



PRESIDENT'S MALARIA INITIATIVE

INDOOR RESIDUAL SPRAYING FOR MALARIA CONTROL



Quarterly Report

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

April 1, 2008 - June 30, 2008

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Prepared for:
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Prepared by:
RTI International
3040 Cornwallis Road
Post Office Box 12194
Research Triangle Park, NC 27709-2194

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Acronyms

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	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

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 U.S. 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

This was a quarter of change in project management structure and leadership for the Indoor Residual Spraying for Malaria Control Task Order One (IRS TO1) project, which included the replacement of the IRS project director. A major initiative was launched to restructure project management in order to better address issues arising from the rapid scale-up of project operations from three countries at the beginning of the project to a total of 12 countries this year. During this quarter, IRS/Kenya transitioned from IRS TO1 to a separate task order (TO2) under the IRS indefinite quantity contract (IQC).

During the quarter, IRS program activities supported spraying operations in seven IRS TO1 countries and the successful completion of spray operations in four of these countries. The country description section of this report provides details on all IRS project activities in support of the President's Malaria Initiative (PMI) for each country.

Highlights for this quarter include finalizing country work plans and country and core budgets, hiring country level chiefs of party (COPs) and staff, finalizing the Liverpool Associates in Tropical Health (LATH) subcontract, analysis of staffing needs, creation of staffing organizational structures for project headquarters in Washington, D.C. and the Nairobi regional office, and preparation of a bundled procurement task order with Crown Agents to more efficiently handle project procurements.

Weekly meetings were held with the USAID leadership team to review ongoing management and technical issues. The IRS senior team also participated in the USAID annual PMI meeting by providing an overview of the project followed by individual meetings with the PMI teams from many of the IRS countries. A two-day follow up meeting was held at the IRS project office with USAID to overview country level programs, identify issues and create a plan for restructuring the project management in line with expanding needs of the program.

Project Leadership

US-based leadership: Following consultation with USAID, RTI appointed Barbara Kennedy as acting project director. This change was required in order to clear a backlog of overdue project deliverables, realign project management to enable timely project expansion into a number of new countries, and to assure RTI is more responsive to USAID and country requests and needs. Jeff Sine was assigned as the acting deputy director and Eugene Brantly remains on the project in a technical role. These changes in senior project management will remain in effect until all project deliverables are up to date, the new management structure is fully operational, the Nairobi technical team is fully staffed, and a new permanent director is recruited and approved by USAID.

Nairobi regional project office: John Chimumbwa assumed full responsibility as IRS regional office and senior IRS technical director. The director of operations, Kim Canelas, resigned during this quarter and the position is being modified in line with current project needs. Based on a review of the IRS scope of work and the PMI malaria operational plan (MOP) requests, an analysis was carried out of the technical staffing needs with the objective of moving the majority of technical staff to Nairobi over the next year. A staffing plan was prepared and approved by USAID and recruitment is taking place for the critical vacant positions.

Country level leadership: New COPs for Ethiopia, Mali, Benin, and Ghana were recruited during this quarter. COPs for Rwanda and Uganda were replaced and new candidates have been identified pending USAID review and approval. Candidates for Malawi COP are under review and the Zambia program manager (instead of a COP) position description has been submitted to the Mission for their review before the recruitment process begins. By the end of this quarter, eight of the 12 country COPs are in place and we expect to hire the last four COPs in the next quarter.

A major effort is also underway to hire the remainder of the staff positions at the country level, which will allow the transition of day-to-day operations to the IRS country teams. This will enable close working relationships with the Ministry of Health (MOH) malaria program staff and the PMI teams in country. As more responsibilities are transferred to each country, technical and management oversight will increasingly be provided by the IRS regional office in Nairobi.

Roles and Responsibilities

After an extensive analysis of current staff, future needs, and given budget limitations, the organizational staffing charts for the home project office and regional office were prepared and presented to USAID for review and approval. We initiated a process of reviewing and amending job descriptions to clarify roles and responsibilities for all staff. This process is ongoing and will be completed next quarter.

US-based: Particular attention was given to the role of home office technical manager (HOTM; formerly known as task managers). HOTMs have played a crucial role in starting up and managing all IRS operations. They played a pivotal role in mobilizing project offices, hiring and orienting new staff, the logistics of preparing for IRS spray operations, working closely with MOH and serving as the principle administrative backstop. As the country project offices are becoming fully staffed, the role of the HOTM role will change somewhat. They will provide country backstop support to the COP and will provide technical assistance to the IRS spray programs through conducting operational needs assessments and training as needed. A draft, revised job description will be finalized and operationalized next quarter.

Nairobi regional project office: Our new organizational chart for the IRS Nairobi office is designed to increase the ability of that office to serve as the leading edge of technical, environmental, financial, IT, human resources, and administrative support to country IRS programs. Over time, we envision the balance of project support to shift from the US to Nairobi. This is expected to not only increase the timeliness of support to country IRS teams, but also the cost-effectiveness of project operations. During this quarter, we put a sustainable budget in place to support Nairobi operations and made substantial process towards creation of standard operating procedures to clarify roles and responsibilities of staff. With approval of our core budget, which includes the resources needed for our Nairobi operations, we have put in place a plan to complete hiring of vacant project positions. We have initiated a process to streamline and improve transparency between Nairobi personnel and structures and those in the U.S. This process will be completed during the planned September 2008 planning meeting to be held in Nairobi. Over the next quarter, the direct supervision of all country COPs will transfer to the IRS regional technical director, John Chimumbwa.

Country level: As noted, we made substantial progress this quarter to recruit and put in place COPs to lead each country program. These COPs have been selected because of their demonstrated track record at country project management in the health sector, specifically with an eye towards the goal of increasing the degree of self-sufficiency of our country teams to provide on-the-ground support of country project operations and improving the capacity of our project to provide critically important capacity building technical assistance among our country counterparts and partners. Empowering our country teams and COPs in particular, will be an ongoing focus of project operations.

Work Planning and Budgeting

We undertook a major effort this quarter to produce work plans and budgets for all IRS TO1 countries and for the core component of the project. On May 8 and 9, senior project management staff met with most PMI country teams to hear their comments on IRS operations in their country. We subsequently submitted draft work plans to USAID and on May 14 and 15, with USAID’s participation, we conducted formal, internal reviews of these drafts. At the end of this quarter, revised work plans and budgets had been submitted to USAID for all 12 IRS TO1 countries, we have responded to at least one round of comments from USAID on each work plan and budget, and 3 country work plans and budgets had been approved. Additionally, we submitted a budget to support US- and Nairobi-based project operations. (We received verbal approval of this core budget from USAID on July 9.) The status of work plans and budgets is shown in the table below.

Country	Work plan/budget status
Angola	In process of responding to mission request to present a streamlined work plan and budget.
Benin	Responses to USAID comments submitted; awaiting comments.
Ethiopia	Work plan/budget approved (July).
Ghana	Work plan/budget approved (July)
Madagascar	In process of revising work plan and budget in response to second round of comments from USAID.
Malawi	In process of revising work plan in response to comments from USAID.
Mali	Responses to USAID comments submitted; awaiting comments.
Mozambique	In process of responding to requests from USAID in response to our second revised work plan and budget.
Rwanda	Revised work plan and budget submitted to USAID.
Senegal	Work plan approved (July).
Uganda	Process on hold.
Zambia	Work plan approved.
Core	Budget approved (July).

During this quarter, we have also produced summary analyses of country-level spending during the 2007 project year (against obligations from USAID of FY 2007 PMI funds) for several countries. This is an ongoing process and during the next quarter, we plan to complete more thorough analyses of 2007 spending for additional countries. We also plan to complete a cross-country analysis of 2008 budgets to compare costs line item by line item. These analyses will be used to better inform our work plan and budget development process for the Year 3 (2009) project period.

Reporting

Quarterly project reports: This quarter, we put in place a process to clear the backlog of reports due to USAID. By the end of the quarter, we assembled over 30 of the 57 components sections (country and core) of quarterly project reports due to USAID. We intend to complete and submit all outstanding reports to USAID by the end of the next quarter.

End-of-spray-round reports: During this quarter, we produced and delivered to USAID end-of-spray round reports for Malawi and Uganda. We intend to complete and submit a number of additional country spray reports during the next quarter.

Trip reports: We designed a new, standardized simple template for trip reports. All IRS TO1 staff and consultants are now required to submit trip reports using this template following the completion of a short-term technical assistance visit using project funds.

Weekly project highlights reports: We continue to provide USAID with highlights from all IRS country programs (IRS TO1, TO2, and the Tanzania/Zanzibar cooperative agreement).

Procurement

Procurement of personal protection equipment (PPE), insecticide, and other commodities is a critical element of IRS TO1 and getting the right quantities of these products to the right place at the right time is critical for project success. As the project has expanded to a number of new countries this year, we have experienced periodic difficulties in getting commodities ordered and delivered on time. Under RTI's new project leadership, during this quarter we gave consideration attention to identifying the root causes of procurement delays, refining processes and revising systems to address procurement system barriers. To this effect, we have held several strategic planning meetings with Crown Agents, our major procurement partner for IRS TO1. The team started developing an operational timeline and "countdown calendar" which links country level malaria transmission seasons to the planning cycle. In order to start and end the spraying cycle on time, certain sequence of events need to take place at a particular moment in time, otherwise the whole process gets derailed. Procurement is one of those critical elements in the chain, from assessment of logistics, selecting the types, placing orders with suppliers, delivery date and destinations, storage, security distribution etc.

Bundled procurement: Crown Agents USA is our principle procurement partner and we determined that the previous practice of separating procurements by individual country and category of goods has slowed the process considerably. To address this challenge, we created procurement "bundles", one each for PPE, insecticide, and spraying equipment. Each bundle includes projected needs for all countries for a six-month period looking forward, allowing for better advance planning. We also hope this system will produce economies of scale in terms of the labor requirements to manage procurement processes and we hope this will also produce project savings through increased bargaining power with suppliers as larger purchases will be negotiated. Bundled procurement will result in larger orders being placed with suppliers, many of which are expected to exceed the dollar threshold required by USAID (\$100,000) with any one supplier. In anticipation of this, we submitted to USAID requests for blanket waivers to exceed this threshold with named suppliers who we routinely use. These waivers received our CTO's endorsement and we are still waiting for final USAID approval.

Internal bundled waivers: We successfully sought an internal waiver to procure goods in anticipation of waivers requested but not yet approved by USAID, including source and origin waivers and subcontract threshold waivers. This has allowed us to move more quickly this quarter on a wide range of procurements across project countries.

Source and Origin code: In certain not-uncommon circumstances, goods or subcontracts necessary to implement IRS programs are available in project countries at lower cost and where delivery would be faster than procurement from a US source. Currently, the IRS IQC (including IRS TO1) operates under a “000” source and origin code and we have submitted to USAID a request to change this code to “935” to allow for local procurement. This request is currently under consideration by USAID.

Technical Progress

Spray Operations

Of the seven countries (Angola, Benin, Ethiopia, Ghana, Mali, Senegal, and Uganda) where spraying was occurring this quarter, three countries (Angola, Ghana, and Senegal) successfully concluded their spray rounds during the quarter while four are still on going. Three IRS TO1 countries are just about to launch their operations. The key challenge continues to be with getting all commodities ordered and in-country on time to start all operations within planned time periods, even though we saw remarkable improvements in meeting deadlines this quarter.

LATH Subcontract

Major progress was made during this quarter in getting the new LATH subcontract approved. LATH is a major IRS partner and will support entomological assessments and insecticide resistance evaluations across the 12 IRS TO1 countries. The sub-contract was successfully developed and negotiated, and it was approved by USAID Washington. There are minor final adjustments that are being made to the subcontract, and we hope the final amendment will be signed in the next few weeks so that LATH can hire staff and begin implementation. The subcontract will receive technical oversight from John Chimumbwa and administrative support will be provided by the RTI home office..

Entomological Monitoring

RTI participated in several meetings with RTI, USAID/Washington, and the Centers for Disease Control (CDC). The purpose of the meetings was to reach consensus on the basic indicators and parameters that should be monitored across the IRS project target countries. This team is carrying out an inventory on the progress made by each IRS country and the expected outcome of this exercise will be to generate a standards set of monitoring indicators for IRS and also to develop an agreed tracker to monitor progress of IRS monitoring in each country. The entomological monitoring will still be guided by the monitoring principles laid out within the PMI project document.

Environmental Monitoring and Compliance

The IRS team meet with USAID on May 15 to discuss the disposal of post-spraying products in the four IRS countries where DDT is being used to spray houses. Based on this meeting, we assigned Gene Brantley and Tito Kodiago with the task of identifying and clarifying RTI

policies, procedures, and systems with respect to the disposal of post-spraying products. This will include development of standard operating procedures and be included in the IRS manual. The end-goal is to define a disposal solution for each of these countries. We will link and cooperate with the Integrated Vector Management (IVM) 2 project which is also investigating options.

The last quarter was characterized by country support from the RTI environmental compliance support team from both the Nairobi and home office teams. All requests for environmental compliance assessments, supplementary environmental assessments (SEAs) or pesticide evaluation report and safe use action plans (PERSUAPS), and compliance inspections were met. In addition, the team started putting into place standard operating procedures, stating the minimum requirements for disposal of the organochloride and pyrethroid compounds, respectively. The next quarter will concentrate on timely pre- and post-IRS inspections and timely reporting. In the last quarter, RTI also participated in an international meeting on environmental compliance in public health and the participation of RTI was acknowledged and approved by both organizers and participants.

Financial Progress

Between April 1 and June 30, 2008 the IRS TO1 project incurred \$15,002,869 in costs. Total project costs incurred contract-to-date are \$47,319,347 against funds received to date of \$44,271,993. Appendix 1 provides a more detailed financial update.

Core Priorities for Upcoming Quarter

- Carry out the Nairobi fiscal year 2009 program planning meeting for COPs.
- Complete standard operational procedures for the project and disseminate to COPs, country teams, regional office staff, and DC operational staff. This includes both technical and management procedures.
- Recruit a permanent IRS project director.
- Complete a cross-country budget analysis of fiscal year 2007 spending and fiscal year 2008 estimated costs (2008 includes spending against almost ¾ of the project year).
- Streamline communications and trouble-shooting by setting up routine phone calls with PMI teams and sending out the first Quarterly “how are we doing” email to each country team.
- Completion of the IRS manual.
- Finalize entomological standard operating procedures.
- Clearly define the RTI training objective across the IRS project.
- Begin priority LATH entomological activities.

Angola

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.

During fiscal year 2008, IRS will be continued in Angola's southern province of Huila, which reports the most cases of malaria among the southern provinces, and discontinued in Cunene and Namibe provinces. IRS will be initiated in Huambo province, the second most malarious province in the country. Between October 1, 2007 and December 31, 2008, RTI will conduct two rounds of spraying within these areas. One round of IRS will be conducted between December 2007 and March 2008 and will protect a total of 140,000 households, benefiting an estimated 600,000–700,000 residents. The second round of IRS will occur between September 2008 and November 2008 and will also protect 140,000 households.

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 April to June 2008, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Planning and Assessment

The IRS team in Angola had completed a spray round in the country on April 28 (see summary results below). Between April and June, António Muhungo, RTI Chief of Party (COP), met with USAID and Centers for Disease Control (CDC) representatives several times to discuss lessons learned from the completed spray round, planning for the fall 2008 spray round, and initiation of a number of other local capacity building and improved epidemic response activities, such as entomological monitoring and the building of an insectary.

In close collaboration with National Institute for Public Health, Mr. Muhungo planned and coordinated the logistical and administration support for the malaria microscopy training that

took place in Huambo in June 2008. Mr. Muhungo also met with the provincial health director, the provincial supervisor for the malaria program, and the provincial supervisor for laboratory analysis to discuss, assess, and plan the replication of the malaria microscopy training in the Cunene province. The group determined that a lack of local government financial resources is the main obstacle in replicating the training. They also noted that local laboratory facilities either did not have microscopy capacity at all or did not provide adequate microscopy analysis.

Spraying Operations

Post-spraying Operations

During this quarter and immediately following completion of IRS at the end of March, the IRS team collected all spray pumps and personal protective equipment (PPE) assigned to the seasonal personnel. The IRS team washed and stored all equipment and noted what would be required for future spray rounds (i.e., which PPE required repair or replacement, and spray pumps requiring replacement nozzles, new filters, etc.). The empty insecticide sachets were sealed in drums and stored. The remaining insecticide stock was also counted and stored. The final inventory list of equipment will be available in August and will be provided in the end of spray round report.

Also in April, the IRS team also conducted internal data quality assessment of the daily reports (tracking households sprayed and reached) received by IRS operators throughout the spraying. The IRS team was able to confirm the completeness and accuracy of the data which was received and inputted into the database.

In May, RTI conducted a post-spray operations beneficiary satisfaction survey to assess the effectiveness of information, education, and communication (IEC) activities and the satisfaction of the population. The IRS monitors contacted beneficiaries in about 5 percent of sprayed houses in Lubango between May 15 and 30.

The main response that the team received was that residents appreciated the spray program and welcomed future spraying in the area. In Huambo, although no survey was conducted, residents from unsprayed communities located near sprayed communities have contacted the IRS team and the Provincial Health Department to request spraying. The government has indicated to RTI that they look forward to the next spray round.

In addition, RTI collected malaria case data from health centers in the sprayed areas of Lubango in order to assess the impact of the IRS campaign. Nearly all health posts in the area were contacted to determine malaria case numbers. This work was done with the participation of the local sanitation officials, who worked with the IRS team. The figures from this effort will be released during the next quarter.

Other Activities

Entomological Monitoring

In March and April 2008, RTI conducted bio-assays tests in Huambo and Huila to determine the effectiveness of insecticide placed on the walls. In May, RTI worked with two entomologists from the NMCP to train monitors and breed larvae. Unfortunately, the team found it difficult to find considerable amounts of larvae to breed and those collected did not

develop into adult mosquitoes. The team determined that the main reason for the poor result was the temperature that had been too low. In effect, the team was not able to find heaters locally to recreate the conditions necessary for mosquitoes to breed.

Following ongoing discussions about the value of testing the longevity and effectiveness of the insecticide applied on household walls in Angola, USAID and RTI determined that an entomological baseline survey should be conducted before beginning round four in Angola. In June, RTI resumed talks with entomological baseline survey team-leader to agree on contractual arrangements for the team members, logistical needs, and an activity schedule. The baseline survey should be conducted in Huila and Huambo sometime in September and October respectively.

Insectary Building

In order to solicit construction bids for the insectary building, the IRS team worked with the CDC to update the specifications for the insectary and then advertised the project in the national newspaper Journal de Angola in April. Initially, only one bid was received due to the newspaper misprinting the correct email address and telephone numbers for quotation submission. The newspaper reprinted the submission the following week and the deadline for submission was extended. As of the revised deadline June 10, the IRS team had received four bids for the insectary building.

In June, Mr. Muhungo met with Jules Mihigo (PMI CDC focal point), Francisco Saute (PMI USAID focal point), Adeline Chan (an Atlanta-based CDC entomologist), Pedro Cani (an NMCP senior entomologist), and Mpova Zambote (NMCP IRS focal point) to discuss the modification of the specifications for the building of the insectary. The team also visited the building site. Based on these discussions, RTI revised the insectary building specifications and requested updated quotes from the bidders in June.

