

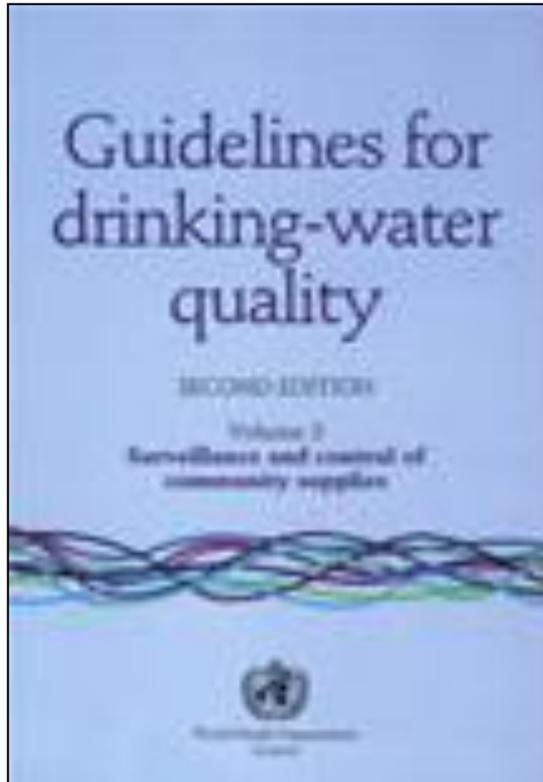
Guidelines for Drinking-water Quality: Small Water Supplies

An Update

Rick Johnston
Jen DeFrance
2 December 2016

RWSN Forum
Abidjan, Côte d'Ivoire

Guidelines for Drinking-water Quality



2nd ed,
1993

- **Volume 3 (1997):
Surveillance and Control of Community Supplies**
- Sanitary Inspections (SIs)

3rd ed,
2004

- Framework for Safe Drinking Water introduced
- Shift to risk-management approaches
- Water Safety Plans (WSPs)

Since then

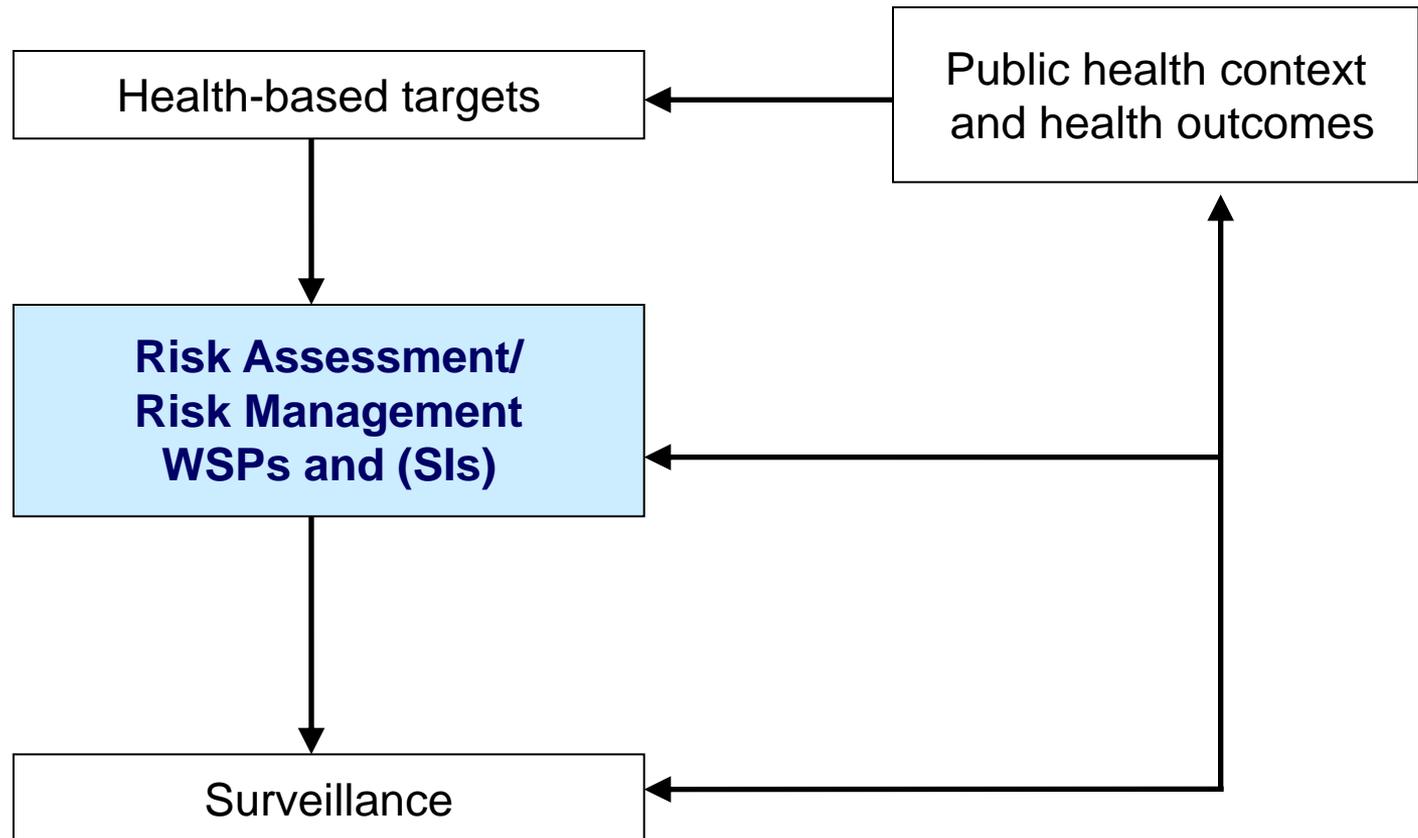
- 4th ed, 2011
- Additional experience with managing small water supply systems, including Sanitary Inspection forms

