



PRESIDENT'S MALARIA INITIATIVE

## INDOOR RESIDUAL SPRAYING FOR MALARIA CONTROL



# Quarterly Report

Indoor Residual Spraying (IRS) Indefinite Quality  
Contract (IQC)

July 1, 2007 - September 30, 2007

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

Prepared for:  
United States Agency for International Development

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

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.

### September 2008

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

# Contents

Acronyms.....	2
Introduction.....	5
Angola.....	10
Kenya.....	15
Malawi.....	16
Mozambique.....	19
Rwanda.....	25
Senegal.....	38
Uganda.....	43
Zambia.....	48

## 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 Santé de Oueme (Benin)
DDT	Di-chloro Di-phenyl Tri-methyl Chloride
DHE	District health educator
DHMT	District Health Management Team
DHT	District Health Team
DNACPN	Direction National du Contrôle de la Pollution et de la Nuisance
DOMC	Kenya Division of Malaria Control
DPS	Provincial Department of Health
DPV	Plant Protection Division (Senegal)
DRS	Direction Regional de la Santé
EA	Environmental assessment
EIA	Environmental impact assessment
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization
FY	Fiscal year
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GHC	Ghanaian cedi
GHS	Ghana Health Service
GIS	Geographic information system
HCC	Health Communications Center (Rwanda)
HCP	Health Communication Partnership
HOTM	Home office technical manager
ICON	Brand of Sygenta insecticide (available in WP and CS formulations)
IEC	Information, education and communication
IQC	Indefinite quantity contract
IRS	Indoor residual spraying
ITNs	Insecticide treated nets
IVM	Integrated vector management
KAP	Knowledge, attitude and practices
LATH	Liverpool Associates in Tropical Health
LLN	Long-lasting (pesticide-treated) net

L	Liters
LNA	Logistics needs assessment
LSTM	Liverpool School of Tropical Medicine
M	Meters
MCP	Malaria Control Program
M&E	Monitoring and evaluation
MACEPA	Malaria Control and Evaluation Partnership in Africa
MOA	Ministry of Agriculture
MOE	Ministry of Environment
MOH	Ministry of Health
MOHP	Ministry of Health and Population
MOP	Malaria Operational Plan
MOU	Memorandum of Understanding
MRTC	Malaria Research and Training Center
MSD	Ministry of Social Development
NBO	Nairobi Regional Office
NEMA	National Environment Management Authority
NGO	Non governmental organization
NMCP	National malaria control program
NVCC	National Malaria Control Centre (Zambia)
ORHB	Oromia Regional Health Bureau (Ethiopia)
ONE	Office National de l'Environnement
PEA	Programmatic environmental assessment
PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
PNLP	Senegal, 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
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 United States Agency for International Development (USAID) to support the use of an effective malaria control intervention in Africa.

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

The main objectives of the project are to:

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

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

# Project Management

---

As USAID and the Centers for Disease Control and Prevention (CDC) complete the fiscal year 2008 malaria operating plans for the President's Malaria Initiative (PMI), it was confirmed that indoor residual spraying (IRS) would be included in the plans for every PMI country. Thus, the rapid scale up of activities under the IRS IQC continues. Under the core element of the project, RTI focused its attention this quarter on staffing in Washington and Nairobi in order to meet the project's needs and developing key reference documents, including the operations and training manuals.

## ***Project Management***

### *Staffing*

RTI took the following actions to add project staff in Washington:

RTI opened two positions for IRS task managers. The staff previously included three task managers, each of whom manages work in 2-3 countries. RTI needs two more people in this function to support start-up and provide home-office backstopping for all 15 PMI countries. RTI hired Ms. Bijou Muhura as the fourth task manager in September; and she will support IRS programs in Benin and Mali. RTI is still recruiting for a fifth task manager, who speaks Portuguese, to take over support duties for IRS programs in Angola and Mozambique.

RTI also opened a project assistant position to provide home office support for communications, reporting, and records maintenance. Ms. Jill Jensen has been selected and will start work in October.

RTI opened two positions for IRS environmental assessors, based on the projected workload for preparing and amending supplemental environmental assessments (SEAs) in all PMI countries. Recruiting for these positions is underway.

RTI has also taken steps to create several positions in the project's Nairobi regional office and is recruiting to fill the most important roles:

RTI created two positions to support the project's financial management function, IRS regional controller and finance manager. Mr. Francis Kathuku has been selected as the finance manager and is available to start in October, assuming approval by the USAID contracting officer. RTI is still considering candidates for the regional controller position.

RTI created a project position for human resources manager, to provide guidance and oversight to IRS project chiefs of party (COP) for recruiting and hiring, setting salaries and benefits, and other issues with regard to "cooperating country national" employees. Recruiting for the position is underway.

RTI created positions for two environmental compliance inspectors, who will conduct environmental audits of ongoing IRS activities and provide training on environmental compliance requirements to COPs and other program staff.

### *Management Visit to Nairobi Office*

Gene Brantly travelled to Nairobi at the end of September on the first leg of a three country trip. He met with John Chimumbwa and Kim Canelas to develop the full staffing plan for the Nairobi regional office, met with several new members of the Nairobi staff, and interviewed candidates for other positions. Kim Canelas reviewed several problems that were causing delays in completing set up of the Nairobi office, concerning furniture purchase, IT and phone services, and hiring local staff. A key problem was the ongoing delay in obtaining work permits for John Chimumbwa, Kim Canelas, and their families, and in securing delivery of the Canelas' household goods.

In advance of the trip, Gene Brantly met with senior staff at Crown Agents in Washington to sort out a series of issues that have arisen in the execution of the subcontract, including how to minimize delays when a waiver is required from the USAID contracting officer, improving the accuracy and completeness of Crown Agent invoices and the timeliness of RTI payments, proposed staffing for Crown Agents in Nairobi, and a new mechanism for authorizing preparatory work in advance of country-specific task orders.

While in Nairobi, Mr. Brantly conveyed the results of these discussions to Kim Canelas and Crown Agents' operations manager based in Nairobi, Ms. Jean Benedict. The three managers reviewed the anticipated schedule of assessments and spray launch dates for the coming year and developed a logistics tracking system that will help ensure more efficient sharing of information on the status of procurement, shipping and delivery of project commodities. They clarified the full range of preparatory activities that Crown Agents must complete in advance of procuring insecticides and equipment, so these may be included in a generic scope of work for future task orders that RTI will issue to Crown Agents.

### *Reporting*

In response to a request for more frequent reports on the status of actions in each country, RTI began submitting weekly updates on IRS project activities in September. The updates are sent via email to USAID and include a section reporting the most recent events and issues in each country. The updates are prepared by the task manager. Initial feedback on the updates is positive and RTI intends to continue the practice.

### **Technical Progress**

Project-level technical activities during this quarter focused on developing the operations manual, training manual, and additional guidance for environmental compliance consistent with the priorities discussed at the project start-up workshop in April.

### *Operations Manual*

Ms. Susan Voskuil, head of project administration for RTI's International Development Group, coordinated work to develop and document new procedures for addressing some of the challenges that have arisen in IRS operations. She and Abrar Sattar, a project administration specialist, began developing a set of administrative procedures on the following topics:

- Options for hiring and paying seasonal workers, including:

- Subcontracting to a third party employer of record
- Establishing a memorandum of understanding with the host country Ministry of Health, under which the Ministry serves as employer of record
- Hiring seasonal workers as day labourers without a service agreement or other form of written contract.
- Procedures for investigating and reporting incidents, such as road accidents, pesticide spills, and other events involving actual or potential injuries.
- Revisions and clarifications of COP authorities regarding hiring and firing staff, engaging consultants, managing project funds, negotiating leases for offices and warehouses, completing legal registration with the host country government, and obtaining/issuing approvals for project travel.
- Obtaining email accounts and access to RTI network systems for new project staff, when such staffs are hired as consultants because RTI is not registered in the subject country.
- Managing work flow for the high volume of procurement required on the IRS project.

### *IRS Training Manual*

Dr. John Chimumbwa prepared materials for the first draft of a comprehensive IRS training manual. The manual will include background material on malariology and malaria vector entomology, with practical sections and annexes on the following topics:

- Planning IRS
  - Geographic reconnaissance
  - Estimation of sprayable surface
  - Logistics assessment
  - Insecticide selection
- IEC for community mobilization
- Implementing IRS
  - Application equipment – the compression sprayer
  - House spraying techniques
  - Cleaning equipment and waste management
- IRS safety
  - Personal protective equipment
  - Safety procedures
  - Safe storage and transportation
  - Managing acute pesticide poisonings
  - Emergency preparedness
- Program management
  - Roles and responsibilities
  - Scheduling – the GANTT chart
  - Record keeping
  - Monitoring and evaluation
  - Entomological baseline and surveillance

The manual will be completed early in the next quarter, field tested in several countries, and then finalized based on trainers' experiences in the trials.

### ***Financial Progress***

From July through September 2007, the IRS task order one (TO1) project incurred \$6,251,105 in costs. Total project costs incurred contract-to-date as of September 2007 are \$9,321,532 against funds received of \$35,747,717. Appendix 1 provides more detailed information on financial status.

### ***Management Priorities for Upcoming Quarter***

During the next quarter, RTI will continue to focus on adding staff in Washington and Nairobi to meet the project's anticipated workload and preparing the training and operations manuals.

