



مكتب التنظيم و الرقابة
Regulation & Supervision Bureau

Code of Practice for the Inspection and Cleaning of Customer Water Storage Tanks

Consultation Document

09 March 2014

CP/T03/100

www.rsb.gov.ae

water, wastewater and electricity sector of the Emirate of Abu Dhabi

Code of Practice for the Inspection
and Cleaning of Customer Water
Storage Tanks
For Consultation

Document	Approved by	Recipients of controlled copies
CP/T03/100	Director General	AADC, ADDC, DMA, ADM, AAM, WRM, ADFCA, HAAD, Musanada, Khidma, TDIC

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Issued by:

The Regulation & Supervision Bureau

Foreword

The Regulation and Supervision Bureau (the Bureau) was established under Abu Dhabi law No. 2 in 1998 to oversee the economic and technical activities of the electricity, water and wastewater companies that are licensed to operate in the Emirate of Abu Dhabi.

The Bureau is the Competent Authority that administers the Water Supply Regulations and Water Quality Regulations which provide the legal framework to ensure adequate water supply and quality to end use customers.

This Code of Practice for the Inspection and Cleaning of Customer Water Storage Tanks is issued by the Bureau in support of the Water Supply Regulations and Water Quality Regulations and has been developed to put in place water tank cleaning and inspection requirements and guidance to ensure that water quality and wholesomeness supplied and subsequently received by customers is protected and maintained beyond the distribution network and to the customer's taps.

The Code details the regulatory requirements for building owners or managers and for water storage tank cleaning and inspection companies. The Code also provides good practice guidance to building owners and managers; water tank cleaning companies; and water tank inspection and sampling companies on methods for the safe and effective cleaning, disinfection and/ or sampling and testing of the most common types of water storage tanks in use in the Emirate of Abu Dhabi.

This Code will also be available in Arabic, but the reader should note it was first written in English. It may be downloaded from the Bureau's website at **www.rsb.gov.ae**

Acknowledgements

The Bureau has consulted with relevant Abu Dhabi Government Authorities and industry stakeholders in the development of this Code of Practice. The Bureau would like to acknowledge the valuable input and support of the Government and industry stakeholders in the development of this Code.

In particular, the Bureau would like to express its thanks and appreciation to the following Authorities and industry stakeholders for their contributions and continued support:

Abu Dhabi Government Authorities and Companies

- Abu Dhabi Water & Electricity Authority
- Al Ain Distribution Company
- Abu Dhabi Distribution Company
- Abu Dhabi Municipality
- Western Region Municipality
- Abu Dhabi Food Control Authority
- Abu Dhabi Education Council
- Health Authority of Abu Dhabi
- Musanada

Industry Stakeholders

- Kidmah
- Magic Touch
- Poly Clean

List of Issues

Document No.	Document Title	Revision	Date of Issue	Issued By
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1.0 Introduction

1.1 Citation and Commencement

- 1.1.1 This Code of Practice shall be cited as the Code of Practice for the Inspection and Cleaning of Customer Water Storage Tanks.
- 1.1.2 This Code comes into force on (TBA).
- 1.1.3 This Code is issued by the Bureau to complement the Water Supply Regulations and Water Quality Regulations.

1.2 Purpose

- 1.2.1 The purpose of this Code of Practice is to outline the regulatory requirements and responsibilities for building owners or their registered building managers or agents; and water tank inspection, sampling and cleaning companies, with respect to the inspection, sampling, and cleaning of existing customer water storage tanks within the Emirate of Abu Dhabi.
- 1.2.1 The Code provides guidelines for building owners or their registered building managers or agents, as well as water tank inspection, sampling and cleaning and inspection companies, to assist them in meeting the requirements stipulated under this Code.
- 1.2.2 The regulatory requirements and guidelines stipulated are intended to improve and raise the level and standards of water tank inspection, cleaning and disinfection, to ensure that water quality and wholesomeness are protected and maintained for customer use.

1.3 Scope

- 1.3.1 This Code applies to all registered building owners or registered building managers or agents, engaged by way of legal contract or agreement, to maintain building water plumbing systems and customer water storage tanks in the Emirate of Abu Dhabi.
- 1.3.2 This Code applies to all persons, companies or organizations engaged in any activities relating to the inspection, sampling, cleaning and disinfection of customer water storage tanks in the Emirate of Abu Dhabi.
- 1.3.3 This Code applies only to drinking water customer storage tanks that are up to 500,000 IG (or 2,270 m³) per individual tank and not in aggregate, in all types of buildings within the Emirate of Abu Dhabi, regardless of the construction material, shape, or design of the tank or its location.
- 1.3.4 Specifically the Code sets requirements and in certain instances, guidelines, for the following elements:
- a) Water tank inspection;
 - b) Water tank sampling and testing;
 - c) Water tank cleaning and disinfection;
 - d) Waste water and sludge discharge and disposal;
 - e) Environment, health & safety;
 - f) Pre-qualification and registration of water tank cleaning companies;
 - g) Roles and responsibilities of relevant authorities; and
 - h) Regulatory compliance.

The Code does not cover aspects relating to the design, construction, location, placement or commissions of new custom storage tanks or general maintenance of customer water storage tanks, or any other non-cleaning related issues. The issues of water tank general design, construction location, placement and general maintenance are covered under the Water Supply Regulations.

- 1.3.5 Nothing in this Code is intended to conflict with or affect the operation of:
- a) UAE Federal Law No (24) of 1999 for the Protection and Development of the Environment and its executive orders;
 - b) Law No (21) of 2005 for Waste Management in the Emirate of Abu Dhabi;
 - c) Decree of the Crown Prince, Chairman of the Executive Council No. (42) of 2009 Concerning the Environment, Health and Safety Management System in the Emirate of Abu Dhabi (EHSMS) and the Abu Dhabi EHSMS Regulatory Framework Version 2 of 2012.

1.4 Current Regulations and Other Related Codes of Practice in Abu Dhabi

The Water Supply Regulations (RSB)

- 1.4.1 The Water Supply Regulations establish the framework for the provision and assurance of safe and efficient water supply to Customers, including water fittings used for the connection of water supply to Customers.
- 1.4.2 The relevant section of the Water Supply Regulations concerning the operation of this Code is titled “Customer water storage tanks”.

Guide to Water Supply Regulations (RSB)

- 1.4.3 The Guide to Water Supply Regulations establishes the water connection arrangements and water fitting requirements a Distribution Company and its customers must follow in order to prevent wastage, contamination and overconsumption of water.
- 1.4.4 The relevant sections of the Guide to Water Supply Regulations concerning the operation of this Code for newly commissioned tanks are:
- a) “Storage tank testing and disinfection”
 - b) “Operation and maintenance procedures for storage tanks”
 - c) “Disinfection”.

The Water Quality Regulations (RSB)

- 1.4.5 The Water Quality Regulations (WQR) establish the framework for the provision of wholesome drinking water to consumers throughout the Emirate of Abu Dhabi and to reflect current guidance by the World Health Organization to ensure water is fit for human consumption.
- 1.4.6 These Regulations aim to ensure a high and consistent quality of product is delivered to customers. The WQR define the permissible concentrations for a range of water quality parameters and the monitoring requirements for assessing compliance.
- 1.4.7 The relevant section of the WQR concerning the operation of this Code is titled “Quality of supply”.

The Uniform Plumbing Code of Abu Dhabi (EAD)

1.4.8 The Uniform Plumbing Code of Abu Dhabi Emirate defines the standards for the installation, alteration, repair and replacement of plumbing systems in the Emirate of Abu Dhabi.

1.4.9 The relevant section of the Uniform Plumbing Code concerning the operation of this Code is Section 607.1.12 “Disinfection of water storage tanks”

Abu Dhabi International Property Maintenance Code (DMA)

1.4.10 The Abu Dhabi International Property Maintenance Code provides guidance on the maintenance of buildings within the Emirate of Abu Dhabi.

1.4.11 The relevant sections of the Uniform Plumbing Code concerning the operation of this Code are:

- a) Section 504 – “Plumbing Systems and Fixtures”
- b) Section 504.1 – “General”.

Abu Dhabi International Building Code (DMA)

1.4.12 The Abu Dhabi International Building Code provides guidance on the maintenance of building plumbing systems within the Emirate of Abu Dhabi.

1.4.13 The relevant sections of the Abu Dhabi International Building Code concerning the operation of this Code are:

- a) Chapter 29 – “Plumbing Systems”
- b) Section 2901.1 – “Scope”
- c) Section 2902 – “Legionella management”
- d) Chapter 34 – “Existing Buildings and Structures”
- e) Section 3402.2.1 – “Maintenance Programme”.

