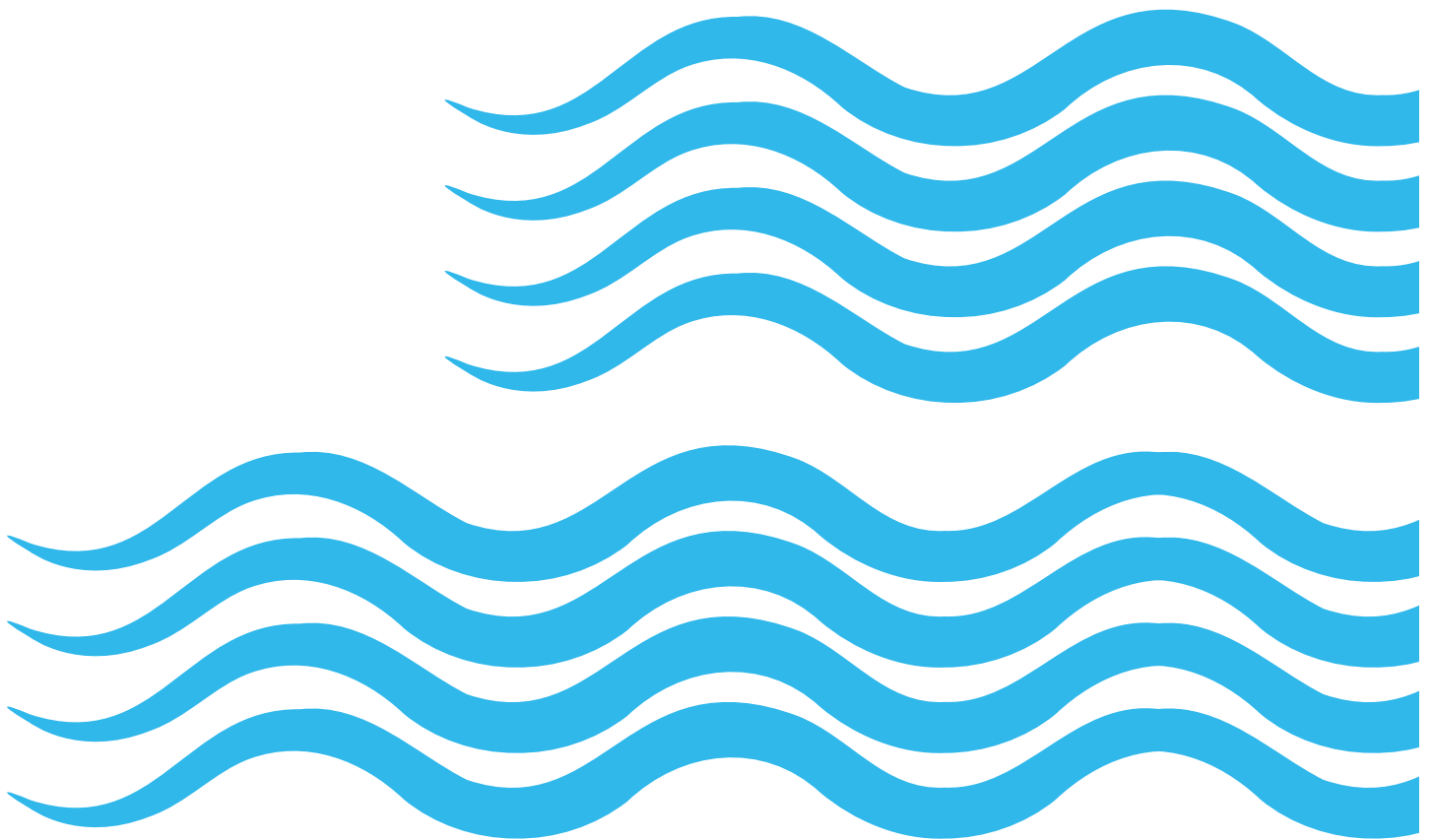


Compendium of WHO and other UN guidance on health and environment



Chapter 3: WASH



WHO/HEP/ECH/EHD/21.02

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3.1 Introduction

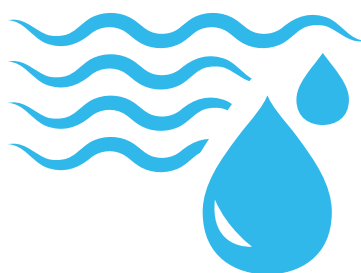
Safe WASH are crucial to human health and well-being. Safe WASH are not only a prerequisite to health, but contribute to livelihoods, school attendance and dignity and help to create resilient communities living in healthy environments (1).

Inadequate or unsafe WASH may cause disease through a range of interrelated transmission pathways, which include among others:

- ingestion of water that is contaminated with faeces or chemicals
- inadequate personal hygiene which may be linked to lack of water
- contact with pathogen-containing water
- proximity to water bodies where disease vectors proliferate (2).