# Angola

---

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

Working initially under the U.S. Agency for International Development (USAID) Integrated Vector Management (IVM) project, RTI assisted the Angolan National Malaria Control Program (NMCP) with its IRS program 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 Centers for Disease Control, RTI is also tasked with completing epidemiological and entomological studies of the risk of malaria transmission in the city of Luanda and 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

### *Planning and Assessment*

Beginning in June 2007 and continuing through this reporting period, the PMI planning team and the NMCP developed the PMI malaria operating plan (MOP) for fiscal year 2008. The FY08 MOP will be approved officially in early October; however, essential details on IRS targeting have already been communicated to RTI to support planning for IRS round three, scheduled to start in November. Activities during fiscal year 2008 constitute "Year 3" of the PMI program in Angola.

During Year 3, IRS operations will be discontinued in Cunene and Namibe provinces. Malaria rates are lower in Cunene and Namibe than in Huila, and access to effective antimalarial drugs and ownership of insecticide-treated nets are expected to increase substantially during the coming year in these locations. The size of the IRS program will remain approximately the same, however, with continued operations in Huila Province and a new program in Huambo, the second most malarious province in Angola. PMI has set a target of spraying 120,000 households to protect 600-700,000 residents in Year 3.

### *Logistics Assessment*

The chief of party (COP) and logistics manager travelled to Huambo municipality to meet with local officials and gather information for preparing a logistics and operational plan for the new IRS sites in Huambo province. The current plan calls for spraying approximately 60,000 houses on the outskirts of Huambo municipality, protecting approximately 300,000 people. The following is a brief summary of the operational plans for Huambo and Huila that will be executed for round three:

- Huambo
  - 60,000 houses to be sprayed over 21 days of operation with a target of 2880 houses sprayed per day
  - 360 spray operators with a target of 8 houses sprayed per day
  - Operators will be organized in teams of 8 with 3 teams per brigade. This produces 45 teams and 15 brigades.
  - The communications program will engage 120 IEC activists
  - Schedule: Local radio announcements will start in late October and IEC field mobilization visits will start on 6 November. IRS operations will run from 13 November to 12 December, with a reserve period to 21 December if required, assuming timely delivery of required insecticide and equipment.
- Huila
  - 80,000 houses to be sprayed in the outskirts of Lubango municipality and Chibia town.
  - 41 days of operation with a target of 1920 houses sprayed per day
  - 240 spray operators with a target of 8 houses sprayed per day
  - Operators will be organized in teams of 8 with 3 teams per brigade. This produces 30 teams and 10 brigades.
  - The communications program will engage 90 IEC activists
  - Schedule: Local radio announcements will start in early November and IEC field mobilization visits will start on 20 November. IRS operations will run from 27 November to 6 February, with a break from 24 December to 6 January for Christmas. A reserve period to 15 February will be used if needed. The schedule assumes timely delivery of required insecticide and equipment.

### *Pesticide Selection*

The southern region of Angola is at risk for malaria epidemics for 6-7 months each year. To provide protection from malaria for this entire period, the NMCP should use an insecticide that is effective for six months or longer on mud walls, the predominant wall surface in this region. The only WHO-approved insecticide with well-demonstrated effect for six months or longer is DDT. However, the Ministry of Health has to date not agreed to use DDT in the IRS program. In rounds one and two, therefore, RTI used a pyrethroid insecticide (lambda cyhalothrin, ICON WP®) approved by the NMCP.

Recent data from studies in Uganda have shown that a new, encapsulated formulation of lambda cyhalothrin (trade name ICON CS ®) may provide a lethal dose of insecticide to mosquitoes for six months or longer when applied at recommended rates. Based on this study, the PMI focal point has recommended to the NMCP that ICON CS® be used in round three. The NMCP is considering this recommendation. Several other countries are also considering using this new product, and its manufacturer has not yet established the necessary

capacity to meet growing demand. At this time, RTI is not sure whether the NMCP will approve the use of ICON CS® or, if it does, whether a sufficient amount of the insecticide will be available for purchase in time to start IRS operations as scheduled.

## ***Procurement and Logistics***

### *Pesticides*

As of the close of this reporting period, RTI has contacted the only registered distributor for ICON WP and ICON CS in Angola to determine the availability of the required amounts of each insecticide. RTI has not yet placed a firm order pending the NMCP's decision and USAID's approval.

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

Requirements have been defined and communicated to RTI's procurement agent; procurement actions are underway.

## ***Other Activities***

### *Entomological Monitoring*

Although training on bioassay methods was provided to 12 technicians in May, it has not been possible to conduct routine bioassays in the field to determine the duration of effect of insecticide applied to houses during round two. Efforts to prepare an insectary have been stalled until the NMCP identifies a site for the insectary and associated entomology laboratory. Another constraint – the lack of specific equipment and materials required for cone bioassays -- is being resolved by ordering the necessary supplies from the Medical Research Council of South Africa.

RTI is continuing to support periodic mosquito collections in Cunene, Namibe, and Huila provinces to document the presence and seasonality of anopheline mosquitoes.

## ***Monitoring and Evaluation***

In June 2007, the USAID Office of Inspector General criticized the PMI program for failing to verify the quality of data being used to report PMI progress. In response, PMI initiated data quality audits in the three "Year 1" countries, including Angola. Mr. Zachary Levy, Monitoring & Evaluation Specialist, arrived in Angola on or about August 1 to conduct a data quality audit, with assistance from Dr. Jules Mihigo, CDC Resident Advisor for PMI. RTI's Chief of Party had prepared data reports for the auditors to review and arranged a field visit to Lubango for the audit team. In Lubango, the DQA team reviewed RTI's data collection forms and data bases, recalculated key indicators, and visited a few sprayed houses.

The audit team discovered data transcription errors associated with spray activities in Huila province in January, February, and early March 2007. Data entry personnel recorded houses as "not sprayed" only if the reason given was "refusal," and improperly omitted houses from the not-sprayed category if the reason was "sick resident," "newborn child," "not home," "recent death in the family," or "other." This error resulted in an undercounting of "houses not sprayed" and an over-estimate of the percent coverage achieved during round two. The audit team reported its results in a memorandum dated August 17. In addition to requiring

that RTI correct and resubmit final data for round two, the audit team made the following recommendations for round three:

- Use uniform data collection instruments at all locations and a single database for recording data for all provinces
- Employ a Monitoring and Evaluation Officer who is responsible for ensuring data quality
- Provide final results within 30 days of completing the round
- Clearly define and record agreed targets for round three.

RTI did correct and resubmit the final data for round two. The corrected, final results are shown below, and have also been reported in the quarterly project report for the April-June period, during which round two was completed.

**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	<b>87.4</b>	425,588
Cunene	11,000	9,125	1,485	10,610	<b>86.0</b>	49,174
Namibe	35,000	23,457	6,603	30,060	<b>78.0</b>	138,014
<b>TOTAL</b>	<b>140,000</b>	<b>110,826</b>	<b>19,392</b>	<b>130,218</b>	<b>85.1</b>	<b>612,776</b>

***Project Management and Administration***

*Staffing*

RTI is in the process of recruiting additional staff to support and manage IRS operations in Huambo. RTI expects to hire an Operations Officer, Reporting Officer, Environmental Compliance Officer, Entomology Technician, and administrative assistants for the Huambo office.

RTI hired a Monitoring and Evaluation Specialist in response to recommendations from the PMI audit team. The specialist left for another position soon after joining the project, however, and RTI is in the process of recruiting a replacement.

RTI is also recruiting for a new Finance Manager. Candidates were interviewed in early September. RTI expects to complete reference checks and employ the successful candidate early in the next reporting period.

***Partnership and Collaboration***

*National Partners*

RTI is negotiating a new Memorandum of Understanding with the NMCP. The MOU will clarify the roles and responsibilities of each partner, establish agreed indicators and mechanisms for measuring progress, and describe expectations for communication between the NMCP, RTI, and local authorities.

## **Outstanding Issues**

The most important issue at this time is resolving pesticide selection and completing procurement so that required commodities will arrive in time to start IRS operations as scheduled.

## **Upcoming Activities**

- Complete procurement and delivery of commodities required for round three
- Make arrangements to conduct a baseline entomological survey in Huambo province prior to the launch of IRS operations. The survey will be performed by a team from the university Faculty of Sciences.
- Recruit and employ a Monitoring and Evaluation Officer
- Complete selection and employ a new Finance Manager
- Recruit and employ an operations team for Huambo
- Provide training for round three staff to assure use of uniform data collection instruments at all locations
- Establish data entry and reporting procedures to create a single, unified database for recording data at all operational sites in Huila and Huambo provinces

# Kenya

---

Kenya was 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 season.

This quarterly report summarizes the program's progress from July through September 2007.

## Current Activities & Accomplishments

### *Payroll Support for Non-Government 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 to approximately 4,500 spray operators and drivers in 16 districts.

During this reporting period, Crown Agents supported payroll delivery for three weeks, with the last payroll on July 21, 2008. Crown Agents completed all documentation and account reconciliation by mid-August and provided final records to RTI.

## Upcoming Activities

Based on recent discussions, RTI anticipates there will be a greater technical involvement with the DOMC's 2008 IRS program. Preparations for the 2008 program should begin during the next quarter.

