

Proper EXCRETA and SEWAGE Disposal

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Philippine Context PUBLICATION REVIEW



- Read **pages 18 to 24**

adb.org/sites/default/files/publication/217816/sanitation-safety-philippines.pdf

- Describe waste characterization and identification of potential health hazards for a **sewage or septage** treatment plant.
 - What **hazards** are related to the wastes generated by the system? How are these **identified and monitored**?

1. Excreta & Sewage

SEWAGE



- **waste matter** such as feces or dirty water from homes and factories (flows away through sewers)

EXCRETA



- comprise of **FECES and URINE** (normally of human origin)

2. Wastewater

- **liquid waste** from **toilet, bathroom, laundry, kitchen of households**; usually deposited in septic tanks or disposed through sewer lines (WHO, 2017)

- **used water** affected by domestic, industrial, commercial use; 99.9% **water** and 0.1% **organic matter, microorganisms, inorganic compounds** being removed (Tuser, 2021)

- from ordinary living processes: bathing, toilet flushing, laundry, dishwashing



3. Categories of Wastewater

GRAY WATER

- from showers, baths, dishwashers, sinks other than kitchen sink

BLACK WATER

- from toilets and kitchen

4. Levels of Toilet Facilities

INDIVIDUAL FACILITY

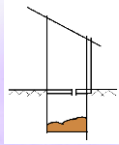
- dedicated for **individual household**

SHARED FACILITY

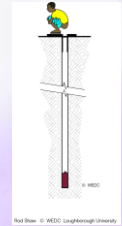
- **local single toilet** - shared at local level by a **number of households**
- **communal** - number of toilets for **predefined community**
- **public** - in public areas, dedicated for **everyone** (not to a predetermined user group)

5. Types of Toilet Facilities

- **Pail System / Bucket Toilet**
 - basic form of dry toilet
 - uses **bucket / pail** to collect excreta
 - feces and urine together in same bucket
- **Open Pit Privy**
 - pit covered by platform with **uncovered hole**



- **Closed Pit Privy**
 - pit covered by a platform with **covered hole**



- **Bored Hole Latrine**
 - deep but relatively **narrow hole** made with mechanical / boring equipment
 - 10-18 inches diameter
 - 15-36 feet deep

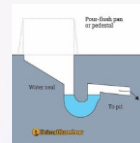
Pub. Blue © WDC Longhorn University

- **Overhung Latrine**
 - toilet house constructed **over a body of water**



- **Antipolo Style**
 - **elevated** toilet house or a shallow pit is extended upwards

- **Water-Sealed Latrine**
 - **water-sealed toilet** placed over a pit
 - with S or P bend such that there is water barrier



- **Flush Type**
 - waste is disposed by **flushing water** through pipes (sewer) into sewage system or septic tank



6. Excreta and Sewage Disposal Systems

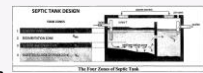
- The privy recommended for use is the **sanitary privy**.
 - fecal matter and urine be deposited into earthen pit, which shall be completely fly-proof
 - pit shall be **at least one meter square**
- Individual sewage disposal system shall not be installed, maintained or operated on property **accessible to public sanitary sewerage system**



Sewage Collection and Disposal, Excreta Disposal and Drainage of the Code on Sanitation of the Philippines (PD 856)

7. Septic Tanks

- **water tight receptacle** which receives discharge of plumbing system or part thereof
- designed to accomplish **partial removal and digestion** of suspended solid matter in sewage through period of detention
- signs that septic tanks are full: bad odor, slow drains, trouble flushing, pooling water



Sewage Collection and Disposal, Excreta Disposal and Drainage of the Code on Sanitation of the Philippines (PD 856)

- must be rectangular, structurally sound, and watertight
- depth provides **adequate gravity flow** from source
- **not installed under** building, park, or driveway (cannot withstand heavy loads)
- not in areas with steep soil slope or prone to **erosion / landslide**
- on firm, dry, granular, undisturbed soil
- must be **desludged every 4 years** to maintain designed treatment efficiency
- inspect for **cracks and ponding of water**

National Standard on the Design, Construction, Operation and Maintenance of Septic Tank System
DOH Administrative Order No. 2019-0047

- Practice **water conservation** to prevent overloading. Check for **defective** toilet tank valves, repair leaky fixtures, and install appliances and fixtures that **use less water** and avoid wasteful practices.
- Divert **excess rainwater runoff** away from septic tank and leaching field system.
- Keep trees and deep-rooted plants and shrubs away from immediate area that may **intrude or clog** the system.
- **Do not park or drive heavy** vehicles or equipment over septic system or any of its components.

