



PRESIDENT'S MALARIA INITIATIVE

INDOOR RESIDUAL SPRAYING FOR MALARIA CONTROL



Quarterly Report

Indoor Residual Spraying (IRS) for Malaria Control
Indefinite Quantity Contract (IQC) Task Order 1

July 1, 2008–September 30, 2008

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RTI International is a trade name of Research Triangle Institute.

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Acronyms

ABE	Agence Béninoise pour L'Environnement/Benin Environmental Agency
ASACO	L'Association de Santé Communautaire/Community Health Association (Mali)
CAMERWA	Centrale d'Achats des Médicaments Essentiels du Rwanda/Central Purchasing of Essential Drugs in Rwanda
CA-USA	Crown Agents USA, Inc.
CCF	Christian Children's Fund
CDC	U.S. Centers for Disease Control and Prevention
COP	Chief of Party
CREC	Centre de Recherche Entomologique de Cotonou/Entomological Research Center of Cotonou (Benin)
CS	Capsule Suspension
CSCOM	Centre de Santé Communautaire/Community Health Center (Mali)
DDS	Direction Départementale de la Santé/Regional Health Office (Benin)
DDT	dichloro-diphenyl-trichloroethane
DHMT	District Health Management Team (Malawi)
DNACPN	Department of Sanitation, Pollution, and Nuisance Control (Mali)
DPS	Departamento Provincial de Saúde/Provincial Department of Health (Mozambique)
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization of the United Nations
FY	Fiscal Year
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GIS	Geographic Information System
HCC	Health Communication Center
HOTM	Home Office Technical Manager
ICON	Lambda Cyhalothrin
IEC	Information, Education, and Communication
IQC	Indefinite Quantity Contract
IRS	Indoor Residual Spraying
IT	Information Technology
LATH	Liverpool Associates for Tropical Health
LC	Local Council
LLIN	Long-Lasting Insecticide-Treated Net
M&E	Monitoring and Evaluation
MEWS	Malaria Early Warning System
MICOA	Ministry of Coordination and the Environment (Mozambique)
MOE	Ministry of Environment
MOH	Ministry of Health
MOP	Malaria Operational Plan
MOU	Memorandum of Understanding
MRTC	Malaria Research Training Center
NGO	Nongovernmental Organization
NMCC	National Malaria Control Centre (Zambia)
NMCP	National Malaria Control Program

NMIMR	Noguchi Memorial Institute for Medical Research
NRO	Nairobi Regional Office
PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
PMI	U.S. President's Malaria Initiative
PNILP	Programme National Intégré de Lutte contre le Paludisme/National Integrated Malaria Control Program (Rwanda)
PNLP	Programme National de Lutte contre le Paludisme/National Malaria Control Program (Benin, Senegal)
PPE	Personal Protective Equipment
PSI	Population Services International
RTI	Research Triangle Institute
SAE	Serious Adverse Event
SEA	Supplemental Environmental Assessment
SLP	Service de Lutte contre le Paludisme/National Malaria Control Program (Madagascar)
TO	Task Order
TOT	Training of Trainers
UGP	L'Unité de Gestion du Programme/Program Management Unit (Madagascar)
UMEMS	Ugandan Monitoring and Evaluation Management Systems
USAID	U.S. Agency for International Development
WHO	World Health Organization
WP	Wetable Powder

Introduction

RTI International (RTI) was awarded the Indoor Residual Spraying (IRS) Indefinite Quantity Contract (IQC) on September 29, 2006 under Contract No. GHN-I-01-06-00002-00. This IQC represents a new and substantial commitment from the U.S. Agency for International Development (USAID) to support the use of an effective malaria control intervention in Africa.

Funded by the United States President's Malaria Initiative (PMI) through USAID, RTI provides 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 IRS project include:

- Introduce 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.
- 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 report presents the project's progress during the period of July 1 to September 30, 2008. The report is divided into core activities outlining project management and technical support, and specific country sections. It summarizes the project's current activities and achievements, outstanding issues, and upcoming activities.

