



PRESIDENT'S MALARIA INITIATIVE

## INDOOR RESIDUAL SPRAYING FOR MALARIA CONTROL



# Quarterly Report

Indoor Residual Spraying (IRS) for Malaria Control  
Indefinite Quantity Contract (IQC)

January 1, 2008 - March 31, 2008

Contract GHN-I-01-06-00002-00

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RTI International is dedicated to conducting research and development that improves the human condition by turning knowledge into practice. With a staff of more than 2,500, RTI offers innovative research and technical solutions to governments and businesses worldwide in the areas of health and pharmaceuticals, education and training, surveys and statistics, democratic governance, economic and social development, advanced technology, energy, and the environment. The second largest independent nonprofit research organization in the United States, RTI maintains nine offices in the U.S., five international offices, and one international subsidiary, as well as project offices around the world.

RTI International is a trade name of Research Triangle Institute.

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The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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## Acronyms

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ASACO	Association de Santé Communautaire
CAUSA	Crown Agents USA
CCF	Christian Children's' Fund
CDC	Centers for Disease Control
CFA	Central African franc
CFR	Code of Federal Regulations
CO	USAID's Contracting Officer
COP	Chief of Party
CNAC	National Committee for the Registration and Control of Pesticides
CNIECS	Centre National Information et d'Education du Ministère de la Santé
CREC	Center for Entomological Research of Contonou (Benin)
Crown	Crown Agents
CSCOM	Centre de Santé Communautaire (community health center)
CSREF	Centre de Reference
CS	Capsule suspension
CTO	USAID's Cognizant Technical Officer
DDS	Direction Departemental de la Sante de Oueme (Benin)
DDT	Di-chloro Di-phenyl Tri-methyl Chloride
DHE	District health educator
DHMT	District Health Management Team
DHT	District Health Team
DNACPN	Direction National du Contrôle de la Pollution et de la Nuisance
DOMC	Kenya Division of Malaria Control
DPS	Provincial Department of Health
DPV	Plant Protection Division (Senegal)
DRS	Direction Regional de la Santé
EA	Environmental assessment
EIA	Environmental impact assessment
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization
FY	Fiscal year
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GHC	Ghanaian cedi
GHS	Ghana Health Service
GIS	Geographic information system
HCC	Health Communications Center (Rwanda)
HCP	Health Communication Partnership
HOTM	Home office technical manager
ICON	Brand of Sygenta insecticide (available in WP and CS formulations)
IEC	Information, education and communication
IQC	Indefinite quantity contract
IRS	Indoor residual spraying
ITNs	Insecticide treated nets
IVM	Integrated vector management
KAP	Knowledge, attitude and practices
LATH	Liverpool Associates in Tropical Health
LLN	Long-lasting (pesticide-treated) net

L	Liters
LNA	Logistics needs assessment
LSTM	Liverpool School of Tropical Medicine
M	Meters
MCP	Malaria Control Program
M&E	Monitoring and evaluation
MACEPA	Malaria Control and Evaluation Partnership in Africa
MOA	Ministry of Agriculture
MOE	Ministry of Environment
MOH	Ministry of Health
MOHP	Ministry of Health and Population
MOP	Malaria Operational Plan
MOU	Memorandum of Understanding
MRTC	Malaria Research and Training Center
MSD	Ministry of Social Development
NBO	Nairobi Regional Office
NEMA	National Environment Management Authority
NGO	Non governmental organization
NMCP	National malaria control program
NVCC	National Malaria Control Centre (Zambia)
ORHB	Oromia Regional Health Bureau (Ethiopia)
ONE	Office National de l'Environnement
PEA	Programmatic environmental assessment
PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
PNLP	Benin, Mali and Senegal National Malaria Control Program
PNILP	Rwanda National Malaria Control Program
PMI	United States President's Malaria Initiative
POP	Persistent organic pollutants
PPE	Personal protection equipment
PSI	Population Services International
RBM	Roll Back Malaria partnership
REMA	Rwanda's Environmental Management Agency
RFP	Request for proposal
RWF	Rwandan franc
RTI	RTI International
SAEs	Severe Adverse Experiences
SEA	Strategic environmental assessment
SLP	Service de Lutte contre le Paludisme
SO	Strategic objective
SOW	Scope of Work
STTA	Short-term technical assistance
TA	Technical assistance
TDY	Temporary Duty (in country)
TO	Task order
TOT	Training of trainers
TRACplus	Training and Research AIDS Center
UCAD	Universite Cheikh Ante Diop (Senegal)
UNICEF	The United Nation's Children's Fund
U.S.	United States of America
USD	United States dollar

USAID	United States Agency for International Development
WHO	World Health Organization
WHOPES	World Health Organization Pesticide Evaluation Scheme
WP	Wettable powder

## Introduction

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RTI International (RTI) was awarded the Indoor Residual Spraying (IRS) Indefinite Quantity Contract (IQC) on September 29, 2006, to respond to task order GHN-I-01-06-00002-00. This IQC reflects a new and substantial commitment from the United States Agency for International Development (USAID) to support the use of an effective malaria control intervention in Africa.

Funded by the United States (U.S.) President's Malaria Initiative (PMI) through USAID, RTI is providing technical and financial support to countries supported by the PMI to expand the use of IRS as an intervention for malaria prevention and control.

The main objectives of the project are to:

- Introduce the appropriate, effective, and efficient use of IRS in African countries not previously using it as part of systematic control programs.
- Provide technical assistance to improve the targeting and effectiveness of IRS programs in countries that already use the method.
- Provide financial assistance and procurement support alone to countries that have an established capacity for implementing strong IRS programs, but lack the resources and mechanisms to fully cover their populations at risk for malaria.
- Develop the capacity of public health institutions, municipal and district governments, and (where appropriate) private sector companies to implement IRS programs by systematically transferring greater responsibility and authority to such institutions with each round of IRS supported under the IRS IQC, and by relying on host country staff to the maximum degree possible in each assisted country; and
- Dramatically improve the transparency and quality of current government and industry practices for procurement, technical support, safety, and environmental compliance by setting examples of excellence and establishing clear standards for participation in work under the IRS IQC.

This quarterly report presents the program's progress towards achieving these objectives, and the report is divided into program management and individual country sections. This report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

# Project Management

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RTI continued adding staff on the IRS project to meet the growing work load as IRS programs start-up in seven PMI “year three” countries. The USAID Cognizant Technical Officer (CTO) gave RTI approval to proceed with the most critical positions in Nairobi, while discussions continue on the full staffing plan and budget for the project’s regional office.

## ***Project Management***

### *Nairobi Regional Office*

RTI took the following actions:

- Ms. Dorcas Wainaina reported for work as the Regional Human Resources Manager in January.
- Mr. Jamie Adrian was hired as the Head of Administration for the regional office in January.
- Mr. Autman Tembo and Mr. Gaspard Bikwemu were hired to serve as Environmental Compliance Inspectors and started work in March.
- Ms. Alice Otiato was hired in March to serve as an Operations Manager.
- Ms. Catherine Ngugi, who has previously served on the IRS project as Acting Chief of Party in Mozambique and as a technical advisor in Uganda, has agreed to transfer to Nairobi as an Operations Manager in early April.

Barbara Kennedy, RTI’s Vice President for International Health, is coordinating planning for the Nairobi regional office, including developing a full staffing plan and budget, recruiting, and revising job functions for US-based staff (task managers and project administrative specialists) to ensure that the project maintains an effective and optimal allocation of duties as the regional office expands to take on more operational authority. Ms. Kennedy is also leading the effort to recruit a Deputy Director for the IRS project, who will be based in Washington, DC.

Our lead managers in Nairobi, Dr. John Chimumbwa and Kim Canelas, received official work visas from the Government of Kenya, resolving a long-standing issue with their official status.

Nairobi office operations were interrupted for about two weeks in early January as a result of civil unrest following Kenyan elections in late December. RTI prepared a contingency plan for continuity of operations and evacuation of expatriate staff and families in the event such actions might be required in the future.

### *General Waivers Requested*

In January, RTI requested that the Contracting Officer (CO) and CTO waive the requirement for USAID approval of all personnel, retaining only the requirement for approval of key personnel. In February, the CO waived the requirement for CO approval of project personnel other than key personnel. In March, the CTO waived the requirement for CTO concurrence for positions other than Chief of Party and senior technical positions.

In March, RTI requested that the CO waive the 000 authorized geographic code for commodities, and substitute in its place authorization to purchase commodities under geographic code 935. This request is still pending action.

### *Subcontractors*

**Crown Agents.** During the previous quarter, RTI suspended issuing further task orders to Crown Agents USA until the USAID CO obtained clearance from the Department of Labor indicating that Crown Agents USA had satisfied the requirements of FAR Clause 52.224-24. This clause requires that RTI obtain an affirmative showing of compliance with the Department of Labor's Equal Employment Opportunity regulations before awarding work in excess of \$10 million to any subcontractor. In January, the CO notified RTI that Crown Agents USA had been listed on the Department of Labor's EEO registry and authorized RTI to issue subcontracts to Crown Agents up to a new ceiling of \$25,185,737.

**Liverpool Associates in Tropical Health.** RTI is preparing a new task order for Liverpool Associates in Tropical Health (LATH), to mobilize the full value of the institution's expertise in support of the IRS project. Previously, RTI has attempted to issue individual task orders to LATH for work in single countries; this mechanism has proved cumbersome and administratively expensive to LATH. The new task order will include a broad scope of work under which LATH can mobilize its staff and consultants at a lower administrative cost. RTI has discussed the scope of work with USAID's IRS Technical Advisor and will provide it to the CTO for formal approval before it is issued.

The proposed task order will include the following components:

#### *Technical Support for Insecticide Selection and Resistance Management*

- Workshops to reach consensus among PMI stakeholders (USAID, CDC, WHO, and government officials of PMI countries) on criteria and processes for selecting IRS insecticides and preparing resistance management plans. LATH will propose objective criteria upon which IRS insecticides should be evaluated for potential use under country-specific settings and means by which rational preferences among them should be established.
- National-level consultations with ministries of health and other stakeholders to support their consideration of candidate insecticides and help prepare a resistance management strategy. Assist the selection committee in documenting the rationale for their selection, the full list of insecticides deemed appropriate for IRS in the country and the agreed resistance management scheme for the country.
- Technical support for entomological surveillance and lab capacity.
- Reach agreement with PMI stakeholders on the minimum requirements (and, if different, allowable additions) for entomological surveillance.
- Work with national malaria control programs, national institutes, and other stakeholders (e.g. CDC entomologists) to design country-specific entomological surveillance programs.
- Inspect existing insectories and entomology laboratories and prepare plans for improving such facilities.
- Train field and lab technicians.
- Where appropriate, direct or supervise field data collection and manage the resulting data to ensure that minimum surveillance requirements are met.

### *Cost and Cost-Effectiveness Analyses*

- Review project procedures for capturing cost data and identify additional data needs to support cost and cost-effectiveness analyses.
- Consult with USAID to select several PMI countries for which cost and cost-effectiveness analyses will be prepared over the course of the project.
- Complete the analyses and prepare reports of the findings and recommendations. Disseminate the finding via reports, briefings, and publications.

### *Reporting*

In February, RTI released the first issue of the IRS Update, a quarterly newsletter intended to provide news and technical information concerning the IRS project to the broad audience of PMI stakeholders. The newsletter will include summaries of recent activities by country, as well as current charts summarizing IRS coverage by country, anticipated spray schedules for the next six months, and a cumulative chart of the number of households sprayed to date. The October-December 2007 issue (see Appendix 2) was distributed via the CTO. For future issues, RTI can continue this practice or disseminate the newsletter directly to USAID, CDC, and host country stakeholders. Consistent with the approved branding strategy and marking plan, the newsletter includes only the PMI logo and does not promote RTI specifically.

### *Internal Review by RTI's Risk Management Committee*

In February, RTI's Risk Management Committee met to consider the full range of potential risks to which RTI is exposed as prime contractor for the IRS Project. The committee's primary concern focused on the request from USAID to support application of DDT in Uganda, including taking full responsibility for purchase, receipt, shipping, storage, stock control, application, and waste disposal associated with IRS operations in Apac and Oyam districts. The committee also considered financial, physical (e.g., vehicle accidents and pesticide spills), and reputational risks associated with the project. Gene Brantly and IRS project staff met with committee staff to prepare for the session and presented a detailed briefing to the committee. The Risk Management Committee issued a formal decision approving of RTI's support for use of DDT in Uganda. It also instituted an independent review process to provide ongoing oversight of environmental compliance issues on the project.

### **Technical Progress**

#### *IRS Training Manual*

As previously reported, Dr. John Chimumbwa prepared a draft IRS Training Manual during the last quarter and the manual was tested during training programs in several countries. Ms. Melanie Biscoe and Dr. Jacob Williams made substantive revisions to the manual late in 2007 and into this quarter, adding material on environmental compliance. Dr. Chimumbwa made additional revisions early this quarter to incorporate improvements from the trial uses of the manual. RTI then submitted the draft manual to USAID's IRS Technical Advisor, Dr. Michael Macdonald, for his review and comment. We will continue to use the manual in its present form, pending revisions in response to comments from USAID and other stakeholders (e.g., CDC).

## *Environmental Assessment and Compliance Procedures*

RTI reviewed its experience to date with environmental assessments and compliance audits, in part in response to specific issues and also in preparation for the internal RTI Risk Management Committee meeting mentioned above. Project staff noted the following issues and required actions.

- Many of the supplemental environmental assessments (SEA) RTI prepared during the first two years of PMI were limited in scope to one or a small number of pesticides, and all were limited to the specific geographic areas (e.g., districts) in which IRS was anticipated at that time. Most of the SEAs will need to be amended during the coming year to broaden the number of pesticides addressed and geographic coverage. For countries considering a national-scale expansion of IRS (e.g. Uganda and Tanzania), a new, two-step mechanism may be preferable, under which USAID and the cognizant national environmental authorities approve a national-scale SEA with provision for subsequent, district-specific mitigation plans.
- Staff noted two recurring problems with review and approval of environmental assessments.
  - With regard to USAID approval of SEAs, there were a few instances of long delays between completion of draft and final versions of an SEA. These were mostly due to long waiting periods for comments from USAID mission environmental officers, coupled with a lack of active follow-up by RTI. This will be remedied by using a tracking sheet for SEA status and more assertive follow-up through the CTO.
  - There were three instances – in Mozambique, Madagascar and Malawi – in which RTI proceeded with IRS operations without first receiving approval of the draft SEA from the cognizant national environmental authority. In both cases, USAID had approved the SEA and there was confusion about whether the national environmental agency needed to or intended to actually review and comment on the SEA. The SEA process includes an interview with officials of the national environmental agency to determine whether they wish to review and approve the SEA prepared for USAID, or require that a separate Environmental Impact Assessment be prepared. In the future, RTI will document the results of this interview in a follow-up letter and will seek the USAID mission’s assistance in obtaining written verification from the cognizant official of the understanding reached.
- Staff also noted there were several instances in which preparatory steps needed to ensure full compliance with the SEA requirements for mitigation had not been completed prior to operational launch (e.g., failure to train local clinical staff in procedures for treating pesticide poisoning [Malawi, Ethiopia]; failure to require pre-service pregnancy tests from all of the women applying for spray operator positions [Mali, Ethiopia]; failure to obtain fire extinguishers and other equipment for storage locations [Ghana, Kenya, Senegal]; failure to train long haul and short haul drivers on safe transport of pesticides [Ghana, Mozambique and Ethiopia]; lack of drugs in the district health facilities to treat pesticide acute exposure incidences [Mali, Senegal, Ethiopia, Benin]; or the delay in the construction of evaporation tanks for DDT wash water forcing the need to improvise in disposal of the waste water using plastic barrels [Mozambique, Ethiopia, Zambia]. To

address this issue, RTI has instituted a new requirement for a pre-launch environmental compliance inspection to determine that all of the preparatory steps have been completed, or identify specific additional steps that are required concurrently with program launch.

### *Environmental Monitoring*

Gene Brantly and Robert Truesdale of RTI worked closely with Elissa Beerbohm of USAID to develop an agreed scheme for environmental monitoring that should be implemented in any country that uses DDT in its IRS program. RTI prepared a monitoring plan and quality assurance plan specifically for Uganda. Ms. Beerbohm circulated a summary of the proposed scheme within USAID and met with mission and bureau environmental officers to gather comments. RTI expects to plan environmental monitoring programs for Zambia, Mozambique, and Ethiopia in the next quarter, once the general scheme has been approved.

### *Work Plans*

The CTO has emphasized the need for RTI to complete fiscal year 2008 work plans and budgets for each of the PMI countries receiving assistance under task order one (TO1) of the contract. RTI task managers are preparing the documents, based on best available information from the Chiefs of Party, USAID, and counterpart agencies. RTI will complete work plans early in the next quarter for Uganda, Mozambique, Ethiopia, Mali, Benin, and Ghana, followed by Angola, Senegal, and Madagascar. RTI will await further guidance before preparing work plans for Rwanda, Malawi, Zambia, and Liberia. Support for Kenya and Tanzania/Zanzibar is provided under other contracts.

### ***Financial Progress***

From January to March 2008, the IRS TO1 project incurred \$5,946,522 in costs. Total project costs incurred contract-to-date as of March 2008 were \$20,857,287 against funds received of \$37,759,717. Appendix 1 provides more detailed information on financial status.

# Angola

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In June 2005, Angola was selected as one of the first three countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). PMI and the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM) funded the first large-scale indoor residual spraying (IRS) program in more than 10 years in Angola from December 2005 to March 2006.

Working initially under the U.S. Agency for International Development (USAID) Integrated Vector Management (IVM) project, RTI assisted the Angolan National Malaria Control Program (NMCP) with its IRS program. Activities supported by PMI and managed by RTI in Angola in 2006 and 2007 included spraying of 110,000 houses, protecting a total population of more than 613,000 in three southern provinces, Huila, Cunene, and Namibe. More than 85% of the houses targeted for spraying during this time were sprayed.

RTI is tasked with providing strategic, technical, management and operations support for IRS activities in these provinces. In addition, RTI will work with the NMCP to help them strengthen their malaria case detection and epidemic response capabilities. As such, RTI will support the NMCP to develop an early warning system for malaria cases and will strengthen its diagnosis of malaria by supporting the development of entomological monitoring capabilities and building of an insectarium.

This quarterly report presents the program's progress towards achieving these objectives in Angola from January through March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

RTI resumed round three operations in Lubango and launched the IRS program in Huambo during this reporting period. At the close of the last quarter, RTI expected to be able to conduct IRS operations in both locations starting in January 2008. Extended delays in the receipt of insecticide and, to a lesser degree, compression sprayers and personal protective equipment, delayed the launch of IRS operations in Huambo until March 18 and the resumption of spray operations in Lubango until March 24. As of the end of this period, operations were underway in both locations with agreed operational plans to complete spraying the target number of households by the end of April.

### ***Planning and Assessment***

RTI project staff in Angola performed the following planning and assessment activities during this reporting period.

- The Chief of Party, Mr. Antonio Muhungo, and the Operations Officers for Huila and Huambo Provinces conducted micro-planning meetings with local administrations and provincial health teams.
- Mr. Muhungo met with the Provincial Health Director (DPS) and Provincial Supervisor for Malaria Control for Huambo in January and February. He also met with the Deputy Administrator for Huambo to discuss how to involve the local community in the IEC and monitoring of IRS.

- The operations officers for Huambo and Huila (RTI's local site managers) held frequent meetings with local administrations and provincial health teams, including the WHO Provincial Malaria Advisors, to update them on plans and preparations for IRS.
- Mr. Muhungo prepared several iterations of operational plans and schedules for Huambo and Huila, as the start date for IRS operations was pushed back because of delays in the arrival of required commodities and their release from customs. As of March 31, Mr. Muhungo had submitted revised operational plans for continuing spray operations through April to meet the coverage targets in both locations.

### ***Procurement and Logistics***

As previously reported, RTI's team in Angola conducted the logistics and operations assessments for round three in July-August 2007 for Huambo, and in September-October 2007 for Huila. The 2008 PMI Malaria Operating Plan, approved in October, confirmed the decision to use ICON CS in Huambo province. RTI ordered the required pesticides, spray pumps, and personal protection equipment (PPE) in mid-October. The order included sprayer replacement parts and insecticide for use in Huila, and a full complement of sprayers, PPE, and insecticide to establish IRS operations in Huambo for the first time.

