



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, 2007 - June 30, 2007

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

RTI International is a trade name of Research Triangle Institute.

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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
DHO	District Health Office
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 Dvision (Senegal)
DRS	Direction Regional de la Santé
EA	Environmental assessment
EC	Environmental Compliance
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
HDI	Howard Delafield International
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, Benin and Mali National Malaria Control Programs
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

The key program management events during this quarter were the start-up workshop and establishing the project's regional office in Nairobi.

Project Management

Opening the Nairobi Regional Office

RTI established the project's regional office in Nairobi during this quarter. Dr. John Chimumbwa was hired at the end of last quarter (March 2007) to serve as the IRS Technical Advisor, based in Nairobi. RTI assigned Kim Canelas, Operations Director, to Nairobi in April 2007.

Discussions had been underway for some time between RTI and its subcontractor, Crown Agents USA, concerning the possibility of subleasing space for the project's regional office from Crown Agents' Kenya subsidiary. The location proved inconvenient and the space too small for the number of staff anticipated. Dr. Chimumbwa identified a better option with greater capacity, recently upgraded by its previous tenant and convenient to USAID/Nairobi. Mr. Canelas worked with RTI home office staff to secure a lease on the property as of June 1, 2007 and made arrangements for services and modest improvements.

RTI also took the following steps to operationalize the Nairobi office during this quarter:

- Establish project bank accounts;
- Lease office furniture and a vehicle;
- Obtain quotations to purchase office furniture, vehicles, communications services, and visa and travel services;
- Recruit an office manager, receptionist and driver; and
- Apply for work visas for Dr. Chimumbwa and Mr. Canelas.

Washington Staffing

RTI recruited and hired a third IRS Task Manager during this quarter. Candidates were interviewed in April and RTI hired Ms. Patricia Preware in May. Ms. Preware will support the IRS programs now starting up in Mozambique and Ethiopia.

Branding and Marking Plan

RTI submitted a proposed Branding Implementation Plan and Marking Plan to USAID for review in April. USAID provided comments in May. RTI submitted a revised plan in June, which was approved as submitted.

Project Administration

Gene Brantly and other project management staff spent considerable time during this quarter working with colleagues in RTI's International Development Group to sort out new procedures for addressing the unique administrative demands of the IRS IQC. Approaches were developed to address the following issues.

- Mobilizing seasonal workers. RTI must mobilize a large number of spray operators and other short-term workers to support IRS operations. RTI must engage seasonal workers in a manner that is consistent with local law but does not trigger obligations associated with longer-term employees (e.g., tax withholding, insurance and other benefits, severance procedures). Also, RTI is not yet legally registered in many of the PMI countries and cannot hire staff directly as an employer of record. RTI senior administrators agreed to a hierarchy of options, including subcontracting a local labor contractor to serve as employer of record, reaching written agreement with the Ministry of Health (MOH) to serve as employer of record, and engaging seasonal staff as daily workers where permissible by law.
- Hiring senior local staff. To control project costs and build capacity, RTI is hiring most Chiefs of Party (COPs) and all long-term staff locally in each country. Our recruiting efforts have attracted very capable and qualified candidates, many with previous experience outside their home country. To provide competitive salaries and benefits, RTI reevaluated its pay scales for “cooperating country nationals” in several countries and created new personnel categories to accommodate developing country citizens working in their country of citizenship, who also have an established employment record in the international market.
- Banking and cash management. Seasonal workers must be paid frequently, in remote field locations, and generally in cash. Banking systems are not well-developed in many of the PMI countries and it is often impossible to transfer funds to a branch bank close to the area of IRS operations. Project staff must often handle large amounts of cash to meet payroll and other expenses, putting themselves and the funds at risk. Also, in some countries, RTI cannot establish a corporate bank account until the company is formally registered with the government and, in the interim, must operate using personal accounts opened by project staff. This situation is atypical of RTI’s overseas projects and requires special procedures, controls, and approvals.

RTI also took steps this quarter to transfer property originally purchased under the Integrated Vector Management (IVM) task order to this project, for continued use in Angola.

Technical Progress

IRS Project Start-up Workshop

RTI held the project start-up workshop on April 16-18, 2007 at the Hotel La Mada in Nairobi. The workshop objectives, agenda, and list of attendees are included in Appendix 2. Approximately 25 people participated, including RTI’s US-based staff, three chiefs of party (Angola, Uganda, Tanzania), representatives of the project’s four partner organizations (Crown Agents USA, Liverpool Associates in Tropical Health, Medical Research Council South Africa, and Howard Delafield), and USAID’s Technical Advisor, Dr. Michael Macdonald. The main objectives of the meeting were to review project procedures, compare lessons learned among the IRS programs implemented to date, and for all project staff to get to know each other and the partner organizations.

The first day included four sessions. First, Dr. Mahdi Ramsan Mohammed, John Bahana, and Antonio Muhungo reviewed results, experiences, and lessons learned from IRS programs

implemented in the PMI “Year 1” countries -- Zanzibar, Uganda, and Angola, respectively. In the next session, RTI staff reviewed key achievements and issues to be addressed on four topics – technical quality, IRS operations, environmental compliance, and communications and media. In the afternoon, representatives of the partner organizations gave overviews of the capabilities and roles of their institutions. The final session included three technical presentations on insecticide selection, cost analysis of IRS programs completed to date, and a framework for cost and cost-effectiveness analysis to be applied going forward.

The second day opened with a discussion of the objectives and preferred contents for a project operations manual, led by John Chimumbwa and Kim Canelas. The second session focused on monitoring and evaluation and data management. In the afternoon, Gene Brantly provided projections of the work load and schedule expected for the balance of 2007, followed by motivational presentations by Dr. Chimumbwa and Mr. Canelas. Part of the afternoon was reserved for small group meetings, during which several of the chiefs of party and John Chimumbwa met with the RTI and Crown Agents staff responsible for procurement, to resolve some issues regarding equipment selection. In the final session, Gene Brantly, Anna Thompson, and Cheri Brown-Alexander provided information on the project’s organizational chart, country-specific scopes of work, and administrative and contractual requirements. Mr. Brantly led an interactive exercise to demonstrate the steps required to arrange the scope of work and travel clearances for a subcontractor or consultant.

The third day opened with a session on DDT, including the circumstances under which its use is appropriate and the special challenges it presents for environmental compliance and public relations. The second session focused on public relations and the project’s relationships with its many clients, including USAID, national malaria control programs, and local governments. The last session included closing remarks from Dr. Michael Macdonald of USAID, Gene Brantly, Kim Canelas, and John Chimumbwa.

The following were key outcomes and decisions arising from the workshop.

- The IRS Project should prepare and deliver its own training program rather than relying on insecticide vendors to train IRS operators. Vendors may be included as part of the training course, but their contribution should be part of a larger program designed and delivered by project staff.
- RTI should request that USAID and the Center for Disease Control (CDC) resolve issues soon concerning Monitoring and Evaluation requirements and Entomological Surveillance for which the project will be responsible. What are the key indicators country IRS programs must collect and report, what are the minimum requirements for entomological data, and what additional information beyond minimum requirements are programs authorized to collect? We need to implement procedures for collecting monitoring and evaluation (M&E) data from the very beginning of a country program.
- Project staff will develop a Field Operations Manual to include technical, logistical, and administrative procedures. The primary audience is COPs and national program staff, with specific chapters tailored to the duties and needs of staff responsible for procurement, logistics, spray operations, data management, environmental compliance, entomological surveillance, and reporting.
- Take the following actions to enhance environmental compliance (EC):
 - incorporate EC training for COPs early in the start-up process;
 - include a specific unit on EC in the operator and supervisor training manuals;
 - conduct routine checks of EC, document results, and submit to the COP

- incorporate the cost of environmental compliance (e.g., time and travel costs for inspectors) directly into project budgets.
- The country start-up process should include subcontractors in appropriate roles. For example, staff from Crown Agents should participate in logistics assessments and staff from either Liverpool Associates in Tropical Health (LATH) or the Medical Research Council South Africa (MRC) should lead entomological baseline studies.
- The project needs a more consistent strategy for IRS-related communications (“IEC”). The success of IRS depends greatly on effective information, education, and communication (IEC) and mobilization. RTI should urge PMI to assign responsibility for IRS mobilization to the project rather than other organizations. We should gather materials and lessons learned to capture the project’s best practices and apply them in all countries.
- The configuration of basic project staff should be made consistent across countries, and should include an Environmental Officer and Data Manager.
- Program staff need more time before the launch of IRS operations in which to build working relationships with USAID missions, national malaria control program officials, and local leaders. When start-up is rushed, these relationships are strained. More time is also needed to train supervisors and create a context within which they will be motivated to perform well and maintain discipline.
- Women working as spray operators have asked for a clear explanation why they must take pregnancy tests, if the pesticide they are using is considered safe for use in houses with pregnant women and infants as residents.
- The project should standardize the format and contents of End-of-Spray Round reports.
- RTI and Crown Agents should explore options for using a “supply-chain” approach to procurement for the IRS Project.

Vendors’ Meeting

At RTI’s request, Crown Agents USA organized a meeting of commercial vendors likely to have a strong interest in providing equipment and supplies to the IRS Project. The meeting was held on April 19 in Nairobi, immediately following the project start-up workshop. Crown Agents invited all of the vendors to which RTI had issued tenders to support IRS operations conducted under the IVM Task Order, as well as several manufacturers it had identified. All of the major manufacturers of IRS pesticides attended, as did representatives of US and UK manufacturers of compression sprayers. Several vendors of vehicles, safety equipment, and other miscellaneous goods also attended.

During the meeting, Crown Agents’ procurement manager presented the procedures that would be used to advertise opportunities, invite quotations, and evaluate offers. He responded to questions and provided and received accurate contact information. At the breaks and over lunch, there were opportunities to respond to vendors’ questions in smaller group conversations.

Financial Progress

From April to June 2007, the IRS task order one (TO1) project incurred \$2,161,135 in costs. Total project costs incurred contract-to-date as of June 2007 were \$3,020,427 against funds received of \$9,652,097. Appendix 1 provides more detailed information on financial status.

Management Priorities for Upcoming Quarter

During the next quarter, RTI will recruit additional staff in Washington and Nairobi to address the rapidly growing number of countries with IRS programs under the contract, with a focus on hiring additional task managers, environmental staff, and filling additional senior positions in Nairobi. RTI will also follow-up on the principal recommendations from the start-up workshop to prepare materials for the operations manual and training manual.

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 ten 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 in the three southern provinces of Cunene, Huila, and Namibe. Activities supported by PMI and managed by RTI in Angola in 2006 included spraying of 110,000 houses, protecting a total population of more than 613,000 in three provinces.

During fiscal year 2007, support for the IRS spraying program in Angola will be transitioned from the IVM project to the IRS IQC. RTI is tasked with providing strategic, technical, management, and operations support for IRS activities which are currently focused in Cunene, Huila, and Namibe provinces. IRS in these provinces is targeted to achieve 85 percent coverage of 140,000 households. In collaboration with the NMCP and US Center for Disease Control (CDC), RTI is also tasked with completing epidemiological and entomological studies of the risk of malaria transmission in the city of Luanda and other southern provinces and supporting efforts to build capacity in the NMCP for entomological surveillance and testing vector resistance to insecticides.

