Agenda

1. The EPAL System
2. Global View
3. The Program with W-SMART
4. Outcomes
5. Future Improvements
6. Final Remarks

1. The EPAL System

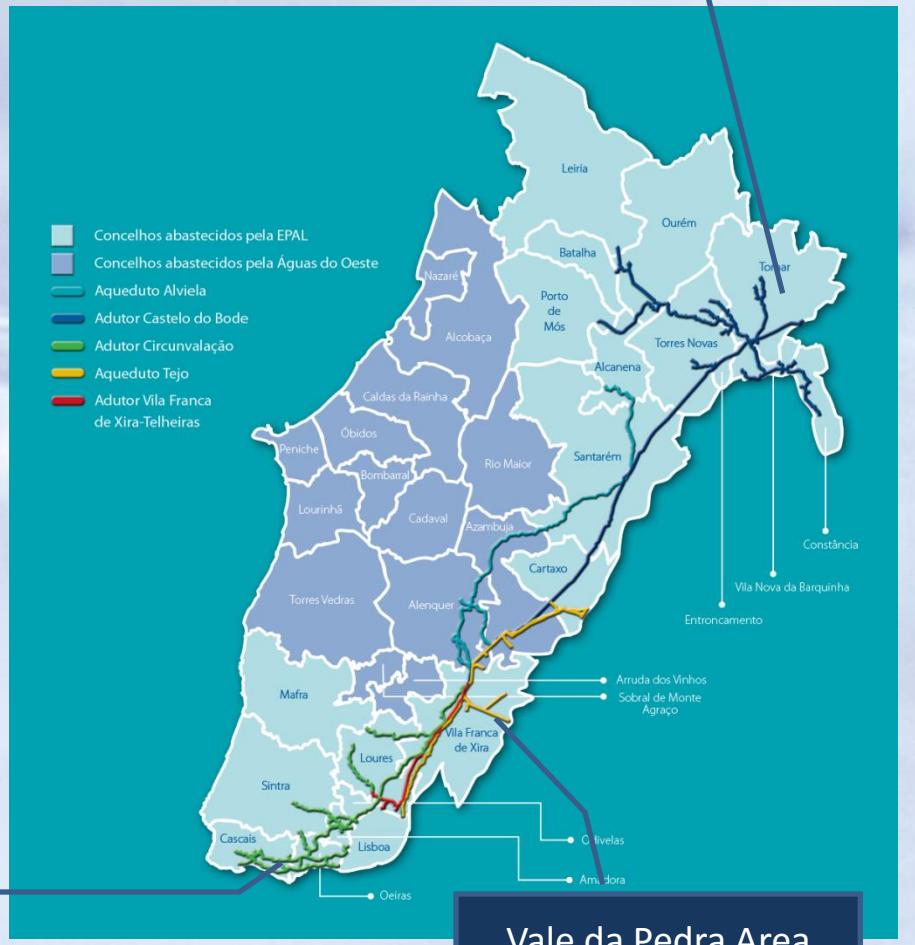
140 year company, supplying water to 350,000 clients in Lisbon and to 35 municipalities.

EPAL supplies water to more than 2.8 million consumers representing 30% of Portugal's population.

The main facilities are located in Lisbon – a seismic city – the last big event was in 1755, with a magnitude approaching 9.0 on Richter scale and the next big earthquake is expected in the coming years.

EPAL's mission: ensuring continuous supply of safe drinking water during routine and crisis events.

Asseiceira Area



Lisboa

Vale da Pedra Area

2. Global View - Water Resources and Climate Change in Portugal

Hydrological Extremes Situation

- Floods - concentration of precipitation in shorter periods of time
- Droughts - longer periods and more intense

