



# THE NATIONAL OFFICE OF POTABLE WATER



Water Quality Control  
Directorate



**From the source to the tap water ... the quality is our main concern**



**Treatment**

**Control  
Plant performances**



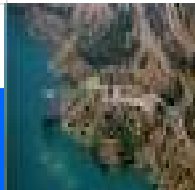
**Production**

**Sanitary risk  
control measures**



**Water  
Resources**

**Studies  
Control  
Follow up**



**Quality**



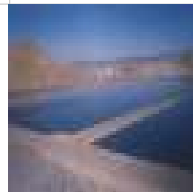
**Network**

**Sanitary risk  
control**



**Wastewater purification control  
and performance**

**Characterization  
and follow up**



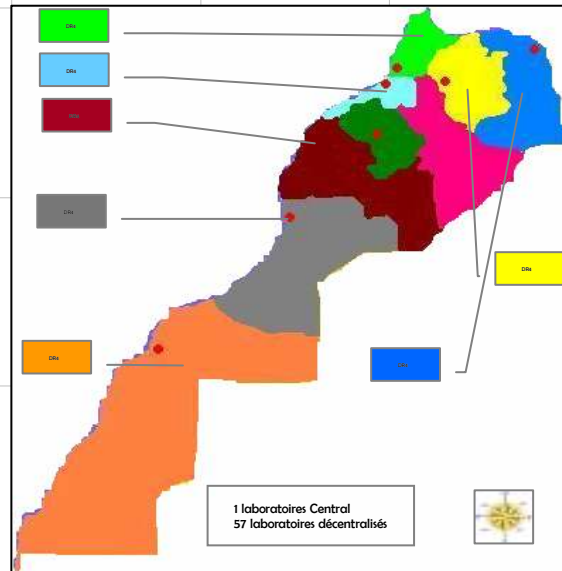
**Purification**



**wastewater**



## Water Quality Monitoring



**Monitoring the quality of produced and distributed waters is ensured by the central laboratory and 56 decentralised laboratories in all the Kingdom.**

### Carried out Actions:

- ✓ Characterization of new resources for drinking water supply
- ✓ Control and performance of water treatment plants:
  - Surface water
  - Desalination
  - Iron, Manganese and Ammonia removal
- ✓ Development of specific treatments.
- ✓ Evaluation of new technologies

**Doctors, Engineers, technician, experts and control agents, are bringing solutions to different issues.**

More than 90 agents in the central laboratory and more than 120 agents in the decentralised laboratories are involved in:

- Operating of conventional and specific water treatment plants
- Sampling water
- Water quality analysis

### Some numbers

- More than :
- 4619 sampling points
  - 931 underground water
  - 1077 Feed and treated reservoirs
  - 2255 network points
  - 162 pumping tests
  - 30 treatments chemicals

## Pollution Control and treatment



### Among the carried out actions:

- ✓ Investigation of potential pollution at the water source
- ✓ Evaluation of pollution hazards in water supply system
- ✓ Intervention in case of a pollution hazard
- ✓ Eutrophication control
- ✓ Industrial discharge control ...
- ✓ Diagnostics and follow up of wastewater purification plants performances



### Some numbers:

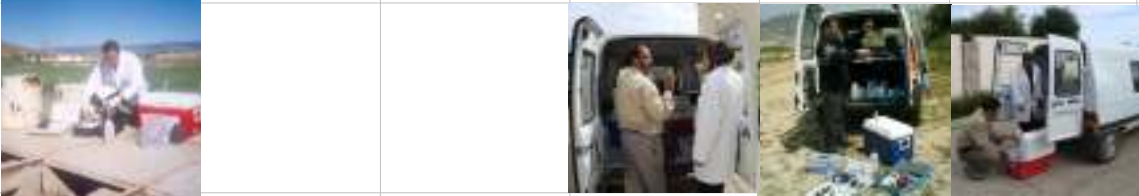
- More than :
- 356 Surface water sampling points
  - 26 wastewater sampling points



### Control of 26 wastewater treatment plants :

- ✓ 21 WWT lagoon type
- ✓ 1 WWT Infiltration/percolation type
- ✓ 1 WWT mixed lagoon - infiltration/percolation
- ✓ 2 WWT activated sludge type
- ✓ 1 WWT bacteria bed

**Our occupation ... in few words**



**Survey missions, Site inquiry**



**Sampling of water, sediments, and investigation on sites**



**Microbiological and physical chemistry analysis**

More than 469 analytical methods are used for Microbiological and physical chemistry water control

- More than 308 parameters and 30 reports

## Recognition at the national and international levels

Since 1994 the ONEP Central Laboratory has been nominated a World Health Organisation Collaborating centre For training, water quality control and applied research

The water quality central laboratory is accredited for:

- Bacteriological and toxicological analysis
- Organic and Inorganic analysis

By the Moroccan Ministry of Industry and Commerce since April 2003



By the Ministry of Sustainable Development, Environment and Parks of Quebec (Canada) since September 2002

### International Standard ISO/CEI 17025 – version 2005



This accreditation is a recognition of the laboratory agents technical skills in sampling, analysis and in the proper working of the quality management system. It was confirmed and extended in

2008 for:

- Water sampling and analysis on sites
- Analysis carried out in the wastewater mobile unit



الجودة إنشغالنا الدائم  
La qualité notre préoccupation permanente

## Our tools; ... Technical means

### Types de matrices

- ✓ Surface water, underground water
- ✓ Public water supply
- ✓ Recreational waters
- ✓ Wastewater and industrial discharge
- ✓ Sediments
- ✓ Treatment Chemical additives ...