This quarterly report presents the program's progress towards achieving these objectives in Angola from April through June 2007, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Spraying Operations – Completion of Round Two

Working with the NMCP, RTI launched "round two" of the IRS program in November 2006 in Huila province. The round continued through March 2007 with spraying operations in six municipalities across three provinces: Lubango and Humpata in Huila province; Ondjiva and Namacunde in Cunene province; and Namibe and Tombwa in Namibe province. Spray teams located 130,218 households in the targeted areas, somewhat fewer than the 140,000 expected. Teams sprayed 110,826 households (85.1 percent of households found), thereby meeting the program's coverage target. Based on interviews in the field, spray operators reported 612,776 residents in the households sprayed, yielding an average occupancy of 5.53 people per household. This average is consistent with findings in round one.

The below table represents the final results for round two of spraying in Angola.

Final Results for Round Two of IRS in Angola						
	Houses				Coverage	People Living in Houses Sprayed
	Number Expected	Number Sprayed	Number Not Sprayed	Total Found	Sprayed as % of Total	
Huila	94,000	78,244	11,304	89,548	87.4	425,588
Cunene	11,000	9,125	1,485	10,610	86.0	49,174
Namibe	35,000	23,457	6,603	30,060	78.0	138,014
TOTAL	140,000	110,826	19,392	130,218	85.1	612,776

During round two, approximately 220 people from the six municipalities were trained and employed as IEC activists, 450 as IRS operators, 20 as IRS brigade supervisors, 50 as IRS team leaders, and 30 as IRS and IEC monitors. The operational personnel worked under the leadership of RTI operation officers and the government's provincial supervisors for malaria in each province.

The IRS coverage in Namibe was 78 percent, below the 85 percent target. RTI and the NMCP staff working in Namibe indicated that many people were reluctant to allow their houses to be sprayed because of reported cases of allergic reaction to the insecticide, most likely because residents did not comply with instructions to remain outside of their houses for 2-3 hours until the spray had dissipated and dried on the walls. Poor spraying practices used by other organizations in the prior year may also have contributed to the resistance encountered in Namibe. It will be important to mobilize a more effective IEC program in round three to address these issues in Namibe.

RTI introduced several improvements in operational procedures, organizational structures, and monitoring and reporting tools to address issues and lessons learned from round one:

- Leadership of IRS operators -- Leaders were trained on management skills, organization principles, and leadership functions to increase their efficiency and effectiveness. Job descriptions were formalized and the command structure was reorganized to reduce the "span of control" at each supervisory level.
- Operator's daily target – the daily objective was reduced from ten to eight households sprayed per day per operator. Additional operators, team leaders, and brigade supervisors were hired to ensure the program could meet its overall targets in the time available.
- Monitoring teams -- To assure high quality of spraying and total coverage, monitoring teams were trained and deployed in the field.
- Community committees -- To reinforce community involvement, IRS "community committees" were established and comprised residents of the communities to be sprayed. These committees monitored the actions of spray operators to ensure they were honest and worked hard, and urged specific households to reconsider allowing the team to spray if they had first denied the operators access to their home.
- Daily analysis – Brigade supervisors were required to review data each day on the performance of spray teams under their command. This resulted in earlier and more effective corrections to improve performance.

RTI's support for round two was launched using the TASC2 contract, Integrated Vector Management (IVM) task order, under which RTI had provided support for IRS round one in

Angola in 2005-2006. RTI began transitioning work in Angola to the IRS IQC task order one in January 2007. By the time round two was completed in April, Angola funds in the IVM task order had been expended and all charges were being incurred under the IRS IQC.

Post-spraying Operations

Round two was completed on March 31, 2007. RTI implemented the following post-IRS activities during the April – June period:

- In April, RTI recovered all IRS equipment and unused insecticide from the operational locations and stored these items at the program warehouse in Lubango. Equipment was inventoried, damaged equipment was repaired, and additional replacement and repair parts were ordered. Unused insecticide was inventoried and 22 boxes of ICON WP were secured for future use.
- In May, RTI conducted an informal survey with community committees to evaluate public satisfaction with the IRS program and collect comments and suggestions. Results were summarized and provided to the NMCP and PMI focal points.
- In June, auditors from PMI visited the warehouse in Lubango to examine inventory records and warehouse conditions and conduct their own inventory of equipment and insecticide. The auditors were satisfied that all records were in order and reported no irregularities.

Other Activities

End of Round Evaluation

RTI requested that the PMI focal points organize an end-of-round evaluation meeting with the NMCP and community leaders. Although there was tentative agreement to hold such a meeting after the completion of round two, other events took precedence and the meeting was never held.

Entomological Monitoring

RTI organized a four-day training program in late May for 12 technicians drawn from the three southern provinces. An entomologist working with the Medical Research Council's (MRC) IRS program in Mozambique trained the technicians to perform bioassays for evaluating the duration of lethal effect of insecticide on known susceptible mosquitoes. The NMCP's entomologist had agreed to support the training as a co-instructor and by providing equipment, but unfortunately did not arrive. The MRC scientist brought sufficient equipment and materials so that the training program could be completed. However, the technicians were not able to conduct routine bioassays following round two because they lacked equipment from the NMCP, and because there is not yet a working insectary to supply lab-reared populations of mosquitoes with known susceptibility to the insecticide being used.

Two entomology technicians from the NMCP continued their work to perform routine collections of mosquitoes in households in Luanda, Cunene, Huila, and Namibe as an indicator of when and where *anopheline* mosquitoes are present. Results were presented to the PMI planning team during their visit in June.

Epidemiological Surveillance

RTI supported a survey of clinical sites in Luanda to collect data on malaria cases. The study was organized and supervised by CDC scientists.

IRS Workshop in Nairobi

In April, the COP, Antonio Muhungo, participated in a “start-up” workshop for RTI’s IRS project in Nairobi, Kenya, where he met with project staff from Washington and Nairobi, representatives of the project’s partner organizations, and COPs from other countries in which PMI is supporting IRS programs. Mr. Muhungo presented the results achieved to date through two rounds of IRS in Angola and shared many of the procedures and best practices developed in Angola.

Project Management and Administration

Staffing

RTI is recruiting a new finance manager for the Angola IRS program. The position was advertised in April and resumes were received in early May. Interviews were completed by the end of May. Reference checks and further documentation were still underway as of the end of this reporting period.

Partnership and Collaboration

National Partners

Gene Brantly, RTI’s project director, met Dr. Filomeno Fortis in Washington during Dr. Fortis’s visit as part of an official delegation including the Minister of Health and the Minister of Education. Dr. Fortes invited RTI to join the Partnership Forum for Malaria in Angola. He also requested that RTI hire and train entomology teams directly, as the NMCP does not have funds to do so. Mr. Brantly indicated he should make this request to the PMI focal points in Angola and to the PMI planning team that would be visiting Angola soon.

USAID Partners

RTI met with the PMI planning team during their visit to Angola in June. The COP presented results from round two and discussed options for work in the coming year. During this process, the COP learned that PMI might include Huambo in the round three spray program.

Outstanding Issues

- There are still problems preventing routine entomological surveillance and bioassays following IRS application. The NMCP has no capacity for entomological surveillance and the NMCP entomologist actively impedes RTI’s efforts to mobilize non-governmental personnel to perform this vital function. The PMI focal points are aware of the problem and will hopefully be able to resolve it as part of planning discussions for the fiscal year 2008 (FY08) PMI program.

- The stock of insecticide remaining from round two includes ten boxes of ICON WP containing 150 sachets each that will expire in August 2007. RTI accepted this insecticide from MENTOR, Inc. because MENTOR was no longer conducting IRS operations and could not use the insecticide. RTI has asked MENTOR to obtain a recertification of the insecticide from the manufacturer to extend its date of expiry. RTI is also exploring options for shipping the insecticide to another country where it may be used before its date of expiration, although this may be difficult given import and export restrictions on hazardous materials.

Upcoming Activities

- Conduct geographic reconnaissance and logistical planning for IRS operations in Huambo, if the PMI planning team and NMCP confirm agreement that Huambo will be included in round three.
- Order additional equipment and insecticide as needed for round three.
- Organize a consultancy to support the design of a malaria early warning system.

Kenya

Kenya has been selected as one of the third set 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) has decided to use resources from its existing fiscal year 2007 budget to begin supporting the indoor residual spraying (IRS) program in Kenya.

The Division of Malaria Control (DOMC) within Kenya's Ministry of Health (MOH) secured funds from the Global Fund to support IRS in 16 epidemic-prone districts in Kenya as part of its national malaria control strategy. The DOMC used available funds to purchase spray equipment and insecticide, but did not have sufficient funding to mobilize the number of spray operators and supervisors required to fully implement the IRS program. USAID tasked RTI to provide payroll support for the DOMC's seasonal IRS activities in the 17 IRS districts. Through this effort, the DOMC was expected to treat approximately 700,000 households with insecticide, protecting approximately 3.5 million people from malaria during the 2007-2008 transmission seasons.

This quarterly report summarizes the program's progress from April through June 2007.

Current Activities & Accomplishments

Payroll Support for Seasonal Workers

RTI assigned the payroll support function to its subcontractor, Crown Agents USA. Given the limited scope of work, which did not include technical support, analysis, or oversight, RTI had a minimal role and Crown Agents was the primary organization providing support to the Kenya IRS program during this period. Crown Agents arranged subcontracts with local accountancy and security agencies, hired and mobilized pay clerks, and supplied cash stipends valued at over \$1.4 million to approximately 4,500 spray operators and drivers in 16 districts.

The national IRS campaign launch was planned to coincide with Africa Malaria Day on April 25, 2007. The first pay stipends were delivered on May 6, 2007. By the end of June, a total of nine monthly pay events had been made. The total number of personnel receiving stipends is shown below.

District	District Supervisors	Division Supervisors	Team Supervisors	Spray Operators	Drivers	Actual Total Working
Bomet	3	6	37	237	3	286
Buret	5	5	28	266	1	305
Gucha	4	7	33	284	3	331
Kericho	3	8	32	284	3	330
Kisii	3	8	34	300	3	348
Koibatek	3	7	18	165	2	195
Lugari	3	3	11	116	3	136

Mt Elgon	3	4	16	113	4	140
Nandi North	3	6	56	250	4	319
Nandi South	3	7	42	200	3	255
Narok	3	4	37	178	4	226
Nyamira	3	7	90	302	2	404
Trans Mara	5	5	22	138	1	171
Trans Nzoia	3	8	84	388	1	484
Uasin Gishu	3	13	70	398	3	487
West Pokot	3	6	26	185	3	223
Totals	53	104	636	3,804	43	4,640

Crown Agents worked with the Group 4 Security Company to prepare specially-designed wage packets in opaque envelopes which could be counted without breaking the seal. Payroll envelopes were branded with USAID stickers and were delivered in each district on a bi-weekly basis, by a secure transport vehicle provided by Group 4 Security in addition to a police escort, which is required by Kenyan law.

All pay localities were determined in advance through consultations with the district health officers. Crown Agents supplied a pay clerk who accompanied Group 4 Security to each pay locality and verified the receipt of all stipends. Pay sites changed according to spraying localities and were determined in advance based on road conditions and collective locations that could be reached by several groups of sprayers in order to consolidate the pay localities as much as possible, thereby minimizing the transport of funds.

Crown Agents maintained records of all stipends provided to each spray operator, including the date of payment and the operator's identity number. All original timesheets have been collected and filed. Master payroll records for each week have been collected and reconciled for each district. Crown Agents used the services of a professional accounting firm to correctly ensure compliance and accurate payroll production. Withholding taxes were not required due to the short-term length of employment.

