

Sanitation safety planning (SSP): a practical tool for managing health risks from wastewater reuse

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SANITATION SAFETY PLANNING

MANUAL FOR SAFE USE AND DISPOSAL OF WASTEWATER, GREYWATER AND EXCRETA

Water Scarcity and Reuse in the SDGs

6.3 “By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally”

- 6.2.1 Proportion of population using **safely managed sanitation services**, including a handwashing facility with soap and water
- 6.3.1 Proportion of **wastewater safely treated**

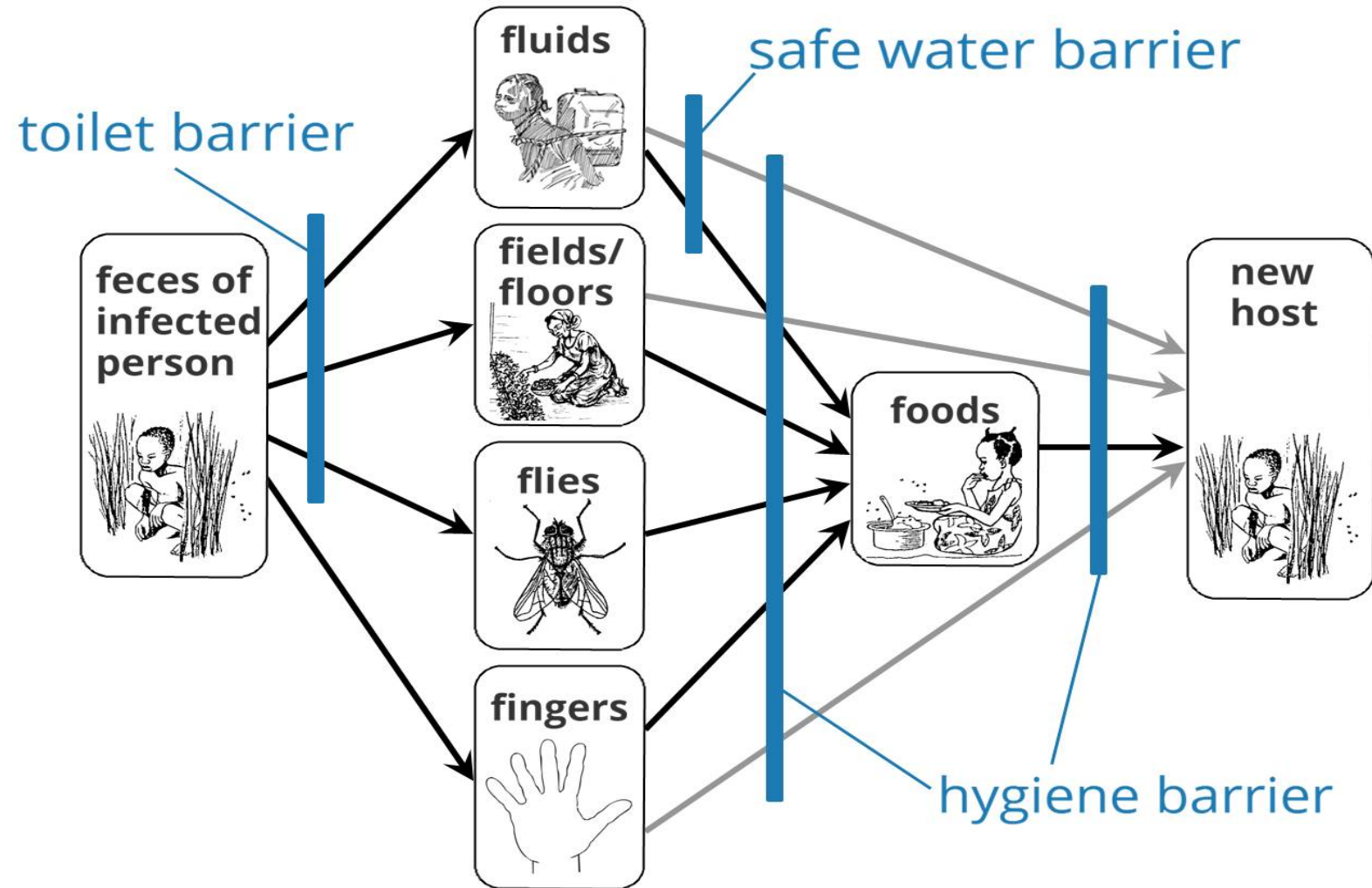
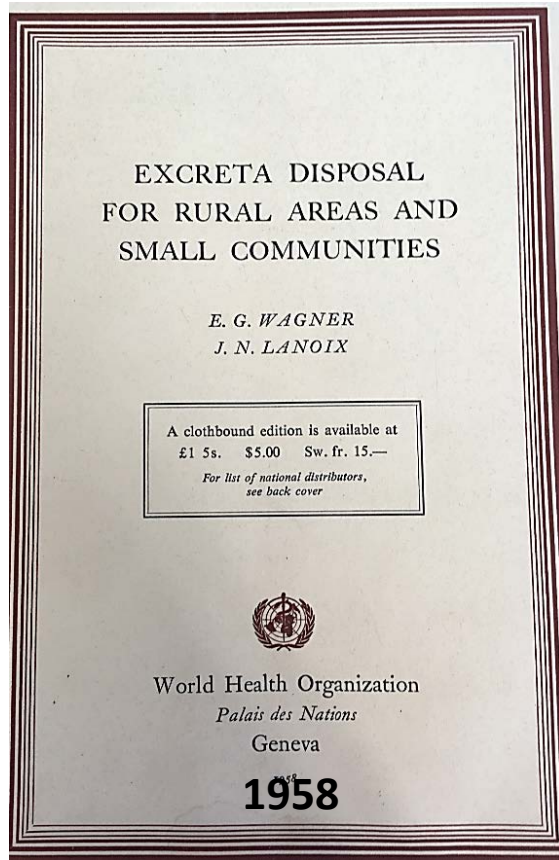
6.4 “By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity”

- 6.4.1 Change in **water-use efficiency** over time
- 6.4.2 Level of water stress: **freshwater withdrawal** as a proportion of available freshwater resources

Why Sanitation Safety Planning?