An estimated 829 000 diarrhoeal disease deaths were estimated to be caused by unsafe WASH in 2016. Other diseases caused by inadequate WASH include among others acute respiratory infections, malnutrition, malaria, soil-transmitted helminth infections, schistosomiasis and trachoma (3). In addition, environmental enteropathy, a chronic subclinical inflammatory condition of the gut, which is related to faecal contamination of the environment, might be a key mediating pathway for adverse effects on child nutritional and developmental status from inadequate WASH (4, 5).

3.2 Water



3.2.1 Drinking-water



This section focuses on water that is used for drinking, though safe water is essential also for other domestic purposes and food production (6). Safe water used for recreational purposes is treated in section [3.2.2 Recreational water](#).



Overview

As of 2020, 26% of the worldwide population lack safely managed drinking-water services. Approximately 144 million people still collect drinking-water directly from surface water. Contaminated drinking-water is estimated to cause 485 000 diarrhoeal deaths each year, in addition to malnutrition and many other diseases (3, 7, 8).

Note: A safely managed drinking-water service is defined as being accessible on premises, available when needed and free from contamination.

What is the situation in terms of drinking-water supply and drinking-water quality in my country?

Most countries monitor access to safe water and progress in improving it. This is usually performed through surveys of households, schools and health care facilities, as well as through routine water quality surveillance.

At national and global levels, SDG monitoring includes indicators related to drinking-water (9):

- [SDG indicator 3.9.2: Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene \(exposure to unsafe Water, Sanitation and Hygiene \(WASH\) services\).](#)
- [SDG indicator 6.1.1: Proportion of population using safely managed drinking-water services.](#)






WHO and UNICEF, through the Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), serve as custodian agencies for the global monitoring of these WASH indicators in the framework of measuring progress towards the SDGs (1).







What is the level of drinking-water quality and safety we want to achieve?









WHO produces guidelines for drinking-water quality (GDWQ) that form the basis for national drinking-water regulations and standards (10). The GDWQ cover a broad range of chemicals, pathogenic bacteria, viruses and parasites, radioactive substances and aspects of taste, odour and appearance that can affect drinking-water quality. The GDWQ provide health-based targets for over 200 parameters.

WHO guidance on water quality parameters and safe limits is presented within a broader framework for safe drinking-water, which addresses the following.











- **Health-based targets:** These include parameters with associated limits (such as those included in drinking-water quality regulations and standards). Health-based targets that include chemical guideline values in the GDWQ can be used to establish country-specific targets. Guideline values generally represent a concentration of a parameter in drinking-water that does not represent a significant risk to health over a lifetime of consumption.
- **Water safety plans (WSPs):** These are part of a comprehensive risk assessment and risk management approach that encompass all steps of water supply from catchment to consumer.
- **Independent surveillance:** This refers to the continuous and vigilant public health assessment and review of drinking-water supplies to confirm effective risk management and safety.







 Guidance	 Sector principally involved in planning/implementation	 Level of implementation	 Instruments
Policies and actions			
<p>1. Develop or update drinking-water quality regulations and standards (10, 11).</p> <p>National (or subnational) drinking-water regulations and standards should be based on the GDWQ, incorporating the three components of the framework for safe drinking-water. Regulations should be customized to consider local needs, priorities and capacities, as well as the economic and health benefits resulting from improved drinking-water supplies.</p> <p>Suggested practical steps for developing/revising drinking-water quality regulations and standards are:</p> <ul style="list-style-type: none"> • identify the lead institution • define roles to support the process • define objectives and scope of the regulations and standards • review existing regulations and standards • gather baseline data for analysis • prepare the separate sections of the regulations and standards • ensure peer review. <p>These steps are further detailed in <i>Developing drinking-water quality regulations and standards (11)</i>, with a particular focus on taking a risk-based approach to establishing parameters, limits and monitoring requirements.</p>	 Water/sanitation	National	Regulation

 Guidance	 Sector principally involved in planning/ implementation	 Level of implementation	 Instruments
<p>2. Protect drinking-water supplies using WSPs (12).</p> <p>Proactive management of risks to drinking-water supplies through WSPs should be promoted at national (or subnational) level, with related support (e.g. capacity building) provided to drinking-water suppliers.</p> <p>A WSP involves the following steps.</p> <ol style="list-style-type: none"> Assemble the team. Describe the water supply system. Identify hazards and hazardous events and assess the risk. Determine and validate control measures and reassess the risk. Develop, implement and maintain an upgrade/improvement plan. Define monitoring of control measures. Verify the effectiveness of the WSP. Prepare management procedures. Develop supporting programmes. Plan and carry out periodic review of the WSP. Revise the WSP following an incident. <p>These WSP steps are further detailed in the <i>Water safety plan manual: step-by-step risk management for drinking-water suppliers</i> (13) with an alternative six-task approach for small water supply systems (14) (see also the “Special considerations for small water supply systems” section below.) Guidance on the systematic consideration of women and disadvantaged groups through the WSP process in order to ensure equitable benefit is also available (15). Additional practical guidance on WSPs is available in the various resources outlined in <i>Water safety planning: a roadmap to supporting resources</i> (10).</p> <p>Guidance on applying the WSP approach to identify and manage the impacts of climate variability and change on drinking-water systems is presented in Chapter 7. Climate change.</p>	 Water/sanitation	National	Other management and control
<p>3. Confirm water safety through independent surveillance (10).</p> <p>Surveillance provides independent verification that drinking-water supplies are safe and water suppliers are proactively managing risks. Surveillance includes:</p> <ul style="list-style-type: none"> direct testing to confirm compliance with drinking-water quality standards; WSP auditing or sanitary inspection to confirm effective risk management; review of supplier monitoring records to confirm that compliance monitoring practices and results are in accordance with requirements in drinking-water quality standards. <p>Guidance on surveillance is provided in Chapter 5 of the GDWQ and volume 3 of the GDWQ: surveillance and control of community supplies (10, 16). Guidance on establishing WSP audit schemes and carrying out audits is provided in <i>A practical guide to auditing water safety plans</i> (17). An associated training package on WSP auditing is available (18).</p>	 Water/sanitation	National; community	Assessment and surveillance