RTI arranged to purchase the ICON insecticides and Hudson compression sprayers from Sheba, the only local distributor registered for these products in Angola. RTI also arranged for Sheba to serve as the consignee for shipments of PPE items RTI purchased via international tender, since RTI is not registered as an importer in Angola. At the time of the initial order, Sheba indicated the additional ICON WP needed for Huila would be delivered in November and other commodities needed for Huambo would be delivered within six weeks, by the end of December. The projected arrival date proved overly optimistic, given heavy demand on available supplies of ICON CS and complications with shipping and customs clearance procedures in Angola.

All of the PPE, spray pumps, and insecticide eventually arrived in Angola by February 21, after a series of predicted and missed dates for delivery. PPE and spray pumps were cleared from customs during the week of February 25 and were immediately transferred to Huambo. The shipment of ICON CS was released from customs on March 14 and was also transferred immediately to Huambo, where IRS operations were launched the following week. The shipment of ICON WP for use in Huila province was released from customs on March 26 and was transferred immediately to Lubango.

### ***IEC Development and Implementation***

#### *IEC Material Design and Development*

The PMI IRS project in Angola is currently using information, education, and communications (IEC) materials that were developed by RTI in 2006, in collaboration with the NMCP, to support the first PMI-supported spraying in Angola.

#### *Training for IEC Mobilizers*

RTI oversees all aspects of the IEC program associated with IRS in Angola, including local recruitment, training, and mobilization of IEC mobilizers. As previously reported, Mr. Muhungo, the provincial IRS coordinators, and the M&E officer trained the IEC trainers in

December 2007, and this cadre provided training to 145 mobilizers in Huila and Huambo provinces.

### *IEC Campaign Implementation*

The IEC campaign was launched in January in Huambo province with the expectation that spray operations would start soon thereafter. By February 19, mobilizers had visited approximately 56,000 houses and had spoken with more than 100,000 residents. By March 4, the teams had visited an additional 9250 houses and spoken to 21,000 more residents. When spray operations were finally launched in mid-March, mobilizers were assigned to IRS spray teams to alert the “beneficiary committees” in each compound of the expected date when each area would be sprayed and to refresh communication of the key messages regarding how to prepare houses, how long to remain outside, reentry procedures, and cautions not to replaster walls until after the risk of malaria transmission had passed.

The IEC campaign in Huila was substantially completed in November and December in anticipation of spray operations originally scheduled for mid-November. Because residents of Lubango are already familiar with IRS because of spray rounds in the previous two years, the program relied primarily on radio spots, local administrations, and “beneficiary committees” to alert residents of the restart of spraying in late March 2008, with plans to continue through April.

### ***Spraying Operations***

#### *Geographic Reconnaissance and Detailed Planning*

Beginning the week of February 25 and continuing through the start of operations in late March, IRS brigade supervisors and team leaders conducted technical reconnaissance and mapping in the eight compounds of Huila to be sprayed. The local government administration in Huila guided the reconnaissance teams. RTI and provincial health staff also conducted reconnaissance visits to Chibia, a municipality in Huila Province being sprayed for the first time under this program.

#### *Environmental Mitigation and Compliance*

During the week of February 11, Dr. Francisco Saute visited the IRS operation site in Huila province. One purpose of his trip was to evaluate actions taken to comply with the recommendations made by environmental inspectors during an audit the previous quarter. Dr. Saute was satisfied that all of the requested actions had been implemented.

An amendment to the Initial Environmental Evaluation (IEE) addressing environmental mitigation steps to be taken in Huambo was signed on February 27. This satisfied a requirement clarified by the Regional Legal Advisor and Regional Environmental Advisor during a trip to Angola in the previous quarter, and cleared the way for IRS to start in Huambo.

Also in this quarter, Mr. Muhungo met with the Provincial Public Health Department (PPHD) in Huila to review appropriate measures to deal with accidental insecticide poisoning. The provincial supervisor for vector control in Lubango, who is knowledgeable on the topic, has been assigned as the point person for incidental insecticide poisoning. The PPHD identified

appropriate topical creams and medicines, available at local pharmacies, to address any possible issues.

Mr. Muhungo also confirmed to RTI headquarters and USAID in February that all empty insecticide sachets accumulated to date had been packed and sealed in plastic drums, and were being stored safely until arrangements can be made for proper disposal.

#### *Recruitment and Training for Spray Teams*

During the previous quarter, in November, the IRS team recruited, tested, selected, and trained over 590 IRS operators, 25 brigade supervisors, 75 team leaders, and 30 field monitors in Huila and Huambo.

Due to the delayed start of operations in Huambo and the interruption of spraying in Huila, many of the operators trained in November left for other jobs or returned to school in January 2008. Those who remained participated in a “refresher training session” the week of February 18 in Huambo. RTI also recruited, trained and tested 250 new spray operators during the week of February 25 to bring the operational cadres up to full strength. In total, approximately 450 IRS operators were trained and deployed to support the IRS operation that resumed in Huila and was launched in Huambo during this quarter.

#### *Spray Operations*

As the expectations evolved concerning receipt of insecticide and equipment, RTI adjusted operating plans and schedules several times. Based on the original projected delivery dates – ICON WP for Huila in mid-November, and ICON CS for Huambo by end of December -- RTI planned to launch the program in Huila province in November and scheduled operations to begin in Huambo in early January.

When none of the additional commodities had arrived by late November, RTI adjusted plans again and launched operations in Lubango on December 3, using the limited supply of ICON WP remaining from round two. This supply was exhausted by late December.

Spray operations were launched in Huambo province on March 17, immediately after the shipment of ICON CS was cleared from customs and transferred to the operational sites. Operations were resumed in Huila Province on or about March 30, also immediately after the required insecticide ICON WP was released from customs on March 26.

Mr. Muhungo met frequently during this period with Dr. Francisco Saute (PMI USAID coordinator), Dr. Jules Mihigo (PMI CDC coordinator), and the NMCP to brief them about the status of IRS operations. As part of their regular monthly meeting, Mr. Muhungo met Dr. Saute, Dr. Mihigo, and Mr. Bart Bruins (USAID Health Section team-leader) on February 20 to brief them on the status of IRS activities and related activities. The team was informed about the delayed arrival of equipment, the loss of trained personnel, cash flow issues, and plans to complete IRS within timeframe.

At the end of this reporting period, Mr. Muhungo provided USAID and the NMCP with modified plans for completing all spray operations and meeting target coverage levels in both provinces by April 30, 2008.

## **Other Activities**

### *Entomological Monitoring*

RTI supported four distinct activities related to entomological monitoring during this quarter.

- RTI continued its support for the two government entomologists assigned by the NMCP to collect mosquitoes from selected houses in Luanda, Huila, Namibe, and Cunene to study the presence and seasonality of Anopheles mosquitoes in Luanda and the three southern provinces. RTI provided airfares, transport, and per diem for the technicians, managed the reports and stored the collected mosquitoes until they could be transferred to CDC for analysis.
- A team organized by Mr. Alfredo Armando from the Faculty of Science was mobilized to plan and carry out an entomological baseline survey in Huambo and Huila. The survey was originally planned for November 2007 but was postponed several times for various reasons, including lack of mosquitoes (November), lack of funds in country (February), and confusion over team composition and roles vis-à-vis the NMCP entomologist, Dr. Cani, and technicians responsible for conducting the routine mosquito collections mentioned above (early March). The issues concerning team composition and relationship to the NMCP were never fully resolved and the survey was cancelled for round three. RTI will attempt to reschedule an entomological survey in advance of round four in 2008.
- During the week of February 25, eight technicians being trained as “field monitors” attended sessions to learn how to perform wall bioassays, an entomological technique for verifying that walls sprayed with insecticide retain a sufficient residual concentration to kill known, susceptible mosquitoes exposed to the wall. Wall bioassays are an essential quality assurance technique for IRS. The training was conducted by the IRS field monitor superintendent, who was trained in May 2007 by biologist Dulcisária Jutamo from the “LSDI” IRS program in Mozambique. Due to a lack of Anopheles mosquitoes at the time of the original training, participants were not able to conduct bioassays following the completion of round two operations. With support from RTI, the NMCP entomologists travelled to Huila and set up a temporary insectary to produce mosquitoes for use in wall bioassays that will follow the completion of round three. Unfortunately, during this training and because the team was not able to get temperatures high enough and recreate appropriate external conditions, larvae and pupas did not develop into adult mosquitoes in sufficient quantities that would allow bioassays to be conducted.
- Following heavy rains in Ondjiva, in Cunene Province, RTI provided airfare, transport, and per diem for the two NMCP entomology technicians to visit the region, collect mosquitoes, evaluate larval breeding sites, and determine if any IRS or other malaria control interventions were warranted. The assessment was performed in late March. The entomologists did not recommend immediate action based on the first visit, but recommended a follow-up trip to continue the assessment in mid-April.

### *Insectary Building*

RTI was not able to make substantial progress on the insectary during this period. Because of the complexity of the process required for meeting USAID regulatory requirements on new construction, and the detailed steps required by RTI for planning, tendering, evaluating

offers, and awarding a contract for its construction, work on this project was deferred until the new Finance Manager had been hired.

#### *Operational Support to CDC Activities with the Ministry of Health*

During February and March, RTI worked with the CDC to plan the Luanda malaria survey. In March 2008, a CDC team of enumerators came to Angola to gather data on malaria cases reported at selected health facilities in Luanda. RTI provided administrative, logistics and financial support for the training of the enumerators and the data collection activity. The study is designed to help the NMCP determine whether malaria transmission occurs in Luanda and whether preventive interventions such as IRS are warranted in the urban environment.

#### *Partnership Activities*

In March, the PPHD in Huambo asked RTI to participate in the Provincial Committee for the Control of Malaria Vector and Medicine Management, along with WHO and Project Concern. RTI was asked to visit hospitals and health posts in Huambo in conjunction with IRS operations, to interview doctors, medics, nurses and patients to ascertain whether they were using the antimalarial Coartem. Local authorities believed malaria would only be reduced if all measures approved by the central government were complied with in an integrated approach. Since PMI was supporting both interventions, they asked RTI to visit health facilities in the areas of its IRS operations. RTI did so and reported the results of its interviews to the PPHD.

Also in March, RTI arranged to have Angola's National Strategic Plan to Control Malaria translated into English, for use by PMI partners and for distribution by the NMCP.

### **Monitoring and Evaluation**

#### *Information Collection Plan*

RTI developed a plan for daily and weekly collection of IRS coverage data. Data collection forms, which were used during the campaign to collect necessary information that would then be used for compilation, were distributed to Huila and Huambo operators.

Each province prepared and maintained an operational spray plan indicating compounds and communities to be sprayed during spray operations. During the first week, spray leaders at each operational site met at the end of the day to discuss the day's events, challenges faced, and recommendations for resolving problems. The operational site leadership team continued to have these meetings frequently and met at the end of each week, to review the week's achievements as well as planned for the following week. Where necessary the spray leadership team has made adjustments to the spray operational plan. Spray forms for the collection of household level data by spray operators were assessed and validated by the data collection process monitored and reported on a daily basis during spray operations.

Monitoring of the IRS operations was done both by the IRS team and by the NMCP.

### *Progress on Key Indicators*

As of March 29, 7,329 houses had been sprayed in Huambo, representing only 12% of the 60,000 target number of houses to be treated in the province. In Huila, for the same period, the IRS program had managed to spray 34,086 houses, or 43% of the 80,000 target number of houses to be treated. This slow progress was the result of delays in arrival and release of commodities, and deployment of fewer spray operators than anticipated once the rounds were launched. RTI planned adjustments in the number of spray operators, teams, brigades, and schedule to reach the target coverage in both provinces by the end of April.

### **Project Management and Administration**

#### *Financial Management*

The Angola team's Finance Manager resigned from the project in March 2007. For the next several months, Mr. Muhungo prepared the necessary reports and monthly account reconciliations while recruiting for to fill the open position. The recruiting effort was not successful and the position remained open for the balance of 2007.

This became a serious problem late in 2007, as the increased pace of activities once the spray season started quickly overwhelmed Mr. Muhungo's ability to keep up with necessary financial reports. Problems with mail, email, fax transmissions, and airline cancellations also compromised the Angola team's ability to assemble the required receipts in a timely manner to complete their accounting and reconciliations. RTI suspended further advances to Angola in January 2008, pending resolution of the outstanding amounts.

During this period, Mr. Muhungo restarted the process for recruiting a new Finance Manager. RTI also sent Mr. Naji Isaa, a senior finance advisor in the region, to assist the Angola team. Mr. Isaa arrived in late February, after several weeks of delay waiting for a travel visa. He then reviewed all accounting records, responded to outstanding questions from headquarters, and resolved remaining concerns. RTI reinstated normal advances to the Angola accounts in time to pay spray operators, IEC activists, and transport providers in early March for their prior services, clearing the way to resume operation when all of the commodities arrived.

Mr. Isaa also assisted with interviews of the candidates and selection of a new Finance Manager, who was hired in March.

#### *Other Staffing*

The IRS M&E Officer, Ms. Eunice António, resigned from her position at the end of February 2008. In March, RTI promoted Ms. Felismina Portugal, who had been Field Monitor and Data Base clerk, to fill the M&E officer position based in Lubango.

#### *Registration*

On January 10, 2008, RTI's local counsellors acknowledged receipt of the second submission of all authenticated documents required for RTI registration in Angola. By February 1, the counsellors reported that the request for registration had been submitted to the Ministry of Justice according to normal registration procedures. No further developments occurred during this quarter.

## **Outstanding Issues**

- The pace of spray operations in Huila and Huambo must be accelerated to achieve the coverage targets by the end of April 2008.
- Arrangements for contracting to build the insectary were deferred during this quarter until a new Finance Manager was hired. The insectary is a key requirement for strengthening the NMCP capacity for entomological monitoring and providing quality assurance for IRS operations.

## **Upcoming Activities**

- Complete round three spray operations
- Conduct inventory for spray pumps, PPE, and insecticide and place orders for additional commodities required for round four, which is proposed to start in October 2008.
- Secure construction bids for building the insectary
- Provide support as needed for ongoing CDC activities – mosquito collection in four provinces, the Luanda malaria case survey, and provincial-level training of microscopists to support improved malaria case diagnosis.

# Benin

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Benin was identified as one of the second wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). The United States Agency for International Development (USAID) and the Benin national malaria control program (PNLP) identified four epidemic-prone districts for indoor residual spraying (IRS) activities. In fiscal year 2008, the USAID and PNLP agreed to focus spraying activities in Sèmè-Kpodji, Dangbo, Adjohoun, and Akpro Missérété districts.

RTI is tasked with providing strategic, technical, management, and operations support for IRS activities in the above-mentioned districts. RTI and the NMCP will treat at least 70,000 households in the four districts during the first round of IRS which will begin in July. While most households in the target areas will be sprayed with residual insecticide, 20 to 30 percent of the target households in Dangbo and Adjohoun will receive long-lasting insecticide treated nets (LLNs) instead of IRS due to the prevalence of wetlands. This combined IRS program in these districts will protect approximately 350,000 people and at least 85 percent of the total estimated population in the targeted districts.

RTI will also implement a monitoring and evaluation (M&E) plan in Benin in collaboration with the Center for Entomological Research of Cotonou (CREC) and the PNLP. Additionally, RTI will provide support to the NMCP and to CREC by training them in IRS activities and providing guidelines to CREC in the construction of soak pits and renovation of storage facilities in the areas where CREC is working.

This quarterly report presents the program's progress towards achieving these objectives in Benin from January through March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

### *Planning and Assessment*

#### *Logistics Assessment*

Bijou Muhura, home office technical manager, and Kim Canelas, operations director, were both in-country in February and visited the target IRS communes, including those that were determined to include flood zones. During this visit, Ms. Muhura and Mr. Canelas identified warehouse space in Porto Novo, approximately 35 kilometers from Cotonou. Mr. Canelas finalized the logistics assessment after the final sites were selected.

#### *Environmental Assessment and Compliance*

The environmental assessment was conducted in January by environmental specialists Tito Kodiaga and Jeanne Chabrier. Seydou Doumbia, chief of party for the IRS project, and IRS coordinators from the PNLP and Ministry of Environment (MOE) accompanied the environmental team to all meetings. The environmental specialists noted that in Dangbo, there

were houses built on stilts and located in flood zones, creating the risk of contaminating agricultural and fishing areas. RTI requested that the CREC investigate this finding because the CREC had recommended the sites and specifically excluded a previous site (Agguege) for the same reason.

Professor Akogbeto, head of the CREC, visited the villages identified as contamination threats by the environmental specialists and concluded that they will be excluded from the spray operations. The villages encompass between 20 and 30 percent of the targeted population. Ongoing discussions are being held with the USAID/PMI/Center for Disease Control and Prevention (CDC) team to determine whether LLNs can be distributed to houses that cannot be sprayed.

The supplemental environmental assessment (SEA) was submitted to the USAID and the environmental impact assessment (EIA) was submitted to the Agence Beninoise de l'Environnement.

### *Pesticide Selection*

A document review was requested in December prior to insecticide selection. The review was funded by RTI and completed by a group of seven technicians, including entomologists, environmentalists, and agronomy engineers. The technicians concluded that the most appropriate insecticide for IRS in the target areas is bendiocarb (Ficam). This conclusion was consistent with other documents already submitted by the CREC.

After Ms. Muhura informed the Mission that bendiocarb is not registered in Benin, the Mission called a meeting to discuss registration possibilities with the Ministry of Health (MOH). Meeting attendees determined that the MOH would work with the PNLP to register the pesticide in Benin and thereby obtain either a waiver for RTI to bring Ficam in-country. Ms. Muhura asked the MOH to identify an alternative insecticide in the event that Ficam could not be used; however, the MOH selected only one insecticide.

The MOH issued a letter to the Ministry of Agriculture requesting that Ficam be registered as soon as possible. The National Committee for the Registration and Control of Pesticides (CNAC) asked Bayer, the Ficam manufacturing company, to send pertinent documents required for the registration. The CNAC has received these documents. Ms. Muhura and Dr. Doumbia have met numerous times with the CNAC to emphasize the importance of registering Ficam as quickly as possible.

### ***Procurement and Logistics***

#### *Pesticides*

RTI has initiated procurement of Ficam. However, USAID has yet to approve the SEA and the CNAC must register Ficam so that RTI can finalize the order and avoid delays.

### *Spray Pumps & Parts*

An order has been placed for spray pumps and associated parts to support Benin's IRS program.

### *Personal Protection Equipment*

An order has been placed for personal protection equipment (PPE) to support Benin's IRS program. An order has also been placed other commodities, including first aid kits and pregnancy tests for spray operators.

## **IEC Development and Implementation**

### *IEC Material Design and Development*

Dr. Doumbia identified and introduced the information, education, and communications (IEC) consultant, Yvonne Adjovi, to the PNLP. Ms. Adjovi and Dr. Doumbia met with the PNLP and Direction Departmental de la Santé of Oueme (DDS) to discuss IEC strategy, implementation, and materials.

### **Other Activities**

- The Mission helped identify new IRS sites; the sites that were replaced had originally been identified by the PNLP. The MOH approved the new IRS sites. The sites consist of four communes in the department of Oueme: Seme Kpodji, Akro Misserete, Adjohoun, and Dangbo.
- The government of Benin officially launched the PMI project in February. USAID/Benin invited all PMI-implementing partners to attend launch preparation meetings. During these meetings, the roles and responsibilities of each partner were discussed. The launch was held at the "Palais du Congres at Cotonou." The president of Benin chaired the launching ceremony, for which approximately 800 people attended.
- Ms. Muhura and Dr. Doumbia held numerous meetings with the health team in the department of Oueme and local authorities from the four communes. Participants included the director of the health department of Oueme, chief doctors from the four communes to be sprayed, the secretary general of Oueme, and representatives for the mayors of the four communes. Ms. Muhura and Dr. Doumbia also discussed the IRS project and initial IEC activities with the mayors of the four communes, traditional and religious chiefs, health teams (including the chief doctors of each arrondissement), the environmental team working in the department of Oueme, the prefect of Oueme, and other local authorities and health officials.
- Ms. Muhura and Dr. Doumbia visited Senegal to observe IRS activities and gain perspective for the implementation of IRS in Benin. They visited every site and participated in IRS launch activities, as well as observed the first week of the spray operations and environmental precautions being implemented.
- Dr. Doumbia held a day-long meeting in which partners completed an IRS micro-plan and a detailed activities plan. RTI submitted the micro-plan to the PNLP and USAID.
- Wabi Marcos (in charge of pollution prevention at the MOE) assisted Dr. Doumbia with soak pit placement at the warehouse in Porto Novo.

