World Health Organization

Introduction to
Sanitation Safety Planning

Step-by-step risk management for safely managed sanitation systems

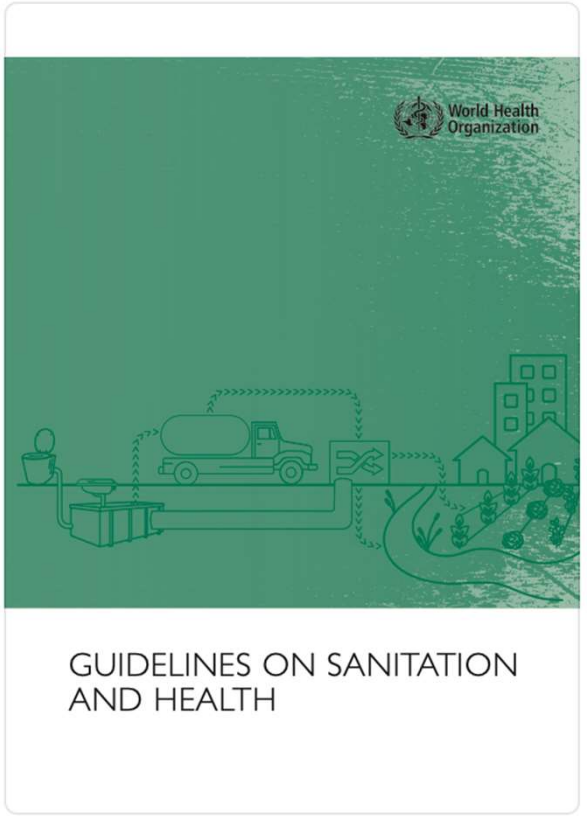
SANITATION
SAFETY
PLANNING

Why do we need Sanitation Safety Planning?

Sanitation

According to the WHO Guidelines on Sanitation and Health:

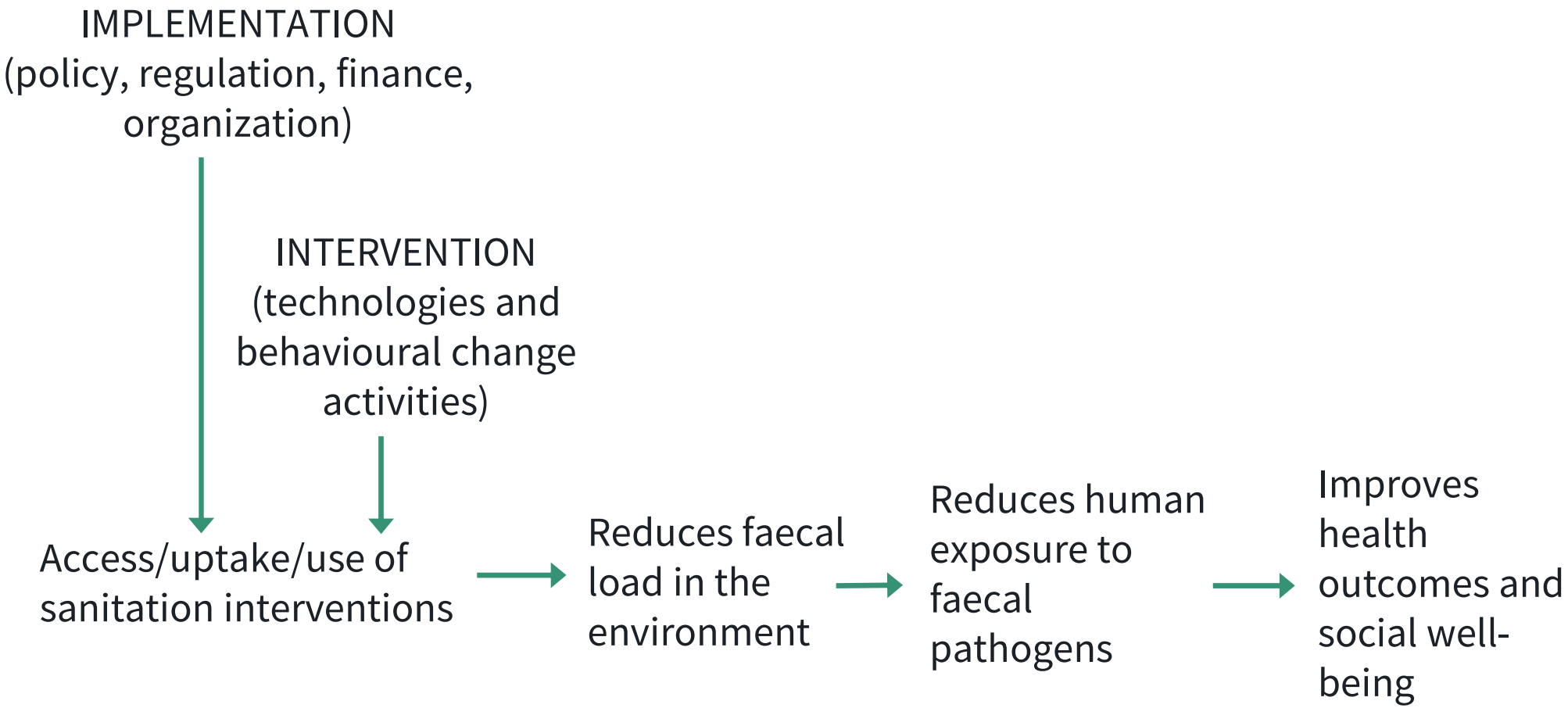
Sanitation is defined as **access to** and **use of** facilities and services for the **safe disposal** of human urine and faeces.



Sanitation is a human right, and a public good and is meant to deliver cost-effective **benefits for public health, the economy and the environment**.

