

December 2003

## **Guidelines For Determining the Arsenic Content of Ground Water in USAID-Sponsored Well Programs in Sub-Saharan Africa**

Note: These guidelines are derived from draft Agency-wide guidelines prepared by the Bureau for Economic Growth, Agriculture and Trade in 2001. As of December 2003, the Agency-wide guidelines were still in draft form, and no efforts were underway to finalize them. Nonetheless, the Bureau for Africa Office of Sustainable Development recommends that these guidelines be followed for all USAID programs in the Africa region, and compliance with these guidelines is being mandated in all Initial Environmental Examinations for activities wherein well drilling is contemplated.

### *1. Background*

Over the last few years, considerable information has been shared about arsenic problems in the Ganges basin of Bangladesh and India (see WHO Fact Sheet attached as Annex A). This resulted in a cable being sent out by the U.S. Agency for International Development (USAID) in 1998 (cable attached as Annex B). Subsequently, USAID has evaluated approaches in the Agency's ground water development efforts to prevent similar consequences arising in USAID development activities.

In order to protect the beneficiaries of USAID-sponsored well drilling programs from long-term arsenic ingestion, all contractors, grantees, or cooperative agreement groups must follow the protocol below in assuring that safe water is being supplied, and meeting U.S. Environmental Protection Agency (USEPA) standards.

### *2. USEPA standard for arsenic in drinking water*

On January 22, 2001, the USEPA adopted a new standard for arsenic in drinking water at 10 ppb (10 micrograms per liter), replacing the old standard of 50 ppb. The rule became effective on February 22, 2002. USEPA regulations on arsenic are available at the following URL: <http://www.epa.gov/safewater/arsenic.html>

### *3. Criteria for selecting which wells to test in a common aquifer.*

One cannot usually be sure of a homogeneous structure within an aquifer. Aquifers often consist of separate geologic units with different geochemical properties. Thus, USAID requires that each well be tested.

#### *4. Timing and extent of sampling required*

After installation is completed, the well should be pumped and tested. Samples for arsenic analysis should be taken once water that is representative of the aquifer is found, i.e., once equilibrium conditions have been established (rather than stagnant water around the well, or water that has been affected by drilling). A suggested time for the first sample would be when the temperature, pH, and conductivity measurements are stable (as determined by field probes). New wells should be sampled initially and each quarter for a total of 4 quarters. At this point USAID would turn over any additional sampling and analysis results to the local authority. Should the funds in the project terminate before all required sampling has been completed and samples analyzed, it will be the responsibility of the USAID Mission to assure that sampling and analysis is completed.

#### *5. Analysis of samples*

At the present time there is one field kit that USAID will accept for use in measuring arsenic in the field, the Hach Arsenic Kit, which appears to be reliable in measuring arsenic down to the U.S. standard of 10 ppb (see Annex C for information about this kit). If a sample should show >10 ppb by the field kit test, USAID will require that a qualified laboratory conduct an analysis on this well. The laboratory selected must be one approved by at least one of the following persons: the Bureau Environmental Officer, the Regional Environmental Officer (or Advisor), the country Mission Environmental Officer, or the country Food for Peace Officer.

*Annex A: WHO Fact Sheet, "Arsenic in Drinking Water"*



"WHO Fact Sheet No  
210 May 2001.doc"

*Annex B: USAID cable on arsenic testing, May 12, 1998*



arsenic cable  
051298.doc

*Annex C: Hach Arsenic Kit information*



Hach kit  
observations.doc



HACH response.doc



HACH kit paper.doc



HACH kit photo.jpg