- Dr. Doumbia attended a World Health Organization (WHO) meeting at the MOH to discuss the M&E plan for malaria vector control activities in Benin. Meeting attendees included all in-country malaria partners and donors: the USAID, UNICEF, World Bank, and WHO. Each partner briefly presented their activities. Pierre Carneval (WHO/Geneva) stated the WHO's willingness to help measure the impact of malaria vector control activities. He will be working on a proposal with the PNLP.
- Dr. Doumbia meets weekly with the USAID/Benin team to discuss activities in progress. The USAID/Benin team has made subsequent visits to the Porto Novo warehouse.
- The USAID director and health team leader introduced Dr. Doumbia to the Minister of Health. During the meeting, RTI and the USAID again emphasized the need for the NMCP to accelerate the registration of Ficam.

## ***Project Management and Administration***

### *Staffing*

Dr. Doumbia started in January. During this time, Ms. Muhura was in-country to introduce the COP to partners and brief the COP on past and future IRS operations. The finance manager, logistician, IEC consultant, and administrative assistant were also identified and hired. The USAID director and health team leader also introduced Dr. Doumbia to the Minister of Health.

### *Office & Warehouse Space*

RTI has identified an office space and a Porto Novo warehouse. The warehouse has a big yard and accommodates over 50 cars in the parking area. RTI decided to use this space for training to avoid renting training space. RTI signed the lease and has initiated renovations.

## ***Partnership and Collaboration***

### *National Partners*

RTI works in close collaboration with the PNLP. RTI consults and informs the PNLP and DDS on all IRS activities. RTI is also working in close collaboration with the MOE.

## **Outstanding Issues**

- The RTI environmental specialists observed houses built on stilts and in flood zones in Dangbo, creating a contamination risk for agricultural and fishing areas. RTI is communicating with the USAID/PMI/CDC team to determine if LLNs can be distributed among the houses that cannot be sprayed.
- The PNLP coordinator has changed, which may affect IRS operations that require the PNLP's attention.
- Ficam is still not registered in Benin and the PNLP's failure thus far to expedite this process may cause delays in the program timeline. Ficam cannot be brought into Benin until it is registered. Bayer, the Ficam manufacturing company, has sent the required documentation to the registration board, but the CNAC has so far not made a decision.

- The renovation of the Porto Novo warehouse and the construction of soak pits and rinsing areas are in progress.
- The PNL and DDS in Porto Novo are in disagreement with RTI over daily wages. The PNL and DDS would like to be paid for meetings held in Porto Novo (their home office city) and Cotonou (30 minutes away), although RTI is providing transportation and paying for the fuel costs of MOH vehicles. RTI is working with the Mission to resolve this issue before it affects IRS activities.
- Dr. Doumbia met with Professor Akogbeto at the CREC to discuss the following:
  - The registration of Ficam as overseen by the MOH.
  - The IRS acceptability study among target populations as overseen by the CREC. This study is intended to guide the IEC and was due at the end of January.
  - The CREC subcontract documents that the CREC must complete so that RTI can initiate subcontracting processes.
  - IRS implementation in the Dangbo flood zone site.

## **Upcoming Activities**

- Obtain registration of Ficam from the CNAC.
- Obtain approval of the EIA by the MOE. When the EIA is approved, the MOE will issue a certification enabling RTI to spray.
- Obtain approval of the SEA from the USAID environmental officer.
- Validate IEC material and train IEC mobilizers.
- Validate IRS technical materials and initiate the training of trainers and spray operators.
- Recruit IEC mobilizers and spray operators.
- Train drivers.
- Train chief nurses of all community health centers in contamination response strategies.
- Complete geographical reconnaissance mapping.
- Finish renovating central warehouses in Porto Novo.
- Construct soak pits and progressive rinsing areas.

# Ethiopia

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Ethiopia was identified as one of the third wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). The U.S. Agency for International Development (USAID), Ethiopia National Malaria Control Program (NMCP), and Oromia Regional Health Bureau (ORHB) identified three epidemic-prone zones in Oromia region (East Shoa, Arsi, and West Arsi) for indoor residual spraying (IRS) activities. In 2008, the USAID and ORHB agreed to focus spraying activities in the 12 districts of the East Shoa zone, five districts of the Arsi zone, and four districts in the West Arsi zone.

RTI is tasked with providing strategic, technical, management, and operations support for IRS activities in the above-mentioned districts. RTI and the ORHB will treat at least 400,000 households with residual insecticide and protect over 1.7 million people in 21 districts during the first round of IRS in Ethiopia. In addition, RTI will develop and implement entomological and environmental monitoring plans in Ethiopia in collaboration with the Malaria Research and Training Center (MRTC), Addis Ababa University Department of Pathobiology, Ethiopia Health and Nutrition Institute, Environmental Protection Authority (EPA), zonal and district health offices, and other USAID and national partners.

This quarterly report presents the program's progress towards achieving these objectives in Ethiopia from January to March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

### *Start Up*

Start up for the Ethiopia IRS country program began in earnest this period. In February, a country visit was made by Gene Brantly, IRS project director, and Patricia Preware, Ethiopia home office technical manager, to discuss the program objectives with the USAID Ethiopia PMI team and local partners of the ORHB.

### *Program Objectives*

USAID/Ethiopia, the ORHB, and the PMI Malaria Operating Plan (MOP) are in close agreement concerning the objectives of PMI's support to Oromia's malaria control program. There is broad consensus on a strategy that puts quality before quantity, with the following objectives:

- Help the ORHB improve the quality of IRS operations in a focused, selected area within the region. The OHRB designated the East Shoa zone and bordering districts in Arsi and West Arsi zones as the focus of initial activities. RTI's support will proceed in three steps:
- First, improve IRS operations by strengthening staffing, equipment, training, and quality control.
  - Concurrently, improve information systems and analysis to more rigorously identify the kebeles (a small group of villages) that should receive highest priority for routine annual IRS.

- Then, increase or re-target program assistance to achieve at least 85 percent coverage of the high priority kebeles.
- Concurrently with the above, RTI will work at the regional level to improve information systems and analysis for detecting malaria outbreaks and create a reserve capacity to respond to outbreaks from the regional, or possibly zonal, level. This work will address all of the Oromia region.

With the program objectives more clearly defined, RTI revised the draft work plan document to include more specific information about activities to be performed on the Ethiopia IRS program. The draft work plan includes the following information.

#### *Analysis of Malaria in Oromia Region*

The region has a set of malaria sentinel sites at which slide-confirmed cases are recorded in log books and then entered into an electronic database using a standardized template. The system has been in place for about eight years, although it is not clear whether all sentinel sites are entering data routinely and all computers are still functioning. These data should be gathered into a central data base, audited, cleaned, and made comprehensive by filling in gaps from log books as necessary to create a complete record of malaria case reports at the regional level for the maximum period possible. The case data should then be analyzed in conjunction with meteorological data for the same period to identify the various seasonal transmission patterns that occur in specific geographic areas.

#### *Improvements at the Adami Tulu Insecticide Manufacturing Plant*

RTI will work with the Adami Tulu plant to achieve the following:

- First Year
  - Arrange for space in which the malaria control program can store spent DDT packaging until arrangements can be made for its proper disposal.
  - Provide financial support as needed to improve packaging, packing, and tracking systems so that the plant can imprint unique tracking numbers on sachet labels and generate accurate records of the numbers associated with sachets packed into specific barrels or boxes.
  - Conduct an inspection of the plant's manufacturing and packaging facilities to identify modifications that would improve quality control and reduce releases to the environment. Subsequently, RTI will prepare a set of recommendations for improvements to the plant.
- Second Year
  - The PMI planning team will consider providing funding for some of the recommended improvements.

#### *Logistics Needs Analysis (LNA) and "Microplanning"*

Please see description under Logistics Assessment section below.

### *Procure Equipment and Services to Support 2008 Operations*

RTI will issue a task order to its procurement partner, Crown Agents USA, to purchase personal protective equipment, compression sprayers, camping equipment, and other incidental equipment for use during the 2008 IRS operations in the target areas, including all of East Shoa and bordering districts in Arsi and West Arsi zones. Crown Agents USA has an affiliated company, Crown Agents Ethiopia Ltd., based in Addis.

### *Rehabilitation of the Insectary at Malaria Research and Training Center (MRTC)*

The insectary at the MRTC is housed in a structurally-sound building, but the space requires interior repairs and the comprehensive replacement or upgrade of all equipment. RTI will engage a local consultant, or one of his or her subcontractors, to develop the full list of improvements and equipment required. RTI will subcontract the design and rehabilitation services to Crown Agents, which has recent experience managing an extensive program of school rehabilitation.

### *Rehabilitation of Other Facilities at MRTC*

The MRTC complex was originally an estate with a main house and outbuildings. Some new buildings were constructed to serve specific uses; others appear to have been intended as temporary structures that have nonetheless been used for many years. In addition to the insectary, the MRTC complex includes the following:

- A main building (estate house) used for offices and a meeting hall
- A “Quonset hut” housing a malaria clinic
- A laboratory building which is set up to train microscopists
- A low structure, probably originally a stable, used as a maintenance shed with several old Hudson sprayers and discarded parts
- Additional offices, constructed as “lean-to’s” against an adjoining block wall, occupied by several departments of the zonal health office

The grounds include a high block wall, which appears to be the side of the adjoining building, used for training spray operators; 10 to 15 junked vehicles; and miscellaneous piles of debris, old tires, concrete forms, and other trash. The entire complex needs to be renovated, including removing all debris and vehicles, improving building systems (roofing, electrical, plumbing, lighting, and ventilation), and replacing the temporary building used as a clinic with a suitable permanent facility. RTI will subcontract with Crown Agents to manage this part of the program.

### *Support Training for IRS Supervisors and Spray Operators*

Ethiopia has a strong history of IRS and has very capable staff who understand how to train spray operators. We will provide an expert trainer to observe and assist in the supervisor and operator training programs, but we anticipate that the zonal staff will not need much support for this function.

### *Prepare and Implement a DDT Tracking System*

One of the objectives of PMI assistance is to improve compliance with environmental controls, including strict tracking of DDT supplies. RTI has developed systems to improve insecticide tracking for IRS programs in Mozambique and Uganda and will work with local officials to adapt these systems to the program structures in Ethiopia.

### *Design Improvements to the Malaria Program's Information Systems*

The malaria research program of the South African Medical Research Council (MRC) is a subcontractor to RTI on the PMI IRS Project. The MRC has extensive experience building modern information systems for malaria control, with applications in South Africa and Mozambique. RTI also has strong experience with health information systems, primarily in engineering data networks in developing countries. RTI will explore options for combining the talents of RTI and the MRC to support improvements in the malaria information systems for the Oromia region.

## ***Planning and Assessment***

### *Logistics Assessment*

In discussions with USAID/Ethiopia, it was suggested that a micro-planning meeting be held with representatives from each district and zone in attendance. During this micro-planning meeting, participants will plan a timeline for IRS activities and prepare a logistics needs assessment (LNA) to determine accurate procurement requirements.

In addition, a tentative budget was drafted by USAID/Ethiopia and discussed with RTI. The tentative budget included estimates for procurement and operational costs for the IRS campaign.

### *Description of envisioned Micro-planning meeting:*

RTI will work with the zonal malaria teams and district coordinators in East Shoa and Arsi to review the existing logistics arrangements for IRS in targeted districts and identify improvements that are needed immediately to support IRS operations in 2008. The LNA and micro-planning meeting will take place as a workshop at the MRTC and will include staff from RTI, USAID, the ORHB, and zonal and district malaria teams. District coordinators will be instructed to bring specific information to the workshop. The purpose of the workshop will be to:

- Review the current IRS “microplans” prepared by each district.
- Assemble up-to-date lists of names, locations, estimated populations, and numbers of households and structures in each village, kebele (neighborhood), and woreda (district) for all targeted districts.
- Using available paper maps, review the deployment patterns and schedules that have been used in recent IRS rounds and capture information on the number of spray teams used in each area, their camp locations, order of villages sprayed, coverage achieved in each area, and villages within the targeted districts that were missed.
- Review the transport, storage, and supply arrangements that have been used in recent IRS rounds.

- Identify changes that are needed to increase coverage within the already-established targeted areas, consistent with the existing general norms for deployment, staffing, transport, and storage.
- Determine how existing funds allocated by districts for IRS in 2008 will be used, as well as the amount and purpose of additional funds that will be required from RTI.
- Support district malaria staff in revising their microplans to incorporate agreed changes.
- Confirm schedules for all steps in the 2008 IRS program.
- Prepare final lists of items to be procured to support the 2008 IRS program.

Participants will also review the funding available from district resources for IRS operations in 2008 and estimate the shortfall to be covered using PMI project resources. PMI is intended to provide additional resources so that districts can provide a high-quality spray program and achieve at least 85 percent coverage of their high-priority areas. Recent campaigns have not met this target; in particular, shortfalls in district funding have resulted in widespread reduction in the ratio of supervisors to spray operators. Thus, each squad leader is supervising eight to ten operators, rather than four to five, as established by program policy. The districts have programmed some resources for 2008; USAID expects that these resources will still be spent on IRS and will not be reprogrammed to other uses. Thus, other than procurement, the primary uses of PMI funding should be to provide “additionality” for hiring more supervisors and transport.

#### *Environmental Assessment and Compliance*

Jacob Williams, author of the supplemental environmental assessment (SEA) document for Ethiopia, requested comments from relevant parties and made final revisions to the document. The Ethiopian SEA was submitted to USAID on March 28 for review and approval.

#### *Pesticide Selection*

The government of Ethiopia formulated an IRS strategic framework covering three classes of insecticides: organophosphate, organochlorides, and pyrethroids. For the 2008 IRS campaign, in line with the country’s IRS guidelines and existing practices, di-chloro di-phenyl tri-methyl chloride (DDT) 75% WP will be used for IRS operations.

### **Procurement and Logistics**

#### *Pesticides*

In light of sufficient quantities of DDT available for use in Oromia, RTI does not anticipate purchasing any insecticide for the 2008 malaria season, but will facilitate the in-country transportation and safety of the products.

#### *Spray Pumps & Parts. Personal Protective Equipment etc.*

A sufficient supply of personal protection equipment (PPE) will be procured to provide for all spray operators in the targeted area. A sufficient number of compression sprayers will be procured to provide one spray pump per operator in the targeted areas. The current estimate for required PPE and spray pump quantities from the USAID tentative budget is as follows:

- Gloves – 2480
- Cotton Overalls – 1550
- Rubber Boots – 1550
- Masks – 1550
- Hard Hats – 1550
- Spray Pumps – 1200
- Spray Pump Spare Part Kits – 300

The final items and amount required will be determined during the micro-planning exercise described above.

#### *Other Commodities*

In addition to the items listed above, RTI is planning to arrange for local procurement for camping equipment and other incidentals (buckets, stirrers, drums for progressive rinsing, storage drums for spent packaging, etc). The items and amounts required will be determined during the micro-planning exercise described above.

### ***Spraying Operations***

#### *Geographic Reconnaissance and Detailed Planning*

Geographical reconnaissance and detailed planning will occur during the anticipated micro-planning meeting with all the targeted districts.

#### *Recruitment and Training for Spray Teams*

Following the micro-planning meeting to be held with all targeted districts, an action plan for the IRS campaign will be developed. From this plan, RTI and the targeted districts will ascertain how many spray operators and other spray personnel are needed for each district. It is expected that districts will perform their own spray personnel recruitment in keeping with Ethiopia's IRS implementation history.

### ***Project Management and Administration***

#### *Staffing*

During discussions with the USAID/Ethiopia PMI team, it was agreed that RTI should set up a country office in Ethiopia to manage RTI's support to the IRS campaign in the targeted districts of East Shoa, Arsi and West Arsi zones.

The proposed staffing scheme is not yet final and must be approved by the USAID mission.

- In Addis, to support the ORHB:
  - Chief of party
  - Finance officer
  - Entomologist
  - Information management/logistics officer

- Environmental/quality control officer
- In Adama, to support East Shoa & Arsi zones:
  - Overall procedural/operations quality manager
  - Finance assistant
  - Logistics assistant

RTI is confident it will be able to identify and hire qualified candidates in Ethiopia and does not expect to hire any expatriate staff. During Mr. Brantly and Ms. Preware's visit to Ethiopia, they were able to meet with a few promising Chief of Party candidates, and recruitment efforts were well underway during this period.

### *Office & Warehouse Space*

RTI and the ORHB discussed the possibility of RTI sharing office space with the Malaria and Other Vector-borne Diseases Control Department, in OHRB offices. This would allow for increased collaboration, capacity-building and a cost-sharing for the project. The regional health bureau supported the plan and agreed to identify office space for RTI within their malaria control department.

District warehouse space has yet to be identified. During the micro-planning meeting, RTI hopes to obtain district storage information and visit the various targeted districts to identify suitable storage areas.

## **Partnership and Collaboration**

### *National Partners*

RTI met with its main local partner in Ethiopia, the ORHB, to discuss program objectives and begin the work planning process. It is expected that more detailed information in terms of gaps, needs and activity timelines will be developed in collaboration with district health office representatives at the district micro-planning meeting.

### *USAID Partners*

RTI met with its IQC partner, Crown Agents, to discuss their role in the support of the upcoming Ethiopia spray campaign. In addition, RTI met with other USAID partners (Management Science for Health, John Snow International, and the Ethiopia Health and Nutrition Research Institute) to better understand the institutional context and other malaria prevention activities being supported by USAID.

## **Outstanding Issues**

- The SEA was submitted to USAID on March 28, 2008 and is pending approval.
- Confirmation that USAID will purchase DDT directly for use in the 2008 campaign.
- Obtaining a full list of targeted district in East Shoa, Arsi and West Arsi zones.

## **Upcoming Activities**

- Micro-planning meeting and logistics assessment will be held early in the next quarter.
- Procurement will proceed once actual quantities required are confirmed at the micro-planning meeting.
- Recruiting and hiring key personnel.
- Securing office space for RTI staff.

# Ghana

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Ghana was identified by the United States Agency for International Development (USAID) as one of the third wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). The USAID and the Ghana National Malaria Control Program (NMCP) identified five epidemic-prone districts (West Mamprusi, Gusheugu, Karaga, Savelugu/Nanton, and Tolon) for indoor residual spraying (IRS) activities.

RTI is tasked with providing strategic, technical, management, and operations support for IRS activities in the above-mentioned districts. RTI and the NMCP will treat 500,000 households with residual insecticide in five districts during the first round of IRS. This will protect at least 85 percent of the total estimated population in the targeted districts. In addition, the IRS program will collaborate with Ghana's Ministry of Health (MOH), the Ghana Health Service (GHS), the NMCP, and other stakeholder institutions to establish and maintain a national IRS coordinating committee. RTI will work closely with the Noguchi Memorial Institute for Medical Research (NMIMR) to facilitate entomologic monitoring and surveillance activities for IRS operations as well as provide support to the NMCP to strengthen epidemic preparedness and response plans.

This quarterly report presents the program's progress towards achieving these objectives in Ghana from January through March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

### *Operational Planning*

RTI conducted environmental and logistics needs assessments during the first quarter of 2008; personnel conducted short-term technical assistance visits to plan and assess IRS operations. These personnel included John Chimumbwa, IRS technical director, Jacob Williams, Integrated Vector Management (IVM) project director and environmental specialist, Anna Thompson, home office technical manager, and Joaquim Canelas, director of operations.

- **Logistics assessment:** Based on the logistics assessment, RTI determined the material, logistical, and financial support required for the IRS program and associated environmental compliance activities. The logistics assessment included visits to the target districts to meet with regional and district authorities, assessments of storage facilities, human resource requirements for the implementation of spray activities, operational arrangements, and determination of financial resources required for the implementation of spray operations.
- **Environmental assessment:** The environmental assessment prepared by Dr. Williams was submitted to the NMCP, USAID/Ghana, and Environmental Protection Agency (EPA) for review and approval.

## ***Procurement and Logistics***

Prior to equipment procurement, RTI selected the insecticide for IRS, finalized IRS commodity requirements in the logistics assessment, and obtained approval of budgetary requirements and the environmental assessment. With the help of Crown Agents, RTI was then able to initiate arrangements for the procurement, shipping, and delivery of compression sprayers, spare parts, sprayer maintenance kits, insecticides, and personal protection equipment.

As part of the IRS capacity-building efforts, logistics officer Valens Kayumba (Rwanda) provided logistics management training to the Ghana IRS program in March. Mr. Kayumba worked closely with the Ghana IRS logistician, chief of party (COP), and home office technical manager to establish an efficient logistics and inventory management system in compliance with RTI's procurement policies and procedures. Additional activities included:

- Briefing the logistician on RTI reporting tools
- Training project employees in IRS logistics and inventory management
- Establishing reporting systems at central, district, and operational site levels
- Training project employees in local procurement procedures, the payment process, and required documentation
- Training project employees in the management and record-keeping of IRS commodities, including the management and transportation of the insecticide

In March, Mr. Kayumba and Ghana IRS logistician Noah Agbebor visited and assessed possible IRS operational sites and storage facilities for upcoming spray operations.