Capacity Building of Ministry of Health

Per a request from USAID, RTI provided logistical and financial support for a microscopy training session that was conducted June 3 - 13 in Huambo. During the training, 15 new laboratory technicians were trained by three facilitators, who had been trained by CDC-Atlanta specialists last November. The three facilitators included the supervisor at the National Institute for Public Health in Luanda, and two senior technicians assigned by the Provincial Health Directorate. The microscopy training is aimed at providing new techniques to identify the plasmodium for all laboratory technicians working in the provinces where IRS has been or is being conducted.

RTI also planned to support two additional training sessions in July and August 2008. However, USAID informed RTI in June that funds had been designated to another contractor under a separate contract for this work.

Others Activities

- In April, Mr. Muhungo attended a one week monitoring and evaluation (M&E) workshop organized by USAID/Angola and facilitated by two M&E specialists from USAID/Washington. The workshop familiarized participants with the monitoring, evaluation, indicators and data quality assessment in all projects and programs funded by USAID.

- Based on a recommendation of the USAID focal point for PMI, Mr. Muhungo met in June with the Sustainable Development Division team from mining company BHP-Billiton to agree on information exchange collaboration on malaria prevalence surveys and eventual technical cooperation on IRS.

Monitoring and Evaluation

Progress on Key Indicators

During the third round of IRS in Angola, a total of 139,700 households (64,360 in Huambo and 75,340 in Huila) were sprayed and an estimated 745,061 residents were protected. This represents more than 99% of the target for both provinces.

Project Management and Administration

Registration

During this quarter, the Ministry of Justice, which oversees all company registration applications, sent all RTI documents requesting registration to the Ministry of Foreign Affairs and the Ministry of Health for assessment and feedback. The timing of when we will receive feedback or notification regarding registration is uncertain.

Office & Warehouse Space

The warehouse in Huila, the warehouse and office in Huambo and the main office in Luanda have been maintained to support the next spray round in Angola. In June, the IRS team switched office locations in Huambo to a lower cost space that functions as an office.

Outstanding Issues

The following are outstanding issues for the IRS project:

- The IRS team is working with USAID to define the scope of work and budget for the fourth round of spraying in Angola, which is currently scheduled to begin in September.
- Because of the high cost of vehicle rentals in Angola and the need to manage program costs, the IRS team is working to determine if part-time daily hiring (i.e., for four hours per day versus eight hours per day) is an option. The IRS team is expecting that transportation operators may resist this new arrangement.

Upcoming Activities

The following are upcoming activities for the IRS project in Angola:

- Complete the program IRS inventory (for spray pumps, PPE, and other equipment)
- Prepare the end-of-round report for the third spray round which ended in March
- Secure the contractors and USAID authorizations to build the insectary
- Complete arrangements to have the entomological baseline survey conducted
- Conduct all planning and training in order to start round four of spray operations
- Establish the malaria early warning system in southern provinces of Angola

Benin

Benin was identified as one of the second wave 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 (NMCP) identified four epidemic-prone districts for indoor residual spraying (IRS) activities. In fiscal year 2008, the USAID and NMCP 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 spray 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 in the 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 NMCP. 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 April to June 2008, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Procurement and Logistics

Pesticide Selection

The NMCP and CREC chose bendiocarb as the pesticide to be used for IRS operations. Bendiocarb was not registered in Benin when this decision was made, and therefore the NMCP, CREC and RTI contacted the National Committee for the Registration and Control of Pesticides (CNAC) in February 2008 to initiate registration. The CNAC approved bendiocarb for use in Benin in June. The first consignment of Bendiocarb (10 pallets - 1500 kg) arrived in Cotonou and was delivered to the Porto Novo warehouse in June. The final consignments will be arriving in July.

Spray Pumps & Parts

Spray pumps and associated parts (e.g., repair kits, replacement nozzles, etc.) arrived in country and were delivered to the Porto Novo warehouse in June.

Personal Protection Equipment

Personal protection equipment arrived in country and was delivered to the Porto Novo warehouse in June.

IEC Development and Implementation

IEC Material Design and Development

RTI facilitated the development of information, education, and communication (IEC) materials to be used to support IRS operations in Benin. The materials were developed in close collaboration with the NMCP and the Direction Departmental de la Sante of Oueme (DDS). The NMCP plans to distribute pamphlets explaining IRS and LLNs to each household to be sprayed.

Training of IEC Mobilizers

In March, RTI met with the chief nurses in the 43 arrondissement (administrative divisions) of the four districts to be sprayed. The IEC specialists from the DDS and NMCP helped conduct this meeting where the chief nurses were introduced to the IRS program and trained on any possible health risks associated with the spraying.

IEC mobilizer training was held on May 14 and 15 at the Porto Novo warehouse where 187 IEC mobilizers were trained. The trainers included IEC representatives from the DDS, NMCP, and RTI, as well as the two chief doctors from each of the four districts.

IEC Campaign Implementation

RTI participated in World Malaria Day activities in Benin on April 25. The Ministry of Health (MOH) and NMCP included IRS as one of the major programs on Malaria Day.

RTI will work with 150 of the trained IEC mobilizers during IRS operations. DDS mobilizers are already going door to door to educate communities about IRS. Radio shows have also started to broadcast segments on IRS, with a focus on the behaviors that are necessary to follow IRS.

Coordination with Spray Operations

IEC began several weeks before spray operations. During IRS, IEC mobilizers will also follow the geographical mapping teams so that they generally visit households 24 hours before spray operations.

Spraying Operations

Geographic Reconnaissance and Detailed Planning

The mapping for the target districts (Sèmè-Kpodji, Dangbo, Adjohoun, and Akpro Missérété) was completed in mid May.

Recruitment and Orientation for District Administration

The recruitment of district staff is complete. The staff is in place only for the duration of the spray operations. RTI hired a district manager for each of the four districts. Staff also includes a warehouse manager, district logistician, finance clerk, and maintenance workers. RTI is in the process of assigning other necessary district positions.

Environmental Mitigation Set-Up

The main IRS warehouse in Porto Novo has been renovated to mitigate environmental impacts. This renovation included the construction of nine soak pits.

Recruitment and Training for Spray Teams

The recruitment of spray operators was completed by the chief doctor and health technicians in each community health center. RTI staff then screened each operator to assure those finally selected had reading and writing skills.

Ngayo Sy and Ousmane Boye from the Senegal MOH trained operators and future trainers in June and approximately 315 operators received training. Prior to the training, all prospective operators received a physical examination and only those who received a medical certificate attended the training.

Other Activities

- The supplemental environmental assessment (SEA) was approved by USAID in April.
- RTI is helping the CREC meet environmental mitigation standards for its storage space in Tori-Bossito, particularly with regard to soak pit construction.
- RTI received authorization from the Ministry of Environment (MOE) to begin spraying in June.
- The Benin program borrowed the Mali IRS project spray pumps to conduct their training of trainers.

Project Management and Administration

Staffing

All staff in the Cotonou office are in place. These staffs include the chief of party, finance manager, logistician, operations coordinator, and driver.

Office & Warehouse Space

The warehouse space in Porto Novo will be the central location for all IRS operations. The warehouse has been divided into five areas: a central storage area for shared commodities among the districts, and an individual storage area for each of the four districts.

Partnership and Collaboration

RTI is working in close collaboration with the NMCP and facilitates all IRS activities. RTI's partners include the MOH, the CREC, and the MOE. At the operations level, RTI is also working in closely with the DDS, Service d'Hygiene, the community health centers in each of the four districts, chief doctors, and mayors.

Outstanding Issues

- Daily wages for spray operators were lowered from 5,000 CFA (USD \$12.50) to 3,000 CFA (USD \$7.50). Operators were initially informed they would receive a higher daily stipend and with this decrease we can anticipate some discontentment among some sprayers.
- The NMCP has raised the issue of having antidotes available in each of the health sectors and to have each operator go through cholinesterase testing.
- RTI is working to set up meetings with the NMCP to talk about the LLNs that are needed for distribution in Adjohoun and Dangbo.

Upcoming Activities

- Implement IRS spray operations.
- Assist the NMCP delegate with the supervision of IRS operations among the CREC, NMCP, and the MOE.
- Conduct an IRS task force meeting.
- Train drivers on the transport and storage of pesticide scheduled for July.
- Train nurses and physicians on symptoms of contamination scheduled for July.

Ethiopia

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 April to June 2008, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Start-Up

Start-up for the Ethiopia IRS program continued during this period. A micro-planning meeting was held with representatives from all target districts of the three zones on April 16 and 17. The micro-planning meeting was aimed at gathering logistics needs information from all of the districts, encouraging detailed planning for the implementation of the IRS operations, and fostering dialogue between RTI, USAID, and zonal/district health office representatives.

Planning and Assessment

Logistics Assessment

The logistics assessment was performed as part of the micro-planning meeting held with representatives from all the districts on April 16 and 17. Prior to the micro-planning meeting, district health office malaria focal persons were sent a questionnaire on the current status of IRS equipment/logistics and were asked to provide information on IRS needs for the upcoming campaign. During the meeting, each district representative provided the completed questionnaire and a session was held to determine what needs RTI could address through the PMI-funded program. A spreadsheet was developed to detail district IRS information.

Environmental Assessment and Compliance

The Ethiopia supplemental environmental assessment (SEA) document was submitted to USAID on March 28 and RTI received formal approval of the Ethiopia SEA on June 25.

As part of the micro-planning meeting, RTI gave a session on environmental compliance issues and mitigation measures for environmental safety. With a long history of IRS, the regional, zonal, and district health offices are well versed in IRS operations. However, to date, little environmental compliance mitigation measures have been put in place during the IRS campaign. Therefore, the need for environmental compliance and adherence to mitigation measures as outlined in the SEA was highlighted in the micro-planning meeting.

Tito Kodiaga, RTI environmental specialist, visited Ethiopia in May to assess environmental compliance aspects of the project in preparation for spray operations once operational staging sites had been identified by each target district. He visited each of the districts to assess the feasibility of the operational staging sites, storage capabilities at each district, and began activities for evaporation tank construction.

The environmental compliance visit highlighted the need for improved storage facilities at district level. RTI is assisting the districts in putting in place minimum storage facility requirements for this spray campaign, with additional efforts to achieve all Food and Agriculture Organization (FAO) storage facility standards by the 2009 campaign. The minimum requirements include:

- Thermometers in all the storage facilities
- Fire extinguisher in each storage facility
- Bucket of sand in each storage facility
- Skull and cross bone signs in all the warehouse and evaporation tanks sites
- Wooden pallets to be used to place the pesticide containers
- Double padlocked doors of the storage facilities
- Locks in all the evaporation tank doors

RTI worked with its partner, Crown Agents (Crown), to issue a tender for the construction of evaporation tanks. RTI received bids from two contractors for multiple target districts. RTI and Crown are currently finalizing contracts for the bidders and evaporation tank construction will begin the week of June 29 with an expected completion date of July 12.

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 compliance with the country's IRS guidelines and existing practices, di-chloro di-phenyl tri-methyl chloride (DDT) 75 percent wettable powder (WP) will be used for IRS operations.

Procurement and Logistics

Pesticides

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

Spray Pumps & Parts

The following items were purchased for the Ethiopia IRS program:

Qty.	Model Number	Description
970	67322WD	X-PERT SPRAYERS 4 GAL.
1940	148-676	KITS FOR X-PERT
970	805-855	NOZZLE TIP 8002E

Personal Protection Equipment

The following items were purchased for the Ethiopia IRS program:

Description	Quantity
Gloves	8,470
3M 8511 Nose Masks	16,941
Coveralls	
Small	932
Medium	1,553
Large	621
Helmets/faceshields	2,000
Gum Boots	
Small	466
Medium	777
Large	311
Reflective jackets – Green (lime)	233
Reflective jackets - Red or Orange	58

Other Commodities

The follow items were also purchased for the Ethiopia IRS program:

Description	Quantity
Wash basins	104
Buckets	600
25 L Jerricans	450
2 L Jugs	400

1 L Jugs	28
220 L Barrels	300
5000 L Barrels	10
Metal funnels	500
Mesh strainers (for funnel)	750
8-person tents	112

IEC Development and Implementation

IEC Material Design and Development

RTI developed information, education, and communications (IEC) materials based on IEC materials used in other IRS countries, and existing IEC materials used in districts. RTI is currently adapting IEC materials to the local context, after which the materials will be reproduced and distributed to the various target district mobilizers.

Training of IEC Mobilizers

A training of trainers (TOT) for IEC was held on June 30 in Adama. The training addressed various malaria prevention messages as they relate to IRS operations, and provided responses to questions frequently asked by household residents. The training also provided an opportunity to discuss the best method of information dissemination at the kebele (smallest administrative unit of Ethiopia similar to ward or neighbourhood) household level.

Two participants were requested from each district; however, final numbers were lower than expected due to other health activities and trainings that required the presence of various district health officers. The following is a summary of participants:

Environmental health officers – 15
 Public health nurses – 17
 Malaria experts – 1
 Health education officers – 2

Follow-up training and information dissemination will occur during a meeting with district administration and kebele political leadership representatives in order to discuss how to use the kebele structures to mobilize from house-to-house.

Spraying Operations

Geographic Reconnaissance and Detailed Planning

Following the micro-planning meeting held in April district representatives returned to their districts to organize their IRS set-ups. Given Ethiopia's long history with IRS, regional, zonal, and district offices are well versed in the organizational needs of IRS operations and the areas to be covered during this year's campaign. However, as discussed during the micro-planning, each district was to recruit IRS personnel based on the number of houses to be covered during the IRS time frame of 30 days. District representatives were led through a series of exercises through which to calculate these numbers during the micro-planning meeting.

Environmental Mitigation Set-up

As detailed under the environmental compliance section above, RTI worked with its partner Crown Agents to initiate the construction of evaporation tanks at IRS operational sites identified. RTI, the regional health bureau, and the districts worked to identify which operational sites would be most prudent for the citing of evaporation tanks during the environmental compliance visit by Mr. Kodiaga. 24 operational sites were agreed upon and Crown Agents issued a tender to vendors for building the necessary evaporation tanks.

RTI approved two vendors to initiate construction and the work will be split between the two vendors. After each has constructed a pilot evaporation tank, the vendors have agreed to proceed with concurrent evaporation tank construction in the remaining districts.

Recruitment and Training for Spray Teams

Due to delays in procuring and receiving all the necessary personal protection equipment (PPE) in-country, the training of trainers (TOT) had to be postponed until the arrival of the PPE, and spray operator training was delayed until all PPE arrived in-country.

The IRS TOT was held June 16-19 in Adama. Districts were advised to send two team members from each IRS team in their district, as well as district environmental and malaria focal persons. Generally there was good turnout, however some districts had lower representation because some of their staff were called back to their districts to address epidemics. A total of 152 completed the training (two representatives from Fantale district and six representatives from Akaki district were called back). In addition, there were no representatives from Gimbichu district, who started IRS operations on their own to avoid anticipated problems of inaccessibility.

The following is a summary of participants:

Malaria experts/malaria technicians – 89
Health extension workers – 16
Environmental health officers – 23
Nurses – 21
Public health officers – 2
Zonal chief - 1

Due to delays in PPE delivery and construction of evaporation tanks, it was agreed that the spray operator training should begin the week of July 7 in order to allow time for all equipment to be received in country.

Logistics Support for Spray Operations

RTI is in the process of renting vehicles for IRS operations and various vehicle and is planning on renting 118 vehicles for spray personnel in the various target districts for the duration of the operations.

Other Activities

Entomological Monitoring

A consultant was identified to carry out entomological baseline monitoring activities for the IRS spray operations. The baseline activities will commence in early July. The consultant will perform the following:

1. Collection of mosquitoes to determine malaria vector density in the identified sentinel sites in Jeju district (Arsi zone), Ziway (East Shoa zone), and Shala (West Arsi zone) using spread sheet and human landing collection methods prior to the 2008 DDT spray. Vector density will also be evaluated during and immediately following the 2008 IRS operations.
2. Female mosquitoes obtained in the field or reared in the laboratory will be identified morphologically using the criteria of Gilles and de Meillon (1968).
3. Conduct monthly monitoring of bio-efficacy of insecticides using standard World Health Organization (WHO) bioassay method in selected sentinel sites.
4. Conduct larval monitoring in selected mosquito breeding sites.
5. Undertake insecticide susceptibility testing using standard WHO methodology (WHO 1998) for all insecticides recommended by WHO for IRS (DDT, carbamates, pyrethroids, and organophosphates).

Blood-fed and gravid *Anopheles gambiae* complex females will be collected from houses using aspirators and maintained in the laboratory to lay eggs that will be used for rearing F1 progeny for susceptibility tests. The larvae will be reared to adults for use in insecticide susceptibility tests. Adult mosquitoes (two to four days old, non-blood fed females obtained from laboratory or F1 progeny of wild-caught females) will be used for the bioassay at diagnostic concentrations to determine susceptibility. Results of susceptibility tests will be analyzed for dose/response relationships (probit analysis) by the Maximum Likelihood method (Finney 1971). Insecticide susceptibility data will be related to vector species, etc. in a geographic information system (GIS) format.

6. Transmission indices: sporozoite rates will be determined.

Capacity-Building of Ministry of Health (Surveillance, M&E, etc.)

The micro-planning meeting in April was held to gather district information in relation to logistical needs, plan for the upcoming campaign, and set a trend of detailed micro-planning activities at the regional level for the future.

Since budgeting and planning for each district-level IRS operation is based on funding available from the district administration, this year's campaign proved different in that RTI, through USAID, was able to support the districts through the provision of equipment,

vehicles, and per diem payments. To this end, districts were encouraged to plan differently with the knowledge that additional equipment would be available to them.

In addition, environmental compliance activities that were lacking in previous campaigns have been brought to the forefront. RTI and Crown Agents are increasing the districts' capacities to implement an environmentally compliant IRS campaign, complete with proper disposal facilities for DDT-contaminated water (evaporation tanks) and improvements to storage facilities.

Monitoring and Evaluation

Information Collection Plan

RTI developed a plan for daily and weekly summaries as well as monthly IRS coverage data. Data collection templates will be distributed to the various target districts. These will be used during the IRS campaign to collect necessary spray data for the eventual compilation and results summary.

Project Management and Administration

Staffing

RTI hired key IRS Ethiopia staff during this period. These include chief of party (COP) Sheleme Chibsa, logistics officer Alemiye Wondimneh, and finance officer Aklilu Mulate. RTI is also in the process of hiring logistics and finance assistants in preparation for start of spraying in each of the 21 districts.

Negotiations are underway with a technical specialist in entomology, while recruitment continues for an information management specialist and procedural quality specialist.

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

The Ethiopia IRS team is being supported by RTI Nairobi and Washington. There were several visits by RTI staff in support of the project during this period. These include:

April:

- Joaquim Canelas, operations director (RTI/Nairobi) – provided logistical assessment support to the project and training of operational aspects of IRS during the micro-planning meeting.
- Jacob Williams, director of the USAID Integrated Vector Management (IVM) project (RTI/Washington) – provided environmental compliance training during the micro-planning meeting.
- Patricia Preware, Ethiopia home office technical manager – provided project administrative support and overall RTI management and IRS support training during the micro-planning meeting.