### New state of the art equipments

- ✓ Gaz Chromatography /Mass spectrometry (GC/MS)
- ✓ Inductively Coupled Plasma (ICP), Ionic Chromatography
- ✓ Laser Particle Counter, Total Organic Carbon (TOC) and Organic Halogen Compounds (OHC)
- ✓ Auto sampler, Microscopy Camera,
- ✓ Distributor of biological culture medium
- ✓ Two mobile laboratory units
- ✓ Pilote units for testing new treatment technologies for surface water and discharge ...
- ✓ Flowmeters ...

### Normalized and reliable methods

- ✓ Membrane filtration
- ✓ Most plausible number methods
- ✓ Continuous flow Calorimeter
- ✓ Titration
- ✓ Gravimetric analysis
- ✓ Flame Atomic Absorption Spectrophotometry or Inductively Coupled Plasma (ICP) ...

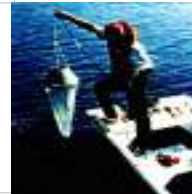
## Our Occupation ... Sampling and parameters measurement on site



**Tap water**



**Drilling**



**Dams**



**Well**

## Sampling of different kinds of water: Natural, treated, Wastewater...

The sampling method is a crucial step in the water analysis.

Teams with a satisfactory know-how: from sampling step to parameter analysis



**Qualitative analysis**



**Quantitative analysis**



**Gas measurement  
in anaerobic basin**



**Sludge measurement level**

## Specialized and controlled Sampling methods

# Our occupation ... Microbiological analysis

## Bacteriological Analysis



E . Coli, Entereococcus  
Clostridium  
Staphylococcus  
Salmonella ...

## Toxicological Tests



- Determination of the inhibition mobility of Daphnia Magna
- Determination of the inhibition luminescence in Photobacterium phosphoreum
- Determination of the acute lethal toxicity of substances to a freshwater fish ( Brachydanio rerio)

## Plankton Analysis



Search and count of phyto and zooplankton

## Parasitological Analyses



Search and count of Helminth eggs

# Our occupation ... Physical chemistry analysis

## Inorganic Analysis



### 4 major parameters

Characteristics of natural waters :  
Temperature , pH, Chlorides, Sulfates,  
Magnesium, Calcium ...

Pollution indicators:  
Nitrates, Nitrites, Nitrogen,

Phosphorus

Global Parameters:  
BOD, COD, TSM, ...

Toxic parameters :  
Arsenic, Mercury, Chrome, Lead ...

## Organic Analysis

PAH  
TOC  
PCD  
BTEX  
THM  
Pesticides, Halogenated Organic  
compounds  
...



## Training, guidance and cooperation



### Training and assistance

- ✓ Personnel Training
- ✓ Appraisals in many African and Middle East countries
- ✓ Technical assistance
- ✓ Involvement in legislative and standardisation measures
- ✓ Supervision of student et suivi des étudiants dans le cadre des préparations des mémoires de fin d'étude



### Coopération

- ✓ National organisms
- ✓ CNRST; CNESTEN; CDER; CMPP;...
- ✓ Engineering Schools
- ✓ Universities
- ✓ Public Laboratories
- ✓ Moroccan Association for Research and Science
- ✓ ...

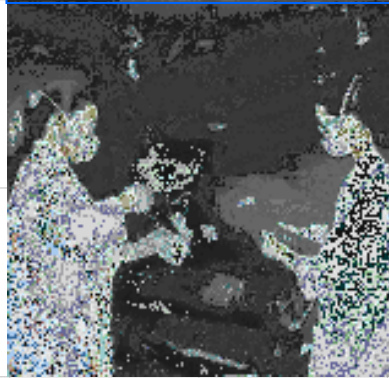


- ✓ International organisms
- ✓ International agencies: WHO, UNEP, UNPD, USTDA
- ✓ European organisms : GTZ; NAN.C.I.E, Anjou Recherche, Eau de Paris, Société Wallonne de Distribution d'Eau (SWDE), Syndicat Interdépartemental pour l'Assainissement de l'Agglomération Parisienne (SIAAP) ... ;
- ✓ African organisms : ONAS, AGEPE,...
- ✓ Canada: (CRDI),
- ✓ ...

## Applied research & Development

Among the R&D activities:

- Monitoring and protecting water resources and drinking water supply against pollution
- Improving the water quality and developing new systems for drinking water treatment.
- Experiences on simple techniques for the purification and water reuse that can be adapted to the Moroccan environment.
- Development of specific treatment and evaluation of new technology



Reference material; and interlaboratory studies

Investigating eutrophication phenomenon

Development of new water analysis techniques



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Édition . 2009