 Guidance	 Sector principally involved in planning/ implementation	 Level of implementation	 Instruments
<p>4. For the management of chemicals in drinking-water, including cyanotoxins, the key components of the GDWQ framework for safe drinking-water should be applied. This includes selecting which priority parameters to include in drinking-water quality regulations (and associated limits), taking management actions to reduce concentrations of these contaminants as part of WSPs, and monitoring as part of surveillance. Refer to the GDWQ (10) and <i>Developing drinking-water quality regulations and standards</i> (11).</p> <p>The WSP approach can be adapted to manage pharmaceuticals and microplastics by preventing their entry, or the entry of their precursors, in the water cycle. This could include improved recycling programmes and minimizing inappropriate disposal. These contaminants have the potential to reach drinking-water, although the concentrations generally found in drinking-water or its sources are unlikely to pose a risk to human health. Therefore, routine monitoring of these contaminants is not necessary and concerns over these emerging contaminants should not divert resources from known dangers, including removing of microbial pathogens (19).</p>	 Water/sanitation	National	Other management and control
<p>5. For the management of radioactivity in drinking-water in non-emergency situations the key components of the GDWQ framework for safe drinking-water should be applied, as described above.</p> <p>Radionuclides in drinking-water generally present a very low health risk compared to microbial pathogens and chemicals. Radiation exposure through drinking-water in normal situations mostly results from naturally occurring rather than human-made radionuclides. In contrast, following radiation emergencies involving radioactive release, human-made radionuclides may represent the major source of exposure. These factors should be considered for establishing criteria included in drinking-water quality regulations, management actions and surveillance activities (see section 6.5 Radioactivity in food and drinking-water and 6.6 Radiological emergencies) (10, 20-22).</p>	 Water/sanitation	National	Other management and control
<p>6. Include safe drinking-water, sanitation and hygiene in relevant health policies, strategies and programmes (23).</p>	 Water/sanitation  Health	National; community Universal health coverage	Regulation

Note: For additional publications related to drinking-water safety, see *Supporting publications to the guidelines for drinking-water quality* (18).

 Guidance	 Sector principally involved in planning/implementation	 Level of implementation	 Instruments
Special considerations for small water supply systems			
<p>7. Consider the special needs, challenges and opportunities for small water supply systems when applying the framework for safe drinking-water (10).</p> <p>Small water supply systems tend to share a common set of characteristics that set them apart from other systems. For instance, there are often great numbers of systems covering a large geographic spread (including remote locations); limited technical and financial support; reliance on undertrained and/or unpaid staff; and limited surveillance oversight and support.</p> <p>Developing drinking-water quality regulations and standards (11) offers considerations for small systems and other settings with limited resources, and water safety planning for small community water supplies (14) presents a simplified six-task WSP approach for the small systems context (which is an abridged version of the 11-module approach outlined in point 2 above). See volume 3 of the GDWQ: surveillance and control of community supplies (16) and the associated sanitary inspection forms for further guidance (24).</p>	 Water/sanitation	National; community	Regulation
<p>8. Consider water safety improvements within the context of broader WASH efforts.</p> <p>As those responsible for managing or overseeing small systems may also be responsible for hygiene and sanitation, it is important to consider WASH improvements holistically.</p>	 Water/sanitation	National; community	Regulation; infrastructure, technology and built environment
<p>9. Provide sufficient and safe drinking-water in communities, schools, health care facilities, workplaces and public places (23, 25-27).</p>	 Water/sanitation	Community; schools/child-care settings; health care; workplace	Infrastructure, technology and built environment
<p>10. Support and provide point-of-use/household drinking-water treatment and safe storage as an interim solution for safer drinking-water while longer-term infrastructure improvements are being planned and implemented (23).</p> <p>Further guidance and detail can be found in the following documents (28, 29).</p>	 Water/sanitation	Community	Infrastructure, technology and built environment
Awareness-raising and capacity building			
<p>11. Promote the use of safe drinking-water in communities, schools, health care facilities, workplaces and public places (23, 25-27).</p>	 Health  Education	Community; schools/child-care settings; health care; workplace Universal health coverage	Information, education and communication