## ***IEC Development and Implementation***

Ms. Thompson and Mr. Napoleon Graham, the RTI Chief of Party, developed an information, education, and communications (IEC) plan for IRS operations and presented it to the USAID/Ghana, NMCP, and Health Communications Promotion Unit (HCPU) for review. After the central-level review, Ms. Thompson and Mr. Graham presented the IEC plan to the northern regional health promotion officer for additional review and comments.

In February and March, IEC materials (brochures, posters, and stickers conveying IRS messages) were designed and developed for dissemination at the household level. IEC materials were reviewed by the USAID/Ghana and the Ghana Health Service (GHS) HCPU.

RTI initiated an IEC tendering process to solicit competitive bids for the production of IEC materials and awarded contracts following the approval of IEC materials.

During the period, the IEC team held 11 separate collaboration meetings with the GHS and district assemblies across the five beneficiary districts. The IEC team met with the northern regional director of health and the regional health promotion officer at the northern regional health directorate to discuss IEC strategies for the Ghana IRS program. After reviewing the document, they submitted their comments to the IEC team and declared their full support for the successful implementation of the IRS program.

The IEC team met with each of the district health management teams (DHMT) of the five beneficiary districts to introduce the IRS program and to seek their collaboration in successfully implementing the program. The DHMT meetings were very successful and the teams expressed their gratitude for the selection of their districts to benefit from the program.

The IEC team also met with each of the district assemblies of the five beneficiary districts to introduce the IRS program and to seek their support for the program. The local authorities of all five districts responded very positively; some described the program as “God-sent.” The authorities also confirmed they were prepared to participate fully in the program.

### *District Stakeholders Meeting*

To sensitize community leaders and seek their participation in the IRS program, the IEC team held a stakeholders’ meeting in the Wantugu sub-district of the Tolon/Kumbungu district. Participants included traditional rulers of the Wantugu area, assembly members, unit committee members, religious leaders, sub-district health directorate staff, environmental officers, and other opinion leaders. 70 participants were male and two were female. The meeting was very successful and participants declared their support and full participation in the program. The participants also expressed their gratitude to RTI and the U.S. government for including the Tolon/Kumbungu district in the program.

### *Implementers Training*

The IEC team recruited and trained 50 IEC implementers (25 each for the Karaga and Tolon/Kumbungu districts) to disseminate accurate information about malaria, its prevention, and the IRS program to beneficiary communities. Training took place in March with support from the district health management teams. Each IEC implementer was assigned a zone in which to work; most were assigned zones in which they had already worked as community-based surveillance (CBS) volunteers. The following tables are a breakdown of the IEC implementers recruited and trained this month for each sub-district of Karaga and Tolon/Kumbungu districts.

District	Sub-District	# IEC Implementers		Total
		Male	Female	
Karaga	Karaga	10	1	11
	Pishigu	5	0	5
	Sandua	5	0	5
	Zandua	4	0	4
Tolon/ Kumbungu	Tolon	6	0	6
	Kumbungu	4	0	4
	Nyankpala	4	0	4
	Wantugu	5	0	5
	Dalun	5	0	5

It was especially challenging to involve women in the Ghana IRS operations. Of 72 people who attended the stakeholders meeting in Wantugu (Tolon/Kumbungu District) this month, only two were women. Similarly, only one woman was included among the 50 IEC implementers recruited and trained.

## ***Spraying Operations***

### *Geographical Reconnaissance and Detailed Planning*

During the reporting period, the home office technical manager, COP, logistician, and finance manager conducted several geographic reconnaissance visits to assess the capacities of district facilities and to finalize logistical/administrative needs.

### *Recruitment and Orientation for District Administration*

RTI conducted interviews to recruit personnel for district IRS operations during the second and third weeks of March. Those who were selected would start work in April. RTI received over 200 applications for the advertised district positions. Orientation for district administration will take place during the second quarter of 2008.

### *Environmental Mitigation Set-Up*

- RTI reviewed possible operational sites and made initial arrangements to construct soak pits and procure soaps and water tanks. Priority was given to the least accessible areas to ensure that spray operations would begin in those regions prior to the rains.
- RTI assessed the availability of progressive rinse barrels in Accra and Tamale for all operational sites.
- RTI met with regional health authorities to discuss possibilities for a secure central storage facility.

## ***Monitoring and Evaluation***

### *Baseline Entomological Assessment*

Following preliminary discussions regarding the baseline entomological assessment, RTI and Noguchi established the scope of work for baseline activities. Nougchi will assume the following responsibilities:

- Collect mosquitoes in the three IRS target districts and one control district.
- Conduct susceptibility tests for carbamates, pyrethroids, and organophosphates.
- Identify species (molecular ID): Members of the *An. gambiae* complex will need to be identified by species and molecular form.

The baseline assessment was delayed considerably during the period and is expected to be completed in the next quarter.

## ***Project Management and Administration***

### *IRS Program Management*

Ms. Thompson visited Accra and Tamale to help with in-country start-up activities and program management. During the quarter, RTI recruited the COP (Napoleon Graham), logistician, Accra

office manager, Tamale administrative assistants, finance manager, and IEC officer. During this period, key personnel (the COP, finance manager, logistician and office manager) were familiarized with IRS operations, program management, and the USAID and RTI policies and procedures. In addition, the Ghana IRS team was able to secure premises for office space in Accra and Tamale by the end of the reporting period.

It was agreed that IRS staff will be based in Tamale during the peak planning and implementation of IRS operations. The Accra office will serve as the liaison for coordination with the USAID, NMCP, and other key stakeholders and partners.

RTI recruited district management teams during the period, including district operations managers, logistics assistants, finance assistants, IEC assistants, store keepers, and data managers. RTI also placed job advertisements in the Daily Graphic for a finance assistant, an environmental officer, and district operations managers. Ms. Thompson and Mr. Graham interviewed the short-listed candidates for the district operations manager and finance assistant positions in Accra and Tamale. RTI also began recruitment efforts for data managers, store keepers, and logistics/IEC assistants, emphasizing academic background, professional experience, and language capabilities within the northern region.

Mr. Chimumbwa provided additional technical oversight and support.

## ***Partnership and Collaboration***

### *National Partners*

RTI held several meetings with the NMCP, EPA, and USAID to review the Environmental Assessment prepared by Dr. Williams.

The NMCP, USAID, and RTI reviewed and finalized the IRS scope of work, including the roles and responsibilities of key partners. They also updated the IRS work plan and timeline of activities to accommodate the rapid start-up process required for IRS operations at the end of April and beginning of May.

AngloGold Ashanti: Ms. Thompson and Mr. Graham met with AngloGold's malaria manager to discuss the involvement of AngloGold in training activities. They decided that AngloGold will host the training of trainers (TOT) in Obuasi and help Mr. Chimumbwa and Mr. Graham design the TOT.

They also decided that AngloGold's IEC officer will help the RTI team implement IEC activities in the target districts.

RTI also met with the following international organizations:

- UNICEF provided helpful insight on logistics preparations and vehicle sources.
- Catholic Relief Services (CRS) supported IEC efforts by providing connections to mobilizer networks in several districts.

- WHO agreed to participate in spray operator training and monitor IRS operations in the field during the campaign.

## **Upcoming Activities**

- On-going operational set-up of all 16 IRS sites in the five target districts
- TOT workshop
- Training of spray operators
- Mobilization of district management teams
- Coordination of IRS activities with key stakeholders (at regional and central levels)
- On-going community mobilization and awareness-raising efforts within the five target districts
- IEC material distribution
- Identifying a cost-effective transportation system to mobilize spray operators
- Delivery of personal protective equipment (PPE), insecticide, and other IRS commodities to all IRS operational sites
- Development of the IRS spray plan

# Kenya

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Kenya was selected as one of the third wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI), beginning in fiscal year 2008. In anticipation of this new program and because of malaria's high priority as a public health problem in Kenya, the U.S. Agency for International Development (USAID) used resources from its fiscal year 2007 budget to begin supporting the indoor residual spraying (IRS) program in Kenya. As such, in 2007, RTI provided payroll support for the Kenya Ministry of Health (MOH) and its Division of Malaria Control's (DOMC's) seasonal IRS activities in the 17 IRS districts.

The fiscal year 2008 Malaria Operating Plan includes support for IRS in two epidemic-prone districts and two bordering districts in which malaria is endemic. This will advance the DOMC strategy of transitioning IRS to endemic areas. PMI funds will be used to pay for insecticides and spray equipment, operational costs, training and supervision of spray operators, and related technical assistance for planning, monitoring and evaluation. The specific IRS activities for fiscal year 2008 are as follows:

- Provide technical assistance to the DOMC to refine their IRS strategy for epidemic prone areas in the highlands of western Kenya and assist with planning for the 2008 IRS campaign. This support will include additional training for sprayers and supervisors, development of a comprehensive IEC program to sensitize communities to the IRS campaign and assistance in planning and managing the logistics of the IRS campaign.
- Support IRS in two highland and in two neighboring endemic districts targeting 85 percent coverage in all four districts.

Planning discussions for the above activities were conducted between October 2007 and March 2008 under Task Order 1 of the IRS Indefinite Quantity Contract (IQC). In March 2008, USAID/Kenya issued a request for task order proposal (RFTOP) to RTI, under the IRS IQC, to provide support for the FY2008 IRS program. The mission issued a pre-award authorization on April 9, 2008 for RTI to incur costs for procurement in anticipation of the 2008 IRS program, and awarded Task Order 2 to RTI following review of RTI's proposal and subsequent negotiations, effective May 12, 2008.

This quarterly report presents the Kenya program's activities under Task Order 1 conducted from January through March 2008. Support provided from April 2008 and beyond will be reported separately under Task Order 2.

## Current Activities & Accomplishments

The political tensions and unrest that took hold in Kenya following national elections caused a temporary slow-down in project activities during the first half of January 2008. Staff members working at RTI's Nairobi office were cautioned to plan for a prolonged emergency. Those who were unsure of the security of their routes to and from the office were advised to work from home for several days. RTI imposed a short-lived ban on project travel to and from Nairobi from January 2 to 9, followed by a period of "restricted travel" during which travel requests were

reviewed on a case-by-case basis. The situation eased and project activities returned to normal by the end of January.

### ***Project Management and Administration***

RTI hired the principal personnel required for the Kenya IRS program during this reporting period. The chief of party (COP), Ms. Catherine Lwenya, joined RTI in early March. Mr. Muya Martin, the logistics officer, and Ms. Irene Chami, the community mobilization/information, education, and communication (IEC) specialist, were also hired later in March. RTI has also selected Mr. Kissinger Kimonge to fill the finance manager position; Mr. Kimonge will report for work in April.

### ***Planning and Assessment***

Dr. John Chimumbwa, IRS technical director, attended two meetings with the Kenya Division of Malaria Control (DOMC) to discuss the Kenya IRS start-up process. Outcomes of the meeting included arranging a field visit for “ground truthing” and dividing the DOMC team into three planning teams to focus separately on IRS operations, monitoring and evaluation, and IEC. The team also reviewed lessons learned from the 2007 IRS campaign that were documented in the October post-IRS workshop.

The DOMC decided to develop a number of IRS implementation scenarios to present to the government to address the shortfall of supplies and resources required to implement IRS in all 16 target districts. This became necessary when the DOMC realized that PMI would support only two to four districts, and that the government had only 150,000 sachets of ICON for use in the remaining districts.

After being selected as RTI’s COP for the Kenya IRS program, Ms. Catherine Lwenya also attended planning and coordination technical task force meetings for the 2008 IRS campaign with the DOMC, USAID, WHO, Crown Agents, the Department for International Development (DFID) and the Centers for Disease Control/ Kenya Medical Research Institute (CDC/KEMRI).

### ***Logistics Assessment***

RTI staff and a representative from the DOMC conducted the initial logistics assessment in the three targeted districts from March 10 to 15, 2008. RTI analyzed results to determine the amount of insecticide, and the number of compression sprayers, spare parts, personal protective equipment (PPE), and other consumable commodities and logistics required for the 2008 spray campaign. RTI’s COP and regional operations manager, Ms. Alice Otiato, travelled to the PMI targeted districts to meet with provincial medical officers and the District Health Management Teams (DHMT) and brief them on the planned IRS activity. They collected data on village and division population and household unit sizes to use in planning, and evaluated the availability of water, storage facilities, security, personnel, cleaning facilities, and other logistics required for the IRS program.

### *Environmental Assessment and Compliance*

The supplementary environmental assessment (SEA) for IRS activities in targeted PMI districts was prepared in March 2008 and a draft report was submitted to USAID, the DOMC, and NEMA for review.

### **Procurement and Logistics**

#### *Pesticides, Spray Pumps & Parts, Personal Protection Equipment*

Requirements for commodities were quantified and submitted to RTI's home office. Home office staff prepared a task order to Crown Agents, USA, the project's procurement agent, to initiate procurement.

#### *Office & Warehouse Space*

RTI has set up the IRS Kenya project office within RTI's regional office in Nairobi. The office is in Gigiri district adjacent to the US embassy and USAID compound.

Ms. Lwenya and Ms. Otiato identified possible district coordination offices and warehouses for IRS commodities during the logistics assessment field visit in March.

#### *Other Commodities*

Office furniture and supplies were purchased locally to set up the IRS Kenya office.

### **IEC Development and Implementation**

#### *IEC Material Design and Development*

RTI worked closely during this period with the DOMC and its partners to design and develop communication materials for use in the IRS program. The IEC team reached an agreement on key messages and prepared posters and brochures for distribution, as well as securing several radio spots for broadcast before and during the IRS campaign.

### **Other Activities**

#### *Entomological Monitoring*

The baseline entomological assessment was led by Dr. Nabir at CDC/KEMRI, in Rachuonyo district. Per the PMI MOP, RTI did not have any role or responsibilities with regard to the baseline entomological assessment.

#### *Training*

RTI worked with the DOMC in March to identify options and select a training site for the training-of-trainers (TOT). RTI staff also worked with the DOMC to finalize the training

curriculum, based on RTI's IRS training manual, and to initiate recruiting for IRS supervisors in collaboration with the DHMT.

## **Monitoring and Evaluation**

### *Information Collection Plan*

The technical taskforce meetings held in February and March also addressed monitoring and evaluation needs for the IRS program. The taskforce agreed on a set of IRS indicators and on the data collection plan to be implemented during the campaign.

## **Outstanding Issues**

- It has taken longer than expected to hire the COP and other project staff. These personnel are joining the program in March and IRS operations are expected to start in late April or early May, requiring that these personnel become integrated into the program and take over responsibility for operational systems very quickly.
- Procurement of insecticide and equipment has been delayed for several reasons, including uncertainty over the location and extent of IRS operations that will be supported under PMI; ethnic tensions in western Kenya that delayed the logistics assessment; differences of opinion among the DOMC, CDC, and USAID regarding selection of insecticide; and uncertainty concerning which contractual mechanism RTI should use for procuring required materials, given the RFTOP recently issued by USAID/Kenya. At this stage, delays in procurement threaten the team's ability to launch IRS operations on time.
- The DOMC expected to receive USAID financial support to cover the payroll costs for implementing an IRS program on the same scale as in 2007, even though the 2008 MOP is clear that PMI support for IRS will be focused in four districts. This difference in understanding has created strains in the relationship between the DOMC and RTI, acting as USAID's implementation partner for IRS.

## **Upcoming Activities**

RTI's support for the IRS program in Kenya will proceed under Task Order 2 of the IRS IQC; future reporting will be governed by the new task order and will be submitted separately from the Task Order 1 reports. RTI anticipates the following activities during the next quarter:

- Procurement will be completed and all required items, including insecticide, PPE, spray equipment, and incidentals, will be delivered.
- Detailed preparations will continue in each of the districts, including arrangements for transport, warehouses, and offices; recruiting for spray team leaders and operators; arrangements for a water supply, staging areas, and soak pits for spray teams; and coordination with DHMT.
- RTI's subcontractor, Crown Agents USA, will complete preparations for distributing payroll, based on final decisions by USAID and the DOMC regarding the scope of PMI support for IRS payroll.
- The finance manager will report for work in April.

# Madagascar

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Madagascar was identified by the United States Agency for International Development (USAID) as one of the third wave of countries to receive funding under the United States (US) President's Malaria Initiative (PMI). USAID and the Madagascar national malaria control program (NMCP, or Service de Lutte contre le Paludisme [SLP]) identified 24 epidemic-prone districts for indoor residual spraying (IRS) activities. USAID and the SLP agreed to focus spraying activities in 95 communes within targeted central highlands districts.

RTI is tasked with providing strategic, technical, management and operations support for IRS activities in the above-mentioned districts. During the first round of IRS in fiscal year 2008, RTI and the SLP will spray at least 250,000 households with residual insecticide in six districts, protecting at least 1.25 million people and 90 percent of the total estimated population in these districts. In addition, RTI will provide support to Madagascar's national malaria control program to strengthen its entomology capacity to monitor IRS activities and procurement of entomological equipment.

This quarterly report presents the program's progress towards achieving these objectives in Madagascar from January through March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

### *Planning and Assessment*

Anna Thompson, RTI's home office technical manager, visited Madagascar from February 2-9 to attend the official launch ceremonies and meet with the USAID/Madagascar, Ministry of Health (MOH)/SLP, and the IRS team to provide program management support.

In discussions with the IRS coordinator (SLP) and USAID/Madagascar, the following per diem/honorarium has been finalized for IRS operations effective February 11:

- Senior management – 33,000 Ariary (\$19.50 USD)
- Technicians, supervisors, zonal managers - 25,000 Ariary (\$14.80 USD)
- Team leaders - 11,000 Ariary (\$6.50 USD)
- Spray operators - 10,000 Ariary (\$5.90 USD)
- Drivers - 19,000 Ariary (\$11.25 USD)

It was agreed that RTI in-country staff would follow local per diem rates used by other USAID contractors, such as Chemonics under the Santenet Project.

Ms. Thompson transferred home office technical manager responsibilities for the Madagascar IRS program to RTI home office technical manager Bijou Muhura during the week of February 11. A conference call was held with the Mission the week of February 11 to officially introduce

Ms. Muhura to the USAID/Madagascar. Ms. Muhura will lead all IRS-related activities in Madagascar and Ms. Thompson will provide support over the next month to ensure a smooth transition.

### ***Procurement and Logistics***

RTI supported the procurement of the following items to support the Madagascar IRS project:

#### **IRS Campaign Logistics Support for 2007**

<b>Equipment Category</b>	<b>Equipment Type</b>	<b>Quantity</b>
Insecticides	RUBI SWP	18T 400
Spray equipments	Pumps: Hudson X-pert 12 litre	300
	Reparation kit	300
Personal protection equipment	Gloves, visors, hats, goggles, overalls, boots	720 per equip. type
Transport equipment	Vehicle rental	15
	Motorbikes	27

### ***IEC Development and Implementation***

RTI consistently supported the SLP in IEC activities, including community mobilization, dissemination of key information, education, and communication (IEC) messages, and the development of IEC materials such as brochures and stickers. The SLP's IEC focal point managed all IEC activities.

### ***Spraying Operations***

#### *Geographic Reconnaissance and Detailed Planning*

RTI completed geographical reconnaissance shortly before launching spraying activities during the present operation. Below are the main results of the geographical reconnaissance effort.

#### **Geographic Reconnaissance Data for the 2007/2008 IRS Campaign**

Number of Districts	24
Number of Communes	95
Number of Fokontany (Villages)	1,026
Number of hamlets	6,069
Structures with floors	143,574
Structures without floors	79,800
Existing structures	218,919
Existing rooms	844,568
Population	1,262,788

### *Recruitment and Training for Spray Teams*

The below table shows the human resources that were hired to support the Madagascar spray round.

#### **Human Resources Deployed for the 2007/2008 IRS Campaign**

<b>Job Type</b>	<b>Number of Employees</b>
Spray operators	500
Team leaders	100
Sector Chiefs	27
Zone supervisors	9
Inter-regional coordinators	2
Inter-regional technical managers	2
National technical managers	2
Environmental monitoring and compliance and IEC specialist	1
Community mobilization workers	2,032
Regional supervisors (DRSPF)	6
District supervisors (health of districts)	25
Central supervisors (SLP)	2
Central coordinator	1

### *Logistics Support for Spray Operations*

The 2007/2008 IRS campaign spray operations were carried during this quarter. All technical activities were supervised to ensure that spray operations were in accordance with prescribed dosages for the areas to be sprayed. The following measures were taken before and throughout spraying operations:

- Spray operators were required to wash their hands and face with soap and a large quantity of clean water after spraying and before eating, smoking, or drinking.
- Workers were advised to immediately wash affected areas with soap and water in the event of accidental skin contact with the insecticide.
- Workers were advised to immediately inform the supervisor if they experienced adverse side effects of the insecticide.
- RTI ensured that essential emergency medicines were available at every health facility in the target areas. All physicians and paramedics of these facilities were trained in managing emergencies arising from exposure to the insecticide (alphacypermethrin).
- All pumps used during IRS activities were regularly maintained according to the manufacturer's guidelines, which were taught during the training.
- All pumps were cleaned at the end of each working day through multiple rinsing inside and washing outside. The waste water was thrown into a pit latrine dug especially for this use and located on high ground, away from sensitive ecosystems.