USAID stated explicitly that all MOH government employees were not to receive stipend payments during this particular campaign. Divisional supervisors were present to verify the identities of the personnel being paid.

Crown Agents staff sourced and hired eight payroll clerks to manage raw data collection in two districts each for a total of 16 districts. Crown Agents provided a three-day training course to all the clerks and developed all materials, including accounting records and timesheets for each district. Crown Agents dispatched the clerks to work alongside each district health official for approximately three months for the entire length of the campaign.

The Crown Agents pay clerks became an integral part of the district health team collecting daily work records and helping to transport data between districts for all spray operators. The clerks helped to facilitate communication and transparency and created an atmosphere of integrity that was sustained throughout the campaign.

Almost all the spray operators originally trained for this campaign remained employed throughout the full three-month spraying period. In the past, when operators worked as volunteers, many were only willing to spray in their own villages for a limited period of time. With the addition of cash stipends, the operators were more motivated and committed to the full-term of the spray campaign. Operators were trained at the district level and gained

experience in many villages over the life of the campaign. This made their work more professional, accurate, and cost effective.

Upcoming Activities

Three pay periods are scheduled in July, with the last payroll scheduled for July 21, 2007. Pay clerks will finalize activities in the field and return to Nairobi. Crown Agents will then prepare and submit final documentation to RTI to close out the 2007 program.

Malawi

Malawi was identified by the United States Agency for International Development (USAID) as one of the first wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). The 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 district during the first round of IRS in Malawi.

This quarterly report presents the program's progress towards achieving these objectives in Malawi from April through June 2007, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

During this quarter, RTI IRS teams visited Malawi twice, once for preliminary assessment and planning and once to prepare the supplemental environmental assessment (SEA).

Start Up

During this quarter John Chimumbwa, IRS technical director, and Jake O'Sullivan, malaria task manager, made an initial visit to Malawi in May to plan IRS activities for a 2007 spray round. The objectives of the visit were to:

- Liaise with USAID, the NMCP, and other IRS stakeholders in Malawi;
- Establish objectives of IRS in Malawi;
- Discuss timelines and the scope of work for IRS in Malawi;
- Visit Nkhotakota district, the district health office, and Dwangwa Sugar Estates to assess requirements for IRS in the area;
- Begin staff recruiting; and
- Gather preliminary information for the SEA.

Planning and Assessment

USAID Briefing

Dr. Chimumbwa and Mr. O'Sullivan met with Catherine Chipfazi and Lilly Banda-Maliro of USAID Malawi and Carl Campbell from the Center for Disease Control (CDC) for a USAID inbriefing on May 7. The purpose of the meeting was to introduce the main activities and programs of PMI in Malawi and to discuss where and how IRS would fit in. Insecticide-treated nets (ITNs), diagnosis and treatment, intermittent preventive treatment, surveillance, and monitoring are all underway or in phases of planning or roll-out. IRS will be piloted as a demonstration to show efficiency and help establish a possible future role in malaria control in Malawi.

The Innovative Vector Control Consortium has been conducting entomological surveillance in Malawi, including in Nkhotakota district. There are good entomological and epidemiological data available. Susceptibility of vectors to approved pesticides has not been an issue in Malawi, however, this will need to be confirmed and monitored. Any widespread implementation of IRS will require a resistance management strategy. The group discussed who could do this and how. The group also discussed possible pesticides for IRS use in Malawi.

NMCP Introductory Meeting

Dr. Chimumbwa and Mr. O'Sullivan met with the NMCP at the Community Health Sciences Unit. Present were Doreen Ali, John Chiphwanya, and Austin Gumbo of the NMCP, and Mr. Campbell from the CDC. Participants in the meeting discussed IRS as part of Malawi's overall malaria program. IRS currently has a very small role in this program, but the NMCP would like to see it expanded.

District Health Management Team Introductory Meeting

Dr. Chimumbwa and Mr. O'Sullivan, accompanied by Ms. Chiphazi, Autman Tembo, Mr. Campbell and Mr. Chiphwanya, visited the Nkhotakota district health office and met with Dr. Kachala, District Health Officer; Mr. Makanjiz, Head of Clinical Section; Mr. Wilson Kamanga, IEC Officer; Mr. Kadyampskeni, Environmental Health Officer; Mr. Msiska, Malaria Officer; and Mr. Phiri, ITN Coordinator. Participants discussed plans for the upcoming spray round. The district team briefed the RTI team on the malaria situation in the district and the status of treatment and prevention interventions underway.

Illovo Sugar/Dwangwa Sugar Estates Introductory Meeting

Dr. Chimumbwa and Mr. O'Sullivan, accompanied by Ms. Chiphazi, Mr. Campbell and Mr. Chiphwanya of NMCP, visited the Dwangwa Sugar Estates on May 9 and met with:

- Don Carter- Brown – General Manager
- Richard Kunjawa – Human Resources Manager
- Henry Chakaniza – Medical Officer
- Ed Halse – Field Manager, Technical
- Alexander Chihana –Technical Agronomist
- Mike Chiutira – Risk Control Officer
- Esther Banda – Nursing Officer
- Don Carter- Brown – General Manager
- Richard Kunjawa – Human Resources Manager
- Henry Chakaniza – Medical Officer
- Ed Halse – Field Manager, Technical
- Alexander Chihana –Technical Agronomist
- Mike Chiutira – Risk Control Officer
- Esther Banda – Nursing Officer
- Wilfred Manda – Assistant Environmental Health officer, Nkhunga, MOH

This meeting laid the groundwork for cooperation between PMI, the NMCP, Nkhotakota district health management team, and the Dwangwa Sugar Estate.

After the main meeting, the group toured the pesticide storage warehouse and the clinic. Dr. Chakaniza and Evans Masamba briefed participants on the existing IRS program on the estates, where IRS has been a routine for three years. They have been using lambda-cyhalothrin and alpha-cypermethrin in the past, spraying at a frequency of every four months.

The visitors noted that cutting off spraying in the middle of a populated area was not the best use of IRS. By expanding the spray territory to natural boundaries in Nkhotakota, it is likely that the impact on malaria transmission—even within the Sugar Estates—will be greater. The current plan calls for extending the territory north and south of the Sugar Estates.

Preliminary Logistics Assessment

The team reviewed the infrastructure available for supporting IRS in Nkhotakota. Initial findings are that training facilities are readily available and of good quality. Warehouse/staging facilities are available, but will require upgrades to bring them into compliance with environmental regulations. Local transport is available and appears to be adequate. All sites to be sprayed are reported to be accessible by vehicle. Labor for spray operators, washers, and other seasonal staff is available during the time period of the spray round. The warehouse facility at the Sugar Estates is well-built, secure, and in compliance with environmental requirements but is too small for more than a small portion of the pesticide and equipment required for this operation.

Environmental Assessment and Compliance

Melanie Biscoe, environmental scientist, and Mr. O'Sullivan visited Malawi from June 6 - 14 to gather information necessary for the SEA for the upcoming spray round. No major obstacles are foreseen that would impede the spray operation. Pesticides approved for use in Malawi include:

- Alpha-cypermethrin
- Bifenthrin
- Cyfluthrin
- Deltamethrin
- Lambda-cyhalothrin
- Fenitrothion
- Pirimiphos-methyl

These all fall into two categories: pyrethroids or organophosphates. This SEA will cover pyrethroids. Use of other insecticides in the future will require an amendment to the SEA, or the creation of a new SEA.

Pesticide Selection

The NMCP and the PMI team requested using ICON CS (lambda-cyhalothrin Capsule Suspension), if possible. This formulation of pyrethroid has shown longer-lasting efficacy on sprayed surfaces than some other pyrethroids. While Nkhotakota has year-round transmission of malaria, the basic pattern is of unimodal, seasonal transmission. Any pesticide lasting up to eight months could be used only once a year, resulting in a substantial savings over needing to spray twice yearly. DDT would last that long, but is not currently approved for use in Malawi.

Project Management and Administration

Staffing

During this quarter, RTI advertised for chief of party (COP), finance manager, and office administrator for the project. Initial interviews took place and will continue into the next reporting period. Charity Mauluka has been selected as the office administrator.

Outstanding Issues

The sole-sourcing of ICON 10CS will require a sole source justification.

Upcoming Activities

Next steps include the finalization of the SEA, the hiring of COP and finance manager, the identification office space, the procurement of pesticide and supplies, and completion of logistics assessment in the spray area. The IRS logistics director, Kim Canelas, will take the lead role in the logistics assessment and spray operations.

Rwanda

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

RTI is tasked with providing strategic, technical, management and operations support for IRS activities in the above mentioned districts. RTI and the PNILP will treat at least 85 percent of households in the three Kigali districts with residual insecticide during the 2007 spray round. In addition, RTI will provide support to the PNILP, strengthen epidemic preparedness and response plans, and train entomological technicians in collaboration with PNILP/Ministry of Health (MOH) and other malaria partners.

This quarterly report presents the program's progress towards achieving these objectives in Rwanda from April through June 2007, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Project Start-up

During this quarter, contact with PMI Washington and USAID/Rwanda was established. RTI negotiated a plan of activities with the MOH and PNILP and drafted a scope of work which was shared with them. Other preparations for project start-up continued during April, May, and June 2007.

Planning and Assessment

After scopes of work for necessary environmental and logistics assessments were developed and discussed with USAID/Rwanda, and country clearance was obtained, planning of other project start-up activities were implemented during the months of April, May, and June 2007.

Procurement and Logistics

RTI contacted Crown Agents to procure and deliver insecticides and personal protection equipment for Kigali. Centrale d'Achats des Médicaments Essentiels Consommables et Equipements Medicaux du Rwanda (CAMERWA) was identified to provide a warehouse for storage. CAMERWA drafted a contract, which was sent to RTI's office in Washington for rectification and signing. Field storage facilities in the three districts of Kigali were identified and approved for suitability with the help of district authorities (the mayors).

A detailed logistics plan for spray operations in the three districts was developed before the commencement of the spray operations. This was done in collaboration with the sectors identified by the PNILP. According to the PNILP, 10,000 households were not to be sprayed out of the initial 155,000 which had been identified earlier for spraying.

Pesticides

A competitive tendering process for pyrethroids, including ICON WP, was conducted by RTI's procurement partner, Crown Agents. Expected delivery of ICON WP has been scheduled for the end of June 2007.

Spray Pumps & Parts

Spray pumps and associated parts were procured by Crown Agents and delivery towards the end of June 2007.

Personal Protection Equipment

A competitive tendering process for personal protection equipment was conducted by Crown Agents. Contracts have been awarded to vendors with a scheduled delivery date of the last week in June 2007.

Other Commodities

Barrels for progressive rinsing were planned to be procured locally.

IEC Development and Implementation

IEC Assessment and Strategy

In May, Dhianaraj Chetty (Senior Community Education Advisor) and Siddhartha Swarup (Senior Creative Advisor), two consultants from RTI's consortium partner Howard Delafield International (HDI), conducted an information, education, and communication (IEC) needs assessment and developed a draft IEC strategy for the IRS campaign.