Sanitation impact on health

Pathways through which sanitation shall provide health and economic benefits



But evidence shows lower health impact than expected

Photos: L. Barreto Dillon

Sanitation systems are not interrupting pathogen transmission

Evidence on effectiveness

Overall, greater access to sanitation is associated with significant lower odds of diarrhoea and other infections.

-Absence of open defecation is associated with healthier populations.

-Evidence of a protective effect of sanitation on infectious diseases and nutrition.

-Evidence of association with wider health outcomes, including cognitive development, personal wellbeing, especially among women and girls.

However, the health impact is lower than expected

Reasons for low health impact

-Many interventions do not reach levels of toilet access and use in the community that are high enough to remove pathogens from the environment.

Disease reduction will not be detected unless the coverage of sanitation use at community level is high (>70%)

-Many sanitation systems do not effectively prevent contamination of the environment (failures in containment, transport, treatment, etc.) hence have limited impact on exposure.


The reality of poor sanitation

Health impact of unsafe sanitation

Faecal-oral infections: e.g., diarrhea (2016 killed 800 000 people)

Helminth infections

Vector-borne diseases

Sequelae (conditions caused by preceding infections): e.g., stunting.

Broader well-being: e.g., anxiety

Photo by fairplanet.org

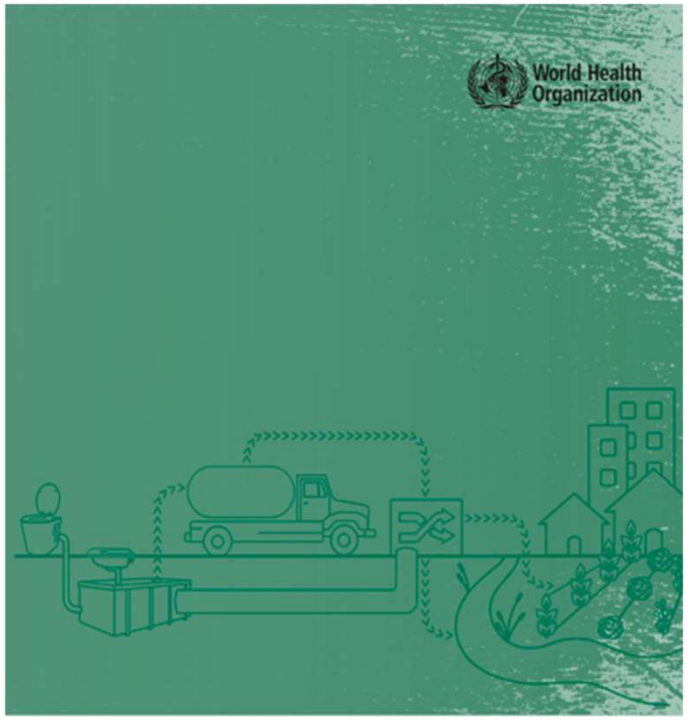
Heath impact of unsafe sanitation

Direct impact (infections)*	Sequelae (conditions caused by preceding infection)	Broader well-being
Faecal-oral infections • Diarrhoeas (incl. cholera) • Dysenteries • Poliomyelitis • Typhoid **Helminth infections** • Ascariasis • Trichuriasis • Hookworm infection • Cysticercosis • Schistosomiasis • Foodborne tremetodes **Insect vector diseases** (vectors breed in faeces or water contaminated with faeces) • Lymphatic filariasis • West Nile Fever • Trachoma	• **Stunting/ growth faltering** - related to repeated diarrhoea, helminth infections, environmental enteric dysfunction • **Consequences of stunting** -obstructed labour, low birthweight • **Impaired cognitive function** • **Pneumonia** - related to repeated diarrhoea in undernourished children • **Anaemia** - related to hookworm infections	**Immediate:** • Anxiety (shame and embarrassment from open defecation and shared sanitation) and related consequences • Sexual assault (and related consequences) • Adverse birth outcomes (due to underuse of healthcare facilities with inadequate sanitation) **Long-term** • School absence • Poverty • Decreased economic productivity • Anti-microbial resistance

WHO 2018 Guidelines on Sanitation and Health

Authoritative health-based guidance on sanitation that results in better health

Evidence · Recommendations · Guidance · Tools · Resources



Objectives

- Ensure that sanitation systems are designed and managed safely to protect human health from microbial hazards contained in human excreta.
- Maximize the health impacts of sanitation interventions.
- Articulate the role of health sector in sanitation.