1.5 Other References

- i. BS 8558:2011 Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages, Section 6.1.5 Guidance on BS EN 806-5:2012 and Section 13.1 – Cisterns.
- ii. Building Services Research and Information Association (BSRIA) - Cold Water Storage Tanks, Technical Note TN13/98.
- iii. Dubai Municipality Food Control Department – Food Code
2.13 Water Supply - Guidelines for Cleaning & Disinfecting Water Tanks and Piping Systems in Multi-story Buildings.
- iv. Hong Kong Water Supplies Department - Freshwater Plumbing Maintenance Guide, Section 2.1 Cleaning of Water Tanks and Section 2.2 Inspections.
- v. ISO 17025 Laboratory Competence Quality Management System
- vi. ISO 5667 – Water Quality Sampling.
- vii. Singapore National Water Agency, Water Supply Regulations and Singapore Standard SS CP48 – Code of Practice for Water Services, Inspection, Cleaning and Sterilization of Water Storage Tanks.
- viii. Canada, Yukon Health & Social Services, Guidelines for Cleaning and Disinfecting a Water Holding Tank.
- ix. ASHRAE Guidelines 12-2000, Minimizing the Risk of Legionellosis Associated with Building Water Systems, Section 4 Potable and Emergency Water Systems and Section 4.1.6 Recommended Treatment.

2.0 Explanations

2.1 Interpretation

- 2.1.1 Words defined begin with capital letters when used in this Code of Practice.
- 2.1.2 Words and expressions other than those defined in this Code of Practice which are defined in:
- a) Water Supply Regulations shall have the meanings ascribed to them in those Regulations.
 - b) Guide to Water Supply Regulations, shall have the meanings ascribed to them in those Regulations.
 - c) Water Quality Regulations, shall have the meanings ascribed to them in those Regulations.
- 2.1.3 Words in the singular include the plural and those in the plural include the singular.
- 2.1.4 Unless otherwise specified, “days” shall mean “calendar days” and “year” a calendar year according to the Gregorian calendar.

2.2 Definitions

Accredited Laboratory/Testing Company – a laboratory or water testing company or organization that operates under ISO 17025 and is licenced in Abu Dhabi Emirate to conduct testing of drinking water samples, and is accredited by the relevant authorities, such as QCC or ESMA to conduct such operations.

Bureau – the Regulation and Supervision Bureau for the water, wastewater and electricity sectors in the Emirate of Abu Dhabi as established by Law No (2).

Disinfectant – any chemical, such as sodium hypochlorite, calcium hypochlorite or liquid based chlorine, used for the purpose of disinfecting or sterilizing micro-biological agents or bacteria.

Disinfection – the act of applying disinfectant to water storage tanks for the purpose of neutralizing bacterial and micro- biological agents.

Cleaning – the act of removing dirt, grime, sediment, sludge, algae or any other contaminants from a water storage tank for the purpose of restoring or maintaining hygienic conditions.

Cleaning Chemicals – any detergents or cleaning agents used for the cleaning of water storage tanks.

Code of Practice or Code – this Code of Practice for the inspection, sampling, cleaning and disinfection of customer water storage tanks.

Commercial Building – buildings or parts thereof that comprise any non-residential uses and/ or activities, including retail, hotels, hospitals, schools, mosques, malls, shopping centres, food outlets, industrial facilities and manufacturing buildings.

Customer – the Person to whom the Distribution Company supplies water for domestic, industrial, agricultural and commercial purposes.

Customer Water Storage Tank – means any receiving tank after the point of delivery to the Customer from the Distribution System for storing water for subsequent use; it may be underground tank, ground tank or roof tank.

Distribution Company – a company or body holding a Licence from the Bureau, pursuant to the Law.

Distribution System – means the system consisting (wholly or mainly) of water pipes owned or operated by a licensee and used for the distribution of Wholesome Water to the point of delivery to Premises or Customers and includes any plant and equipment, including metering equipment, owned or operated by the licensee in connection with the distribution of water.

EHS – Environment, Health and Safety.

GI Water Tank – Galvanized iron steel tanks.

Good Industry Practice – means the exercise of that degree of skill, prudence and foresight which would reasonably and ordinarily be expected from a skilled and experienced person engaged in the same type of undertaking under the same or similar circumstances.

Ground Water Tank – means a customer water storage tank whose base is located on ground level.

Inspection – the act of visually evaluating the external and internal condition of a customer water storage tank for the purpose of establishing the likely quality or wholesomeness of stored water, or for the purpose of establishing any likely sources of contamination.

Inspection Companies – companies engaged to conduct inspections (visual or otherwise), as well as sampling and testing of water for customer water storage tanks.

Man-Entry Tank – means a tank which is sufficiently large to allow a man to enter and work inside.

Non-Man-Entry Tank – means a tank which is not sufficiently large and does not allow a man to enter and work inside.

Person – means any corporate body, partnership, person or other entity having independent legal personality.

Plastic Tank – Polyethylene water storage tanks.

Premises – means a tract or plot of land and includes the buildings and any appurtenances on the land. A Premises may contain more than one property or dwelling and more than one Customer.

Residential Building – For the purpose of this Code, residential buildings are defined as buildings where owners, tenants or occupiers reside for the purpose of living, including residential towers, low to medium rise buildings, mixed use residential/commercial buildings, labour camps, and field camps/cabins.

Responsible Company – means a company or organization that is licensed to conduct any operations or activities that relate to water storage tank Inspection, Sampling, Cleaning or Disinfection within the Emirate of Abu Dhabi.

Responsible Person – means the person who assumes actual responsibility for the installation or the ownership of the Water Tank or Water Fitting including Registered Building Owners, Managers or Agents.

Roof Water Tank – means a fixed container, cistern, or break tank located on the roof of a building for the purpose of holding or storing water at atmospheric pressure.

Sampling – the act of collecting a small amount of water from a water storage tank for the purpose of representing the whole.

Sludge – any sediment or dense material that has settled inside a customer water storage tank.

Testing – the act of analysing a water sample for the purpose of determining the level of specified contaminants or parameters.

Underground Water Tank – for the purpose of this Code, an underground water tank is a customer water storage tank whose base is below ground level.

Wastewater – the water-borne waste generated by any customer water tank.

Water Fitting – means pipes, pipe fittings, joints, and valves, back prevention devices including the Customer's Ground Storage Tank or Roof Tank. Without limiting the foregoing, Water Fitting shall include a pump, meter or any other relevant fittings required to facilitate the connection arrangement to the Customer.

Wholesome Water – means water that is in compliance with the Water Quality Regulations.

2.3 Abbreviations

AADC	Al Ain Distribution Company
AAM	Al Ain Municipality
ADDC	Abu Dhabi Distribution Company
ADEC	Abu Dhabi Education Council
ADFCA	Abu Dhabi Food Control Authority
ADM	Abu Dhabi Municipality
CWM	Centre for Waste Management
DMA	Department of Municipal Affairs
EAD	Environment Agency Abu Dhabi
EHS Centre	Environment, Health & Safety Centre
ESMA	Emirates Authority for Standardization & Metrology
FRP	Fibreglass Reinforced Plastic
GRP	Glass reinforced plastic
HAAD	Health Authority Abu Dhabi
QCC	Quality and Conformity Council
RCC	Reinforced cement concrete
RSB	Regulation and Supervision Bureau
WRM	Western Region Municipality

2.4 Units

l	litre
IG	imperial gallon
m	metre
m³	cubic metres
mg/l	milligram per litre
ml	millilitre
ppm	parts per million

3.0 Activities subject to this Code

3.1 Tank Inspection

3.1.1 This Code is applicable to any activity that involves the internal or external visual inspection of a customer water storage tank for the purpose of establishing the quality or wholesomeness of stored water, or for the purpose of establishing any internal or external sources of contamination.

3.2 Tank Sampling and Testing

3.2.1 This Code is applicable to any activity that involves the sampling and testing of customer water storage tanks for the purpose of establishing the quality of wholesomeness of stored water.

3.3 Tank Cleaning and Disinfection

3.3.1 This Code is applicable to any activity that involves the cleaning and / or disinfection of customer water storage tanks, regardless of the manner or method of cleaning or disinfection, or the type, material, design, shape or location of the tank.

4.0 Roles and Responsibilities (Proposal)

Proposed roles and responsibilities of the main stakeholders are presented in Diagram 4.0. The highlighted fields represent shared responsibilities.

