Under the High Patronage of His Majesty King Mohammed VI

International Water Resources Association
IWRA

XIX WORLD WATER CONGRESS
International Water Resources Association (IWRA)
Marrakech, Morocco | 1-5 December 2025

Kingdom of Morocco
Ministry of Equipment and Water

From water quality monitoring to the generalization of testing the implementation of new approaches for health risk assessment and management.
- ONEE Water Branch Experience -

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02/12/2025

NB: WHO / IWA support
Results of the work done by the local teams of ONEE / Water Branch

Summary

Drinking water

- **Global crisis**
  - Scarcity
  - Unsuitable wastewater treatment
  - Drying sources
  - Degradation of surface water and Underground water

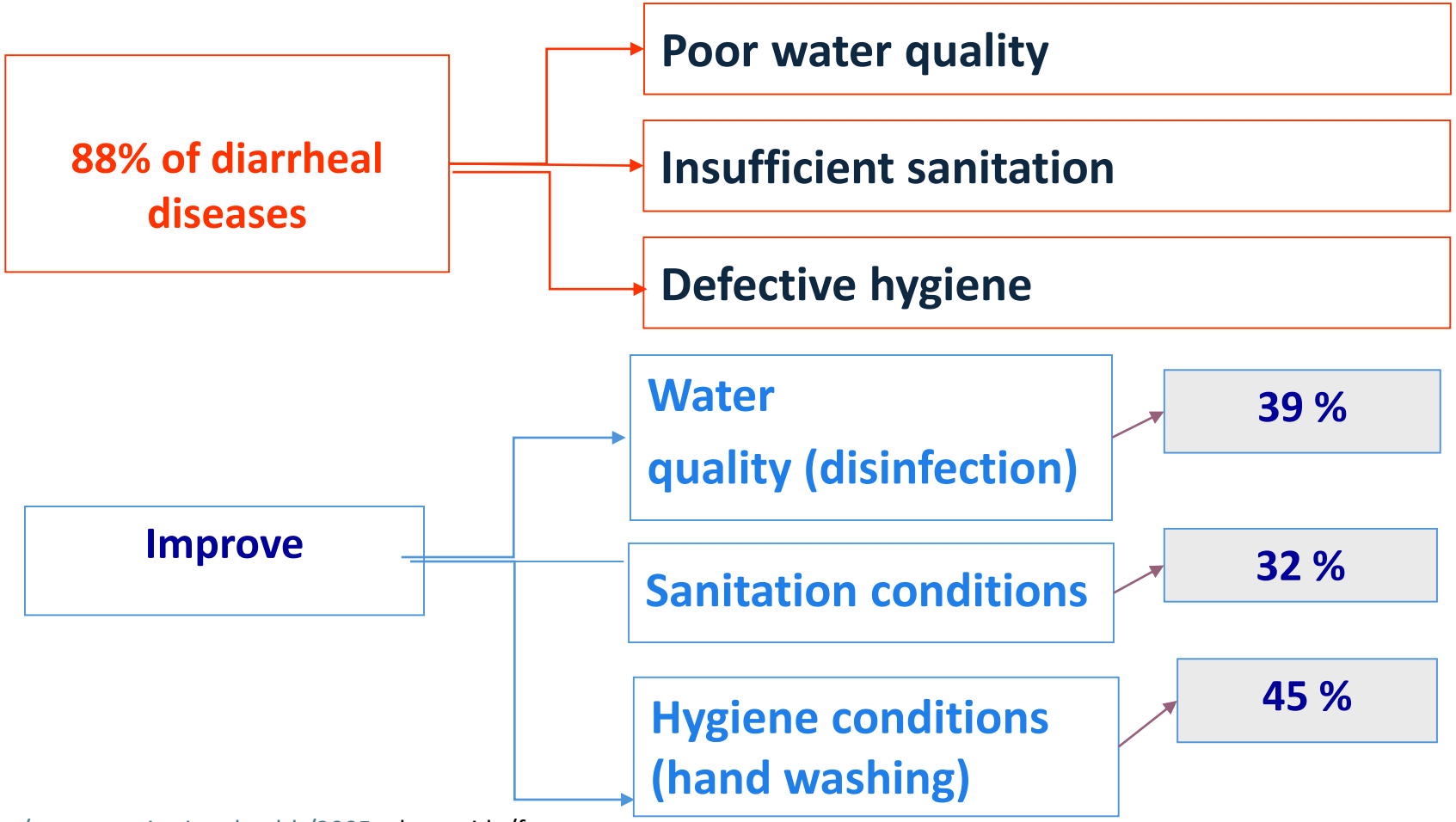
Climate change (flood-drought)

- **No access to drinking water**
  - 1.4 billion people
  - 2 billion people without infrastructure health
  - The consumption of polluted water kills 4 million children per year

Energy problems (future)

Context

According to the WHO:



Réf : site www.who.int/water_sanitation_health/2005 advocguide/fr

Evolutions….