Recommendations

Derived from comprehensive evidence review and wide expert and end user input

1. Ensure universal access and use of toilets that safely contain excreta

2. Ensure universal access to safe systems along the entire sanitation service chain

3. Sanitation should be addressed as part of locally delivered services and broader development programmes and policies

4. The health sector should fulfil core functions to ensure safe sanitation to protect public health

Implementing recommendations

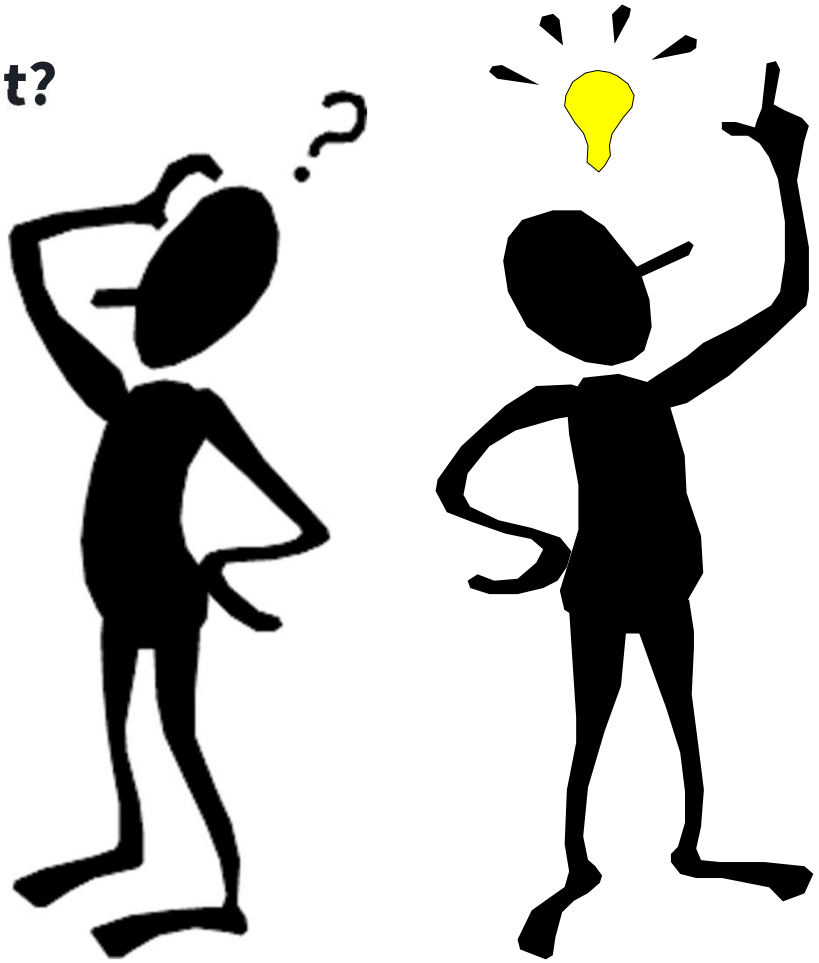
Ensuring that we maximize the health benefit of sanitation interventions

What we can do as local practitioners?

We need to ensure that:

- Systems and services are selected to respond to the local context.
- Investments and system managements are based on local level risk assessments along the entire sanitation chain.
- Incremental improvements are based on local level risk assessment.
- Communities, sanitation workers, consumers and farmers are protected.

How do we do that?



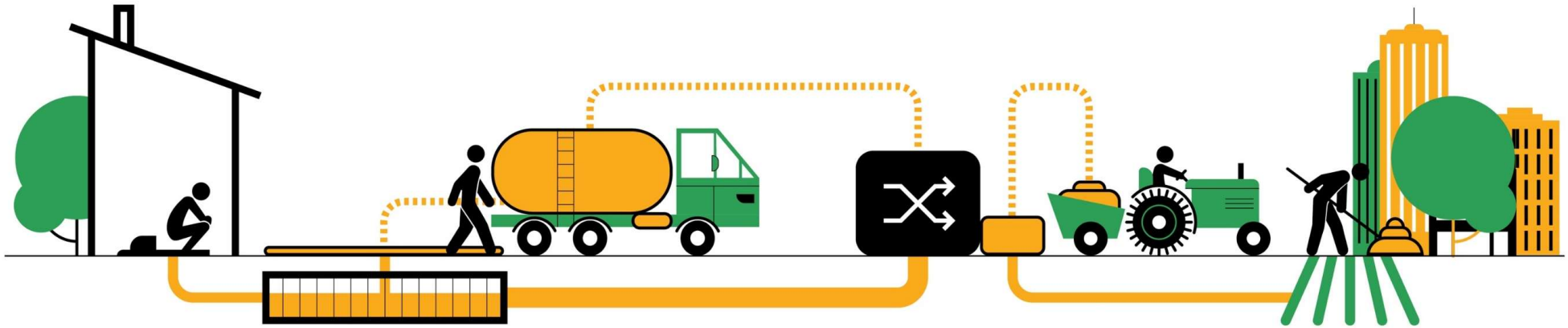
We need to ensure

safety

along the entire sanitation service chain.