Diagram 4.0 - Responsibilities of Main Stakeholders

RSB	Develop and Issue CoP	DMA/ Municipality	Oversee and enforce CoP Implementation	Distribution Companies	Support Municipalities in site inspections & audits
	Receive Feedback, Review & Update CoP		Inform building Owners/Managers of the requirements as part of attestation process		Co-ordinate with Municipalities to resolve & close-out non-compliance with CoP
	Regulatory Direction & Oversight		Carry out periodic site inspections and audits		Establish root cause of the problem
	Receive Customers' complain in case of dispute		Receive Customers' feedback and complaints		Receive Customers' feedback and complaints
	Outline Pre-qualification & Registration Scheme		Develop & Manage Pre-qualification & Registration Scheme		Respond to reports on water quality issues, leakage, overflow or request for supply isolation
			Resolve and close-out non-compliance with CoP in ordination with Distribution Companies		
			Develop & maintain central database of water tanks. Collect and store tank cleaning and inspection records and test results		
		Responsible Person	Ensure cleaning, disinfection, inspection & sampling of water tanks		
			Engage qualified & registered water tank cleaning, inspection, sampling & testing company		
			Maintain records of tank cleaning & inspection and report results to DMA/Municipality		
			Make cleaning and inspection records available to relevant Authorities e.g. DMA/Municipality, ADFCA, HAAD, RSB.		
		Responsible Company	Be a qualified and registered cleaning & inspection company		
			Adhere to the CoP		
			Notify Customers of cleaning operations		
			Maintain cleaning & inspection records and report results to Responsible Person		
			Maintain proper training and competency assessment of personnel		
			Report water quality problems, leakage or overflow to Distribution Companies		
			Co-ordinate cleaning & inspection activities with Distribution Companies, if necessary.		

5.0 Requirements for Responsible Person

5.1 Water Tank Cleaning and Disinfection Frequency

5.1.1 The Responsible Person shall ensure regular and routine cleaning and disinfection of all water storage tanks within their premises. The routine tank cleaning and disinfection procedures are depicted in Diagram 5.1.

Note¹: In case a tank is in continuous use and subject to regular cleaning and disinfection procedures it can be put back to service without waiting for the results of water samples to become available.

5.1.2 The Responsible Person shall ensure water tank cleaning and disinfection of all water tanks within their premises at the minimum cleaning and disinfection frequency prescribed in Table 5.1.1 below.

Table 5.1.1 – Minimum Frequency for Water Tank Cleaning and Disinfection

Type of Building	Tank Material	Tank Location	Frequency of Cleaning & Disinfection
Residential and Commercial	Concrete	*Underground	Bi-annually
		Ground	Bi-annually
		Roof	Annually
	Plastic	Ground	Annually
		Roof	Annually
	FRP	Ground	Annually
		Roof	Annually
	GRP	Ground	Bi-annually
		Roof	Annually
	GI/steel	Ground	Annually
Roof		Annually	

***In 2012 the Bureau banned the construction of underground (buried) customer storage tanks in low rise residential buildings**

5.2 Water Tank Inspection Frequency

- 5.2.1 The Responsible Person shall also ensure routine visual inspections of all customer water storage tanks within their premises, in accordance with Table 5.2.1, for the purpose of identifying the presence of common visual signs of contamination as identified in Table 5.2.2. This includes any underground, ground level or roof level water storage tank regardless of the type of tank. The routine tank inspection procedures are depicted in Diagram 5.2.
- 5.2.2 The Responsible Person shall, in instances where they have identified positive signs of contamination, initiate cleaning and disinfection of the contaminated tank.

Table 5.2.1 – Minimum Frequency of Water Tank Inspection

Type of Building	Tank Material	Tank Location	Frequency of Inspection
Residential and Commercial	Concrete	Underground	Quarterly
		Ground	Bi-annually
		Roof	Bi-annually
	Plastic	Ground	Bi-annually
		Roof	Annually
	FRP	Ground	Bi-annually
		Roof	Annually
	GRP	Ground	Bi-annually
		Roof	Bi-annually
	GI/steel	Ground	Bi-annually
		Roof	Annually

Table 5.2.2 – Common Visual Signs of Contamination

Water Tank Interior	Signs of Contamination
	Sediment / sludge
	Algal growth
	Micro-film or oils
	Dead animals or insects
	Extensive corrosion
Water Tank Surroundings	Nearby oil or chemical or sewage leak
	Water tank opening is uncovered
	Algal growth around the tank opening/manhole
	Accumulation of dirt around the tank

5.3 Water Tank Cleaning and Disinfection Requirement

- 5.3.1 The Responsible Person shall notify all residents or tenants of the planned date and time of the water tank cleaning and any precautions that must be taken to protect their health and safety. This notice shall specify the amount of time that the water supply will be shut down and shall be delivered to their premise or under their door and posted in all common entry points into the building.
- 5.3.2 The Responsible Person shall ensure that the water tank cleaning notice is provided in 3 languages, including Arabic, English and Hindi, or in additional languages as required.
- 5.3.3 The Responsible Person shall ensure that the water tank cleaning and/ or disinfection is conducted during normal working days and hours so as not to disturb residents or tenants.
- 5.3.4 The Responsible Person shall notify residents and tenants, by way of public notice of when cleaning and disinfection is complete, when it will be safe to drink the water, and any precautions that they must take before using the water, such as allowing the water from the taps or showers to run for at least 5 minutes after cleaning, or as advised by the cleaning company.

- 5.3.5 The Responsible Person shall ensure that water tank inspections are conducted at the frequency prescribed for the specific type and location of the water storage tank, as detailed in Table 5.2.1.
- 5.3.6 The Responsible Person shall ensure the appointed water tank inspection company completes the water tank 'Inspection and Sampling Checklist' (Appendix A) for the water tanks inspected and shall retain signed copies of these checklists on file. The building owner or manager shall make these records available to any regulatory authority upon request.
- 5.3.7 The Responsible Person shall, upon being informed of a non-compliant inspection result, such as the presence of sludge, dead animals, micro-film, other visual signs of contamination (as per Table 5.2.2), or non-compliant water sampling test results, based on the water quality parameter limits detailed in Table 5.4.1 below, engage a water tank cleaning company to conduct water tank cleaning and disinfection within 48 hours of the inspection data and time.
- 5.3.8 The Responsible Person shall notify all residents and/ or tenants of any non-compliant inspection results and shall inform tenants by way of a public notice displayed in common areas and under the door of each tenant, to refrain from drinking or using the water.

5.4 Sampling and Testing Frequency

- 5.4.1 The Responsible Person shall sample and test all water storage tanks following the completion of the cleaning and disinfection process or in circumstances where contamination is suspected. This includes any underground, ground level or roof level water storage tank regardless of the type of tank.
- 5.4.2 The Responsible Person shall ensure that the water samples taken are tested for the water quality parameters detailed in Table 5.4.1, and that the limits set are not exceeded.

Table 5.4.1 – Water Quality Parameters to be tested and Limits

Parameter	Units of Measure	Limits
Total coliforms*	Number/100 ml	0
E. coli*	Number/100 ml	0
Total bacterial count	Number / 1 ml at 37°C	100 at 37°C
Legionella	Colony Forming Units (cfu)/ml	0

- 5.4.3 The Responsible Person shall, upon being alerted to other possible sources of contamination of the water tank, such as disintegration of internal coating material or other chemical contamination, ensure the testing for such parameters and take the necessary cleaning or maintenance action to resolve the cause of contamination
- 5.4.4 The Responsible Person shall engage a third party water quality sampling and testing company, that is licensed and accredited by Abu Dhabi Government, to conduct the water tank sampling and testing.
- 5.4.5 The Responsible Person shall ensure the appointed water tank sampling and testing company completes the water tank 'Inspection and Sampling Checklist' (Appendix A) for each water tank sampled and that they retain signed copies of these checklists on file. The building owner or manager shall make these records available to any regulatory authority upon request.
- 5.4.6 The Responsible Person shall acknowledge the results of the water samples by signing the sample reports and retaining them on file. These sample results shall be made available for review, inspection or audit by relevant regulatory authorities, as required.
- 5.4.7 The Responsible Person shall, upon receiving a non-compliant water test result which is non-compliant with the water quality parameter limits set in Table 5.4.1, notify all residents and/ or tenants within their building that the water is unfit for use and that they should refrain from using the water until further notice. This notice shall be issued as soon as reasonably practicable, but at least within 4 hours of receiving the non-compliant result.
- 5.4.8 The Responsible Person shall notify all residents and/ or tenants by means of a visible letter and notice, delivered to their premise or under their door and posted in all common entry points into the building.
- 5.4.9 The Responsible Person shall ensure that the notice is provided in 3 languages, including Arabic, English and Hindi, or in additional languages as required.
- 5.4.10 The Responsible Person shall ensure that, where the results of a water tank sample exceed the limits for specified water quality parameters set out in Table 5.4.1 above, an approved and registered water tank cleaning company is immediately engaged to conduct water tank cleaning and / or disinfection within a 48 hour period.