Sanitation interventions are not very effective

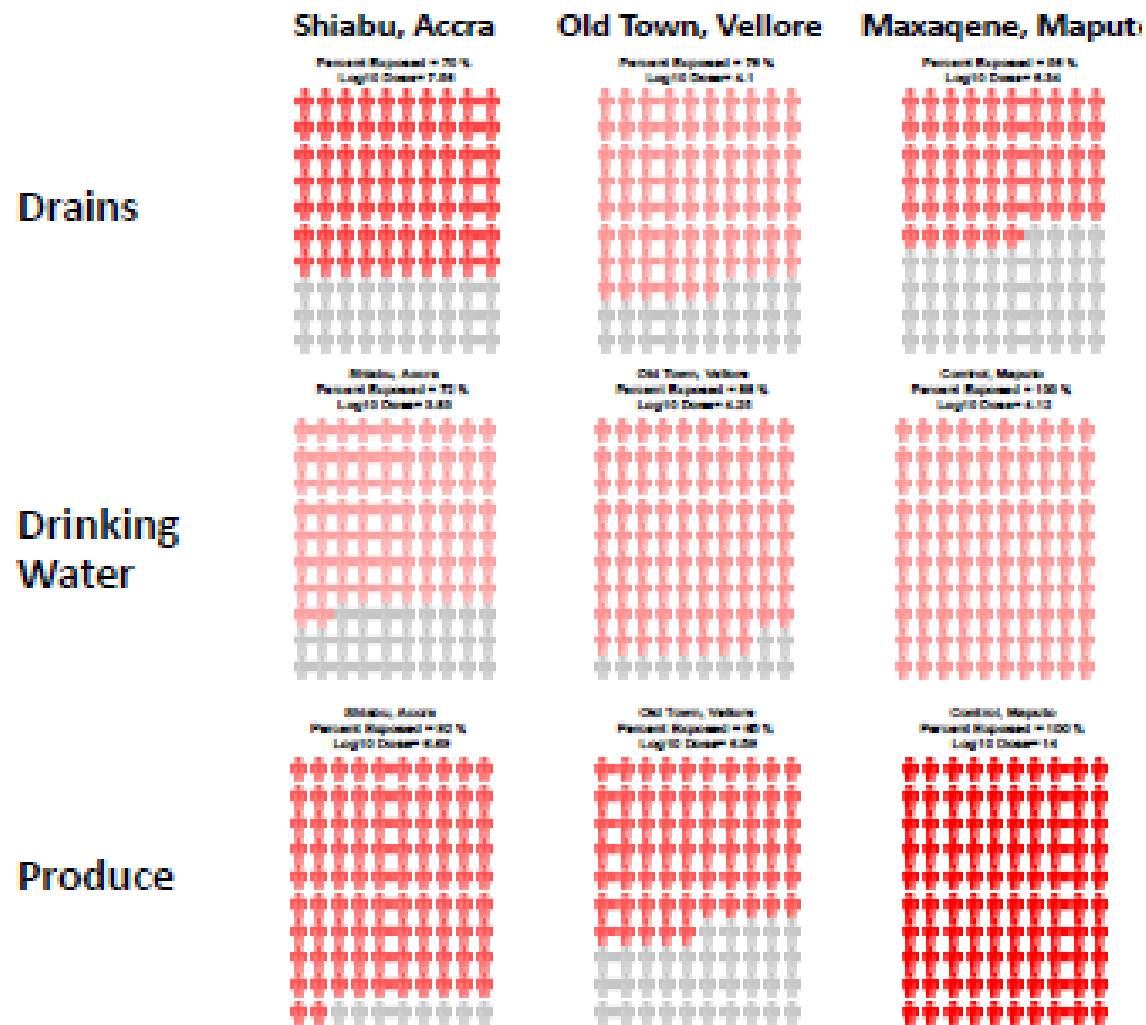


Sanitation interventions are not very effective

**2015
systematic
reviews for
Sanitation
Guidelines**
- indicators
of faecal
exposure

Outcome	Total No. Studies (Intervention Studies)	Effects from Sanitation	GRADE
Observed feces	10 (7)	Slight reduction in levels of feces (RD -0.03, 95% CI: -0.07 to 0.00)	Very low Very low
Water quality	9 (3)	No effect No effect	Very low Very low
Hand contamination	5 (2)	No effect No effect	Very low Very low
Sentinel object (toys)	1 (1)	No effect No effect	NA NA
Surfaces and soil contamination	3 (1)	Mixed effects No effect	Very low NA
Food contamination	1 (0)	No effect NA	NA NA
Flies	7 (4)	Reduced fly counts where high levels of coverage and use	Low Very low
Contamination of water supply by distance to latrine	6 (0)	Inverse relationship between distance of water supply from a latrine and contamination of water supply	Low NA