Core Activities

The primary focus during this quarter was to consolidate the management and structural changes initiated in the previous quarter. IRS Task Order 1 (TO1) defined roles, responsibilities, and reporting lines; continued to revamp procurement, human resources, and financial systems; and built out the Nairobi structure. Accomplishment highlights include:

- Hired Suzanne Hoza, Regional Director of Operations posted at the Nairobi Regional Office.
- Conducted a Program Planning Week conference with IRS Chiefs of Party (COPs) in Nairobi from September 7–12, 2008.
- Hired Lourdes Loch-Martinez, IRS Deputy Director scheduled to start on October 13, 2008.

Project Leadership

Barbara Kennedy remained acting project director while recruitment for a permanent project director continued. RTI engaged the services of a Recruitment Firm to actively recruit a permanent Director. Recruitment efforts remain a priority until a Director is hired. RTI completed recruitment, selection, and hiring of a permanent Deputy Director. Ms. Loch-Martinez, will assume the duties of that position in October, and Jeffrey Sine will transition to a support role. Gene Brantly fully transitioned off this project at the end of this quarter.

Dr. John Chimumbwa's role as Regional Technical Director and Nairobi Regional Office Director was consolidated, with all COPs reporting directly to him. Suzanne Hoza was hired as Regional Director of Operations, reporting to Mr. Chimumbwa. The Regional Director of Operations provides timely and responsive operational support throughout the region, enabling Dr. Chimumbwa to focus on high level technical oversight and support to the program.

New COPs were hired for Malawi, Rwanda, and Ethiopia, and a program manager was hired for Uganda during this quarter. Recruitment for a senior manager for the Zambia program remains a high priority.

Procurement

RTI and Crown Agents, Inc. (CA-USA) are jointly responsible for the timely procurement and delivery of commodities and services under the IRS IQC. During this reporting period, RTI's request for source/origin code 935 was officially granted by USAID allowing commodities including protective clothing and compression sprayers to be sourced worldwide.

Prior to the 935 request being granted, CA-USA competed and awarded IQCs for vendors of insecticide, which already had a waiver for use of code 935, and of compression sprayers, under the previous 000 source/origin code. The compression sprayer IQC was awarded in July and delivery orders were placed almost immediately. The 935 source/origin code waiver for both sprayers and personal protective equipment (PPE), will enable CA-USA to establish additional IQCs for a wider range of vendors.

During this quarter, as per discussions with USAID, IRS TO1 instituted the practice of involving host country counterparts in the selection of an insecticide for spraying.

Nairobi Regional Office

The role of the Nairobi Regional Office (NRO) is being repositioned to be the locus of technical and operational support to the IRS country programs.

During this quarter, RTI hired additional IRS project staff in Nairobi to reinforce NRO's mandate to make immediate management, operational, and technical decisions in response to the needs at country level.

The following personnel were hired:

- Dr. Desire Jean Rakotoson, Vector Control Manager
- Kennedy Mugo, Regional Information Technology (IT) Manager
- Jabez Ojowa, Regional Accountant
- Robert Sumbi, Program Assistant

Additionally, recruitment efforts are ongoing for the Entomological Surveillance Coordinator and Insecticide Selection Advisor positions to be contracted by Liverpool Associates in Tropical Health (LATH) and seconded to NRO.

Project Management Activities

IRS Program Planning Week

From September 8–12, key IRS project stakeholders gathered in Nairobi to share experiences and best practices, address obstacles to successful programs, and plan for fiscal year (FY) 2009. Participants included project senior leadership, COPs, HOTMs, NRO staff, subcontractor representatives, the USAID Cognizant Technical Officer (CTO) Julie Wallace, and RTI's Chief Financial Officer, James Gibson, and President and Chief Executive Officer, Dr. Victoria Haynes. Topics covered included:

- PMI overview and overview of the IRS project
- Roles, responsibilities, and IRS project structure
- Environmental assessment and monitoring
- COP panels on country programs
- Project administration (finance, human resources, IT, procurement, security, etc.)
- Contractual requirements and annual work plans and budgets
- Client relations
- Address by James Gibson, RTI CFO, and keynote address by Dr. Victoria Haynes, RTI President and CEO