Mr. Dhianaraj was tasked specifically with the following activities:

- Conduct an initial assessment of existing government, community-based organizations and nongovernmental organizations (NGO) communications programs and mechanisms in Rwanda and develop an implementation plan for the IEC component. The initial assessment will include facilitating focus group discussions to understand perceptions, misconceptions, and attitudes of the population concerning IRS to better target communications and outreach.
- Identify and recruit an IEC coordinator to manage the IEC component of the IRS program, and provide technical guidance and assistance for the implementation of a successful IRS communications strategy in Rwanda.
- Develop and disseminate IEC materials to targeted districts and populations using various socio-cultural communication mechanisms and techniques.
- Provide technical support to the IEC coordinator in conducting an IEC campaign prior to, during, and after spraying operations.
- Provide technical support to the IEC coordinator/chief of party (COP) with IRS communication and education activities to key stakeholders (including government officials and donors), IRS launch activities, and post spray operations (particularly community meetings).

This activity focused primarily on inputs from key stakeholders in the program at the national level and profiling the capacity of local suppliers in print media, broadcast media, design, production, and events management. The consultant worked extensively with David Rugero (RTI COP) over the period of this assignment to ensure that he was well informed on all development related to the IEC assignment and campaign plans.

Mr. Swarup provided a draft assessment tool which was utilized as a guide for capturing information that will be useful in developing the IEC Strategy. Appendix 3 presents the questionnaire used in focus group discussions and IEC meetings with USAID and the PNILP.

With a program goal of spraying at least 85 percent of households, the communication goal was to ensure that at least 85 percent of the targeted households would be willing to have their houses sprayed. The specific objectives of the IRS IEC campaign were to create long-term sustainability of the program by involving and engaging key stakeholders; to inform the beneficiaries about the positive benefits of IRS in controlling and preventing malaria and malaria-related deaths; to inform the beneficiaries about their role before, during, and after the spray operations; to inform the key stakeholders and beneficiaries about environmental safety issues and allay fears related to environmental and health effects of using insecticides.

By end of the consultants' assignment, a candidate for the IEC coordinator position was identified and interviewed; an advertising agency was selected and their SOW drafted; and an IEC implementation, monitoring, and evaluation plan and provisional budget was drafted. The IEC strategy was concluded by the HDI consultants in June 2007 and was submitted to relevant authorities for approval.

IEC Campaign Implementation

Initial contacts were made during June 2007 with the Rwanda Public Broadcaster composed of national radio and television regarding a town hall meeting as a requisite for the IRS IEC comprehensive campaign. RTI also worked with HDI consultants on the final IEC strategy and selection of the IEC coordinator. Initial planning for the IEC mobilizer training of trainers (TOT) also started during June 2007. Contacts with the PNILP and the local government were made in order to identify trainees from all sectors of the three districts of Kigali. Initial contacts with partners on possible identification of IEC community mobilizers were also made.

Spraying Operations

Recruitment and Orientation for District Administration

RTI prepared job descriptions and announcements for district level staff prior to recruitment, which was planned for early July 2007. RTI and the PNILP decided to form district oversight /advisory committees for IRS operations.

Monitoring and Evaluation

Entomological Surveillance for IRS operations

Entomological surveillance activities were clarified and operational planning is currently underway. Rwandan entomologists Emmanuel Hakisimana and Emmanuel Ruzindana were contacted about their availability for entomological surveillance activities.

Mr. Ruzindana is a skilled technician trained in entomology and parasitology. He is trained in most field entomological techniques and is currently employed by the Ministry of Health at the National Reference Laboratories.

The PNILP's in-house entomologist agreed that July 2 will be the start date for the entomological baseline study. The entomological materials for the baseline study were shipped by the Centers for Disease Control (CDC) in the U.S. and were received by the USAID/Rwanda office. USAID helped to clear the materials from customs and delivered them to the RTI IRS program office.

The RTI team was unable to meet with Dr. Andre Vandoren at the Belgian Technical Cooperation to discuss its malaria program, which includes research on epidemic response measures, malaria stratification maps, and risks results for Rwanda.

In addition to the entomological surveillance plan, the team worked to establish an IRS information system and data management team, as well as data collection, analysis, and spray card management procedures.

Project Management and Administration

Staffing

The recruitment process involved the preparation of job descriptions for key staff at the program office; the identification of prospective candidates for available posts; and the submission of resumes to USAID in Washington for further scrutiny and decision making. Recruitment of key program staff started with the COP, the logistics manager, and the finance and administration manager.

Following the placement of job advertisements for IRS key personnel positions in Rwanda newspapers, and dissemination of the advertisements through external networks, RTI reviewed and screened resumes that were submitted.

- Chief of party position: An initial screening of short-listed candidates was conducted and three Rwandan candidates were selected for interviews by the RTI/PNILP/USAID recruitment panel. Candidates have been contacted for reference information.
- Finance officer position: Four candidates were short-listed for interviews and two of them were selected for second round of interviews with the RTI senior finance managers. Candidates have been contacted for reference information.
- Logistics officer position: Four candidates were short-listed for interviews and two of them selected for second round of interviews by the RTI/PNILP/USAID recruitment panel. Candidates have been contacted for reference information.

These members of staff were interviewed during April and May 2007. The COP joined in the first week of May 2007, while the two other staff joined during the third week of June 2007.

Administrative Support

Dr. John Chimumbwa arrived in the country on June 27 to help the program office with start-up activities. Accompanied by the COP, Dr. Chimumbwa was able to meet different stakeholders and provide them with briefings on IRS. On June 29, accompanied by the COP,

he provided a 40-minute presentation on IRS to Twubakane health personnel from the districts. The director and other senior staff were in attendance. RTI also met with Mr. Benoit, a representative of an umbrella organization for developmental and environmental NGOs, and briefed him on IRS the same day. Dr. Chimumbwa also met the PNILP's director together with the COP and PMI officers (Dr. Karen Shelley and Dr. Patrick Condo), and discussed preparations for IRS, sector level storage of insecticide and other equipment, district health centres that were to be on standby to provide treatment in case of insecticide poisoning, and work schedules for sector IRS activities. The PNILP designated an entomologist to be the IRS focal point; he was expected to join by July 2.

Office & Warehouse Space

RTI decided not to co-locate with the Twubakane office due to anticipated operational difficulties. During the follow-up visit to Kigali, several potential office spaces were assessed and an office space identified.

After a contract was signed by the land lady and RTI, an office was secured for use by the country program office in Kigali at Immeuble Aigle Blanc, Plot 1719, Gasabo District (near the parliamentary building) in Kigali City.

Office furniture was procured from Mutara Enterprises Limited, and proforma invoices for information technology equipment were obtained from different vendors and were submitted to Washington for approval. Other office needs were identified for procurement.

CAMERWA was contacted on several occasions for purposes of confirming the availability of a warehouse, which was to be used to store a consignment of insecticides and other equipment imported for IRS operations in the districts of Gasabo, Nyarugenge and Kicukiro.

Registration

Information and documentation that was required to begin registering RTI as an NGO was obtained from the Ministry of Local Administration. Following review and approval by RTI's management team, RTI engaged a Rwandan legal firm and has begun compiling the required documentation.

In addition, the PNILP has offered to assist RTI with registration in order to accelerate the process. The PNILP intends to complete the IRS work plan approval process and plans to submit a letter of support and an approved RTI work plan to the Ministry of Local Administration through the MOH in order to facilitate temporary registration for the commencement of IRS activities. RTI and the local Rwandan legal firm are aware of the arrangement with PNILP. Once the temporary registration process with PNILP is complete, RTI and the Rwandan legal firm will provide additional documentation, if required, in order to obtain full registration status as an international NGO in Rwanda.

During June, RTI's registration process was followed up with no results. The memorandum of understanding (MOU) remained unsigned at the end of June 2007, despite a letter of recommendation sent by the MOH to the Ministries of Local Government, Good Governance, Community Development, and Social Affairs (the ministry responsible for registering NGOs). This delay in registration consequently caused a negative effect on RTI's daily work and timeline preparation.

Partnership and Collaboration

It was previously planned that at least two briefing sessions (on IRS operations) with identified government officials would be carried out, and an IRS oversight committee would be formed by the government. The government (MOH/PNILP) would also confirm setting up emergency poison centers and a number/availability of doctors trained in poison treatment. This activity was hampered by the delay of the registration process.

The program planned to proceed with consulting district health and environmental authorities for the purposes of being prepared and being able to plan ahead with the limited time available for program planning.

The COP met the mayors of Nyarugenge district and Kicukiro at different dates during the month of June 2007 and briefed them on IRS and how RTI looked forward to working with the districts. The Mayor of Gasabo was on an official trip outside the country but the COP met the executive secretary of the district and briefed him on IRS. Contact addresses and telephone numbers of all executive secretaries from all sectors of the three districts were obtained from the mayors' offices. These were necessary for further contacts at local levels and planning of IRS activities with them;

Rwanda National Malaria Control Program (PNILP)

The PNILP expressed concern regarding the recruitment of staff from its team to manage the IRS operations, which would weaken its systems. Since the onset of the recruitment process, RTI has been very sensitive to this issue and has not intended to reduce capacity within the PNILP. The PNILP requested a review of the terms of reference for IRS key personnel staff and expressed interest in participating in the final interview process. The interest to participate in the recruitment process also stems from the need to ensure those recruited have clean records in their past engagements.

During the initial project start-up visit, RTI invited the PNILP to appointment a representative on the recruitment panel. RTI has also shared with the PNILP the terms of reference for key positions, profiles and resumes of short-listed COP candidates, and the names of short-listed candidates for the logistics and finance officer positions. During this visit, it has been agreed that Dr. Corine Karema will participate with RTI (specifically, Dr. Chimumbwa) to interview the COP and logistics officer candidates.

The PNILP requested copies of the approved Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) and RTI work plan. RTI submitted the IRS work plan to the PNILP and is awaiting approval of the IRS work plan in the requested format.

Rwanda has been selected to host the global Africa Malaria Day event and has extended the invitation to RTI to participate in the celebrations on that day. The PNILP requested that external visitors to RTI contact the PNILP management to brief and debrief. In the same vein, the program will ensure that they have one senior staff member available as the focal point for IRS at the PNILP.

Rwanda Environmental Management Agency (REMA)

REMA was informed that the environmental assessment for Rwanda has been approved by USAID in Washington and a summary was presented to Alex Mulisa, the national project manager for poverty and environmental initiative. In addition, he was briefed on the progress on the various components of PMI, particularly IRS, including the recruitment process for Rwandan nationals to lead the IRS project.

REMA's request to have a dedicated environmental assessment officer inserted into the IRS team was viewed as a positive development and the USAID mission would consider sourcing funding for the position. The outstanding issues regarding this same position were: where the position will be based, who will supervise the position and whether it will be a part-time or full-time position. REMA would like to see the terms of reference for this position once they have been prepared by USAID. The PNILP has been made aware of this arrangement and has expressed interest in reviewing the terms of reference for the position and has inquired about the supervision of this staff between the PNILP and REMA. The PNILP would prefer that the environmental officer is co-located within its offices or paid through USAID/PNILP if s/he co-locates within REMA to ensure communication of information, transparency, and that the environmental officer is focusing on the implementation of the IRS program.

Tulane University

The RTI team met with Joshua Rodd from Tulane University to clarify roles and responsibilities for an entomological training program and support to sentinel sites. Since then, Kicukiro serves as one of the ten sites identified in the Rwanda malaria operational plans for fiscal year 2007. RTI will monitor IRS operations and conduct the necessary entomological data collection in the three IRS districts of Gasabo, Kicukiro and Nyarugenge. RTI will also perform additional monitoring and evaluation requirements and provide support to the Kicukiro sentinel site. RTI has extended an offer of additional collaboration with Tulane, should they need to collect specific household information. RTI has expressed willingness to engage in activities such as training field supervisors to take GPS coordinates or training spray operators to use PDAs, provided that money is available and spray operations are not adversely affected.