Produce is an overlooked exposure pathway



Source: SaniPath
– Emory University



Credit: L Shoebitz



Credit: D Jackson



Credit: Reuters



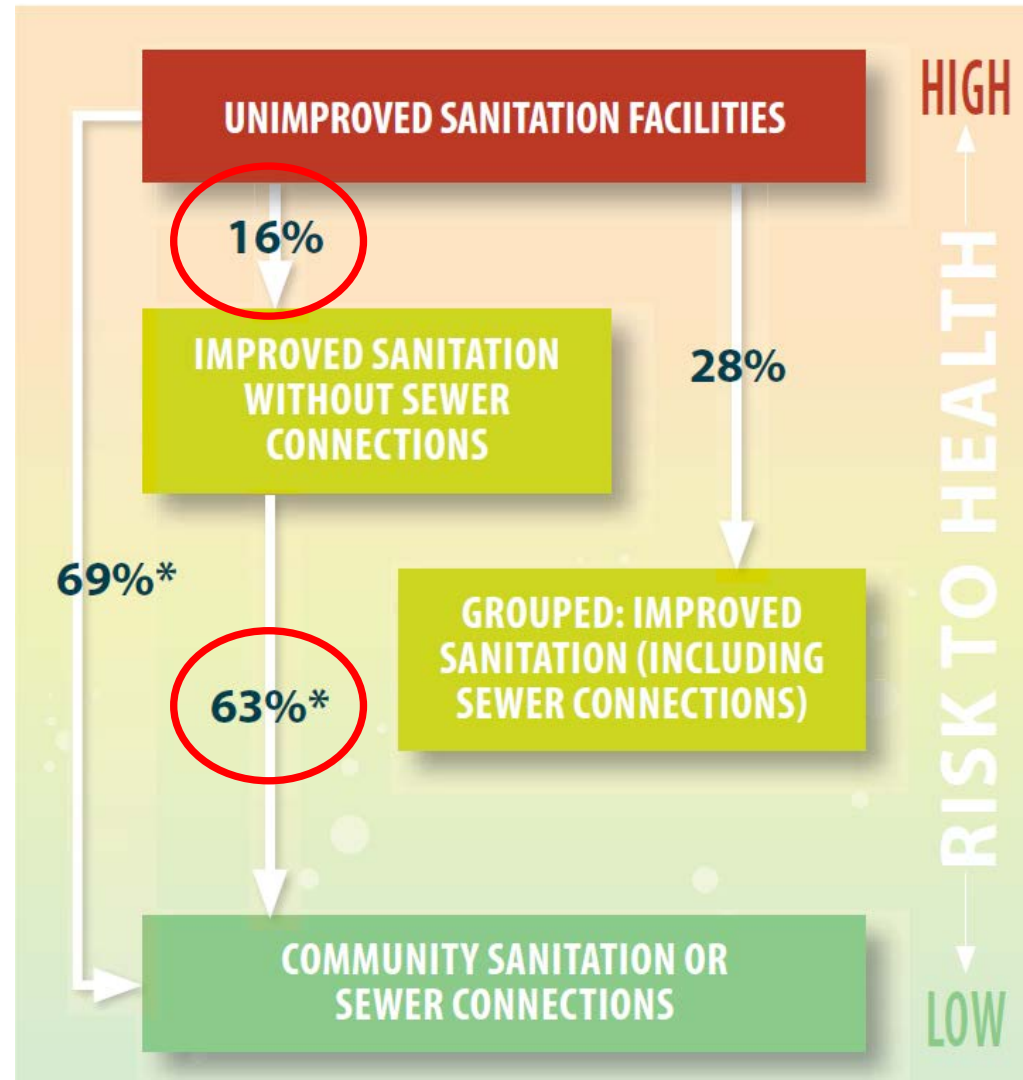






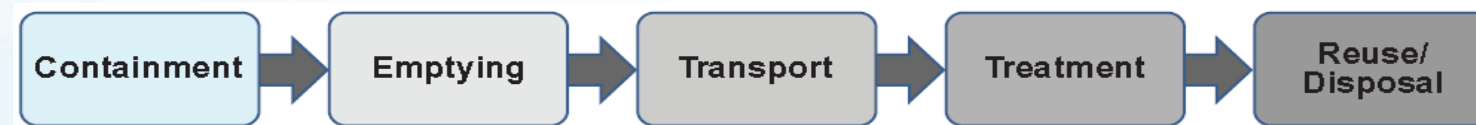
Credit: OCHA

Why “Safely managed” “Safely treated”?



2014 WHO burden of disease for diarrhoea estimate

A ***safe management and reuse system*** prevents human contact with excreta at all steps of the sanitation chain.



