



USAID
FROM THE AMERICAN PEOPLE

WATER

& USAID's Environmental Procedures

Environmental Compliance/ESDM Training Workshop
Cairo ■ November 2012



Water: a key USAID focus

- ❖ **Water (& sanitation) has been and continues to be a key focus of USG and other donor assistance in ME**
- ❖ **A “water focus” has been built into this workshop**
 - *Virtual field visit*
 - *Indicators exercise:*
 - *Field visit*
 - *This session*

MDG 7c
Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

USG: Paul Simon “Water for the Poor” act makes affordable & equitable access to potable water and sanitation a key component of U.S. foreign assistance.



Why care about water? **Human health**

Health: Diarrheal disease globally is a leading cause of death for children under 5.

In addition to direct fatalities, diarrheal diseases worsen malnutrition and weaken the immune system, leading to decreased resistance to other diseases (e.g. Malaria.)

Ingesting contaminated water is the overwhelming cause of diarrheal disease.



Photo: [Amr Emam/IRIN](#)

Poor access to water makes good hygiene difficult → thereby increasing disease



Why Care About Water?

Food Security; Economic Activity

Water is essential for agriculture and industry.

Producing. . .

- 1kg grain requires 1m³ of water. (avg)
- 1 kg beef requires 3.7m³ of water
- 1 liter of gasoline requires 3-6 liters of water
- 1 liter of bottled water requires about 3 liters of water





**OK. . .so why care about
even more about water in
MENA countries?**



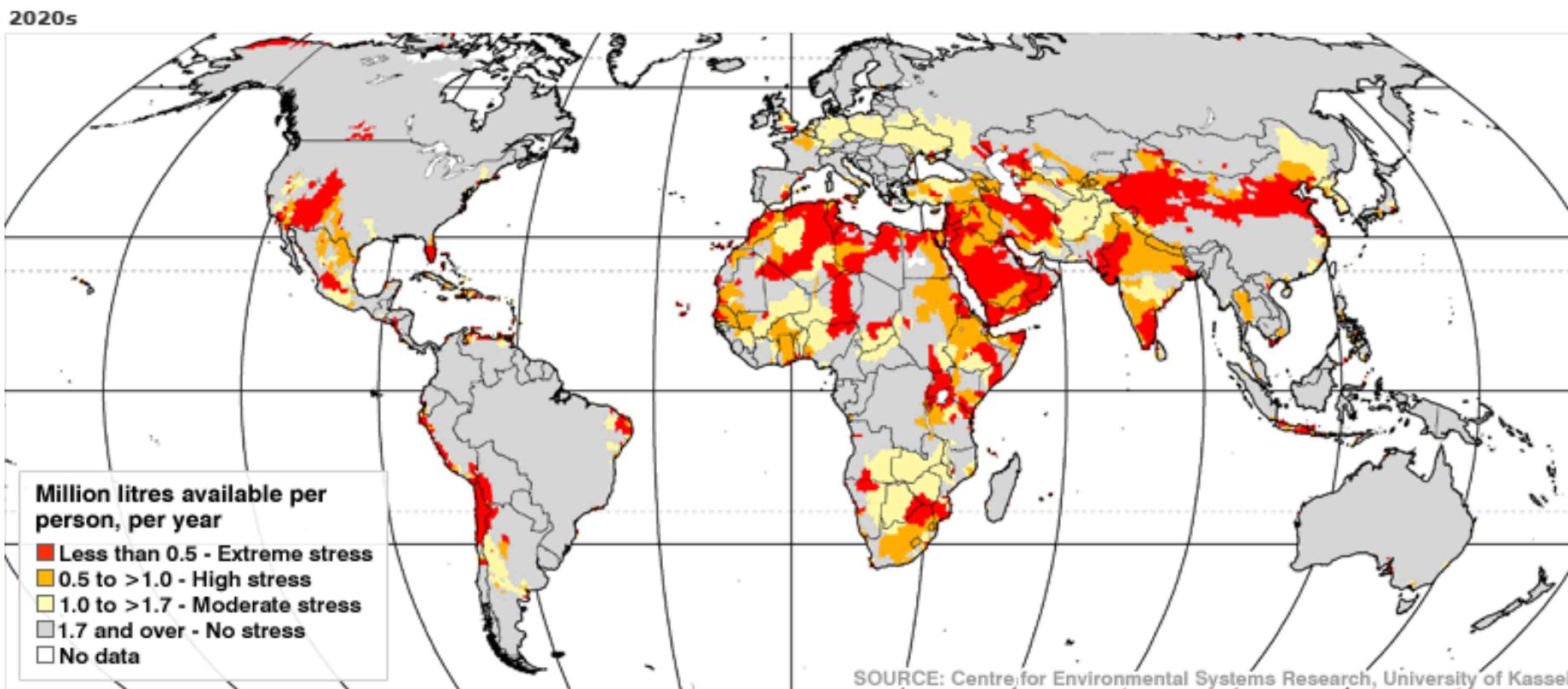
1. Water & Sanitation Access: Rural Gaps