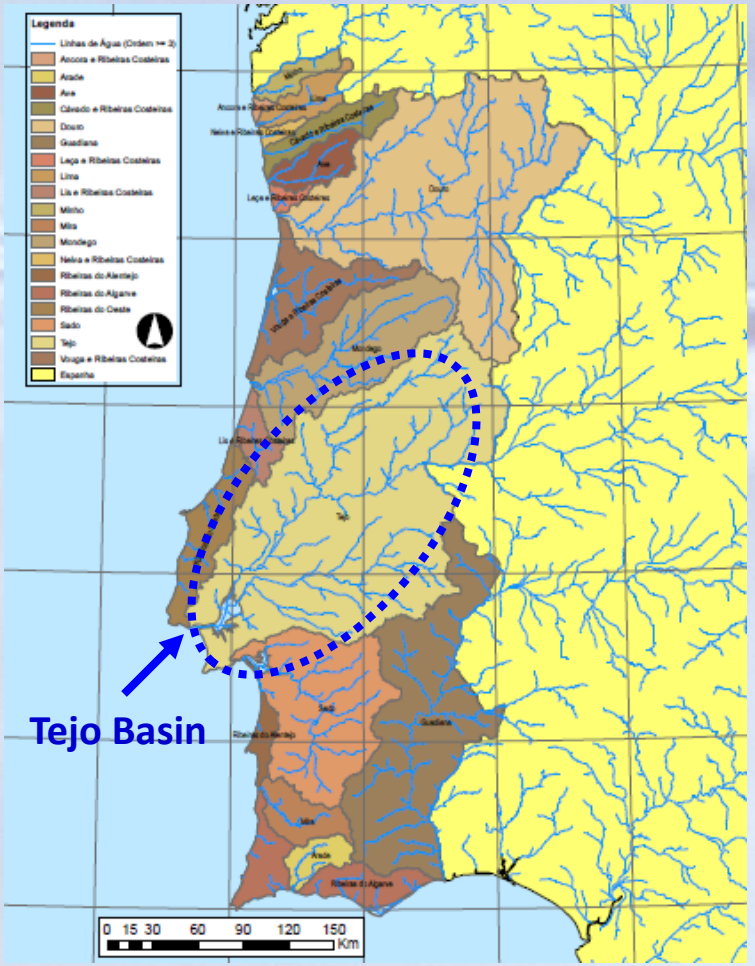
Water Supply

- Unpredictable availability of water at sources
- Decrease of groundwater resources

Water Quality

- Diminished dilution capacity of rivers streams, mainly in the dry periods of the year
- Increase in the biological productivity may lead to serious eutrophication problems already existing in Portugal.

2. Global View



Fonte: INAG, 2009. http://snirh.pt/snirh/atlas/mapasweb/pt/aa1002.pdf

EPAL's Sources and Supply System

- The Castelo de Bode sub-system, commissioned in 1987, has a production capacity of 625,000 m3/day.
- The Tejo sub-system, commissioned in 1940, has a nominal capacity of daily production of 220,000 m3/day.
- Other sources, wells and springs, in operation with a nominal capacity about 265,000 m3/day.

2. Global View

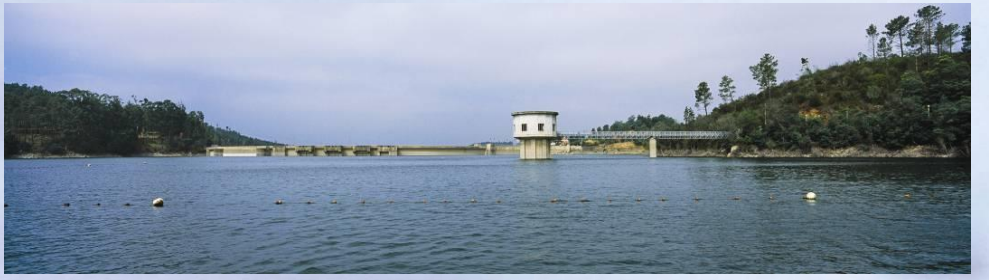
EPAL´s Water Safety Plan

The implementation of WSP, is aimed at continuous improvement of services, reliability and inherent image of the Company to its customers.

Main Ideas of the Water Safety Plan Project

- Ensuring the quality and quantity of drinking water supply
- Implementing *"best operational practices"* and preventive measures to manage the identified risks
- Preventive measures for improving public health
- Compliance with legal requirements and recommendations of World Health Organization
- Increased consumer confidence by improving the quality of water produced

3. What We Have Done with W-Smart Support



9 months project

Preparation of Guidelines for crisis management in water events

1st version - July 2009 until December 2009

2nd version - January 2010 and 3th version in March 2010

EPAL Team (Water Supply, Water Security, Water Quality, Maintenance and Asset Management)

Training

Workshop in 15 – 17 th December for 36 technicians (4,5%)

Training Exercise in 21st January 2010 for 55 technicians (7%)

Exercises

Full-scale Exercise in 10th March 2010 for 76 technicians (9,5%)

Why W-SMART?