Definition of drinking water: Water that doesn't pose any risk to health.

Water from food preparation and food industry

Water from other household uses including body washing

Microbiological quality assurance strategy for water based on faecal contamination indicators or indicators treatment efficiency.

New microbiological risks:
- inhalation of water
- contact with water

Parasitological risks

New pressures …..

Hardening of the regulations

Changes in standards and practices

Pressure of competition

Customer requirements

Objectives

Objectives of any Water supplier:

- Guarantee safe and acceptable water that does not pose health risks for consumer
- Control the risks related to the drinking water supply and have strategies to control its risks
- Know the risks of non-compliance with national standards for produced and distributed drinking water

Background

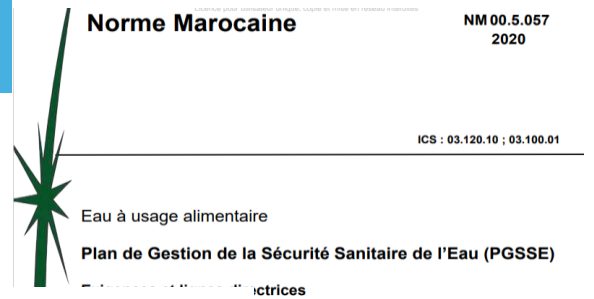
National:

Moroccan standard fod food use water 03.7.001 (2020)

Maximum admissible values

Morrocan standard for the control and monitoring of public drinking water supply networks NM 03.7.002-(2011)

Sampling frequency resource storage



Moroccan standard of WSP NM 00.5.057 (2020)

Standards NM 08.0.002 and 08.0.001

International:

WHO guidelines, WSP, NM ISO 22000… Supply drinking water crises.

Objectives of control health risks

Staying in line with WHO guidelines, national and international standards.

Demonstrate the ability to provide consumers a safe healthy through:

- The control of health risks at all stages from production water through processing, storage, transportation to distribution of water.
- Improving the management and control system of the drinking water supply
- Control of the health risk communication.

Preserving the consumer health

Strengthen collaboration and synergy between water managers, producers, distributors, local authorities and health authorities.

Risk Management Approach

Why implement a risk management approach?

- Ensure the drinking water safety
- Improve the management of drinking water supply systems
- Optimize analytical controls

And…

Preventive approach

Obligation of results and not means

Limitation of water quality control

Emergency preparedness and management

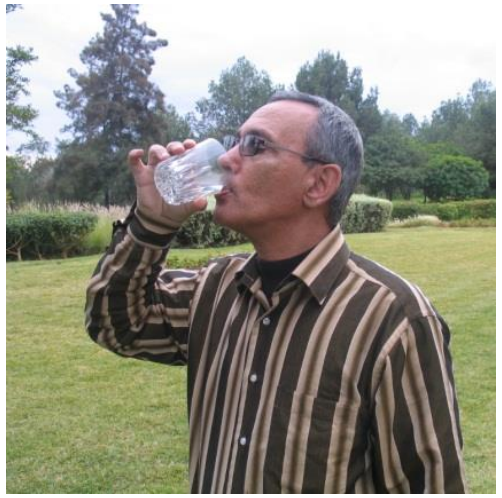
Effective internal and external communication

From the resource to the tap ... quality is at the heart of the Office's business

+ 50 dam reservoirs

Water quality

1 central laboratory
and 117 decentralized laboratories



+ 1000 catchments

+ 7000 Network points

Water Safety Plan
WSP

Introduction

The major and immediate risks for consumers of drinking water are **pathogenic micro-organisms.**

Water resources protection and treatment are very important and **should never be compromised.**

Water Safety Plan -WSPs - The Basics

- Concept developed by WHO in its Quality Guidelines for Drinking Water 2004 and 2011

- 3 principles :

1.Setting quality objectives based on public health and acceptability

2. WSP based on the principles of risk management used in food industry (HACCP) + multiple barriers

3. Monitoring

Basics:

- Restrictive
  - List of water quality indicators limited
  - Diseases observed despite water test results in accordance with national regulations
- Limited
  - Sampling volume in relation to the volume of water produced Not representative
  - Thresholds of analytical detections (microbiology) insufficient
  - When water contamination is detected, it has already reached the consumer

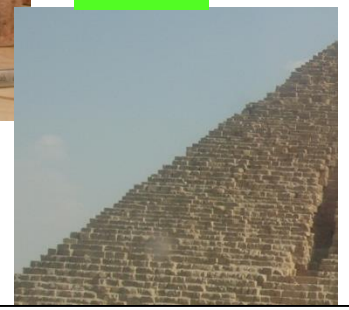
Réf : J.F Loret _ Suez Environnement CIRCSEE

Classical approach: control of the finished product with obligation of results (curative)

System approach through analysis and risk management at all stages of water production

Approaches of controlling health risks

??



2004 :

WHO Guidelines for Drinking Water Chapter on the application of a health risk management approach

2006 :

Standard for Food Safety Management (ISO 22000) adopted by Morocco.

2009 :

Development of the guide for the application of water safety plans (in French).

Implementation

Application domain

Physical
Microbiological
Chemical

Present dangers
in raw water

Radiological

Exploitation
Maintenance
Quality…

Operational Hazards (Equipment, Maintenance, Method, ...)

Dangers from byproducts of treatment and distribution

Chemical

Resource

Drinking water supply process: production, storage, distribution

Many elements already in place

- The protection of resources through the reduction of pollution sources that could negatively affect the water cycle.
- The best choice of the resource for the drinking water production.
- The appropriate treatment processus according to the resource quality - the perforamance monitoring of the water treatment plant, the treatment reagents control, the materials used ...
- A local water quality monitoring network covering all stages of water production and distribution.
- Reliable analysis results
- Compliance with the regulations governing the water quality

Operating and maintenance procedures

Training ....

Missing the link

Criteria for selecting Sites:

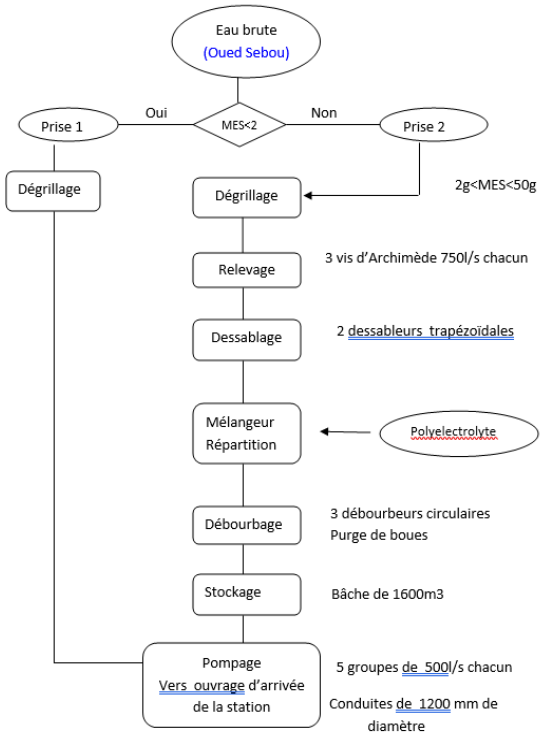
The choice was made according to the following criteria:

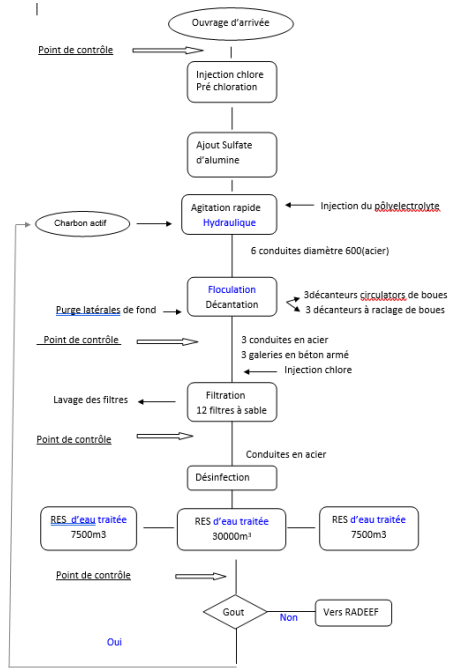
- The importance of drinking water supply (DWS)
- The nature of the water supply system and the history of water quality
- The availability of safety studies of DWS systems

Approach Adopted

- Implementation of WSP at the local level with the participation of people involved in the drinking water production process for large treatment plants and medium capacity of DWS systems.
- Implementation of ISO 22 000/WSP at large DWS complexes.