	% of Population With Access to Safe Water			% of Population With Access to Adequate Sanitation	
	Total	Urban	Rural	Total	Urban
MENA ^a	84	93	79	88	95
Algeria	89	94	82	92	99
Bahrain	-	-	-	-	-
Egypt	97	99	96	98	100
Iran	92	98	83	83	86
Iraq	85	96	48	79	93
Israel	-	-	-	-	-
Jordan	96	100	84	99	100
Kuwait	-	-	-	-	-
Lebanon	100	100	100	99	100
Libya	72	72	68	97	97
Morocco	80	98	56	68	86
Oman	41	30	92	98	61
Qatar	-	-	-	-	-
Saudi Arabia	95	100	64	100	100
Syria	80	94	64	90	98
Tunisia	80	92	58	84	96
Turkey	82	82	84	91	98
United Arab Emirates	-	-	-	-	-
Yemen	69	74	68	38	89

In the Middle East, diarrheal disease is tied as the leading cause of death for children under 5, directly resulting in the death of ~1.7% of all children born in the region by age 5

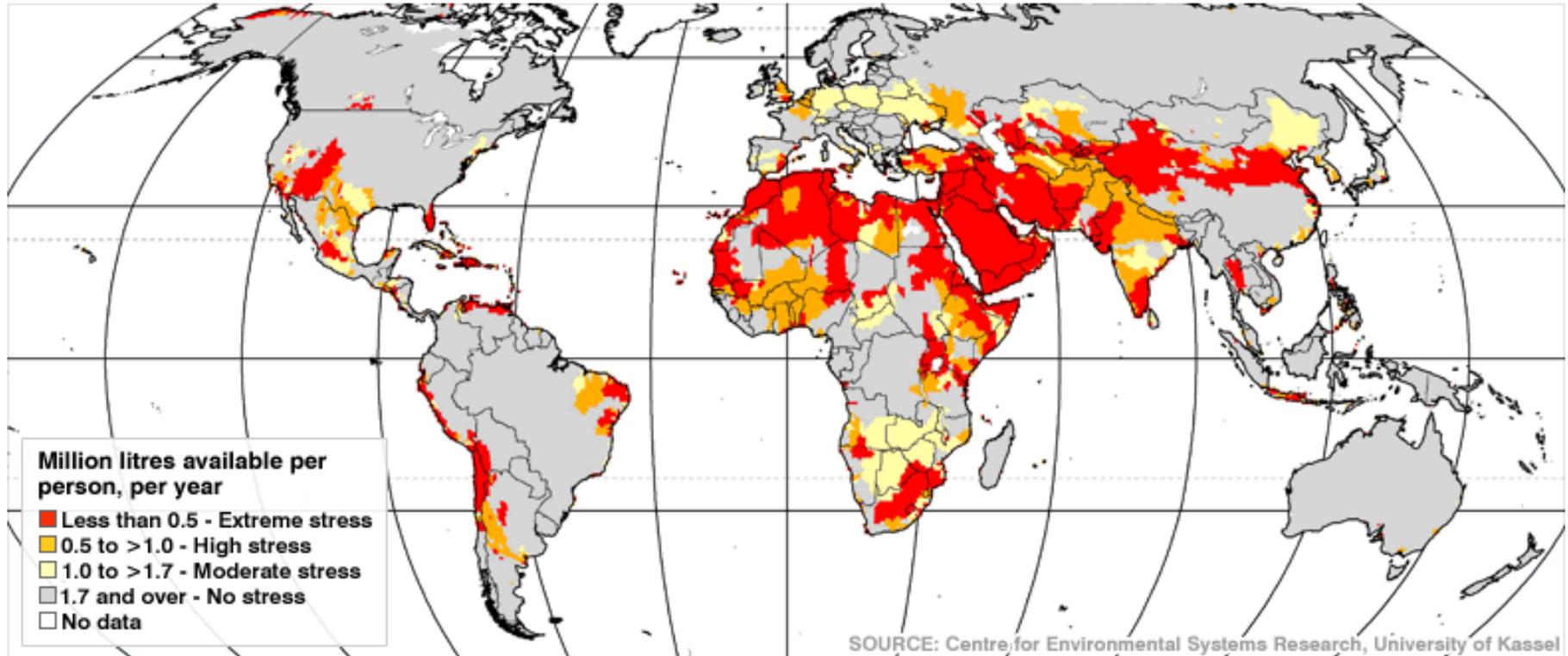
<http://news.bbc.co.uk/2/hi/science/nature/7821082.stm>