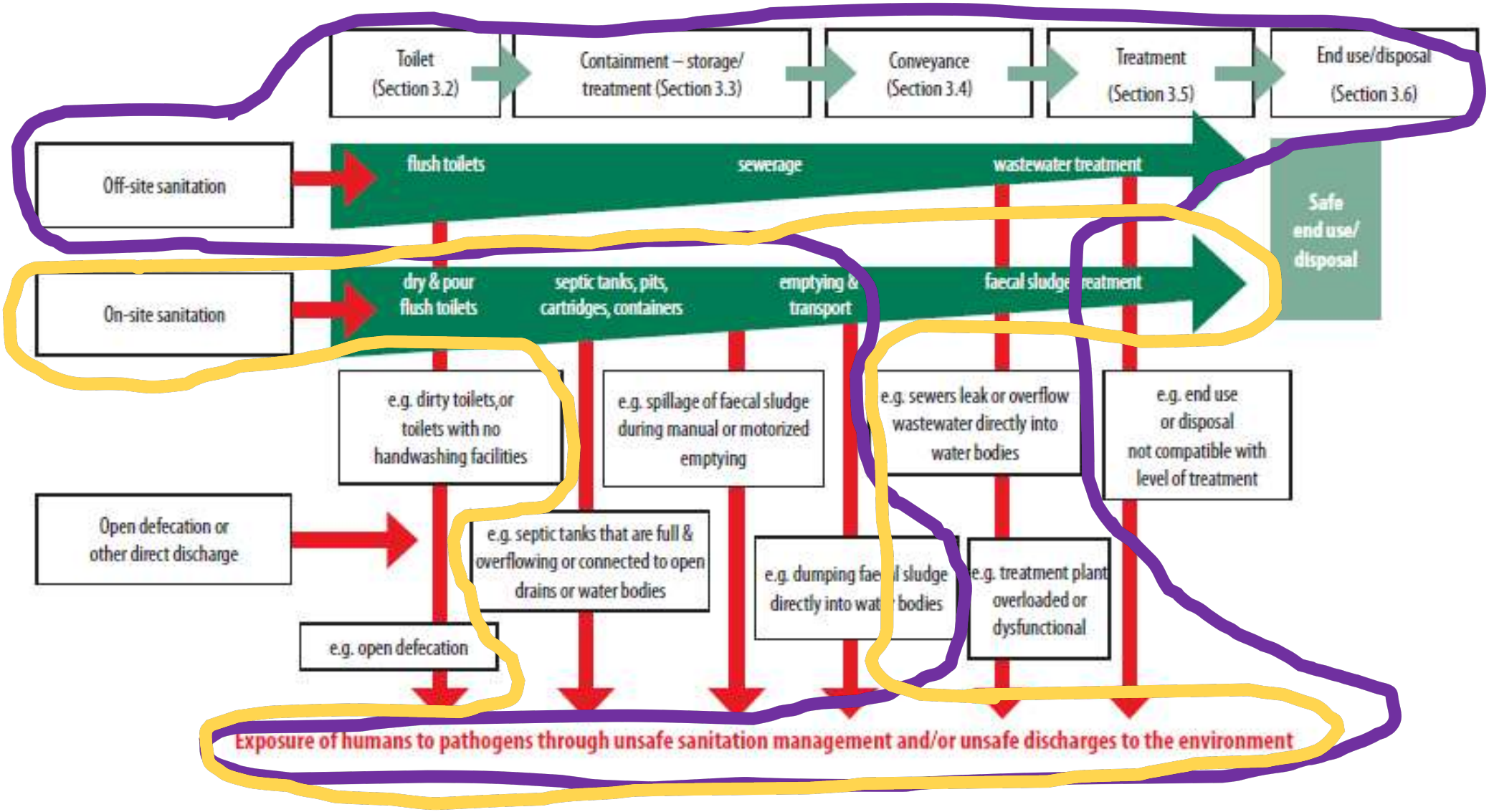
Safe sanitation systems

Arrangement of technologies and practices designed to separate human excreta from human contact **<u>at all steps</u>** of the **sanitation service chain**.



Failures at any step of the sanitation chain result in negative health outcomes

Typical failures



Risks should be managed along the entire sanitation service chain

Sanitation Safety Planning - SSP

WHO recommended approach

SSP is a risk-based management tool for sanitation systems that:

- helps with systematically identifying and prioritizing health risks along the sanitation chain;
- guides management and investments in sanitation systems according to risk;
- identifies operational monitoring priorities and regulatory oversight mechanisms that target the highest risks

SSP provides assurance on the safety of sanitation-related products and services

WHO 2006 Guidelines for the safe use of wastewater, excreta and greywater

SSP was first published to make the 2006 WHO Guidelines on reuse more widely adopted.

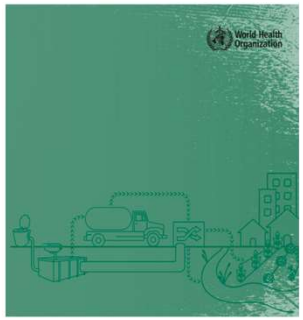
These guidelines are concerned with the health implications of reusing wastewater and aim to protect the farmers, local communities and consumers, maximizing the health benefits of safe reuse.

Today, SSP is used for the entire sanitation system.

SSP manual – Second Edition, 2022

Key updates in this second edition of Sanitation safety planning include:

- simplification of the SSP process;
- reorientation to support recommendations on local-level risk assessment and management in the WHO Guidelines on sanitation and health, covering all steps of the sanitation chain, with or without safe end use; and
- inclusion of climate risks



How does SSP works?

System assessment phase

Identify disease pathway and affected people.

Identify hazards and hazardous events.

Carry out a risk–based assessment.

Identify the highest risks.

Identification and prioritization of control measures.

Define monitoring and validation mechanisms.

Operational, monitoring and management phase

Implement control measures to reduce the highest risks.

SSP Modules

Where should SSP be done? Who should be involved and what are their roles?

How does the sanitation service chain work?

What could go wrong? What existing control measures are in place and how effective are they? How significant are the risks?

What needs to be improved and how?

Is the system operating as intended?

How should SSP be supported? How can we adapt to changes?

Results of Sanitation Safety Planning

Products

- Prioritized, incremental improvement plan.
- Operational monitoring plan for regular monitoring and periodic verification.

Outcomes

- Maximization of health impact of sanitation solutions.
- Progressive implementation towards sanitation targets.
- Built local capacities of stakeholders, so they initiate and maintain the risk-based sanitation management approach.

Benefits of Sanitation Safety Planning

- Maximizes health benefits of sanitation interventions
- Prioritizes efforts
- Sets a plan for incremental improvements
- Target limited resources to the highest health risks
- Coordinates efforts

"SSP brings back the sanitation focus to health"

SSP in a nutshell

- is the WHO recommended approach for local risk assessment and management for sanitation systems;
- helps to maximize health benefits and minimize health risks;
- guides efforts to where it will have the most impact;
- helps to coordinate efforts of the many stakeholders along the sanitation chain, and stimulates policy dialogue.

Let’s look at a practical example

Newtown SSP Interactive Learning Activity

Welcome to Newtown, Sanitola

Municipality of 50,000 pp in the outskirts of a metropolitan city

Photo: L. Barreto Dillon

Water supply

Surface water source upstream

Photo: L. Barreto Dillon

Users of the sanitation system

6 volunteers!