USAID

Timelines were shared with USAID on different planned activities of IRS during this reporting period, especially the anticipated arrival of insecticides and planned dates for the official launch of IRS and spraying.

Outstanding Issues

At the end of June 2007, the following were main outstanding issues which the program had:

- Neither the MOU between RTI and the MOH, nor the provisional registration of RTI/IRS Rwanda program, were signed;
- The final draft contract with CAMERWA was not yet written by CAMERWA and therefore not signed by either party;
- An IRS operational plan was to be drafted and submitted to different stakeholders for approval and sharing;

- Recruitment of district level staff;
- Formation of district oversight /advisory committees on IRS to be decided upon by the PNILP;
- Launch date for both IRS and the town hall meeting to be decided by the PNILP/MOH;
- Identification of district storage facilities with the help of district authorities also remained pending;
- Approval by the PNILP, Centre for Health Communication and final production of IEC materials by Great Lakes Media Communication remained pending;
- Health centers to be designated for use in case of emergencies during spraying remained unidentified by the PNILP;
- District storage facilities (with help of district authorities) also remained pending;

Upcoming Activities

- Recruitment at all levels and training plans and timings agreed upon by all concerned parties;
- The formation of district oversight/advisory committees on IRS, and having their terms of reference drafted by the PNILP;
- The identification of district/sector storage facilities with the help of local authorities, and their suitability approved;
- Development of work plans for the rest of fiscal year 2007 and 2008 and their submission to USAID;
- Revision of timelines for the IEC campaign and spray operations and having them shared between all concerned parties;
- Launching date for IEC campaign and starting dates for spraying in the three districts to be confirmed by the PNILP/MOH;
- Identification of health centres to be used for medical check up /examination of sprayers before spraying.

Senegal

Senegal was identified by United States Agency for International Development (USAID) as one of the second wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). The USAID and the Ministry of Health (MOH) and Senegal national malaria control program (PNLP) identified Nioro, Richard Toll, and Velingara as three epidemic-prone districts for indoor residual spraying (IRS) activities. In 2007, USAID and the PNLN agreed to focus spraying activities in these three districts with the intention of expanding IRS coverage in 2008.

RTI is tasked with providing strategic, technical, management and operations support for IRS activities in the above mentioned districts. RTI and the PNLN will treat at least 85 percent of 75,000 target households with residual insecticide in Nioro, Richard Toll, and Velingara districts during the first round of IRS. This will protect approximately 500,000 people in the targeted districts. In addition, RTI will provide support to the PNLN to strengthen epidemic preparedness and response plans.

This quarterly report presents the program's progress towards achieving these objectives in Senegal from April through June 2007. The report also summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Planning and Assessment

Logistics Assessment

RTI conducted a detailed malaria situation analysis and logistics needs assessment in January 2007 to determine the technical, financial, human capacity, and operational needs that would be required to implement an IRS activity in the targeted districts.

The three districts cover a total population estimated at approximately 634,264 inhabitants with an average household size of eight persons. The total number of households is estimated at 75,000 and distributed throughout the three districts as follows: Velingara 22,000; Nioro 34,000 and Richard Toll 19,000.

Based on past experiences, a single spray operator was expected to spray seven households in a 5-hour workday. To spray the estimated 75,000 houses, the program required a total of 10,714 days of spray operations. To accomplish this within 40-50 working days, the deployment of 230 spray operators was required.

The program's planning divided each district into three or four groups with the purpose as follows:

- Strengthening information, education, and communication (IEC). Each group was managed by a field manager who was assisted by supervisors and team leaders;
- Facilitating operators' transportation;
- Enhancing security for the material.

Environmental Assessment and Compliance

The IRS project prepared a strategic environmental assessment (SEA) report according to the national regulations required by the Senegalese environmental code. This included the preparation and submission of the report for approval by a committee established by the Direction de l'Environnement et des Etablissements Classés (DEEC).

The Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) and the environmental impact assessment (EIA) were prepared and submitted to USAID and the DEEC for review and prior to the commencement of spray operations.

Pesticide Selection

The lambda-cyhalothrin (ICON WP) was selected as the insecticide for the IRS project by the PNLP as a balance between the known health and economic risks of malaria; as well as environmental risks of IRS. Lambda-cyhalothrin is the most commonly-used synthetic pyrethroid for mosquito control and it is usually sprayed on interior walls or used to treat bed nets. Based on field trials conducted by Brian Sharp from the Malaria Research Council in South Africa and the Pasteur Institute in Madagascar, lambda-cyhalothrin is effective on mud walls for at least five months.

ICON WP is registered in Senegal for public health use. The PNLP took the lead in choosing this chemical based on results of efficiency tests on pyrethroids and in consultation with a technical committee from other cooperating partners and agencies, including WHO and Cheikh Anta Diop University (UCAD). It possesses suitable technical and logistical factors such as appropriateness of surface (of the targeted houses) for spraying, duration of effectiveness, the costs of the insecticide, host country's capacity to prevent pilferage, and resistance management.

The total amount of ICON procured for Senegal was 4,242 kg. Given the large variations in household sizes, and the number of rooms and people per home, estimates for ICON were based on field reconnaissance and MOH data.

Spray Pumps & Parts

RTI, in collaboration with forwarding agents, prepared and procured materials necessary for the IRS campaign. Hudson sprayers, which are approved by the WHO, were procured for each spray operator, with extras per team for emergency and repair situations.

Personal Protection Equipment

In accordance with WHO specifications, personal protection equipment (PPE) was provided to each spray operator and to team leaders. The table below shows the spray pumps and personal protection equipment that was procured for Rwanda.

Description	Quantity
Hudson X- Pert Sprayers	277
Sprayers spare part kit	28
Visor	287
Helmets	287
Face shields	287

Mouth/nose masks	20000
Gum boots	284
Overalls (Green)	30
Rubber Gloves (Green)	1940
Overalls (Blue/Black)	576
Overalls (Orange)	12
Polythene sheet 3 M	20000
Bucket (100 L)	75
Basin (40 L)	225
Bag (10L)	150
Cup (2L)	75
Tool kit	61
Soap	294
Barrel	40

IEC Development and Implementation

IEC Material Design and Development

Christian Children's Foundation (CCF) was selected by USAID to lead IEC activities in collaboration with RTI. CCF is a consortium of many organizations with existing mechanisms developed to deliver health information from the national level to lower level communities. A series of meetings between RTI and CCF were held to provide an orientation of the IRS program and RTI's experience in managing IEC activities for IRS operations. Prior to the spray campaign, the RTI team shared with CCF technical information on IRS for community mobilization and education activities.

The following activities were identified with an implementation plan for early May through the end of the spray period in August 2007:

- District leaders/stakeholders sensitization;
- IEC material development workshop;
- Sensitization meetings;
- Radio spots on IRS: twice a day throughout the spraying period;
- Radio talk shows, if necessary;
- Preparation and printing of 22,205 IRS fact sheets (in French, Arabic and local language);
- Recruitment and training of 855 IEC implementers to carry out IEC in the three districts.

RTI's chief of party (COP) participated in one radio talk show in Velingara, which aimed at sensitizing the district communities in IRS. RTI staff also participated in a meeting held by CCF to ensure that the proposed IEC activities were in accordance with IRS objectives. A mission conducted by the RTI technical director in early June 2007 brought significant improvement to IEC in Richard Toll.

Training of IEC Mobilizers

855 IEC implementers were recruited and trained to carry out IEC in the three districts.

IEC Campaign Implementation

For a smooth running of IRS activities, the coordination of IEC activities with spray operations was ensured at each level as follows:

- At central level, the COP coordinated with the CCF coordinator;
- At district level, RTI local coordinator coordinated with head nurses and local IEC coordinator;
- At health post level, group leaders coordinated with IEC implementers.

Spraying Operations

Geographic Reconnaissance and Detailed Planning

The reconnaissance visit was conducted based on the spray operations schedule developed by RTI in collaboration with health post head nurses.

Recruitment and Orientation for District Administration

For the purpose of IRS operations management, the following temporary staff members were hired at district level to support the national staff composed of the country manager, the finance officer, and the logistics officer:

- District coordinators (3)
- District logistician (3)
- District finance assistant (3)
- Data clerks (3)
- Field site managers (10)
- Spray teams (25)
- Operators (230)
- Team leaders (32)
- Supervisors (6)
- Other staff: storekeepers (3), laundry women (20) and security guards (16)

There were additional supervision staff members from the hygiene service distributed at the rate of one supervisor per group.

Environmental Mitigation Set-up

Between March 15 and April 15, 2007, RTI rented offices and warehouses in the targeted districts. Offices and warehouses were chosen with concern for the following:

- Minimizing the IRS effects on human health and the environment;
- Securing storage areas for pilferage prevention;
- Reducing the transportation time.

Warehouses were located as far away as possible from households, with a secured garage for storage, and were equipped with latrines for wastes stemming from cleaning equipments.

Recruitment and Training for Spray Teams

The goal for the recruitment and training of spray operators was to strengthen the capacity of the PLNP and district authorities in implementing a well-organized IRS program. To this end,

spray operators were recruited within each district, with training courses held at the central and district levels. Training for IRS included training of trainers (TOT) at central and district levels and the training of spray operators at the district level.

Training of trainers (TOT)

In collaboration with the insecticide manufacturer and the PNLP, RTI implemented a technical training in conjunction with Yaounde Initiative Foundation in Dakar between April 16 and May 5, 2007. The training was successively implemented in Nioro from April 16-20, in Velingara from April 23-27, and in Richard-Toll from May 2 - 6.

RTI and the MOH/Hygiene Service chose 101 personnel as potential IRS instructors or supervisors. The table below summarizes the number of participants in each district.

Participants	Nioro	Velingara	Richard Toll
Field Manager Male/RTI	3	2	1
Field Manager Female/RTI	1	1	2
Supervisors Male/RTI	0	2	1
Supervisors Female/RTI	0	0	0
Team Leaders Male/RTI	11	11	7
Team Leaders Female/RTI	1	0	2
Reserves/ RTI	13	9	11
TOTAL/RTI	29	25	24
Hygiene Service/MOH	8	7	8
TOTAL	37	32	32

Candidates were trained in the following topics:

- Vectors and diseases: background;
- IRS in context: options for control;
- Managing pesticides safety: choosing, transportation, storage, disposal, etc.;
- Choice of application equipment and nozzles for different tasks;
- Calibration of spraying equipment;
- Mixing pesticides safely and accurately;
- Maintenance of spraying equipment;
- Applying pesticides (IRS);
- Ensuring efficiency and security of equipment and other associated inputs;
- Reporting and data submission;
- Quality insurance and impact assessment.

The TOT course was participatory and involved several hours of practical work. On the basis of their performance as trainers and their technical grasp of the materials, 16 RTI trainers for Nioro, 16 for Velingara, and 13 for Richard Toll were selected to deliver the operator training courses. Ten personnel from the MOH/Hygiene Service were chosen as supervisors.