# 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

Kim Canelas, RTI's IRS project logistics director, visited Malawi during this quarter from July 16-20 to interview chief of party (COP) candidates and plan logistics for the upcoming spray round.

Jake O'Sullivan, Malawi task manager, visited the country September 12-October 2 to orient the new COP, Samson Ojesi, establish a business presence in Malawi, and help prepare for the upcoming spray round. Mr. O'Sullivan also oriented the new office manager, Charity Mauluka.

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

#### *Environmental Assessment*

Melanie Biscoe, environmental scientist, submitted a project brief and the terms of reference for an environmental impact assessment (EIA) to meet the Malawi environmental requirements for the use of IRS in malaria prevention. The supplemental environmental assessment (SEA) and EIA are being completed as a single activity with separate outputs. The SEA is completed in draft form and under review.

#### *Pesticide Selection*

There has been considerable discussion among stakeholders both within Malawi and in the U.S. over choice of pesticide. Preliminary susceptibility tests show that vectors in Nkhotakota are susceptible to all approved pesticides available and registered for use in Malawi. In September of this reporting period, Dr. John Gimnig, CDC entomologist, wrote a sole source justification for the purchase of ICON 10CS. The reasons for this choice are susceptibility and duration of efficacy. This formulation of lambda-cyhalothrin has shown to be longer lasting than other pyrethroids and holds a potential for use as a "DDT substitute" in areas of unimodal transmission. Since the use of DDT is being considered in Malawi, monitoring the duration of ICON 10CS can provide valuable data for future program decisions.

## *Logistics*

On September 19 at the Malaria Alert Center Library, Medical College Blantyre; Carl Campbell (CDC-Malawi); John Gimnig (CDC-Atlanta); Themba Mzilahowa (Medical College, Blantyre); Samson Ojesi (RTI); Jake O'Sullivan (RTI); and John Chiphwanya (NMCP) met to plan the upcoming spray round. The purpose of the meeting was to delineate the spray area, review the population distribution within the spray area, and project current population levels from last known census data in order to plan coverage and logistics.

Key issues discussed were:

- **Wall space.** The pesticide requirement for household compounds in Nkhotakota needs to be verified. Current estimates for one sachet per household seem high. Jake O'Sullivan, John Chiphwanya were designated to follow up and review in Nkhotakota.
- **Entomological monitoring.** Themba Mzilahowa briefed participants on the vector distribution in the Nkhotakota spray area, vector susceptibility to approved pesticides, and future plans for entomological monitoring. All *Anophelines* found in the area are currently susceptible to all pesticides tested.
- **Area mapping.** Detailed mapping of the area shows some small population clusters in the north of Nkhotakota may be of such low population density and wide dispersion that they do not justify IRS, but would be better served with ITNs. This will be verified in the final geographic recognizance of the area. Care will be taken to assure that the "edges" of the spray area do not cut off abruptly in population clusters.

## **Procurement and Logistics**

### *Pesticides*

A request for task order proposal (RFTOP) was given to Crown Agents September 6 covering pesticides and personal protective equipment (PPE). Period of performance is October - November 2007. Target date for delivery of pesticide to Malawi is October 5.

### *Spray Pumps & Parts*

The RFTOP given to Crown Agents asks for 130 10-liter Hudson Xpert pumps with spare parts.

### *Personal Protection Equipment*

The PPE specifications given to Crown Agents for procurement were modified after input from the Malawi district health management team. The new specifications were forwarded on September 20, 2007. This will not delay procurement.

## **Project Management and Administration**

### *Staffing*

Kim Canelas interviewed COP candidates in July and selected Samson Ojesi. Mr. Ojesi was approved by USAID Washington as COP and assumed his duties September 17. He resigned

his position on September 21 for personal reasons. Recruitment for a replacement began immediately. Charity Mauluka was recruited as office manager for the project. She assumed her duties in September.

#### *Office & Warehouse Space*

RTI identified a small office space in Arwa House in City Center Lilongwe. Lease negotiations are underway.

### **Outstanding Issues**

The loss of the COP at this time is a risk for the timely accomplishment of spray activities. RTI will proceed with all deliberate speed to recruit and retain a replacement.

### **Upcoming Activities**

RTI will oversee completion of procurement for the country. RTI will also continue with recruitment of a new COP and the planning of spray operations.

# Mozambique

---

Mozambique was identified by the United States Agency for International Development (USAID) as one of the second wave of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). The USAID and the Mozambique National Malaria Control Program (NMCP) identified six epidemic-prone districts (Quelimane, Nicosadala, Namacurra, Murrumbala, Milange and Macuba) for indoor residual spraying (IRS) activities. In 2007, the USAID and NMCP agreed to focus spraying activities in all six districts with the intention of continuing coverage in these, and possibly expanding IRS to additional 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 NMCP will treat at least 85 percent of households and protect 1.7 million people with residual insecticide in the six districts during the first round of IRS in the country. In addition, RTI will provide support to the NMCP to strengthen epidemic preparedness and response plans in collaboration with partners Liverpool Associates in Tropical Health (LATH), the Medical Research Council (MRC), and Crown Agents (Crown).

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

## Current Activities & Accomplishments

### *Start Up*

Patricia Preware, home office technical manager for the Mozambique IRS project, conducted a start-up visit with the following objectives:

- Meet with USAID/Mozambique and NMCP representatives to discuss draft work plan and spray activities
- Meet with local implementation partners to discuss roles and responsibilities
- Identify office space and sign lease
- Open bank account
- Identify office furniture vendors
- Visit Zambezia province and districts that will be sprayed
- Advertise job openings in local newspaper
- Clarify the Mozambican Ministry for the Environment's (MICOA) environmental impact assessment (EIA) process
- Initiate project registration process

### *Partner Meetings*

USAID and NMCP: Discussions focused on staffing and the level of support RTI would provide the NCMP for IRS operations. NMCP representatives established that the NMCP has few funds to support major operations and would therefore appreciate any assistance from USAID/RTI. The expansion of IRS operations, the use of di-chloro di-phenyl tri-methyl

chloride (DDT), and waste management were also discussed. Rosa Marlene also informed partners that the spray operations start date had been moved from August 1 to September 1.

MICOA: RTI performed a supplemental environmental assessment (SEA) of the Zambezia province as required by USAID regulations, and is now in the process of approving the SEA through the MICOA. During the start-up visit, Ms. Preware learned that RTI must hire a MICOA-accredited consultant to draft terms of reference (TOR) for an SEA and submit them to the MICOA for approval. Once the MICOA approves the TOR, the SEA can then be reviewed for adherence to MICOA regulations.

After discussions with an environmental consultant, RTI learned that because all IRS activities would be performed in Zambezia, only an abbreviated application needed to be submitted to the MICOA. RTI submitted the necessary application information to the Zambezia MICOA on August 22.

Other activities:

- A bank account was opened when Kim Canelas, director of operations for the IRS project, visited the country during this quarter.
- Office space was identified and a lease has been signed.
- Furniture and computer equipment vendors were identified.
- Job advertisements were placed in Noticias newspaper via Crown Agents and CVs are being collected for review.
- Ms. Preware planned to visit Zambezia Province, but she was unable to do so because of delays getting approval from the Ministry of Health (MOH) for the trip.

## ***Planning and Assessment***

### *Logistics Assessment*

Mr. Canelas, Elizabeth Streat of the Medical Research Council, Michael Coleman of LATH, and Mario de Almeida of Crown Agents Mozambique participated in an RTI fact-finding mission July 9 to July 13, 2007. The purpose of this mission was to carry out the required logistics needs assessment under IRS activities in Mozambique prior to finalizing logistical arrangements.

The team visited Quelimane City, Nicoadala, and Namacurra districts, which at the time were the only districts covered by the RTI task order for the implementation of IRS activities. The team met with all concerned authorities from the provincial and district directorate staff involved in IRS activities.

The team learned how IRS had been implemented by the provincial and district health authorities previously and assessed existing conditions in the field and needs for the upcoming IRS campaign.

### *Environmental Assessment and Compliance*

The SEA for Mozambique was completed by Melanie Biscoe, RTI environmental specialist. However, final approval by USAID is contingent on approval by the MICOA. RTI submitted the required documentation to the Zambezia MICOA on August 22 and MICOA approved the SEA on September 5. A final version of the SEA has been submitted to USAID Mozambique and Washington for signatures and final approval.

### *Pesticide Selection*

The government of Mozambique has already formulated an IRS strategic framework covering three classes of insecticides: carbamates, organochlorides, and pyrethroids. For the 2007 IRS campaign, the Mozambican government has proposed the use of DDT 75 percent wettable powder for 90 percent of the structures (rural and traditional houses) in the six districts and the remaining 10 percent (urban areas) to be covered by deltamethrin 10 percent WP, both of which have already been procured by the government in sufficient quantities to meet the necessary insecticide demands for all six districts during the 2007 malaria transmission season.