Diagram 5.1 – Routine Water Tank Cleaning & Disinfection Procedures

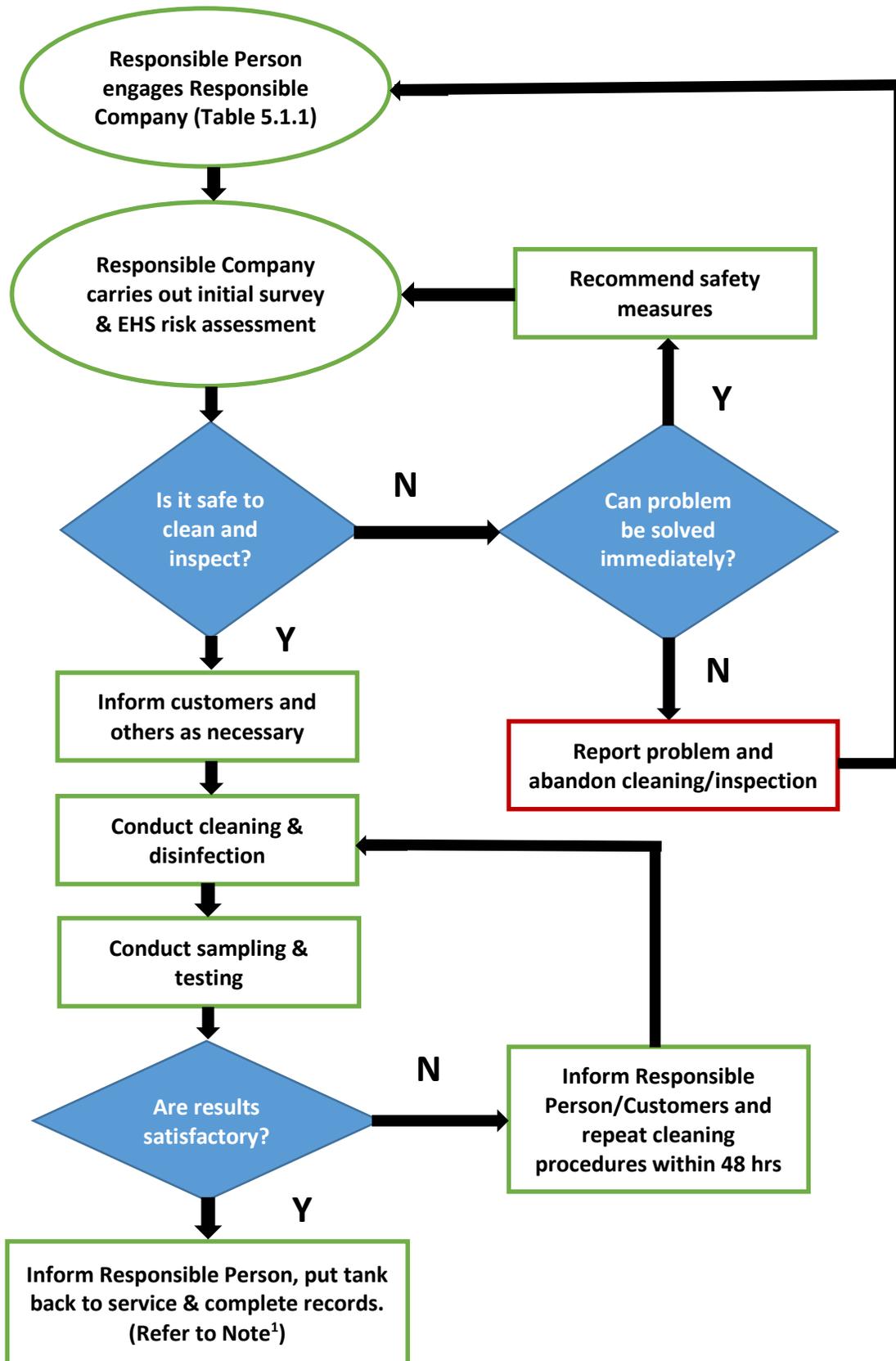
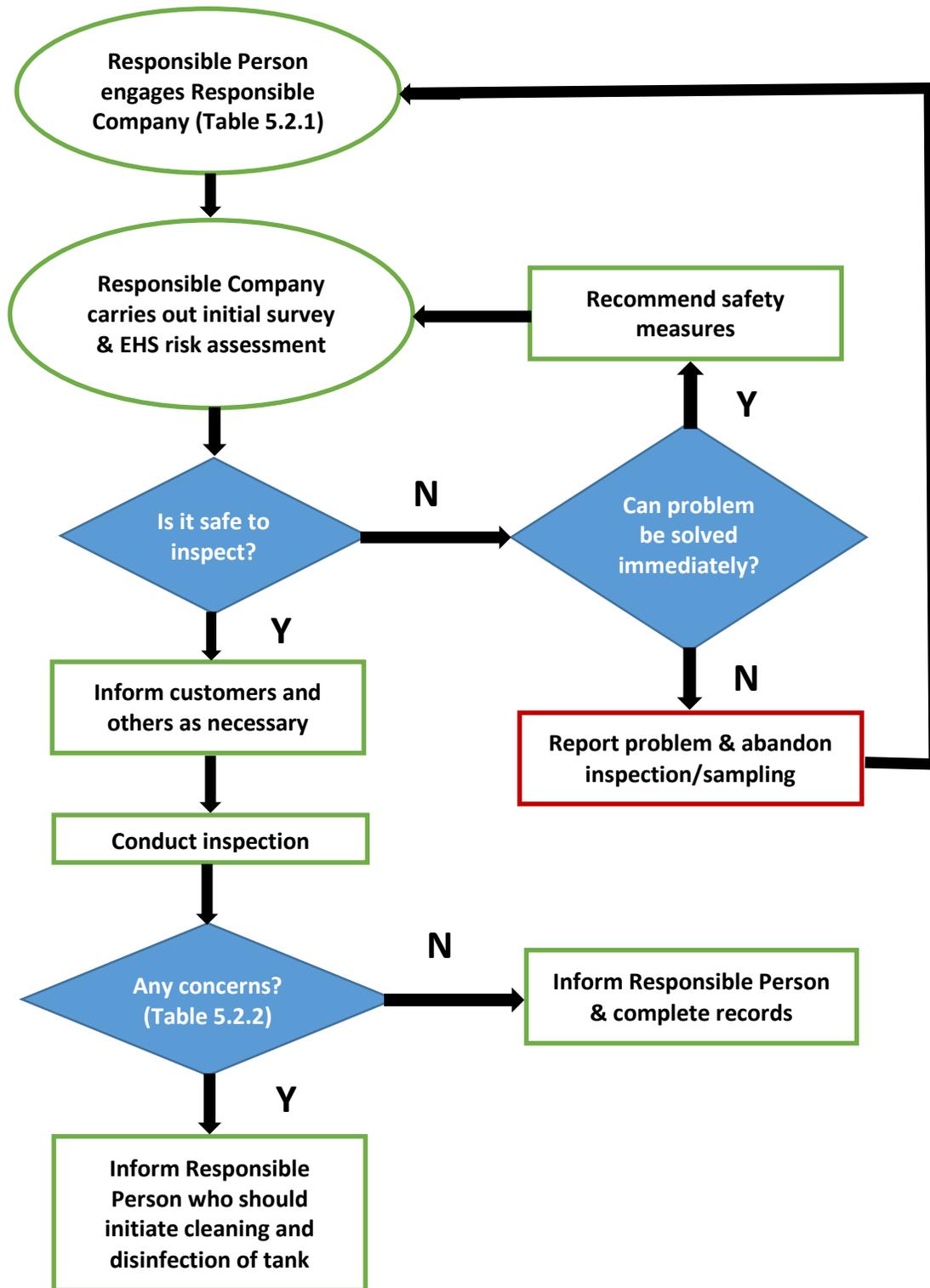


Diagram 5.2 – Routine Water Tank Inspection Procedures



6.0 Requirements for Responsible Company

6.1 Cleaning and Disinfection Requirements

- 6.1.1 The Responsible Company shall, upon being engaged by the Responsible Person to conduct the cleaning and / or disinfection of a water tank, arrange an Environment, Health & Safety (EHS) Risk Assessment of the concerned water tank to establish any access or safety hazards and required control measures.
- 6.1.2 The Responsible Company shall conduct the EHS risk assessment in accordance with the requirements detailed in Section 8 'Environment, Health & Safety Requirements'.
- 6.1.3 The Responsible Company shall, where it is deemed safe to continue with the water tank cleaning and disinfection, conduct such cleaning and disinfection in accordance with the water tank cleaning and disinfection procedure provided in Section 9.
- 6.1.4 The Responsible Company shall, where it has been required to clean and disinfect both an underground and roof tank belonging to the same building premise, and where such tanks are connected, ensure the cleaning and disinfection of the underground tank first prior to the roof tank to prevent cross contamination of the roof tank.

6.2 Water Tank Inspection and Sampling & Testing

- 6.2.1 The Responsible Company shall, where it has been requested or engaged by a Responsible Person to conduct inspections and/ or water sampling and testing of a customer water storage tank, ensure that it is appropriately licensed, approvals, registered and accreditations as required by the laws of Abu Dhabi Emirate and the provisions of this Code
- 6.2.2 The Responsible Company shall, upon being engaged by a Responsible Person to conduct an inspection and/or sample of water tanks, provide the Responsible Person with evidence of its registration and approval as a qualified, registered and approved Responsible Company.