May:

- Mr. Kodiaga, environmental scientist – conducted an environmental compliance support visit and assisted with environmental compliance preparation and storage set-up.

June:

- Samson Mesfin, IRS financial controller (RTI/Nairobi) – provided financial set-up and administration assistance.
- Mr. Williams – conducted TOT for operators and mobilizers in collaboration with RTI Ethiopia staff, with particular emphasis on environmental compliance and mitigation measures. He also provided technical oversight of evaporation tank construction.
- Ms. Preware – provided administrative training and support to RTI Ethiopia staff.

Office & Warehouse Space

The ORHB agreed to provide RTI space in the malaria control department office. The exact specifications of this space are still being discussed, but RTI plans on co-locating with the regional health bureau to foster closer collaboration.

During the environmental compliance visit, Mr. Kodiga visited the various districts to inspect available storage space. He discovered that some districts did not have storage space at all, which other districts had identified storage space but improvements were necessary. RTI is working with the districts to complete the necessary improvements for the up-coming campaign, with the goal of supporting extensive improvements before next year's campaign.

Partnership and Collaboration

National Partners

RTI encouraged increased collaboration between different government authorities, including environmental focal persons and health workers in all trainings provided to district representatives. This will allow for a more integrated and multi-sectoral approach to IRS implementation, monitoring, and evaluation.

In addition, both traditional and local administrative authorities are participating in the implementation of IRS through IEC training and information dissemination. These local partners will play a clear role in passing along important IEC messages associated with malaria, as well as informing communities when spray operators are likely to visit their households.

Outstanding Issues

- Completed construction of evaporation tanks in all 26 operational sites.
- Verification of minimum requirements at all storage facilities.
- Arrival, clearance, and delivery of all procured PPE.

Upcoming Activities

- TOT for mobilizers (June 30 and July 1).
- IEC dissemination meeting with political leadership at district level (to be scheduled in July)
- Spray operator training (July 7-12)

Ghana

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 the 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 to manage entomology 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 April to June 2008, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Planning and Assessment

A series of consultative meetings were held with partners to ensure that the IRS program was well received in the northern region. In Accra, the chief of party (COP) and task manager discussed the generic timeline for IRS implementation and RTI's scope of work with the Mission and NMCP.

At the regional, district, and sub-district levels, the COP, the information, education, and communications (IEC) officer, and the district operation managers oriented relevant authorities about upcoming spray operations, the implementation of IRS in PMI countries, the scope of IRS work in Ghana, and key objectives of the program. This goal of these debriefings was to build the in-country technical capacity to ensure effective application of IRS and the sustainability of IRS operations.

Regional Stakeholders' Meeting

On April 2, 2008, the IRS program in Ghana held a regional stakeholders meeting in Tamale, the northern region of Ghana, with about 100 participants. Participants included medical doctors, district health directors, nurses, disease control officers, and public health experts, as well as district coordinating directors and environmental health officers from all 20 districts of the northern region. Also present were USAID and NMCP representatives, development partners, and RTI staff.

John Abenyeri, the northern regional coordinator of the Roll Back Malaria Initiative and northern regional director of health services, explained the burden of malaria on the Ghanaian economy. He described IRS as one of the most effective malaria vector control methods and appealed all participants to help make the Ghana IRS program a success.

Paul Psychas, senior advisor to the PMI, explained the history and objectives of the PMI. He said the PMI began in 2005 and currently encompasses 15 African countries with the goal of reducing malaria-related morbidity and mortality. The PMI in Ghana was launched in December 2007 with a \$17 million donation. Dr. Psychas advised the participants to help put these resources to the best use.

Napoleon Graham, the COP for the Ghana IRS program, introduced RTI to the participants. He outlined the activity plan of the Ghana IRS program and welcomed the various stakeholders to participate in its implementation.

Environmental Mitigation

Dr. Jacob Williams visited the Ghana IRS Program in April to meet with key stakeholders at central, regional, and district levels as well as conducted field visits on pre-operational planning on environmental mitigation activities at the district level and provided technical guidance to the in-country Team and recommendations for improvement as needed.

Other measures put in place and adhered to by the Ghana IRS program included:

- Enforcement and use of full PPEs by spray operators
- At each operational site and in the soak pit, detergents have been made available; and for washers to wash coveralls used by spray operators at the end of each day.
- Barrels were procured from Accra; water tanks purchased and soak pits set up at all operational sites for establishment of a progressive rinse system. Monitoring and supervision of spray operators is done on a daily basis to ensure the progressive rinse system is used properly and enforced.
- Dedicated and secured storage facilities are available and functional at all IRS operational sites to prevent pilferage.
- Detailed planning to retrieve and store empty insecticide sachets, and the use of strict auditing schemes (use of daily spray cards, team leader daily summary cards, supervisor daily summary cards) for proper control and accountability on insecticide usage is in place.



Monitoring progressive rinse system

Several measures were used to minimize pilferage and wastage. First, all procured items (insecticide, PPE, sprayers, and other logistical items) were recorded using forms and checklists. Only authorized staff were allowed to withdraw items from stores, and each withdrawal was documented. Second, all storage facilities were retrofitted and secured to avoid break-ins. Third, a logistics assessment and inventory were conducted at least once a month. RTI has arranged to store all unused Fendona sachets from district level to central level storage facilities in Tamale.

Occupational exposure to alpha cypermethrin for the spray groups, team leaders and wash persons was minimized by using PPE. The spray operators were provided with helmets, face shields, nose and mouth masks, long-sleeved cotton overalls, rubber gloves, pairs of cotton-rich stockings, and robust gum boots. At the end of the day, spray operators handed over the PPE to the wash persons for cleaning and initiated the progressive rinse process.

In summary, the following measures were taken prior to and during IRS activities to minimize exposure to the insecticide and the potential adverse experiences of such exposure.

- Prohibiting eating, drinking, or smoking while working (to avoid dermal exposure, inhalation, or ingestion exposure)
- Ensuring that workers washed their hands and face with soap and a large quantity (about 2 liters) of clean water after spraying and before eating, smoking or drinking (to avoid dermal exposure, inhalation, or ingestion exposure)
- Coveralls were washed by the wash person(s) to avoid dermal exposure, inhalation, or ingestion exposure
- In case of accidental spillage of insecticide on the skin, advising the worker to wash the affected area(s) with soap and water immediately (to avoid prolonged dermal exposure)
- Advising spray operators and wash persons to immediately inform the supervisor or team leader about any adverse side effects of the insecticide (to seek health care early)
- Advising parents, guardians, or home caretakers to prevent children from coming into contact with sprayed surfaces after returning to the house (to avoid the transitory side effects of the insecticide) and to avoid plastering, painting, and placing pictures/photographs on the sprayed surfaces because these activities conceal the insecticide and reduce the sprayable surface).

Procurement and Logistics

Equipment and Supplies

The logistics officers of the Ghana IRS program and the Rwandan logistics officer worked to ensure that IRS teams had the requisite equipment and supplies at all operational sites. Five logistic assistants, five store keepers, and five security officers were hired and trained for the five districts.

To comply with environmental mitigation recommendations under the IRS program, the following actions were taken:

- 16 IRS operational sites were set up in the five districts.
- Progressive rinse systems, soak pits, pump hangers, and drying lines were provided at all sites.

- Soak pits were fenced with *zana-mats* (woven grass mats) and fitted with doors and locks to deny unauthorized access to the site.
- Fire extinguishers were provided at all operational sites, offices, and warehouses.

Due to unforeseen airline logistical problems,¹ 24 pallets (40,800 sachets) were airlifted from South Africa to Ghana instead of the full consignment of 32 pallets (70, 000 sachets). This occurred on April 27; and the pallets were then transported by road to Tamale.

The first batch of insecticide was then transported to the targeted IRS districts during week of April 28 for the commencement of IRS operations. The remaining eight pallets were airlifted from South Africa for delivery in Accra and transported by road during the week of May 5 to RTI's IRS central warehouse in Tamale.

Delivery Truck Accident

On May 7, RTI's Tamale office received word that a delivery truck had been involved in an accident. This vehicle had been hired to haul the remaining insecticide for the IRS operations in the northern region. The COP then received a call from Logistics Direct² indicating that a second truck had been loaded with the insecticides (from the first truck) and dispatched to Tamale.

Upon arrival and inspection, RTI determined that the shipment was made up of 195 barrels. Most of the barrels had dents on them, with 36 barrels damaged or mangled. The RTI team determined that some barrels had sachets missing and others had contents spilled. The RTI logistics officer hired six people and provided them with personal protection equipment (PPE)—coveralls, boots, nose masks, and gloves—to off-load the barrels at the warehouse.

Both RTI and the Crown Agents teams investigated the accident. As part of the internal investigation, RTI's logistics officer and M&E/environmental specialist visited the accident site (14 km from Jema, the Brong Ahafo region, near the Awurate village) on May 9. The RTI investigators were accompanied by Baba Ali, who was driving during the accident.

Below are summary findings and recommendations:

- Mr. Ali indicated he had steer lock and could not control or stop the vehicle on the untarred portion of the road. He skidded into a ditch about 12 meters off the road, and the truck landed on its right side. This happened at about 20.00 GMT. It took Mr. Ali one hour to reach the Kintampo hospital for medical attention.
- George Baidoo, a retired civil servant and chief of Awurate village, informed the RTI team that he was notified of the accident between 21.00 and 22.00 GMT. Upon receiving notification, he assembled the community accident squad at the site of the accident and kept watch until the driver returned to the accident site at about 06.00 GMT on May 7.
- The accident occurred near a narrow stream (locally named Adjoa kuma). The stream was covered with vegetation and difficult to see. A broken wooden board from the truck, the tarpaulin, and an empty Fendona sachet without contents were found at the

¹ According to an e-mail from the supplier, the 32 pallets of insecticide were off loaded because of a sudden change in runway to a shorter runway (by 2km) allotted for the aircraft prior to departure. As a result of the aircraft could not up lift all the cargo due to the shorter runway.

² Crown Agents local partner responsible for clearance and transport services

site. (Note: the Adjoa Kuma stream flows to join the Awurate stream about 20 meters away as a tributary to the larger Subin river. According to the chief, the streams have no fish but crabs can be caught all year around the fringes of both streams for food).

- It had rained on Thursday night and there were no visible signs of the insecticide spill except for on the right side board of the truck. Spills from the insecticide and oils from the truck were washed away as runoff into the Adjoa Kuma stream.
- The team took one water sample from the stream and interviewed one of the persons hired to reload the barrels. The team moved the contents of the open barrels into the second truck upon the arrival of Logistics Direct personnel at about 08.00 GMT on May 7. He told them to use handkerchiefs as nose masks and to wash themselves after the reloading exercise.
- Team members experienced burning sensations in their eyes after the exercise, and therefore washed themselves upstream before going home. RTI was not able to interview the other five personnel because they had already returned to their farms.
- Although the chief assured the team that no sachets were taken from the accident scene, RTI entreated him to direct his community to return any sachets found because of their toxic contents. The team also asked him to inform RTI of any adverse effects from the spill.
- The RTI team requested that the chief send all six people hired to load the truck to the Kintampo hospital for medical examination and to inform the team of their physical health.

In summary, steps taken to address the issue were:

1. Visit to accident site to undertake independent enquiry and obtain first-hand information on events leading to the accident, location and spill area.
 - One empty sachet (contents missing) found at accident site.
 - Interview with driver and driver's friend on injuries sustained and medical attention received. Driver and friend were not trained in the handling of the hazardous goods as required.
 - Interview with chief of Awurate community to solicit help to retrieve sachets if any were taken away from the accident site and report any adverse situation to RTI/Tamale office.
2. Six locals who were hired to reload the consignment on the second truck were identified and instructed to seek medical attention from Kintampo Hospital. Follow-up visits were undertaken for monitoring purposes.
3. A 500-ml water sample taken from the Adjoa kuma stream was sent to a chemical laboratory in Tamale (University of Development Studies) for investigation.
4. The USAID and NMCP were informed of the accident.
5. On May 12, the Environmental Protection Agency (EPA) office in Tamale received written notification of the accident and subsequent actions taken by the RTI/Tamale office.
6. The EPA office in Sunyani has oversight responsibility for the area and visited the accident site on May 13. There, they found another sachet of Fendona, whole and with its contents intact.
7. The water analysis results sheet from Adjoa kuma stream samples indicates:
 - 48 micrograms per liter value for alpha-cypermethrin (World Health Organization standards for drinking water are 50-180 micrograms per liter and 0.03 micrograms per liter for fresh water)

- Although this is below the recommended guidelines, RTI has requested that an additional test be carried out on soil samples from the site a month later.

A detailed accident report, including immediate steps and recommendations, has been submitted by RTI's Ghana IRS program to USAID/Ghana and Ghana's EPA.

IEC Development and Implementation

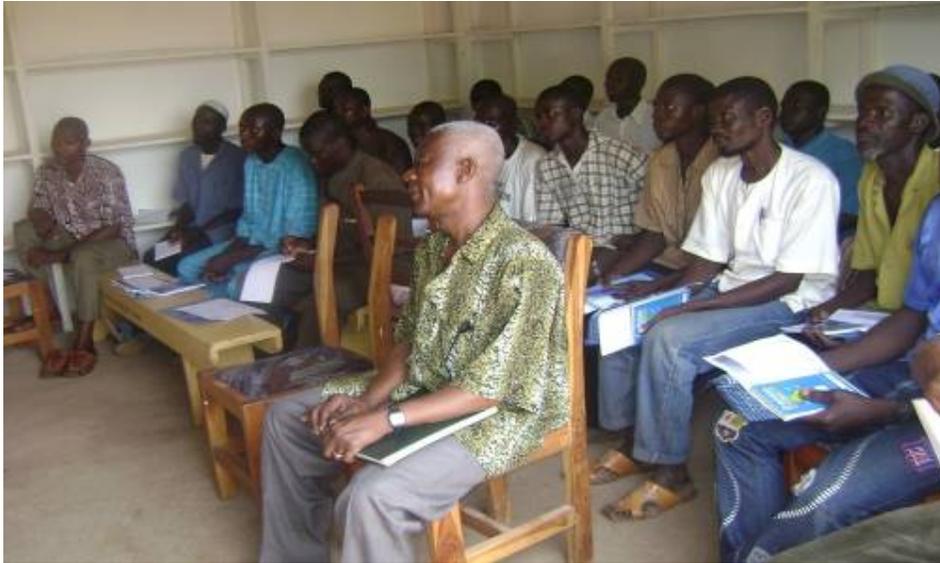
The Ghana IRS program held 38 stakeholder meetings in sub-districts across the five selected districts; this is expected to continue through the end of the spray operations, until July or August 2008. These meetings were intended to educate community leaders and members about the IRS program, solicit their participation, and inform them of their expected roles before, during, and after the spraying exercise. Participants of these meetings included chiefs, assembly members, unit committee members, female leaders, religious leaders, health workers, environmental officers, heads of departments, and other opinion leaders, all of whom expressed their gratitude and thanks to the government and people of the U.S. for the IRS program and PMI.



Chiefs, assembly members, and other opinion leaders seated during a stakeholder meeting at Savelugu/Nanton District.

IEC Training

In order to provide intended beneficiaries with the most correct and up-to-date information about malaria, its prevention, and the IRS program, the Ghana IRS program office recruited and trained 138 IEC implementers for all five districts in April 2008. These IEC implementers received training on malaria, its transmission, prevention strategies, the IRS program, and key messages to convey to communities.



IEC implementers for Gushegu district undergoing training at Gushegu Hospital.

RTI uses the following channels of communication for IEC messages:

- Print media, radio communication, mobile vans, and interpersonal communications.
- Materials developed for print and radio were distributed and aired throughout the five selected districts.
- Posters, brochures, and stickers were displayed on notice boards, houses, and vantage places.
- Radio spots (health talks, discussions, and jingles) were played on a number of FM stations.

RTI, with assistance from the NMCP, worked with the northern regional health promotion unit, northern regional health authorities, district assemblies, district information services, the National Commission on Civic Education, the Department of Community Development, the Department of Women's Affairs, the Department of Education, and the Department of Children's Affairs to undertake the following activities:

- Sensitize local leaders and government functionaries. The IEC team worked with districts and local chiefs to mobilize communities and educate them about IRS.
- Arrange for periodic meetings at the regional and district levels to keep stakeholders informed about IRS progress.
- Facilitate community meetings with local leaders and arrange for gong beatings, announcements, radio discussions, and use of mobile vans.

The IEC implementers continued to conduct door-to-door efforts to educate citizens about the IRS program and necessary activities to prepare communities for the spray activities. In each district, RTI's IEC assistants worked closely with district IRS teams to maintain oversight of IEC activities and ensure coordination of spray operations with IEC activities.

- 30,000 posters, 80,000 IEC stickers, 80,000 spray operator stickers, and 80,000 brochures were distributed to communities by IEC implementers, community leaders, schools (IRS clubs), health centers, and information vans.

- 42 separate meetings were held across the five beneficiary districts, and meetings are still being held. Participants included traditional rulers, assembly members, unit committee members, female leaders, religious leaders, health and workers, heads of departments, other opinion leaders, and the general public.
- In-school IRS education occurred with the help of IRS clubs.
- Sign posts, radio spots, media events, and community events were used to increase awareness of the IRS program. Community events included festivals, games, and market days.

Spraying Operations

Training of Trainers

RTI and AngloGold Ashanti organized a training of trainers (TOT) workshop at AngloGold's Malaria Center in Obuasi between April 14 and 19. Participants included district operations managers, the M&E officer, COP, finance officer, IEC coordinator, and logistics officer (Rwanda) from the Ghana IRS program office.

As part of the IRS program's objectives to build in-country capacity, Ghana Health Service staff from the central and northern region and disease control officers from the five beneficiary districts were invited to the TOT workshop. Also present were district environmental health officers, officials from the plant protection and regulatory services department of the Ministry of Food and Agriculture, and EPA staff. The senior advisor of the PMI (USAID) and representatives of the Center for Disease Control and Prevention (CDC) also participated in the training. The training emphasized practical sessions, spray techniques, safety, and maintenance of equipment.

John Chimumbwa was the lead facilitator of the TOT, with support from AngloGold Ashanti, the WHO, and NMCP staff.

A total of 25 participants took a general malaria knowledge pre-test without attaching any identification of an individual to the outcome as a way of gauging the level of understanding of malaria in general for the group of participants. Out of a possible total of 315 points, the group scored 148, representing a 47% score average. The range of individual scores was from 22-72%.

At the end of the course 16 participants took the more specific test related to curriculum of the IRS training and this time attaching identities to names and also the district from which they originated. Out of a possible 400 score, the group achieved 299 representing 81% mean achievement, ranging from 48-100%. It should be noted that the two tests should not be compared one to the other, instead they should be looked at in the sense of above average ratings, which in the first instance meant the group generally knew something about malaria and its possible control, and in the second test, that the group as whole scored above average in terms of assimilating the material that was taught to them during the course.