**Need to update the Community
Supplies Guideline**



**World Health
Organization**

WHO's Framework for Safe Drinking-water



Guidelines for Drinking-water Quality: Surveillance & Control of Community Supplies

Key definition:

WATER SAFETY PLAN: A comprehensive risk assessment and risk management approach that includes all steps in the water supply from catchment to consumer

“*The most effective means of consistently ensuring the safety of a drinking-water supply.*”

WHO Guidelines for Drinking-water Quality



World Health
Organization

Small Water Supplies Guideline: Activities to Date

Gap analysis of the Guideline and consultations with experts and stakeholders (2009+)

Updated structure and table of contents of the Guideline (2014)

First draft of updated Guideline (2015)

Literature review and expert interviews on SI forms (2015)

Revision of SI forms and second draft of guideline initiated (2016)



World Health
Organization

Small Water Supplies Guideline

	Part 1: <u>Policy Framework</u>	Part 2: <u>Field Guide</u>
Purpose	Provides the overarching policy framework for managing small water supplies	Support surveillance activities (WSPs, SIs and water quality testing)
Target Audience	Decision makers/ planners/managers at various levels of government	Field workers undertaking water quality surveillance activities

Small Water Supplies Guideline

Part 1: Policy Framework

- 1 Introduction
- 2 Policies and regulations
- 3 Standards and guidelines
- 4 Water Safety Plans
- 5 Technical interventions
- 6 Surveillance
- 7 Using information and taking action



Small Water Supplies Guideline

Part 2: Field Guide

1 Introduction

2 Considerations for field workers

3 Procedures for field work visits and record keeping

4-5 Review of WSP process & SIs

6-7 Water sampling and analysis and QC

8-9 Interpretation of findings and reporting

10 Using surveillance data



Small Water Supplies Guideline

Part 2: Field Guide

1 Introduction

2 Considerations for field workers

3 Procedures for field work visits and record keeping

4-5 Review of WSP process & SIs

6-7 Water sampling and analysis and QC

8-9 Interpretation of findings and reporting

10 Using surveillance data

Annexes: examples of small water supply inventory forms, SI forms, etc.



Small Water Supplies Guideline and Sanitary Inspection Forms

- SI forms continue to be a useful tool in their own right to identify hazardous events and prioritize management actions – for both the individual supply and surveillance agency
- SI forms can be a useful tool to support WSPs, in particular to identify hazardous events to inform risk assessment

I		Type of facility	TUBEWELL WITH HAND-PUMP
1.		General information:	Health centre
			Village
2.		Code no.—Address	
3.		Water authority/community representative signature	
4.		Date of visit	
5.		Water sample taken?	Sample no. Thermotolerant coliform grade
II		Specific diagnostic information for assessment	Risk
1.		Is there a latrine within 10 m of the hand-pump?	Y/N
2.		Is the nearest latrine on higher ground than the hand-pump?	Y/N
3.		Is there any other source of pollution (e.g. animal excreta, rubbish, surface water) within 10 m of the hand-pump?	Y/N
4.		Is the drainage poor, causing stagnant water within 2 m of the hand-pump?	Y/N
5.		Is the hand-pump drainage channel faulty? Is it broken, permitting ponding? Does it need cleaning?	Y/N
6.		Is the fencing around the hand-pump inadequate, allowing animals in?	Y/N
7.		Is the concrete floor less than 1 m wide all around the hand-pump?	Y/N
8.		Is there any ponding on the concrete floor around the hand-pump?	Y/N
9.		Are there any cracks in the concrete floor around the hand-pump which could permit water to enter the well?	Y/N
10.		Is the hand-pump loose at the point of attachment to the base so that water could enter the casing?	Y/N
		Total score of risks	/10
Contamination risk score: 9–10 = very high; 6–8 = high; 3–5 = intermediate; 0–2 = low			
III		Results and recommendations	
The following important points of risk were noted: (list nos 1–10) and the authority advised on remedial action.			
Signature of sanitarian			