 Guidance	 Sector principally involved in planning/implementation	 Level of implementation	 Instruments
<p>12. Promote point-of-use/household drinking-water treatment and safe storage as an interim solution for safer drinking-water until longer-term infrastructure improvements can be implemented (23).</p>	 Health  Education	<p>Community; schools/child-care settings; health care; workplace</p> <p>Universal health coverage</p>	<p>Information, education and communication</p>

Selected tools

WHO 2020: WHO sanitary inspection (SI) forms support water safety planning and/or surveillance by presenting a simple set of questions designed to assess key sanitary risks to drinking-water supplies. SI packages – which include an updated SI form, technology fact sheet and management advice sheet – have been developed for various water supply system technologies (24). SI forms for additional technologies are included in volume 3 of the GDWQ: surveillance and control of community supplies (16).

WHO 2017: *Water safety planning: a roadmap to supporting resources* (10)

This overview includes publications by WHO and partners and provides guidance on various aspects of water safety planning, such as development, implementation, training, advocacy and auditing.

WHO/Neglected Tropical Disease NGO Network 2020: *WASH and health working together: a 'how to' guide for NTD programmes* (30)

This is a toolkit to address WASH and neglected tropical diseases.

UNICEF 2017: *Thirsting for a future: water and children in a changing climate* (31)

3.2.2 Recreational water



Overview

Recreational use of fresh and coastal waters as well as waters in swimming pools and similar environments can deliver important benefits to health and well-being such as physical activity, relaxation, cultural and religious use. Yet, recreational water use can pose risks to health through exposure to microbial and chemical pollution as well as physical risk such as Drowning and injury.

What is the status of recreational water quality in my country?

Most high-income countries and some middle-income countries monitor safety of recreational water sites with the purpose of identifying and addressing pollution sources and providing water users with timely information on whether it is safe to enter.

At national and global levels, SDG monitoring includes indicators related to, but not directly assessing, water quality of water bodies used for recreation (9).

- SDG indicator 6.3.1: Proportion of domestic and industrial wastewater flow safely treated.
- SDG indicator 6.3.2: Proportion of bodies of water with good ambient water quality.

WHO and UN-HABITAT serve as custodian agencies monitoring that wastewater is safely treated globally and UNEP is the custodian agency for monitoring ambient water quality globally (32).

What is the level of recreational water safety we want to achieve?

WHO produces guidelines for recreational water in two volumes: *Guidelines on recreational water quality. Volume 1: coastal and fresh waters* and *Guidelines for safe recreational water environments. Volume 2: swimming pools and similar environments* (33, 34). These guidelines focus on water quality-related health hazards for the general population engaging in all type of recreational water use involving contact with water and beach sand.

WHO guidance on recreational water quality parameters and safe limits is presented within a broader recreational water safety framework including three core recommendations for coastal and fresh water (as listed in Tables 3.1–3.3).

Table 3.1. Guideline values for microbial quality of coastal and fresh recreational waters

Microbial water quality assessment categories ^a	Intestinal enterococci (95th percentile value per 100 ml water sample)
A	≤ 40
B	41–200
C	201–500
D	> 500

Categories A–D: Based on risk evaluation, e.g. estimated risk of gastrointestinal illness per exposure: A: <1%, B: 1–5%, C: 5–10%, D: >10%.

^a See (33) for further information on combining categories with sanitary surveys for beach classification.

Source: Adapted from (33).

Table 3.2. Indicators and guideline values for harmful algal blooms in freshwater

	Cyanobacterial biomass indicator values	Cyanotoxin guideline values, recreation (cyanotoxin type)
Vigilance level	1–4 mm ³ /L biovolume or 1–12 µg/L chlorophyll <i>a</i> (with dominance of cyanobacteria)	—
Alert level 1	4–8 mm ³ /L biovolume or 12–24 µg/L chlorophyll <i>a</i> (with dominance of cyanobacteria)	24 µg/L ^a (microcystin) 6 µg/L ^a (cylindrospermopsin)
Alert level 2	Scum or transparency < 0.5–1 m	60 µg/L (anatoxin-a) 30 µg/L (saxitoxin)

^a Provisional value.

Source: Adapted from (33).

Table 3.3. Guidelines and operational monitoring limits for other hazards

Hazard category	Guideline values or operational monitoring limit
Beach sand	Provisional guideline value of 60 CFU/g of intestinal enterococci.
Chemicals	Chemical concentration 20 times higher than the guideline value in the WHO <i>Guidelines for drinking-water quality</i> as a screening approach.
Other microbial hazards	No dose–response relationship established for these organisms to support guideline values. Monitor environmental conditions favouring proliferation of organisms ^a .
Nuisance aspects	No guideline value. Operational monitoring via visual inspection and data collection on priority aesthetic aspects of concern.

CFU: colony forming units.