- 6.2.3 The Responsible Company shall ensure that all water samples are analyzed at an accredited laboratory and that the results of water samples taken from their water tanks are provided back to them within 3 days for total bacterial count, E. coli and total coliforms and 6 days for legionella.
- 6.2.4 The Responsible Company shall agree with the Responsible Person on the date and time for the inspection and sampling of the building water tanks.
- 6.2.5 The Responsible Company shall ensure that all required access and permissions are granted from the Responsible Person and that a representative is designated to accompany the Responsible Company for the water tank inspection and sampling.
- 6.2.6 The Responsible Company shall ensure it has all the necessary authorizations, equipment, paper work and tools to conduct the inspection and sampling.
- 6.2.7 The Responsible Company shall conduct an external visual inspection of the water tanks location and shall assess and determine if it is safe to continue with the internal visual inspection and water tank sampling.
- 6.2.8 The Responsible Company shall, in deciding whether it is safe to continue to inspect and sample the water tank, have regard to environment, health and safety requirements detailed in Section 8 below.
- 6.2.9 The Responsible Company shall be responsible for protecting the health and safety of all its employees, and of any member of the public involved in the water tank inspection or sampling, and shall bear responsibility for any injuries or accidents that result.
- 6.2.10 The Responsible Company, shall if determined to be safe, continue with the visual inspection of the water tanks and/ or collection of the water samples and completion of the water tank 'Inspection and Sampling Checklist' (Appendix A).
- 6.2.11 The Responsible Company shall collect, store and transport all water samples of water tanks in accordance with the ISO5667 standard on water quality sampling or demonstrate that an international best practice is adopted which provides guidance on sample handling and preservation technique.
- 6.2.12 The Responsible Company shall employ the services of an ESMA/QCC accredited and approved to analyse the water samples in accordance with ESMA/QCC standards.

- 6.2.13 The Responsible Company shall ensure the water tank sample results are provided to the Responsible Person within 3 days of the date of inspection and sampling.
- 6.2.14 The Responsible Company shall advise the Responsible Person in writing with the findings of the inspection and sampling tests, including the details of any non-compliances and recommendations for required cleaning and/ or disinfection of the concerned water tanks.
- 6.2.15 The Responsible Company shall provide a copy of the water tank 'Inspection and Sampling Checklist' report for their documentation and records.
- 6.2.16 The Responsible Company shall on completion of the inspection and / or sampling, retain a copy of the inspection and sampling and testing results on their files. These files shall be made available for regulatory compliance inspections or audits by relevant Regulatory Authorities.
- 6.2.17 The Responsible Company shall, where it has been engaged by a Responsible Person to conduct water tank inspection or sampling, not also conduct the cleaning of the same water tank. This condition is provided in order to remove any potential, actual or perceived conflicts of interest
- 6.2.18 The Responsible Company shall on completion of the inspection and / or sampling, retain a copy of the inspection and sampling and testing results on their files. These files shall be made available for regulatory compliance inspections or audits by relevant Regulatory Authorities.
- 6.2.19 The Responsible Company shall, where it has been engaged by a Responsible Person to conduct water tank inspection or sampling, not also conduct the cleaning of the same water tank. This condition is provided in order to remove any potential, actual or perceived conflicts of interest.

7.0 Record management and reporting

7.1 Reporting obligations

- 7.1.1 The Responsible Person shall document and report any non-compliant water tank inspection or sampling test results to the relevant Distribution Company.
- 7.1.2 The Responsible Company shall document and report any non-compliant water tank inspection or sampling test results to the Responsible Person and copy in the relevant Distribution Company.
- 7.1.3 The Responsible Company shall document and report all EHS Risk Assessments to the Responsible Person.
- 7.1.4 The Responsible Person or Company shall prepare and forward all reports in written form by email, fax or letter to the relevant Responsible Person or Distribution Company.

7.2 Records/Certificates

- 7.2.1 The Responsible Person shall retain records of all water tank inspection and sampling reports provided by the Responsible Company on file.
- 7.2.2 The Responsible Company shall retain records of all water tank inspection and sampling reports and checklists and EHS Risk Assessment reports provided to Responsible Persons.
- 7.2.3 The Responsible Person and Responsible Company shall retain records of any reports sent to the Distribution Companies on file.
- 7.2.4 The Responsible Person shall make and shall make these available to the relevant authorities if requested.

8.0 Environment, health and safety requirements

8.1 Requirements for Responsible Person

8.1.1 The Responsible Person shall maintain water storage tanks in a clean and safe condition and shall ensure that water stored within such tanks is wholesome and safe to drink and is in compliance with the Bureau's Water Quality Regulations.

8.1.2 The Responsible Person shall ensure safe access and egress, and generally safe conditions nearby and around water storage tanks.

8.1.3 The Responsible Person shall remove, control or mitigate any identified environment, health & safety hazards within their premises to ensure safe access, inspection, sampling and cleaning and disinfection of water storage tanks by Responsible Companies.

The Responsible Person shall, where a Responsible Company has recommended EHS risk control measures to be put in place prior to an inspection, sampling or cleaning and disinfection of a water storage tank, ensure that such control measures are implemented in a timely manner to enable the concerned activities to continue in a safe manner.

8.2 Requirements for Responsible Companies

EHS Risk Assessment

- 8.2.1 The Responsible Company shall, prior to conducting any inspections, water sampling, or cleaning and disinfection of any water storage tank, ensure the completion of an Environment, Health & Safety (EHS) Risk Assessment in accordance with the Risk Management Guidelines outlined in the Abu Dhabi EHSMS Regulatory Framework, Version 2 of 2012.
- 8.2.2 The Responsible Company shall ensure that the EHS Risk Assessment is completed by a qualified and competent EHS Professional or Company that is registered as an EHS Practitioner or EHSMS Consultant, EHS Auditor or EHS Technical Specialist under Qudorat, the Abu Dhabi EHS Centre's Professional Entity and Practitioner Registration Scheme.
- 8.2.3 The Responsible Company shall ensure that the EHS Risk Assessment is conducted in accordance with the Risk Management Element 02 and Technical Guideline on the 'Process for Risk Management' (Ref. No 8) contained within the Abu Dhabi EHSMS Regulatory Framework, Version 2 of 2012.
- 8.2.4 The Responsible Company shall ensure that the EHS Risk Assessments and any associated recommended control measures for identified high risks are documented and reported to the Responsible Person for signature and approval prior to the commencement of activities.
- 8.2.5 The Responsible Company shall, upon completing the EHS risk assessment, determine whether it is safe to conduct the water tank cleaning and disinfection, and if so, ensure that all practical safety control measures, precautions or other measures are put into place to enable safe access, egress and working conditions.
- 8.2.6 The Responsible Company shall, in the instance where it is deemed too dangerous to conduct the cleaning and disinfection of water tanks, notify the Responsible Person of the results of the risk assessments and the recommended control measures required to allow safe conditions for water tank cleaning.

- 8.2.7 The Responsible Company shall, upon completing the EHS risk assessment, determine whether it is safe to conduct the water tank cleaning and disinfection, and if so, ensure that all practical safety control measures, precautions or other measures are put into place to enable safe access, egress and working conditions.
- 8.2.8 The Responsible Company shall, in the instance where it is deemed too dangerous to conduct the cleaning and disinfection of water tanks, notify the Responsible Person of the results of the risk assessments and the recommended control measures required to allow safe conditions for water tank cleaning.
- 8.2.9 The Responsible Company shall not, under any circumstances continue with any water storage tank inspection, sampling or cleaning and disinfection activities if a high or extreme risk has been identified which poses a danger to the life of any employees or members of the public, and has not been controlled or reduced to an acceptable level, as per the Risk Management Guidelines.

EHS Procedures and Method Statements

- 8.2.10 The Responsible Company shall where it has identified high EHS risks, develop appropriate Standard Operating Procedures (SOPs) or Method Statements to ensure these risks are appropriately managed through the implementation of safe and proper procedures.

The Responsible Company shall ensure that any activities or EHS hazards that are subject to the AD EHSMS Regulatory Framework Version 2 of 2012 Codes of Practices are managed in accordance with the requirements and provisions of these Codes and that documented evidence of such compliance is made available to relevant authorities upon request. Common hazardous activities governed by AD EHSMS Regulatory Framework Code of Practices are detailed in Table 8.2 below.

- 8.2.11 In accordance with the requirements and provisions of these Codes and that documented evidence of such compliance is made available to relevant authorities upon request. Common hazardous activities governed by AD EHSMS Regulatory Framework Code of Practices are detailed in Table 8.2 below.