Photo: L. Barreto Dillon

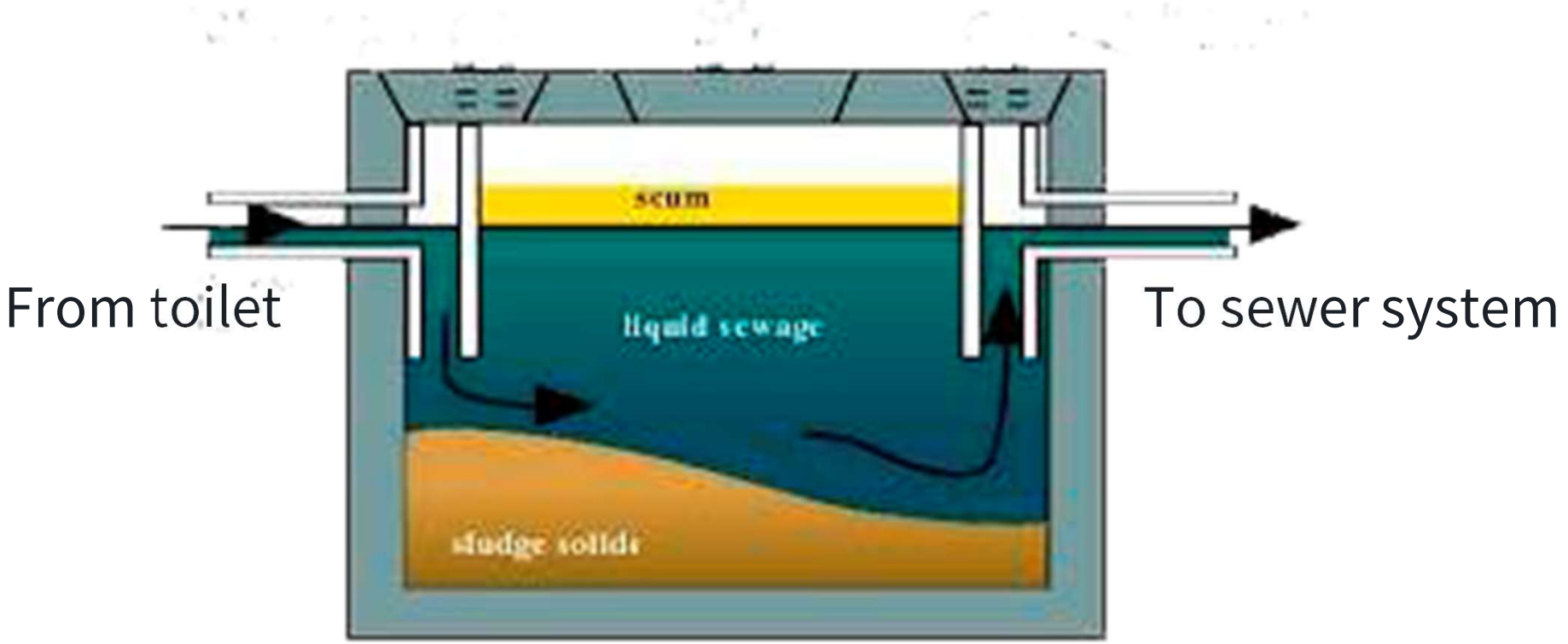
Toilet

Cistern or pour-flush toilet

Photo: L. Barreto Dillon

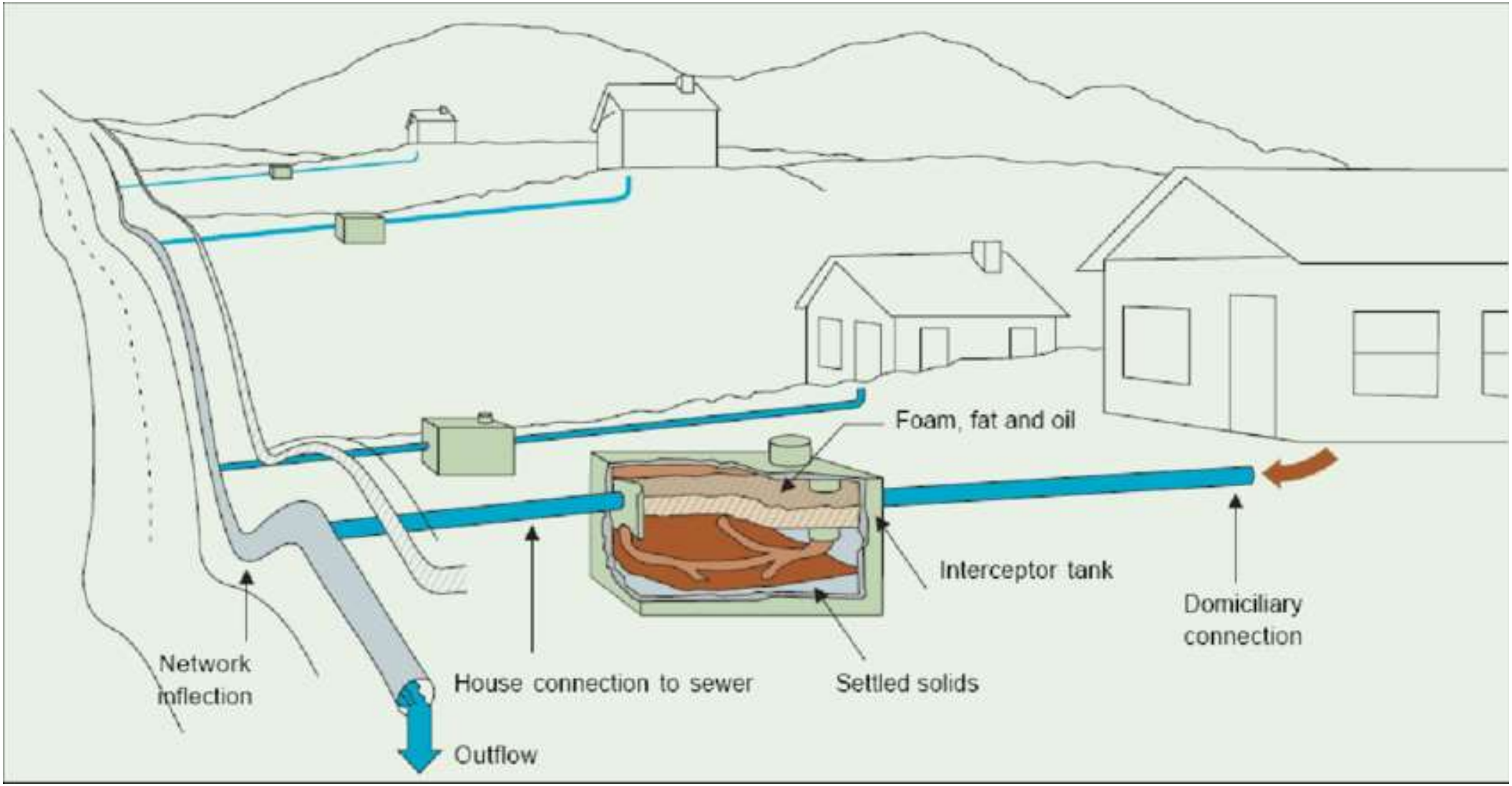
Containment – storage / treatment

Most of the houses have septic tanks



Conveyance

Solids-free sewer system