IRS Standard Operating Procedure Manual

During this quarter, IRS TO1 developed the draft version of the new IRS Standard Operating Procedure Manual which outlines standard operating procedures based on IRS best practices, USAID requirements, and RTI's internal protocol. The manual is intended to be a dynamic

document used by all IRS staff and will be updated as best practices in IRS evolve. It details administrative procedures (such as office management, human resources, finance, local procurement, and IT); technical matters (such as environmental assessment and compliance, insecticide selection, entomological monitoring, and monitoring and evaluation [M&E]); and operational procedures (such as operations timelines and planning, memoranda of understanding, training, waste management, logistics and stores, and incident reporting). The manual will be released in final version during the next quarter.

Other Core Activities

During this quarter, IRS TO1 conducted the following activities:

- The NRO Director, as a member of the Global Fund to Fight AIDS, Tuberculosis, and Malaria's (GFATM) Technical Review Panel, spent a week in Geneva to review country applications for malaria funding through GFATM.
- In September, RTI and LATH signed a subcontract. LATH has principal responsibility for providing technical assistance to countries for mitigating insecticide resistance; improving entomologic surveillance and building laboratory capacity; and providing technical oversight for the costing and cost-effectiveness analyses conducted under this program.
- IRS TO1 began preparations for an entomological surveillance visit to the Quelimane District in Mozambique.
- IRS TO1's memorandum of understanding (MOU) template was approved by USAID.
- During this quarter, the NRO technical team completed the design and distribution of IRS data collection tools in the form of spray operator data collection cards, which will be rolled out with each new IRS round after September 2008.
- IRS TO1 standardized the equipment used for IRS, including application nozzles which control the amount of insecticide deposited on the inner walls of dwellings. The nozzle was deliberately fixed to a size which delivers insecticide at the higher end of the World Health Organization (WHO)-approved range.

Upcoming Activities

- Issue and implement final version of the IRS Standard Operating Procedure Manual.
- Identify local incineration options for solid waste disposal in all IRS TO1 countries.
- IRS TO1 will initiate planning for workshops on insecticide selection to be held in 2009 in East and West Africa.
- LATH's two new full-time staff will be seconded to the NRO during the next quarter.
- During the next quarter, PMI partners will harmonize the parameters to be monitored across all PMI countries and reach consensus on data analysis methodologies, guided by compliance with PMI core indicators for IRS and the indicators developed by the Roll Back Malaria Monitoring and Evaluation Reference Group.

Angola

Background

During the current quarter, IRS TO1 evaluated IEC materials used in the previous campaign; materials were updated and printed for the next operations in Huila and Huambo provinces. A refresher training course for IEC mobilizers was administered from September 24–26. The team assessed the capability of potential contractors to build an insectary. The insectary activity is being built in collaboration with the Integrated Vector Management 2 (IVM2) Project. Entomological baseline protocols were reviewed and verified by CDC, and the team will begin the entomological baseline survey during the next quarter.

Current Activities and Accomplishments

Procurement and Logistics

Spray Pumps and Parts

To support the IRS campaign, IRS TO1 initiated procurement of spray pumps, repair kits, and spare parts for the upcoming spray operations in Huila and Huambo districts. IRS TO1 expects arrival of the spray pump procurement in the upcoming quarter.

Information, Education, and Communication (IEC) Development and Implementation

IEC Material Design and Development

The IEC materials used in the previous campaign were reviewed by IRS TO1 and determined to be appropriate. They were reprinted and will be used during spray operations in Huila and Huambo provinces during the next quarter.

Training of IEC Mobilizers

From September 24–26, 20 former IEC agents attended the IEC refresher training in Huila. During the week of September 29, and a week prior to commencing IRS operations, these agents were deployed to educate household residents on the importance of IRS, how to cooperate with the spray teams, and what safety measures must be taken after their houses have been sprayed.

Spraying Operations

Recruitment and Training for Spray Teams

Announcements were made through local radio stations in August and September to summon all former IRS personnel to prepare for the IRS round four in Huila and Huambo provinces. As a result, about 360 IRS operators confirmed their availability. Additionally, approximately 700 new candidates applied for various positions in the IRS operations, and about 35% of them passed the skills and ability tests. Of these, spray operators, monitors, brigade supervisors and team leaders were selected.