Participants at TOT receiving practical training at the AngloGold malaria training site

The training agenda was set up in themes alternating theory and practical sessions and interspersing passive and interactive sessions:

- Official opening and administrative steps
- Overview of PMI
- 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

The following outputs were achieved:

- CD hand out for each participant of all materials covered and generated during the course
- Realization of training objectives by participants
- Course evaluation (Pre- and post tests, mood meter and daily evaluation)
- Spray operator training plan and agenda for the next phase of training
- Selection of trainers to undertake the district level training of spray operators in the five IRS districts
- Development and consensus criteria for spray operator candidates selection
- Consensus on data collection tools and the nomenclature therein agreed to by all stakeholders

Training of Spray Operators

RTI's District Operations Managers facilitated the district spray operator training in their respective districts, with support from supervisors from AngloGold Ashanti and the Regional and District Health staff. The spray operators training utilized the same methodology for training of trainers including the training agenda, topics covered and practical sessions. To that end, the Ghana IRS program office recruited and trained 341 spray operators from April 27-3 May 2008, to implement spray operations in the targeted communities in the 5 districts from May through to the end of July.

Prior to training activities, general medical examination were conducted on all spray operators, team leaders, and supervisors to assess their medical fitness for the IRS activities. All female operators and team leaders were conducted pregnancy tests.



Spray Operators undergoing training at Karaga

Environmental Compliance

As part of routine program environmental monitoring activities, Tito Kodiaga, RTI's environmental assessment specialist, conducted an environmental compliance visit to the Ghana IRS program from June 5-12. His activities included:

- Observe IRS activities in Tamale, including spray operator activities, supervisory capacity and skill, insecticide accounting and storage, and daily cleanup.
- Determine and document whether these activities are in full compliance with the supplementary environmental assessment (SEA) for Ghana and USAID's requirements as approved in the SEA.

Following are areas where the program excelled in environmental compliance. While there may be individual exceptions the following bullets describe where, given an overall view of the program, compliance has been achieved.

- PPE procurement complete; helmets, face shields, dust masks, coveralls, gloves and boots all available and worn in a complete uniform by spray operators and team leaders/supervisors.

- Pregnancy testing completed.
- Commodity storage conditions generally excellent, spacious and ideal for storing the pesticides.
- Commodities have been stored in a thoughtful manner and the warehouse roofing is not susceptible to leaking.
- Soap and water are available at each warehouse.
- All the warehouses are well guarded and well secured by locks apart from a one which had its lock taken off but was immediately replaced upon notice.
- Stock records up to date in all of the warehouses at the time of the visit.
- There seems to be good coordination between logistics officers and group leaders/storekeepers.
- All food, household goods, domestic animals and people were evacuated from the households before spray operators' began spraying.
- Progressive rinse and re-use of contaminated rinse-water conducted. At the time of visit this was considered very satisfactory. However, reports from the USAID indicate that the process was somewhat chaotic and wanting before this visit.
- Separation of basins/barrels/buckets used for cleaning spray and PPE equipment vs. personal washing evident.
- Medical kits readily available in warehouses and in the field.

The points below indicate the areas where non compliance was evident:

- Delayed training of health workers (clinicians) on the treatment of pesticide exposure symptoms. Training took place June 18 and 19, 2008.
- The single major incident to have occurred to-date is the vehicle accident during the transport of insecticides from Accra to Tamale by Crown Agents contractor.
- Training on pesticide handling and emergency response not provided to long distance truck drivers as well as the normal day to day spray drivers.

The environmental compliance report provides additional details on areas of compliance, non compliance, and recommendations for improvement.

Implementation of Spray Operations

Spray operations started on May 5 in all 5 districts. RTI divided spray operators into teams of 4 spray operators and 1 team leader to ensure strict supervision during the implementation phase. Spray teams were managed and monitored by supervisors and operational site managers within each district. Operational site managers and spray teams in turn were supervised by the districts management team to ensure RTI's goal of providing day-to-day operational management and support for IRS implementation, including all aspects of monitoring and quality assurance.

Operational oversight has been provided by NMCP staff, EPA, USAID/Ghana, and RTI's in-country management team to ensure that spray operations are conducted. Corrective actions for the identified spray operators' mistakes are taken immediately to improve performance and efficiency of the team. During and after a monitoring exercise, team leaders and supervisors were notified of the most common identified mistakes and the recommended actions to ensure that these mistakes would not happen in the future. Key issues focused on during routine monitoring and supervision included the following:

- Observing the spray operators when they mixed the insecticide with water to ensure adherence to guidelines.
- Verifying the information-recording process by the spray operators to account for their work and by the supervisors to ensure proper tallying of a day's activities.
- Verifying the logistics supplied to each spray team against the number reportedly used the balances, and the amount available in stock.
- Evaluating the cleaning and maintenance procedures followed by the spray team.
- Verifying the washing process of PPEs and sprayers and the disposal of that water into pit latrines.
- Cleaning and maintenance of spray equipment. All Hudson compression sprayers used in the project were regularly maintained according to the manufacturer's guidelines. This not only helped to ensure that pumps maintained the correct pressure for generating the flat fan swath required for efficient spray results, but also to extend their productive life. Spray operators were advised to observe the following maintenance and storage procedures.

Other Activities

Baseline entomological assessment: Noguchi Memorial Institute for Medical Research (Noguchi) contracted by RTI, conducted baseline entomological studies in May 2008 and preliminary results by Ngouchi will be presented next quarter.

Pesticide poisoning management training: A pesticide poisoning management workshop was organized by RTI/GHS for prescribers, health and allied health works at district level health facilities in the five IRS districts on June 18 and 19. The training was very interactive with participants solving a series of case studies presented. A key component of the training was the early recognition and management of pesticide poisoning. The 40 participants were presented with certificates upon completion of the training program.

World Malaria Day press briefing: As part of the activities to commemorate the first World Malaria Day on April 25, the Ghana IRS program team was invited by the northern region health directorate to brief the local media about the IRS program.

Preparation of Ghana malaria strategic plan (2008-2015): The COP and home office technical manager participated in a workshop organised by the NMCP to revise the existing Ghana malaria strategic plan (2005-2010) in Accra on June 26, as part of the requirements for Ghana to be able to submit a Global Fund round eight proposal on malaria. The RTI team provide comments and recommendations relevant to IRS operations.

Visits: The Ghana IRS program benefited from a number of high profile visits

- USAID Mission visit – BethAnne Moskov and Paul Psychas; May 20 and 21
- NMCP Mission visit – Aba Baffoe Wilmot and Kwame Gakpey; May 20 - 30
- Environmental compliance visit – Tito Kodiaga, John Pwamang, Salifu Wahab; June 5 – 12
- IVM consultant to assess entomological capacity among Ghanaian institutions - Cliff Mutero; June 12

Monitoring and Evaluation

Information Collection Plan

Each district prepared and maintained an operational spray plan indicating sub districts 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 are assessed and validated by the data collection process monitored and reported on a daily basis during spray operations.

Monitoring of the Ghana IRS operations is done at two levels, internally where the Ghana IRS team carry out daily routine monitoring visits to operational sites and communities; and externally by the USAID Ghana Mission, RTI HQ & Nairobi and other partners, such as GHS, NMCP, EPA, and District Assemblies to monitor progress and compliance of the IRS operations.

Program Management and Administration

The COP in Ghana is supported by officers of logistics and finance, an office manager/Accra liaison, Tamale administrative assistant, monitoring and evaluation (M&E) environmental officer, and an IEC officer to run the Ghana IRS program. All key IRS personnel were based in Tamale during the peak IRS planning and implementation phase to manage IRS operations in the targeted districts. The Accra office served as the liaison for coordination and partner activities with the USAID, NMCP, and other key stakeholders and partners.

RTI recruited and trained the district operations management team, which consisted of a district operations manager, IEC assistant, logistics assistant, data managers, and finance assistants to set up operational IRS sites within each district.

The district management teams secured district-level office facilities and storage facilities and implemented environmental mitigation activities such as the construction of soak pits and progressive rinse systems. They also retrieved and stored empty insecticide sachets within each district. In addition, the district management teams were responsible for logistics management and transport arrangements to support spray activities.

District operations managers worked closely with district authorities to coordinate IRS activities. RTI provided district authorities with the selection criteria for spray operators. Spray operators were recruited within the targeted districts by district health authorities, local leaders, and other key stakeholders based on the operational requirements.

Outstanding Issues

- Formation of IRS oversight committee

Upcoming Activities

- Mop up of spray operations

- IRS closing ceremony
- Medical examination of spray operators (post spray operations)
- Demobilization of district IRS operations
- Logistics assessment/inventory management and waste disposal
- Document best practices and lessons learnt
- Closing of IRS round one operations
- Debrief USAID and GHS/NMCP
- Post IRS evaluation meetings – all levels (regional and district)
- Post IRS entomological monitoring/surveillance

Kenya

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 Division of Malaria Control's (DOMC's) seasonal IRS activities in the 17 IRS districts.

During fiscal year 2008, PMI plans to support IRS in three of the 17 districts in which IRS will occur in Kenya. RTI will manage and deliver IRS spraying programs in Rachuonyo, Nandi North, and Nandi South districts. Between May and July 2008, RTI will conduct one round of spraying within these areas and will spray a total of 199,000 households. RTI will also provide supplementary support to distribute payments for services to seasonal workers (specifically spray operators, team leaders, and supervisors) in the remaining 14 districts where the DOMC intends to implement IRS programs.

Planning discussions for the above activities were conducted between October 2007 and March 2008 under task order one (IRS TO1) of the IRS IQC. However, a request for task order proposal (RFTOP) was issued to RTI in March, and preliminary authorization for task order two (TO2) was given on April 9, 2008. All above activities will be initiated under this new task order.

Madagascar

Madagascar was identified by USAID as one of the third wave of countries to receive funding under the United States (US) President's Malaria Initiative (PMI). The U.S. Agency for International Development (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. In 2007, USAID and the SLP agreed to focus spraying activities in 95 communes within the targeted 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, RTI and the SLP reached at least 250,000 households and 1.25 million people with residual insecticide in six districts, protecting at least 90 percent of the total estimated population in these districts.

In summary, RTI provided:

- Strategic, technical, management and operations support to implement USAID's goal of reducing malaria-associated mortality in the central highlands
- Support to a workshop on vector control strategies in Madagascar
- 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 April to June 2008, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Spraying Operations

Following a slow start, the management of the Madagascar IRS campaign was very efficient; all necessary elements were in place, such as support from the political leadership, high technical capabilities and strong support from the local Roll Back Malaria (RBM) partnership. The spray teams organized follow-up teams to return to targeted houses that were locked, or whose owners refused spraying activities, during the previous spray operations in the area.

While the teams did their best to adhere to the training protocols and to deliver quality IRS, there were a number of points that will need to be fine-tuned in order to improve the quality and effectiveness of their operations. Given the difficult terrain and long distances within the targeted IRS districts, staging posts will be set up during the next round of IRS operations. The staging posts will allow the teams to cover shorter distances. The spraying teams will travel from these staging posts to the day's target site and return at the end of the day. This would result in a larger, well-run storage facility, greater safety to the environment, and less time wasted walking to and from the spray sites.

During the first campaign, spray operators were well-trained to handle their equipment. However, little consideration was given for the protection of the environment with regard to the disposal of wastewater. This situation will be addressed during the next IRS campaign by:

- Ensuring that the equipment is cleaned away from the lower levels of the water table
- Introducing the concept of triple progressive rinsing
- Establishing soak pits in camps where the team will remain for several days.

Geographic Reconnaissance and Detailed Planning

2007/2008 IRS Campaign Geographic Reconnaissance Data

Number of Districts	24
Number of Communes	95
Number of Fokontany	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

Environmental Mitigation Set-up

Environmental monitoring and compliance need to be improved for the 2008 spray operations. The program collected almost all empty used sachets and properly returned them to the national warehouses to be accounted for. Unfortunately, approximately 7,000 used sachets (5 percent) were incinerated prior to the recommendations made by RTI on disposal strategy.

Indeed, incineration of used sachets was routine practice in previous IRS campaigns in Madagascar. For the disposal of excess liquid, teams dug a hole in the ground at whatever house they stopped the IRS activity for the day. The spray operators dumped their excess insecticide into this hole. Progressive rinsing was not practiced and there were no soak pits to deal with excess insecticide. Each spray operator had a basin to wash their overalls, either at home or where they camped for the night. Spray operators had sufficient protective clothing, from top to bottom. However, the gas masks that were purchased scared the community and, thus, could not be used. Furthermore, the safety goggles did not fit above the face mask.

This issue was resolved by buying a smaller disposable mask, which was more comfortable and acceptable. For the 2008 spray operations, the principles of triple progressive rinsing and soak pits for cleansing have been adopted as the best practices for proper rinsing of equipment and safe disposal of pesticides.

Recruitment and Training for Spray Teams

2007/2008 IRS Campaign Human Resources Deployed

Categories	Number
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)	3
Central coordinator	1

Logistics Support for Spray Operations

2007 Campaign Logistic Support

	Type	Quantity
Insecticides	RUBI SWP	18T 400
Spray equipments	Pumps Hudson X-pert 12 litre	300
	Repair Kit	300
Personal protection equipment	Gloves, Visors, Hats, Goggles, Overalls, Boots	For 720 persons
Transport equipment	Vehicle rental	15
	Motorbikes	27

Other Activities

Entomological Monitoring

The post-campaign entomological survey could not be done because of the timing (end of transmission season). It was replaced by an entomological data collection exercise; the results of which will be used as a baseline for the next activities. Baseline data collection for entomological monitoring was conducted from April 10 – 19 in 2 sites in Antananarivo, one site in Betafo and one in Miarinarivo. Sites where baseline data were collected were not sprayed during the last campaign.

End of Round Evaluation

During the first year campaign, RTI's support focused on:

- Purchasing insecticide, spraying equipment, and adequate amounts of personal protection clothing and equipment for spray operators
- Providing financial support and transportation for trainers and spray teams
- Supporting the promotion of health education to raise public awareness and to foster
- Cooperation for IRS activities
- Establishing and monitoring human health and environmental safety components.

The SLP prepared and presented the 2007–2008 IRS end-of-round report to RBM partners on May 8.

Others Activities

- Development of the PMI fiscal year 2009 malaria operational plan (May 15 and May 22).
- Development of draft RTI IRS/Madagascar work plan (June 2008- May 2009).
- Participation in the international malaria conference in Antananarivo, Madagascar (May 28-30). The conference focused on the intensification of efforts to eliminate

malaria in Madagascar. The IRS team provided financial support and coordinated management of the international conference with a firm identified by USAID, which was leading the administrative management of the conference.

- Participation in the “monitoring and evaluation system strengthening tools” workshop in Antsirabe, Madagascar from June 2 to June 5. The workshop was co-funded and organized by PMI (Measure/Evaluation and IRS/RTI) and The Global Fund to Fight Aids, Tuberculosis & Malaria. The workshop covered the determination of the key indicators in the malaria control program, and the development of these methods to monitor and evaluate the activities.
- Preparation of the next campaign (2008-2009).
- Determination of the six intervention districts (the districts of Anjozorobe and Ankazobe in the region of Analamanga, Betafo in the region of Vakinankaratra, Ambositra and Ambatofinandrahana in the region of Amoron'i Mania, and Ambohimahasoia in the region of Haute Matsiatra).
- Determination of the insecticides: Pyrethroid class insecticides with a residual effect of six months or more, presented as powder, granules or capsules, in conformity with the guidelines of the insecticides approved by WHO Pesticide Evaluation Scheme (WHOPES).
- Development of the revised memorandum of understanding for the 2008 campaign
- Others activities
 - Washing the personal protection equipment in Ambohimahasoia and Anosy Avaratra
 - Recuperation of insecticide from Ambinanindrano
 - Registration of 27 motorbikes used during IRS campaign
 - Prepare the scope of work for new staff (program assistant, finance assistant, logistical assistant, environmental specialist), and for temporary staff in the satellite/district office

Monitoring and Evaluation

Progress on Key Indicators

2007/2008 IRS Campaign Summary Results

Number of districts targeted	24
Number of communes targeted	95
Number of communes treated	96 (an additional non-target commune sprayed because of malaria outbreak)
Percentage of treated communes	100%
Number of fokontany (villages) targeted	1,026
Number of treated fokontany (villages)	1,018
Percentage of treated fokontany	99.2%
Number of hamlets targeted	6,069
Number of treated hamlets	6,194 (an additional 125 non-target hamlets sprayed because of malaria outbreak)
Percentage treated hamlets	100%
Number of dwellings targeted	218,979
Number of treated dwellings	205,383
Percentage of treated dwellings	93.8%
Number of rooms targeted	844,568
Number of rooms treated	813,151
Percentage of rooms treated	96.3%

Number of unprocessed dwellings (closed or refusal)	4,046
Percentage of the unprocessed dwellings (refusal, closed, ...)	1.8%
Number of populations of the zones targeted	1,262,788
Population protected	1,241,344
Percentage of population targeted protected	98.3%
Number of households targeted	252,558
Number of households protected	248,269
Percentage of households targeted protected	98.3%

Project Management and Administration

Staffing

RTI recruited David Rasolofondranohatra as the IRS program manager , a finance assistant and a finance intern to provide support in the financial management of spray operations.

Once recruitment is completed, the IRS/Madagascar team full-time personnel will include IRS program manager, finance officer, logistics officer and administrative/program/logistics assistants. In addition, RTI will recruit a part-time (during the pre- and post-campaign period) environmental specialist (for six months), and district level logistics and finance assistants (for four months).

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

Transition of home office technical manager (HOTM); RTI's HOTM (Bjiou Muhura) transitioned her responsibilities for the Madagascar IRS program to Volkan Cakir during the week of May 19, 2008.

Office & Warehouse Space

The RTI Antananarivo office was established and has been functional since May 2008.

Outstanding Issues

Outstanding issues identified in the previous quarterly report (January-March 2008) were all addressed as follows:

The need to harmonize per diem rates: Under the leadership of USAID and the SLP, an agreement was reached on an updated per diem scale to reflect real cost.

The need for work plan development that clearly identifies tasks and responsibilities: The June 2008-May 2009 annual workplan and associated budget was developed and submitted to USAID.

The need for expertise on the ground and a stronger leadership role for RTI: RTI and the SLP designed and submitted an improved, effective field presence for the next campaign to USAID. RTI will recruit a financial assistant and a logistics assistant for each intervention district to provide appropriate support to the SLP teams.

The need for new storage facilities: RTI and the SLP have identified two national storage facilities. The final decision will be made with a USAID environment specialist. In addition, RTI will contract storage facilities in compliance with safety qualification criteria at the commune level. RTI foresees renting approximately 70 commune (local) warehouses for two months for the 2008 IRS campaign. A solicitation for proposals will be posted in each intervention commune.

The need for a clear and appropriate strategy for the management and disposal of empty sachets and pesticide residues: RTI will request from the vendor that will be selected to provide insecticides for the upcoming campaign to collect used sachets from the previous (2008/2009) campaign and upcoming campaign and dispose them out of the country in appropriate facilities.

The need for the training of storekeepers and capacity building: RTI has included and budgeted the training of storekeepers in the annual work plan as part of pre-campaign activities.

The need of better involvement of the Office National de l'Environnement (ONE): RTI discussed this with the SLP and it was agreed to include the ministry of environment and ONE representatives in the district supervision teams.

The need to minimize insecticide release into the environment: RTI and the SLP agreed to introduce the progressive triple rinsing strategy and the use of soak pits during the 2008 campaign.