### **Procurement and Logistics**

The following items have been procured for spray operations in Mozambique:

#### *Spray Pumps & Parts*

<b>Spray Procurement Item</b>	<b>Number of Items</b>
Two-gallon cans (8 liters)	650
Sprayer kits	55
Nozzles (appropriate type for DDT )	1,300
In-line filters	1,300

#### *Personal Protection Equipment*

<b>PPE Item</b>	<b>Number of Items</b>
Poly cotton 1 piece overall	1,800
Black PVC Gumboots with steel toe cap	900
Helmets	900
Faceshield bracket lift front	900
Visor Clear 8"x12" .040	900
Heavy duty rubber gloves - industrial medium size	900
Respirator Mask #2: Valved, foldable	29,250
Reflecting jacket	42
Aprons	120

Repair of old spray pumps was carried out September 10-16 and a total of 650 used pumps were restored to working condition. Newly purchased spray cans/pumps are also in the country and available for spray activities.

Provincial department of health (DPS) protective suits were cleaned; only 1,110 used suits are available in the province.

### **IEC Development and Implementation**

#### *Training of IEC Mobilizers*

Mobilizers from all six districts were trained between September 11 and 14. 446 community mobilizers participated. Mobilizers were selected from their home villages to promote community interest in the spray activities. Mobilizers reproduced and distributed pamphlets.

### *IEC Campaign Implementation*

Mobilization activities began on September 17. Mass media through Radio Mozambique and community radio stations has been ongoing since September 19 and will continue until the end of spray operations.

### ***Spraying Operations***

The NMCP and MOH informed RTI that the start date of spray operations has been shifted from August 1 to September 1. Spraying for Quelimane, Nicoadala, and Namacurra districts is scheduled to start on October 1. RTI will first spray remote areas and villages that were missed in the last season and then progressively spray toward the main centres of each locality.

### *Environmental Mitigation Set-up*

RTI constructed wash water disposal pits in all three districts using a standardized size and gravel/charcoal contents. RTI has also ensured that the pits are not near other water sources (e.g. potable water). Triple lines for the pumps have been established in the localities to ensure minimal environmental contamination and wastage of DDT.

### *Recruitment and Training for Spray Teams*

The first group of spray operators from Quelimane, Nicoadala, and Namacurra were trained September 17-27. Training included practical field experience using DDT. A total of 550 persons participated in the training. They returned to their respective districts on September 28. The participants included 433 spray operators, 24 supervisors, 72 team leaders, and 21 coordinators.

The second group of spray operators (for Milange, Mocubaand, and Morrumballa) will begin training on October 1. Two nurses manned a makeshift emergency room for 24 hours daily to ensure the care and support of spray operators.

### *Logistics Support for Spray Operations*

RTI organized transport logistics for the spray operators and community mobilizers.

- Approximately 76 vehicles will be sourced for mobilizer and spray operator transportation in all six districts.
- A boat was identified for team transportation between two islands in Nicoadala.
- 230 bicycles were repaired and distributed.
- Spray pumps used in previous campaigns were rehabilitated for the training of the first 550 spray operators and the spraying of Quelimane, Nicoadala, and Namacurra districts.
- New spray pumps were received in Quelimane on September 17 and were used to train the second group for Mocuba, Morrumballa, and Milange districts.
- Construction of the wash water pits for the first three districts was completed on September 28, while work in the other three districts is expected to be completed the first week of October.

## **Other Activities**

### *Entomological Monitoring*

RTI is working with LATH to plan entomological monitoring activities for the IRS operations in Zambezia province. Mr. Coleman has already begun field work in Zambezia and will be working to implement an entomological monitoring plan for USAID-supported IRS activities.

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

The NMCP requested support from RTI for entomology field training. RTI began working with the NMCP to help fund a small team of entomologists to provide their services in Zambezia.

The provincial department of the MICOA was asked to require some of its employees to participate in the IRS program as supervisors of their respective districts. Each department assigned one district supervisor to work on the district supervisory team during the campaign. These representatives relocated to the training center to review the spraying activity and educate spray operators on the importance of protecting the environment from pollution and leakage from the chemical to the agricultural sector. This is the first time a multi-sectoral approach has been implemented during the IRS campaigns, and more interaction through consultative meetings is imminent. This collaboration is the basis for the formation of an IRS working group, which does not currently exist in the province.

## **Project Management and Administration**

### *Staffing*

RTI began recruitment for IRS staff, including a chief of party (COP), technical specialist, finance officer, logistics officer, and office manager. RTI identified and hired a finance manager and an office manager and is currently recruiting candidates for the remaining positions.

Crown is providing logistical and procurement support to the project. Therefore, Crown also has a logistics officer and other support staff assigned to IRS in Zambezia.

RTI has hired an interim COP to oversee operations in Mozambique until the full-time position has been assigned. The interim COP will work with USAID, the NMCP, the Zambezia provincial health department, and other RTI partners to supervise and direct RTI-supported IRS activities.

### *Office & Warehouse Space*

RTI identified and leased office space in Maputo (main office) and Quelimane (provincial field office). Suitable warehouse space was identified in Quelimane and is large enough to accommodate all RTI and provincial health department procurement items. Because the DPS warehouse was prone to flooding, RTI also rented warehouse space to accommodate storage for the DPS and RTI's IRS procurements.

## ***Partnership and Collaboration***

### *National Partners*

Collaboration and coordination with the DPS, MICOA, and Ministry of Agriculture (MOA): MICOA and MOA supervisors have been identified to provide provincial- and district-level oversight for the whole spraying period to ensure environmental and agricultural compliance in relation to DDT use.

### *USAID Partners*

RTI has worked with Crown on all logistical planning and implementation aspects of IRS activities.

RTI is working with LATH on entomological activity planning and implementation. RTI and LATH are in the process of finalizing the scope of activities for entomological monitoring in Mozambique, according to approved USAID activities.

While RTI had intended to work with the MRC on technical oversight for the operational aspects of the IRS campaign, the organizations were unable to agree on the scope of work for activities. RTI has therefore initiated technical oversight without the MRC.

## **Outstanding Issues**

- Continued recruitment for open country office and field office positions.
- Clearance of RTI-procured DDT from Maputo and transportation to Zambezia.
- Establishment of the IRS working group.
- Purchase of office equipment and furniture.

## **Upcoming Activities**

- Training of the second group of spray operators.
- Initiating operations in all the districts.
- Entomological survey by the MOH and MRC/LATH in the operational areas.

# 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 July through September 2007, and the report summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

## Current Activities & Accomplishments

### ***Start-Up***

In anticipation of the commencement of IRS operations on July 16, RTI's IRS technical and management support team (Dr. Chimumbwa, Jacob Williams, and Anna Thompson) visited Rwanda to provide technical leadership and management oversight for the training of trainers (TOT), the start-up of spray operations, and technical assistance/training on environmental mitigation and compliance. Prior to establishing a start date for IRS operations, the USAID and RTI technical and management support team worked to resolve pending issues and increase collaborative efforts with the NMCP. Meetings were held at the ministerial level to discuss the IRS program in Rwanda and its implementation. The Minister of Health expressed his support for the program and agreed to an August 3 start date. However, due to several pending items required for spray operations, the date was postponed by the government of Rwanda.

During the start-up phase, the program encountered a number of challenges:

- Implementing activities was difficult due to shifting timelines that were determined solely by senior management decisions within with the MOH.
- Following initial discussions, the timing and launch of spray operations appeared clear to RTI until the RTI team learned in July that the MOH would propose a launch date after the submission and approval of a cabinet paper on IRS.
- The process of registration was not well communicated to RTI, as the NMCP emphasized registration with the ministry of local government. Preliminary registration was provided by the MOH, and thereafter permanent registration could be sought by RTI from the ministry of local government.

- Identification of field offices in Gasabo and Nyarugenge districts was also challenging. Kicukiro district authorities provided free offices for the IRS program. The program anticipated support for office space by district authorities in Gasabo and Nyarugenge but had to rent office spaces due to the unavailability of office space within the district administration.

#### *Memorandum of Understanding (MOU) and Temporary Registration*

The MOU was signed on July 6, 2007 by the MOH after a follow-up by a team including John Chimumbwa, RTI technical director, David Rugero, IRS country program manager in Nairobi, and John Dunlop, senior health officer for USAID/Rwanda. On July 5, the team met with the MOH director of health care and obtained official permission to initiate IRS operations. The team signed a temporary IRS registration form on July 12.

#### *Start-Up Partner Meetings*

Several meetings were held between RTI and key stakeholders in July. RTI met on one or more occasions with: the NMCP; USAID; UNICEF; district health offices of Gasabo, Nyarugenge, and Kicukiro; and the Minister of State in charge of HIV/AIDS and other epidemics among other stakeholders. All were debriefed of RTI plans for the IRS program.

### **Planning and Assessment**

#### *Logistics Assessment*

The NMCP called for a meeting with the IRS steering committee on August 2 to oversee the implementation of IRS operations. Participants included RTI, the NMCP, USAID/PMI, MOH, and Kigali City Council. This first meeting focused on training of sprayers and information, education, and communication (IEC) implementers and on the terms of reference for the IRS steering committee. Members agreed that meetings should be held every morning at 8:00 a.m. in the NMCP office. Members were given feedback on plans for medical examinations for sprayers; members also reviewed a list of proposed people to be trained as IEC implementers and the IEC information sheet for Kinyarwanda, as well as RTI's training module.

A subsequent steering committee meeting included an update of IRS training and a screening of unqualified candidates submitted as prospective spray operators by the NMCP/districts. In this meeting, the NMCP agreed to prepare a final list of sprayers excluding students and old people. The meeting also focused on official closing ceremony activities, the training of sprayers, and establishing a list of sector managers and supervisors to the NMCP and USAID.