During a training session that took place in Huila September 22-26, 122 people were trained as IRS operators and 15 as monitors. Between September 29-30, twelve additional people were trained as brigade supervisors and 36 as team leaders.

Other Activities

Entomological Monitoring

On August 21, a team composed of two RTI staff (Maria Kuingua and Silvestre Fernando), a representative of the NMCP, and a representative from the National Institute of Public Health evaluated quotations from potential contractors to build an insectary and selected a winning bid from the local non-governmental organization ADFER. In the next quarter, this activity will be continued under RTI's Integrated Vector Management 2 (IVM2) Project.

In preparation for spray operations, IRS TO1 and the NMCP identified a local consultant, Mr. Alfredo Manuel, from the Faculty of Sciences of Agostinho Neto University of Medicine to be the team leader of the entomological baseline survey in Huila and Huambo provinces. The team will also include three entomologists from the NMCP. The entomological baseline protocols have been reviewed and verified by the Atlanta-based U.S. Centers for Disease Control and Prevention (CDC) entomological branch. The team will begin the entomological baseline survey during the next quarter.

Capacity Building of Ministry of Health (MOH): Malaria Early Warning System (MEWS) Establishment

Due to a reduction in the number of malaria cases in Namibe and Cunene, the PMI planning team and the NMCP decided to suspend the IRS campaigns in those provinces in June 2007. However, it was decided that IRS TO1, in collaboration with local health authorities, would be responsible for establishing a MEWS. During the next quarter, local health staff will be trained on the MEWS components and the respective set-up system, including data collection tools, data analysis, and reporting.

IRS TO1 hired Dr. Josephat Shililu as a consultant to assist the NMCP with the establishment of their MEWS in Huila, Namibe, and Cunene provinces (two sentinel sites each). As of the end of this quarter, Dr. Shililu was working to acquire a visa for entry to Angola. Once the visa is obtained, he will travel to the country to provide this technical assistance.

Monitoring and Evaluation

Information Collection Plan

IRS TO1 and the NMCP already have IRS-related data collection tools and systems in place. These tools were reviewed for consistency and those that were found to be lacking the necessary indicators were updated. IRS TO1 plans to use these tools for the upcoming spray rounds in Huila and Huambo.

Project Management and Administration

The IRS technical director, Dr. John Chimumbwa, visited Angola, August 4-9, to provide technical and operational planning support to the Angola PMI IRS project in relation to the implementation of FY 2008 activities.

Dr. Chimumbwa met with IRS TO1 staff and discussed challenges to implementation and lessons learned from previous spray rounds. Additionally, he attended two meetings with the USAID/Angola PMI team and discussed IRS performance in Angola. Dr. Chimumbwa also met with the NMCP and discussed the success and constraints of the PMI-supported IRS program and methods for fostering increased collaboration with the NMCP and provincial counterparts.

Partnership and Collaboration

National Partners

From August 28–31, the RTI COP Mr. Antonio Muhungo attended the Malaria Partners Forum meeting in Benguela headed by NMCP, the Benguela provincial government, and the Forum Steering Committee. The theme of the meeting was “Strengthening Partnerships to Control Malaria.” NMCP presented the National Strategy to Control Malaria, 2008–2012, while the Forum Steering Committee updated participants on Forum achievements, challenges, and the way forward. PMI and GFATM representatives demonstrated the development of partnerships with the MOH to control malaria.

During this meeting, the COP initiated talks with the Steering Committee leadership, the Angolan Red Cross, and Population Sciences International (PSI) to identify areas of collaboration for IRS-related activities.

Outstanding Issues

- Entry visas for IRS TO1 regional staff and consultants are an ongoing issue.
- Review and editing of the English version of the National Strategy to Control Malaria.

Upcoming Activities

- Set up a Huambo beneficiary committee to conduct IEC among people who refuse IRS and to monitor the quality of IRS and geographical coverage.
- Implement spray operations Huambo province.
- Commence the baseline entomology survey.