2. Growing Water Stress (Scarcity)



Growing populations + Global Change increased water stress in the Middle East.

2050s



And the situation looks worse when surface water **QUALITY** is taken into account

<http://news.bbc.co.uk/2/hi/science/nature/7821082.stm>



Because water is so inter-related to health, food security, and economy, water scarcity quickly becomes a very complicated development challenge. . .

Global
Change

Conflict

Water quantity

Water quality

Industrial
demand

Domestic
demand

Agricultural
Demand

Population

Per capita
Income

Health

How must the EIA/environmental compliance process help address this complexity?

If the activity. . .	Then the IEE/EA
Uses water	Assesses the current and future adequacy of the supply in view of competing uses & GCC
Provides drinking water	Addresses the quality of the source water and how the quality of the provided water will be assured. (IP is required to develop and implement a <u>water quality assurance plan</u> .)
Discharges Water	Assesses the potential for surface or groundwater contamination and how <u>significant</u> this contamination may be.



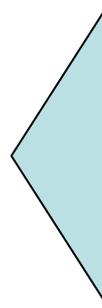
About Water Quality Assurance Plans

3. Water quality assurance plan. For water supply activities, the project will develop and implement a Water Quality Assurance Plan that will provide a high level of assurance that all new and rehabilitated USAID-funded water supplies provide safe drinking water,

The plan must adopt drinking water standards no less protective than host country law. It must assign responsibility to the IP for initial water quality testing. When feasible, the program must also set in place capacities and responsibilities to provide reasonable assurance that ongoing water quality monitoring will occur. The WQAP must include a response protocol in the event that water does not meet the adopted standards.

At minimum, fecal coliform, arsenic must be tested prior to use and thereafter quarterly for four quarters. Arsenic testing must conform to the requirements enumerated in Guidance Cable State 98 108651.

If the program terminates in less than four quarters, remaining testing is the responsibility of the mission. Water violating the 10ppb Arsenic standard or having fecal coliform detectable in a 100ml sample may not be supplied for public consumption.



Typical IEE Language

Minimum testing:

- Fecal coliform
- Arsenic
- other parameters required by circumstances or host country standards

Project responsibility:

at least initial testing + quarterly for 4 quarters.