^a Examples of bacteria: *Aeromonas* spp., *Leptospira* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, noncholera *Vibrio cholerae*; examples of free-living amoebae: *Acanthamoeba* spp., *Naegleria fowleri*; examples of Helminth: *Schistosoma mansoni*, *S. intercalatum*, *S. guineensis*, *S. mekongi*, *S. japonicum*, *S. haematobium*, *Trichobilharzia* spp.)











Source: Adapted from (33).








Swimming pools and related water environments

Volume 2 of the WHO guidelines on safe recreational water environments (34) provide guideline values for chlorine- and bromine-based disinfectants, chlorine dioxide, ozone (in air), pH and operational guidelines for microbial testing. The WHO guidelines are intended to form the basis for national and international regulations and standards.

Guidance to create safe environments to prevent drownings is provided in section 9.3.1 Drownings.

 Guidance	 Sector principally involved in planning/ implementation	 Level of implementation	 Instruments
Coastal and fresh water environments: policies and actions			
<p>1. Set national health-based targets for recreational water bodies (33).</p> <ul style="list-style-type: none"> Express targets as microbial water quality standards for sources of faecal contamination based on WHO guideline values (see Table 3.1). Develop additional water quality standards for cyanotoxins or biovolume indicators from harmful algal blooms based on WHO guideline values (see Table 3.2). Consider additional standards based on provisional guideline values for beach sand and chemicals, operational monitoring limits for other microbial hazards and aesthetic and nuisance aspects, if justified by national or local risk assessment and resource availability for monitoring and control measures (see Table 3.3). 	 Health  Environment	National	Regulation
<p>2. Develop and implement recreational WSPs for priority bathing sites (33). Steps for developing an RWSP include the following.</p> <p>a. Identify the lead entity and assemble a team to develop the recreational WSP. This includes identifying the lead entity and key stakeholders and forming a coordination committee that includes relevant stakeholders with clear roles and responsibilities.</p> <p>b. Undertake a system assessment for each existing priority recreational water site (or group of sites within the same catchment) and before developing new sites.</p> <ul style="list-style-type: none"> Describe the recreational water environment – by combining a sanitary survey of adjacent land and water drainage with an initial microbial quality assessment to assign a beach classification. Identify hazards and hazardous events, considering seasonality and predicted local climate change scenarios. Assess and prioritize the risks. Identify existing control measures, assess risks and prioritize risks that are insufficiently controlled. Establish plans, with sustainable funding, for managing currently effective control measures. Establish improvement plans, with sustainable funding, for incrementally implementing control measures where priority risks are insufficiently controlled. <p>c. Conduct and maintain system monitoring.</p> <ul style="list-style-type: none"> Establish and implement an operational monitoring regime for priority control measures in the catchment to give rapid warning when operational limits are exceeded. Establish and implement corrective actions for exceedances of operational limits. Conduct ongoing verification monitoring of water quality. Establish procedures to verify effectiveness of the recreational WSP. 	 Health  Infrastructure  Environment	Community	<p>Infrastructure, technology and built environment;</p> <p>information, education and communication;</p> <p>other management and control</p>

 Guidance	 Sector principally involved in planning/ implementation	 Level of implementation	 Instruments
<p>d. Establish coordinated management and communication strategies to support effective pollution control and public communications.</p> <ul style="list-style-type: none"> • Document management procedures for normal and incident conditions, including incident response plans. • Where feasible, develop predictive models to support timely communication to water users. • Develop supporting programmes – for example, training, research and development, standard operating procedures (SOPs), quality control activities, procedures for visual inspections, sample collection and equipment calibration. • Establish communication protocols between responsible organizations and agencies. • Establish mechanisms for communication with users and managers of the site. <p>e. Review and update recreational WSPs. This includes meeting periodically and after incidents to review performance of plans, including operational monitoring and water quality results, an updated sanitary survey and beach classification, the occurrence of incidents, communication and complaints; if necessary, update the risk assessment.</p> <p>More information is provided in the <i>Guidelines on recreational water quality. Volume 1: coastal and fresh waters</i> (33).</p>			
<p>3. Conduct ongoing surveillance and risk communication of recreational water-related illness (33).</p> <ul style="list-style-type: none"> • Collect, analyse and interpret health-related data on suspected or confirmed illness in humans and/or animals, and systematically document outbreaks associated with recreational waters. • Provide the public with timely information about the status of health risks, and provide water users with advisory warnings before, during and after a public health incident, in conjunction with recreational WSPs. 	 Health	National; community	Assessment and surveillance
Swimming pools, spas and similar water environments: policies and actions			
<p>4. Develop a pool safety plan for swimming pools and similar environments (34). Points to consider include:</p> <ul style="list-style-type: none"> • adequate water treatment including filtration and disinfection, pool hydraulics, addition of fresh water, cleaning and ventilation. • Provision and encouragement of the use of showers and toilets • Monitoring of turbidity, residual disinfectant and pH. <p>Note: The WHO guidelines for safe recreational water environments (volume 2) provide operational guidelines for microbial testing (34).</p>	 Health  Environment	National; community	Assessment and surveillance
<p>5. Ensure adequate clarity of pool water to minimize injury hazard (e.g. through filtration and pool design) (34).</p>	 Health  Infrastructure  Recreation	Community; national	Infrastructure, technology and built environment; other management and control