Revision of SI forms

- Needs to be informed by evidence base, practical experience, new technologies/construction materials, etc.
- Can SI forms be updated to better align with WSPs?
 - Standard 'Yes' / 'No' method of scoring assumes equal weighting of each hazardous event while within WSPs each hazardous event should be ranked (e.g. high, medium, low)
- Can SI forms be made more useful?
- Improve graphics
 - Figures in earlier WHO guidance (1976) provided more technical detail

Need to ensure SI forms remain to be simple, brief and serve both surveillance authorities and water suppliers

Revision of SI forms: Evidence Base Review

Method: Literature reviews + expert interviews

Aims: To address and analyse the evidence related to

- experiences, practices, reported benefits and challenges with SIs
- scientific validity of the questions covered by the SI forms to support prioritization of hazardous events
- experience with use of SI forms in the current Guideline versus nationally/locally adapted ones
- any experiences with use of SIs as part of water safety plans (WSPs)



Revised SI Package

Part 1:
Technology fact
sheet

- Diagram + description of key elements and protective features
- Drawing depicting risk factors?

Part 2:
SI form

- Yes/No section
- Modify questions and add/delete questions based on review
- Option to assign a risk grade (low, med, high)?

Part 3:
Explanatory
notes

- To support answering the SI questions

Part 4:
Management
advice

- To support remedial actions associated with each question



World Health
Organization

Example SI Form: Assessment

Sanitary inspection questions	Yes	No
<p>Is there any visible contamination of the roof catchment area (plants, dirt, or excreta)?</p> <p><i>Water quality is at risk if the roof catchment is unclean. Water may be contaminated before entering the storage tank, or contaminants present on the catchment could be washed into the tank.</i></p>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Are the guttering channels that collect water dirty?</p> <p><i>Unclean gutters can contaminate the water or introduce dirt into the storage tank in the same way the roof can.</i></p>	<input type="checkbox"/>	<input type="checkbox"/>



Example SI Form: Assessment

Sanitary inspection questions	Yes	No	Complete this portion only for questions answered 'YES'. Grade the risk by placing a tick over Low, Medium or High.		
<p>Is there any visible contamination of the roof catchment area (plants, dirt, or excreta)?</p> <p><i>Water quality is at risk if the roof catchment is unclean. Water may be contaminated before entering the storage tank, or contaminants present on the catchment could be washed into the tank.</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	Low	Medium	High
<p>Are the guttering channels that collect water dirty?</p> <p><i>Unclean gutters can contaminate the water or introduce dirt into the storage tank in the same way the roof can.</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	Low	Medium	High

Example SI Form: Scoring

<p>Total number of:</p> <p style="text-align: right;">'YES' answers: <input style="width: 30px; height: 25px;" type="text"/></p>		<p>Total number of:</p> <p>Low <input style="width: 25px; height: 25px;" type="text"/> Medium <input style="width: 25px; height: 25px;" type="text"/> High <input style="width: 25px; height: 25px;" type="text"/></p>
---	--	---

In the table below, enter the number of 'Low', 'Medium', 'High' risks assigned to 'Yes' answers and multiply by the relevant number to generate a 'Risk score'.

	Number of risks		Score
# High		X 5	
# Medium		X 3	
# Low		X 1	
Total number of risks: (should match total number of 'YES' answers)		Risk score	

SI form package and Guidelines: Next steps

- Finalize SI package for 3-4 technologies (Q1 2017)
 - rainwater harvesting, covered dug-well with handpump, protected spring source and household storage
- Pilot SI package (Q1 2017)
- Draft updated Guideline (Q1 2017)
- Revise SI package for selected technologies and develop for other technologies
- Peer review
- Finalize Guideline 2018

Items for Discussion

- Feedback on SI Package
- Feedback on SI form format
 - Feasibility of assessing the risk for each individual question?
 - Need for overall risk score?

Looking for volunteers to pilot SI form package and peer reviewers of Guideline including SI form package



Thank you

For more information please contact:

Rick Johnston, johnstonr@who.int
Jennifer De France, defrancej@who.int