Benin

Background

During the fourth quarter of fiscal year 2008, from July 1 to September 30, IRS TO1 conducted spray operations in four malaria epidemic-prone districts (Akpro-Misserete, Dangbo, Adjohoun, and Seme Kpodji). Operations began on July 3 and ended on August 23, lasting 44 days. Approximately 42,814 structures were sprayed and 521,738 people were protected. In addition to spraying, IRS TO1 distributed long lasting insecticide-treated nets (LLINs) in villages located in flood zones not appropriate for IRS. In total, 16,000 LLINs were received from the National Malaria Control Program (Programme National de Lutte contre le Paludisme; PNLP) and distributed and hung in these villages.

IRS TO1 worked throughout this quarter in close collaboration with PNLP, CREC, USAID/Benin, the Beninese Ministry of Environment, Regional Health Office (Direction Départementale de la Santé; DDS) Oueme, chief doctors, community health workers, mayors, village chiefs, and community radio stations to conduct IEC, training, spray operations, and the distribution and hanging of LLINs.

Current Activities and Accomplishments

Planning and Assessment

Environmental Assessment and Compliance

IRS TO1 submitted the Environmental Impact Assessment (EIA) in February of 2008. It was approved by USAID in April. The report was approved by Agence Béninoise pour L'Environnement (Benin Environmental Agency; ABE) as the spray operations began in July.

The pre-spray environmental compliance inspection was conducted in July by Mr. Gaspard Bikwemu, an RTI environmental specialist based in the NRO. During his visit, Mr. Bikwemu met with stakeholders involved in IRS activities and visited the field with environmental consultant Damien Kodjo to make sure that all the environmental safeguard processes were followed and that the program was in compliance with recommendations prior to spraying.

The removal of the cholinesterase test from the EIA was discussed at a meeting with ABE during Mr. Bikwemu's visit. The ABE requested that a formal letter be sent to them requesting the removal of cholinesterase testing from the EIA. IRS TO1 sent the letter, but has not yet received a response from ABE.

Procurement and Logistics

Pesticides, Spray Pumps and Parts, and PPE

The first shipment of 1.5 tons of Bendiocarb (Ficam[®]) was received at the warehouse on July 2, 2008, allowing spray operations to commence on July 8th. The remaining balance of two tons was received two weeks later. In total, 4,400 kilograms of Bendiocarb were procured for this spray round.

WHO-approved Hudson X-Pert compression sprayers were received in quantities sufficient for each spray operator and extras for emergency situations or in case of pump failure. PPE, in accordance with WHO specifications, was provided to each spray operator, team leader, washer, and driver.

Environmental Compliance

In order to abide by the rules and regulations of Food and Agriculture Organization of the United Nations (FAO) regarding the storage of hazardous material, the Porto Novo warehouse was renovated and partitioned, and additional doors were installed to enhance ventilation. Ceiling fans were also installed in the warehouse.

IEC Development and Implementation

IEC preparation

The initial training of 150 IEC mobilizers was done in June before the start of this quarter. However, due to delays in pesticide arrival, a one-day refresher meeting was held in July before the mobilizers went door to door in the villages to talk about the benefits of IRS and the steps to be taken during spraying.

IEC Campaign Implementation

The IEC mobilizers informed the communities about the benefits of IRS and went door to door to talk to each household about the steps to take before, during, and after IRS. Community members, village chiefs, and local authorities also participated in IEC mobilization and organized village meetings. The IEC mobilizers placed stickers on houses for the spray operator, team leader, and supervisor to sign after a house had been sprayed and inspected. During the pre-spray period, leaflets were distributed to each household.

In each district, a mass mobilization campaign was conducted consisting of songs in local languages discussing the benefits of IRS. Local singers participated in concerts and sang about malaria and the benefit of IRS.

To reinforce the IEC mobilization campaign, five local radio stations broadcast information on the benefits of IRS and the steps that each household should take before, during, and after the spray operations. This information was broadcast three times a day during all 44 days of spray activities.

Spraying Operations

Recruitment and Training for Spray Teams

In preparation for spray operations, a series of trainings was conducted prior to the start of IRS operations in the field. The training of trainers (TOT), training of spray operators, and medical check-up for spray operators were all conducted during the previous quarter.