 Guidance	 Sector principally involved in planning/implementation	 Level of implementation	 Instruments
<p>6. Provide rescue services and access to emergency response/ services. Pre-set maximum water temperatures to < 40°C (34).</p> <p>Examples for rescue services and emergency response include: first aid availability, accessible emergency shut-off for pool water outlet pumps, telephones with emergency numbers, properly trained and equipped lifeguards, emergency accessibility.</p>	 Health  Recreation  Infrastructure	Community; national Universal health coverage	Infrastructure, technology and built environment; other management and control

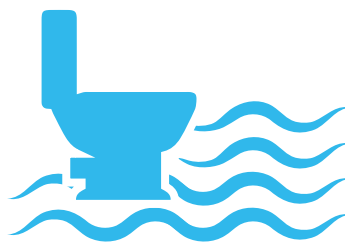
Selected tools

WHO 2021: *Guidelines on recreational water quality. Volume 1: coastal and fresh waters* (33)

WHO 2006: *Guidelines for safe recreational water environments. Volume 2: swimming pools and similar environments* (33, 34)

Bartram J, Rees G, editors (2000): *Monitoring bathing waters: a practical guide to the design and implementation of assessments and monitoring programmes* (35)

3.3 Sanitation



Overview

Nearly half the world's population lacked safely managed sanitation services in 2020. Such deficiencies cause 432 000 diarrhoeal disease deaths globally each year (2016), and also lead to soil-transmitted helminth infections, malnutrition and numerous other diseases (3, 7, 8). Poor sanitation contributes to the spread of antimicrobial resistance and negatively affects broader well-being (36).

Benefits of improving sanitation extend well beyond reducing the risk of diarrhoea and other diseases and include among others increased dignity and safety, particularly among women and girls, and increased school attendance.

Evidence suggests that simply improving sanitation facilities might not lead to the desired health impacts but needs to be accompanied with the safe disposal of children's and animal faeces, and the cessation of open defecation (37).

Who has inadequate sanitation in my country?

Most countries are monitoring progress on access to safe sanitation. This is usually performed through surveys of households, and also schools and health care facilities.

At national level, SDG indicators also monitor progress related to sanitation (9):

- SDG indicator 3.9.2: Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH)).
- SDG indicator 6.2.1: Proportion of population using safely managed sanitation services, including a handwashing facility with soap and water.
- SDG indicator 6.3.1: Proportion of domestic and industrial wastewater flow safely treated.






















Chapters 3 and 4 of the WHO *Guidelines on sanitation and health* provide definitions of safely managed sanitation for all steps of the chain (toilet, containment, conveyance, treatment, disposal/end use) and good practice advice on translating definitions into national targets, policies, regulations and monitoring systems.






















What do we want to achieve in terms of sanitation services to protect people's health?

Safe sanitation systems should be designed and used to separate human excreta from human contact at all steps of the sanitation service chain from toilet capture and containment, through emptying, transport, treatment (in-situ or offsite) and final disposal or end use.

The WHO *Guidelines on sanitation and health* (38) provide guidance to maximize the health impact of sanitation interventions including preventing infections and maintaining mental and social well-being through four main recommendations: i) ensuring universal access to and use of toilets that safely contain excreta among entire communities, institutions, workplaces and public places; ii) ensuring universal access to safe systems along the entire sanitation service chain based on context-specific solutions and local health risk assessment to protect the health of individuals, communities and workers; iii) integrating sanitation into regular local government-led planning and service provision; and iv) ensuring the health sector fulfil core functions to ensure sanitation interventions effectively protect public health.

 Guidance	 Sector principally involved in planning/ implementation	 Level of implementation	 Instruments
Policies and actions			
<p>1. Develop or update government-led multisectoral sanitation policies, planning processes and coordination (38).</p>	 Water/sanitation  Health	National	Regulation
<p>2. Sustain health sector engagement in sanitation through dedicated staffing and resourcing, and through action on sanitation in health services (38).</p>	 Health	National; community	Information, education and communication
<p>3. Develop or update national guidelines, standards and regulations, to ensure sanitation systems and services protect public health (38), to include the following elements:</p> <ul style="list-style-type: none"> • safe management at each step of the sanitation chain, for example through minimum requirements for toilets and pit latrines or septic tanks, SOPs for safe emptying and transport of faecal waste, and health based standards for faecal sludge and wastewater treatment and disposal or use in agriculture and aquaculture (39); • risk management and management along the entire sanitation chain – see <i>Sanitation safety planning</i> (40); • occupational health and safety for sanitation workers (36). 	 Water/sanitation  Health	National	Regulation
<p>4. Include sanitation in health policies where sanitation is needed for primary prevention, to enable coordination and integration into health programmes (38). For example, by including sanitation promotion in training curricula of health professionals, in job descriptions and local budgets.</p>	 Health  Water/sanitation	National; community Universal health coverage	Regulation
<p>5. Conduct national risk assessment using health surveillance data to target sanitation services to settings with high disease burden, and to support outbreak prevention efforts. This process involves standardized data gathering and a stakeholder meeting, possibly as part of a joint sector review (38).</p>	 Health  Water/sanitation	National	Assessment and surveillance
<p>6. Implement local risk assessment and management to prioritize improvements and manage system performance.</p> <p>Sanitation safety planning involves an assessment of the sanitation system, identification of hazardous events and assessment of control measures, development of an incremental improvement plan, and monitoring and evaluation. The WHO manual <i>Sanitation safety planning</i> provides specific training and support (40).</p>	 Water/sanitation	National; community	Assessment and surveillance; other management and control
<p>7. Address demand and supply of sanitation facilities and services concurrently by enabling marketing of sanitation services and developing sanitation services and business models (38).</p> <p>Approaches to generate demand may include social marketing or incentives such as subsidies, etc.</p>	 Environment  Industry  Water/sanitation	Community; national	Taxes and subsidies

