WG8 Document (6/15)

● Basic on-site domestic wastewater systems

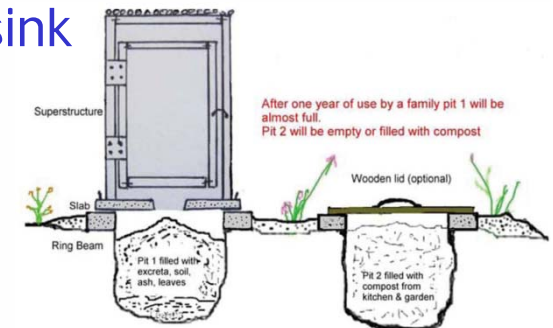
- Basic on-site domestic wastewater systems generally comprise:
 - user interface,
 - collection and transport of sanitary waste/wastewater and residues removed from wastewater,
 - treatment of sanitary waste/wastewater and residues removed from wastewater, and
 - disposal/reuse of residues.

Contents of WG8 Document (7/15)

● User interfaces

e.g.

- simple ventilated/unventilated pit latrine;
- dry toilet(including Urine diverting dry toilet, composting toilet and other basic dry toilet models and their variations)
- pour flush toilet
- waterless urinal
- cistern flush toilet
- Fossa Alterna
- washing facilities, e.g. grey water sink
- soakaway, e.g. for grey water.



Contents of WG8 Document (8/15)

● Collection

e.g.

- above ground tank (Jerrycan/ other tank)
- underground tank (drum/vaults/chambers);
- human-powered emptying;
- motorized (pump or vacuum) emptying;
- transfer station (underground holding tank)



Photos: NGO RAIL-Niger



Photo: NGO RAIL-Niger



Photo: pS-Eau

Contents of WG8 Document (9/15)

● Transportation

Transportation may be by way of carts, tricycles, trucks, vacuum tankers

NOTE:

When water is used, conventional drainage systems (gravity sewers), and non-conventional drainage systems (settled sewage or simplified sewer systems) may be applicable.



Contents of WG8 Document (10/15)

● Treatment

Technologies primarily for the treatment of wastewater:

- ventilated improved pit latrine
- pour flush latrine
- dry toilet (including Urine diverting dry toilet, composting toilet and other basic dry toilet models and their variations)
- septic tank with one or more compartments
- septic tank system with adequate filtration, if discharged
- ponds (anaerobic, facultative, aerobic, maturation)
- constructed wetland
- land treatment (slow filtration, rapid filtration and overland flow)
- biological treatment units, based usually on attached growth (such as trickling filters or rotating biological contractors) or suspended growth biological processes, such as low-rate activated sludge
- upflow anaerobic sludge blanket reactor (UASB)

Contents of WG8 Document (11/15)

● Treatment

Technologies primarily for the treatment of sludge:

- Sedimentation/thickening ponds
- Unplanted drying beds
- Planted drying beds
- Co-composting (where composting is required with other available organic waste)
- Anaerobic biogas reactor

Contents of WG8 Document (12/15)

● Disposal /reuse

Some examples of disposal/reuse of wastewater sub-products may include:

- Irrigation
- Effluent disposal
- Land application

Contents of WG8 Document (13/15)

- **Management components of basic on-site wastewater systems**

- Management components of basic on-site domestic wastewater systems comprise:

- Activities and process management
- Human resources management
- Financial resources management
- Management of assets
- Customer relation management
- Information management, and
- Risk management

Contents of WG8 Document (14/15)

- **Guideline for management of basic on-site wastewater systems**

- Contents of the guideline comprises:
 - General
 - Organization
 - Planning and construction
 - Operation and maintenance
 - Operation
 - Maintenance
 - Implementation and operation of collection
 - Implementation and operation of transportation
 - Education