SSP Steps



Principles

- **Hazard identification and risk assessment – investment prioritized according to risk**
- **Multiple barriers to reduce risk – technical, management, behaviour**
- **Routine and verification monitoring – visual, process, sampling**
- **Supporting programmes**
- **Review and Incremental improvement**



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Sanitation safety planning



Linda Strande

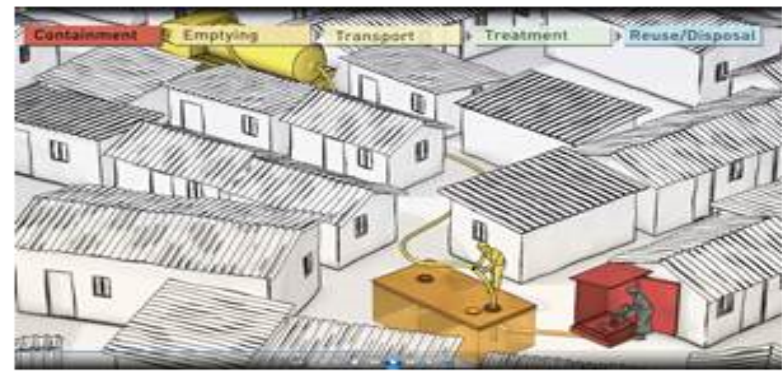
Sanitation Safety Planning (SSP) is a step-by-step risk based approach to assist in the implementation of the 2006 WHO Guidelines for Safe Use of Wastewater, Excreta and Greywater. The approach can also be applied to all sanitary systems to ensure the system is managed to meet health objectives. The SSP approach requires identifying health risks in the

sanitation system, implementing an improvement plan and conducting regular monitoring. SSP can be used at the planning stage for new schemes, and to improve the performance of existing systems.