In addition to its regular members, this IRS steering committee meeting was attended by the Kigali City and Gasabo district vice mayors in charge of social affairs and representatives of the Rwanda Agriculture Development Authority (RADA), Rwanda Environment Management Authority (REMA), Rwanda Bureau of Standards (RBS) and World Health Organization (WHO). This meeting focused on the final details of the IRS official launch, such as number of people invited and a progressive report on preparations at the launch site. Also discussed and agreed upon were the rates of wages for sprayers and other people engaged in IRS, including team leaders, supervisors, IEC implementers, washers, and sector managers.

Meeting participants agreed that working days would be Monday through Saturday and that sprayers can continue to work on Umuganda (Community Work) Day. An operational plan was concluded that spraying would start with vulnerable areas along the swamps, gradually moving up the hills to safer areas.

RTI confirmed its logistics plan and agreed upon a list of restaurants identified for sprayers' breakfasts. The list was then sent for approval by the district-level health representative.

The RTI team explained the IRS implementation plan and trained the district health officers in environmental monitoring and compliance. The NMCP and RTI discussed an IRS cabinet paper, whereby the PNILP requested that RTI help prepare the paper. The RTI team learned that the implementation and timing of spray operations were dependent on the approval of the cabinet paper.

### *Environmental Assessment and Compliance*

Mr. Williams and Mr. Rugero met with the MOH official in charge of pharmacies to inspect storage facilities; they also met with Mable Busingye, Kicukiro RTI district operations manager. The meetings and subsequent visits to storage facilities revealed that not all stores were in good condition and some needed to be changed. The meeting participants emphasized that all storage facilities for IRS insecticide and other equipment must meet MOH standards.

### **Procurement and Logistics**

Crown Agents procured and delivered (through its clearing agent COIMEX) insecticide, personal protective equipment (PPE), and pregnancy test kits between July 4 and 16. By the end of July, all materials had been cleared through customs and were stocked in the CAMERWA warehouse. During the reporting period, the following activities were achieved by the logistics and procurement department:

- ICON and protective equipment were supplied on time to district and sector offices.
- Empty ICON sachets were collected from all sectors and were stocked in RTI's Nyarugunga (Kicukiro district) store.
- All districts received enough ICON to ensure uninterrupted spray operations. Another stock remained in the CAMERWA warehouse, a stock big enough to ensure supplies for Round 1.
- Monitoring visits to district storage facilities as well as IRS field visits were conducted.
- Negotiations were made with authorities in Kicukiro for possible rehabilitation of the warehouse at Nyarugunga, where district staff had also relocated.
- The RTI Kigali office provided regular administrative support, maintenance and cleaning services, a power supply, telephone, Internet connections, and also maintained computers and printers for IRS program and district offices.
- Spray operators, field staff, and administrative personnel were provided with transportation to facilitate their duties.
- On September 18, the RTI/IRS logistics team led a one-day training workshop that focused on stock management, storage, distribution, and inventory control.
- RTI supervised district stores and sector operation sites; ICON and other related IRS consumables and materials were also inspected.
- RTI and its partners ensured smooth transport of sprayers and other IRS personnel in all 35 sectors of the three districts.

- RTI tracked and collected returned empty sachets of ICON from all sectors. Some 13 ICON sachets that were reported missing in Gatsata sector were located.
- Administrative support was provided, such as cleaning services and the supervision of power supplies and telephone/Internet connections in program and district offices.

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

### *IEC Material Design and Development*

- 40,000 brochures were distributed during community work (Umuganda).
- 120,000 information sheets were distributed during Umuganda Day and at different local leader meetings.
- 1,500 folders containing IRS messages were distributed on IRS launch day.
- 500 T-shirts were distributed on IRS launch day.
- Seven cloth and digital banners were displayed in public areas of the three districts (Gasabo, Kicukiro, and Nyarugenge).
- IRS spots were aired on Radio Rwanda and Rwanda Television.

### *Training of IEC Mobilizers*

Sixty IEC implementers were trained for IRS work at the Umudugudu level.

### *IEC Campaign Implementation*

Mass mobilization through IEC was progressively intensified during this reporting period, especially through IRS messages aired on five FM radio stations, where the RTI/IRS program maintained six journalists charged with conveying IRS messages, accompanying IRS spots aired on their respective radio stations, and answering questions during call-in programs.

Earlier, these journalists were briefed by the RTI/IRS program, HCC, and NMCP and were provided with IRS materials to broaden their understanding of IRS. The IEC coordinated continued to work on a documentary about IRS Round One and to photograph spraying activities at different sites.

An IRS feedback was sought from communities. Ten questions were administered by IEC implementers to members of approximately 15 households that had been sprayed in each sector, with an aim of evaluating their awareness of IRS and its importance to them. Approximately 90 percent of the interviewees responded positively:

- 85 percent of respondents agreed that using insecticide to control malaria is very essential to them.
- 89 percent of respondents learned about the IRS program from the radio, newspaper, and friends.
- 91 percent of respondents confirmed that their houses were sprayed by trained IRS program workers.
- 91 percent of respondents revealed that their houses were sprayed while doors and windows were closed as directed by the IEC implementers and local leaders.
- 87 percent of interviewed people conveyed their impressions of how the IRS program controls malaria.

- 95 percent of respondents confirmed that other insects like cockroaches, ants, spiders, bedbugs, and lice died and continued to die even several days after spraying.
- 87 percent of respondents confirmed that their unemployment problem had been reduced by the program.
- 91 percent of respondents recommended that IRS operations be performed every six months.

The IRS campaign continued to intensively broadcast TV and radio messages targeting diverse population demographics. Some leaders and educated people were still ignorant of IRS. Stakeholders and government officials also needed additional information on IRS. For these reasons, planning of future meetings with leaders at different levels was indispensable for the effective implementation of IRS. Popular call-in programs with FM radio stations were encouraged to field questions about IRS.

#### *Coordination with Spray Operations*

Spraying schedules were planned on a weekly basis by district operation managers in collaboration with sector managers and IEC implementers. However, a timeline for overall spraying operations in 35 sectors of the three districts was estimated to take at least eight weeks. As spraying officially started on August 13, RTI expected to finish spraying by October 6, but an additional week was required to give an opportunity to those whose homes were not sprayed. To this end, the program anticipates completion of spray operations by mid-October 2007.

### **Spraying Operations**

#### *Recruitment and Orientation for District Administration*

The Rwanda IRS program is managed by key personnel working at the central level and providing management support to district-level operational staff. Key personnel at the central level include the COP, logistics officer, finance and administrative manager, IEC coordinator, and a program assistant. A program assistant was hired on July 1 to provide administrative and support duties to the IRS program. An IEC coordinator was identified and recruited to monitor the implementation of IEC activities. The IRS task manager in Washington was indispensable in the hiring of these people.

At the district level, the following positions were recruited by RTI/IRS program staff:

- a) District coordinators, logistics and financial assistants, data managers, and storekeepers. These were deployed in the three districts of Gasabo, Kicukiro, and Nyarugenge. Kicukiro District supported the program by providing space for offices and storage for the insecticide and other IRS equipment.
- b) The district of Nyarugenge provided office and store accommodation for nine sectors out of ten. The IRS program hired two offices: one for district operations staff and another for the Kimisagara sector.
- c) In Gasabo, district authorities provided the IRS program with nine sector offices. Six offices were rented in the sectors of Nduba, Gisozi, Ndera, Kimihurura, and Jabana. In addition, 35 sector managers and supervisors were selected from a list of 89 individuals who attended the TOT course and demonstrated a thorough

understanding of IRS as a malaria prevention tool and operations/spray techniques through practical and written tests.

### *Recruitment and Training for Spray Teams*

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

A five-day training course from July 20-24 was carried out by the RTI team focusing on malaria, vector control, national policy, IRS benefits, human and environmental safety, IEC, use of spray equipment, and personal protective gear. Theoretical classes were complemented by afternoon practical sessions focusing on application techniques. 98 trainees from Gasabo, Nyarugenge, and Kicukiro participated in training activities and have been prepared to coordinate sector-level spray operator training with an experienced facilitator.

A draft training manual was developed at the request of the NMCP and submitted on July 16, 2007.

#### **Training of Spray Operators**

Training of spray operators took place from August 3 to 8, with 490 participants recruited by local administration. This was preceded by the large exercise of undergoing medical examination at different district hospitals, including the Kanombe Hospital and Kigali Teaching Hospital. Medical exams were paid for by the IRS program and medical personnel provided verifications of the wellness of spray operators.

Prospective candidates found to be physically unfit were excluded from the training exercise. Pregnancy tests were coordinated by the IRS program and NMCP. Initially seven training sites were identified based on the availability of facilities such as catering services, a wall for the practical course, and proximity to the participants' place of residence. Two sites were selected in the Nyarugenge and Kicukiro districts and three sites in the Gasabo district. In order to ensure IRS quality, sprayers were trained in appropriate sprayer calibration, correct distance from the wall, correct rhythm, and proper spraying of surfaces. Spray team leaders and supervisors were also trained to go back to communities to assess spray operations and provide additional spot checks for spraying and data entry on spray forms.