Spray Operator Training

230 IRS spray operators (99 in Nioro, 76 in Velingara, and 55 in Richard Toll) were trained by the IRS instructors at the three locations one week before IRS: from May 14 - 18 for Velingara, from May 21 - 25 for Nioro, and from June 4 - 8 for Richard Toll. They were trained in the following topics:

- Managing pesticides safely – transportation, storage, disposal, etc.;
- Calibration of spraying equipment;

- Safe and accurate mixing of pesticides;
- Maintenance of spraying equipment;
- Applying pesticides (IRS);
- Ensuring security of equipment and other inputs;
- Reporting and data submission.

A general medical examination was conducted for all spray operators, team leaders, and supervisors to assess their medical fitness for the IRS activities. All female operators and team leaders were tested for human chorionic gonadotropin levels to rule out pregnancy. Findings indicated that no female staff members were pregnant and that the overall team was medically fit to conduct IRS activities. An end-of-spray period re-evaluation of all the staff was conducted. Results from clinical evaluation show that none of the 230 spray operators examined had health problems associated with IRS.

Commencement of Spray Operations

On May 29, 2007 in Keur Moussa, the IRS program was officially launched by Janice Jacobs, Ambassador of the United States in Senegal, in the presence of Cheikh Samba Ndiaye, National Hygiene Service Director, on behalf of the MOH and senior representatives from USAID and districts officials. Ms. Jacobs and other officials also witnessed a demonstration of an IRS activity in one of the houses in Keur Moussa.



Spray activities commenced on May 21 in Velingara and on June 11 in Richard Toll. This delay in starting activities in all 51 sub-counties (“Poste de Sante”) was to ensure that all villages were notified about the upcoming activities so that villagers would be available to receive the spray teams.

The success of the IRS project depended largely on its organization, labor, logistics, and the cooperation of community members throughout the exercise. Efforts were made to ensure that spraying would progress from the south to the north and that the spraying in all villages within a sub-county was completed before moving to the next health post.

Households were required to do the following:

- Provide about eight liters of clean water to spray operators;
- Remove their property from the house before spraying;
- Keep the items outside their homes for a minimum of two hours after spraying in order to allow the solvent in the formulation to vaporize and dry on the treated surfaces;
- Residents were advised to sweep any dead insects found on the floor and dispose of them in pit latrines or bury them to avoid contaminating the food chain (i.e., insects would be eaten by domesticated birds, chickens, ducks, and turkeys).

Thereafter, they could move their property into the houses. Spraying was typically conducted from 8:30 a.m. to 5:00 pm each day, with 5 effective hours in the field.

The program experienced instances whereby a few residents were initially not available on the planned day of spraying, but after talking to their neighbors and listening to additional mobilization exercises, they understood the project's purpose and sought out the spray teams to spray their houses during the subsequent visits to the villages.

Technical support supervision was provided by the RTI IRS technical director, the RTI environmental scientist, the RTI in-country management team, Hygiene Service and PNLP staff to ensure that spray operations were conducted in accordance with prescribed technical procedures for dose dispensation on the walls, ceilings, eaves, and other surfaces suitable for mosquito resting.

Corrective actions for the identified spray operators' mistakes were taken immediately to improve the performance and efficiency of the team. The major cause of inefficiency during the project was initial confusion associated with definition of a household – some operators confused a compound of households (“concession” in French) with a household. Other mistakes included putting the nozzle tip nearer to the wall than the recommended distance of 45cm.

Other Activities

Entomological Monitoring

The entomological monitoring will be conducted by the MOH/PNLP in collaboration with UCAD of Dakar. The entomological monitoring activities were scheduled in the three districts from July to October 2007.

Monitoring and Evaluation

Information Collection Plan

Data management systems were set up at the district level to collect field level data from spray operator spray cards. Using IRS coverage data, a spreadsheet was created to enable RTI supervisors evaluate the productivity of each spray team and spray operator in terms of the number of structures sprayed in comparison with the expected number of households to be sprayed and the amount of insecticide used per structure.

Spray operators were trained in data collection and were required to collect household level data of their daily activities on a spray card. Each card was then evaluated and spot checks were conducted by the spray team leader and supervisors. Spray team leaders were required to collect aggregated team and household level information on a card and submit them to

district level data managers. Daily IRS activities were collected, evaluated, and validated by data managers.

Data managers collected IRS data forms from each group on a regular basis for inclusion in the IRS database. Data managers and district coordinators monitored the daily and cumulative coverage of the IRS project and tracked insecticide usage by the spray team.

The following data was included on each spray card:

- House type and total number of rooms in a household;
- Total population, by sex, residing in the sprayed house;
- Number of children under the age of five in each household;
- Number of insecticide-treated nets or untreated nets used in the sprayed household;
- The spray teams also recorded the number of ICON sachets received, the number used, and the number returned at the end of each working day.

Houses found locked or whose owners refused spraying were also recorded on the spray operator's daily card; but it was not possible to obtain reliable information on the number of people residing in those households or the total number of rooms.

Using IRS coverage data, the summary spreadsheet was managed so that RTI supervisors could evaluate the productivity of each spray team and spray operator in terms of the number of structures sprayed in comparison with the amount of insecticide sprayed per structure.

Progress on Key Indicators

As of July 2, 2008 the IRS results were as follows in the respective districts:

District	Rooms sprayed	HH sprayed	HH not sprayed	Population			Nets		
				Male	Female	Children <5	Treated	Untreated	Absence
Nioro	24,658	7,346	18	25,506	31,552	14,488	7,812	3,088	5,734
Richard toll	10,221	3,153	35	8,279	7,903	4,147	1,949	4,739	54
Velingara	29,712	8,048	853	35,015	34,059	19,790	21,360	2,955	2,426
Total	64,591	18,547	906	68,800	73,514	38,425	31,121	10,782	8,214

Partnership and Collaboration

National Partners

The MOH, the PNLP, and the Ministry of Environment participated in the TOT as facilitators. The IRS project put significant emphasis on the use of government (district and central MOH) staff during the logistics needs assessment, environmental assessment, and training activities. Recruitment of applicators was managed by health post head nurses and sub-counties, in collaboration with the district coordinator. Hygiene Service's supervisors actively took part in the technical supervision. District coordinators maintained daily communication with their respective district health officers.

Outstanding Issues

- The lack of IEC in the beginning of the IRS campaign was the main issue. Currently, technical capabilities and coordination of IEC activities with spray operations has been improved;
- The gaps of communication with the Nioro district remains a big issue in the reporting, resulting from the difficulties in setting up Internet and telephone resources in this district;
- The damage and malfunctioning of spray equipment (11 faulty sprayers) were noted. Additional training and supervision will be required to refine application techniques and the use of spray equipment.

Upcoming Activities

- Activity planning was developed in preparation for the IRS operations closing in July;
- The stakeholders' meeting for the elaboration of the fiscal year 2008 malaria operational plan for PMI is scheduled for July 10 in Dakar;
- Monitoring of spray operations;
- Demobilization and operational assessment following the completion of spray operations.

Uganda

Uganda was identified by United States Agency for International Development (USAID) as one of the first wave of countries to receive funding under the United States (U.S.) President's Malaria Initiative (PMI). USAID and the Uganda National Malaria Control Program (NMCP) identified two epidemic-prone districts, Kabale and Kanungu, for IRS activities beginning December 2006. USAID also agreed to support IRS internally displaced people (IDP) camps in the districts of Amuru, Gulu, Kitgum and Pader in Northern Uganda beginning in April 2007.

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 85 percent of 500,000 target households with residual insecticide in the above districts during the second round of IRS in Uganda. This will protect at least 2.5 million people in the targeted districts. In addition, RTI will provide support to the NMCP to strengthen epidemic preparedness and response plans.

This quarterly report presents the program's progress towards achieving these objectives in Uganda over the period of April through July 2007, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Current Activities & Accomplishments

Following successful conclusion of spraying activities carried out in Kabale and Kanungu districts in March 2007, the Ministry of Health (MOH) requested that USAID and RTI take over spraying activities in Katigum and Pader districts that were originally planned to be funded by the United Kingdom Department for International Development and conducted by the WHO. This request was followed by a needs assessment that was conducted by RTI and the opening of a field office in Kitgum in April 2007 and in Pader in June 2007. IRS spraying in Kitgum was launched on April 30, 2007. Therefore, this report primarily focuses on activities associated with the spray round in Katigum district.

Planning and Assessment

Logistics Assessment

An important element of the logistics assessment is the involvement of district health teams in a micro-planning exercise held in the Kitgum district in March. Workshops were held with all the twenty sub-county supervisors and district health teams in order to share lessons learned and experiences from the first round of IRS in Kabale. Contributions by participants were positive and all the issues raised were documented as recommendations to improve future operations in other parts of the country where IRS will be conducted. A work plan was also developed in the workshop in order to clarify what will be required from district health teams and all participants.

Procurement and Logistics

A summary of the pesticide, spray pumps, and personal protection equipment purchased to support spray operations in the IDP camps (including Kitgum, Pader, Gulu, and Amuru) can be found in the previously submitted IRS semi-annual report for the period of September 2006 through March 2007.

IEC Development and Implementation

The IEC component in Kitgum was undertaken by an independent contractor, Health Communications Partnerships. The contractor worked very closely with RTI and fully utilized the district health teams to undertake specific tasks, including radio announcements, radio talk shows, community seminars, distribution of posters and fliers, film shows, and community sensitization meetings.

IEC Material Design and Development

IRS information leaflets for community sensitization meetings were produced in the English language and a translated version was also available in Luo, the local language. Pre-testing of the IEC materials took place successfully and production and distribution took place as the district health educator (DHE) and teams were busy sensitizing the sub-county/camp leaders. Two district health officials from Kabale traveled to Kitgum to assist in IEC and social mobilization activities in the district.

Community Sensitization

District Leaders

One day sensitization workshop for district leaders was held in the District Council Hall in Kitgum and was facilitated by the RTI IRS project director, two IRS field supervisors, and five officials from the MOH. In attendance were: the district chairman, 67 councilors, five district health team members, one representative (malaria focal person) from the WHO, 14 media representatives, and two religious leaders. The workshop was officially opened and closed by the district chairman. All the participants expressed overwhelming support for the program in the district.

RTI also invited 14 journalists from various media houses to attend the workshop as a means to gain wider publicity for IRS. The journalists came from the New Vision, The Daily Monitor, Red Paper, Rupiny, UBC Radio, Mega FM radio, Choice FM Radio, Radio King, Kit FM radio and Voice of Kigezi radio.

Sub-counties

One day sensitization workshops were also held in every sub-county in Kitgum. 30 participants were drawn from each sub-county and a total of 570 participants attended the workshops. Each sub-county had five hours of facilitation and 570 copies of IRS informational handouts were distributed. All 18 sub-counties and town councils were covered in five days.

The following people attended the workshops:

- Sub-county chiefs
- Local Council Executives/Chairpersons
- Secretaries for Health, Production, Women, and Youth

- Extension Workers: Health, Education, Production
- VHT members, parish mobilizers
- Religious leaders, Army Detach Commander

Other IEC Activities

Two phone-in radio talk shows were conducted on Kit FM radio in Kitgum district. The participants included the MOH, RTI, district health and political leaders.

Three radio spots started running on April 18 on a local radio called radio Peace FM. Two film vans from the MOH arrived in the district on April 22 and two film shows were conducted in two camps (Labong Layamo and Labong Amida) on April 23.