During this quarter, 27 drivers attended a one-day training session on how to transport spray operators and how to use PPE and fire extinguishers. The training was held in July at the Porto Novo warehouse.

Also in July, the washers attended a one-day training session on how to use PPE when cleaning to avoid contamination. The training was held at the Porto Novo warehouse by PNLN staff and a representative of the Ministry of Environment (MOE).

Training for Long Lasting Insecticide-treated Net (LLIN) Hanging in Flood Zones

In August, 45 head nurses from various health posts as well as community workers received a one-day training session on hanging LLINs in the 50 villages located in flood zones in the districts of Dangbo, Adjohoun, and Seme Kpodji.

Training on Pesticide Management

In July, the chief doctors and head nurses of the four districts attended a one-day training session on pesticide management at the Porto Novo warehouse. About 42 people attended this training, including the PNLN coordinator. The training was conducted by Professor Fayomi Benjamin, the head of toxicology department of the MOH in Cotonou. During the training he informed the participants that the cholinesterase monitoring test for spray operators using Bendiocarb was not necessary. He also worked in close collaboration with DDS of Oueme, the PNLN, and staff from the MOE.

IRS Activities

On July 8, 2008, the IRS operations were officially launched by the Beninese Minister of Health, Dr. Kessile Tchala Sare, and the USAID Mission Director Mr. Rudolph Thomas at the warehouse at Porto Novo. Health and community officials at the national and district levels attended the ceremony and visited the field to see the work being done by the spray operators.



Dr. Kessile Tchala Sare, Minister of Health of Benin, during IRS launch ceremony.

IRS operations in the four targeted districts (Adjohoun, Akpro-Misserete, Dangbo, and Seme-Podji) began on July 3, lasted for 44 days, and ended on August 23. In total, 142,814 structures were sprayed and 521,738 people were protected in all four districts. The IRS program reached 94% of houses in the targeted areas. Operators used 20,984 pesticide sachets to spray 388,455 rooms. At the beginning of spraying there was a high proportion of refusals (31%) which decreased significantly throughout the spray operations. By the end of

operations, most of the houses which had initially refused spraying had consented to have their houses sprayed.

The total spray team staff was made up of 205 spray operators, 41 team leaders, and 19 supervisors.

Spray operations were also conducted under the supervision of a team from the Beninese MOH and MOE made up of PNLP supervisors, hygiene agents from DDS Oueme, Chief Doctors, a Hygiene agent from the National Directorate of Hygiene, and a technician from the MOE.

Environmental Compliance

At the end of each day, empty sachets were collected by each district team leader, recorded on M&E forms, and given to the district logistician in the presence of the logistics manager. Both logisticians in turn counted all the empty sachets and sealed them in barrels. All the solid waste, including masks and gloves, were also sealed in barrels.



Barrels being stored in the warehouse before the start of operations.



Spray pumps stored in the warehouse after a day's work.

The progressive rinsing areas and the nine soak pits were also divided per district to avoid any confusion during operations. Spray operators and washers were instructed to use the washing area and the soak pit assigned to their districts. The district logistician was in charge of making sure that everyone was at his or her assigned location throughout the spray operations period.

Post-spraying Operations

Liquid and solid wastes were stored securely in the warehouse awaiting disposal, which will be carried out by Bayer (manufacturer of Ficam[®]). All IRS equipment was cleaned and stored for the next spray round.

An end-of-spray report is being drafted and will be sent to the Mission and NMCP. The report will show the process taken for operations and will also depict the issues that occurred during spray operations.

Other Activities

Entomological Monitoring

Under subcontract to RTI, a team from the Centre de Recherche Entomologique de Cotonou/Entomological Research Center of Cotonou (CREC) began conducting an entomological evaluation of IRS on July 8, 2008. As PNLP spray operations have ended, the CREC team is currently in the field conducting the evaluation of IRS operations in all four districts. The first data of the entomological assessment will be available on October.