#### **Training Data Per District**

<b>District</b>	<b>Training</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
<b>Kicukiro</b>	TOT	9	13	22
	Spray Operation Training	70	58	128
<b>Gasabo</b>	TOT	18	24	42
	Spray Operation Training	122	86	208
<b>Nyarugenge</b>	TOT	10	15	25
	Spray Operation Training	76	78	154

### *Logistics Support for Spray Operations*

IRS operations officially began in all 35 sectors of the three districts of Nyarugenge (10 sectors), Gasabo (15 sectors), and Kicukiro (10 sectors) on August 13. Spray operators, team

leaders, supervisors, washers and sector managers were deployed to their respective sectors with offices, storage facilities, a soak pit, PPE for IRS, and equipment to manage and implement spray operations. Spraying activities began in the most vulnerable areas, buffer zones along river valleys and swamps.

Each sector was also provided with a four-wheel drive motor vehicle for logistical support. All IRS operations started with vulnerable areas in marshlands where the least affluent people live, and cooperation from the people was very good. By end of August, 60,932 houses had been sprayed and 4,800 houses were not sprayed for a variety of reasons, which included refusals due to use of commercial companies to spray homes and compounds/gardens, as well as the presence of sick, bed-ridden and/or newborn babies in the household.



The implementation of the IRS program was a collaborative effort between different stakeholders and program/field staff through different consultative and implementation meetings. During this reporting period, the following meetings were convened:

- Staff/management meetings were carried out every Monday to deliberate the week's work plans and reflect on the previous week's achievements and challenges. These meetings are attended by all program office staff, including district operation managers.
- We convened a meeting with the Health Communication Center (HCC) and six journalists from five FM radio stations to chart an aggressive media campaign on IRS. At this meeting, journalists were requested to convey IRS messages accompanying IRS spots that were being aired on their respective radio stations.

The three districts also faced a number of challenges. Prominent among these were:

- A high rate of refusals, mainly from the most affluent families, most of whom stated they were already using commercial spraying or did not want their houses sprayed.
- The heavy rains of September 2007 seriously disturbed IRS activities in almost all districts.
- Rough terrain and bad roads, especially during the rainy season, reduced the number of houses sprayed per day.
- Some pumps broke easily and reduced the number of sprayers as they were repaired.
- Some people spread rumors about IRS, particularly those who had expected to be involved in the operation but were unable to be involved.

- About 15 chickens in the Gatenga sector of the Kicukiro district ate cockroaches running away from a sprayed house and died, according to ground sources. The RTI team did not investigate the validity of this assertion but was advised by the NMCP to compensate the owners.
- There were reported cases of allergic reactions to the pesticide, especially from housemaids and other adults who mopped the floor after the two-hour wait. All cases were treated at designated health centers and hospitals.



*Spray operators heading to the district.*

### *Environmental Mitigation*

In view of the fundamental importance of pesticide management, Mr. Williams trained personnel for the IRS Rwanda program, including the IRS Kigali management team, sprayers, team leaders, supervisors, and sector managers in appropriate environmental compliance measures. During pre-IRS training, Mr. Williams provided an introduction to IRS and reviewed population and environmental safety precautions, personal protection methods, IRS application techniques, monitoring, stores, and cleansing depot. Personal safety and protection equipment such as helmets with glass shields, respiratory masks, hand gloves, coveralls, and gum boots were provided to each sprayer. The environmental specialist encouraged appropriate disposal of Lambda cyhalothrin using the progressive system of rinse pumps and soak pits recommended by the WHO.

Most of the field visits by the COP aimed at overseeing how environmental compliance was being respected at different spray sites. All sector stores had properly stored the insecticide on dry floors and on pallets. Pumps were also hung upside down, away from the insecticide, and soak pits were constructed at all washing and progressive leasing stations. All of them are within the sector office compound. Sprayers were also returning each sachet of used and unused ICON to the sector manager.

### **Monitoring and Evaluation**

#### *Progress on Key Indicators*

The following tables show figures from each district as of August 31:

District	Number of Sectors	Number of Cells	Total Number of Villages	Number of Cells sprayed by August 31	Villages sprayed by August 31	Houses sprayed by August 31	Houses not sprayed by August 31
<b>Nyarugenge</b>	10	44	359	23	141	18,702	1,833
<b>Gasabo</b>	15	70	450	23	172	26,933	2,141
<b>Kicukiro</b>	10	41	315	22	95	15,297	826
<b>Total</b>	<b>35</b>	<b>155</b>	<b>1,124</b>	<b>68</b>	<b>408</b>	<b>60,932</b>	<b>4,800</b>

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

#### *Staffing*

The RTI/IRS program started with the following staff: a chief of party, finance and administration manager, logistics officer, IEC coordinator, and program assistant. RTI also recruited a district operations manager, a finance assistant, a logistic assistant, a data manager, and store keepers for each of the three districts (Gasabo, Nyarugenge, and Kicukiro).

#### *Office Space*

The RTI/Rwanda IRS office is situated at Plot 1719 of the Gasabo District in Kigali City and consists of 190 square meters of office space.

Offices are situated in each of the three districts—Gasabo, Nyarugenge, and Kicukiro—with 15, 10, and 10 sectors, respectively. All the 35 sectors are operating at community level and each sector has an office and a soak pit. Offices and storage facilities were found for all sectors, some provided by district authorities in the Kicukiro and Nyarugenge districts and others were rented after failure to secure them for certain Sectors due to the nature of their location.

### ***Partnership and Collaboration***

#### *Visitors to the IRS Program*

On August 16, U.S. Congressman Donald Payne visited RTI's IRS operations in Kicukiro district and sprayed a villager's house in Nyarutovu village. Mr. Payne was accompanied by his senior staffers, Ms. Shelley, Mr. Dunlop, Ms. Thompson, Mr. Rugero, communication officer David Krampf, Kicukiro district operations manager Mable Busigye, IEC coordinator Aloys Badege, and some local leaders.



*US Congressman Donald M. Payne ready for spraying.*

On August 21, Shannon Smith, a staffer for Senator Joe Bidden, visited RTI's IRS spray operations in Isangano village, Nyakabanda cell, Niboyi sector, Kicukiro district. The COP briefed her on IRS activities and the spray plan and answered her questions. She was accompanied to the site by USAID's acting mission director Christopher Tocco, as well as Ms. Shelley, Ms. Busigye, Mr. Badege, and Jennifer Orrico, a U.S. embassy staff member.



*Shannon Smith, a staffer for Senator Joe Bidden, visiting an IRS site.*

On August 24, two senior staffers for Senator Richard Lugar visited RTI's IRS spray operations in Bwiza village, Kabeza cell, Kanombe sector, Kicukiro district. The COP briefed them on IRS activities and the spray plan and answered their questions. They were accompanied to the site by Mr. Tocco, Ms. Shelley, Ms. Busigye, and Mr. Badege.



*Two senior staffers for Senator Richard Lugar visiting an IRS site.*

### *National Partner*

#### **Meeting with mayor of Kigali City:**

During July, a courtesy call was made to the mayor of Kigali City by Ms. Shelley, Patrick Condo, Ms. Thompson, Mr. Williams, and Mr. Rugero. Kigali City staffers, including health staffers and the personal assistant to the mayor, were also present. Ms. Shelley introduced IRS to the mayor, and the mayor promised to support the program, proposing that the IRS program office work closely with the city of Kigali in operational planning. An IRS focal

point at Kigali city council was named, and RTI agreed to share information with Kigali, particularly with regard to IRS communication messages.

**Meeting with executive secretaries from 35 sectors of Kigali City at City Hall:**

Kigali City's deputy mayor in charge of social affairs called this meeting on August 11 to brief executive secretaries from 35 sectors of the three target districts on IRS and the necessity of their cooperation in sensitizing communities to open their homes to IRS. This meeting was attended by Ms. Shelley, Dr. Karema, Ms. Thompson, Mr. Williams, Mr. Rugero, and Madame Reinelde of the Kigali City Council (on behalf of the vice mayor). Also present were 35 environmental health inspectors who were designated to work in each sector to oversee IRS and environmental compliance. Everyone received a copy of a work plan that had been prepared by Ms. Thompson and Mr. Williams. Attendees discussed the recruitment of IRS personnel as well as the proposed daily wages for each category of IRS field staff.

**Meeting with IRS steering committee:**

The NMCP called this meeting on August 3. Discussion topics included medical examinations for prospective sprayers, daily wages for sprayers and others involved in IRS implementation at the sector level, district store visits, equipment transportation, the training module, obtaining an import license for IRS equipment from the MOH, terms of reference for incoming entomologist Josephat Shilulu, and training site confirmations by RTI. Meeting attendees confirmed an August 10 launch date at Cyeru Village Primary School in the Mbandazi cell and Rusororo sector of the Gasabo District.