Upcoming Activities

The 2007/2008 IRS campaign was successful in terms of achieving targeted goals. However, the need for improvement in several areas was indicated by both the USAID regional environment advisor and the RTI/IRS regional director. The upcoming 2008 IRS campaign will include all recommendations to fully comply with efficacy, efficiency and safety requirements.

The operations will be improved in terms of recruiting a higher number of spray operators. The SLP feels that it is constrained by a lack of equipment. RTI will order additional equipment to meet these expressed needs. In addition, there are more than 100 pumps belonging to the SLP which are currently not working properly due to minor faults. With a small budget, all of these pumps will be fixed, allowing another 100 spray operators to be added to the upcoming campaign. The objective of this strategy is to carry out the campaign in 25 days, simultaneously start spray operations in all communities, and use spray operators who are based in their own community (unlike past campaigns, in which spray operators moved from sector to sector and sprayed for almost three months).

Past campaigns have only used male spray operators, while women were limited to IEC and community mobilization. Experience from elsewhere shows that female operators are much more effective workers and are readily welcomed by the community. As such, RTI will advocate for more gender balance among spray operators.

Although the objective of the IRS intervention is epidemic prevention, the campaign should ideally begin just before the onset of the rainy season to ensure that the operations are

completed before the period of peak transmission of malaria. Failure to do so makes it more difficult to get rid of the vector whose numbers are high during the rainy season. The last campaign was started late, due to external conditions rendering the spray operations mitigational. The ideal time to start a campaign is in late October to early November. However, the timing of the 2007/2008 spray operations was, for the most part, affected by disbursement and/or the allocation of funds. The upcoming campaign is planned for November 3, 2008 and the RTI team is working to ensure that all resources are put into place beforehand to allow IRS to begin at the right time.

The RTI/Madagascar team is working with the SLP and USAID to identify most appropriate national storage facilities.

Malawi

Malawi was identified by USAID 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 April to June 2008, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

The third quarter of fiscal year 2008 (FY08) falls after the end of the mop-up round and before any trainings or field activities for the next round take place. Highlights of this quarter include submission of the implementation plan and budget for 2008, and community open meetings in Nkhotakota to gather feedback from community members on IRS.

Environmental Assessment and Compliance

The *Certificate of Approval of a Project* was signed by the Minister Responsible for Environmental Affairs on May 20.

Procurement and Logistics

Pesticides

The 1,427 remaining unused sachets from the mop-up round were transported to the hazardous chemical storage facility in the Dwangwa Sugar Estate for secure storage. This is in a ventilated, locked building inside a guarded compound where the Estate stores its own pesticides, herbicides, and equipment.

Personal Protection Equipment (PPE)

The PPE was inventoried and inspected during this quarter in preparation for procurement for 2008 spray round.

Spraying Operations

Post-spraying Operations

Community open meetings were held from May 13 to June 4 in 16 locations in Nkhotakota District. These were organized by the district health management team (DHMT) and RTI, and were led by the DHMT. This was an extensive and inclusive exercise which was designed to allow community members to freely discuss their perceptions and ideas about

IRS, and for them to contribute to planning future rounds. Because of the large number of meetings, a separate report writing workshop was organized to analyse and present the information gathered. The report of this workshop was not completed before the end of the quarter and will be included in the next quarterly report. Some of the highlights were:

- There was a perception that, while the number of malaria cases had dropped, the population of mosquitoes had decreased in some areas and not in others.
- Rumors and misinformation were common, especially at the beginning of the spray round. Some of these were due to ineffective community mobilization and some resulted from elements of communities themselves.

Community members provided valuable suggestions and showed enthusiasm for deeper involvement in any future spray rounds.

Project Management and Administration

Staffing

Recruiting for a chief of party (COP) and finance manager began during this quarter. Interviews and selections were still ongoing at the end of the reporting period.

Meeting in Bethesda, Maryland

RTI had an opportunity to meet with PMI/USAID Malawi in Bethesda, Maryland on May 8 during the PMI meeting there. Barbara Kennedy (acting Project Director), Julie Wallace (cognizant technical officer), Mike MacDonald, Kate Wolf, Gene Brantly, and Jake O'Sullivan (home office technical manager) met to discuss administrative and implementation issues and concerns.

Office & Warehouse Space

The RTI office in Lilongwe installed a broadband internet connection. Further furnishing of the office was postponed until after FY08 budgeting is complete.

Outstanding Issues

There has been much discussion around the household count from the first spray round. This discussion centers on determining what definition of "household" was used and whether it was used consistently. In round two, every effort will be made to standardize the definition and thoroughly train all staff in its correct application and recording.

Upcoming Activities

The next spray round is scheduled for October 2008. A "lessons learned" workshop will be organized for August 25. Trainings will begin for round two in September. DHMT staff from other districts will attend training as part of capacity building for expansion to new districts.

Mali

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 Mali National Malaria Control Program (NMCP) 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 NMCP, as well as provide support to the NMCP 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 April to June 2008, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Mali is currently preparing for spray operations that are planned to begin in July. The below activities focus primarily on preparing for the spray operation.

Procurement and Logistics

Pesticides

The NMCP and MRTC chose lambda cyhalothrin (ICON) as the pesticide to be used during IRS. At the time of selection, ICON was not registered in Mali, but members of the IRS task force met with the Ministry of Agriculture (MOA) to obtain a waiver that will allow RTI to bring the pesticide in country. On May 6, after initially rejecting the waiver request, the MOA approved ICON for use in Mali. Pesticide is scheduled to arrive in July. Soon after, it will be delivered to the Koulikoro and Bla warehouses and from there dispatched to the 42 sites.

Spray Pumps & Parts

Spray pumps and associated parts (e.g., repair kits, replacement nozzles, etc.) arrived in Mali in mid-June. In order to remain on schedule, the Mali project borrowed spray pumps from the Benin program for the training of trainers (TOT) program that took place in early June.

Personal Protection Equipment (PPE)

Personal protection equipment (PPE) is scheduled to arrive in July. Currently, the PPE is stuck at the airport in Addis Ababa awaiting available cargo space on Ethiopian Airlines. RTI is working to split the consignments and perhaps even reduce the size of each pallet so that shipment can all arrive in July.

IEC Development and Implementation

IEC Material Design and Development

The information, education, and communication (IEC) materials were developed in close collaboration with the Centre National Information et d'Éducation du Ministère de la Santé (CНИЕCS) and NMCP. In mid-April, the TOT and mobilizer manuals were validated by numerous partners, including the World Health Organization (WHO), NMCP, CНИЕCS, USAID/Mali, Ministry of Environment (MOE), Ministry of Social Development (MSD), and the regional health offices of Segou and Koulikoro.

Training of IEC Mobilizers

IEC trainers (i.e., TOT) were trained in Koulikoro from April 29-30 and in Bla from May 2-3. 34 trainers were trained in Koulikoro and 50 were trained in Bla. During the week of May 18, these trainers in turn trained 627 mobilizers in Koulikoro and 1,221 mobilizes in Bla.

IEC Campaign Implementation

RTI participated in World Malaria Day activities on April 25. The NMCP featured IRS as a major program on Malaria Day. RTI conducted a mini-launch of the IRS IEC strategy. Madame Diakite Fatoumata N'Diaye, mediator of the republic of Mali, presided over this presentation, which occurred on April 26 at the National Museum. The USAID Mission Director opened the ceremony and Madame Diakite gave the closing speech. The presentation included a three-minute television clip explaining the protocols for citizens before, during, and after their households have been sprayed.

The 1,848 mobilizers that were trained in Mali are volunteers and therefore will not be paid during the IRS activities. Immediately following their training, mobilizers began travelling door-to-door to inform the public about IRS. They have also communicated their IEC messages at various community meetings and religious gatherings.

Radio shows have also begun to broadcast segments on IRS to explain the protocol during spraying activities.

Coordination with Spray Operations

IEC activities began several weeks before spray operations. During IRS, IEC mobilizers will follow the geographical mapping so that they are ahead of the spray operations by at least 24 hours.

Spraying Operations

Geographic Reconnaissance and Detailed Planning

The mapping for Bla and Koulikoro circles was completed by RTI in June for the 17 health centers (CSCOM) in Koulikoro and 25 in Bla with the help of the chief doctor and health technicians from each health center.

Recruitment and Orientation for District Administration

The recruitment of district staff is mostly complete. In Bla and Koulikoro, a finance clerk, logistician, circle (district) coordinator, data clerk, and warehouse manager have been assigned to each circle. Other district staff members are also being recruited, including warehouse clerks and guards.

RTI originally intended to assign three maintenance workers to each circle to ensure the repair and upkeep of pumps. However, a field investigation revealed that the distance between some health centers is too great for just three maintenance workers to attend to the needs of each CSCOM. Ideally, RTI could place one maintenance worker in each CSCOM. However, as this exceeds available resources, RTI is evaluating the need for workers and distances between centers to minimize response time to problems at each CSCOM.

Environmental Mitigation Set-up

There will be 17 storage facilities in Koulikoro and 25 in Bla (i.e., one facility in each CSCOM). The MOE and Centre de Reference (CSREF) (the CSREF is part of the MOH) representatives identified areas for storage facilities and soak pits. RTI oversaw all necessary storage facility improvements and the construction of these soak pits in these areas followed this selection.

Recruitment and Training for Spray Teams

The chief doctor and health technicians in each CSCOM recruited all spray operators. RTI staff then screened those for reading and writing abilities and those female recruits who were either pregnant or breast feeding.

John Chimumbwa, IRS technical director, trained future trainers (TOT) during the week of June 16. Approximately 31 recruits were trained. Participants included the NMCP, MRTC, MOE, and Service d'Hygiene of Koulikoro and Segou. Out of the 31 trainees, 20 trained operators during the week of June 23. Approximately 144 operators were trained in Koulikoro and 212 in Bla. All spray operators who were trained underwent a physical check-up and only those who were given a medical certificate attended the training.

Other Activities

- The Ministry of Health (MOH) gave official approval to implement an IRS task force chaired by Secretary General of Health (SEGAL) and comprised of the NMCP, USAID, relevant technicians (entomologists and parasitologists), and ministries involved in IRS, such as agriculture, environment, and the interior. The first task force meeting was held at the MOH on April 9.
- Gaspard Bikwemu, RTI regional environmental compliance officer, was in Mali in May for two weeks. He travelled to Bla and Koulikoro and identified warehouses for

storage space. Sample soak pits were built in CSCOMs in both Bla and in Koulikoro so that the logistician can construct future soak pits and storage spaces based on the environmental officer's recommendations and USAID standards as applied to the samples.

- Elie Bankineza, Mali's new Chief of Party (COP) began on June 2. Task manager Bijou Muhura was in country to orient Mr. Bankineza.
- Direction National du Contrôle de la Pollution et de la Nuisance (DNACPN) met with RTI, the NMCP, and MRTC on May 14 to discuss the environmental impact assessment (EIA) process. RTI made corrections and additions to the EIA based on feedback from the meeting. On May 28, the revised copies were submitted to the NMCP, who in turn submitted them to the DNACPN on May 30. DNACPN authorized spraying activities on June 9.
- The NMCP presided over a national micro-planning meeting on June 2. Micro-planning meetings were also held in Koulikoro on June 3 and in Bla on June 4. Attendees included MOA, MOE, NMCP, and MRTC representatives. The partners approved all IRS activities. The daily stipends for spray operators, supervisors, and team leaders were also agreed upon, as well as the supervision schedule that will be implemented by the NMCP, MOA, MOE, WHO, Direction Regional de la Santé (DRS), DNACPN, MRTC, and all other partners who agreed to implement supervision.
- RTI obtained an authorization from the MOA on May 30 to allow for the pesticide to be brought in country.
- The 42 storage spaces identified in Bla and Koulikoro were given to RTI by community leaders (chief of village, Association de Santé Communautaire (ASACO) [community health association], mayor, under-prefect) free of charge. All spaces required renovation and the construction of soak pits. In some CSCOMs, RTI provided funds to the communities and local citizens completed the renovation of storage spaces and construction of soak pits and sheds. In CSCOMs where the citizens lacked the materials (charcoal, gravel) to complete the construction and renovations, a contractor completed the work.

Project Management and Administration

Staffing

All staff members in the Bamako office are in place and include the chief of party, finance manager, logistician, technical coordinator, and monitoring and evaluation (M&E) officer.

Office & Warehouse Space

There will be 17 storage spaces in Koulikoro and 25 in Bla in each CSCOM. In addition, there is one central warehouse in Koulikoro and one central warehouse in Bla. As there is no electricity in Bla, RTI is investigating possibilities for obtaining electricity in the evening for security purposes and ventilation. RTI will be paying rent for the central warehouse in Bla and Koulikoro, but not for the 42 storage facilities. After numerous meetings, the communities have each agreed to give RTI a storage space at no rental cost. That said, RTI will conduct/fund any necessary renovations to meet the environmental and Food and Agriculture Organization (FAO) rules.

Partnership and Collaboration

National Partners

RTI works in a close collaboration with the NMCP. Because RTI facilitates all ground activities, RTI's partners include the MOH, MRTC, MOA, MOE, and MSD, which helped with IEC, logistics, renovations, and building of soak pits.

At the operations level, RTI is working in close partnership with the CSREF, CSCOM, ASACO, mayors, prefects and under-prefects, circle council, and religious group leaders. Community operations partners identified the spray operators and storage spaces.

USAID Partners

RTI is working in close collaboration with the MRTC and WHO, which has recently requested to be included in the supervision schedule during IRS activities.

Outstanding Issues

- The suggested daily rates of pay for project workers included 2,000 CFA (USD \$5.00) for operators, 2,500 (USD \$6.25) for team leaders, and 3,000 (USD \$7.50) for supervisors. These rates have not been accepted by a number of operators in both circles. RTI will therefore inform the mission of the suggestion from the MOH to increase the daily pay rates to 2,500 for spray operators, 3,000 for team leaders, and 3,500 for supervisors.
- During the microplan meeting, RTI suggested that each operator will be given 300 CFA (USD \$0.75) for breakfast. The MOH has requested that RTI increase the breakfast to 500 CFA (\$1.25)/person in order not to create discontentment among operators.
- In a number of CSCOMs the village chief and/or mayor informed RTI that there are high theft rates, thereby the community does not want to take responsibility for securing the storage facility and therefore necessitating guards for the storage spaces.

Upcoming Activities

- IRS launch is scheduled in July.
- Conduct an IRS task force meeting.
- Assist the NMCP to delegate supervision of IRS operations among the MRTC, NMCP, MOE, MOA, and Service d'Hygiene at the national level.
- Training of drivers on the transport and storage of pesticide scheduled for July.
- Training of nurses and physician on symptoms of contamination scheduled for July.

Mozambique

Mozambique 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 Mozambique National Malaria Control Program (NMCP) identified six epidemic-prone districts (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 total of about 48 localities in all six districts with the intention of continuing coverage in these areas in the 2008 IRS campaign season.

Prior to USAID support through PMI, the IRS program of the Zambezia province in 2006/07 season was carried out by the NMCP with its counterparts in the provincial and district health offices under several logistical and human resources constraints. As a result, IRS activities started very late in February 2007 and ended in May 2007, with spray activities occurring well into the months of the rainy season. Under USAID/RTI support for implementing activities in Zambezia province in 2007, the Provincial Department of Health (DPS)/RTI team began IRS activities in August 2007 and ended in February 2008 in most of the 48 localities. The 2007-08 IRS activities covered 586,568 of the 603,862 households found in target localities in the six districts, yielding 97.1 percent coverage. The end-of-spray activity report covering the entire period from August 07 – March 2008 was drafted and presented to USAID/ Mozambique for review.

During the 2008 IRS season, RTI is continuing to provide support for the development, planning, implementation, as well as monitoring and supervision of PMI-supported IRS activities in Zambezia in collaboration with the provincial and district health offices, local NGOs and the NMCP. Plans for further assistance at the national level for strengthening the IRS activities in other provinces are being put in place, as well as providing management and technical support to entomological monitoring and strengthening epidemic preparedness/ response plans.

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

Current Activities & Accomplishments

The activities and accomplishments related to this quarter are from the winding up of the previous August 2007- March 08 spray season and the preparation for upcoming August 2008-09 IRS campaign in the same six districts of Quelimane, Nicosadala, Namacurra, Murrumbala, Mocuba and Milange.

The major achievement for the previous quarter Jan-March 2008 was the successful conclusion of the 2007-2008 IRS activity season in February, 2008. The IRS program covered 586,568 households in 48 localities within the six target districts in Zambezia Province, providing protection to about 2,010,000 people living in areas at high risk for malaria. The other important achievement was the conduct of a post-spray review meeting in March to discuss and analyse the results and outcome of the spray season in Quelimane.

During the meeting, preliminary planning for next round of spray operations in 2008-2009 was performed at a detailed district level.

In addition, while the Minister of Health stated earlier in the quarter that all spray operations should begin on July 20, due to a delay in the national training-of-trainers, the estimated dates of initiation of spray operation in Quelimane is around the first-second week of August 2008.

The main activities for the current quarter April-June, 2008 were therefore:

- a) Review and analysis of data to develop the end-of-spray-round report for last IRS spray season;
- b) Collecting all IRS-PPE and auxiliary material from district temporary depots and finalizing the storage and stock inventory balancing;
- c) Commencement of procurement processes for PPE, spray pumps and other material for the next round of spraying;
- d) Initiation and completion of recruitment of Quelimane staff for next IRS round under RTI;
- e) Development of operational plan and budget for next spray season;
- f) Participation/contribution toward commemoration of World Malaria Day in Nicoadala in Zambezia province and Maputo in April;
- g) Logistic/administrative support for conduct of malaria and vector control course for 18 newly-recruited biologists of the NMCP in May and June;
- h) Logistic/administrative assistance for the participation of provincial malaria coordination staff from 11 provinces in the annual national malaria review meeting in Maputo in June; and
- i) Review meetings with USAID/PMI team on planning activities for the 2008-09 season.

Major achievements for the period were:

- a) Provided assistance for the conduct of the malaria course and the national malaria review meeting.
- b) Completion of formal recruitment of implementation staff for Quelimane office (eight staff members in different categories).
- c) Support for World Malaria Commemoration Day (April 25) in Zambezia province and Maputo.
- d) Procurement of PPE material and spray pumps.
- e) Timely and adequate preparations for 2008-09 IRS campaign.

Planning and Assessment

Logistics Assessment

Assessments were done to support the World Malaria Day activities in Maputo and Zambezia province. Materials for participants' activities and event winners were sourced and supplied. Transportation and per diems for 12 personnel were also provided.

RTI provided logistical and facilitation support for the malaria and vector control course for 18 biology recruits in Maputo.

An assessment was performed in preparation for the district level cascade training in the six target districts of Zambezia province in order to determine current equipment status, operational site positioning and preparation, as well as the need for any additional supplies.

Pesticide Selection

RTI currently does not provide insecticides to the Zambezia province IRS program. The Mozambican government has proposed the use of di-chloro di-phenyl tri-methyl chloride (DDT) 75 percent WP for 90 percent of the structures (rural and traditional houses) in the six districts and the remaining 10 percent (urban areas) to be covered by deltamethrin 10 percent WP, both of which have already been procured by the government in sufficient quantities to meet the necessary insecticide demands for all six districts for the 2008-2009 spraying season.