[Sanitation safety planning manual](#)
Publication and downloading information

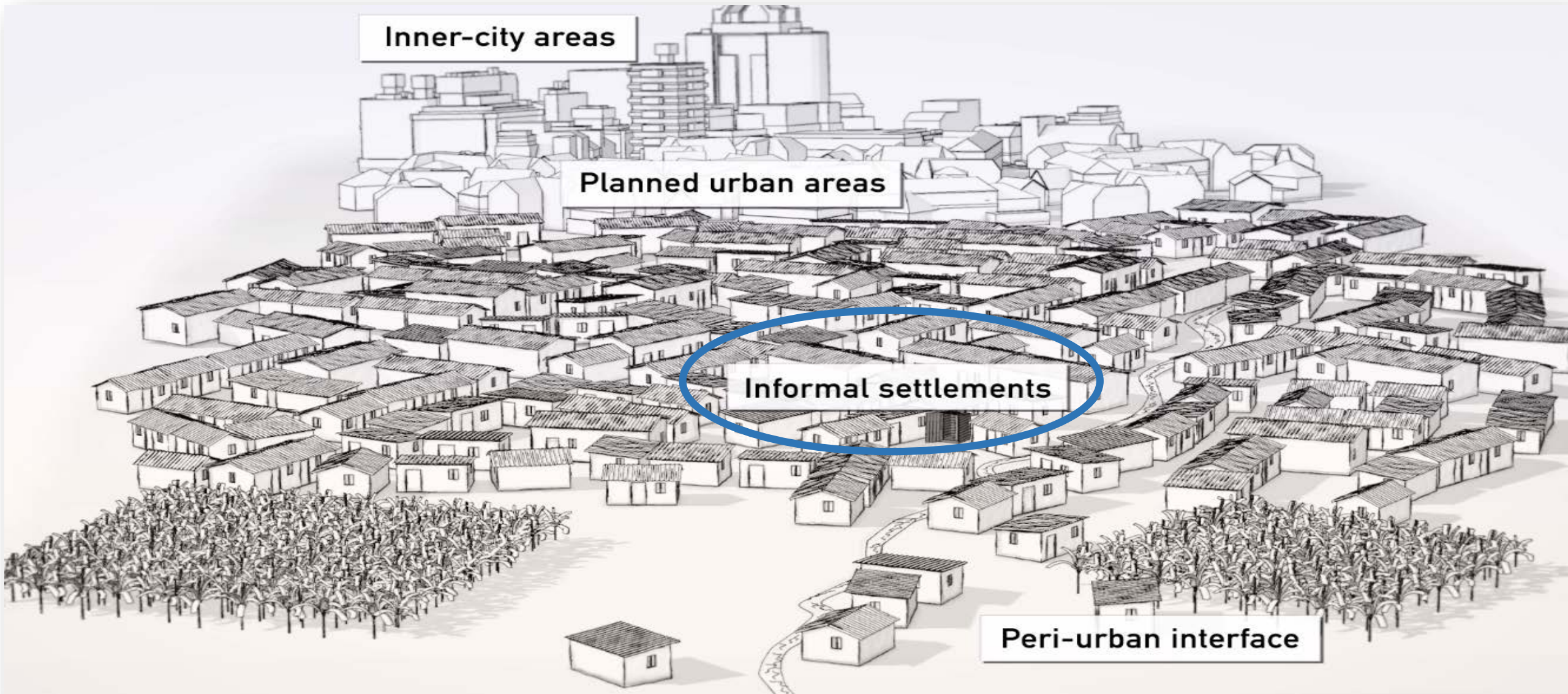
Further information

Sanitation safety planning in this MOOC

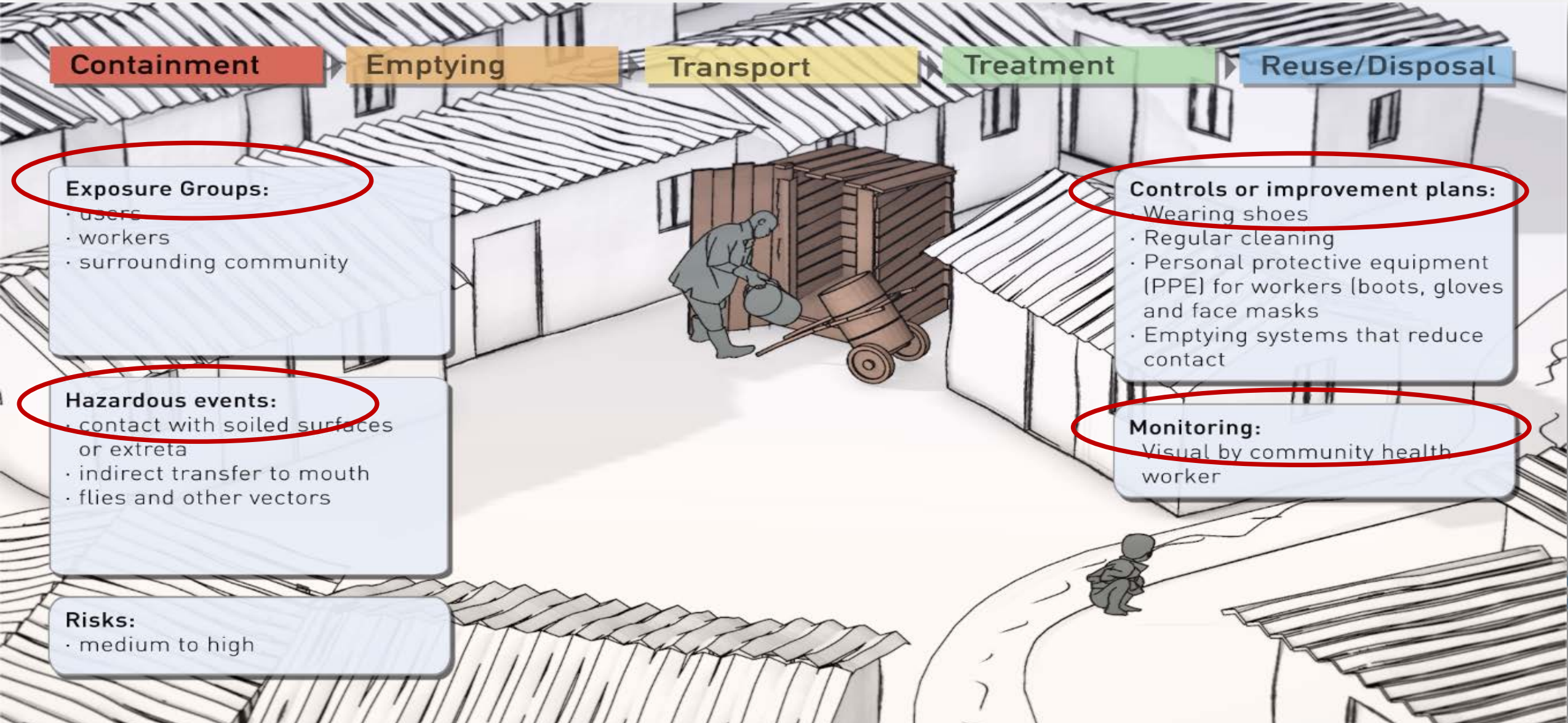


Watch a short overview of SSP in this MOOC [🔗](#)
Download the video clip [🔗](#)