 Guidance	 Sector principally involved in planning/ implementation	 Level of implementation	 Instruments
<p>8. Design, implement and monitor locally appropriate and safe systems along the entire sanitation chain (38). Examples include the following.</p> <ul style="list-style-type: none"> • Toilets should be made of durable material that can be easily cleaned, provide safety and privacy, with facilities for anal cleansing, hand washing and menstrual hygiene management. • Ensure safe containment of faecal waste through adequate design, operation and maintenance. • Use motorized emptying and transport over manual emptying and transport wherever possible, implement SOPs and health and safety measures for workers. • Ensure adequate treatment of faecal waste before end use/ disposal. • Ensure multi-barrier approach is used along the entire service chain. <p>For more information, Annex 1 of <i>WHO guidelines on sanitation and health</i> contains sanitation system fact sheets which describe applicability of different sanitation systems to a given context, with consideration on design, operation and maintenance and mechanisms for protecting public health (38).</p>	 Water/sanitation  Health  Environment	National; community	Infrastructure, technology and built environment
Awareness raising and capacity building			
<p>9. Perform context-specific behaviour change programming based on understanding sanitation behaviours and their determinants (38).</p>	 Health  Water/sanitation	Community; national Universal health coverage	Information, education and communication
<p>10. Promote access to safe toilets in schools (26), health care facilities (27), workplaces and public places.</p>	 Health  Water/sanitation  Environment	Community: schools/child-care settings; health care; workplace Universal health coverage	Information, education and communication
<p>11. Promote shared and public toilet facilities that safely contain excreta as an incremental step when individual household facilities are not feasible (38).</p>	 Health  Water/sanitation  Environment	Community Universal health coverage	Information, education and communication
<p>12. Provide training and technical support to community health workers/environmental health officers for inspection of sanitary facilities and supporting households in improving their sanitation facilities (38). See SI forms and sanitation system fact sheets (41, 42).</p>	 Water/sanitation  Environment  Health	Community; national Universal health coverage	Information, education and communication
<p>13. Raise awareness about climate adaptation options for sanitation systems, such as selecting sites less prone to floods, taking measures during/after extreme weather events, constructing simplified sewer networks to withstand flooding and flotation, etc. (38) (43). Also see “Sanitation safety: Adaptation and increased resilience” section in Chapter 7. <i>Climate change</i>.</p>	 Water/sanitation  Environment  Health	Community; national Universal health coverage	Information, education and communication

 Guidance	 Sector principally involved in planning/ implementation	 Level of implementation	 Instruments
14. Involve children at home and in school in promotion of safe sanitation (44).	 Education  Water/sanitation  Environment  Health	Community; schools/child-care settings Universal health coverage	Information, education and communication
15. Involve and support all community members in the design, construction and use of sanitation facilities (44).	 Water/sanitation  Environment  Health	Community Universal health coverage	Information, education and communication
16. Promote avoiding open defecation and adopting safe sanitation facilities (38).	 Health  Environment	Community; national Universal health coverage	Information, education and communication
17. Promote safe disposal of child faeces, that is, into latrines (38).	 Health  Environment	Community; national Universal health coverage	Information, education and communication
18. Promote washing hands with soap at critical times, such as after defecation, after child cleaning and before preparing food (38).	 Health  Environment	Community; national Universal health coverage	Information, education and communication
19. Promote maintaining functional and clean toilets (38).	 Health  Environment	Community; national Universal health coverage	Information, education and communication
20. Promote safe management of domestic animals and their excreta (38).	 Health  Environment	Community; national Universal health coverage	Information, education and communication

Selected tools

WHO 2018: Sanitation system fact sheets: Annex 1 of the *Guidelines for sanitation and health* (38)

WHO 2006: *Guidelines for the safe use of wastewater, excreta and greywater*; volumes 1–4 (45)

WHO 2020: Sanitary inspection forms for sanitary systems, sanitation system fact sheets (41, 42)

WHO/Neglected Tropical Disease NGO Network 2020: *WASH and health working together: a 'how to' guide for NTD programmes* (30)

This is a toolkit to address WASH and neglected tropical diseases.