Temporary storage, transport, and distribution of insecticide within the six districts in Zambezia province was handled by the NMCP under the supervision of Ministry of Environmental Affairs regional and district offices. RTI supported the activities by guaranteeing district and provincial storage facilities and transport means.

Procurement and Logistics

Spray Pumps & Parts

RTI is providing 850 new 15-gallon pumps and a substantial amount of spare part for the 2008-09 activity season. The order was placed through Crown Agents and pumps and parts are currently being shipped to Mozambique.

Personal Protection Equipment (PPE)

All PPE material necessary for next spray season activities is currently being procured locally. The procurement consists of gloves, boots, visors, and disposable nose masks and will all be delivered before July 20, 2008.

Other Commodities

Office/computer equipment and communication systems for smooth functioning of both of the Quelimane and Maputo offices have been secured. Most rented material has been returned and replaced by RTI-purchased project material.

IEC Development and Implementation

IEC Material Design and Development

IEC material produced in the previous campaign is being reviewed and reproduced for the 2008-2009 spray campaign.

Training of IEC Mobilizers

The training of mobilizers will begin in July and will be documented in the next quarterly report.

Spraying Operations

Geographic Reconnaissance and Detailed Planning

Detailed planning was carried out and quantities for the following were determined:

- Number of base localities
- Coverage within localities
- Estimated number of houses

The size and composition of district IRS teams, and supervision and mobilization teams were already determined for the upcoming spray season. All the areas to be covered have been geographically identified and the estimated numbers of houses to be targeted were factored into the planning.

The total estimated number of houses stands at around 550,000 houses in six districts. IRS and IEC operations will be carried out by a team of 900 spray operators and team of 150 mobilizing agents. The number of operational bases will be 24-26, with an estimated fleet of about 50-60 vehicles planned for the coming season operations.

Recruitment and Orientation for District Administration

The initial round of orientation and preparation visits was completed in all six districts. During discussions, certain remote rural areas with access difficulties were set aside for bed net programs while two additional areas were added for spray operations in one district. The recruitment of spray operators and supervisors will be done by the DPS after the national training-of-trainers (TOT) session presently proceeding in Beira.

Environmental Mitigation Set-up

Mitigation measures to prevent soil contamination with DDT will be put in place for all the 24-26 operational bases. A washing platform with drainage into a temporary evaporation tank will be set up for safe handling of DDT waste water from PPE and overall washings. All the temporary storage houses will be checked for their suitability for DDT storage by the Ministry of Environmental Affairs officers at district levels. Pre- and during-spray inspections will also be carried out by RTI, during which storage and mitigation measures will be assessed and reviewed, and recommendations for improvement provided.

Recruitment and Training for Spray Teams

The activity will be performed during the next quarter.

Logistics Support for Spray Operations

As mentioned above, all logistic planning and estimations were completed and RTI and its partners Crown Agents are currently securing all needed supplies. A total of 24-26 operational sites will be made ready for operations, and vehicles and motorcycles are being rented to provide adequate transportation for teams and supervisors during operations.

Post-spraying Operations

During the current quarter, all the spray pumps, PPE and other auxiliary material from the 2007-2008 spray operations were collected from the district bases, cleaned and sorted for future use or to be discarded. They were then inventoried and stored in Quelimane warehouse for safety.

All the empty DDT sachets were collected and stored in Quelimane storage house until they were collected by the Food and Agricultural Organization (FAO)/USAID-funded disposal team in May 2008.

Other Activities

Entomological Monitoring

No entomological activities were carried out during this period. However, plans were drawn out and funds are allocated for entomological activities for the next season that will be performed by RTI's partner Liverpool Associates for Tropical Health (LATH).

Capacity Building of Ministry of Health

RTI supported capacity building of the Ministry of Health through the following:

- a) Participating in/contributing towards the commemoration of World Malaria Day in Nicosada in Zambezia province and Maputo in April;
- b) Providing logistic and administrative support for the conduct of a malaria and vector control course for 18 newly-recruited biologists of the NMCP in May and June;
- c) Providing logistic and administrative assistance for the participation of provincial malaria coordination staff from 11 provinces in the annual national malaria review meeting in Maputo in June; and
- d) Providing logistical support for the participation of the Zambezia malaria coordination team in the national TOT sessions in Beira City.

End of Round Evaluation

The Zambezia provincial level end-of-IRS-round review and evaluation meeting was sponsored and facilitated by RTI Mozambique. The meeting report was provided to the DPS office in Quelimane and is available for review. Overall, the evaluation conducted revealed a positive impact of the 2007-2008 IRS program on the six target districts, and recommendations for improvement of future rounds was given.

Monitoring and Evaluation

Information Collection Plan

Last year's records on all IRS activities were compiled by the RTI data manager. The data was used to produce outcome and results tables outlined in the end-of-spray-round report. Current data forms are being reviewed and prepared for the upcoming spray season.

Data collection will be carried out in collaboration with district data officers of the district health office. The RTI data manager will collect data from the district office and enter the data into the database established by RTI. This database will be shared with the provincial health office for reporting and analysis. Similarly, the data records of all the storage facilities will be gathered and entered into a database at the Quelimane RTI office. This record will assist in controlling DDT and equipment stocks, as well as balancing and monitoring the usage levels in the field.

Progress on Key Indicators

Data collected and recorded in the IRS activity database is the basis for monitoring process indicators. The previous End of Spray Round report elaborated on the performance of the previous campaign in terms of IRS coverage, use of insecticides, refusal rates, estimated population coverage, corrected house coverage after a new census of IRS coverage areas, etc. However, lack of data on entomological monitoring hindered the program in terms of outcome indicators in relation to this activity. The RTI data manager is currently collecting district malaria incidence data in order to establish and monitor the impact indicator for the IRS operations.

Project Management and Administration

Staffing

Due to difficulties with formal registration of RTI in Mozambique, the RTI head office, the Nairobi regional office and the RTI Maputo office issued temporary work contracts for 7 of its staff members in the Quelimane office. The contracts for two staff members in the Maputo office were renewed.

A new training manager was recruited and hired effective June 1, 2008.

All positions will need regularization once formal approval for RTI registration in Mozambique is received. The registration process is expected to be completed by the end of the next quarter.

A potential Provincial Coordinator was identified but the candidate refused the salary level offered. Recruitment of a suitable Provincial Coordinator continues.

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

The Nairobi regional office supported the development and issuance of contracts for Quelimane field office personnel. The regional and home offices were also provided support for the local procurement of required PPE and other necessary goods.

Office & Warehouse Space

A central office in Maputo and a field operation office in Quelimane were maintained during the current quarter.

Most of the rented items (office furniture, computer, etc.) in the Quelimane office were replaced with RTI-procured items. Both offices are now sufficiently equipped for operations.

Two warehouse buildings (one for storage of PPE and pumps, and another for insecticide waste and extra insecticide sachets) were also maintained in Quelimane during the current quarter.

Partnership and Collaboration

National Partners

RTI supported the national partner NMCP on several occasions. Administrative support was given to the Quelimane DPS office and the NMCP office in Maputo for the malaria day activities, for the conduct of the entomology course and the national review meeting in Maputo, as well as for the participation of Zambezia province representatives for the central TOT course.

USAID Partners

Meetings were held with the visiting PMI teams with regards to planning for the FY08 season, rehabilitating the central and Quelimane insectaries, and finalizing the entomological activity plan for Zambezia province.

Outstanding Issues

- RTI registration in Mozambique
- Procurement of vehicles
- Establishment of district storage facilities
- Establishment of DDT containment structures for safe use of DDT in district bases
- Recruitment of a provincial coordinator
- Renewing and resigning of the MOU with DPS Quelimane for 2008-2010 period
- Establishment of insectaries and entomological monitoring activities in Zambezia province
- Formal recruitment of four other staff members

Upcoming Activities

- Completion of the national TOT session for IRS operations;
- Preparation for district cascade training sessions;
- Recruiting and contracting spray operators, supervisors and mobilization agents;
- Planning and conduct of district training sessions for IRS and community mobilizations;
- Placement of DDT containment structures in district bases with participation of Crown Agents;
- Implementation of the FY08 IRS activities in six districts from middle of August;
- Supervision and monitoring of the training and implementation activities; and
- Preparation for data collection and recording of the upcoming IRS activities.

Rwanda

Rwanda 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 Rwanda National Malaria Control Program (PNILP) identified three epidemic-prone districts of Nyarugenge, Gasabo and Kicukiro for indoor residual spraying (IRS) activities.

In fiscal year 2007, USAID and the PNILP agreed to focus spraying activities in Kigali City with the intention of expanding IRS coverage to Kirehe and Nyanza in fiscal year 2008. In recent discussions, the PNILP recommended focusing IRS operations in five districts – the three Kigali districts of Nyarugenge, Gasabo and Kicukiro, as well as Kirehe and Nyanza.

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 approximately 200,000 households in the five districts with residual insecticide during the first round of IRS. This will protect at least 85 percent of the total estimated population in the targeted districts.

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

Current Activities & Accomplishments

On April 1 the David Rugero (chief of party [COP]), John Ruziga (monitoring and evaluation [M&E] director), Aloys Badege (information, education, and communications [IEC] coordinator), and other USAID partners attended a meeting at the American Embassy. This meeting was called by the Mission to meet Rear Admiral Tim Ziemer, the PMI Coordinator from Washington, DC and Trenton Reubush, Senior Malaria Advisor. Others attendance included the new USAID/Rwanda Mission Director and Roopal Patel, PMI/CDC malaria advisor. Rear Adm. Ziemer briefed partners on PMI objectives and U.S. President Bush's commitment to help 15 African counties, including Rwanda, to fight malaria by using different interventions such as insecticide-treated nets (ITNs), improved malaria drugs, and use of IRS.

On Thursday April 3, Dr. Ruebush and Dr. Patel visited the RTI/IRS program office and met IRS staff. The discussions centred mainly on achievements, constraints of the IRS first round, the working relationship with the PNILP, and preparations for the second spray round of spraying in the country. Dr. Ruebush mentioned the reasons given by the Ministry of Health (MOH)/ Training and Research AIDS Center (TRACplus) – PNILP that led to the cancellation of the spraying operation which was planned for mid-February 2008.

On April, 18 Dr. Wayne Stinson, the new PMI malaria advisor and Dr. Patrick Condo from USAID visited the RTI/ IRS program office and discussed with staff the achievements and challenges of IRS round one, the circumstances that led to the postponement of the second round, and the way forward with the preparations for the next round.

On 22 April, Mr. Rugero and Mr. Ruziga met with Emmanuel Hakizimana (entomologist from the PNILP) at the RTI/IRS office and discussed preliminary preparations for field entomological training and setting up an insectary laboratory.

In May, John Chimumbwa, IRS technical director, visited Kigali to meet with the Mission and the PNILP to kick-start the reinstatement process of the IRS activities that had been suspended. The trip was also used to provide some oversight to the IRS team, including to:

1. Meet with the Rwanda PMI team and the PNILP to discuss planning and timing of anticipated IRS operations
2. Meet with the Rwanda PMI team and the PNILP to reach consensus on the scope of work and timing for the activities that are in the malaria operational plan (MOP), but are not directly related to the spraying exercise (such as an epidemic surveillance needs assessment, field entomology training, development of an insectary, and support to sentinel sites)
3. To meet with the Rwanda IRS team to discuss RTI's immediate actions leading to reinstatement of the IRS operations
4. Provide oversight support to the IRS team in the area of human resource and other administrative support summary of findings

During this visit, Mr. Chimumbwa and Dorcas Wainaina meet with Mr. Rugero to discuss concerns raised regarding the management of spray operations.

Subsequent technical visits and discussions were held between Dr. Chimumbwa, the PNILP, and USAID/Rwanda on the way forward with IRS in Rwanda. The PNILP also shared a number of policy and strategic documents that had been developed to govern the implementation of IRS. The technical discussions were based on the following assumptions:

- That the vectors in the country are present in the proportions of *An. gambiae ss* at 80 percent, *An. funestus* at 15 percent and *An. arabiensis* makes only 2 percent. The vector populations are exclusively both endophilic and anthropophilic
- The spraying should target all sleeping places and in addition, external structures such as latrines, kitchens and animal shelters should also be covered notwithstanding the fact that the vectoral system is endophilic and anthropophilic
- The population to be covered by IRS is fixed according to the PMI indicators, but the geographical coverage will be determined by the inclusion and exclusion characteristics set by the PNILP/TRACplus
- New districts will be included on the basis of resource availability and that the environmental compliance requirements are fulfilled and approved within reasonable time necessary to undertake subsequent activities in time for the launch of the campaign

Criteria for Sector Inclusion

Inclusion	Exclusion
Rural and peri-urban areas	Urban area
Area of <1500 M	Area of >1500 M
Presence of vectors	Absence of vectors
High population density	Absence of population
Hyper –meso-transmission	Hypo-transmission and less
Areas of population resettlement	
Adjacent to neighbor country IRS activities	

Priority areas as described by Dr. Hakizimana at the PNILP (numbered in order of priority):

1. Three Kigali districts
2. Kirehe
3. Nyanza
4. Kayonza
5. Nyagatare
6. Gicumbi
7. Rusizi

The following items were discussed and action points developed:

- Sharing criteria for IRS site selection used by the PNILP
- Ranking the potential sites according to the government needs
- Sharing the government proposal outlining IRS issues

Planning and Assessment

Operational Planning

In addition to mobilization efforts by the RTI IRS program, meetings were held with the PNILP to discuss IRS operational activities as summarized below:

- Meetings with Mr. Hakizimana of the PNILP to discuss the IRS work plan, targeted districts and review of RTI's comments;
- It was agreed that this round will focus on five districts - the three Kigali districts and Kirehe and Nyanza. The next round would look at expanding to additional districts proposed by the PNILP;
- The PNILP is to obtain approval from the MOH to proceed with IRS in August with a tentative start and launch date of August 1, 2008;
- RTI requested through Mr. Hakizimana that the PNILP inform district authorities about selected sectors for IRS operations in the five districts prior to RTI's districts team working at district level to plan and set up for IRS operations;
- The PNILP/ Mr. Hakizimana plans to inform district authorities about IRS selected sectors week of June 23;
- RTI is to arrange for an environmental assessment visit during the week of July 14 for expansion to proposed extension of IRS to four districts and review and update environmental assessment conducted for the five districts;
- RTI is to prepare the memo to the Rwanda Environment Management Authority (REMA) to propose the use of incinerators at the Kigali teaching hospital;
- RTI to provide the PNILP with a logistics update for upcoming spray operations;
- The PNILP is to provide contracts to spray operators and IEC implementers;
- Agreements were made to use the following daily rates for the spray operations team:
 - Sector Managers- 7,000 RWF (approximately USD \$13)
 - Supervisors- 6,000 RWF (approximately USD \$11)
 - Team leaders- 5,500 RWF (approximately USD \$10)
 - Spray operators- 5,000 RWF (approximately USD \$9)
 - Washers- 4,000 RWF (approximately USD \$7)
- Development of an insectary: the PNILP has identified a room at the Kigali Health Institute to serve as an insectary for the program.

- The room would need renovations and to be redesigned for use as an insectary
- Design has been prepared by technicians at the Kigali Health Institute
- Mr. Hakizamana to prepare entomological equipment required for insectary as well as other related costs associated with development of the insectary

Operational plans within each district were developed by IRS district managers and discussions were held with the PNILP/Mr. Haikizamana to ensure coordination of activities at all levels.

Environmental Assessment and Compliance

In April 2008, Mr. Ruziga and the IRS team held discussions with Mr. Theobard Mashinga, director of environmental impact assessment at REMA, to review the data gathered on the incinerator, in the light of possible use of the facility to incinerate the waste from the IRS operations. Mr. Mashinga subsequently advised RTI to submit a formal request to REMA for consideration.

Additional meetings were held with Mr. Timothy Karera, USAID/Rwanda environmental specialist, to discuss options for disposal of empty insecticide sachets.

RTI's environmental team proposed to use the incinerator at the Kigali University Teaching Hospital. The specifications of the incinerator at the Kigali University Teaching Hospital were reviewed to determine how these compare with the basic World Health Organization (WHO)/United National Food and Agriculture Organization (FAO) specifications for the incineration of pyrethroids. RTI/Rwanda conducted inspection tours and interviews with the technical staff at the facility, including Jerome Muyogoro, the environmental health officer in charge of health care waste management, and the head of maintenance at the facility. The Kigali University incinerator is currently being used to routinely dispose of expired drugs, heavy plastics (including infusion bottles with high chlorine components), and bio-medical wastes from routine hospital operations.

RTI recommended using local incineration, provided the necessary environmental safety standards are met.

Procurement and Logistics

Most logistical and procurement preparations for IRS were completed in February prior to the prior cancelled spray round. Additional procurements were requested during this quarter to accommodate the expanding needs of the project, and IRS commodities borrowed from the Rwanda program to support spray operations in Ghana were replenished.

In May, an additional logistics and inventory management assessment was conducted by the logistics officer and was confirmed with district operations managers in June when the program was certain about next round plans in the five targeted districts. Storage facilities within all districts were assessed for compliance with FAO guidelines.

IEC Development and Implementation

Initial discussions were held between USAID/Rwanda, the PNILP, RTI, and the Health Communications Centre (HCC) in Rwanda to provide technical assistance and leadership in

the development of a revised IEC strategy for upcoming IRS operations. The HCC expressed an interest in providing technical guidance and reviewing IEC materials for this spray round, with the intention of playing a larger role for 2009 IRS operations.

The PNILP suggested working through Population Services International (PSI) on IRS communications activities, which is supported by the HCC and PMI/Rwanda. To that end, an IRS IEC steering committee was established with representatives from the PNILP, PSI, PMI/Rwanda, HCC, and RTI to review lessons learned from round one spray operations, revise the IEC strategic plan, and develop an IEC timeline of activities.

During her visit, Anna Thompson, RTI IRS home office technical manager, met with PSI to discuss RTI's roles and responsibilities for upcoming spray operations. RTI's role was defined as follows:

- RTI is to provide technical and financial support for training of IEC implementers
- RTI is to provide financial support for the production of brochures and supervisory stickers for spray operators
- RTI is to pay for daily wages for IEC implementers identified by the PNILP

RTI recommended that communication activities and IEC implementers should be seen as part of the IRS team in order to avoid creating an isolated communications program or parallel structures.

- IEC implementers should meet with the spray operators at the end of the week to discuss the week's activities and spray plans for the following week;
- IEC implementers should be going ahead of the spray team to communicate the coming of spray operators to targeted households and should be in constant communication with spray operations teams; and
- IEC implementers should report to sector and district managers.

Project Management and Administration

Staffing

Following initial discussions to plan for spray operations in August 2008, the program initiated a recruitment process for short term district personnel demobilized after the cancellation of the last spray round.

Ms. Thompson visited Kigali in June to supplement previous efforts at strengthening the relationship with the PNILP, and providing technical and programmatic support to the Rwanda IRS team.

An advertisement for the COP position was placed in the New Times Kigali on June 20 and June 23.

Ms. Thompson met with the RTI team to review and discuss administrative procedures and policies in the program office. Efforts were made to increase motivation among the team in planning for upcoming spray operations during program leadership transition period.