**Meeting with the vice mayor in charge of social affairs:**

The NMCP called this meeting on August 14. Attendees included Madam Reinelde, Dr. Karema, Ms. Thompson, Mr. Williams, and Mr. Rugero. The purpose of this meeting was to review Day One of IRS in the three districts and generate recommendations to improve IRS operations. The vice mayor opened the meeting with the statement, "Nobody should refuse to open up the house for IRS." The vice mayor described her visits to Nyarugunga in Kicukiro district and Rwampara in Nyarugenge district on Day One of IRS. During her visit, she observed that spraying began smoothly and acknowledged that some soak pits had not been filled and some households had been unprepared for the first day of spray operations. Meeting attendees decided the following: weekly IRS plans for each sector in each district should be sent the mayor's office, published in Imvaho Nshya weekly newspaper, and broadcast daily on Radio Rwanda; the RTI/IRS program office should send daily IRS data electronically to the mayor's office, NMCP, and USAID; IEC implementers, team leaders, supervisors, and sector managers must work as a team and obtain accurate village information (Imidugudu) and the exact number of households in each village for planning purposes; and motorbikes may be used to facilitate sprayer mobility across hilly terrains in sectors such as Mageragere in Nyarugenge district. The vice mayor provided contacts for this. To improve working relationships and coordination of IRS, the vice mayor sent a letter to district mayors asking for their cooperation with IRS field staff in all sectors. "These are people who can help us in convincing the people to open up their homes and solve some administrative problems like inspection of restaurants, etc.," stated the vice mayor. Meeting attendees agreed that district mayors should also be provided with daily data on IRS.

The MOH, NMCP, and RTI/IRS program collaborated on an IRS media campaign that helped reduce refusal rates and increase public awareness of IRS.

- The MOH published a full-page advertisement of IRS activities almost three times a week in the New Times newspaper, as well as an IRS schedule in the weekly IMVAHO Nshya newspaper. The MOH also led a number of press briefings on IRS.
- On September 11, Dr. Nyaruhirira, Dr. Karema, and Mr. Hakizimana discussed IRS on the radio talk show Contact FM, a popular station in Kigali that enabled citizens to call in and ask questions about IRS and mosquitoes in general.

### *USAID*

Ms. Shelley and Mr. Condo of USAID/PMI visited the IRS program office and met with program staff, including district operation managers. Ms. Shelley advised program staff to document all daily experiences encountered with IRS. She also urged program staff to record lessons learned from stakeholders, central and local governments, citizens, and schools. She encouraged visits to schools to discuss IRS with pupils with visual aids in order to help gauge community opinions of IRS. RTI was asked to create educational messages about IRS and other forms of malaria interventions, such as bed nets, to demonstrate how they complement each other. Ms. Shelley thanked all IRS staff for the good job they were doing.



*USAID/Rwanda staffers Karen Shelley and Patrick Condo visiting the RTI/Rwanda IRS program office on September 10, 2007.*



*PMI/USAID/Washington staff member Kamden Hottman and USAID/Rwanda staff member Christiana Pangalos in the Kabeza Cell, Kanombe Sector, Kicukiro District on September 26, 2007.*

### **Meeting between Dr. Shilulu and PMI/USAID:**

This meeting was attended by Ms. Shelley, Mr. Condo, and Mr. Rugero, and focused on the scope of Dr. Shilulu's work and coordination of field entomology training with Tulane University and the NMCP. The PMI/USAID advised Dr. Shilulu to develop a district-level entomological technician training program with Ray Beach of the CDC and Mr. Chimumbwa. This program was recommended to foster a sustainable technician training program that will

enable Rwandan citizens to train technicians without depending on international organizations.

## **Outstanding Issues**

- RTI and its partners feared that the onset of heavy rains in late September would cause setbacks in IRS operations within the three districts.
- RTI was concerned about curtailing refusal rates by people due to fear of allergies.
- RTI and its partners focused on diversifying the IRS educational campaign through different media outlets.

## **Upcoming Activities**

- Completion of Round One by the second week of October.
- Completion of plans for Round Two in Kigali and Round One in Kirehe and Nyanza.
- Post-IRS entomology surveillance.
- Post-IRS evaluation meetings with stakeholders.
- Submission report on Round One.
- Preliminary contacts with eastern province local authorities.
- Completion of recruitment plan for Kirehe and Nyanza IRS district staff.
- Planning the official closing of Round One with the NMCP and USAID.

# 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 75,000 households with residual insecticide in Nioro, Richard Toll, and Velingara districts during the first round of IRS. This will protect approximately 500,000 people and at least 80 percent of the total estimated population in the targeted districts.

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

- Conducting environmental and logistics needs assessment;
- Procuring insecticide, protective equipment and gear for spray operators;
- Providing financial support for IRS management team and spray operators;
- Providing operational and technical support for planning, implementation and supervision;
- Carrying out environmental compliance monitoring;
- Providing financial support for all operational activities.

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

## Current Activities & Accomplishments

### *IEC Development and Implementation*

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

- District leaders/stakeholders awareness raising;
- IEC material development workshop;
- Awareness raising meetings;
- Radio spots on IRS;
- Radio talk shows; and
- Preparation and printing of 22,205 IRS fact sheets (in French, Arabic and the local language).

This component of the program was led by the Christian Children's Fund (CCF) with support from RTI project staff.

## ***Spraying Operations***

The IRS round ended in July in the three health districts of Nioro, Richard Toll, and Velingara. The success of IRS operations largely depended upon work organization, labor, logistics, and the cooperation of community members throughout the activity. Efforts were made to ensure that spray operations were started in all villages. In each village, household members were given at least two weeks advance notice and a confirmation notice the day before the spray schedule in their respective areas began.

The monitoring and evaluation section below provides a summary of the overall results of the IRS project as reflected by the key output indicators in the three districts. These results indicate that the program was successfully implemented, yielding a much higher coverage rate for the spray activities in the planned period of time. In addition, the application rate of the insecticide was within the recommended manufacturer's range, with a total average of 0.6 sachets per household.

Although the refusal rate was less than 2.5 percent, these refusals were primarily due to miscommunication of IRS operations for a few residents. In many cases, the residents initially locked their homes and disappeared on the planned day of spraying, but after talking to their neighbors and listening to additional mobilization sessions, 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 and Supervision*

Technical support and supervision for IRS operations was provided by RTI's technical director, RTI environmental scientist, RTI project staff, Hygiene Service and the PNL 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.

Using IRS coverage data, RTI supervisors evaluated 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. Corrective actions for the identified spray operators' mistakes were immediately taken into consideration to improve the spray team's performance and efficiency.

This enabled the project staff to detect operational problems early, led to prompt investigation and supportive corrective action, and helped to improve the project's overall efficiency. Moreover, as the project approached completion, two missions (one led by the logistics officer in Nioro and another by the COP in Velingara and Richard Toll) were planned to supervise IRS operations in the field one week before the end of the spraying to avoid any deceleration in operations. A delay in completing spray activities could extend the working days and with the onset of rains, the schedule of operations could be interrupted.

In addition, spray teams from groups that had completed activities earlier were mobilized to assist with spraying the remaining villages in other sub-counties. This approach proved to be effective and enabled completion of the program just two to three days behind schedule.

During and after the monitoring exercise, team leaders and supervisors were notified of the most commonly-identified mistakes and recommended actions to ensure that these mistakes would not happen again in the future. Key issues focused on during routine monitoring and supervision included the following:

- Observing spray operators while mixing the insecticide with water to ensure compliance with guidelines;
- Verifying the information-recording process by (a) the spray operators, to account for their work and (b) supervisors, to ensure proper tallying of daily activities;
- Verifying the logistics supplied to each spray team in relation to the number reportedly used, the balances, and the amount in stock;
- Evaluating the cleaning and maintenance procedures followed by the spray team; and
- Verifying the washing process of personal protection equipment (PPE) and sprayers as well as the disposal of that water into soak pits.

Due to the short timeframe of IRS activities and the large area to cover, the project staff rented 40 vehicles to transport the equipment, operators, team leaders and supervisors. In spite of the large number of vehicles, RTI project staff ensured effective management in terms of fuel supply. To that end, the project printed tickets valid only with RTI's stamp.

#### *Environmental and Safety Mitigation*

Occupational exposure to lambda-cyhalothrin for the spray groups, team leaders, and wash persons was minimized by using PPE. The spray operators were provided with helmets, face shields, nose and mouth masks, long-sleeved cotton overalls, rubber gloves, pairs of cotton-rich stockings, and robust gum boots.

At the end of the day, spray operators handed over the PPE to the wash persons for cleaning. The waste water (contaminated with the insecticide) generated from washing the overalls was emptied into pit latrines.

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

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

### *Handling Pilferage*

Several measures were taken to minimize pilferage and wastage. First, all procured items (ICON, PPE, sprayers, and other logistical items) were recorded using forms and checklists. Only authorized staff was allowed to withdraw items from stores, and each withdrawal was documented. Second, all storage facilities were retrofitted and secured to avoid break-ins. Security guards were also hired to protect the facilities on a 24-hour basis. Third, the logistics inventory was performed twice a month.

The table below summarizes the quantity of equipment lost.

<b>Designation</b>	<b>Nioro</b>	<b>Richard Toll</b>	<b>Velingara</b>	<b>Total</b>
Boots	1	4	5	10
Hard hats	3	1		4
Face shield visors	3	1	1	5
Red jackets	4	0	3	7
Green jackets	12	0	7	19
Face shield frames	3	1	1	5

The relatively high number of insecticide sachets lost is due to a lack of training and out of negligence. Most of the equipment loss occurred during the last day of IRS.