Assessment of the Impact of IEC

A one day survey was conducted by four health workers on 100 households randomly selected in the internally displaced persons (IDP) camps to assess the impact of information, education, and communication (IEC) on IRS campaigns. Analysis of their findings revealed that the community members were aware that:

- IRS was about killing mosquitoes and bringing down the burden of Malaria in their communities
- Huts/houses were to be smeared/painted before spraying and would be re-smeared/re-painted after six months
- Clean water was to be made available for sprayers to mix insecticide, household properties to be brought out during spraying and re-entry into huts/houses would only be possible after more than or equal to two hours. Rubbish swept from huts/tukul was either burnt or deposited in pit-latrines.
- Community members heard about IRS from radio talk shows, community leaders, health workers, film shows.

Spraying Operations

Spray operations in Kitgum took place from April 30 to May 12, 2007. In total, 84,007 households were sprayed, which provided protection for the entire district population. Details on the spray operations and additional results are presented below.

Environmental Mitigation and Compliance

During the assessments of storage facilities for IRS equipment and materials, it was confirmed that the stores were free from moisture, direct sunlight, and closeness to human habitation and that each had sufficient space for storing personal protective clothes and equipment. All the stores had access to water and latrine facilities for washing and safe disposal of the denatured insecticide respectively. The stores were assessed for renovation and repair. Soak pits in the twenty-two stores were completed to expectations. Guidelines were provided to spray team so that they fully understood the importance of complying with environmental compliance procedures.

Recruitment and Training for Spray Teams

One of the key objectives of the IRS project is to strengthen national capacity for sustainable IRS as one of the strategies for national malaria control. The PMI project, therefore, undertook to train personnel, both at the ministry and district levels. The training was in two components. First, a training of trainers is conducted to enable the county or sub-county health assistants and inspectors to acquire necessary knowledge. Second and following the training of trainers, these staff are able to train newly-recruited spray operators.

Training of Trainers (TOT)

The TOT in Kitgum occurred April 4-7, 2007. RTI, in collaboration with the MOH and the district health office, conducted a five-day TOT workshop on IRS, as well as on spray pump maintenance and repair techniques. The objective of the training was to enhance the skills and competence of participants in IRS and to identify potential spray operators and wash persons for the planned IRS exercise.

The workshop included lecture presentations, demonstrations, role plays, and practical sessions. During the training, participants received intensive training on spraying techniques (the use, operation, repair, and maintenance of the sprayer) and performed simulation exercises of spraying water on walls. The workshops also addressed issues related to the planning of IRS, including housing arrangements during spraying, record keeping, community mobilization, and safer use of insecticides (including sprayer and PPE cleanup during spraying). Participants also received training on personnel management and on environmental aspects of IRS.

A total of 110 participants attended the five-day workshop, the majority of whom were health assistants or community health workers, later designated as supervisors and team leaders, respectively, in the spray exercise. They were all drawn from IDP camps. The facilitators were drawn from the MOH.

Post-training practical assessments indicated that the majority of participants had been well-prepared to conduct appropriate supervision and monitoring of IRS activities and to act as trainers to the spray operators.

Table: Cadre of individuals who participated in the TOT

Cadre of personnel	Number	Comments
Supervisors	23	Health assistants in IDP camps
Team Leaders	80	Community workers in camps

Training of Spray Operators and Wash Persons

All selected spray operators and wash persons went through a five-day intensive IRS training. The training was conducted by the supervisors and team leaders, backed by facilitators from the MOH, the District Health Team (DHT), and RTI. The training programs were modeled from earlier TOT sessions and included all aspects of IRS techniques in accordance with WHO guidelines. In the 23 operational areas, a total of 847 spray operators (23 of whom were from the army and 52 from the reserves), and 80 wash persons were successfully trained.

Table: Human resources trained to support IRS activities for Kitgum and Pader

Type of Resource	# Persons	
	Kitgum	Pader
Supervisors	23	19
Team Leaders	80	81
Wash Persons	80	82
Spray Operators	847	796
Reserve Spray Operators	52	0
Store keepers	17	18
DHT	15	4
V C O	1	
District leaders**	3	16
Total	1,118	1,016

** District leaders were sensitized with the objective of assisting the project in mobilization of the community.

Training of Clinicians

A clinicians training exercise was conducted May 5 and 6 by the MOH. 30 clinical officers from various health units were trained on how to handle and treat ICON-related adverse effects.

Logistics Support for Spray Operations

IRS implementation in Kitgum district started on April 30 in 22 camps, including Lagoro, Oryang, Namukora, Palabek Kal, Orom, Akilok, Ogili, Lokung, Aweno Olwii, Pangira, Ngomoromo, Omiya Anyima, Padibe East, Padibe West, Madi Kiloc, Palabek Gem, Paloga, Potika A, Potika B, Kitgum Matidi, Town Council and Agoro. Nine trucks were used for logistics and transporting spray teams once the spraying exercise was underway. Two double-cabin pickup trucks were used for supervision purposes.

In compliance with best practices for pesticide safe use, drivers were checked out for accident-free records; vehicles were also checked for fitness and owners ensured that the vehicles were adequately insured. RTI entered into a contract agreement to ensure that both parties understood terms of the use of the vehicles. The vehicles were fuelled by RTI to ensure proper monitoring of usage.

A lesson learned is that drivers involved in transporting spray staff will need training in the regular cleaning of their vehicles, first aid techniques, and control of spillage in the event of an accident while commuting to spray areas. In future operations, RTI will address this important element of safety.

Other Activities

Entomological Monitoring

Entomological monitoring was a major activity of the IRS program in all districts. The activities included:

- Establishing malaria indoor resting densities of mosquito malaria vectors.
- Determine sporozoite in malaria in salivary glands of the mosquitoes.
- Check parity rates of captured mosquitoes.
- Test susceptibility status of the mosquitoes to ICON insecticide used.
- Tracing ICON residual effect and persistence on sprayed walls.

Bioassay testing was conducted by the vector control officers of the MOH in Kitgum and Pader, and the results of these tests will be forthcoming.

Monitoring and Evaluation

Summary results for the Kitgum spray round are below.

Table: Summary results for Kitgum spray round

Key Indicators	Numbers
Total structures found	88,849
Population protected	371,846
Structures completely sprayed	76,599
Structures partially sprayed	7,408
Total structures sprayed	84,007
% of targeted houses partially and fully sprayed	95
Age < 5 years protected	86,811
Pregnant women protected	14,709
Refusals	806
Absentees	2,705
Mosquito nets in sprayed houses	65,745

Partnership and Collaboration

The IRS team maintained a strong collaborative relationship with the Uganda MOH throughout the spray round, holding regular meetings and consultations to ensure smooth implementation of the spray activities and sustained capacity building for IRS. Regular contact was also maintained with district leadership to ensure that the project received support in order to attain its objectives. Links with USAID/Uganda were maintained through regular reports and briefings and Mission visits to the project, as well as participation in launches in the targeted districts. Other contacts with USAID by project staff also continued throughout the implementation period to sustain the coherence of plans and implementation.

Upcoming Activities

Preparations are currently being carried out for spray operations that are scheduled to commence in Pader district in July.

Appendix 1: Nairobi Project Start-up Workshop Objectives, Attendees, Agenda, and Technical Initiatives

PMI IRS PROJECT Start-up Workshop Nairobi, 16-18 April 2007

Objectives of the Workshop

“Getting to Know Each Other”

- Build personal relationships among RTI & partner staff
- Establish a strong basis for effective teamwork
- Share information on the capabilities of partner institutions

“Making Best Use of Our Resources”

- Clarify organizational structure and communication channels
- Provide technical information on key topics

“Defining Our Goals”

- State the project’s objectives as part of the President’s Malaria Initiative and in relation to the a long-term vision for improving malaria vector control in Africa.
- Quantify the challenges that lie ahead during PMI scale-up
- Begin setting clear performance targets for the PMI IRS Project

“Taking Stock, Celebrating Success and Doing Even Better”

- Acknowledge achievements to date and recognize “MVPs”
- Identify important issues and problems we must address
- Plan technical initiatives to improve procedures and systems

**PMI IRS PROJECT
Start-up Workshop
Nairobi, 16-18 April 2007**

Attendees

Organization	Name	Role
RTI/US	Gene Brantly	Project Director
	Jake O'Sullivan	Task Manager (Tanzania, Zambia, Malawi)
	Anna Thompson	Task Manager (Rwanda, Senegal, Madagascar)
	Robert Ssengonzi	Task Manager (Uganda)
	Melanie Biscoe	Environmental Compliance Specialist
	Jacob Williams	IVM Project Manager & Environmental Specialist
	Cheri Alexander	Project Administration Specialist
	Valerie Alvarez	Project Administration Specialist
RTI/Nairobi	John Chimumbwa	IRS Technical Director
	Kim Canelas	IRS Operations Director
RTI/Chiefs of Party	Mahdi Ramsan	COP Tanzania & Zanzibar
	John Bahana	COP Uganda
	Antonio Muhungo	COP Angola
RTI Consultants	Manuel Lluberas	IRS expert trainer (Florida, US)
	Josephat Shililu	Entomological surveillance & training (Nairobi)
	Kate Macintyre	IRS monitoring and evaluation advisor (Nairobi)
Crown Agents	Joe Coblenz	Project Manager (Washington)
	David Pearson	Procurement Manager (Washington)
	Jean Bertrand	Regional Operations Manager (Nairobi)
	Chris Gilbert	Malaria commodities expert (UK)
LATH	Eve Worrall	Project Manager & economist (London)
	Louise Kelly Hope	Rational pesticide selection expert (Liverpool)
MRC South Africa	Raj Maharaj	Director, Malaria Research Programme (Durban)
Howard Delafield	Siddhartha Swarup	IEC Expert (Johannesburg)
	Dhianaraj Chetty	IEC Expert (Addis)
USAID	Mike Macdonald	IRS Project "Cognizant Technical Officer" (Wash.)
	W. Knausenberger	Sr. Regional Environmental Advisor (Nairobi)
CDC	John Gimnig	Entomologist (Atlanta)

**PMI IRS PROJECT
Start-up Workshop
Nairobi, 16-18 April 2007**

Agenda

Monday, April 14

- 8:30 am Opening
 Welcome and Introductions – John Chimumbwa
 Brief Overview of the IRS Project – Gene Brantly
 Workshop Objectives, Agenda and Schedule -- Kim Canelas
- 9:15 am Session 1: Taking Stock – Country Presentations
 Zanzibar – Mahdi Ramsan Mohammed
 Angola -- Antonio Muhungo
- 10:45 am Break
- 11:00 am Uganda -- John Bahana
- 11:45 am Session 2: Taking Stock – Key Achievements and Issues to Be Addressed
 Technical Quality – John Chimumbwa
 Operations – Kim Canelas
 Environmental Compliance – Melanie Biscoe
 Communications & Media – Robert Ssengonzi
- 1:00 pm Lunch & Rules for the Sherlock Holmes Prize
- 2:00 pm Session 3: Capabilities and Roles of Institutional Partners
 Crown Agents Consulting, Inc. – Joe Coblenz
 Liverpool Associates in Tropical Health – Eve Worrall
 Medical Research Council of South Africa – Raj Maharaj
 Howard Delafield International – Sid Swarup
- 3:30 pm Open Time/Side Meetings
- 5:30 pm Session 4: Technical Initiatives #1
 Proposed Algorithm for Selection of Insecticides -- Louise Kelly Hope
 Cost Analysis of IRS Campaigns in PMI Year 1 – Jake O’Sullivan
 Framework for Cost & C-E Analysis of IRS Programs – Eve Worrall
- 7:00 pm Adjourn