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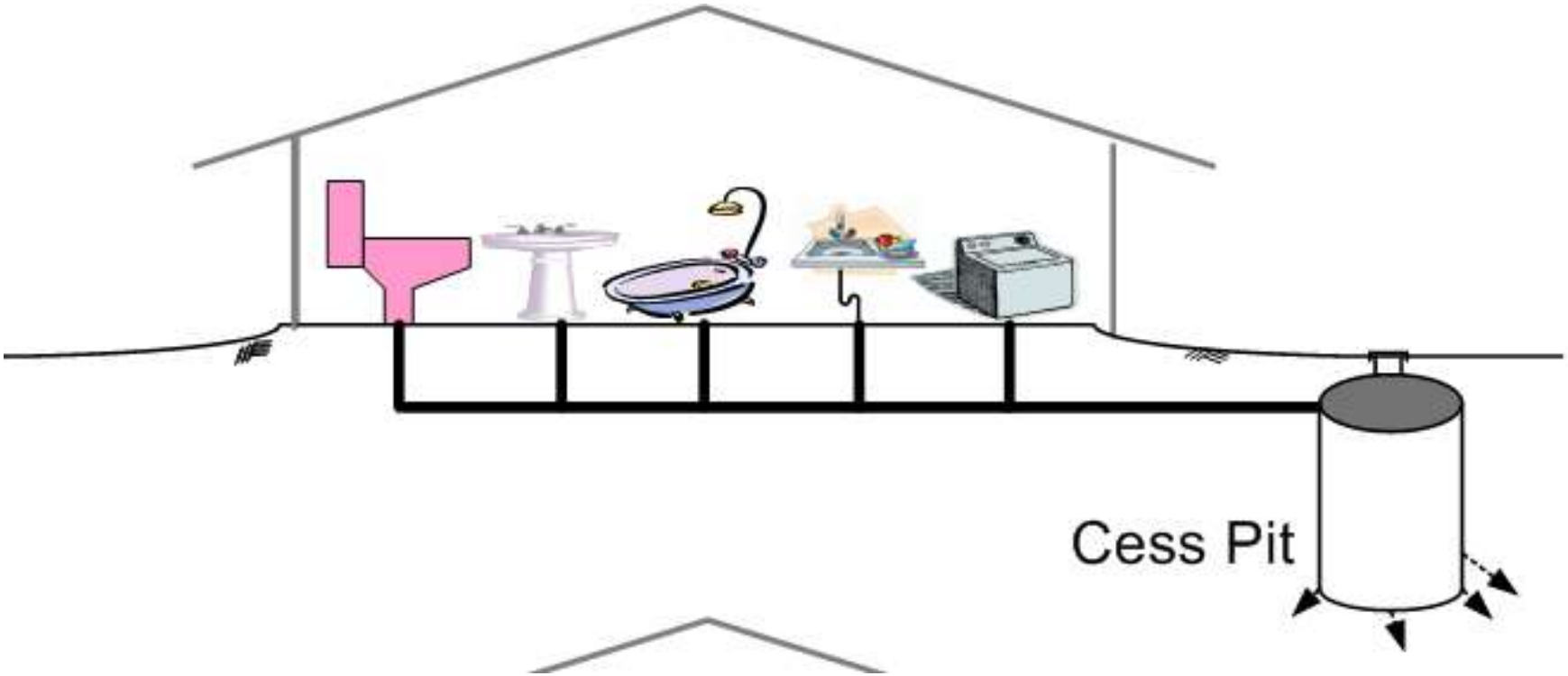
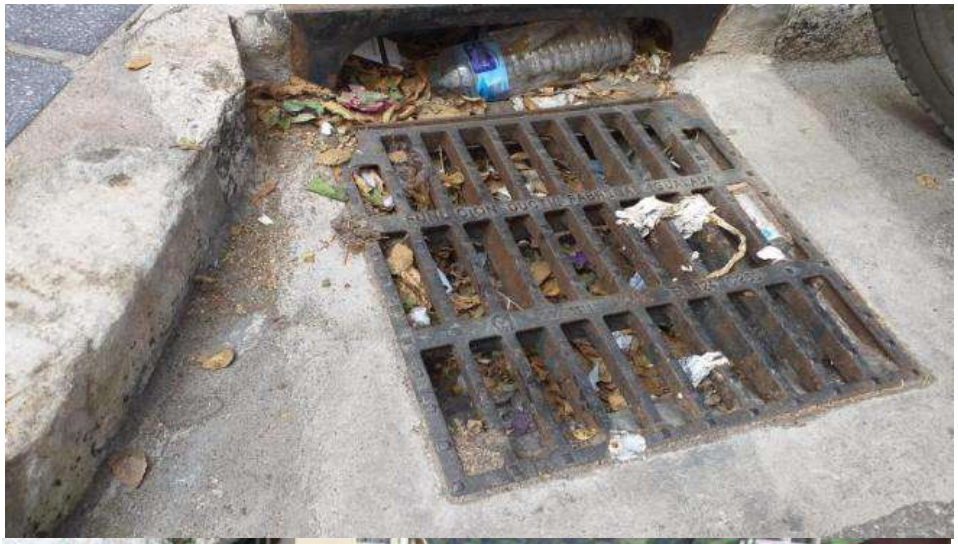


Conveyance

Sewage is transported by gravity to a centralised wastewater treatment plant

1

Pipes (closed conduit)



Open channels

Sewerage workers

6 volunteers!