John Chimumbwa, RTI's IRS technical director, visited spraying teams in three different localities and held clinics for IRS spray operators. He made the following observations:

- **Program management:** The program is well managed and organized, but could be improved in several areas. This IRS program has the potential to be exemplary in terms of effectiveness. In effect, the Madagascar program has support from the political leadership, high technical capabilities, and a strong local Roll Back Malaria partnership. The spray teams have been proactive in organizing “mop-up” teams to return to spray houses that were originally locked and refused spraying.
- **IRS implementation:** While the teams did their best to adhere to training protocols and deliver quality IRS, some of their implementation tactics could be improved to raise the quality and effectiveness of operations. For example, there were several spray techniques that were recommended to operators, including adjusting the speed of the spraying arm to accommodate ceiling height, shaking pumps when spraying or re-pressurizing, and closing doors and windows during the spraying.
- **Inter-site travel:** IRS posts should be selected in closer proximity to one another and spraying teams should have access to vehicles in order to maximize the efficiency of inter-site travel, which often occurs over difficult terrain. With vehicles, spraying teams should be able to travel from community bases to target sites to their original bases in the same day. These adaptations would yield a larger, better-run store while saving time and decreasing travel risks over difficult terrain.
- **Cleaning of equipment:** While spray operators are well-trained in how to clean their equipment, there is little consideration to the environmental impacts of dumping. This needs to be addressed by ensuring that equipment is cleaned away from lower levels of the water table and that teams use the triple-rinse system in addition to opening soak pits where the team is camped for several days.
- **Operator recruitment:** More spray operators must be recruited. The SLP will support this effort, in part to shorten spraying rounds and maximize equipment use. There are over 100 pumps which are in need of minor repairs; with a small budget, these pumps could be fixed and re-commissioned for 100 additional spray operators. Additional spray operators would help complete the round faster and enable operators to be based in their own communities, rather than travel from sector to sector and spray for almost three months as they currently do.
- **Gender equity:** Currently all spray operators are male, and women are confined to IEC mobilization. Records show that female operators are productive workers and they are readily welcomed by the community
- **Community mobilization:** RTI helped develop the IEC campaign for this spray round. The IEC campaign includes posters, community-based information chalk boards, house numbers, booklets, and door-to-door mobilizers. Interviews with community members reflected that citizens were well informed about the importance of IRS.

- Timing of spray operations: Spray operations should ideally begin just before the onset of the rainy season. This is important to ensure that operations are completed before the period of peak malaria transmission, when vectors are most abundant and hardest to eliminate. If operations are implemented later, they can no longer prevent malaria transmission and instead serve only as a means of mitigation. The ideal start time is late September/October; however, the timing of spray operations is often affected by disbursements and/or fund allocations. This needs to change so that IRS operations can begin when they will be most effective.

## **Other Activities**

### *Waste Disposal and Equipment Monitoring*

In the two sites he visited, Mr. Chimumbwa observed full compliance with regulations regarding empty sachets. IRS program personnel collected empty sachets and returned them to stores. However, Mr. Chimumbwa also observed that teams disposed of excess insecticide by dumping it into a hole that they dug near the last house for the day's IRS operations. Teams did not implement the triple-rinse, and soak pits were not available to set up a rinsing system.

Each spray operator was given a basin to wash his overalls at home or where he camped. Mr. Chimumbwa noted that the landscape near the IRS sites had many hills and valleys, which raised concerns about dumped insecticides. Mr. Chimumbwa noted that disposing of insecticides on higher ground was acceptable, but that doing so at the bottom of a valley would not be acceptable because the insecticide could seep into water sources.

Each operator emptied the sachet into a five-liter bucket, added water, stirred the mixture with a stick, and filtered it through a funnel into the sprayer. Operators did not shake the pump, so at the end of the day there was a thick sludge at the bottom of the pump which was washed out. Operators did not seem to be aware that pumps needed to be shaken as operators moved from house to house and as they re-pressurized the pumps.

Coveralls and boots were appropriate; however, the face mask may have deterred community members because it looked like a gas mask. Furthermore, visors did not fit above the face masks. Disposable masks should be used in the next round. Mr. Chimumbwa also observed that most operators wore different boots than those purchased because the original boots were too heavy. Appropriate boots should be purchased for the next spray round.

Triple rinse and soak pits were demonstrated as the best practices to properly rinse equipment and safely dispose of pesticides. Several people noted that this would be a determinant in re-organizing the staging sites.

The triple rinse approach was discussed for the future training of spray operators at the commune level. Training would start with a training of trainers (TOT) at regional and district levels, and these trainers would in turn train spray operators at commune level.

### *Capacity Building of Ministry of Health*

The SLP welcomed the idea of receiving assistance to create a robust entomology monitoring system for vector insecticide resistance, including the development of a long-term plan. While the program has four qualified entomologists at the central level, there is a critical lack of entomological and parasitological technicians.

RTI originally thought the Pasteur Institute (PI) could support the SLP with entomological and laboratory capabilities, but recently learned the PI lacks the resources needed for the IRS project. The SLP indicated that another organization might provide a facility, part of which the SLP would convert to an insectary.

The SLP would appreciate support in acquiring basic field and laboratory equipment, accessories for entomology and parasitology, and training at least three junior-level entomological technicians for IRS surveillance activities. RTI has developed a field entomology training curriculum and proposed to develop a curriculum specifically for Madagascar in collaboration with the SLP.

### *Epidemic Response System*

Mr. Chimumbwa noted that the criteria currently used to select IRS target areas are theoretically sound. However, the criteria must be re-examined to ensure that the data being entered into the epidemic threshold model is not driven by human error. This examination should be conducted in relation to the national sentinel surveillance system for health, including malaria control.

The strategy will need further review and perhaps additional technical assistance to improve the selection process. The criteria include accessibility and caseload reports that exceed the “epidemic threshold” during the previous transmission cycle. Currently, rapid diagnostic tests (RDTs) are used; threshold calculations derived prior to switching to RDTs have not been revised and are still based on clinical data. Mr. Chimumbwa recommended re-establishing epidemic thresholds on the basis of RDTs as opposed to clinical malaria. He also noted the option of using altitude as the basis for selecting IRS target communes. For instance, using 1,500 meters above sea level as the cut-off point would be a more definite way to delineate inclusion and exclusion criteria.

## ***Project Management and Administration***

### *Staffing*

In February, RTI recommended David Rasolofondranohatra to the USAID as IRS program manager and is awaiting approval. RTI also identified an IRS program manager and finance officer to serve as signatories on the account. RTI also identified a finance assistant and finance intern to help with the financial management of spray operations. RTI received approval for the logistics officer who started working with the program on January 28.

The home office technical manager explained office rules and procedures to in-country RTI staff and briefed them on administrative procedures for the management of spray operations. The

field budget was revised to include additional costs such as full-time staff, office space, increased per diem, and communication costs for IRS operations.

### *Office & Warehouse Space*

Ms. Thompson and RTI's logistics officer identified office space and worked with the real estate agent to finalize the leasing agreement. The team obtained competitive bids for office furniture and procured office supplies and equipment.

It was difficult to find appropriate, secure storage facilities for insecticides in the IRS target localities. RTI asked district supervisors to identify potential storage facilities in their areas, and nearly all were located in hospital areas. In the future, RTI has planned to rent and refurbish a warehouse in every district.

### **Partnership and Collaboration**

Mr. Chimumbwa visited Madagascar in February to meet with the SLP and USAID and discuss IRS operations.

#### **Meeting with the SLP**

Mr. Chimumbwa met with nine members of the SLP, including zonal and district staff, and discussed a number of issues regarding ongoing IRS operations in two provinces in the highlands of Madagascar. Discussion topics included: planning field visits to the IRS sites; planning a visit to the storage areas for IRS commodities from regional and community stores; examining possible sites for entomological surveillance; developing the protocol for entomological monitoring; potential roles of other partners; and IRS capacity development issues.

#### **Malaria Elimination Meeting**

Mr. Chimumbwa and the planning team held a malaria elimination meeting to establish a framework for how the international meeting will be conducted in March 2008. Meeting attendees discussed what could be realistically achieved in a three-day meeting and whether the meeting could serve as an advocacy platform to obtain concrete commitments from all key players and facilitate political and resource mobilization. The meeting was attended by the USAID, the World Health Organization (WHO), the SLP, the Center for Disease Control and Prevention (CDC), and RTI.

#### **Pasteur Institute**

Mr. Chimumbwa briefly met with the director and noted that the institute's malaria research is limited due to staffing constraints. Only one entomologist works for the Institute, and she is currently busy with projects other than malaria vector control. However, the Institute is willing to collaborate with the SLP and PMI to support entomological M&E. This decision will depend on the outcome of a meeting that will be held in the coming week between the CDC and the Institute entomologist. The SLP proposed several possibilities for collaboration with the Institute on entomological surveillance. These possibilities included having the SLP carry out field work while the Institute conducts laboratory assays, sharing the work between the SLP and Institute on the basis of sentinel sites, and forming joint field teams of SLP and Institute technicians.

## Outstanding Issues

- Coordinate with donors to agree on a per diem rate that can be used by all donors and implementing partners for the next round of spray operations in November/December 2008.
- The USAID regional environment advisor was in-country from March 2-10. On the basis of field trip findings, he recommended the following actions:
  - Develop a work plan that clearly identifies worker responsibilities.
  - Provide expertise at target sites and establish a stronger leadership role for RTI.
  - Locate new storage facilities.
  - Develop a clear and appropriate strategy for the disposal of empty sachets and pesticide residues.
  - Train storekeepers to build in-country capacity.
  - Increase involvement of the Office National de l'Environnement (ONE).
  - Minimize insecticide release into the environment.

## Upcoming Activities

- Mr. Chimumbwa discussed storage problems for the 2007/2008 IRS round and finalized short- and long-term goals with the USAID.
- Based on field visits to IRS operations, USAID/Madagascar has reported a need for smaller boots and coveralls for spray operators; Malagasies tend to have smaller physiques, so sizes seven, eight, and nine are preferable. Several size 10s should also be procured.

# Malawi

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Malawi was identified as one of the first wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). The U.S. Agency for International Development (USAID) and the Malawi national malaria control program (NMCP) identified Nkhotakota as an epidemic-prone district to pilot indoor residual spraying (IRS) activities.

RTI is tasked with providing strategic, technical, management and operations support for IRS activities in the above mentioned district. RTI and the NMCP will treat at least 26,500 households with residual insecticide in Nkhotakota districts during the first round of IRS in the country.

This quarterly report presents the program's progress towards achieving these objectives in Malawi from January through March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## **Current Activities & Accomplishments**

This quarter included the mop-up spray round in Nkhotakota and the end-of-spray activities for the 2007-2008 season. Out of 1,477 unsprayed households found in the target areas, an additional 1,327 households were sprayed, representing a coverage rate of 89.8 percent.

Also in this quarter, RTI gave a presentation to an extraordinary meeting of the Environmental Council and responded to specific questions from its members on environmental safety aspects of the IRS spray program in Malawi.

The Director of Environmental Affairs issued a certificate of approval for the IRS project in Malawi on March 13 of this quarter.

### ***Planning and Assessment***

#### *Logistics Assessment*

In preparation for the mop-up round, Mohammed Saleh, the IRS team in Nkhotakota, Shardreck Mulenga, Wilfred Manda, and Wilson Kamunga actively sought out missed households from the initial IRS round. They discovered that the number of missed households had been substantially overestimated. (At the end of the spray round, the estimates of missed households ranged as high as 3,000 to 3,500). To prepare for the mop-up round, RTI procured 2,500 sachets of ICON CS based on these estimates. In the field, they found 1,477 households; 1,327 were sprayed.

#### *Environmental Assessment and Compliance*

The environmental compliance inspection report by Tito Kodiaga, RTI's environmental scientist, was finalized during this quarter. The majority of the recommendations in the report had been implemented after his field visit in December of the previous quarter. The remainder of these unmet recommendations was in place for the mop-up round.

Camilien Sant-Cyr, Regional Environmental Officer, visited Malawi in February of this quarter and inspected the IRS project area in Nkhotakota as part of his visit.

#### *Extraordinary Meeting of the Environmental Council*

This meeting took place in the Ministry of the Environment's conference room in Lilongwe. This meeting was conducted at the request of the Environmental Council to gather information on the Nkhotakota spray round and the environmental risk mitigation measures taken. Key issues discussed included:

- Experiences from other countries where IRS has been performed.
- Efficacy of ICON CS insecticide.
- Health and environmental considerations of the IRS program.
- Why there were there so many households (26,000) when this was simply a pilot project.

The Council appreciated the presentation, but still had questions. They provided a list of questions to the MOH following the meeting. Autman Tembo (RTI environmental compliance inspector), Jake O'Sullivan (Malawi home office technical manager), and Carl Campbell worked on writing the technical response to these questions, and provided them to Dr. Storn Kabaluzi of the NMCP. The NMCP submitted the official response to the questions from the Environmental Council, which then issued a certificate of approval for a project on March 13, 2008.

### ***Procurement and Logistics***

#### *Pesticides*

During this quarter, the project procured 2,500 sachets of ICON CS. Of these, 1,237 were used in the mop-up round. The remainder was taken to the Dwangwa Sugar Estate pesticide/herbicide storage facility for storage until the next spray round. This facility is guarded 24 hours a day, year round, and meets supplemental environmental assessment (SEA) and WHO requirements for secure storage.

#### *Personal Protection Equipment*

No additional PPE was required for the mop-up round, as the number of operators used was fewer than in the main round and existing supplies were adequate.

#### *Training of IEC Mobilizers*

All staff for the mop-up activities, including IEC mobilizers, participated in a refresher training before going into the field. Special emphasis was placed on message accuracy and complete coverage.

#### *IEC Campaign Implementation*

The mop-up round made greater use of the village health volunteers than had been utilized in the main spray round. This was in response to feedback from community members who look upon the volunteers as a trusted source of information and guidance on health issues. Community

response to the volunteers was positive. It is recommended that future IRS activities make use of them, as well.

## ***Spraying Operations***

### *Geographic Reconnaissance and Detailed Planning*

In preparation of the mop-up round, Health Surveillance Assistants (HSAs) provided the IRS team with locations and the number of households that had been missed in the main spray round. Geographic reconnaissance visits to these areas found that the numbers provided were inflated. Actual numeration in the field found fewer than half of the number claimed. Staff took care to seek out every missed house before spraying began.

### *Post-spraying Operations*

This reporting period started out with some confusion over the number of households actually sprayed and the categorization of the number of households unsprayed (i.e., whether these were households which "refused" to be sprayed, households where no one was at home, or households inhabited by persons whose health or age did not allow them to leave the home, thus making the household ineligible for spraying).

Hence, in early January, IRS partners, RTI, USAID, and the district health management teams were trying to determine from the database and from observation the number of households unsprayed, the denominator (total number of households in the target area) and the number sprayed. The number sprayed was reported to be 27,109, and the number unsprayed (for various reasons) was 3,005.

It was later determined that both numbers were overstated. The total number of households sprayed was inaccurate due to counting "structures" rather than households. The actual number of households sprayed is approximately 23,450. The estimated number of unsprayed households was reduced to 2,500. When the mop-up operators travelled to the field, they found only 1,477 unsprayed households, and sprayed 1,327 of them. This would indicate that much of the problem was inaccurate denominator data—no one knew for certain how many households were in the area.

Lessons include: conduct better reconnaissance; improve data collection and analysis; categorize and record the reason(s) for unsprayed households (i.e., no one home, presence of immovable person, refused entry).

## ***Other Activities***

### *Office & Warehouse Space*

The warehouse space at Dwangwa was further reinforced around the main doors to improve the ability of the door frame to hold the steel bar outer doors which were added for enhanced security. A new fire extinguisher was mounted in the warehouse, as were two thermometers for monitoring warehouse temperature. Improvements were made to the floor to prevent absorption.

The pallets used to hold boxes and other items off the floor were replaced as wood became available. Warehouse staff underwent refresher training during preparations for the mop-up round.

## **Upcoming Activities**

Following the completion of the mop-up round, there will be a series of community open meetings to gather feedback from the communities on their knowledge of IRS and their attitudes toward IRS after experiencing one round.

## Mali

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Mali was identified by the United States Agency for International Development (USAID) as one of the second wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). The USAID and the Ministry of Health (MOH) and Mali National Malaria Control Program (PNLP) identified two epidemic-prone districts for indoor residual spraying (IRS) activities. In fiscal year 2008, USAID and the NMCP agreed to focus spraying activities in Koulikoro and Bla districts (called circles in Mali).

RTI is tasked with providing strategic, technical, management, and operations support for IRS activities in the above-mentioned districts. RTI and the NMCP will treat at least 75,000 households with residual insecticide during the first round of IRS. This will protect approximately 431,000 people and at least 85 percent of the total estimated population in the targeted districts.

In addition, RTI will develop and implement a monitoring and evaluation (M&E) plan in Mali in collaboration with the Malaria Research and Training Center (MRTC) and the PNLN, as well as provide support to the PNLN to strengthen epidemic preparedness and response plans. Specifically, RTI will train Service d'Hygiene (hygiene agents) from malaria epidemic districts (including Bla and Koulikoro) so that the MOH can have a pool of trainers available in epidemic zones.

This quarterly report presents the program's progress towards achieving these objectives in Mali from January through March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

### *Planning and Assessment*

#### *Logistics Assessment*

The logistics assessment was conducted in January by Kim Canelas, the IRS operations director based in Nairobi. Bijou Muhura, home office technical manager (HOTM), was in-country to help coordinate the logistics assessment. Both Mr. Canelas and Ms. Muhura met key officials in Koulikoro and Bla circles, including the governor of Koulikoro, the prefects of Bla and Koulikoro, the mayor, and the chief doctor. Sitan Traore, the IRS PNLN focal point person, accompanied the team throughout all meetings.

#### *Environmental Assessment and Compliance*

RTI environmental scientists Tito Kodiaga and Jeanne Chabrier conducted the environmental assessment in February. Ms. Muhura was in-country to help coordinate the environmental assessment. The team met with a number of partners and was accompanied by Dr. Traore during all meetings. During the assessment, the environmental specialist team discussed the risk of water contamination in a Bla circle fishing village. The supplemental environmental assessment (SEA) was submitted to the USAID.

### *Pesticide Selection*

The MRTC has tested two insecticides: bendiocarb and lambda-cyhalothrin (ICON). The PNLP selected ICON to be used during IRS. Bendiocarb is not registered in Mali, and the lambda-cyhalothrin ICON component is not registered as well. PNLP coordinator Georges Dakono has initiated the registration process and Ms. Muhura has also met with Syngenta, the ICON manufacturer, to help launch the registration process. In February, Ms. Muhura also met with the permanent secretary of the registration board (l'Institut du Sahel) to explain the importance of registering the pesticide.

### **Procurement and Logistics**

#### *Pesticides*

RTI has initiated the procurement of ICON and must obtain approval of the SEA by the USAID and a waiver from the Ministry of Agriculture (MOA) in order to avoid delays.

#### *Spray Pumps, Personal Protection Equipment, and Other Commodities.*

An order has been placed for spray pumps and associated parts, personal protection equipment (PPE), and other necessary commodities, including first aid kits and pregnancy tests for spray operators.

### **IEC Development and Implementation**

#### *IEC Material Design and Development*

RTI hired Oumou Modibo Diabate as an information, education, and communications (IEC) consultant to develop IEC materials. Ms. Diabate and Ms. Muhura met with representatives from the PNLP and National Center of Information, Education, and Communication on Health Issues (CNIECS) to discuss the IEC strategy/materials, training materials, and the recruitment of IEC mobilizers (called “relais” in Mali) within Bla and Koulikoro. Ms. Diabate also worked with the CNIECS, PNLP, and community health centers of Bla and Koulikoro to develop an IEC micro plan.

Ms. Muhura and Ms. Diabate were accompanied by PNLP representatives at every meeting. They met with Segou and Bla circle authorities from the “Direction Regionale de la Sante,” as well as Koulikoro and Bla circle “medecin chefs,” prefects, mayors, traditional chiefs, religious chiefs, and community members. Meeting attendees discussed the IEC process, the recruitment of mobilizers and spray operators, and other IRS start-up activities.