### **Other Activities**

#### *Entomological Monitoring*

The entomological monitoring was conducted by the MOH/PNLP in collaboration with Cheikh Anta Diop University (UCAD) of Dakar. During the reporting period in July, the entomological monitoring was started in the three districts and will be continue for ten days in each district and during each month until October 2007. The objective of this monitoring is to trace insecticide residual effect and decay persistence on sprayed walls.

### **Monitoring and Evaluation**

#### *Progress on Key Indicators*

The table below presents a summary of coverage results achieved in the three target districts as of August 10:

<b>District</b>	<b>Rooms Sprayed</b>	<b>Houses Sprayed</b>	<b>Houses Unsprayed</b>	<b>Population</b>			<b>Total</b>
				<b>M</b>	<b>F</b>	<b>&lt; 5</b>	
<b>Richard Toll</b>	78,575	22,402	245	62,388	61,582	31,409	<b>155,379</b>
<b>Velingra</b>	94,274	23,137	1,250	98,426	95,763	53,504	<b>247,693</b>
<b>Nioro</b>	99,552	30,740	407	104,145	133,181	58,573	<b>275,899</b>
<b>Total</b>	<b>272,401</b>	<b>76,279</b>	<b>1,902</b>	<b>264,959</b>	<b>290,526</b>	<b>143,486</b>	<b>678,971</b>

## Upcoming Activities

- Post-IRS surveys, including clinical evaluation of spray operators, an entomological survey, and environmental impact assessment, were conducted;
- The post-spray entomological survey will be conducted to assess the resistance of the sprayed insecticide on treated surfaces two to three months after the end of the IRS project, the susceptibility status of the vectors to the insecticide, and the indoor and outdoor resting density of *Anopheles* mosquitoes in sample locations within the district.
- The post-spray environmental impact assessment will be conducted and led by UCAD to assess the impact of the spraying campaign, if any, on the environment. In addition clinical evaluations were conducted on a sample of spray operators to assess their medical fitness after the spray activities. Results from these exercises will be disseminated in early November 2007.
- In July 2007, RTI rented a warehouse in Dakar to store all spraying equipment. All Hudson compression sprayers used in the project were regularly maintained and necessary repairs were made; including distinguishing serviceable and not serviceable equipment.

# 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 July through September 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 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 Pader was launched on July 20, 2007. Therefore, this report primarily focuses on activities associated with the spray round in Pader 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 Pader district in early July. Workshops were held with all 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 Pader was undertaken by an independent contractor, Health Communications Partnerships (HCP). 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.

### *Community Sensitization*

A one-day community sensitization workshop for district leaders was held on June 20, 2007 in the Pader district council hall. It was facilitated by a senior entomologist from the Vector Control Division (VCD)/MOH, the IRS project director, the district health office (DHO), and IRS field supervisors. The workshop was officially opened by the district chairperson and closed by the resident district commissioner (RDC), Pader district local government. Participants included:

- 16 councilors
- 11 district health team members
- 3 media house representatives
- 1 religious leader
- Representatives from the WHO, Northern Uganda Malaria AIDS & Tuberculosis Program (NUMAT), Catholic Relief Services, and Christian Children's Fund.
- Also present at the workshop were the extension workers, town clerks, district vector officers, a production officer, an environment officer, and other district officials. A total of 66 participants attended the workshop.

For this workshop, IRS pamphlets and t-shirts were distributed. The district leadership welcomed the IRS program and pledged their support for the program.

Sub-county sensitization meetings were also held throughout Pader district, and these meetings included sub-county chiefs, local council, extension workers, health educators, village health team members, army personnel, and religious leaders.

### *Other IEC Activities*

Two hours of radio talk-shows were hosted by the local radio station in order to make community members aware of the IRS program and what would be required of them. The MOH also travelled throughout the Pader district communities in film vans to show short films that accomplished the same. Two hours of film were shown at each IDP camp. The exercise was overseen by the MOH and the district health team.

## ***Spraying Operations***

Spray operations in Pader took place from July 20 to August 8, 2007. In total, 136,345 households were sprayed, which provided protection for 530,516 people in the district. Details on the spray operations and additional results are presented below.

### *Environmental Mitigation and Compliance*

One of the major components of IRS activities is health and safety of workers and the community recipients of the program. To this end, a number of environmental compliance issues were addressed in the program. All the stores were set up to ensure they had access to water and latrine facilities for washing and safe disposal of the denatured insecticide respectively. Soak pits in the stores were completed to expectations. Wash places at the stores were fenced off to restrict access to insecticide residues. RTI also worked to involve the district environment officer in Kanungu to participate in inspections. Guidelines were provided to spray team so that they fully understood the importance of compiling 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)**

Pader district comprises of two counties (Agago and Aruu) and nineteen sub-counties. In collaboration with the MOH and district health offices, RTI conducted a five-day TOT workshop for IRS supervisors, team leaders, store keepers, and district health team members. The workshop included lecture presentation, demonstrations, role play and practical sessions. The workshop was opened by the Pader resident district commissioner (RDC) and closed by a representative from district health office. The facilitators included one official from the MOH.

**Table: Human resources trained in the TOT in Pader**

<b>Type of Personnel</b>	<b>No of persons</b>
District health teams	4
Supervisors	19
Team Leaders	81
Store keeper's	16

### **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 DHT and RTI. The training programs were modeled from earlier training sessions and included all aspects of IRS techniques in accordance with WHO guidelines. In

Pader, a total of 796 spray operators and 80 wash persons were successfully trained. In addition, 16 storekeepers received special training in managing field logistics.

Eight IRS skilled personnel from three districts (Kabale [three people], Kanungu [one person], and Kitgum [four people]) were hired to train field supervisors in pump repair and maintenance, as well as support supervision of the spray operators, among other lessons.

### **Training of Clinicians**

A clinicians training exercise was conducted by the MOH. 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 Pader district started on July 20. The implementation of the IRS program followed a similar pattern as to that of Kitgum, with overall supervision being conducted by RTI in collaboration with the MOH and the district. Sixteen trucks were used for logistics and transporting spray teams once the spraying exercise was underway.

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.

### **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.

A baseline entomological survey was conducted in Pader district and the results are forthcoming.

### **Monitoring and Evaluation**

Summary results for the Pader spray round are below.

**Table: Summary results for Pader spray round**

<b>Indicators</b>	<b>Numbers</b>
Total houses found	138,523
Population protected	530,516
Targeted houses	134,508

Houses fully sprayed	129,642
Houses partially sprayed	6,703
Houses not sprayed	1,862
Total houses sprayed	136,345
% of targeted houses(partially and fully sprayed)	101.6
Age <5years protected	136,639
Pregnant women protected	29,783
Mosquito nets in sprayed houses	135,766
Age<5years sleeping under net	100,706

### ***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**

- Planning and assessment activities will be conducted for the upcoming spray operations in Amuru district.
- Mop-up activities for Pader spray operations will take place.

# Zambia

---

Zambia was identified by the United States Agency for International Development (USAID) as one of the third round of countries to receive funding under the United States' (U.S.) President's Malaria Initiative (PMI). Indoor residual spraying (IRS) in Zambia is implemented by the National Malaria Control Centre (NMCC) of the Ministry of Health (MOH). Additional resources and technical support are mobilized through a number of external partners, including USAID, the Roll Back Malaria (RBM) partnership, Malaria Control and Evaluation Partnership in Africa (MACEPA), the World Health Organization (WHO), the Global Fund for HIV/AIDS TB and Malaria (GFATM), and the World Bank.

Zambia is implementing IRS for malaria control as part of an integrated vector control management (IVM) strategy. Spraying began in the country in 2003, following the success of IRS by the private sector (Konkola Copper Mines). The spraying program is under a five-year (2006-2010) national malaria strategic plan, which has an overall objective of reducing malaria incidence by 75 percent by 2010.

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

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

## **Current Activities & Accomplishments**

This reporting period marks the transition from RTI supporting IRS in Zambia under the IVM project mechanism to the IRS IQC. The last major activity funded under IVM will be the procurement of entomological laboratory equipment for the NMCC's insectary. Remaining funds will be applied to operating expenses and to offset the 2007 spray round procurement, the first major expense in Zambia under the IRS IQC.

### *Environmental Assessment and Compliance*

Jacob Williams, RTI environmental specialist, revised the supplemental environmental assessment (SEA) for the 2007 spray season, which is scheduled to begin September 5, 2007. The SEA was submitted July 6, 2007 and, following comments and revisions, had all necessary signatures by the end of July.

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

RTI procured pesticide and PPE during this reporting period, and the quantities procured may be found in the table below.

**Insecticide:**

<i>Item</i>	<i>Number sachets needed</i>
Lambdacyhalothrin 10% WP (62.5g)	111,962
Alpha-cypemethrin 5% WP (150g)	111,962
DDT 75% WP (650g)	54,000

**Sprayer parts**

<i>Item</i>	<i>Hudson serial number</i>	<i>Quantity</i>
Nozzles 8001		560
Nozzles 8002		510
Strainers	152-356	1,110
Pump cylinder assembly	147-202	255
Pump plunger assembly	147-538	215
Teflon gaskets	123-950	655
Shut off ASSy,complete,thrustless	149-706	210
Plunger Tube and Handle	147-501	225
Male fitting for strainer housing	114-905	260
Nozzle Flow regulator Assembly	141-983	195
O Ring Gasket,for male strainer fitting	805-310	690
Extension Tube Assembly	141-967	255