Photo: L. Barreto Dillon

Conveyance

Sewer systems are affected by storm runoff.

Floodings

Solid waste

Local residents besides sewers

6 volunteers!

Photo: L. Barreto Dillon

Conveyance

Blockages are common in both the pipes and the channels.

Conveyance – direct use

Some people deliberately block the channels to grow some water spinaches and water bamboos in the channel

Conveyance

Sludge is removed from septic tanks

Vacuum tanker workers

6 volunteers!

Photo: L. Barreto Dillon

Conveyance

Sludge is removed from septic tanks

2

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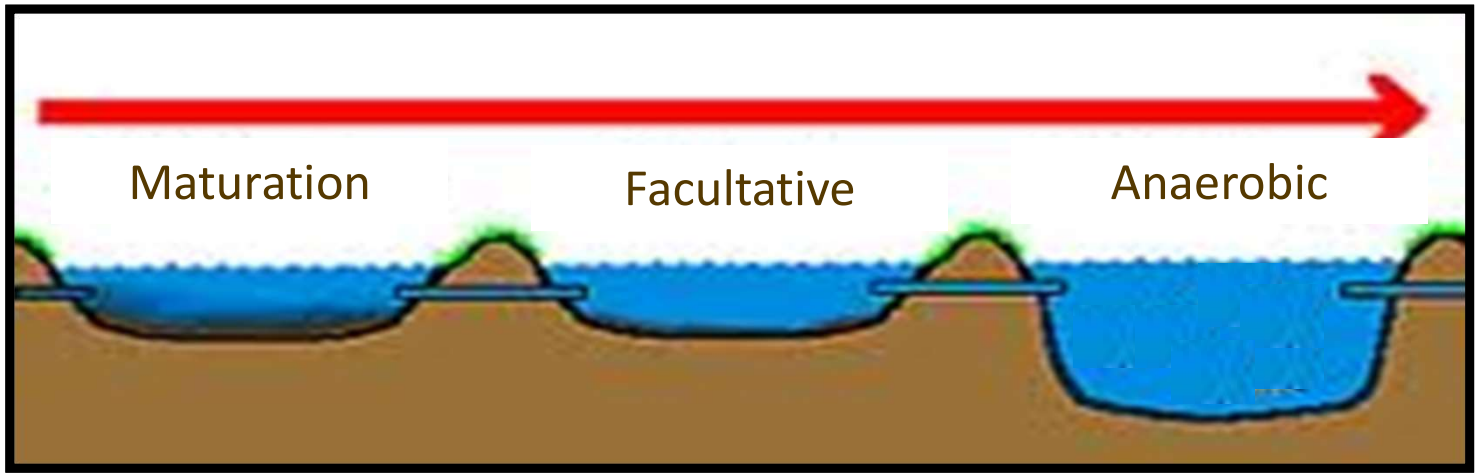
Wastewater Treatment

Waste stabilization pond treatment system



Faecal sludge Treatment

Waste stabilization pond treatment system

WWTP workers

5 volunteers!

Photo: L. Barreto Dillon

Wastewater Treatment

Waste stabilization pond treatment system

Reuse

Some of the treatment plant effluent is used by farmers.

There are about 25 farmers and their families.

Photo: L. Barreto Dillon

Farmers

5 volunteers!

Photo: L. Barreto Dillon

Reuse

Irrigation by open furrows

Manual application

Reuse

The crops grown include salad crops

Some grown in the ground

Local community near farm

6 volunteers!

Photo: L. Barreto Dillon

Reuse

Biosolids are co-composted with solid waste.

Farmes use compost mixture to the soil using manual methods

Consumption of produce

Farmers consume their own produce

Farmers sell their produce to the local community

Consumers

You are all consumers

Photo: L. Barreto Dillon

Big city residents

5 volunteers!

Photo: L. Barreto Dillon

Discharge

Remainder effluent is disposed in the river

Photo: L. Barreto Dillon

Discharge

About 5 km downstream, a small village uses this water as a drinking water source, for bathing and irrigation.

Downstream residents

6 volunteers!