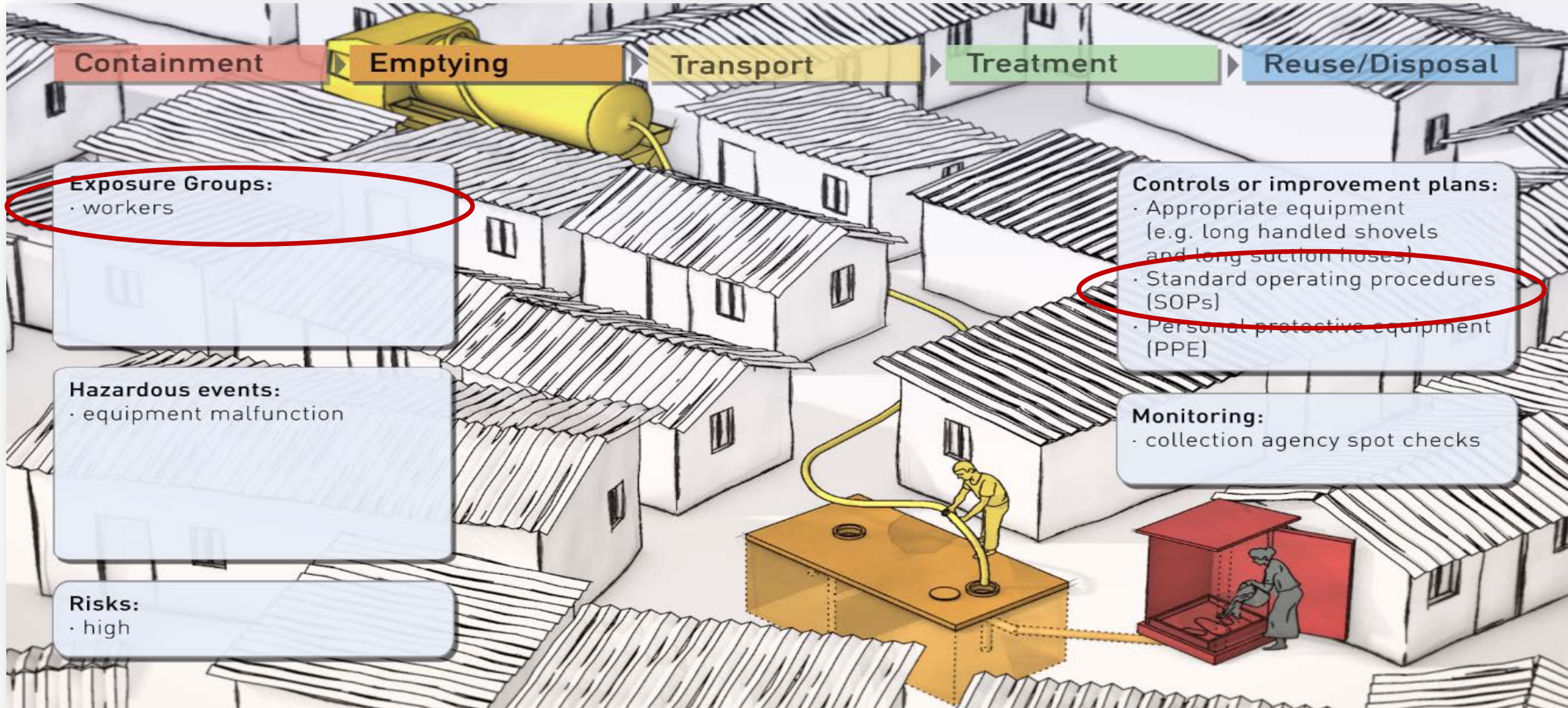
Example



Containment



Emptying



Treatment

Containment

Emptying

Transport

Treatment

Reuse/Disposal

Exposure groups:

- users of the biosolids
- surrounding community members
- consumers of the farm produce
- communities downstream of the treatment plant

Hazardous events:

- overloading of the plant,
- breakdowns
- the processing (temperature and time)
- flies or mosquitoes
- seasonal factors

Risks:

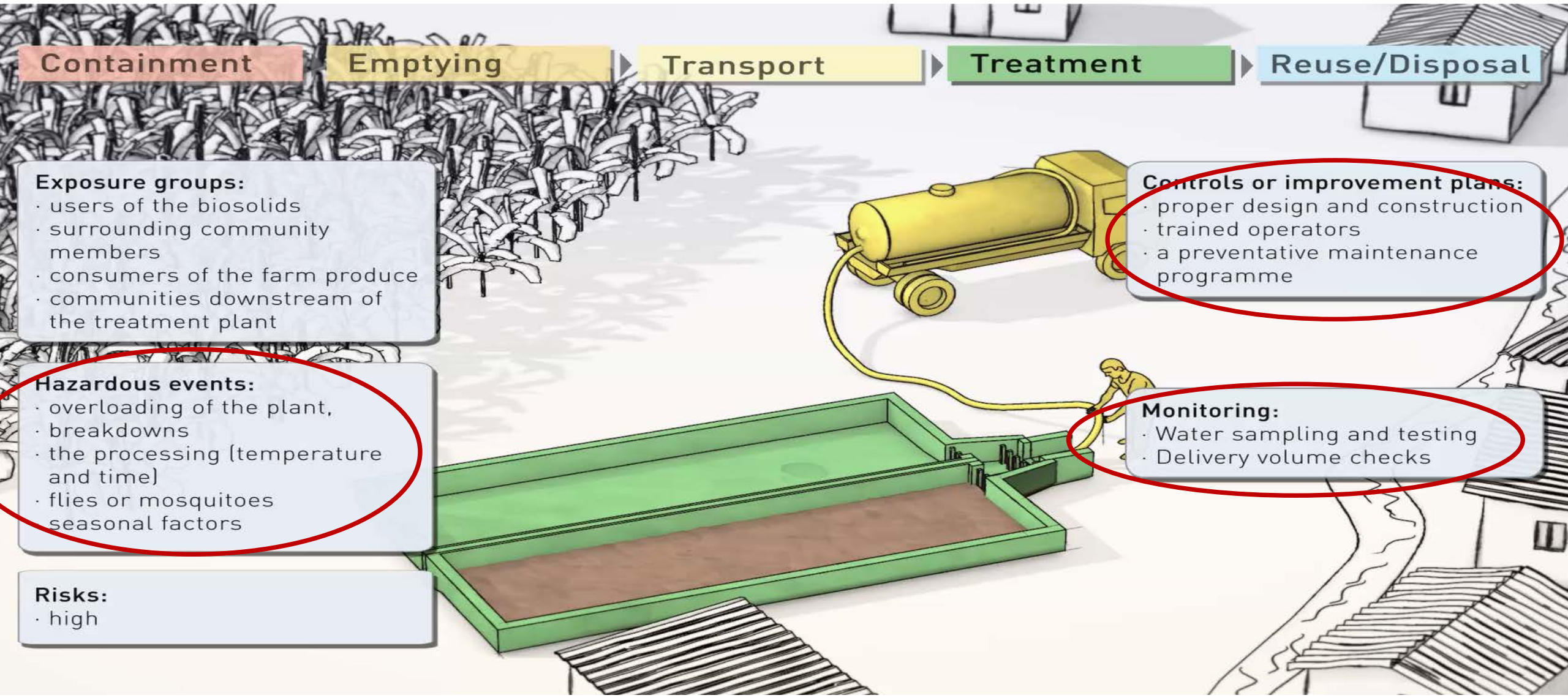
- high

Controls or improvement plans:

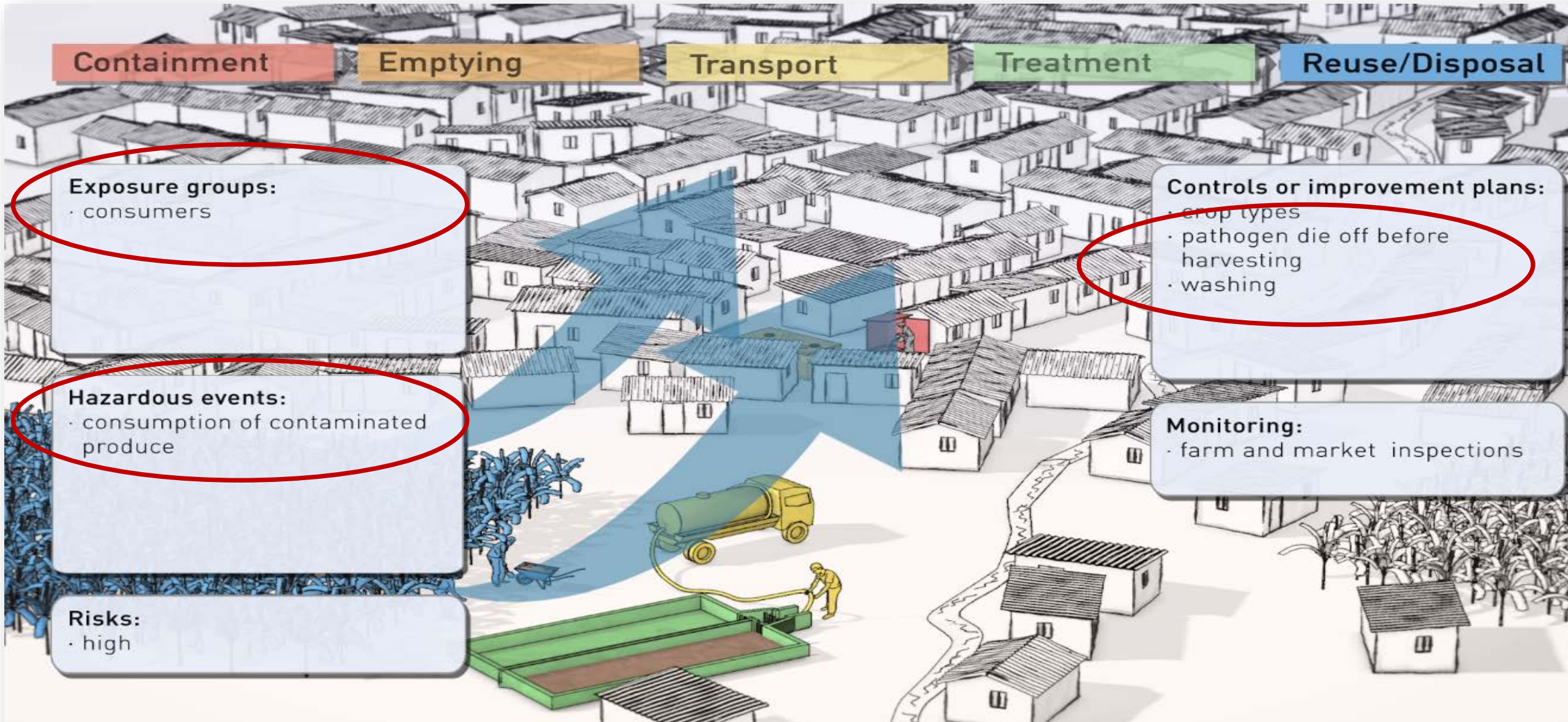
- proper design and construction
- trained operators
- a preventative maintenance programme

Monitoring:

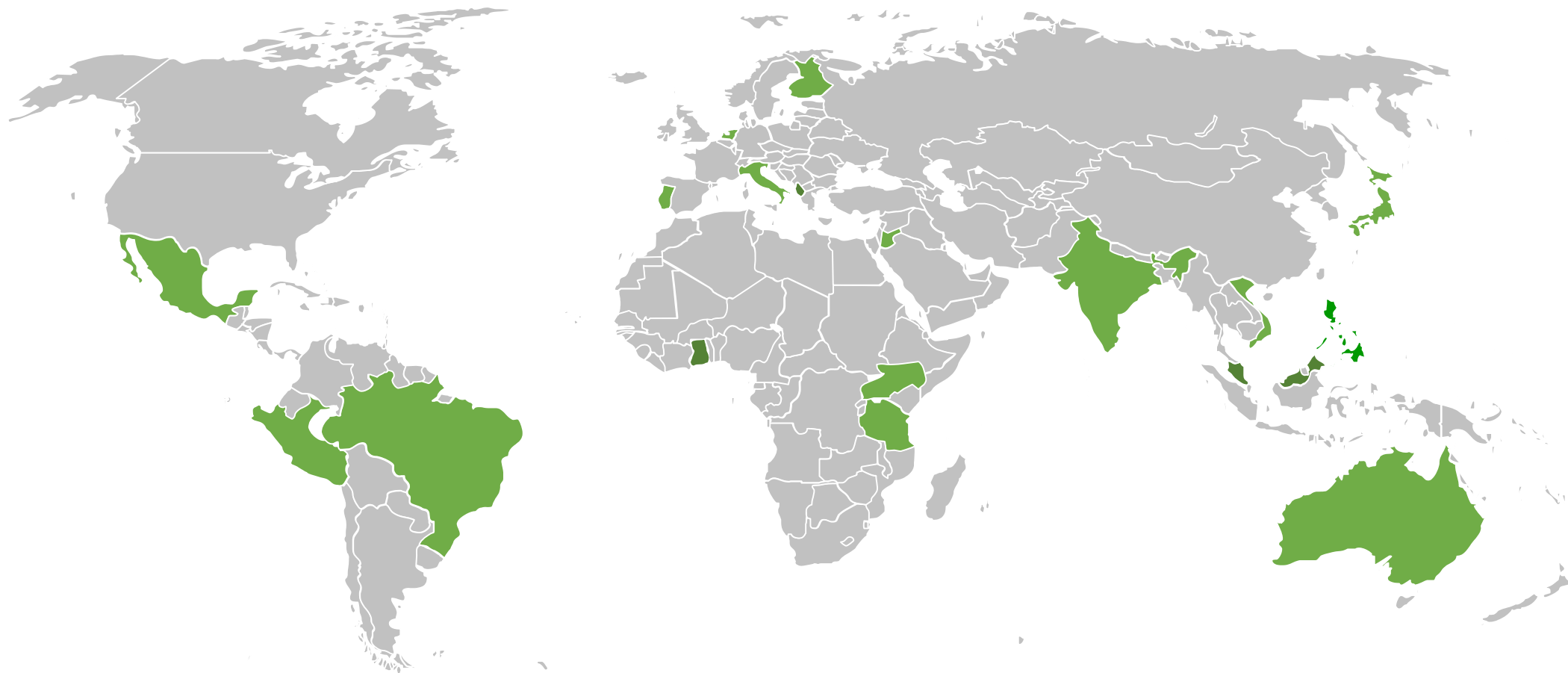
- Water sampling and testing
- Delivery volume checks