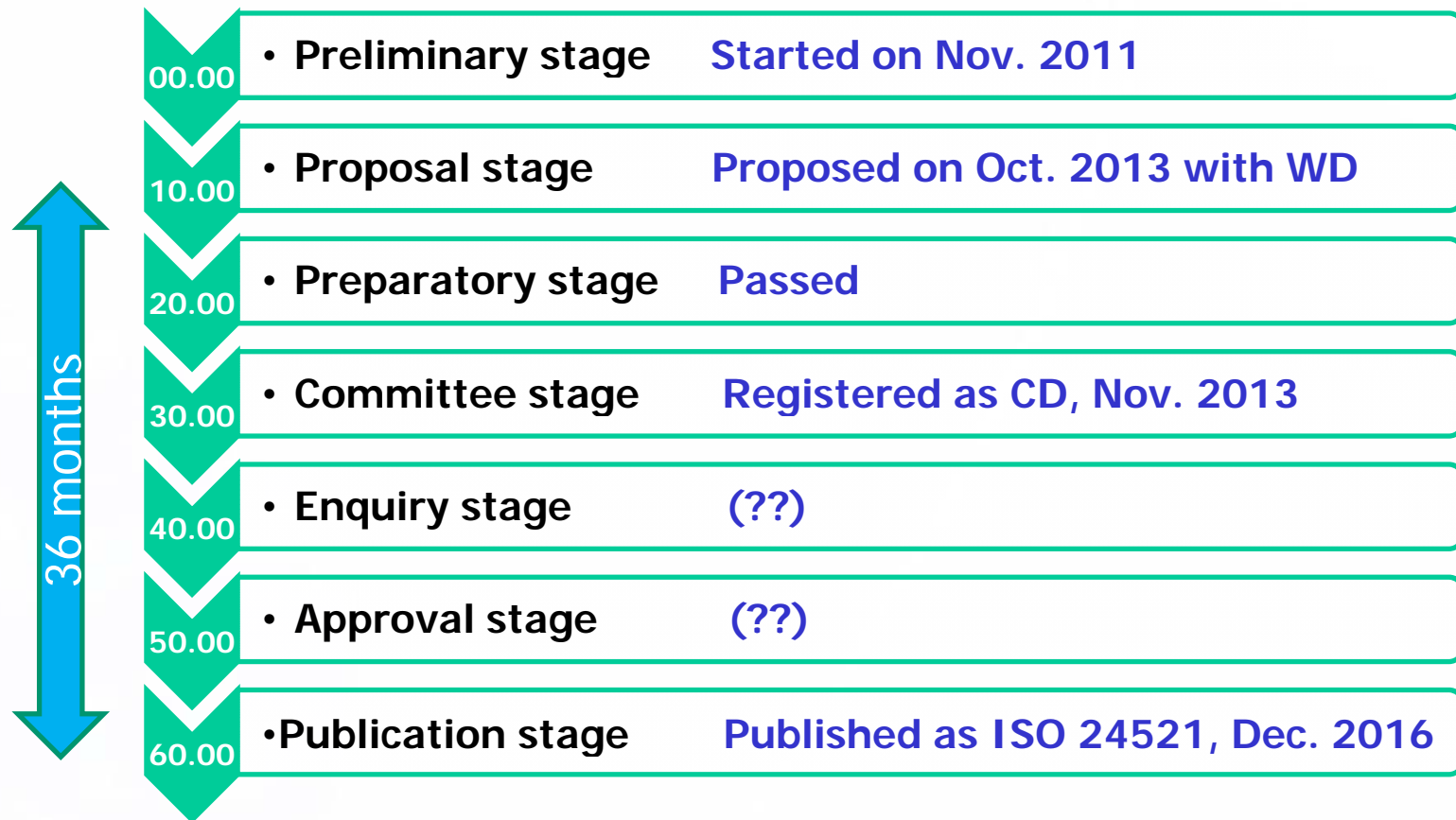
Contents of WG8 Document (15/15)

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Road Map to WG8 Document

Schedule of ISO 24521 by ISO/IEC Directives





Thank You for Your Attention !