Table 8.2.1 – Common Activities Subject to AD EHSMS Codes of Practice

Common Hazards	Related AD EHSMS Code of Practice
Confined spaces	EHS RI CoP27 – Confined Spaces
Working at heights	EHS RI CoP23 – Working at heights
Ladders	EHS RI CoP37 - Ladders
Drowning	EHS RI CoP31 - Working On, Over or Adjacent to Water EHS RI CoP45 – Underwater Activities
Poisoning / burns / respiratory illness	EHS RI CoP01 – Hazardous Materials
Electrocution	EHS RI CoP15 – Electrical Safety EHS RI CoP24 – Lock-out/Tag-out (Isolation)
Trips, slips, falls	EHS RI CoP22 – Barricading of Hazards EHS RI CoP17 – Safety Signage and Signals
Physical Injury (cuts, burns, abrasions)	EHS RI CoP02 – Personal Protective Equipment
Common Hazards	Related AD EHSMS Code of Practice
Emergencies (fire, flood, injury)	EHS RI CoP06 – Emergency Management EHS RI CoP04 – First Aid and Medical Treatment
Heat stroke/exhaustion	EHS RI CoP11 – Safety in the Heat
Wastewater / sludge disposal	EHS RI CoP54 – Waste Management

EHS Training

8.2.12 The Responsible Company shall ensure that its cleaners and their supervisors are appropriately trained on all EHS risks and on their safe management and control and on the SOPs or Method Statements including emergency management, and that their competencies are regularly assessed, as outlined in Section 9 below.

Personal Protective Equipment

- 8.2.13 The Responsible Company shall ensure that it provides all appropriate Personal Protective Equipment (PPE) and other safety equipment, as required under the EHS Risk Assessment and relevant Abu Dhabi EHSMS Regulatory Framework Codes of Practice.
- 8.2.14 The Responsible Company shall ensure that all PPE used is fit for purpose and that it is regularly maintained in good working order and condition.

Waste Water Discharge

- 8.2.15 The Responsible Company shall discharge fresh water already stored in the water tank to the drain or sewer taking all necessary measures to avoid any cross-contamination.
- 8.2.16 The Responsible Company shall minimize any waste-water by starting their cleaning operation when there is a minimum water level in the tank to be cleaned.
- 8.2.17 The Responsible Company shall not discharge water contaminated with cleaning or disinfectant chemicals or wastewater to the sewer or drain without prior treatment, dilution or neutralization.
- 8.2.18 The Responsible Company shall measure the pH and residual chlorine in the cleaned and disinfected tank to determine the required treatment prior to discharge.
- 8.2.19 The Responsible Company shall ensure that any wastewater discharges do not exceed the residual chlorine and pH limits set in Table 8.2.2 below.
- 8.2.20 The Responsible Company, shall where it is deemed necessary to neutralize the wastewater discharge, use approved neutralizing chemicals at the concentrations directed for use, by the manufacturer, for application in drinking water tanks.

Table – 8.2.2 Wastewater discharge limits for pH and residual chlorine

Parameter	Limit*
pH	>6.5 pH <8.5
Total residual chlorine	Not greater than 0.02 mg/l

*USEPA

Waste Sludge Disposal

- 8.2.21 The Responsible Company shall where it has removed waste sediment or sludge from inside the water tank, ensure that the waste sediment or sludge is removed off-site in a safe and hygienic manner and disposed of in an appropriate manner and in an approved waste disposal site, in accordance with the waste disposal requirements and regulations of Abu Dhabi Emirate.

Water Conservation

- 8.2.22 The Responsible Company shall, where possible, conserve water by making provisions for the water tank inlet to be closed and stored water to be used by consumers prior to the water tank been emptied and cleaned.
- 8.2.23 The Responsible Company shall consult with the Responsible Person to determine the average building water usage in order to calculate the amount of time required to empty the tank prior to the scheduled date of cleaning.

9.0 Water Tank Cleaning and Disinfection Procedure

The general procedure for cleaning a water tank will vary depending on whether it is deemed (through the initial inspection and risk assessment) to be accessible and safe or not. The following are standard basic procedures should be followed for water tanks that are deemed (through the initial EHS Risk Assessment) to be accessible and safe for cleaning and disinfection.

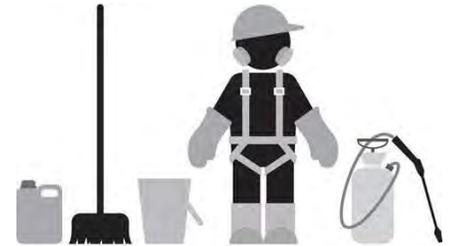
A tank that is assessed as not accessible and safe for cleaning should not be cleaned or disinfected until such time as the Responsible Person has implemented the recommended provisions and safety control measures, and a follow up risk assessment concludes that it is safe to continue.

Table 9.1 –Tank Cleaning Procedures

Accessible for Cleaning & Disinfection	Not Accessible for Cleaning
<ol style="list-style-type: none"> 1. Empty the tank. 2. Scrub or pressure hose the tank interior walls to remove all dirt and grime (using approved cleaning chemicals if necessary). 3. Rinse the tank and drain the water. 4. Apply the disinfectant to all internal tank surfaces. 5. Allow disinfectant to set for 30 minutes. 6. Rinse the tank and drain the water. 7. Refill the tank with potable water. 	<ol style="list-style-type: none"> 1. Notify Responsible Person implement recommended provisions or safety control measures to make tank accessible and safe for cleaning. 2. Once tank is assessed as accessible and safe, follow standard procedure for cleaning and disinfection.

9.1 Guideline for Cleaning and Disinfection of Accessible Water Tanks

- a) Secure access and required authorizations to enter building and conduct the tank cleaning.
- b) Notify tenants of proposed water tank cleaning date and time at least 48 hours prior to cleaning.
- c) Shut off water tank inlet at least 24 hours prior to cleaning to allow maximum water to be used (to ensure less wastage of water).
- d) Prepare all necessary water tank cleaning equipment, required chemicals and concentrations, and personal protective equipment (PPE) off-site and prior to cleaning.
- e) Arrive on-site and notify building residents and tenants through signage of the commencement of the cleaning and expected duration and precautions.



Proper PPE and equipment

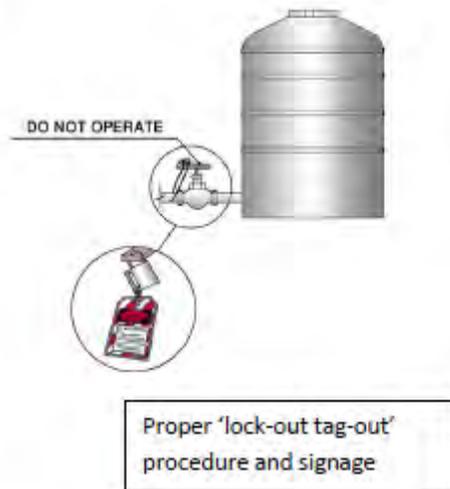


Examples of public notices

f) Place safety barriers around cleaning equipment and working area, if required.

g) If water tank inlet has not already been turned off previously to allow tank to empty, then turn off water inlet.

h) Lock-out / tag-out all water tank inlets and outlets and make sure signs are placed notifying that they should not be opened.



i) Open tank cover and allow tank to vent for 20 minutes.



j) Determine safe oxygen and gas levels using a gas meter. If safe, insert air exchange / exhaust fan hose.

Measuring safe gas levels before opening tank cover

k) Drain remaining in the tank water using either the outlet valve (if available) or using sump pumps (if outlet valve is not available) to below 100mm.



Different draining arrangements



Proper confined space and fall protection procedure and equipment

- l) Set up equipment, including any fall protection and confined spaces equipment and PPE.



Cleaning non-man-entry tanks from exterior

- m) Scrub or pressure hose and clean dirt and grime from tank surfaces, including tank cover and entry points. Use approved cleaning chemicals if necessary.



Cleaning man-entry tanks with pressure jet wash

- n) Rinse tank and drain water.



Cleaning man-entry tanks with brush

o) Spray disinfectant on all tank surfaces, including tank cover and entry point ensuring maximum coverage.



Rinsing man-entry tank interior after cleaning

p) Allow disinfectant to remain for 30 minutes.



Spraying disinfectant on man-entry tank internal surfaces

q) Rinse disinfectant and empty the tank.



Spraying disinfectant on non-man-entry tank internal surfaces

r) Fill tank with potable water.

s) Take water sample and send for analysis.



t) If water samples are compliant, retain records on file.



u) If water tests are not compliant, repeat water tank cleaning and disinfection within 48 hours and notify tenants that water is 'not safe for use' and next intended date and time for cleaning.

Sampling following cleaning and disinfection

10.0 Water Tank Inspection and Sampling Procedure

The general procedure for inspecting and sampling a water tank will vary depending on whether it is deemed (through the initial risk assessment) to be accessible and safe or not. The following are standard basic procedures should be followed for water tanks that are accessible and those that are not.