### **Other Activities**

Ms. Muhura met with the “medecin chef” doctors and prefects of Koulikoro and Bla circles to discuss the IRS program. RTI met with many stakeholders to discuss IRS activities and initiate IEC activities. Meeting attendees included mayors, sub-prefects, village chiefs, chief doctors, the president of “Conseil de Cercle,” and representatives from the Ministry of Environment (MOE), board of non-governmental organizations, Koulikoro, Segou, and community radio stations. The PNLP accompanied the HOTM at every meeting.

There were ongoing discussions with the Mission, PNLP, and chief doctors about the testing of cholinesterase levels.

## ***Project Management and Administration***

### *Staffing*

Recruitment is ongoing for several IRS team positions, including the chief of party (COP). The finance manager, technical coordinator, logistician, M&E advisor, administrative assistant, and IEC consultant have been recruited and will begin working in April.

### *Office & Warehouse Space*

RTI has located an office in Bamako and is in the process of identifying warehouses and secondary storage spaces in Bla circle and Koulikoro.

## ***Partnership and Collaboration***

### *National Partners*

RTI works in close collaboration with the PNLP on all IRS activities. RTI is also working in close collaboration with the Ministry of Health, MOE, MOA, and Ministry of Social Development in IEC.

## **Outstanding Issues**

- Regarding the risk of water contamination in a Bla circle fishing village that was raised during the environmental assessment, RTI is addressing this issue with both the Mission and representatives from the PNLP and “Direction National de la Sante.”
- The PNLP took longer than expected to select the insecticide for IRS, which may cause delayed in the registration process and when we can start spraying in the country.
- As of the end of this quarter, ICON is still not registered in Mali. The PNLP must obtain a waiver from the MOA because the registration board will no longer be meeting in the coming weeks. The PNLP must appeal the Secretary General of Health to obtain the waiver as quickly as possible. Ms. Muhura is working closely with the PNLP on this.
- The PNLP is being moved from the jurisdiction of the National Directorate of Health to the direct jurisdiction of the MOH. This change may delay the hiring of a new PNLP coordinator, which could affect the IRS program.

## **Upcoming Activities**

- Identify and hire a chief of party for Mali.
- Establish IRS steering committee task force.
- Submit an SEA to USAID and an environmental impact assessment for approval by the National Department of Sanitation, Pollution, and Nuisance Control (DNACPN), MOE.
- Validate IEC and IRS trainings material, and conduct training of trainers, IEC mobilizers training, IRS operators training, and community health center nurses training.
- Complete geographical reconnaissance mapping.
- Locate and renovate central warehouses and storage spaces in Bla Circle and Koulikoro.
- Construct soak pits and progressive rinsing areas.

# Mozambique

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Mozambique was identified by the United States Agency for International Development (USAID) as one of the second wave of countries to receive funding under the United States (U.S.) President's Malaria Initiative (PMI). USAID and the Mozambique Ministry of Health and its national malaria control program (NMCP) identified six epidemic-prone districts in Zambezia Province (Quelimane, Nicosadala, Namacurra, Murrumbala, Milange and Mocuba) for indoor residual spraying (IRS) activities. In 2007, USAID and the NMCP agreed to focus spraying activities in 48 localities in the six districts with the intention of continuing coverage in these areas in 2008.

RTI is tasked with providing strategic, technical, management and operations support for IRS activities in the above mentioned districts. RTI and the NMCP will treat approximately 600,000 households in these six districts with residual insecticide during IRS activities. This will provide protection for approximately 1.7 million people and at least 85 percent of the total population in these districts. In addition, RTI will provide support to the NMCP to strengthen epidemic preparedness and response plans in collaboration with partners Liverpool Associates in Tropical Health (LATH), Medical Research Council of South Africa (MRC) and Crown Agents.

This quarterly report presents the program's progress towards achieving these objectives in Mozambique from January through March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

### *Planning and Assessment*

#### *Environmental Assessment and Compliance*

RTI received final approval of the Mozambique supplemental environmental assessment (SEA) document on February 12, 2008.

#### *Pesticide Selection*

No activities concerning pesticide selection were performed during this period. The government of Mozambique selected two insecticides for use during the 2007-08 IRS campaign: di-chloro di-phenyl tri-methyl chloride (DDT) 75% WP for rural and traditional houses, which constitute over 90% of the structures in the six districts; and deltamethrin 10% WP for houses with painted walls, mostly in urban areas. Both insecticides were procured by the government in sufficient quantities to meet the requirements for all six districts for the IRS round conducted from September 2007 through February 2008.

### *Procurement and Logistics*

RTI's procurement partner, Crown Agents, successfully handled the arrangement and payment of vehicles and motorcycles throughout the spray campaign.

Temporary storage, transportation, and distribution of insecticide within the six districts in Zambezia province was handled by the NMCP under the supervision of the Ministry of

Environmental Affairs regional and district offices. RTI supported the activities by guaranteeing payment for district and provincial storage facilities and transportation.

During the campaign, the MOH ran out of funding to supply more DDT to the province and RTI was requested to support the transport from other provinces (Manica and Beira) using the DPS trucks. It was agreed that RTI would provide fuel for two trucks, while the DPS would provide the per diem and other finances to the drivers.

With the completion of spray operations during this period, various clean up and collection activities took place, including:

- Collection of the empty sachets and all spraying materials and equipment and the transfer of such to the Quelimane warehouse. Empty sachets were counter-checked against distribution records.
- Cleaning and repair of spray pumps in the warehouse as they were delivered from the districts.
- Collection, sorting, and storage of personal protection equipment (PPE) returning from the field. An inventory of serviceable PPE was taken for reuse in next season.

The program faced the following logistical challenges, which should be addressed before the next IRS round:

- The lack of appropriate storage facilities in rural areas.
- Poor district-level planning such that insufficient resources were acquired prior to spray operations.
- The lack of information from the districts on which IRS materials were lost during the campaign and by whom. This information is used to discount the cost of items on final pay days.
- Misuse of the motorcycles by the supervisors; several motorcycles hired for the program required significant repairs before being returned to the owners.
- The provincial health office's (DPS-Departamento Provincial de Saúde) trucks were not readily available for equipment and insecticide delivery and transportation, although these vehicles were supposed to be available for use by the malaria program during the campaigns.

## ***IEC Development and Implementation***

### *Coordination with Spray Operations*

IEC mobilization continued in tandem with spray operations until the completion of the program in February 2008. Mobilizers visited each village and spoke with as many heads of household or other residents as possible, to advise them when the spray teams were coming, how to prepare their house for spraying, what actions to take upon re-entry, and not to re-plaster treated walls until after the malaria season. Mobilizers were also directed to monitor spray operations during their visits to households once spray operators reached the community. This helped to increase monitoring efforts for spray operations in the various districts and allowed the community members to report any adverse behaviour of spray operators.

Once mobilizers completed their house-to-house mobilization activities, they accompanied spray operators to each house when the teams arrived. This reduced the number of household refusals.

The IEC program encountered two primary challenges:

- Mobilizers who are illiterate or have a low level of literacy must rely on others to record the data they collect.
- The diversity of local languages and the difficulty of preparing IEC materials in most or all local languages limits the utility of printed materials.

The IEC strategy for the next IRS round should address these difficulties through development and use of health education materials for non-literate mobilizers and audiences.

### ***Spraying Operations***

The IRS campaign was completed on February 20, with Quelimane being the last district to finish. Quelimane district witnessed the highest number of refusals and absent household owners; revisits to the homes were conducted over a six day period. The hospitals and other institutions (schools, etc.) were also sprayed. Namacurra district completed spraying on January 26, and the other districts finished at various times over the next several weeks.

One of the primary goals of this year's campaign was to extend the reach of the government's IRS program beyond what it had achieved the previous year. The 2007-08 program reached many villages beyond the largest towns, where spraying had not been delivered in the government's last two IRS campaigns.

Spray operations were completed on the dates shown below for each district.

<b>District</b>	<b>Start date</b>	<b>End date</b>	<b>Notes</b>
Quelimane	1 Oct. 2007	20 Feb 2008	Extended to cover hospital and return visits
Nicoadala	1 Oct. 2007	16 Feb 2008	Team recalled to work for 6 days to cover several villages previously missed
Namacurra	1 Oct. 2007	26 January 2008	Completed on target date
Mocuba	1 Nov. 2007	16 February 2008	Completed on target date
Morrumballa	2 Nov. 2007	14 Feb 2008	Prematurely terminated due to strike
Milange	2 Nov. 2007	16 Feb 2008	Completed on target date

### *Coverage*

The number of houses sprayed and the number of residents protected far surpassed the estimates provided by the provincial department of public health (DPS) before the start of the IRS program. The DPS estimated there were 337,212 houses and 1,686,022 people in the six districts. The IRS teams reported visiting 603,862 houses, of which they sprayed 586,568, achieving 97.1% coverage. Respondents interviewed by the spray operators and mobilizers reported a total of 2,588,385 people as residents of the houses sprayed.

### Houses Sprayed, % Coverage, and Population Protected

District	Houses Visited	Houses Sprayed	% Sprayed	Reported Number of Residents in Sprayed Houses			
				Male	Female	Children <5years	Total
Quelimane	122,856	122,760	99.9	250,606	279,371	104,673	634,650
Nicoadala	83,336	76,784	92.1	143,343	133,215	86,581	363,139
Namacurra	104,413	103,896	99.5	136,726	136,726	79,162	352,614
Mocuba	116,242	108,313	93.2	197,339	193,237	126,383	516,959
Morrumballa	98,122	95,990	97.8	162,944	156,427	113,750	433,121
Milange**	78,893	78,825	99.9	112,930	110,867	64,105	287,902
<b>Total</b>	<b>603,862</b>	<b>586,568</b>	<b>97.1</b>	<b>1,003,888</b>	<b>1,009,843</b>	<b>574,654</b>	<b>2,588,385</b>

Since there are differences among the three sources of population estimates for the targeted area -- the 2007 census, the DPS estimates, and the IRS team reports -- it is difficult to know whether the number of houses reported by the spray teams is accurate. As a measure to unravel the discrepancy, RTI and the DPS initiated a house counting exercise. The DPS will release revised household and population estimates for the districts when the exercise has been completed.

The following were the most important challenges encountered in the 2007-08 IRS round:

- Low supervisory skills and commitment of the supervisors to spraying activities
- Poor data management, including mathematical miscalculations, inaccurate reporting and team leaders' failure to verify data submitted by spray operators.
- Inadequate follow-up by supervisors and spray team leaders, once problems had been identified.

#### *Insecticide Use*

DDT and deltamethrin were used in this IRS round. DDT is appropriate for use on mud walls and was used on traditional houses in rural areas. Deltamethrin was used in main towns where permanent color-painted structures were found.

The following table reflects the amount of insecticide spray operators reported using, as recorded on daily spray cards.

- Operators reported using a total of 400,166 DDT sachets to spray 567,451 houses in the province, at an average of 1.4 houses sprayed per DDT sachet used. This usage rate is appropriate given the target residual concentration and average size of houses in the area.
- Spray operators reported using 22,100 sachets of deltamethrin sachets to spray 119,115 houses (again the data in the table does not reveal such differentiations), or an average of 5.4 houses sprayed per sachet. If accurate, this indicates that operators were spraying much less insecticide than should be used, since the expected rate of use could have changed from 1 to 3 houses per sachet depending on the average sizes of houses. It is unclear whether the daily field reports reflected the actual rate of use or over-reported the number of houses sprayed. Rather, they would have reported a much larger than actual number of treated houses.

### Insecticide Usage as Reported on Daily Spray Cards

District	Houses Sprayed	Insecticide used (sachets)	
		DDT	Deltamethrin
Quelimane	122,760	102,469	9,346
Nicoadala	76,784	62,837	973
Namacurra	103,896	42,580	1,657
Mocuba	108,313	81,480	5,558
Morrumballa	95,990	54,061	4,566
Milange**	78,825	56,739	0
<b>Total</b>	<b>586,568</b>	<b>400,166</b>	<b>22,100</b>

\*\* Milange mixed together all of the DDT and Deltamethrine data, accounting for all of the insecticide used as DDT. Confusing numbers were produced when attempting to separate the figures; thus they were all left as DDT.

Stock and shipping records indicate that only 314,774 sachets of DDT were available for use during the campaign and, given the balance of 4,280 sachets inventoried at the end of the round, that only 310,494 sachets of DDT were used. This is considerably less than the 400,166 sachets of DDT reported on spray operator daily records.

### DDT quantities in the province since initiation of the campaign

Pre-campaign stock in province		Received from Beira and Manica		Total DDT provided to the province		Amount used		Balance	
Sach.	Tons	Sach.	Tons	Sach.	Tons	Sach.	Tons	Sach.	Tons
17,234	11.5	297,540	199	<b>314,774</b>	210.5	310,494	208	4,285	2.5

DDT stocks were under the direct control of the government before and during the campaign, and stock records were conflicting. It is possible there were existing stocks of DDT at the beginning of the round other than those inventoried by RTI. Also, when small quantities of DDT were discovered at a local market, available for sale to the public, the DPS reported the incident to police, who investigated and eventually arrested one of the IRS supervisors who had worked on the prior year's IRS program. RTI then established "monitoring teams" to regularly check the markets. It is also possible that people who had previously sequestered stocks of DDT for personal use or sale over reported the number sachets to match the over reported houses.

There were other problems that also prevented accurate reconciliation of pesticide stocks and amounts used. In Milange, and occasionally in other districts, operators were not keeping separate data for houses sprayed using DDT and deltamethrin and it became impossible later to separate the reports and accurately quantify the amounts of either insecticide used. Also, it appears some spray teams were influenced by families to use deltamethrin in place of DDT due to its broad spectrum effects (killing other nuisance insects).

For all of the reasons given above, it was impossible to fully reconcile the amounts of insecticide available and the amounts used. This is an extremely serious issue that requires attention and improved systems before the next round of IRS. However, it may not be possible to fully address this problem, given government control over the insecticide stocks and the weak oversight that has been applied for the past two rounds.

At the end of the round, there were 43 boxes of DDT due to expire in 2008:

- 5 boxes had already expired in February 2008

- 11 boxes were due to expire in August 2008
- 27 boxes were due to expire in September 2008

These supplies were to be used in Derre district but went unused when the spray teams went on strike and the spraying program was terminated.

### *Environmental Mitigation*

As noted above, RTI established monitoring teams to detect DDT pilferage. These teams continued to monitor the presence of DDT in markets and houses throughout the campaign. In accordance with the SEA, the program used a triple rinse system for the spray pumps to ensure minimum DDT wastage and reduce the amount of environmental contamination, and wastewater pits for disposal of PPE wash water at all localities; were used for all the localities. Staff from the Ministry for Coordination of Environmental Affairs (MICOA) and the Ministry of Agriculture participated on monitoring teams and visited spray operations in each district to conduct environmental compliance audits. These parties also agreed RTI would collect and transport empty DDT and deltamethrin sachets to the Quelimane warehouse, where the government would retrieve them for delivery to and disposal by the UN Food and Agriculture Organization's initiative regarding obsolete pesticides.

### **Other Activities**

#### *Capacity Building of Ministry of Health*

The NMCP requested support from RTI for entomology field training. RTI is working with the NMCP to provide financial support to a small team of entomologists to travel to Zambezia and work on entomological activities for the province.

### **Monitoring and Evaluation**

#### *Progress on Key Indicators*

The key indicators were discussed in more detail above. The 2007-08 IRS round sprayed 586,568 houses and achieved 97.1% coverage of houses found in the target area. Household respondents reported that 2,588,385 people reside in the houses sprayed.

### **Project Management and Administration**

#### *Staffing*

- Dr. Chandana Mendis took up post as IRS Mozambique Chief of Party (COP), effective March 5, 2008. The Acting Chief of Party, Ms. Catherine Ngugi, stayed in Mozambique through the completion of the 2007-08 IRS round and for several more weeks to assist Dr. Mendis with his transition into the COP role.
- Temporary support staff were available throughout the spray campaign
- Crown Agents/Mozambique supported the payment of seasonal spray personnel
- Zambezia's provincial programme coordinator position was vacant through most of the campaign, as the person hired for this role exhibited improper conduct and was released. The position needs to be filled before the next round.
- A national logistics manager position will need to be filled for the next spray campaign. This is important for capacity building of the RTI and DPS personnel in Quelimane, as

well as for warehouse management and record-keeping training at all levels. RTI is in the midst of discussions with potential candidates.

- A second warehouse assistant for the Quelimane warehouse has been identified as essential to support district and field logistics. This will ensure that RTI has a strong hand in the control and management of the Quelimane insecticide central warehouse.

The IRS seasonal workers, including spray operators and team leaders, completed the spraying without having employment contracts from the DPS, as the DPS was not able to get the advocate to complete the review. Since the DPS had agreed to employ the temporary spray personnel for the campaign, this will need to be addressed again prior to the next campaign to ensure that seasonal staff have clear contracts on file.

### *Administrative Support*

Abrar Sattar, IRS project administrative specialist for Mozambique, visited the IRS team to provide administrative and human resource support to the project. He visited both the Maputo and Quelimane offices during his stay from March 11-20.

Mr. Kim Canelas, IRS director of operations, also visited the project to attend the post-evaluation meeting in Zambezia with the DPS March 10-15.

### *Office & Warehouse Space*

Office spaces are adequate in Quelimane and Maputo.

## **Partnership and Collaboration**

### *National Partners*

Collaboration and coordination with the DPS, MICOA, and the Ministry of Agriculture continued.

From March 10 to 16, a Zambezia post-IRS campaign evaluation meeting was held to discuss the completed campaign. During this meeting, the DPS and the RTI team reviewed the recently completed campaign, in terms of what activities went well and what needs to be improved for future campaigns. Discussions also began concerning planning and timing for the next campaign.

### *USAID Partners*

RTI has continued to work with Crown Agents on all logistical planning and implementation aspects of IRS activities.

Communication was maintained with Juliette Morgan (PMI/CDC) throughout this period.

USAID/PMI put together a DDT investigation team that visited the Zambezia province (Mocuba and Quelimane districts) January 25 – 29. Prior to departing Quelimane, a member of the team was able to purchase some DDT secretly sold by a vendor in the market, and was informed that some more might be obtained if needed. The source of the DDT was not established, but upon further investigation, the Quelimane district IRS coordinator was implicated.

A meeting to discuss the sale of DDT to a PMI representative in the market was held on January 30 with the DPS. The provincial inspector of public health carried out an interview with the suspect who was an IRS seasonal hire. The decision was made to involve the police; the director of DPS would follow up on the issue.

## **Outstanding Issues**

- Recruitment continues for open positions in the national office and field office
- The MOU between the DPS and RTI should be revised to reflect agreements for the 2008 IRS campaign.
- A provincial-level IRS working group has not yet been established.
- The DPS will report results from the house-counting exercise in the six target districts
- USAID will report results from its investigation, with WHO, of the government's management of DDT stocks and usage.

## **Upcoming Activities**

- National IRS review meeting to be held by the NMCP in April/May.
- Planning for the fall 2008 IRS campaign will begin in the next period.
- Dr. Mendis will meet with national NMCP officials to plan the capacity-building component of this project.

# Rwanda

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Rwanda was identified as one of the second wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). The U.S. Agency for International Development (USAID) and the Rwanda Ministry of Health (MOH) and its national malaria control program (Programme National Integre de Lutte Contre Paludisme [PNILP]) identified three epidemic-prone districts of Nyarugenge, Gasabo, and Kicukiro (these three districts comprise what is also known as Kigali Province or Kigali City) for indoor residual spraying (IRS) activities. In 2006, USAID and the PNILP agreed to focus spraying activities in these districts with the intention of expanding IRS coverage to Kirehe and Nyanza districts in 2008.

RTI is tasked with providing strategic, technical, management and operations support for IRS activities in the above mentioned districts. RTI and the PNILP will treat at least 85 percent of approximately 200,000 households in the five districts with residual insecticide during IRS. This will protect approximately 1 million people in the targeted districts.

This quarterly report presents the program's progress towards achieving these objectives in Rwanda from January through March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

During this reporting period, activities in Rwanda focused on preparations for the first spray round to be conducted in Kirehe and Nyanza districts in Rwanda. This spray round was intended to begin in late January. RTI activities this period also focused on preparations for the second round of spraying to occur in Kigali City (at the three districts that comprise Kigali City - Nyarugenge, Gasabo, and Kicukiro). This spray round is scheduled to begin in March 2008. However, due to a number of planning delays, spray round start dates in all districts were pushed back and later cancelled. As of the end of the quarter, this spray round had not yet been rescheduled.