Offering best practice on water crisis management based on the assessment of the accumulative and difersified experience of W-SMART members

Commitment of W-SMART to the experience sharing of its members in order to upgrade security management capabilities of urban water supply.

Only water companies can understand the challanges and assist other water compamies in improving their crisis management capacity.

The W-SMART Team

Oversight committee

- Sion Cohen – Mekorot – Israel - Chair
- Jeff Swertfeger – GCWW - USA
- Bruno Nguyen – Eau de Paris – France

Expert

- Erich Shaw – WSMART

Executive Director

- Dr. Ilan Juran – WSMART

Program Objectives

Changing the corporate culture by improving inter-department communication and real time information sharing

Upgrading the capability for creating a situation picture and consequently preparing a situation analysis

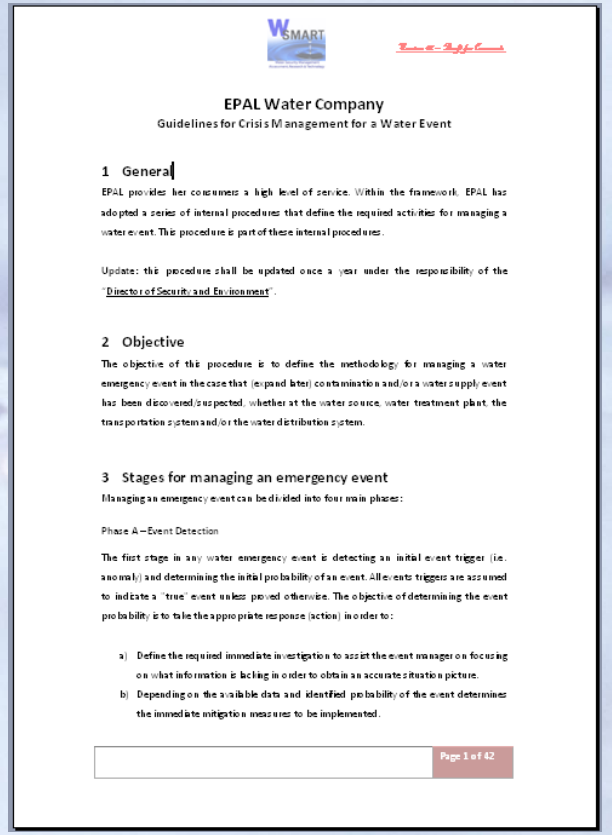
Developing guidelines for crisis management planing, execution, debriefing and performance assessment including severity assessment, management structure, early detection and warning, etc.

Providing an intra and inter agency uniform language to improve for crisis management, reporting and debriefing.

Building EPAL capacity for emergency response training and exercises.

4. Outcomes

Guidelines for Crisis Management for a Water Event



EPAL Water Company

Guidelines for Crisis Management for a Water Event

1 General

EPAL provides her consumers a high level of service. Within the framework, EPAL has adopted a series of internal procedures that define the required activities for managing a water event. This procedure is part of these internal procedures.

Update: this procedure shall be updated once a year under the responsibility of the "Director of Security and Environment".

2 Objective

The objective of this procedure is to define the methodology for managing a water emergency event in the case that (expand later) contamination and/or a water supply event has been discovered/suspected, whether at the water source, water treatment plant, the transportation system and/or the water distribution system.

3 Stages for managing an emergency event

Managing an emergency event can be divided into four main phases:

Phase A – Event Detection

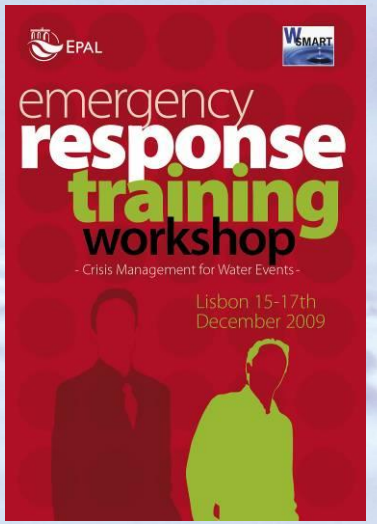
The first stage in any water emergency event is detecting an initial event trigger (i.e. anomaly) and determining the initial probability of an event. All events triggers are assumed to indicate a "true" event unless proved otherwise. The objective of determining the event probability is to take the appropriate response (action) in order to:

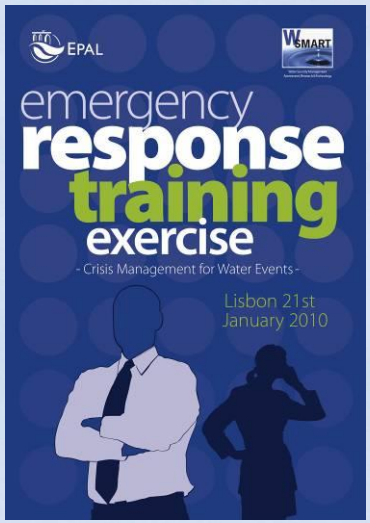
a) Define the required immediate investigation to assist the event manager on focusing on what information is lacking in order to obtain an accurate situation picture.
b) Depending on the available data and identified probability of the event determines the immediate mitigation measures to be implemented.

Page 1 of 42

1 - General
2 - Objective
3 - Stages for managing an emergency event
4 - Definitions
5 - Phase A – Event detection
6 - Phase B – Event severity evaluation
7 - Phase C – Event managing
    Light event
    Medium event
    Serious event
8 - Phase D – Final report

Appendix A – External events that may have implications on water quality/supply





4. Outcomes

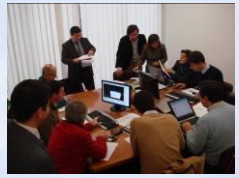
Training

15-17th December 2009

- 36 technicians had participated
- Water Supply events
- Maintenance Events

Water Supply | Maintenance | Water Quality





Debriefing

21st January 2010

- 55 technicians had participated
- Water Quality Events
- Water Supply Events
- Maintenance Events

Manager

Water Supply | Call Center



Maintenance | Water Quality

EPAL

Debriefing & Lessons Learnt

4. Outcomes

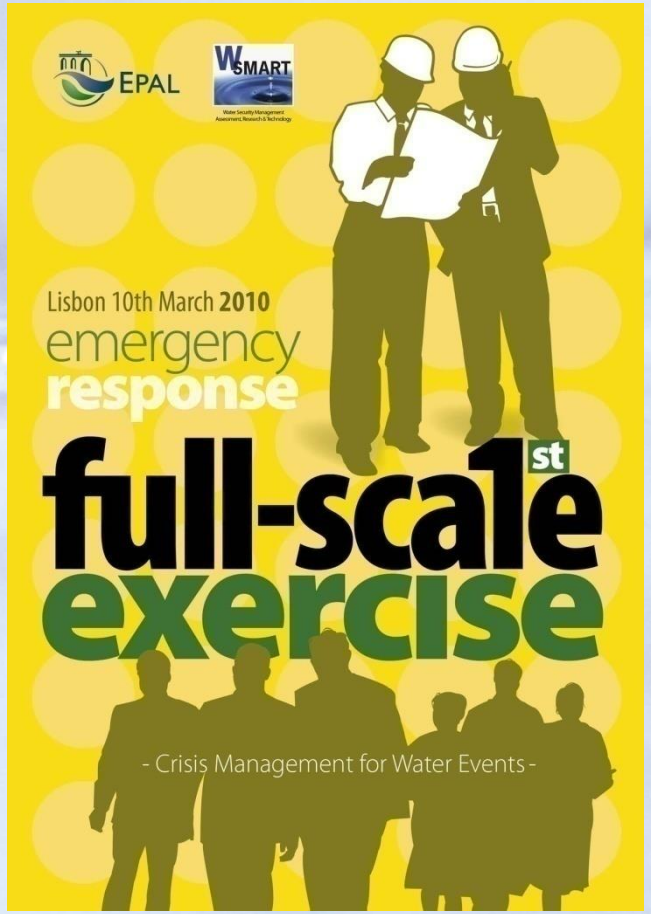
Full-Scale Exercise

Serious Event

09:00 Quality events
- Cryptosporidium contamination on water wells
- Fire as broken in Central Laboratory