Partnership and Collaboration

National Partners

RTI made concerted efforts to re-engage program partners in dialogue and to better understand their needs and concerns. To this end, Dr. Chimumbwa visited Rwanda on several occasions to meet with the PNILP to discuss the upcoming spray round and reach a consensus on the way forward. Initial meetings focused on the main issues that arose during round two planning. The following recommendations and decision points were made:

- The PNILP manager informed the meeting attendees that the 2008 IRS campaign will be launched in the first week of August 2008;
- The PNILP entomologist will determine sites which will be eligible for IRS in the peri-urban areas of Kigali districts. This information will be availed to RTI for planning purposes as soon as is convenient;
- The PNILP acknowledged that the criteria for selection of spray operators will follow what had been agreed upon during the review of the last IRS round in November 2007;
- The PNILP, district officials, and other partners, such as local government officers, will be responsible for selecting candidates for training, whom will be presented to RTI for training purposes. RTI will not play a role in selecting candidate spray operators. This will also apply to team leaders and supervisor training. The PNILP also suggested the involvement of leaders at the community level (Umdugudu and Sector leaders) to support IRS community mobilization;
- The PNILP has already drafted an IRS work plan and has submitted it to the MOH for approval. The PNILP suggested that, once approved by the MOH, the plan will be shared with RTI for purposes of verification and planning to carry out the necessary preparations for the next round of spraying;
- Following approval of the plan by the MOH, the PNILP will organize a meeting of the IRS steering committee where the plan will be presented to the partners. This is an oversight committee mandated to support IRS implementation in the field;
- The PNILP suggested that there was a need to hold a meeting to update the role and responsibilities in the MOU; and
- The PNILP suggested that, to ensure an improved information flow between the PNILP and RTI, Dr. Chimumbwa become the contact person until the situation normalizes.

Several meetings were also held between Mr. Ruziga and Mr. Hakizimana to discuss planning activities for upcoming spray operations and the development of a joint IRS work plan. In addition, Mr. Hakizimana of the PNILP met with RTI's district managers to discuss upcoming plans for spray operations. During this meeting, it was agreed that RTI would share a list of spray operators used in Kigali districts and that RTI would maintain sector managers used for last spray operations in the Kigali districts.

Outstanding Issues

- Spray date to be confirmed by the PNILP for round two in Kigali and round one in Kirehe and Nyanza;
- Set-up of an insectary laboratory at one of the PNILP's sentinel site;
- Agreement on the way forward for disposal of empty ICON sachets;

- IEC strategic plan to be approved by the MOH(TRACplus).
- Assist the PNILP in developing the vector control strategy. Although this not a priority issue for the PNILP, it would like for the strategy to be completed by the third quarter of 2008; RTI should coordinate the participation of the CDC and the WHO;
- Development of insectary capability. This activity is considered a priority by the PNILP and it would like for this to be acted upon as soon as possible. The first activity will be to wait for the government to come up with an agreement with the government partner institution on the accommodation of the insectary. The PNILP, along with Ray Beach of the CDC, is developing a list of equipment that will need to be purchased for the insectary;
- Recording of adverse reactions to insecticides. The PNILP/MOH is to develop standard protocol and share it with RTI. RTI is to provide feedback and adopt the tool and work with it during 2008 IRS operations. This will enable all those concerned to operate within the national monitoring framework; and
- In terms of the safety of spray operators, the meeting suggested that a daily muster for PPE be carried out by team leaders and supervisors. They are to ensure that all members of their team are correctly attired and adhere to all safety standards, and that team leaders will also record the health of each operator in the space provided on the data sheet. In addition, the PNILP manager suggested provision of goggles as part of the PPE, in addition to the face shield provided to spray operators.

Upcoming Activities

- Entomological field training will begin in July, and will be held for technicians from district level and sentinel sites;
- Re – fresher trainings for supervisors, team leaders and ICE implementers will start in July;
- Production of IEC materials - brochures and stickers;
- Recruitment of operators, sector managers, supervisors and team leaders will be done by the PNILP;
- Selection of spray operator candidates will be conducted by the PNILP/MOH, and then presented to RTI for training and deployment. The model to be adopted will be that two spray operators will be trained for each compression sprayer. However, when it comes to operations, spray operators will work on a “two-weeks (12 days) on and two-weeks off” basis. Each spray operator will only be remunerated during the period during which they are engaged and not during the off days;
- RTI isto follow up on a number of other activities in the MOP, such as training, entomological training, insectary set-up and sentinel site training;
- Entomological assessments to use the same model as before. RTI will await the submission of an activity request with budget from Dr. Hakizimana to avail resources for that activity;
- RTI is to review environmental assessments for the five districts as well as update the environmental assessment to include the four proposed IRS districts for extension;
- RTI is to submit a memo to the REMA on the use of the Kigali teaching hospital incinerator for disposal of empty sachets;
- RTI’s district management team is to plan field visits for operational set-up in selected sectors of the five IRS targeted districts;
- RTI is to submit the final number of spray operators required for upcoming spray operations;
- The PNILP is to share the final list of spray operators with RTI;

- Mr. Hakizimana is to prepare entomological equipment required for the insectary;
- RTI is to send the updated IRS training manual to the PNILP; and
- RTI, in coordination with USAID/Rwanda and the Mission's environmental officer, will conduct compliance evaluations on the following:
 - a. Preparations for IRS operations prior to the start of spraying activities;
 - b. IRS operations (on-site evaluation); and
 - c. As necessary, an intercessional inspection (i.e., between spray seasons) to ascertain progress made on implementing recommended improvements aimed at enhancing compliance.
 - The PNILP will carry out routine inspections of all IRS districts, including unannounced spot inspections, to verify compliance with all relevant national regulations and guidelines, as well as procedures outlined in the environmental assessment; and
 - The REMA, in coordination with the PNILP and RTI, will independently conduct compliance inspections of IRS activities and facilities in the IRS districts.

Senegal

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 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 2007, USAID and the PNLP agreed to focus spraying activities in the three districts.

PMI funds will be used to procure insecticide and provide technical and management assistance to the Senegal Ministry of Health (MOH) for its 2008 IRS campaign. The insecticide is to be used in the three districts prior to the season of highest transmission, with two rounds of spraying proposed: Richard Toll in March 2008, and Velingara, Nioro, and Richard Toll in June-August 2008.

RTI International (RTI) is tasked with providing strategic, technical, management, and operations support for IRS activities in the above mentioned districts. RTI and the PNLP will treat at least 75,000 households and 500,000 people with residual insecticide in the Nioro, Richard Toll, and Velingara districts during the second round of IRS. This will protect at least 80 percent of the total estimated population in the targeted districts.

In addition, RTI will implement the below activities in collaboration with the MOH, as well as provide support to the PNLP to strengthen epidemic preparedness and response plans.

- Conduct environmental and logistics needs assessments
- Procure insecticide and personal protection equipment (PPE) for spray operators
- Provide financial support for the IRS management team and spray operators
- Provide operational and technical support for planning, implementation, and supervision
- Carry out environmental compliance monitoring
- Provide financial support for all operational activities

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

Current Activities & Accomplishments

RTI's activities during this quarter focused on the preparation and start-up of the second IRS round in the districts of Velingara and Nioro and the preparation for the third round in Richard Toll.

Planning and Assessment

Logistics Assessment

Field visits were conducted on several occasions by the IRS Dakar-based team (led by the Chief of Party [COP]) and district management team to inspect pre-operational activities underway. Field visits were often supplemented with planning meetings to review progress-

to-date, identify needs, and resolve challenges. Additional activities in all three districts included:

- Selection of the spray operations team
- Review of transportation costs and medical examination fees
- Planning for training-of-trainers (TOT) and spray operators
- Development of spray operations schedule in consultation with the chief nurse at the health post
- Distribution of IRS commodities, including PPE, to all districts
- Provision of calling cards to chief nurses at health posts/centers for emergency communication during IRS operations
- Posting the spray personnel payment rate and the respective job description at each IRS center
- Planning for post-IRS operations medical examinations
- Joint planning and consultation with district authorities

RTI held micro-planning meetings in the three districts in close collaboration with all partners at district levels. All the items addressed in these meetings have been validated by participants. The COP met with Dr. Diop at the PNLP and Professor Faye to discuss the next IRS round planning for TOT, spray operators training, operations, and the entomological surveillance as follows:

- TOT: from May 19- 22; facilitators and participants have been identified.
- Spray operators training: In Nioro from June 3 - 7
- IRS: In Nioro from June 10
- Spray operators training: In Velingara from May 26 - 30
- IRS: In Velingara from June 2
- Entomological surveillance: from early July.

The COP and the PNLP representative went to Nioro and Velingara for the IRS planning validation with the district officer and World Vision, and with Plan International for the information, education, and communications (IEC) component.

On June 3, the COP attended the PMI partners' meeting at the USAID office to discuss the 2008/9 activity planning.

The evaluation meeting on Richard Toll IRS second round was held on May 22, 2008 in the same district. Participants came from the health district, RTI, and Plan International. Recommendations were as follows:

- Improve incentives for all health post head nurses who are intervening in the training (by increasing their payment rate);
- Provision of PPE for spray operators (size of boots and overalls: provide suitable sizes)
- Improve autonomous resources for supervision for hygiene service (providing supervisors with logistics means for a proper fulfilment of their mission)
- Train spray operators on the maintenance of spray pumps
- Areas to be improved in terms of IEC:
 - Select IEC implementers
 - Clear understanding of IRS

- Provide transportation for IEC implementers
- Improve mobilization of IEC implementers
- Increase the quantity of data cards;
- Distribute leaflets
- The coordination between IEC implementers and spray operators

On June 10, the Richard Toll RTI team presented the plan concerning next IRS activities in the presence of the district core team and other stakeholders.

Environmental Assessment

In April, Rokhaya Ndiaye Diop, Senegal IRS environmental officer, conducted a visit to Velingara and Nioro with representatives from the Hygiene Service and the Plant Protection Division (DPV). The purpose of this trip was to conduct a pre-operational environmental inspection of warehouses and to install soak pits.

Procurement and Logistics

The following was procured in preparation for the IRS rounds in the three districts:

- Stickers for sprayers
- Stickers for helmets
- Stationeries for TOT and spray operator training
- Plastic sheet to cover properties
- Desks and chairs for warehouses
- Hand bags for spray operators
- Printing of TOT and spray operator training certificates
- Printing of data collection cards
- Laptop rental
- Rental of video/slide projector
- A4 Clipboard
- Measuring tape
- Drums of 160 liters
- Benches for laundry women
- Towels
- Socks
- Soap
- Powder soap
- Fuel
- Fabric for covering vehicles seats
- Tube for vehicle cleaning
- Visors

The car rental agreements were also signed under the coordination of district logistics assistants. All spray material was delivered to the respective IRS centers in the districts of Nioro, Velingara, and Richard Toll.

IEC Development and Implementation

Information, education, and communications (IEC) activities are managed and led by the Christian Children's Consortium in collaboration with RTI, district authorities, and the PNL. The following IEC activities were implemented within this time period:

- Planning of IEC activities in order to raise the populations' awareness of upcoming IRS operations. These activities include community meetings held by IEC implementers in collaboration with local leaders, women's groups, and health workers
- Orientation of radio presenters on IRS and IEC information to improve key messages aired on local radio stations
- IRS advertisements played on local radio stations that emphasize the importance of spray operations and the role of IEC implementers
- An IEC implementer operational schedule, developed jointly by the Christian Children's Fund (CCF) IEC coordinator and chief nurse within the health post/health facility rendering services for a catchment population
- Training of IEC implementers in collaboration with community health nurses
- Distribution of IEC posters in schools

RTI and the CCF continue to work on strengthening the coordination of IRS operations and IEC activities within the three districts.

Spraying Operations

Recruitment of Spray Teams

In April, RTI recruited district staff in Nioro and Velingara in preparation for the second IRS round. In each district, the staff comprised one coordinator, one financial assistant, one logistics assistant, and one data clerk. Candidates were identified from a local job announcement.

The newly-hired district staff in Richard Toll began on June 2. Gora Diagne, the RTI district coordinator, and the other district team members worked on administrative and micro-planning for upcoming spray operations.

As part of the recruitment process, spray operators were shortlisted by the health district training personnel prior to their selection, the medical examination and the training. At the end of the training, 208 spray operators were selected in Velingara and Nioro districts and 191 operators were selected in Richard Toll.

Training of Spray Teams

The IRS training of trainers (TOT) was held May 19 – 22 in Ndayane in the province of Kaolack. Participants included representatives from the MOH/PNL, Hygiene Service, regional public health offices, district public health offices, Cheikh Anta Diop University of Dakar (UCAD), and an RTI environmental officer. The five training facilitators came from the MOH, the PNL, UCAD, and RTI. The 14 trainees attended the previous TOT in Thies. Two CDC/PMI team members attended the training.

The spray operator training for the second round of IRS in Velingara followed the final selection of spray operators that was completed on May 30. The training started on May 26

and was conducted by the trainers who attended the TOT. At the end of the spray operator training program, 281 candidates, including drivers, were short-listed by the health district training personnel. The 15 training facilitators came from Hygiene Service, the MOH, the Ministry of Environment, and RTI.

In Nioro, the training of the 12 pump technicians was completed on June 7. It was conducted by Ousmane Boye from the DPV. The training took place from June 3 – 7.

The spray operator training program covered the following topics:

- Pesticide safe management, transportation, storage and disposal
- Calibration of spray equipment
- Safe and accurate mixing of pesticide
- Maintenance of spray equipment
- IRS application technique
- Ensuring security of equipment and other inputs
- Reporting and data submission

Every training day was followed by an evaluation meeting between the training staff and the district health officer.

The RTI environmental officer trained drivers in safe transport of the insecticide and in emergency first aid techniques.

On June 13, health post head nurses in the Richard Toll health district were trained on the management of pesticide poisoning cases. The training was conducted by Amadou Diouf from UCAD. The following topics were covered:

- Presentation of pesticide families
- Detailed presentation of different classes of insecticides
- Insecticide exposure
- Management of pyrethroid poisoning: case of ICON
- Proposal and validation of a notification card for pyrethroid poisoning by district health workers (head nurses and core team)
- Proposal and validation of a pyrethroid poisoning management kit by district health workers (head nurses, core team, and private care providers)

IRS Launch

The official launch of the Velingara second IRS round took place on June 10 in Kounkane, located about 30 kilometres from Velingara. The ceremony, which was held one week after the start of IRS operations, was chaired by the Prefect of Velingara in the presence of representatives from the PMI and the PNLP, administrative and customary authorities, as well as local government representatives. Sketches of the insecticide-treated bed nets and IRS were performed by a performance company. There was a strong mobilization from Kounkane populations.

All speakers in this launch ceremony magnified this donation by the American people. According to them, this IRS program is greatly contributing to the Senegalese government's effort for malaria control. The chairman of Kounkane Rural Council expressed his gratitude to the American people on behalf of his population.

In the meantime, Nioro district was also having its IRS launch ceremony on June 10 in Paos Koto, under the chairmanship of the Sous-Prefet and in the presence of the deputy district chief medical officer.

Geographic Reconnaissance and Detailed Planning

The COP in Nioro and Velingara met with the spray teams to brief them on the IRS challenges prior to the start of spray operations. Instructions were given to group leaders to carry out field reconnaissance on the eve of each spray day.

Supervision of spray teams in Nioro and Velingara were conducted on a daily basis and coordination meetings with the core team were held every evening to address all issues encountered in the field. Coordination meetings on IRS activities were held in both health districts under the chairmanship of the representatives of district chief medical officers. District steering committees were also established for the monitoring of all IRS activities. Steering committees included supervisors from the hygiene service, IEC officers, RTI staff and district representatives.

IRS Activities

At the onset of spraying, the average number of homes sprayed per day in Velingara was lower than expected due to the sparsely populated nature of the area.

On June 5, the spray team was in an accident while being driven to the spray site; fifteen RTI spray operators (including two team leaders), one pump technician, and driver assistants were on board. The accident occurred while the vehicle was leaving the base of Sinthiang Coundara at 7:30am. When the accident was reported, RTI staff took necessary measures, such as calling the district chief medical officer and the national Gendarmerie, who carried out an immediate evacuation of injured personnel to the Velingara health post. Following an examination by the chief medical officer, prescriptions were issued to the injured. In addition, the district chief medical officer kept injured persons under observation for the rest day. No legal proceedings were undertaken against RTI. The reports of security incidents and accidents have been submitted in accordance with USAID standard operating procedures.

Environmental Compliance

Gaspard Bikwemu, RTI environmental compliance inspector, conducted a mission in Senegal from June 16-23 in the company of the Senegal RTI environmental officer. The purpose of his trip was to:

- Observe IRS activities in progress in Velingara and Nioro District;
- Determine and document whether the IRS operation is in full compliance with USAID requirements, as included in the approved SEA;
- Determine current actions that can be taken immediately to comply with the country SEA; and
- Determine, in consultation with RTI program officers in Senegal, the support required to improve and ensure future compliance with SEA requirements.

Following field visits, Dr. Bikwemu provided recommendations to the current and the next IRS campaign.

Immediate actions to be implemented:

1. Changing the insecticide storage in the Velingara district because the actual storage is in the same building as the RTI staff offices. The new product store can be the actual warehouse. It is necessary to create a window to ameliorate the aeration of the store.
 - Action step: partly implemented; the insecticide has been stored in the indicated room;
 - The creation of the window to ameliorate the aeration of the store was planned for the next IRS round.
2. Improving soak pits in all IRS centres by adding a layer of gravels on the stones layer. This will help to reduce the risk of soil sliding.
 - Action Step: implemented in all the three districts (Nioro, Velingara and Richard Toll).
3. Repair the door of the insecticide store of the Bonkonto IRS center of the Velingara district; the door is not closing completely.
 - Action Step: The door of the insecticide store of Bonkonto IRS has been reinforced with a plywood board.
4. Store the gasoil in a different store, along with the storage of the insecticides and solid waste.
 - Action Step: implemented in Nioro.
5. Procure appropriate boots for the women team leader because the actual boots are very heavy and not appropriate.
 - Action Step: to be procured internationally.
6. Procure medicine for insecticide poisoning in the health centers of the Velingara and Nioro districts.
 - Action Step: partly available in the health posts in Nioro, Velingara and Richard Toll. The management is at the cost of the victims of poisoning.
7. Improve the supervision of the drivers and interdict the vehicles to transport persons not equipped with PPE.
 - Action Step: implemented in the three districts (Nioro, Velingara and Richard Toll).
8. Proceed to pregnancy tests of the women in charge of spray operation and washing after 30 calendar days after the last test.
 - Action Step: implemented in Velingara for 14 women, including 12 in charge of washing, and two spray operators. Results: one woman in charge of washing while she was two months pregnant;
 - Ongoing in Nioro: Nine women have been consulted, out of a total of 19, who took part in the 2008 IRS campaign. Results: one woman in charge of washing while she was one month pregnant.
9. Procure fire extinguisher for the storage of solid waste in Dakar and train the guard on how to use it.

Recommendations to be implemented for the next IRS campaign;

1. Changing the insecticide storage for Nioro and using the actual warehouse after rehabilitation of the roof.
 - Action Step: underway; the budget proposal has been prepared for this rehabilitation.