### *Planning and Assessment*

During this quarter, RTI held many planning meetings with counterparts at USAID/PMI, PNILP, and other key partners regarding the planning of spray rounds in both Kirehe and Nyanza districts and in Kigali province districts of Nyarugenge, Gasabo, and Kicukiro. Below is a brief chronological summary of some of the key planning meetings leading up to and following the cancellation of the spray round in these districts:

- In early January, RTI participated in a meeting with malaria advisors Patrick Condo (USAID) and Roopal Patel (PMI) to discuss forthcoming IRS activities and timelines. During this meeting, Mr. Condo and Ms. Patel emphasized the need to send educational messages about IRS through radio and TV spots. Messages had already been prepared, but required prior approval from the PNILP and the Health Communications Center (HCC). Meeting attendees agreed that the IRS information, education, and communication (IEC) coordinator should work with the PNILP and HCC to broadcast these messages as soon as possible in January. Spray round logistics were also discussed. Meeting attendees discussed the need to revive the IRS steering committee. Although the PNILP usually calls IRS steering committee meetings when necessary, attendees agreed that these

meetings are crucial at national and district levels. Attendees therefore decided to contact Emmanuel Hakizimana, the IRS focal point at the PNILP, to discuss implementing regular IRS steering committee meetings.

- In January, David Rugero, the IRS chief of party (COP), visited Nyanza district to meet the mayor and other district authorities. The COP met all 12 executive secretaries from the 12 sectors of Nyanza and discussed the forthcoming IRS operations, as well as the collaboration necessary to ensure the program's success. The COP also met the district health director to discuss the medical examination of IRS operators, among other issues. Mr. Rugero also met the mayor of Nyarugenge district during January and discussed preparations for the next round of spraying in Kigali province.
- In January, RTI also met with Laurent Iyikirenga (PNILP), Eric Mashukano (PNILP), and IRS district managers for Kigali City, Kirehe, and Nyanza to receive IRS preparation updates from program and IRS district offices. Meeting attendees agreed that the program office should update the PNILP on the status of planning activities and that district authorities would provide a list of sprayer operators. Mr. Iyikirenga requested the training module used during last year's spray round and proposed that the IRS program office send the PNILP a written request for his participation in the training of trainers (TOT). IEC coordinator Aloys Badege briefed attendees on the progress IEC materials. Mr. Badege informed attendees that the materials have been finalized by an IEC committee composed of himself, Epiphane Nyiraharerimana (PNILP), and Nathan Mugume (HCC). It was proposed that RTI request the PNILP to expedite their necessary approval of this material. Attendees also discussed forthcoming activities and timelines. RTI requested that the PNILP invite district health officers to the TOT to familiarize them with IRS and prepare them for the supervision and coordination of IRS operations in their respective districts. Attendees also discussed the need for surveillance and monitoring and evaluation (M&E) of IRS to measure its effectiveness.
- The TOT for all five districts started in Nyandungu in January 2008. The PNILP was absent from the official opening of the training, and RTI then received a request from Corine Karema (PNILP) to indefinitely postpone the TOT. This occurred shortly after IRS technical director John Chimumbwa arrived from Nairobi to support the training.



*The training of trainers at Centre d'Accueil St Francois d'Assise during January 16-22, 2008.*

- The PNILP organized a day-long meeting after the proposal to postpone the TOT. The USAID/PMI, Centers for Disease Control and Prevention (CDC), PNILP/Center for Treatment and Research on HIV/AIDS, Malaria, Tuberculosis and other epidemics

(TRAC Plus), HCC, and RTI were represented at the meeting. During this meeting, the group discussed that status of IRS preparations; recommendations from the evaluation of the first round of spraying in Kigali; the development a comprehensive plan for the next round of IRS in the country; appropriate channels of IEC communication; and the roles/responsibilities of the MOH, PNILP, and RTI in communicating IRS messages. After this meeting, Dr. Kramer, the Director General of TRAC Plus – Center for Infectious Disease Control at the Ministry of Health, authorized the TOT to continue. The TOT continued in Kicukiro and ended the third week of January.

- During the first week of February, RTI, USAID/PMI, PNILP/TRAC Plus met at the PNILP to discuss the feasibility of completing Kigali IRS operations in four weeks using an increased number of IRS operators working four days per week. Mr. Hakizimana proposed to replace the four-day work schedule with a six-day work schedule, and sent this plan to various project partners. TRAC Plus did not respond to the proposal.
- Also during the first week of February, RTI held an IRS management meeting to discuss the status of planning for spraying in all five districts and several key concerns: First, the group was concerned with the PNILP/HCC delay in approving IEC materials necessary to support IRS operations. Attendees were concerned with the PNILP's delay in starting the training for IRS sprayers and IEC implementers. Lastly, following a suggestion by the PNILP to increase the number of sprayer operators and decrease the number of spray days per week, the team discussed the challenges with scaling up associated management/administrative oversight and maintaining sprayer quality given a limited work schedule.
- TRAC Plus called a meeting at Kigali City Hall to discuss the upcoming spray operations. Attendees included the PMI/USAID, HCC, RTI, and district health officers. TRAC Plus announced decision to spray only Kigali City and reviewed the timeline of upcoming events. TRAC Plus stated that spray operator lists would be provided to RTI by February 9 and that medical examinations would begin February 11. TRAC Plus also announced that the number of spray operators, supervisors, and IEC implementers must be doubled in order to finish spraying in four weeks. RTI requested the list of Round One sprayers and it was sent the same day.
- During the second week of February, Dr. Michael Kramer sent an email to all IRS partners to inform them that IRS operations in all five districts will be postponed due to the coming rainy season. PNILP representatives gave three reasons for postponing IRS. First, the PNILP wanted to increase the amount of planning time to ensure that all lessons from the first spray round in Kigali (which ended in October) were integrated into current spray rounds. Second, the PNILP wanted to provide enough time for a thorough IRS assessment and adequately prepare people for the upcoming operations. Third, the PNILP wanted to avoid a situation where the coming rains would interrupt operations. Dr. Kramer invited partners to meet in his office on February 14 to explain the MOH's decision.
- Mr. Rugero and Ms. Thompson kept IRS staff informed of events as they developed and notified IRS staff from the five target districts that they would be placed on unpaid leave following the postponement of IRS operations by the PNILP. As such, over 75 percent of IRS staff members were sent on a provisional unpaid leave for three months, pending the MOH decision to resume spray operations.

- Mr. Rugero, Mr. Ruziga (RTI's new M&E director), Mr. Condo, Ms. Patel, and IEC coordinator Aloys Badege met with PNILP coordinator Corine Karema on March 12 for the first time since the postponement of spray operations. The PNILP called this meeting to update PMI partners on the PNILP's activities and discuss preparations for upcoming IRS activities. The IRS team informed the PNILP that the work plan for forthcoming activities was in an advanced stage and would be shared upon its completion. The PNILP informed RTI representatives that they could soon begin working with Mr. Hakizimana, who was on sick leave and would resume his duties within a week. RTI agreed to collaborate on pending issues, including developing an M&E plan, identifying local needs for epidemic surveillance and prevention, developing a long-term IRS plan, establishing an insectary for the PNILP, supporting sentinel sites by training entomological assistants with Tulane University, and developing a strong IEC strategy.
- The Rwanda IRS program team met with Mr. Condo and Ms. Patel at the new program office to discuss the need for the TRAC Plus/PNILP to provide the official number of districts that will be sprayed in the coming rounds. They also discussed the need to revive national- and district-level IRS steering committees to supervise IRS activities. IRS program representatives expressed the need to have an additional employee that would help the focal point person reconcile all IRS matters with PNILP leadership. They agreed that this responsibility could be assumed by the environmental officer to soon be recruited and based at the PNILP. Meeting attendees discussed upcoming visits by high-ranking PMI and CDC officials who will meet with health officials of the Rwanda government. The team also discussed an upcoming visit to the IRS program office to review the previous IRS round and preparations for the forthcoming round.

### ***Procurement and Logistics***

During the month of January 2008, RTI's logistics department concentrated on procurement of items for IRS in Kigali, Kirehe, and Nyanza. Logistics representatives also conducted a field visit to oversee IRS preparations. They also provided assistance and logistics support for the TOT, including transport to and from the training venue and hotels where trainees were staying. By the time of postponement of IRS operations, almost all logistical preparations and procurements for IRS had been completed.

### ***IEC Development and Implementation***

The IRS program office developed a new IEC strategy upon request by the PNILP. This strategy was pending approval when IRS operations were postponed in February. The PNILP requested amendments to the strategy, and the program office developed a second draft that was sent to the HCC, TRAC Plus, and all partners. Although the IEC committee repeatedly corrected IRS messages, the PNILP and HCC did not approve any IRS messages. As of the end of January, all materials were pending or returned to the committee for further modifications.

### ***Spraying Operations***

#### *Environmental Mitigation Set-up*

RTI met with the director of the Kigali Central Teaching Hospital (CHUK) to discuss using the CHUK's incinerator for the disposal of empty ICON boxes and sachets. RTI submitted an

official letter to the CHUK director requesting permission to use the incinerator and is awaiting his response.

The COP also met with the director general of CAMERWA during January to seek help expediting Kirehe District Hospital's acquisition of the medicines needed for spray operator medical check-ups. The director general intervened and the medicines were acquired as requested.

### **Other Activities**

#### *Entomological Monitoring*

Initial consultations between the RTI/IRS program and Tulane and the School of Public Health at the National University of Rwanda (NUR) began on March 5 when the COP and technical M&E director met with Joshua Rodd of Tulane University to discuss collaboration and training. Tulane and the School of Public Health at the NUR were developing a health manager training program at the district level and RTI wanted to work with them in training entomology assistants at the district level, as approved by the PNILP. RTI will meet with Mr. Rodd later this week. RTI/IRS program staff met and discussed a checklist of activities for a six-month draft work plan of IRS operations to be carried out during June/July 2008 following the postponement of January/March operations.

Mr. Rodd and Adam Papendiek of Tulane University visited RTI's program office and met with Mr. Rugero and Mr. Ruziga to establish a common position between Tulane University and RTI before meeting with the PNILP to discuss the way in which both institutions will train program staff members at central, district, and sentinel site levels, as stipulated in Malaria Operational Plans 2007 and 2008.

### **Project Management and Administration**

#### *Staffing*

John Ruziga was hired on February 19 as RTI's technical M&E director. His background is in malaria and public health.

#### *Administrative Support (includes summary of oversight & support from NBO)*

James Adrian, the RTI chief of administration at the regional office in Nairobi, briefly visited the Rwanda IRS program office. Mr. Adrian met with the COP and other program staff to discuss administrative systems and staff-related matters. The COP briefed Mr. Adrian on current program activities and RTI's plans for the upcoming round that is slated for the end of June 2008.

#### *Office & Warehouse Space*

The IRS team met during this quarter to discuss the need to rent new premises for Gasabo and Kicukiro district offices because the Nyarugunga house in Kicukiro was reclaimed by district authorities and the Gasabo office was returned to owners when the previous round of IRS ended last year. Attendees agreed that the logistics officer should work with the Gasabo and Kicukiro IRS operation managers to identify suitable premises for renting.

## **Partnership and Collaboration**

Mr. Rugero and Mr. Ruziga represented the RTI/IRS program during a U.S. government partners retreat in Bambino Super City, Kigali, from March 4-6. The goal of the 2008 U.S. government partners retreat was to improve coordination between the U.S. government and its partners to support the national health strategy. Caroline Kayonga, the secretary general of the MOH, officially opened the retreat. In her opening remarks, Mrs. Kayonga thanked the U.S. government for supporting the government of Rwanda and acknowledged achievements in the health sector, particularly the reduction of malaria. She then called for increased malaria reduction and operations sustainability and also mentioned other areas that needed attention, such as the prevalence of tuberculosis, the exacerbation of HIV/AIDS by poverty, the lack of health facilities, the high child mortality rate, family planning, targeting the poor in health care, and extending health services to rural communities. She concluded by emphasizing that most diseases are preventable through behavioral changes, particularly as applied to the fight against poverty and development of human resources.

Mr. Rugero met with Dean Swerdlin, RTI's decentralization and health facilities team leader at Twubakane, a USAID-funded project implemented by IntraHealth, RTI, Tulane University, Engender Health, and the RALGA. The men discussed malaria work integration, current IRS activities, and local employee performance reviews and merit increases proposed by RTI. They agreed to organize monthly meetings with other partners in malaria programs funded by the USAID to discuss the integration of malaria activities.

On March 31, Mr. Rugero attended an African Conference that was organized and sponsored by White House office of faith-based and community initiatives in the Serena Hotel, Kigali. The conference was officially opened by President Paul Kagame. Attendees included: the entire Rwandan cabinet; Cheryl Sim, Charge D'Affaires; U.S. Embassy Kigali; Jay Hein, director of the White House office of faith-based and community initiatives; PMI coordinator Timothy Ziemer; world-renowned pastor Rick Warren of the Saddleback Church in California; prominent American personalities and businessmen; Clet Niyikiza, vice president of GlaxoSmithKline, the world's second largest pharmaceutical company; the vice president of Pfizer, the world's largest drug manufacturer; religious leaders; representatives of international U.S. non-governmental organizations (NGOs) operating in Rwanda; and prominent individuals from the private sector in Rwanda. In his opening remarks, President Kagame thanked the White House office of faith-based and community initiatives for organizing the conference, and acknowledged that developmental success depends on cooperation between governments, business, and faith-based communities to engender a collaborative culture that incorporates all sectors. Participants shared how the process of "sector blending" integrates partners in private business, NGOs, and faith- and community-based organizations. They further discussed how sector blending contributes to private-public partnership and the ability to mobilize human capital. The theme of the conference was public-private partnerships and economic development.

## **Outstanding Issues**

- Approval of IEC materials by the PNILP and HCC.
- Establishing an IRS start date for Kigali and IRS launch dates for Kirehe and Nyanza following the mid-February postponement.
- Obtaining a list of spray operators for the five districts from the PNILP.

- Communicating IRS messages to the population at least one week before commencement of the operations.

## **Upcoming Activities**

- Approval of IEC materials and commencement of IRS campaign.
- Training of spray operators and IEC implementers.
- Launching of IRS in Kirehe and Nyanza.
- Delivery of equipment, furniture, and insecticide to all five districts.
- Commencement of spraying in Kigali City.
- The USAID and Rwanda government/MOH must agree on dates for resuming spray operations in Kigali, Kirehe, Nyanza, and other potential target districts.

# Senegal

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Senegal was identified by USAID as one of the second wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). The U.S. Agency for International Development (USAID) and the Senegal Ministry of Health (MOH) and its national malaria control program (Programme National de Lutte Contre le Paludisme [PNLP]) identified three epidemic-prone districts (Nioro, Richard Toll and Velingara) for indoor residual spraying (IRS) activities in fiscal years 2007 and 2008.

RTI is tasked with providing strategic, technical, management, and operations support for IRS activities in the above mentioned districts. RTI and the PNLN will treat at least 75,000 households with residual insecticide in the Nioro, Richard Toll, and Velingara districts during fiscal year 2008. This will protect approximately 500,000 people and at least 80 percent of the total estimated population in the targeted districts. In addition, RTI will provide support to the PNLN to strengthen epidemic preparedness and response plans.

This quarterly report presents the program's progress towards achieving these objectives in Senegal from January through March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

During this reporting period, RTI prepared and carried out the second round of the IRS in the health district of Richard Toll, where the second malaria peak occurs during March and April. RTI also prepared for upcoming IRS rounds in Velingara and Nioro districts planned for June and July 2008.

### *Planning and Assessment*

RTI held two January meetings with the health district in Richard Toll in preparation for the upcoming IRS. On January 15, the RTI chief of party (COP) and local RTI team met with the district health officer, local information, education, and communications (IEC) coordinator from Plan International, core district team members, and representatives of the farming communities Ronkh and Ross Bethio. The following took place during this meeting:

- Plan International did not approve the plan of action that had been developed with the health district. The IEC coordinator requested that this budget be revised.
- The RTI coordinator presented his action plan with dates for the training of trainers, training of operators, number of necessary seasonal personnel, number of days in each health post, and proposed location for the launch day.
- The district health officer recommended postponing the start day of IRS because the required conditions were not satisfied.

On January 31, RTI held another meeting in Richard Toll. Attendees included the district health officer, RTI local coordinator, Plan International IEC local coordinator, district core team member, nurse representatives, and USAID representative Dr. Camara. Attendees discussed the coordination of upcoming spray operations scheduled to start around March.

Following the launch of IEC and IRS activities in Richard Toll, several additional meetings were held. On March 18, RTI held a meeting to discuss IEC efforts for IRS. Attendees included the COP, PNL, Service National d'Hygiene, Plan Senegal, World Vision, and the coordination unit of the Community Health Project. Attendees discussed the IEC tools, current IEC activities in Richard Toll, challenges faced, and areas to be improved. They also recommended that spray operators follow the progress calendar that was developed by the IEC officer. Attendees reviewed the IEC implementers' manual and materials and planned IEC activities for the next IRS operations.

The COP met with Mary Cobb of USAID/Senegal to provide an update on IRS activities and plan for the next spray round. A work plan for the next spray round has been submitted to USAID. Ms. Cobb recommended strengthening the involvement of the district health officers, as well as raising the U.S. government's visibility among the beneficiaries by branding and communicating the source of funding to the public. The IRS team has been requested to co-brand country-specific products and activities with the host-country MOH.

On March 17, the COP met with the PNL to plan the second round of spray operations. Dr. Diop will visit all three districts with the COP to discuss and validate upcoming plans for the next round of spray operations. The group agreed to the following:

- Velingara: Spray operator training is scheduled for May 5 and spray operations are scheduled to commence May 13.
- Nioro: Spray operator training is scheduled for May 13 and spray operations are scheduled to commence May 20.
- Richard Toll: Spray operator training is scheduled for June 9 and spray operations are scheduled to commence June 16.
- The PNL and entomological team will propose a date for the IRS round two assessments.

On March 31, IRS program partners met at the RTI office. Attendees included the PMI/CDC/USAID team, PNL, MOH/Service National d'Hygiene, Ministry of Agriculture, and RTI. The purpose of this meeting was to discuss the activity planning for round two of IRS in the three districts. The plan was approved and the record cards revised.

### ***Procurement and Logistics***

The following were procured in preparation for the second round of IRS in Richard Toll: stickers for houses, spray pumps, and helmets; stationeries for spray operator training and the training of trainers; plastic sheet to cover properties; desk and chairs for warehouses; hand bags for spray operators; printing of spray operator training and the training of trainers certificates; printing of data collection cards; laptop rental; rental of video projector; clipboard; tape measures; water collection drums; benches for laundry women; towels; socks; soap; fuel; tissues to cover car seats; and tubes to clean the cars.

### ***Spraying Operations***

#### *Environmental Mitigation Set-up*

Environmental monitoring and compliance visits prior to spray operations were conducted at operational sites and warehouses. The following requirements were met in each warehouse:

- Soak pits were set up in compliance with the environmental regulations. The bottoms of the soak pits were paved with charcoal and stone. The soak pit areas were then fenced off to keep domestic animals and children away. The areas were also used for the progressive rinse of spray equipment and as washing areas for overalls. The soak pits were also used for drying overalls, which were laid on top of stones and over the fencing.
- Insecticide storage rooms were ventilated.
- Bathing facilities were constructed.
- Warehouses were physically secured; the facilities were locked and protected by trained guards.

#### *Recruitment and Training for Spray Teams*

The health district recruited all spray operators. All spray operators, team leaders, and supervisors underwent a general medical examination to assess their medical fitness for IRS activities. All female operators and team leaders were tested for human chorionic gonadotropin levels to rule out pregnancy. Findings indicated that no female staff member was pregnant and that the team was generally medically fit to conduct IRS activities.

#### **Training of Trainers (TOT)**

John Chimumbwa, RTI's technical director, visited Senegal February 17 - 24 to provide technical management for training activities and IRS operations. His activities included:

- Providing strategic, technical, management, and operations support to RTI/Senegal in its effort to reduce malaria-associated mortalities in the three IRS districts.
- Building in-country IRS operational capacities by supporting TOT.
- Supporting local IRS partnerships and helping to plan spray operator training for IRS.

Mr. Chimumbwa led the TOT for IRS operations in Thies February 18 - 22 in collaboration with the PNLP. Participants included representatives from the MOH/PNLP, Service d'Hygiene, regional public health offices (SLAP), district public health offices, and Cheikh Anta Diop University of Dakar (UCAD). This training was also attended by RTI logistics and environmental officers.