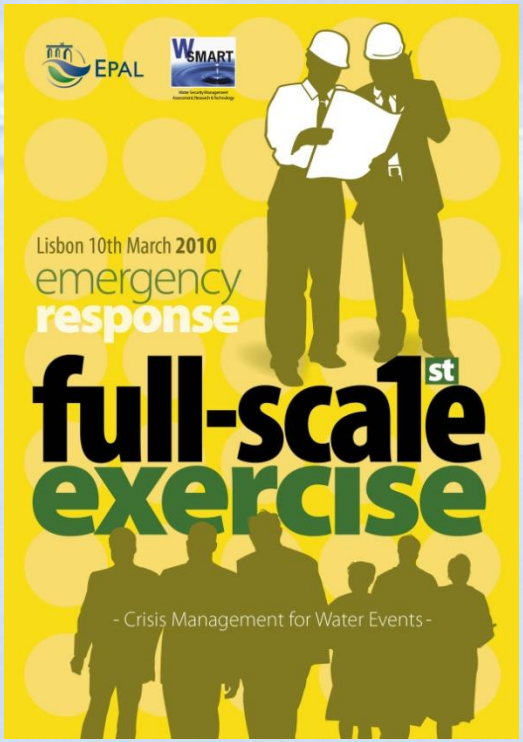
09:10 Supply and Maintenance events
- Big pipe burst
- Sick 1/3 of Maintenance technicians

09:30 Security events
- Bomb in Telheiras pumping station

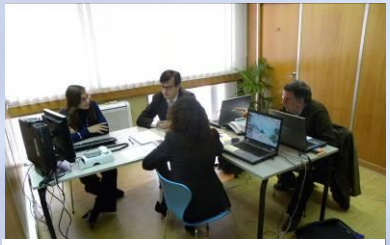


4. Outcomes

Full-Scale Exercise



PRESIDENT



LEGAL & INSURANCE

COMUNICATIONS

MEETING ROOM

SITUATION ROOM

CALL CENTER

MAINTENANCE

WATER SUPPLY

WATER QUALITY

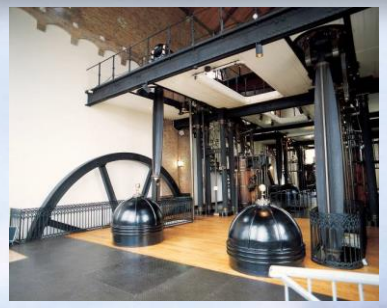
4. Outcomes

Full-Scale Exercise

The exercise was realized in the main CCC in Olivais/Lisboa and both Water Treatment Plants

Water Treatment Plan - Asseiceira

Water Treatment Plan - Vale da Pedra



5. Future Improvements

- Implement simple and workable procedures are essential
- Provide uniform modes of communication for accurate reporting
- Preparing a decision support system for determining whether the information gathered provides the appropriate data for event detection and control under Emergency Situation and deciding when to shift from routine to emergency mode
- Creating a corporate safety culture based on strong cooperation, coordination and real time information sharing between all the departments
- Improving vulnerability assessment capabilities by identifying weak points in the system during exercises without being in real crisis
- Determining when and how to return to Routine after an Emergency Situation

5. Future Improvements

Next 3 months

- Internal and External Communication Plan
- Guidelines improvement through lessons learnt
- Maintenance Plans
- Stakeholders relations and agreements
- Guidelines for improving situation room operations
- Training internal exercise observers
- Logbook improvement

Next 12 months

- One annual full-scale exercise
- One subunit exercise

The W-SMART Contribution

Oversight assessment of guidelines, training and exercises.

Active involvement at crucial stages of guideline development integrating the North American utility – EPA practice with the experience of Mekorot and Eau de Paris.

On-site participation during exercises as observors offering their assessment and recommendations as summerized in their report.

6. Final Remarks

Development of Emergency Response guidelines, training and exercise is important in order to achieve:

- Assurance of the business continuity and sustainable satisfaction of the customers under emergnecy situations
- The integration of best international reference practices regarding water security and water safety
- Acheiving the "best company" reference status among the water utilities in Portugal
- Building corporation image and consumer trust by increaing reliability and improving internal and external communications.

Thank you for your attention

Under the leadership of EPAL Lisbon will be the host for the

9th World Water Congress & Exhibition

In September 2014

Finding Solutions to Assure the Future