Process diagram





Overall overview of the WSP or SFMS implementation project

Consistency

Mission I:

Diagnosis of the current situation of WSS systems, evaluation of sites with respect to WSP or ISO 22000 requirements, staff training, and development of a support and guidance plan for the implementation of the WSP or SFMS.

Mission II:

Methodology and development of the health risk management aspect, preparation and writing of the procedures required by the WSP or the SFMS

Mission III:

Support, application, verification, and validation of WSP or SFMS procedures at the selected sites and request for an audit from IMANOR.

RESULTS

Results

5 Treatment plants certified ISO 22 000

Sebou (Fès), Daourat (El Jadida), Rocade (Marrakech), El Kansera (Khemisset) and Bittit Ribaa (Meknès).

ROYAUME DU MAROC

IMANOR

المعهد المغربي للتقييس

Institut Marocain de Normalisation

CERTIFICAT

n° CSMSDA/2014/044-1

Le Système de Management de la Sécurité des Denrées Alimentaires adopté par :

UNITE DE PRODUCTION D'EAU POTABLE DAOURAT
OFFICE NATIONAL DE L'ELECTRICITE ET DE L'EAU POTABLE - BRANCHE EAU

Pour les activités :

Production, stockage et transport de l'eau potable

Exercées sur le site :

BP. 358, Av. Houmane El Fetouaki – El Jadida

A été évalué et jugé conforme aux exigences de la norme marocaine :

NM ISO 22000-2006

Le présent certificat est valable jusqu'au ***23 Mars 2017.***

Rabat, le ***24 Mars 2014***

IMANOR CERTIFICATION

NM ISO 22000 V 2006

Le Directeur de l'IMANOR

Signé : Abderrahim TAIBI

Results

- TP El Kansera (Khemisset) certified WSP by Moroccan Institute for Standardization (1st certified site)
- 25 sites in progress covering all regional production directions of ONEE

ROYAUME DU MAROC

IMANOR
المعهد المغربي للتقييس
Institut Marocain de Normalisation

IMANOR CERTIFICATION
NM PGSSE

CERTIFICAT DE CONFORMITE

N°CPGSSE/2025/01-01

Le Système de Gestion de la Sécurité Sanitaire de l'Eau Potable adopté par :

Direction Régionale de l'Office National de l'Electricité et de l'Eau Potable

Sise; Lotissement Al Qods– Kénitra

Pour l'activité :

Traitement de l'Eau Potable

Exercée au niveau du site :

Station de traitement AL KANSERA

A été évalué et jugé conforme aux exigences de la norme :

NM 00.5.057 v 2020 (NM PGSSE)

Le présent certificat délivré dans les conditions fixées par les Règles de Certification **RCSGSSE version 1** du **1er Mars 2024**, est valable jusqu'au **08 Mai 2028.**

Rabat, le 09 Mai 2025

Le Directeur de l'IMANOR

IMANOR
Institut Marocain de Normalisation

Signé : Abderrahim TAIBI

La validité de ce certificat peut être vérifiée en scannant le code QR, sur le site : https://www.imanor.gov.ma; ou via l'adresse mail : certification@imanor.gov.ma

IMANOR : Angle Avenue Kamal Zebdi et Rue Dadi, Secteur 21 - Hay Riad - Rabat | www.imanor.gov.ma

PERSPECTIVES

Roadmap for scaling up the implementation of the WSP

2023 – 2030 :

- Use of external support for the development and deployment of the WSP for around twenty sites spread across all Regional Directorates of the Office.
- Internal development and deployment at all conventional and specific treatment plants

Monsieur Le Directeur de l'Epidémiologie
et de la Lutte Contre les Maladies
71 Avenue Ibn Sina Agdal
Rabat

2-121

N°: DCE/S/2022

Objet : Application du plan de gestion de la sécurité sanitaire de l'eau (PGSSE) «NM 00.5.057 2020 »

Réf : V/Lettre n°1378 SAB/DHM/DELM/15 du 25/07/2022
N/Message du 04/08/2022

Monsieur Le Directeur

Faisant suite aux envois cités en référence en relation avec l'application obligatoire du PGSSE, à partir de 2023, j'ai l'honneur de vous faire part du plan d'actions relatif à l'intégration du PGSSE au sein des unités de l'Office. Ce plan tient compte des difficultés d'une généralisation au niveau de tous les systèmes d'AEP gérés par l'Office vu leur nombre, le temps et le coût engendrés pour le développement et la mise en œuvre. En résumé :

2023 – 2025 :
Recours à un accompagnement externe pour le développement et le déploiement du PGSSE et ce pour une vingtaine de sites réparties sur l'ensemble des Directions Régionales de l'Office.