2. Relocate the IRS center of Bonkonto in the Velingara district because the actual site is not appropriated and is near the teachers' lodging.
 - Action step: investigations for the relocation of Bonkonto IRS center are underway.
3. Relocating the IRS Center of Keur Maba because the actual storage of the insecticide is in the same building with a school.
 - Action Step: investigations for the relocation of Keur Maba IRS center are underway.
4. Changing the soak pit of Paoskoto in the Nioro district because the actual site is very narrow and there is not enough space for progressive rinsing and washing.
 - Action Step: underway; the budget proposal has been prepared for changing the soak pit of Paoskoto in the Nioro district and for the decontamination of the existing soak pit.
5. Procure first aid kits for all IRS centers in the two districts.
 - Action Step: implemented in Richard Toll.

Post IRS activities

Post IRS activities following the completion of Richard Toll spray operations in April 2008 included:

- Inventory assessment;
- Assessment of storage facilities;
- Maintenance of spray pumps and equipment;
- Equipment recapture;
- Storage of empty ICON sachets in a central location;
- Demobilization of district management teams and spray operations; and
- Debrief meetings with district authorities and key stakeholders.

Monitoring and Evaluation

Progress on Key Indicators

As of June 30, the IRS results are respectively as indicated below:

District	Number of concessions	Total Population	Children <5 years	Pregnant Women
Nioro	11,987	178,576	37,799	4,625
Velingara	14,588	196,840	47,325	8,690

Upcoming Activities

- Spray operators training for the third IRS round in Richard Toll will take place from July 2 to July 5, 2008;
- IRS operations in Richard Toll are scheduled from July 10 to August 15, 2008;
- The launch ceremony for the third IRS round in Richard Toll will take place on July 10, 2008; and
- End of spray operations in Velingara and Nioro are scheduled for July 10 and July 17, 2008, respectively.

Uganda

Funded by the U.S. President's Malaria Initiative (PMI) through the United States Agency for International Development (USAID), RTI International (RTI) is providing strategic, technical, management, operations and financial support to the Uganda National Malaria Control Program (NMCP) to expand the use of indoor residual spraying (IRS) as an intervention for malaria prevention and control. This quarterly report presents the program's progress towards achieving these objectives in Senegal from April to June 2008, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Project activities were conducted in the districts of Oyam, Apac, Kitgum, Pader, Kabale, Kanungu and Rukungiri. The activities ranged from social mobilization and information, education and communication (IEC) efforts among people in target communities to training of spray personnel, procurement and distribution of logistics, as well as coordinating and monitoring IRS implementation.

Procurement and Logistics

A number of logistics and other commodities were procured and distributed to Oyam, Apac and Kitgum districts as shown below. Given such a relatively large investment in logistics, it was also necessary to ensure their effective use through routine and impromptu supervision and monitoring visits of RTI staff to warehouses and field operations. Warehouses were also renovated, burglarproofed and double- or triple-padded to control insecticide pilferage and to limit public access. Forms and checklists for tracking distribution and consumption of insecticides were developed and used daily at operational centers (sub-counties).

Logistics distributed to Oyam, Apac, and Kitgum districts

Items	Unit	Quantity (Oyam & Apac)	Kitgum	Total
Socks (pairs)	Pieces	3,019	1,970	4,989
Haversack (pieces)	Pieces	2,171	982	3,153
Rubber gloves (short)	Pairs	3,857	985	4,842
Rubber gloves (long for wash persons)	Pairs	408	71	479
Overalls	Number	3,272	1,970	5,242
Gumboots (non-steel toe)	Pairs	1,646	985	2,631
Helmets	Pieces	2,142	708	2,850
Face shields	Pieces	4,284	708	4,992
Nose & mouth masks	Cartons	792	246	1,038
Spray pumps	Number	604	*708	1,312
Hard hats	Number	2148	44	2,192
Insecticide - DDT 75%WP	Sachets	119,556	**20,000	139,556

NB: *708 denotes "old spray pumps"; **20,000 denotes "ICON 10% CS insecticide sachets (62.5ml @)"

IEC Development and Implementation

RTI adopted a multi-channel communication strategy in mobilizing and sensitizing politicians, leaders and communities on IRS activities in operational districts as presented below. The project disseminated leaflets, and organized community meetings and film van shows to optimize community adherence to human and environmental safety guidelines during the implementation of the IRS exercises.

Summary of IEC Activities Conducted in Oyam, Apac and Kitgum Districts

IEC material/activity	Oyam	Apac	Kitgum	Total
T-Shirts	500	900	0	1,400
Leaflets	23,800	38,700	625	63,125
Banners	11	15	15	41
Radio spots	455	455	54	964
Sensitization meetings	56	82	23	161
Radio talk shows	10	16	2	28
Film van shows	53	8	22	83
Estimated number of people reached via film shows and meetings	28,029	10,574	51,300	89,903

Spraying Operations

Recruitment and Training for Spray Teams

Spray personnel were trained in the three districts of Oyam, Apac and Kitgum. In Oyam and Apac districts, spray personnel were trained for the first time to conduct safe and effective IRS with DDT or ICON CS in these districts. In Kitgum district, refresher training sessions were provided to old and new personnel for round two IRS activities, with the first round having been conducted last year. About 65 percent of the spray personnel there participated in the first round. The table below outlines the beneficiaries of training efforts of IRS in Oyam, Apac and Kitgum districts. Besides spray personnel, clinicians in Oyam and Apac districts were trained in managing serious adverse experiences (SAEs), which may occur among spray personnel and residents during IRS implementation because of accidental or occupational exposure to insecticides. In addition, medicines for managing SAEs, such as Atropine and hydrocortisone, were provided to the health facilities in order to be prepared for any such occurrences. A team of environmentalists were also trained to serve as monitors for ensuring compliance of spray personnel and communities to safety standards, as well as for controlling the pilferage of insecticides.

Human Capacity Strengthened to Deliver IRS in Oyam, Apac and Kitgum Districts

Category	Oyam	Apac	Kitgum	Total
Spray personnel	1,131	746	517	2,394
Clinicians	33	30	*	63
Environmentalists	9	15	2	26

* 32 clinicians trained in round one of 2007 in managing serious adverse experiences (SAEs) arising from insecticide exposure were available in Kitgum district for round two. Thus, no new training was conducted there.

Environmental Compliance and Monitoring

RTI conducted environmental monitoring and compliance activities during the reporting period in collaboration with other stakeholders, such as the National Environment Management Authority, district officials, as well as the communities within the districts.

Environmental Monitoring

Over 400 samples were collected in the period between December 2007 and March 2008. About 38 percent of these samples were taken to Chemiphar for analysis. Complete results from Chemiphar were released in May and a draft report was prepared and distributed to partners. The below two tables provide a summary of the analyzed samples.

Summary Results of Baseline Samples, by Location Type

Location Type	Total Samples (samples analyzed)	# of Samples with DDT below Detection	# of Samples with Detectable DDT	Lowest Detected DDT (ppm)	Highest Detected DDT (ppm)
Homesteads	203 (75)	48	27	trace	615
Agricultural fields	47 (25)	25	0	na	na
Cotton facilities	8 (6)	2	4	0.04	1.8
Markets /Trading centers	17 (6)	6	0	na	na
Forest Reserves	19 (3)	3	0	na	na
Wetlands	69 (34)	34	0	na	na
Lakes	12 (5)	5	0	na	na
Rivers	8 (1)	1	0	na	na
Ponds	3 (1)	0	1	trace	trace
Wells	2 (0)	Na	Na	na	na
Evaporation tanks	23 (1)	1	0	na	na
Unknown	5 (3)	3	0	na	na
TOTAL	416 (160)	128	32	trace	615

ppm = parts per million (mg/kg); trace = detected but below quantitation limit; na = not applicable
DDT result is the sum of all isomers in samples with detections of at least 1 isomer, with "trace" = 0.005 and "ND" = 0.001

Summary Results of Baseline Samples, by Sample Type

Sample Type	Total Samples (samples analyzed)	# of Samples with DDT Nondetects	# of Samples with Detectable DDT	Lowest Detected DDT (ppm)	Highest Detected DDT (ppm)
House dust (wall&floor)	51 (25)	6	19	0.014	615
Cotton building dust (wall and floor)	5 (4)	0	4	0.04	1.8

Crops	41 (15)	15	0	Na	na
Biota	39 (10)	9	1	<i>trace</i>	<i>trace</i>
Soil	170 (83)	75	8	0.014	0.20
Sediment	32 (16)	16	0	Na	na
Air	45 (0)	0	0	Na	na
Water	33 (7)	7	0	Na	na
TOTAL	416 (160)	128	32	<i>trace</i>	615

ppm = parts per million (mg/kg); *trace* = detected but below quantitation limit; na = not applicable

DDT was detected in samples from the walls and floors of houses and buildings associated with cotton production, as well as lower levels in soils associated with homesteads and other buildings. No DDT was detected in crops or field biota, with the exception of trace levels in a pond fish. No DDT was detected in sensitive areas for the analyzed samples.

Environmental Compliance

Buffer zones were created for sensitive areas in Apac and Oyam districts. Buffer zone sizes were agreed upon and all houses within zones were sprayed with an alternative insecticide (ICON CS). GPS readings were taken for over 3,228 households sprayed with ICON CS in Oyam and Apac districts. Communities inhabiting sensitive ecosystems were aware of the alternative insecticide used on their houses and responded/complied very well.

The project staff complied with environmental standards and guidelines before, during, and after the spraying exercise. To assess this level of compliance, the project carried out inspection visits prior to, during, and after spray operations, the results of which are summarized in the table below.

Status of Environmental Compliance and Monitoring Activities April-June

Activities	Status	Outcomes/Outputs
Pre-Inspections		
Apac	Accomplished	Reports in place
Oyam	Accomplished	Reports in place
Kitgum	Accomplished	Reports in place
Daily-inspections		
Apac	Accomplished	Reports in place
Oyam	Accomplished	Reports in place
Kitgum	On-going	
Post-inspections		
Apac	On-going	Reports in place
Oyam	On-going	Reports in place
Kitgum	Pending	
Clean up Evaporation Tanks (part of post spray)		
Apac	On-going	7 evaporation tanks cleaned
Oyam	Accomplished	6 evaporation tanks cleaned
Covering of evaporation tanks, soak pits and temporary bath shelters.	Pending for Apac and Oyam	

Monitoring and Evaluation

Progress on Key Indicators

The below tables display summary IRS results in the three districts for the coverage period (April-June). For the Kitgum district, the data presented are not complete for the whole district since parts of the district were covered in July. Complete end-of-spray round cycle results for Apac and Oyam were presented in a separate report in June 2008 and those for Kitgum will also be presented after the completion of activities there in July, 2008. Notably, in both Apac and Oyam districts, the program achieved more than 90 percent coverage of targeted structures.

Summary of IRS output indicators for Oyam district

Indicator	Status
Total houses found	101,908
Houses fully sprayed	87,269
Houses partly sprayed	7,607
Houses not sprayed	6,407
Percentages of houses partly or fully sprayed	93.1
Percentage of houses fully sprayed	85.6
Percentage of houses partly sprayed	7.5
Percentage of houses not sprayed at all	6.3
Total population protected	315,765
Total population unprotected	26,004
Target population	341,769
Percentage of targeted population protected	92.9
Percentage of houses sprayed with DDT insecticide	99.4
Average number of houses sprayed per sachet of insecticide (DDT / ICON CS)	3.0
Number of children under five protected	70,549
Percentage of protected population that is female	51.5
Number of pregnant women protected	12,274
Number of spray days in district	20

Summary of IRS output indicators for Apac district

Indicator	Status
Total houses found	111,534
Houses fully sprayed	95,228
Houses partly sprayed	7,797
Houses not sprayed	8,509
Percentages of houses partly or fully sprayed	92.4
Percentage of houses fully sprayed	85.4
Percentage of houses partly sprayed	7.0
Percentage of houses not sprayed at all	7.6
Total population protected	322,697
Total population unprotected	31,808

Indicator	Status
Target population	354,505
Percentage of targeted population protected	91.0
Percentage of houses sprayed with DDT insecticide	94.2
Average number of houses sprayed per sachet of insecticide (DDT / ICON CS)	3.4
Number of children under five protected	78,761
Percentage of protected population that is female	61.2
Number of pregnant women protected	16,298
Number of mosquito nets found	90,470
Number of children under 5 sleeping under net	38,758
Number of spray days in district	28

Summary of IRS Output Indicators for Kitgum District (June Only)

Indicator	Status
Total houses found	20,996
Houses fully sprayed	15,803
Houses partly sprayed	1,322
Houses not sprayed	3,871
Percentages of houses partly or fully sprayed	81.6
Percentage of houses fully sprayed	75.3
Percentage of houses partly sprayed	6.3
Percentage of houses not sprayed at all	18.4
Total population protected	79,175
Total population unprotected	8,795
Target population	87,970
Percentage of targeted population protected	90.0
Percentage of houses sprayed with ICON 10% CS insecticide	100.0
Average number of houses sprayed per sachet of insecticide (CON 10% CS)	2.2
Number of children under five protected	18,845
Percentage of protected population that is female	53.2
Number of pregnant women protected	2,553
Number of spray days in June 2008	10

Despite the success in coverage, part of the district coverage took place after the rains had started, which could influence the overall effectiveness of the program. In the future, more prudent planning and program organization will be applied to ensure activities are completed during the dry season.

Other Activities

- Several personnel changes took place, including the departure of the chief of party and the finance manager. These two positions will be filled during the next quarter. Zonal offices were set in Lango, Northern and Southwestern sub-regions in order to improve the implementation and monitoring of IRS activities. These new offices are

headed by zonal managers. A number of operational activities were accomplished during the reporting period.

- Zonal managers paid courtesy calls to district leadership and politicians as well as district health team (DHT) members, including the district health educator, district health inspector, district vector control officer/malaria focal person. The purpose of these district-level activities was to introduce and advocate for political will and commitment to the IRS program.
- RTI organized sensitization meetings for district leaders, politicians, and bureaucrats, in close collaboration with the respective district health offices (DHOs) in the districts of Kitgum, Pader, Kabale, Kanungu and Rukungiri. These meetings were held well ahead of the spray program in those districts. In June, RTI was informed about the postponement of activities in the southwestern region, to which follow-up mobilization meetings and other planning activities were held. In Kitgum district, additional sensitization meetings were organized in 22 operational centers (sub-counties/internal displaced persons camps).
- One-day action planning (micro-planning) meetings with sub county-level supervisors and members of the DHT were organized in Kabale, Kanungu, Kitgum and Rukungiri districts, allowing corroboration on IRS issues. Participants of these meetings mapped out the size and composition of spray teams, the daily productivity of spray operators, and timing of training sessions for spray teams.
- As an integral component of the IEC and social mobilization strategy, spot messages and one-hour radio talk shows on IRS activities were organized on local FM radio stations in target districts in the three regions. Emphasis is placed on purpose, benefits, potential risks and mitigation measures, as well as responsibilities of community regarding IRS campaign.
- Sub-county level stores were assessed for availability, accessibility, capacity, safety and security in Kabale, Kanungu, Rukungiri, Kitgum, Pader, and Amuru districts. Stores adjacent to ecologically sensitive habitats, particularly wetlands and water bodies, were declared unsuitable for housing IRS logistics. In Kigum district, the identified 20 stores were renovated before using them for IRS activities. Similarly, soak pits were constructed in the Kitgum district.
- A baseline entomological survey was conducted by entomologists from the NMCP and Vector Control Division/ MOH in Kitgum and Pader districts, with RTI financial support to determine behavior and susceptibility of malaria vectors to ICON 10% CS insecticide. The core task under this activity was to study vector density and behavior. However, a report from the MOH officials (see attachment 1), who conducted the training, indicates that they were not able to identify enough mosquitoes or larvae to perform a more rigorous analysis. Notably, the quality of entomological activities conducted by the MOH staff has been of concern for some time now. Discussions are underway between RTI, the MOH, and the PMI team to utilize services of a consultant to conduct this task in a more effective and efficient manner in the future.
- RTI developed an annual workplan and budget for the period from April 1, 2008 to March 31, 2009. Final feedback from USAID will be obtained in the next quarter.

Partnership and Collaboration

RTI maintained a healthy collaborative partnership with several stakeholders during the reporting period:

- National Malaria Control Program and Vector Control Division (Ministry of Health, Uganda)

- District Health Offices in operational districts
- School of Entomology and Parasitology (Ministry of Education and Sports, Uganda)
- Organic farmers and politicians (LC V, LC III, LC II, LC I) as well as district department heads
- Health Communication Partnership (HCP)
- District Resident Commissioners
- Uganda USAID Mission and CDC Officials
- Uganda Virus Research Institute, Entebbe
- National Drug Authority
- National Environment Management Authority
- Chemiphar Labs
- WHO County Office
- Schools and religious organizations in operational districts
- Uganda Police and Army
- Uganda Forest Authority
- Uganda Wildlife Authority

Upcoming Activities

- Spraying in Kitgum, Pader and Amuru districts.
- Environmental monitoring and compliance inspections (pre-, during and post-spraying).
- Monitoring and evaluation of project.
- Disposal/incineration of waste in accordance with guidelines.
- Development and submission of report to Monitoring and Evaluation Management Services on indicator performance.
- Process quarterly report and dissemination to USAID/Uganda and the MOH.
- Planning for November 2008 - February 2009 spray season.

Zambia

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.

USAID, under the PMI, awarded RTI International (RTI) with a contract to work with the MOH of Zambia and its NMCC to provide technical assistance and support to IRS and other malaria control and prevention activities in Zambia. In 2006, the Zambian 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 April to June 2008, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Planning and Assessment

Environmental Assessment and Compliance

Tito Kodiaga, RTI environmental specialist, submitted a revised supplemental environmental assessment (SEA) on April 30, 2008. During this reporting period there were many comments and revisions, as various reviewers contributed to the process. As of the end of this quarter, the SEA had not been signed and was undergoing revision of a newly-added section on analysis of the cost advantage of using DDT compared to other pesticides.

Environmental Mitigation—Facilities Refurbishment

RTI is engaged in an activity to upgrade spray support infrastructure at the district level to better safeguard spray operators' and community members' health by improving washing and wastewater disposal facilities. This especially includes the construction of evaporation tanks for the containment and disposal of DDT wastewater, as well as the construction of soak pits for the disposal of pyrethroid wastewater produced by equipment washing. RTI consultant Edwin Katota worked on identifying structures needing to be refurbished and quantifying the nature of the work to be done in 16 sites in the 15 districts where USAID supports IRS. Mr. Katota visited all of the sites and met with district health staff and other relevant stakeholders in each site as part of preparations for this work. He developed detailed drawings,

specification lists, tender documents, and other relevant materials for washstands and ablution blocks for use in open, competitive bidding.

Procurement and Logistics

The NMCC sent the list of items needed for procurement for the 2008 spray round on April 24 and the IRS team began procurement. Henceforth, all pesticide procurement will be done in open bidding by class (pyrethroid class, carbamate class, etc.) and selection will take place from all acceptable bids. NMCC will be involved in the selection process.

Project Management and Administration

Staffing

The workplan and budget includes line items for a program manager position and a finance manager position in Malawi. The IRS team will recruit and select.

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

Dr. Chandana Mendis, Ethiopia Chief of Party (COP) visited Zambia June 6—15.