3.4 Personal hygiene



Because of its proven health benefits, hand washing with soap and water (46) is usually the top priority for both health promotion and hygiene monitoring.

This section focuses on individual hygiene behaviours in different settings and covers mainly hand hygiene but also other aspects of personal hygiene such as face washing. It does not address hygiene in health care facilities, which is included in the section on health care facilities (section [11.4 Health care facilities](#)).



Overview

Hygiene is multi-faceted and comprises many behaviours, including hand- and face washing, menstrual hygiene and food hygiene. Hand washing with soap at crucial events such as after visiting the toilet, defecating or before preparing food was estimated to be a poorly practised behaviour globally (47).

Approximately 2.3 billion people lacked functioning hand-washing facilities with water and soap in 2020 (7). Inadequate hygiene behaviours are an important risk factor for infectious diseases like diarrhoea, soil-transmitted helminth infections, respiratory diseases and contribute to malnutrition and other diseases; they were estimated to have caused 165 000 deaths from diarrhoea alone in 2016 (3, 8).

Who has inadequate access to basic hygiene facilities in my country?



















Direct assessment of hand-washing practices is usually considered too resource-intensive, especially at national level. Personal hygiene practices can be estimated by the proportion of people with access to hand-washing facilities with soap and water on premises (basic hand-washing facilities). Access to basic hand-washing facilities is usually assessed in large and nationally representative household surveys. Survey data on access to hand-washing facilities are also available for individual countries for schools and health care facilities (1).






Progress related to hygiene and improved hand washing with soap is also assessed within the SDGs (9). SDG 6 includes a target of adequate and equitable sanitation and hygiene for all. SDG indicators specifically mentioning hygiene or hand washing with soap include the following.

- SDG indicator 3.9.2: Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH)).
- SDG indicator 4.A.1: Proportion of schools with access to: [...] (e) basic drinking-water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the WASH indicator definitions).
- SDG indicator 6.2.1: Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water.

What do we want to achieve in terms of personal hygiene?

Everyone should have access to basic hygiene facilities at home, at school, at the workplace and in public buildings (38). Hand washing should be practised with soap and water and at crucial events such as after visiting the toilet, defecating or before preparing food (38, 48).

 Guidance	 Sector principally involved in planning/ implementation	 Level of implementation	 Instruments
Policies and actions			
<p>1. Support the installation of hand-washing facilities, especially in homes and public places such as schools and health care facilities (see also section 11.4 Health care facilities), bus and train stations and private commercial buildings (38, 49).</p> <p>Hand-washing facilities with soap and water should be available close to (usually within 5 m) of sanitation facilities (26, 38).</p>	 Health	National; community Universal health coverage	Infrastructure, technology and built environment
<p>2. Enforce hand-washing facilities in public places such as food establishments and markets, and include them in routine inspection and monitoring schemes (38).</p>	 Health  Industry	National; community	Regulation; assessment and surveillance
<p>3. Make soap and water available to households, institutions and in public places (26, 38).</p>	 Health	Community; national	Infrastructure, technology and built environment
<p>4. Support the inclusion of culturally- and context-appropriate facilities for hand washing, anal cleansing and menstrual hygiene management into toilet design (38).</p>	 Health  Construction	Community; national	Infrastructure, technology and built environment
Awareness raising and capacity building			
<p>5. Promote regular hand hygiene outside of private homes such as when entering public buildings or public transport (49).</p>	 Health  Education	Community; national Universal health coverage	Information, education and communication
<p>6. Promote hand washing with soap after defecation and any potential contact with faeces (e.g. child faeces) (38).</p>	 Health  Education	Community; national Universal health coverage	Information, education and communication
<p>7. Promote hand washing with soap before handling food and during food preparation (48).</p>	 Health  Food	Community; national Universal health coverage	Information, education and communication
<p>8. Promote face washing for the prevention of certain infectious diseases such as trachoma (50).</p>	 Health	Community; national Universal health coverage	Information, education and communication
<p>9. Promote safe hygiene behaviours such as hand washing with soap in communities, institutions such as schools and in public places (26, 38).</p>	 Health	Community; schools/child-care settings Universal health coverage	Information, education and communication

 Guidance	 Sector principally involved in planning/implementation	 Level of implementation	 Instruments
10. Promote the installation and availability of hand-washing facilities with soap and water (38).	 Health	Community; national Universal health coverage	Information, education and communication

Selected tools

WHO 2020: Awareness-raising and educational material on how to hand-wash, how to hand-rub and when and how to perform hand hygiene in health care settings (51)

WHO 2009: Water, sanitation and hygiene standards for schools in low-cost settings (26)
This includes an assessment checklist for WASH in schools.

WHO 2006: Five keys to safer food manual (48)
The manual provides key messages, resources and training materials related to food hygiene.

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