Tuesday, April 15

- 8:30 am Reflections on Day 1
- 9:15 am Session 5: Technical Initiatives #2
 Preparing an IRS Procedures Manual – John Chimumbwa & Kim Canelas
 Overview and Proposed Contents
 Available Resources & Documents
 Discussion of the Way Forward
- 11:00 am Break
- 11:20 am Session 6: Technical Initiatives #3
 Monitoring and Evaluation – Mahdi Ramsan Mohammed
 Environmental Oversight – Melanie Biscoe

12:30 pm MIS & IT Applications – Raj Maharaj
 Lunch
 1:30 pm Session 7: Gearing Up for the Challenges Ahead
 You Think We're Busy Now? -- Gene Brantly
 Why I Took This Job -- John Chimumbwa
 Mata Mosquitos, Mata! -- Kim Canelas
 2:30 pm Open Time/Side Meetings
 5:00 pm Session 8: Project Organization, Roles & Administration
 Organization Chart & Communication Channels – Gene Brantly
 The Country-Specific Scope of Work – Anna Thompson
 Key Issues for Contract Compliance – Cheri Brown-Alexander
 7:00 pm Adjourn

Wednesday, April 16

8:30 am Reflections on Day 2
 9:00 am Session 8: DDT – The Good, The Bad, and The Ugly
 Reasons and Circumstances for Using DDT – John Chimumbwa
 The Special Challenges of Using DDT – Jacob Williams
 Uganda as an Example of the Public Debate – Robert Ssengonzi
 10:30 am Break
 11:00 am Session 9: Open Session Reserved for Discussion on Topics TBD
 (e.g., capacity building and transition of responsibilities; public relations and
 external communications)
 12:30 pm Lunch & Award of the Sherlock Holmes Prize
 1:30 pm Session 10: Closing
 Putting the Project in Context -- Michael Macdonald
 Key Actions for Follow-up – Gene Brantly
 Final Reflections – John Chimumbwa
 Vote of Thanks – Kim Canelas
 3:00 pm Adjourn

PMI IRS PROJECT Start-up Workshop Nairobi, 16-18 April 2007

Technical Initiatives

IRS Procedures Manual

Several versions of IRS guidelines exist. These include historical WHO documents, training manuals prepared by insecticide vendors and private consultants, protocols in use in active IRS programs such as the LSDI, and materials prepared for use in our own projects in Angola, Uganda and Zanzibar. This initiative will draw on such resources to create a comprehensive operational manual for use by Chiefs of Party and their staffs in our IRS programs. It will be used as a unified, consistent training manual for NMCP managers, district-level leaders and field operational personnel.

Monitoring and Evaluation, including Capacity Building for Entomologic Surveillance

Basic entomological monitoring and other data collection and evaluation work have lagged behind the start of IRS operations in every PMI country to date. This situation reflects five distinct problems:

- confusion among the respective roles and capabilities of CDC, IRS project staff, and NMCPs for M&E functions;
- the imperative to move into action quickly, with or without baseline data and agreement on M&E requirements;
- loss of momentum in the relevant Roll Back Malaria working groups (MERG and WIN) over the past year, as the relationship between RBM and the WHO/GMP was restructured;
- the lack of necessary infrastructure and capacity for entomological monitoring, including trained field technicians, graduate-level professional supervisors, insectories and laboratories; and
- differences of opinion among technical experts over what should be regarded as the minimum essential entomological data to be collected in IRS programs and the best methods for collecting such data.

Our project must have an overall M&E strategy and specific M&E plans in each country. A technical committee will be formed to prepare the strategy and consistent guidelines for developing country-specific M&E plans. The country-specific plans will be developed in parallel with the preparation of country-specific Scopes of Work.

The project must also invest substantial effort to create greater capacity in malaria control programs for performing basic entomologic surveillance. This includes coming to agreement on what data are required and selecting standard field protocols, training field technicians, supervising surveillance operations, and providing equipment, training, and supervision to improve entomology laboratories and insectories.

Cost Analysis and Economic Evaluation of IRS Programs

Maximizing the benefits of health sector interventions is a central objective of public health practice. Thus, for us to be successful, we must find ways of improving the cost-efficiency of IRS operations over time and also demonstrate that the cost-effectiveness of IRS is comparable to that of other malaria vector control methods (e.g., LLINs). Historical uses of IRS during the “malaria eradication era” did not leave clear records of their costs and benefits sufficient to satisfy modern standards of economic analysis. With the increasing use of IRS in Africa, there is a small but growing literature on IRS cost-effectiveness. To support our own short-term needs for improving efficiency and to contribute to the knowledge base on IRS, we will establish a routine protocol for capturing cost information during our IRS programs. This data will be used in conjunction with information on malaria burden from various sources (project evaluations, NMCP monitoring, PMI monitoring), when available, to evaluate the cost-effectiveness of our project activities.

Rational Selection of Insecticides for Use in IRS

To date in this project and its predecessor activities, we have supported the purchase and use of pesticides selected by MOHs without requiring a rigorous selection process based on relevant evidence and information. We intend to require a more evidence-based selection process for future decision-making. The project will provide technical support to help MOHs evaluate relevant factors and justify their selection based on an analysis of those factors, including vector sensitivity (insecticide resistance), required duration of residual effect (length of season), proportion of differing housing types in target areas (wall surfaces), and full life-cycle cost including environmental compliance. The algorithm will include consideration of steps that may be advisable to prevent or retard the development of vector resistance to particular insecticides.

We plan to proceed using at least four distinct steps:

- Develop the selection algorithm
- Obtain data on duration of effect and other variables from pesticide manufacturers or published sources
- Gather relevant local data in each country in parallel with PMI planning
- Facilitate and document the analysis and selection process

IT Applications for IRS Operations

We can improve the efficiency and impact of IRS operations by doing a better job of collecting, analyzing, and using information. There are two basic needs:

- mapping houses to be sprayed (“geographic reconnaissance”) to better organize IRS operations and provide accurate assessments of requirements for insecticide, equipment, personnel, storage and transport; and
- analysis of data from daily “spray cards” and warehouse stock records to evaluate the performance of operational personnel (spray operators, team leaders, and supervisors), track overall progress of the program, and detect pilferage.

In more advanced malaria control programs (e.g., South Africa), confirmed malaria cases are also mapped to the household level and integrated with records of IRS and other interventions to mobilize program response and improve targeting for future IRS rounds. CDC has also shown the power of using GIS technology for analyzing formal studies of

malaria control interventions and is interested in applying such tools in areas where IRS and ITNs are being deployed together (e.g., in Apac District, Uganda).

A technical team will develop specific IT applications to support the project's basic needs and evaluate options for more sophisticated uses in selected programs.

Environmental Oversight

USAID regulations require that the agency evaluate the potential impacts to the environment and human health of any proposed agency action. There are especially rigorous rules for environmental assessments of projects that support the use of pesticides. RTI has helped USAID satisfy these regulations by preparing a risk assessment for several exposure pathways associated with IRS and preparing program-level and country-specific environmental assessments. RTI has also prepared guidelines for environmental compliance and has instituted routine inspections to ensure that project-supported IRS operations comply with environmental mitigation requirements documented in the approved assessments.

There is an understandable concern among some stakeholders that our efforts to support environmental compliance for the IRS project are not sufficiently independent of our responsibility for supporting or conducting IRS operations. We agree there should be independent oversight of project activities and suggest that both USAID missions and the national environmental regulatory agencies for PMI countries should assume this responsibility. We propose that USAID organize a special initiative to train its Mission Environmental Officers (MEOs) and their counterparts in national environmental ministries to inspect IRS operations and establish routine, independent oversight of project activities. Our expertise concerning environmental assessments and compliance inspections will be useful in supporting the development of such capacity within USAID and the environmental ministries.

Appendix 2: Rwanda IEC Focus Group Moderator Guide and Questionnaire

Focus Group Guide for Moderators PNILP/USAID IRS Campaign Version 1

Introduction by Moderators

Welcome. This is a focus group organised by the PNILP and its partner USAID which is focused on prevention of malaria. The PNILP and USAID will be implementing a programme called IRS from the end of June in Gasabo, Kichukiro and Nyarugenge. We are using this focus group to improve our methods of preventing the transmission of malaria through education of local communities. We encourage everyone to participate, to be free with their ideas and not be concerned – there are no right answers. We value everyone's opinions. The moderator will try and capture the main points on each issue that we discuss. All participants must sign for the re-imbursement of their travel expenses when we close the meeting. Thank you for your participation.

General profile

1. All participants to introduce themselves (name, age, gender, occupation, address, education level)
2. What are the most important things you have to attend to every month?
3. What are the big problems facing your sector/community?
4. What are the typical health problems in the community?
5. When was the last time you used a clinic or saw a doctor/health care worker?

Malaria

1. Have you or your family had malaria?
2. How many times?
3. When was the last time?
4. Did you have to take time off work or school to recover?
5. Do you know the cause of malaria and how it is transmitted?
6. How do you prevent malaria transmission?
7. Is your family at risk of malaria? Why?
8. What prevention methods do you use at home? Which is the most effective prevention you have used?
9. What do you use to treat malaria?

Malaria control through spraying

1. Have you heard about using insecticide to control malaria? If yes, from what source – radio, newspaper, friends?
2. Do you know if it works? If yes, how does it work?
3. What do you think about this way of controlling malaria?
4. Do you know if it has been used in Rwanda or other countries? What do people say about it? Did it make a difference?
5. Would you be interested in trying it in your community? If yes, why?
6. If not, why?

If participants have no knowledge, explain the basics of spraying

- Involves use of a pesticide – (approved by govt and under strict conditions)
 - Spray team comes to your house with advance warning – you will be informed by radio, newspaper and your local community health worker
 - Spraying will take place between Mon-Saturday
 - The sprayers are specially trained to do this job
 - They spray the walls, ceiling and other surfaces- especially the areas where mosquitoes concentrate, whole process takes 20-30 minutes
 - You are required to give them access to your house
 - You are expected to remove all food, water, eating utensils, and other movable objects
 - You need to provide the sprayer with a bucket of water to use
 - The spray leaves no marks or stains on the walls
 - You must ensure that everyone is kept outside the house for at least 2 hours and the house is kept locked
 - You may enter the house only after 2 hours and you should sweep away any dead insects on the floor (the spray kills ants, bed bugs etc)
 - Your house and your family are now much safer from malaria!
7. Now that you know how this programme works - is there any reason why you would NOT PARTICIPATE in this programme? Ask them to be HONEST. (Check on possible reasons – time away from work, security, health safety concerns about insecticide, perceptions about efficacy of spraying, house is air conditioned?)
 8. What would make you more willing to participate in the programme?
 9. Do you feel your district is doing the right things to prevent/control malaria?
 10. If not, what should they be doing?

Attitudes to Communications

1. Do you read newspapers? How often? Which newspaper?
2. Do you listen to the radio? What channels are your favourites? Why do you like them? At what time in the day do you usually listen to the radio?
3. What are the best advertisements you have seen or heard recently? E.g. toothpaste, cars, cellphone what makes them interesting?
4. Have you participated in any recent malaria prevention programmes – what did you do?
5. Can you remember anything on the radio or in the newspaper recently about malaria?
6. Was it interesting/useful? Why? Did it give you new information? Was it funny, boring, colourful?
7. What do you think of when you think of malaria? Is there a colour or an image that comes to your head?
8. If you had the job to convince people to get their houses sprayed, what message would you use?