The training agenda alternated between theoretical and practical sessions; it also interspersed passive and interactive sessions. The following were part of the agenda:

- Official opening and administrative steps
- Overview of the PMI
- Overview of the National Malaria Policy and Strategic Plan
- Pre-course assessment
- Basic principles of IRS
- Safety in IRS
- Quality control in IRS
- Measurements associated with IRS
- Practical experiences in IRS
- Planning the training of operators
- Next steps in IRS
- Course evaluation

Twenty-one participants took a general malaria knowledge pre-test to gauge their understanding of malaria. The group scored an average of 218 out of 315 possible points, reflecting an average of 72 percent. Individual scores ranged from 53 to 100 percent. At the end of the course, 18 participants took a more specific test related to the training curriculum. This group scored an average of 367 out 570 possible points, reflecting a 64 percent mean achievement; individual scores ranged from 40 to 93 percent. It should be noted that the two tests should not be compared with each other. Both results show above average ratings. The results of the first test reflect that the group generally knew something about malaria and its control prior to their training. The results of the second test demonstrate that the group scored above average in terms of assimilating the material that was taught to them during the course.

Mr. Chimumbwa made the following summary findings and recommendations:

- Each participant received a CD describing the training materials covered during the course.
- Participants appreciated the training and objectives achieved.
- The PNLN representative awarded participants a certificate of attendance.
- Course evaluations were completed in the form of pre- and post-course tests, mood meters, and personal contracts.
- A spray operator training plan and agenda for Richard Toll were completed.
- Trainers were recruited for the first round of training in Richard Toll.
- Choice of methodology of leading facilitator an assistant and the RTI roving support team.

### **Spray Operators Training**

214 spray operators, including drivers, were trained in Richard Toll February 25 - 29 in preparation of the upcoming IRS round. The following were prepared to work by the end of training: 6 group leaders, 5 supervisors, 24 team leaders, 108 spray operators, 6 store keepers, 10 pump technicians, 12 guards, 12 cleaners, and 19 drivers. The training staff represented the following institutions: 12 Hygiene Service, 1 MOH, 1 Ministry of Environment, and 2 RTI. Spray operators were trained in the following areas:

- Safe pesticide management, transportation, storage, and disposal
- Calibration of spray equipment
- Safe and accurate pesticide mixing
- Maintenance of spray equipment
- Application of pesticides
- Security of equipment and other inputs
- Reporting and data submission

The district health officer met with training staff for an evaluation meeting at the end of each training day. The final results of the spray operator training were released by trainers and head nurses.

### *IRS Launch*

The IRS launch ceremony was held in the city hall of Rosso on March 3. Attendees included the USAID, PMI, government of Senegal, local administration officials, and other development partners. Speakers included the mayor of Rosso, the PMI/CDC representative, the USAID representative, and the district health officer.

IRS activities started in the Richard Toll district on March 3. The operators training workshop lasted five days and ended on February 29. Field prospecting to identify the spraying area was completed on March 2 by all field managers.

IRS operations started in all health posts (Gallo Malick, Taoueye, Rosso Senegal, Savoigne, and Mboudoum) on March 3 except Ross Bethio. Operations began on March 4 in Ross Benthio (Ngnith) due to the weekly market on March 3.

Daily management meetings were held after the IRS operations launch to discuss the day's achievements and identify/address any challenges faced. Attendees included RTI staff, the Christian Children's Fund (CCF) IEC officer, and officers from the hygiene service.

RTI delayed the operations launch in two operational sites for two days because operators and drivers arrived late. The RTI team (task manager, COP, and district coordinator) closely monitored these two sites to ensure that the delays were addressed immediately.

During the first week, some spray operators reported closed homes because community members were attending social events or had not been informed about spray operations. Arrangements have been made to better coordinate IEC and spray operations in the future.

Additional boots and overalls were supplied to Richard Toll spray operators to match the sizes required by spray teams.

The supervision reports prepared by Service d'Hygiene agents stated that some operators should improve their application technique when spraying.

Team leaders reported that some households were unprepared for the spray team because community members had not been informed about IRS operations. RTI and its partners acknowledged a need to improve the coordination of IRS activities and to help the CCF encourage IEC implementers to accompany the spray teams and improve supervision of IEC activities.

## ***Monitoring and Evaluation***

### *Progress on Key Indicators*

As of March 31, 16,155 households have been sprayed in Richard Toll. This provides protection for 95,268 people, including 17,598 children under five years of age and 1,739 pregnant women.

## ***Project Management and Administration***

### *Staffing*

RTI recruited Madame Diop as an environmental officer to support the Senegal IRS team to improve environmental monitoring and compliance for IRS operations in the three districts. Ms. Diop has undergone orientation and reviewed the environmental monitoring and compliance documentation, as well as the results of the last spray round.

RTI also recruited Cheikh Sadibou Diatta as an IRS program assistant to provide administrative support; he began on February 19, 2008.

### *Office & Warehouse Space*

In December 2007, RTI rented warehouses in Richard Toll district. The warehouses were chosen based on the following requirements and needs:

- Geographic distribution throughout the six groups in the district (one warehouse per group).
- Close proximity to communities and reduced travel time.
- Increasing the feasibility of an earlier start time.
- Minimizing the risks of contamination for human health and environmental effects due to the IRS; warehouses were located as far as possible from dwellings.
- Separate storage areas for PPE and insecticide.

### **Upcoming Activities**

- IEC activities will commence in Nioro and Velingara on April 10 and Richard Toll will prepare a communication plan for the start-up of its third spray round in June 2008.
- The recruitment process for labor and the seasonal personnel has started in Nioro and Velingara districts.
- IRS spraying activities have begun in Nioro and Velingara.

# Uganda

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Uganda was identified by the United States Agency for International Development (USAID) as one of the first wave of countries to receive funding under the United States (U.S.) President's Malaria Initiative (PMI). USAID and the Uganda Ministry of Health (MOH) and its national malaria control program (NMCP) identified certain districts for indoor residual spraying (IRS) activities. In 2007, USAID and the NMCP agreed to focus spraying activities in Kabale, Kanungu, Kitgum, Pader, Gulu, Amuru and Apac districts with the intention of expanding IRS coverage to additional areas in 2008.

RTI is tasked with providing strategic, technical, management and operations support for IRS activities in the above mentioned districts. RTI and the NMCP will treat at least 500,000 households with residual insecticide in the above seven districts during IRS in Uganda. This will protect approximately 2.5 million people and at least 85 percent of the total estimated population in the targeted districts. In addition, RTI will provide support to the NMCP to strengthen epidemic preparedness and response plans.

This quarterly report presents the program's progress towards achieving these objectives in Uganda from January to March 2008 and summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

### *Planning and Assessment*

The project scaled-up activities including planning, implementation, supervision and routine monitoring in the targeted districts of Gulu, Kitgum, Apac and Oyam districts. Start-up began in earnest for Apac and Oyam districts, where a pilot program to reintroduce the use of DDT was implemented.

### *Environmental Assessment and Compliance*

The supplemental environmental assessment (SEA) for the use of pyrethroids and piloting of DDT in two districts was approved by USAID in January. An environmental compliance inspection was carried out in ten randomly-selected sub-counties during IRS operations in Gulu district.

### *Procurement and Logistics*

The following equipment was purchased during this period:

Quantity	Model Number	Description
600	67422WD	X-Pert Sprayers 4.Gal.
1200	152-356	Filter nylon for X-Pert
500	123-950	Gasket Nozzles X-Pert
20	803-311	Pressure Gauge 100 lb.
100	148-676	Kit For X-Pert Sprayers
1200	805-855	Tip T-Jet Nozzle 8002E-HSS

The following table presents the personal protective equipment (PPE) procured during this period for upcoming IRS operations:

<b>PPE REQUIREMENT FOR APAC and OYAM</b>		
<b>ITEMS</b>	<b>Unit</b>	<b>Quantity</b>
Nose & mouth masks	Pieces	61,000
Socks (Pairs)	Pieces	3019
Haver sack (psc)	Pieces	2171
Rubber gloves (short)	Pairs	3857
Rubber gloves (long for wash persons)	Pairs	408
Overalls		3272
Gumboots (non-steel toe)	Pairs	1646
Helmets	Pieces	2,142
Face shield	Pieces	4,284
Nose & mouth masks	Cartons	792

Insecticide was ordered for spray operations in Apac, Oyam, Kitgum, and Pader districts.

<b>INSECTICIDE REQUIREMENTS</b>		
<b>District</b>	<b>Insecticide</b>	<b>Quantity</b>
Kitgum	Icon CS	4,162 kgs
Pader	Icon CS	6,393 kgs
Apac	DDT 75%	36,041 kgs
Oyam	DDT 75%	28,519 kgs

### ***IEC Development and Implementation***

The following IEC/BCC activities were conducted in Gulu and Apac districts:

<b>Activity description/District/population reached</b>	<b>Males</b>	<b>Females</b>	<b>Total</b>
IRS launch in Bobi Sub county, Gulu district	152	248	400
Sub county sensitization meetings in Apac district	487	163	650
T-shirts distributed during IRS launch in Gulu district	100*	100*	200
Film shows in Apac district	5,578	3,002	8,580
One-hour radio talk shows in Apac district (on Apac Fm & Radio Unity)	n/a*	n/a*	2
<b>Grand Total</b>	<b>6,317</b>	<b>3,513</b>	<b>9,830</b>

*(n/a represents "not applicable"; allocation of T-shirts to males and females is estimated)*

A workshop was held in Apac to present plans for the IRS program to district leaders for Apac and Oyam districts. The Minister of State for Primary Health Care, Dr Emmanuel Otaala, presided at the workshop.

<b>Category of workshop participants</b>	<b>Apac</b>	<b>Oyam</b>
District councilors	28	12
District Technical Team (DTT) members	15	22
District Health Team (DHT) members	4	6
District Environment Officer	1	1

Lango "Organic" Farmers' representatives	3	8
Journalists	3	4
Minister of State for Health/Uganda	1	1
Malaria Control Program/Ministry of Health	3	3
RTI staff (COP and other IRS Project staff)	1	4
<b>Total</b>	<b>59</b>	<b>61</b>

### Oyam District

- A one-hour radio talk show was organized on Waa FM radio station in Lira district.
- A total of 492 T-shirts and 700 brochures were distributed during the parish mobilization meetings
- A sensitization meeting targeting 60 participants was held in six parishes.

### Kitgum District

- Spot messages and announcements on IRS were aired three times daily on three local FM stations (i.e. POL, Peace and Mega).
- Three teams including the district health officer (DHO), district health inspector (DHI), district vector control officer (DVCO), and sub-county health assistants were constituted to sensitize the communities to IRS activities in the district.
- Sub-county sensitization meetings were organized in Kitgum district. The participants in each sub-county included one sub-county chief, six local council members, four extension workers, five VHT members, six parish mobilizers, three religious leaders, one camp member and one army officer.

Sub-county	Males	Females	Total
Lagoro	26	1	27
Orom	23	4	27
Akwang	19	8	27
Lokung	22	5	27
Amida	19	8	27
Palabek Ogili	19	6	25
Akilok	25	2	27
Palabek Kal	20	7	27
Padibe East	19	8	27
Padibe West	21	6	27
Omiya Anyima	26	1	27
Namukora	19	11	30
Kitgum Matidi	23	4	27
Mucwini	21	6	27
Paloga	25	2	27
Agoro	25	2	27
Palabek Gem	22	5	27
Madi Opei	20	7	27
<b>Total</b>	<b>394</b>	<b>93</b>	<b>487</b>

- Seven film shows were organized in sub-counties; 13,350 people were estimated to have watched them.
- A one-hour radio talk show was organized on Gulu Mega FM station for IRS campaign in Kitgum. The deputy resident district commissioner, malaria focal person (MFP), district health educator (DHE), and senior nursing officer representing the district health officer (DHO) in Kitgum hosted the radio talk show.
- Spot messages on IRS were aired on Peace and Pol FM radio stations.

## **Spraying Operations**

### *Gulu*

The second round of spray activities took place in Gulu district January 28 – February 26, 2008. Key indicators for spray operations in this district are provided below.

Sachets used	Houses found	Houses sprayed	Coverage (%)	Population protected from malaria		
				Males	Females	Total
48,720	122,747	122,607	99.9	226,740	270,424	497,164
Children under 5 years of age		ITNs found	Children < 5 sleeping under ITNs (47.8%)	Pregnant women		
108,932		92,672	52,033	20,520		

### *Apac and Kitgum*

Spray operations for Apac and Kitgum were slated to begin at the end of February. However, with a delay in the arrival of the necessary insecticide and continuing baseline sample collection for DDT monitoring in Apac, the launch of spray operations was delayed to the end of March.

### *Environmental Mitigation*

A total of 19 sub-county stores and soak pits previously used in the first round of IRS in Kitgum district (2007) were visited, and their suitability for the second round of IRS was assessed. Construction of evaporation tanks and soak pits was completed in the sub-counties of Nambieso, Cawente, and Akokoro in Apac district. RTI also began pre-spray compliance inspections to make sure that correct mitigation and safety measures were in place for DDT spray operations.

## **Other Activities**

### *Environmental Monitoring*

RTI continues to work on the environmental monitoring plan in order to assure that adequate baseline, routine, and evaluation monitoring is performed.

RTI began baseline sample collection for the spray operations in Oyam and Apac districts, mapping sensitive areas and collecting soil, crops, biological matter, and other samples for analysis.

During IRS in Gulu in February 2008, a baseline survey was conducted to determine the level of ICON metabolites in six water samples, five sediment samples, and five soil samples. Laboratory analysis of these samples did not detect any insecticide residues.

## **Project Management and Administration**

### *Staffing*

- A monitoring and evaluation specialist was hired.
- A logistics officer was hired.

- Three project assistants were hired.
- Two district coordinators were hired. The hiring process is underway for an additional three district coordinators.

#### *Administrative Support*

During this quarter, the project received technical and administrative support from the following persons:

- Ms. Patricia Preware - The Task Manager
- John Chimumbwa - Regional Technical Director/Nairobi
- Gene Brantly - Program Director
- Ms. Cheri Brown-Alexander – Project Administration Specialist
- Mike Macdonald – USAID/Washington
- Francis Kithuku – Accountant/Nairobi

### **Upcoming Activities**

- Continued sensitization activities in for Kitgum and Pader districts.
- Complete baseline sampling in Apac and Oyam.
- Conduct spraying operations in Apac and Oyam, Kigum and Pader.

# Zambia

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Zambia was identified by United States Agency for International Development (USAID) as one of the countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). Zambia is implementing indoor residual spraying (IRS) for malaria control as part of an integrated vector control management (IVM) strategy. Spraying began in 2003 following the success of IRS by the private sector Konkola Copper Mines. The spraying program is under a five-year (2006-2010) National Malaria Strategic Plan, which has an overall objective of reducing malaria incidence by 75 percent by 2010.

IRS in Zambia is implemented by the National Malaria Control Centre (NMCC) of the Ministry of Health (MOH). Additional resources and technical support are mobilized through a number of external partners, including the USAID, the Roll Back Malaria partnership, the Malaria Control and Evaluation Partnership in Africa (MACEPA), the World Health Organization (WHO), the Global Fund for HIV/AIDS TB and Malaria (GFATM), and the World Bank.

Under the PMI, USAID awarded RTI with a contract to work with the Zambia MOH and NMCC to provide technical assistance and support to IRS and other malaria control and prevention activities in Zambia. In 2006, the Zambia MOH, with the support of USAID, implemented spray rounds in 15 of the 72 districts in Zambia using DDT, lambda-cyhalothrin, and alpha-cypermethrin. The 2007 spray round covered around 700,000 households. The MOH plans to expand IRS to 21 more districts in 2008.

This quarterly report presents the program's progress towards achieving these objectives in Zambia from January through March 2008, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

### *Environmental Assessment and Compliance*

Tito Kodiaga, an environmental specialist for the IRS project, visited Zambia March 4-15 to carry out the field visit portion of the 2008 supplemental environmental assessment (SEA) for Zambia. The SEA will follow after it has been written, sent for comments, finalized, and signed by relevant environmental officers in Zambia, the USAID Southern Africa regional office, and USAID/Washington. Because Zambia is using DDT for part of its IRS project, an SEA or amendment must be completed annually.

Mr. Kodiaga met with stakeholders, including USAID, the Zambia NMCC, the Environmental Council of Zambia (ECZ), Health Services & Systems Program (HSSP), the World Bank, and others to gather information and listen to stakeholder concerns. The issue of DDT waste disposal was a common theme among all stakeholders and is being addressed at various levels (see below).

### *Environmental Mitigation Set-up*

During this quarter, Edwin Katota, RTI's consultant who is working on site facilities rehabilitation, visited all of the districts where rehabilitation work is to be done, comprising 16 sites in 15 districts (with Lusaka having two sites). Rehabilitation includes the building or upgrading of soak pits for disposal of pyrethroid liquid waste, evaporation tanks for the disposal of DDT liquid waste, and ablutions for staff hygiene and safety. He visited local health authorities and local councils in an effort to quantify the work to be done for this activity. His tasks were as follows:

- Establish minimum standards for construction.
- Develop bid tenders, specifying the work to be done, location, quality, and timeline.
- Advertisements (one week only- two insertions per day for three days)
- Develop schedule of operations so that facilities will be operable in time for 2008.
- Investigate qualifications, licensing, insurance, references, etc. of bidders.
- Issue tenders to qualified bidders.
- Perform a bid analysis of acceptable bids
- Engagement of successful bidders following approval.
- Physical inspection of sites in respective zones with respective selected companies.

Much work went into the structuring and administration of the bidding process. The work areas have been divided into four zones to make them more manageable. These are, Zone A: Kazungula, Livingstone, Mazabuka and Kafue; Zone B: Lusaka, Chongwe, and Kabwe; Zone C: Ndola, Luanshya, Kitwe, and Kalulushi; and Zone D: Mufulira, Chingola, Chililabombwe, and Solwezi. It was determined that this work must be done through an open, competitive bidding process. Standards for acceptable bidders have been established based on past work, financial stability, and compliance with Zambian national and local laws and regulations. Preliminary work on drawings began. All drawings will be subject to Local Council and other approvals.

During this quarter, Mr. Katota also met with USAID, HSSP, and Mr. Kodiaga. One problem Mr. Katota identified is the appreciation of the Zambia Kwacha against the dollar, a trend which is eroding the budget for facilities rehabilitation. The budget for this activity for in-country expenses is \$350,000. As of this reporting period, RTI hopes to invite bids for rehabilitation in April.

### *Environmental Monitoring*

In his environmental compliance report, Jacob Williams identified environmental monitoring as a gap in compliance. The RTI team has put together a budget and work plan concept to address this issue. Mr. Williams composed a letter to the vice chancellor of the University of Zambia proposing collaboration on environmental monitoring related to DDT use for malaria control in Zambia. Much of the planning needed to start this activity is in place. There is broad agreement among stakeholders (USAID, RTI, ECZ, and NMCC) that this activity is necessary. However, it is not a part of the fiscal year 2008 malaria operating plan (MOP) and has no funds allocated. Environmental monitoring will cost a minimum of \$150,000 for the first year.

### *DDT Waste Disposal*

Zambia retains DDT packaging and other waste from previous IRS rounds. These must be disposed of through high temperature incineration. There is no incinerator in Zambia, thus all waste will need to be exported to its country of origin (South Africa) or beyond for safe disposal. RTI has been working with Avima, the supplier of DDT to Zambia to repatriate this waste. During this reporting period, the issue of storage costs for DDT waste in the country has become a burden to the Avima's local representative, ChemTalk.

RTI has an agreement with Avima for the collection and disposal of DDT packaging from last year's spray round. This does not include the "historical" waste, generated before last year's procurement. The RTI IRS team is working with USAID, ECZ, and others to resolve this issue.

Future procurements of DDT, and possibly other insecticides, will include repatriation of waste as a necessary condition of sale.

## **Outstanding Issues**

The fiscal year 2008 MOP allocates \$2.4 million for the procurement of pesticides for the 2008 spray round. The spray round in 2008 is expected to be significantly larger than it was in 2007. The IRS team estimates that the cost of procuring pesticide will exceed the funds available by half a million dollars or more. Also, the funding to pursue environmental monitoring is not included in the MOP and this is an activity necessary to bring the Zambia IRS program into full environmental compliance.

The lack of RTI staff in Zambia continues to hinder smooth operations. USAID/Zambia and RTI agree that placing one or more staff in Zambia would facilitate IRS and environmental compliance work there; again, funding is a constraint.

## **Upcoming Activities**

- Procurement for the 2008 spray round should begin in the next quarter to guarantee timely delivery and availability of pesticide stocks.
- The SEA should be finalized in the next quarter.