Agency currently debating

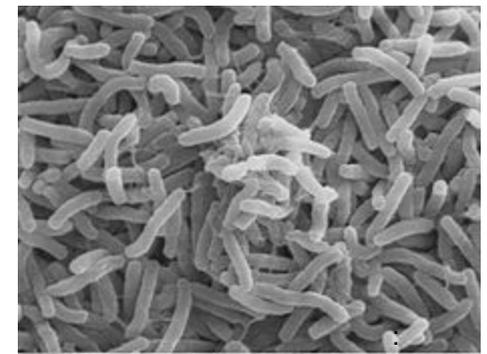
Health Threat:

Fecal-Oral Route Pathogens

- ❖ Ingesting water contaminated with fecal-oral route pathogens is the leading cause of diarrheal diseases
 - *Dysentery, Cholera, Typhoid, other gastroenteritis, (and also hepatitis, shistosomiasis. . .)*
- ❖ These diseases are a leading cause of infant & young child mortality
- ❖ Shallow groundwater easily contaminated by latrines, livestock, exchange with surface waters.
- ❖ Shallow wells tapping “clean” groundwater easily contaminated by dirty buckets, ropes, & soil.
- ❖ Water from boreholes can be contaminated by seepage thru a faulty sanitary seal or can be contaminated at the tap.



Entamoeba histolytica
(cause of amoebic dysentery)



Vibrio Cholerae
(the cholera bacteria)

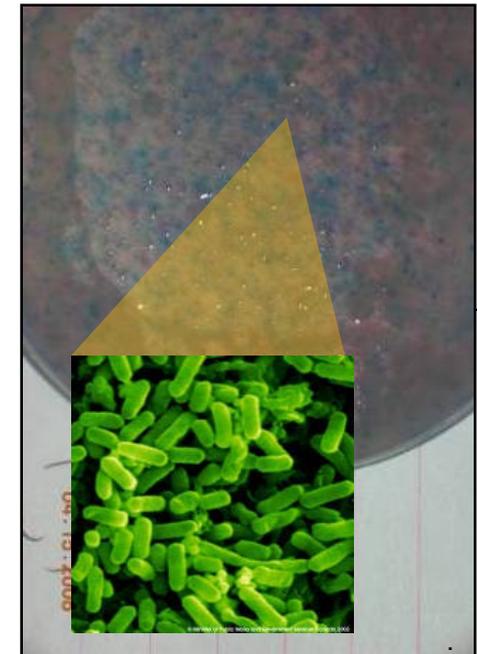
**Test before the
tap opens!**

COMPLIANCE REQUIREMENT: Fecal Coliform Testing

Fecal coliform bacteria species are not necessarily harmful themselves, but indicate that water is likely contaminated with fecal matter, and fecal-oral route pathogens may be present.

If fecal coliform is detectable in an 100ml sample, water must be treated/filtered, source of contamination eliminated, or contamination route blocked.

testing is easy and quick . . .



Test dish showing fecal coliforms (purple) and non-fecal coliforms (pink). Inset is magnified image of fecal coliform bacteria

Health Threat:

Arsenic in Groundwater

- ❖ A potent & bio-accumulative poison → skin lesions, neurological disorders, skin lesions, heart & lung disease, cancer
- ❖ Occurs naturally in geologic formations and can move into groundwater
- ❖ No way to predict which formations contain arsenic. May be significant variations within an aquifer.
- ❖ Can be mobilized by human-induced changes to hydrology (mining, irrigation, flood control)
- ❖ In 1980s, widespread poisoning in Bangladesh/West Bengal (India) highlighted the issue

Poisoning occurred when villages switched from surface water to “cleaner” tube wells

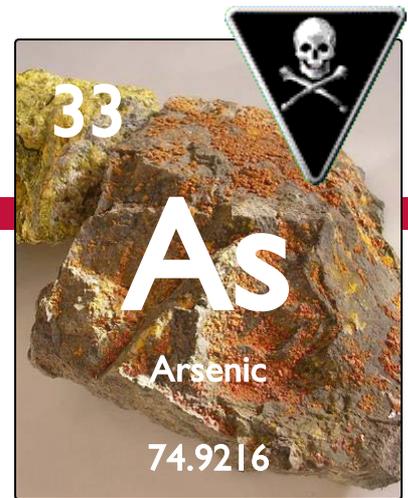


Photo: UNESCO-IHE



Photo: USGS

Skin condition typical of advanced arsenic poisoning (China)

**Test before the
tap opens!**

COMPLIANCE REQUIREMENT: Arsenic Testing

USAID policy requires:

TESTING of water supplied by any USAID-funded well/borehole for **INORGANIC** arsenic:

- **Test initially** (prior to public provision of the water and after the borehole “stabilizes”)
- **Test quarterly** thereafter for 4 quarters.