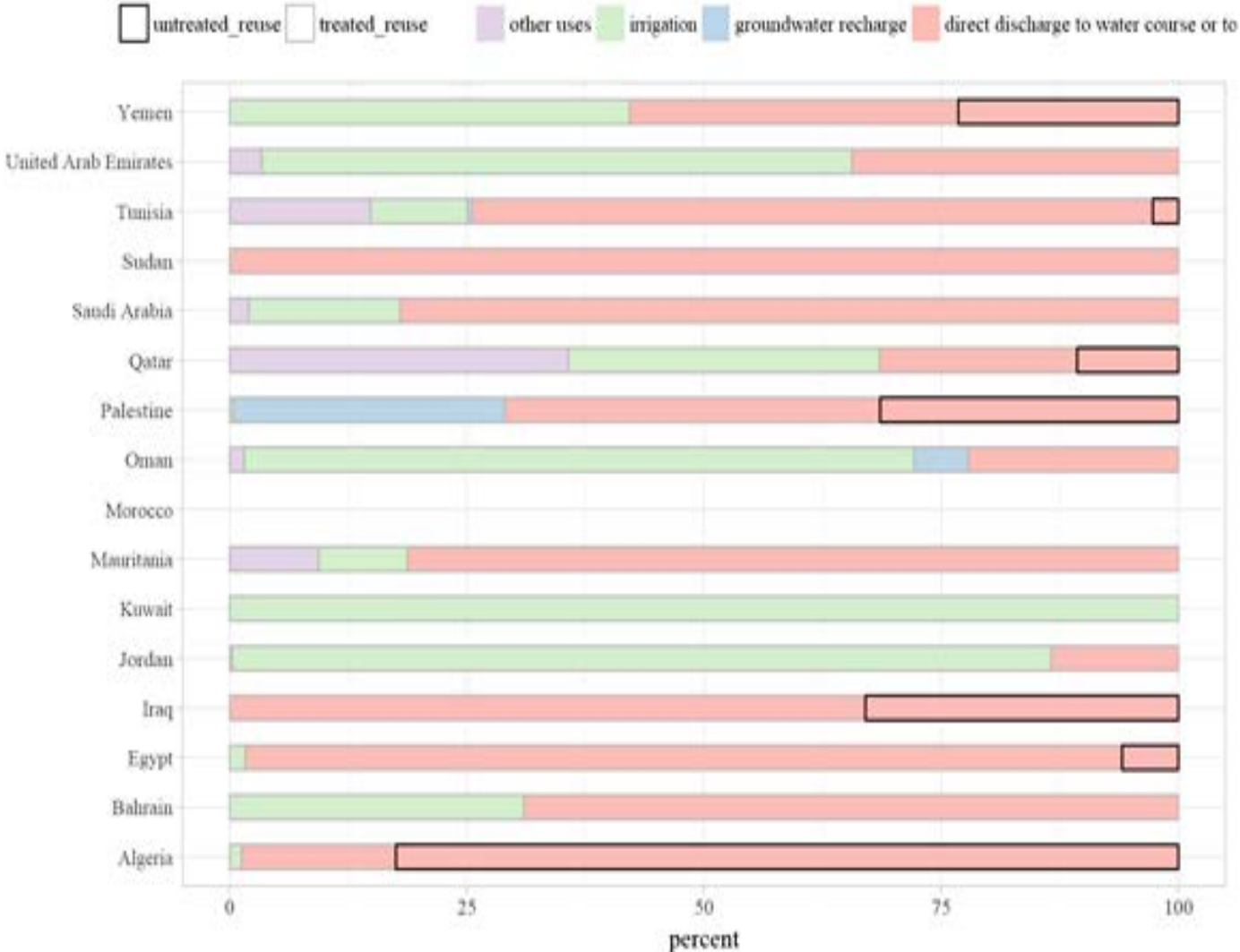
Reuse/Disposal



SSP around the World



Potential for reuse as a response to scarcity



Thank you

[http://www.who.int/water sanitation health/en/](http://www.who.int/water_sanitation_health/en/)



World Health
Organization