2023- 2030 :
Développement et déploiement en interne au niveau de toutes les stations de traitement classiques et spécifiques et les Centres urbains et ruraux alimentés par ces stations.

Au-delà de 2030
Mise en place et déploiement du PGSSE au niveau des centres urbains ayant leur propre production et les centres ruraux gérés par l'ONEE selon le guide simplifié de l'OMS.

Ce plan d'action prévisionnel pourrait subir quelques modifications ou ajustements en fonction des contraintes rencontrées.

A signaler par ailleurs, que les modalités de l'audit du PGSSE restent à clarifier (MSPS, IMANOR ou autres prestataires) pour auditer d'ores et déjà les unités de l'Office certifiées selon le référentiel ISO 22000 « système de management de la sécurité des denrées alimentaire » s'agissant du même concept que le PGSSE.

Veuillez agréer, Monsieur le Directeur, l'expression de mes salutations distinguées.

Directeur Contrôle Q
des Eaux

This plan takes into account the difficulties of generalizing to all water supply systems managed by the Office, given their number, and the time and cost involved in development and implementation.

Challenges

Approach to local integration in the "normal" operation?

Mandatory Health Safety Management Plans?

WSP: among the investment criteria for decision makers?

Feedback on the implementation of the WSP or FSMS

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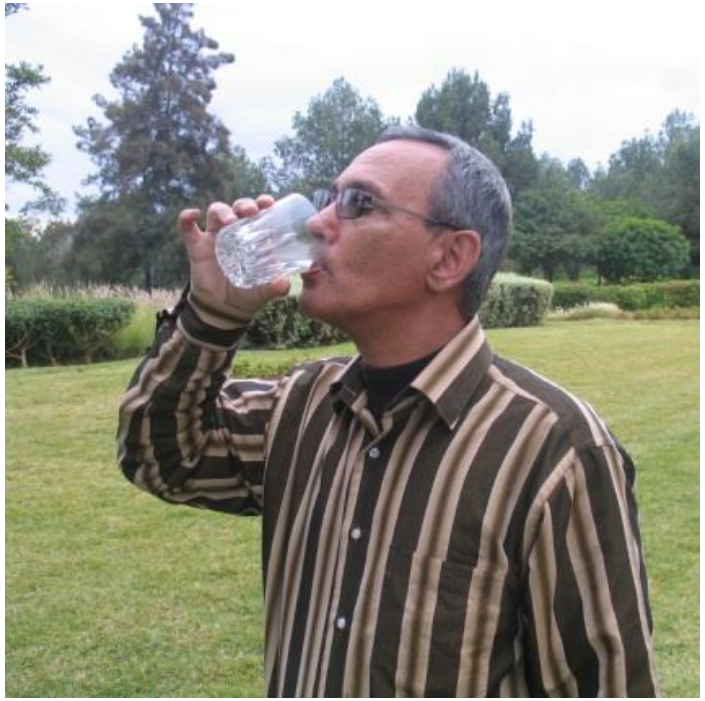
Some benefits:

- Water Quality Control Oriented Toward Health Risks / Relevant Parameters.
- Optimization of analyses.
- Control of Health Risks Related to Water at All Stages of the Water Supply System from Source to Consumer: System Approach
- Consideration of Risks Arising from Actors in the Water Supply Chain Preventive Management of Health Risks
- New Approach with Synergy Between Different Activities
- Control of the Water Supply System in Normal and Crisis Situations

Conclusion

- Drinking water safety management is a major challenge for public health.

- Results of the application of WSP/ISO2200 are convincing and will further strengthen the efforts undertaken by ONEE in terms of active monitoring of quality and will allow a better control of water supply system.



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Thank you!

azouhir@one.ma

www.worldwatercongress.com

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Kingdom of Morocco
Ministry of Equipment and Water