Table 10.1 - Tank Inspection Procedures

Accessible for Inspection and Sampling	Not Accessible for Inspection and Sampling
<ol style="list-style-type: none"> 1. Open tank cover. 2. Take water sample from tank bottom. 3. Store and transport sample to an accredited laboratory. 4. Complete 'Water Tank Inspection and Sampling checklist'. 5. Inform Responsible Person of test results. 	<ol style="list-style-type: none"> 1. Visually inspect tank from a safe distance. 2. Inform Responsible Person or authority that tank is not safe to inspect and sample. 3. Arrange with Responsible Person to make it safe to sample or otherwise take samples from outlets value / taps closest to the water tanks.

10.1 Guideline for Inspection or Sampling of Water Tanks

Water Tank Inspection

- a) Arrange authorization for water tank inspection and sampling.
- b) Assess if it is safe to access the water tank.
- c) If safe to access the water tank, approach the water tank.
- d) Visually inspect the outside of the water tank to assess structural integrity and safety.
- e) Conduct initial EHS risk assessment to determine any safety precautions or controls that should be put in place to access and open tank cover.
- f) Once it is safe to access tank cover and all necessary safety controls are in place (including any confined spaces controls) open tank cover whilst keeping your face and body at a safe distance.
- g) Allow water tank air to be ventilated for 20 minutes.
- h) Place gas meter just below tank cover to measure gas levels.
- i) If gas levels are safe, proceed to visually inspect the insides of the tank whilst keeping your body at a safe distance.



Measuring safe gas levels before opening tank cover.

- j) Complete water tank 'inspection and sampling checklist'.
- k) Fix label sticker on the water tank noting ID number of the tank and date inspected.



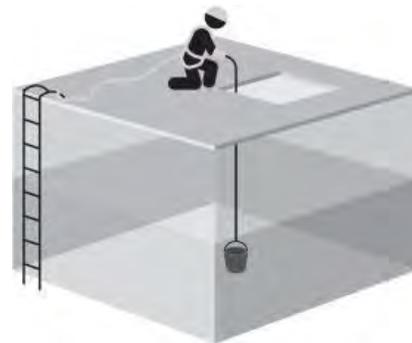
Sampling from tanks with flushing valve

Water Tank Sampling

- l) Take water sample (in accordance with the water sampling guidelines in ISO5667 and ESMA standards), using a bottle attached to a pole ensuring that the tank is not entered.
- m) Label water sample bottles with tank ID and date/time and store water samples and transport them to the accredited laboratory for analysis.
- n) Complete water tank 'inspection and sampling checklist'.
- o) Fix label sticker on the water tank noting ID number of the tank and date sampled.
- p) Inform building owner or manager of sample and test results.
- q) Retain all records of water tank on file.



Sampling from tanks without flushing valve



Sampling from tanks without flushing valve

10.2 Common Types of Water Tanks

10.2.1 The majority of water storage tanks found in the Emirate of Abu Dhabi include five (5) different material types, plastic (polyethylene), GRP sectional panel, FRP, concrete or GI/steel.

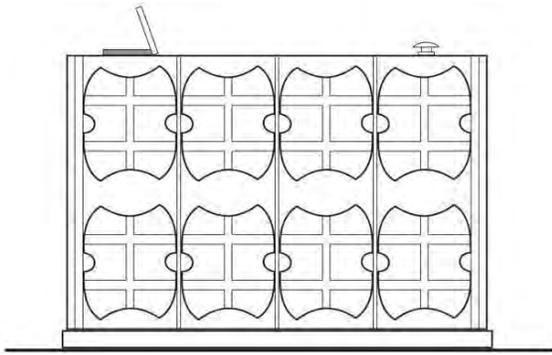
Plastic Tanks



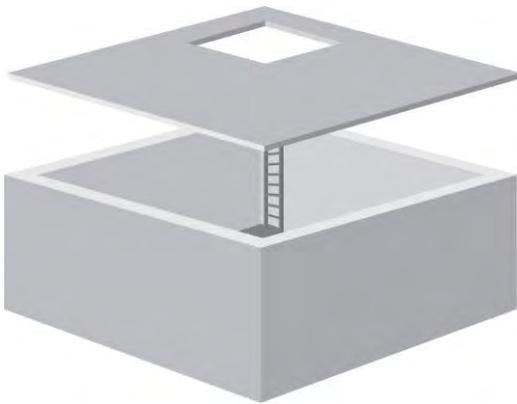
FRP Tank



GRP Sectional Panel Tank



Concrete Tank



GI/Steel Tank



10.3 Disinfecting Water Tanks that are Accessible

- 10.3.1 Tanks are a deemed 'accessible' and are safe to access shall be disinfected using a typically higher concentration of disinfectant (than would be applied for full tanks) which is sprayed or scrubbed onto all internal tanks surfaces including the internal tank cover and any internal ladders. The permitted chemicals that can be used for the disinfection of water storage tanks include the following:
- Sodium hypochlorite (food grade)
 - Calcium hypochlorite (food grade)
 - Liquid bleach (chlorine)
- 10.3.2 The typical concentrations for direct application of the above disinfectants to water tank internal surfaces are recommended to be in the following ranges:
- Sodium hypochlorite and calcium hypochlorite –250mg/l
 - Liquid bleach (chlorine) – 200mg/l
- 10.3.3 The disinfectants shall be left onto all internal surfaces for at least 30 minutes before being rinsed.
- 10.3.4 If using chlorine, then stabilized chlorine shall not be used and the chlorine used shall not contain isocyanuric acid. If using granulated bleach, then this must be dissolved in a liquid (solution) form first.

10.4 Calculating the Amount Disinfectant

- 10.4.1 The Responsible Company shall use food grade quality for the above allowable disinfectants, suitable for use in drinking water storage tanks.
- 10.4.2 The Responsible Company shall follow the directions and instructions of the manufacturer when determining the amount of disinfectant needed to properly cover all internal surfaces of the water tank, as well as MSDS sheets.

10.5 Water Tank Cleaning and Disinfection Equipment

- 10.5.1 The Responsible Company shall ensure the provision of suitable and appropriate equipment to enable the effective cleaning and disinfection of the specific type and location of water storage tank.
- 10.5.2 The Responsible Company shall ensure all equipment used is fit for purpose and that they have been assessed as safe to use (under the EHS Risk Assessment).
- 10.5.3 The Responsible Company shall assess, as part of its EHS Risk Assessment, the transport, lifting and set up of cleaning equipment in difficult to access or dangerous work areas and shall ensure that appropriate control measures are put in place to enable safe transport and movement of equipment.
- 10.5.4 The Responsible Company shall ensure the regular maintenance and safety checks are conducted prior to any water tank cleaning activities and that any faults are immediately reported to the responsible person and are resolved prior to use.
- 10.5.5 Typical water tank cleaning equipment may comprise the following:
- a) Sump pumps
 - b) Wet/dry vacuum pumps
 - c) Exhaust / ventilation fans and hoses
 - d) High pressure jet
 - e) Scrubber / brooms
 - f) Buckets
 - g) Chemical spray cans
 - h) Ladders
 - i) Scaffolding (with platforms)
- 10.5.6 The Responsible Company may, subject to approval from the relevant Municipality, utilize innovative water tank cleaning and disinfection technologies that have been demonstrated to be more effective than the traditional and widely used pressure jet and brushing cleaning technologies prescribed in this Code.

10.6 Cleaning Chemicals

- 10.6.1 The Responsible Company shall, where it is using cleaning chemicals, ensure that these chemicals are food grade, and are suitable for use in the cleaning of drinking water storage tanks.
- 10.6.2 The Responsible Company shall not use any cleaning chemicals unless they have been tested and approved by an accredited QCC laboratory.
- 10.6.3 The Responsible Company shall comply with all directions and instructions provided by the manufacturer when determining concentrations, levels or applications for the cleaning chemicals to be used.
- 10.6.4 The Responsible Company shall ensure that cleaning and disinfection chemicals used are not reactive and harmful to the structure, material, lining or coating of the water tank.

11. Training and Competency Requirements

11.1 Training Requirements for Responsible Companies

- 11.1.1 The Responsible Company shall ensure that they provide proper training to all employees engaged in the inspection, cleaning and disinfection of customer water storage tanks. Training shall cover the following minimum topics:
- a) How to clean and disinfect a water storage tank
 - b) EHS Awareness Training
 - c) Confined Spaces Training
 - d) First Aid Training
 - e) Emergency Management Training
- 11.1.2 The Responsible Company shall ensure that all water tank inspection, cleaning and disinfection training is conducted by a training provider that is licensed and registered to operate in the Emirate of Abu Dhabi in the area of water tank cleaning training.
- 11.1.3 The Responsible Company shall only engage EHS training providers and trainers that are registered as EHS Training Providers under Qudorat, the Abu Dhabi EHS Centre's Professional Entity and Practitioner Registration Scheme.