Photo: L. Barreto Dillon

Seasonally heavy rains

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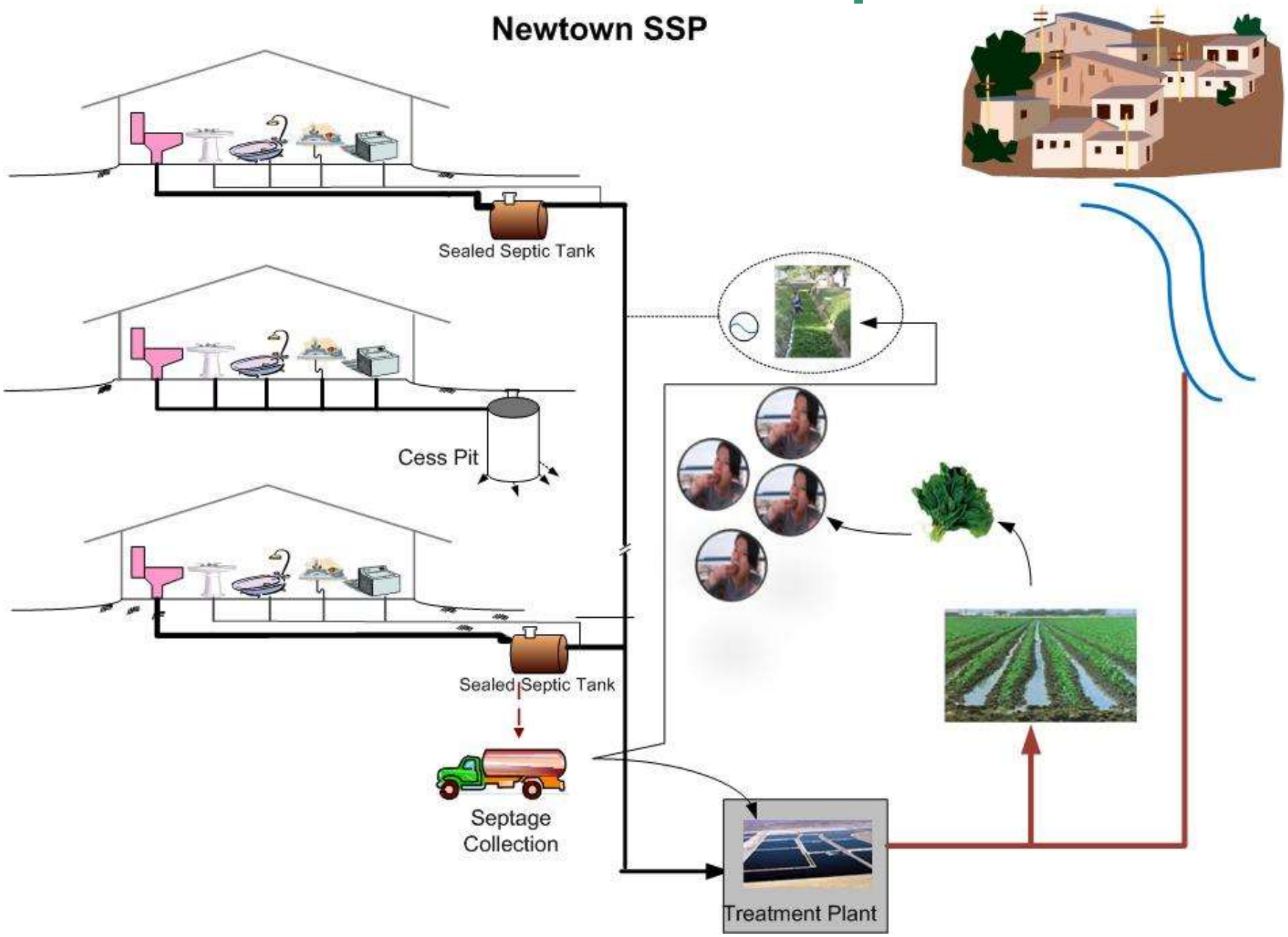
Newtown sanitation map



Video of common worm related diseases

Video of common worm related diseases

Instructions for small group work group

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Worksheet 0.1

Newtown Learning Activity: Risk Assessment

Answer the following questions in your groups:

Question	Guidance	Your response
Q1. What group are you in this activity?	Choose one: • Town resident/users • Vacuum tanker operator • Sewerage workers • Local resident beside sewers • Farmers • Local resident near farm • Big city resident • Downstream village resident	Write your response on the cards provided by the trainer. Use the marker pens and write in large print.
Q2. In the sanitation system, what is one thing that could go wrong, which would make you sick? (Answer this question for your group (see Q1)	Think of <u>one</u> thing that could go wrong in the Newtown sanitation system (from generation of waste and its transfer; its treatment; its use and disposal of wastewater products; uses such as crop production; and consumption of produce. Ensure it is related to affecting the health of people.	
Q3. What do you think is being done to manage the thing that could go wrong in Q2?	If you have insufficient information, decide what you think is probably being done in Newtown based on what you know.	
Q4. What do you think is the risk is of this happening?	Make a simple team decision of the risk. Decide among yourselves how you define the risks.	
Q5. Now, consider a climate change scenario with **more intense precipitation**. How this increase in rainfall might impact the sanitation system and the group you represent?	Think of a flooding situation, and how it will impact the sanitation system (e.g., damage of the infrastructure, spillage and contamination, collapse of the on-site infrastructure, etc.). Explain how it would affect the group you represent.	

Write your answers in colour cards using the markers provided.

Follow the instruction of the Worksheet 0.1

Work in your small groups (residents, sewerage workers, farmers etc).

Congratulations – you've started an SSP process!

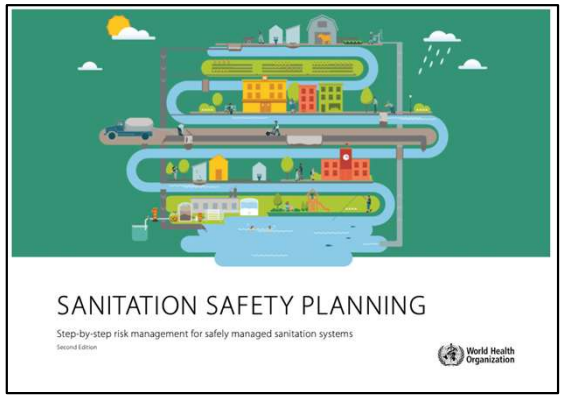
You have just developed a simple SSP risk assessment.

Let's bring this together in a table like this.

What could go wrong? (Q2)	Which group could this happen to? (Q1)	What is being done to manage this? (Q3)	What is its risk? (Q4)	Q5. Now, consider a climate change scenario with more intense precipitation. How this increase in rainfall might impact the sanitation system and the group you represent?

Debriefing – what did we learn?

Let's us discuss



- What was new or a surprise for you?
- What complications can you foresee in SSP?
- What benefits can you foresee in SSP?

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THANK YOU

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