

IUPAC Project Progress Report

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Project number: 2004-017-1-500

Project Title: Standardization of Analytical Approaches and Capacity Building in Africa

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Report:

1. Current Status of Project: On going since August 2004
2. Progress relative to milestones: Two milestones were met. After a long delay by Ugandan officials in agreeing on a date for our IOCD team to visit Uganda; they did contact us and welcomed us to come.
3. Since our last status report dated June 2005, substantial progress has been made. With funding from IOCD, the US National Academy of Sciences and IUPAC, IOCD has completed work on phases 1 and 2 of the project and hope to begin work on phase 3.

The IOCD team of four chemists visited Uganda in October 2005 where, in collaboration with the Ministry of Tourism, Trade and Industry (MTTI), they worked with the chemists and administrators of the Uganda National Bureau of Standards (UNBS) gathering information needed to evaluate the capacity of the UNBS designated laboratories to perform official analytical methods and obtain results that would be acceptable internationally.

In phase 1, IOCD asked UNBS to obtain information from the designated laboratories on the products they test, the methods used, and the countries to which the products should be exported. A questionnaire prepared by Dr. Geoffrey Kamau used 10 questions to help gather this information. The resulting data were very helpful but not complete. We found the web sites of the laboratories useful to determining the government's intentions of future exports.

In phase 2, IOCD arranged two visits of team members to Uganda. Two members (Dr. Malin Akerblom, Uppsala University, Sweden, and Dr. Geoffreu Kamau, University of Nairobi, Kenya) were in Uganda in July 2005, while four members (Dr. Patrick Wilson, FDA, Office of International Affairs, USA; Dr. Albert Pohland, FDA Retired, & AOAC International, USA; Dr. Geoffrey Kamau, University of Nairobi, Kenya; and Dr. Walter Benson, FDA, Retired & IUPAC Associate Member, DCE, IUPAC (2006-07) USA) were in Uganda in October 2005. Dr. Nelson Torto, University of Botswana, Botswana, had visited Uganda in 2004 as an emissary of IOCD to present the proposal for this project to the government.

During their October 2005 visit, the IOCD team obtained the following information:

A. Two of the eight laboratories were private and operated well using official methods with products intended for export. The few problems they had were addressed on the spot. One company (Chemiphar) is completely foreign owned.

B. Three of the eight laboratories generally speaking do not analyze products for export: (1) the Water Resources Management Department Laboratory analyzes drinking water for local consumption; (2) The analytical chemistry department at Makerere University is devoted to training of future analytical chemists; and (3) the Uganda National Drug Authority analyzes imported medicines, some local plants containing drug ingredients, and tests condoms.

C. The remaining three of the eight laboratories, after improving their Quality Assurance (QA), or Good Laboratory Practice (GLP), do have potential to undertake the testing of products for export:

(1). Uganda National Bureau of Standards (UNBS): this laboratory has some rented laboratory space and a well trained chemistry laboratory director, but lacks space for expansion, lacks additional trained personnel, lacks modern equipment needed to perform official methods efficiently, and lacks a complete QA system. Its office space is adequate and it has plans to set up the expensive, but still unopened, GC/MS. It needs to be connected to modern, up-to-date literature methods, such as those in, e.g., AOAC International. The chemistry laboratory of UNBS is performing a few basic tests -- pH, single metal analysis by AAS, optical rotation, titrations, etc., but it does not have a means to repair its equipment rapidly and inexpensively. The UNBS laboratory for testing microbiological contamination of samples is certified and has a good reputation, but it was closed for repairs while we were visiting.

(2). The Government Chemist (GC) had spacious grounds and laboratories, trained chemists, functioning equipment, adequate office space, adequate funding, an advanced pesticide laboratory and plans to expand. It mainly performs analyses on local samples from the police and local clients. It has a good grasp of the regulatory requirements and use of official methods. In our judgment, it could expand into analyzing products for export.

(3). The Uganda Industrial Research Institute (UIRI) is a parastatal, government laboratory that could work for industry. Its laboratories are large and stocked mainly with analytical equipment in need of repair; they lack staff and funds. We saw little evidence of QA. The Chinese government sent a scientist to UIRI for 4 years together with laboratory equipment. A modern nitrogen analytical system for proteins appeared to function correctly. UIRI seems to have little contact with Ugandan industry but performs some analyses for UNBS.

Conclusions:

- All the laboratories have problems with repairing equipment and ordering chemicals in a timely manner;
- Competition between government labs and between industry and government emerged while we were there. This may keep them from cooperating with each other;
- Universities must offer courses and carry on research so that they train chemists in areas needed in government and industry. We believe that the IUPAC scientists, who will visit Uganda under the provision of \$10,000.00 that IUPAC has made for cooperation with IOCD in this project, could have a major impact by offering training in QA, QC, GLP, GMP, Accreditation, etc. to Uganda's industrial, government and university chemists and microbiologists.

In regard to phase 3 of this project, IOCD is waiting for the request from the Ugandan government (MTTI) to provide support to their laboratories.

To date, IOCD has used only funds obtained from the US National Academy of Sciences, but no IUPAC funds.

4. Projected completion date. (Documents ready for external review).

This is still not known. An interim report was sent to the Ministry of Trade, Tourism and Industry (MTTI). We are waiting for a reply.

5. List intended outputs:

A presentation of progress on the project was made to the IOCD Executive Committee in April 2006.

6. Will the project be complete within 6 months?

Probably not. We may need to request an extension of the completion time to use the funds from IUPAC if progress in this unique approach to helping chemists in developing countries is not made soon.

7. Identified new problems:

Delays are being experienced. However, we are not sitting on our hands. We have a consultant from Uganda working with us to facilitate our involvement in Phase 3. For Kenya (after Uganda) we have a Kenyan chemist on our team and have already made a survey for Phase 1 in Kenya, which will commence once we complete work in Uganda.