11.2 Competency Assessment Requirements for Responsible Companies

- 11.21 The Responsible Company shall ensure that all employees engaged in the area of water tank inspection, sampling and testing, and cleaning and disinfection are competent in the activity for which they are assigned.
- 11.22 The Responsible Company shall develop competency assessment schemes to regularly assess the competence of their employees in the tasks for which they have been assigned. Employees shall be assessed as 'competent' or 'not yet competent' to carry out the tasks for which they have been designated. Employees assessed as *not yet competent* shall not carry out the said tasks until such time as they have been assessed as *competent* to do so.
- 11.23 The Responsible Company shall conduct competency assessments of all staff engaged in water storage tank inspection, sampling or cleaning & disinfection at 6 monthly intervals, and the results of these assessments shall be retained on file and made available to the regulatory authorities upon request
- 11.24 The Responsible Company shall ensure it meets the minimum qualification and competency requirements for different types and levels of practitioners involved in the inspection, sampling and cleaning and disinfection of water storage tanks, as detailed in Table 11.2 below.

Table 11.2 – Minimum Qualifications and Competencies for Relevant Practitioners

Practitioner Type	Qualifications	Competencies (Knowledge, Skill & Aptitude)
Inspector	<ul style="list-style-type: none"> - Certificate, Diploma or Bachelor Degree in Engineering, Architecture, Building Services, Environmental Sciences or equivalent. 	<ul style="list-style-type: none"> - Understanding of water storage tank design and plumbing. - Understanding of Abu Dhabi Water Supply Regulations Tank Design Requirements. - Experience in building water systems plumbing

Practitioner Type	Qualifications	Competencies (Knowledge, Skill & Aptitude)
Water Sampler	<ul style="list-style-type: none"> - Diploma or Bachelor Degree in Science, Environment, Natural Resources or equivalent 	<ul style="list-style-type: none"> - Understanding of international standards for water quality sampling, preservation and transport. - Experience in water quality sampling, preservation with a professional laboratory, organization or consultancy.
Cleaner	<ul style="list-style-type: none"> - Certificate in Cleaning & Disinfection of Water Storage Tanks. - Certificate in Basic EHS Awareness and Practice. - Certificate in Confined Spaces (where working in confined spaces). - Certificate in First Aid 	<ul style="list-style-type: none"> - Strong knowledge of best practice water tank cleaning and disinfection procedures and techniques. - Strong knowledge of water tank and disinfection cleaning equipment and its use. - Strong knowledge of water tank types, basic design and operation. - Good hygiene practices. - Physically fit, healthy and able. - Free of water borne diseases. - Appropriate visa with HAAD approved medical checks.

Practitioner Type	Qualifications	Competencies (Knowledge, Skill & Aptitude)
Cleaning Supervisor	<ul style="list-style-type: none"> - Certificate in Cleaning & Disinfection of Water Storage Tanks. - Certificate in Basic EHS Awareness and Practice. - Certificate in Confined Spaces - Certificate in First Aid. - Certificate in Life Saver. - Certificate in Emergency Management. 	<ul style="list-style-type: none"> - Strong knowledge of best practice water tank cleaning and disinfection procedures and techniques. - Strong knowledge of water tank and disinfection cleaning equipment and its use. - Strong knowledge of water tank types, basic design and operation. - Good hygiene practices. - Physical fit, healthy and able. - Free of water borne diseases.
EHS Officer	<ul style="list-style-type: none"> - Diploma or degree in Engineering, Science, Environmental Science, Occupational Health & Safety of equivalent. - IOSH, NEBOSH, Lead EHS Auditor Certificate and/ or Certification. 	<ul style="list-style-type: none"> - Strong knowledge of Abu Dhabi EHSMS Regulatory Framework Version 2, 2012. - Strong working knowledge and experience in EHS Risk Assessment methodologies. - Registered as an EHS Practitioner, Lead Auditor or Technical Specialist with Qudorat. - Demonstrated experience in managing building related EHS issues and operational activities in the field or on-site.

12. Regulatory Compliance

12.1 Compliance Obligations

- 12.1.1 The Responsible Person or Responsible Company shall ensure it, and all affected representatives, personnel, managers, supervisors and employees are familiar with relevant requirements and guidelines under this Code.
- 12.1.2 The Responsible Person or Responsible Company shall ensure compliance with the requirements and provisions of this Code.
- 12.1.3 The Responsible Person or Responsible Company shall retain documented evidence of compliance against prescribed requirements set out in this Code of Practice.
- 12.1.4 The Responsible Person or Responsible Company shall document evidence shall be kept on file and shall be made available to regulatory authorities upon request.

12.2 Regulatory Compliance Audits and Inspections

- 12.2.1 Responsible Persons and Responsible Companies shall be subject to regulatory compliance audits and inspections by relevant regulatory authorities.
- 12.2.2 Responsible Persons and Responsible Companies may be subject to un-announced and ad hoc inspections or planned regulatory compliance audits to monitor compliance against the requirements and guidelines set out in this Code of Practice.

12.3 Managing Non-compliance

- 12.3.1 Where Regulatory Authorities have established serious and repeated evidence of non-compliance against this Code, the Responsible Person or Responsible may be subject to penalties or enforcement under the Water Supply Regulations or Water Quality Regulations.
- 12.3.2 Repeated offenders may also be subject to other penalties or enforcement under other related regulations under this Code and may have their licenses, registrations or accreditations suspended or cancelled.

Appendix A: Sample Water Tank Inspection and Sampling Checklist

Date		Time	
Building Owner Details			
Building Owner/Manager Name		Building Owner/Manager Contact Details	
Building Details			
Region		Area/Subdivision	
Building Address		Building Use Commercial/Residential	
Building Type e.g. Villa/High Rise/mosque		Building Name	
GPS Location		Number of Tanks at the Location	
Inspection and Sampling Details			
Inspection/Water Sampling Company		Company Address and Contact Details	
Name of Inspector/Water Sampler		Inspector/Sampler Address and Contact Details	

Inspection Findings and Corrective Actions

Tank ID / No.	Location of the Tank	Inspection Finding (Please tick any contaminants observed inside the tank)	Other Observations/Comments	Corrective Actions
		<input type="checkbox"/> Sediment / sludge <input type="checkbox"/> Algae growth <input type="checkbox"/> Micro-film or oils <input type="checkbox"/> Dead animals or insects <input type="checkbox"/> Corrosion <input type="checkbox"/> Other signs of contamination. Please provide details		
		<input type="checkbox"/> Sediment / sludge <input type="checkbox"/> Algae growth <input type="checkbox"/> Micro-film or oils <input type="checkbox"/> Dead animals or insects <input type="checkbox"/> Corrosion <input type="checkbox"/> Other signs of contamination. Please provide details		
		<input type="checkbox"/> Sediment / sludge <input type="checkbox"/> Algae growth <input type="checkbox"/> Micro-film or oils <input type="checkbox"/> Dead animals or insects <input type="checkbox"/> Corrosion <input type="checkbox"/> Other signs of contamination. Please provide details		

Sampling and Testing Findings and Corrective Actions

Tank ID / No.	Location of the Tank (underground, ground-level, roof)	Water Sampling and Testing Results (Please tick parameters tested)	Test Results	Corrective Actions
		<input type="checkbox"/> Total coliform <input type="checkbox"/> E. coli <input type="checkbox"/> Total bacterial count <input type="checkbox"/> Legionella		
		<input type="checkbox"/> Total coliform <input type="checkbox"/> E. coli <input type="checkbox"/> Total bacterial count <input type="checkbox"/> Legionella		
		<input type="checkbox"/> Total coliform <input type="checkbox"/> E. coli <input type="checkbox"/> Total bacterial count <input type="checkbox"/> Legionella		
		<input type="checkbox"/> Total coliform <input type="checkbox"/> E. coli <input type="checkbox"/> Total bacterial count <input type="checkbox"/> Legionella		

Appendix B: Registration Requirements and Process for Responsible

Pre-qualifications Requirements	Pre-qualification Process
<ul style="list-style-type: none"> a) Licensed with the Abu Dhabi Economic Department for areas of work relating to the conduct of water quality sampling or testing, and/ or building plumbing, and / or water tank and fittings cleaning or general maintenance. b) Three (3) years of demonstrated experience in the inspection, sampling & testing and / or cleaning and disinfection of water tanks in the Emirate of Abu Dhabi. c) Demonstrated and documented evidence of compliance with the provisions of this Code, including Section 8 'Environment, Health & Safety' and Section 11 'Training and Competency'. d) Demonstrated and documented evidence of good industry practice, as stipulated in Section 9 'Water tank inspection and sampling procedure' and Section 10 'Water tank cleaning and disinfection procedure'. e) Quality control or quality management system and policies, and good industry practice with regards document and record management and reporting. 	<ul style="list-style-type: none"> a) Relevant authority invites applications for pre- qualification and registration against set pre- qualification and assessment criteria. b) Responsible Company submits application addressing all pre-qualification criteria with documented evidence of compliance. c) Relevant authority assesses applications and notifies company of outcome. d) Relevant authority publishes list of approved Responsible Companies (for inspection, sampling and cleaning and disinfection of water tanks. e) Relevant authority Municipalities conduct regulatory compliance audits