If arsenic is at **ANY** time over 10ppb, test must be re-done by a qualified laboratory. If the result is confirmed, the well must be decommissioned.

Tests must be performed on **EVERY** well.

**Arsenic cannot be removed by common
filtration or boiling**

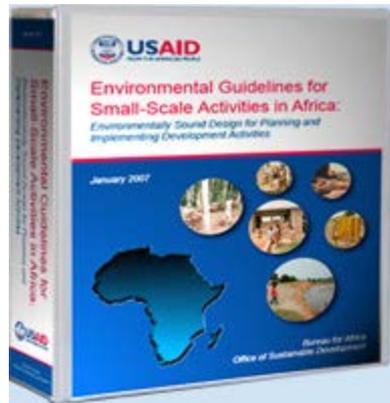


Photo: www.hach.com



IEEs require “Good practices” for small scale watsan activities

IEEs often define good practices by reference to the *Sector Environmental Guidelines*



The basic minimum of “good practice” has been distilled into the **Visual Field Guide**—but this is not a substitute for the full *Guidelines* chapter.



Version: 1 December 2009
download at www.encapofice.org/sectors/watson.htm
comments and corrections to encapinfo@codmugroup.com

ENCAP Visual Field Guide: WATER SUPPLY for quick identification of serious environmental concerns in small-scale water supply activities

About the ENCAP Visual Field Guide Series

ENCAP Visual Field Guides are intended for use during field visits by USAID and Implementing Partner staff who are not environmental specialists.

They are intended to ensure that the most common serious environmental deficits in activity design and management are quickly and easily identified for corrective action.

Note that an activity may be subject to environmental design and management conditions specified in its Environmental Assessment or Initial Environmental Examination but not captured in this document.

The field guides complement the more detailed guidance found in USAID's Environmental Guidelines for Small-Scale Activities in Africa.

Consult the Guidelines for guidance regarding remedies, mitigation and corrective actions.

The Guidelines are available at www.encapofice.org/qs02a.htm.

Disclaimer: This field guide was prepared by The Cadmus Group, Inc. for International Resources Group, Ltd. (IRG) under USAID Africa Bureau's Environmental Compliance and Management Support (ENCAP) Program, Contract Number EPP1-00-03-00013-00, Task Order No. 11. Its contents are the sole responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government.

PROBLEMS: A “YES” answer to any of the following indicates an environmental deficit in activity design or management. For USAID-funded activities, corrective action will be required. Notify the Chief of Party and the USAID Project Manager.

1. Is a tank or well supplying water for domestic use uncovered?	Issue: Easily results in contamination of water with pathogens. Can provide breeding habitat for disease vectors, including mosquitoes. (Photo depicts uncovered well.)
YES	
NO	
2. Is there stagnant water around the water supply point?	Issue: May provide habitat for disease vectors and attract livestock (see below). There is a high likelihood that stagnant water around a shallow well will contaminate water in the well.
YES	
NO	
3. Do livestock share the water supply point?	Issue: Easily results in contamination of water with livestock feces & body fluids. May attract disease vectors (particularly flies) which are themselves a source of contamination.
YES	
NO	
4. Is there soil erosion in the vicinity of the water supply point?	Issue: Usually reduces the service period of the supply point by undercutting concrete aprons, well covers, and pump footings. Often leads to stagnant water around the supply point (see question 2, above).
YES	
NO	

(Over)

Partners then translate the general IEE condition into specific practices in their EMMP



What about **LARGE SCALE** WatSan activities?