National Standard on the Design, Construction, Operation and Maintenance of Septic Tank System
DOH Administrative Order No. 2019-0047

The following **shall not be discharged** into a septic tank system:

- Any sanitary napkin, clothing, or plastic material or liner
- **Flammable or explosive** substance (solid, liquid or gaseous)
- Disinfectant or deodorant, antiseptic or germicide powder or fluid
- Stormwater, including roof and rainwater tank overflow, and surface drainage waters
- **Backflush waters** from swimming pool or water softener discharge from spa bath/pool.
- **All large objects, food, oil, and grease**

National Standard on the Design, Construction, Operation and Maintenance of Septic Tank System
DOH Administrative Order No. 2019-0047

8. Septic Tanks & Disposal of Effluent

- septic tank shall be located **not less than 25 meters** from any well, spring, cistern, or other sources of drinking water supply
- shall be cleaned before **excessive sludge or scum** is allowed to accumulate and seriously reduce the settling efficiency
- effluent and wastes shall **not be discharged** onto surface of ground or into any street... or body of water

Sewage Collection and Disposal, Excreta Disposal and Drainage of the Code on Sanitation of the Philippines (PD 856)

9. Laws / Policies

- Sewage Collection and Disposal, Excreta Disposal and Drainage of the **Code on Sanitation of the Philippines (PD 856)**
 - Septic tanks must be water-tight, inspected **once a year**, must be cleaned and treated **when sludge reduced liquid capacity by 50 percent**
- **Commonwealth Act 383, Anti-Dumping Law in 1938**
 - Prohibit dumping of waste matter and other substances into rivers

Review of Urban Wastewater Management and Clean Water Act
Sonny N. Domingo and Arvie Joy A. Manejar (December 2021)
Philippine Institute for Development Studies

10. Implications to Nurses' Care of Families

Common Exposure Routes and Transmission

- **Ingestion after contact with wastewater and excreta**
 - Transfer of excreta (urine and/or feces) through direct contact to mouth from hands or items in contact with mouth, including ingestion of contaminated soil via contact with hands (e.g., farmers or children)
- **Ingestion of contaminated groundwater and surface water**
 - Ingestion of water drawn from ground or surface source, contaminated from wastewater or excreta and sludge, including unintentional ingestion of recreational waters by swimmers and bathers

GUIDE TO SANITATION SAFETY PLANNING IN THE PHILIPPINES (2016)
Modified from World Health Organization, 2015.

- **Consumption of contaminated produce (vegetables)**
 - Consumption of plants (e.g., lettuce) grown on land irrigated or fertilized with sanitation product
- **Dermal contact with excreta and wastewater**
 - Infection where pathogen (e.g., hookworms) enters through skin via feet or other exposed body part following contact with wastewater, excreta, open defecation, contents of leaking sanitation components or during operation (e.g., pit emptying)

GUIDE TO SANITATION SAFETY PLANNING IN THE PHILIPPINES (2016)
Modified from World Health Organization, 2015.

- **Vector borne by flies and mosquitoes**
 - mechanical transfer of excreta by flies to person or food items, and bites from mosquito or other biting insect
- **Inhalation of aerosols and particles**
 - inhalation of micro droplets of water and particles (which may not be noticeable) emanating or resulting from sanitation technology, which may carry a pathogen dose

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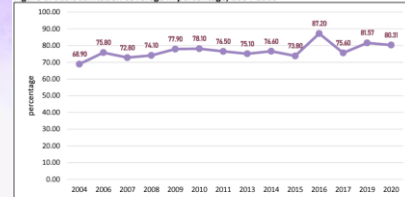
• SANITATION TO SOLVE WASTEWATER CONCERNS

- Wastewater may contain **toxic chemicals, hazardous and organic substances, and pathogenic organisms**, which may create problems to ecosystems and people's health
- Efficient sanitation systems are needed to provide solution for **separating pathogenic organisms and harmful chemicals and substances** from human contact

(WHO, 2017)

In Figure 6, the highest coverage was recorded in 2016 followed by an immediate fluctuation to 75.60 in 2017. Most recent figure pegged the percentage at 80.31 in 2020.

Figure 6. Basic sanitation coverage in percentage, 2004-2020



Source: Compiled from various sources (APIS, FIES, Philippine Water Supply and Sanitation Master Plan 2021)