Hanging LLINs in Flood Zones

As some villages are located in flood zones, they did not benefit from IRS. To solve this problem and to protect every single person in all four districts, households in these zones received LLINs in August. Overall, 16,000 LLINs were given by the PNLP for distribution in the villages located in flood zones. The activity was placed under the direction of the head nurses and doctors of each district and was supervised by the PNLP, DDS, and IRS TO1. Community groups (particularly women's groups) who had worked with the PNLP during the LLIN campaign distributed and hung nets in each household. These women's groups occasionally had to use boats to reach households in certain areas. IRS TO1 retrieved the plastic packaging and stored it at Porto Novo warehouse. In total, 15,993 LLINs were distributed by IRS TO1.



Women use a boat to deliver LLINs to population.



An LLIN is hung in a household that was not sprayed.

Collaboration with CREC during Operations Research Study

At the request of CDC/Atlanta and USAID/Benin, IRS TO1 assisted CREC to conduct an operations research study in Toribo-Sito on IRS. IRS TO1 provided logistics support to CREC during their spray operations and assisted in hanging 1,200 LLINs in the operations research study villages.

Monitoring and Evaluation

Progress on Key Indicators

Preliminary results indicate that at the end of IRS operations, there were:

- Number of structures targeted: 151,783
- Number of households sprayed: 141,154
- Number of structures sprayed: 142,814
- Percentage of structures sprayed: 94%
- Number of people protected: 521,738

The table below summarizes the main indicators for this first round in Benin.

IRS Indicators by District

	District (Total)				
	Adjohoun	Akpro-Misserete	Dangbo	Sème-podji	Total
Coverage rate					
Structures sprayed	37,424	38,933	16,375	50,082	142,814
People covered	117,422	140,965	57,974	205,377	521,738
Children under 5 years old	22,793	21,468	9,092	29,145	82,498
Pregnant women	12,585	11,396	4,443	13,677	42,101
• Acceptance					
Number of rooms	109,630	113,084	47,238	142,898	412,850
Rooms sprayed	101,793	105,898	44,541	136,223	388,455
Rooms not sprayed	7,767	7,284	2,963	4,912	22,926

Partnership and Collaboration

On July 2, the District Health Director of Ouémé, the Prefet, and the mayors of the four selected districts jointly visited the warehouse to officially give their go-ahead for the IRS operation.

On August 6, the IRS TO1 COP attended the monthly malaria partner meeting at the WHO country office. During this meeting the COP shared with the participants the preliminary results of IRS.

On August 8, Dr. Dina Gbenou, WHO Malaria focal point, visited the Porto Novo warehouse and IRS operations in the field. She interacted with spray operators, household beneficiaries and the MOH supervisors.

On August 13, Mr. Pascal Zinzindohoue, USAID health and family team leader, went to the field and visited IRS operations in the district of Sèmè-Podji. He interacted with spray operators, community beneficiaries, and the head doctor of the district.

IRS TO1 was also invited by the PNLP to participate in the annual M&E meeting held from September 24 to 27, 2008 in Lokossa. RTI's operations coordinator, Eugene Kiti, participated in this meeting.

Outstanding Issues

IRS sustainability in Benin

On August 13, 2008, the USAID/Benin Mission Director hosted a meeting with the RTI COP, Dr. Seydou Doumbia, and the USAID health team leader, Pascal Zinzindohoué, to discuss IRS operations sustainability in Benin. A follow up meeting was scheduled for October to share with the MOH the spray operations results and to discuss the necessary requirements for Benin to conduct a successful spray operation on its own.

Upcoming Activities

End of Round Evaluation

An end-of-spray IRS conference will be held in October. During this conference the results of the July to August spray operations will be shared with all the partners and stakeholders. Challenges, lessons learned, and the steps for the next spray round will be discussed.

Ethiopia

Background

During the current quarter, IRS TO1 completed preparations and supported the implementation of the first PMI-supported IEC and IRS in 19 target districts in East Shoa, Arsi and West Arsi zones in Ethiopia. Spray operations began on July 23 and concluded on September 2. IRS TO1 supported IRS training, which included an extensive environmental compliance component. As part of environmental mitigation activities, IRS TO1 supported the placement of evaporation tanks in district operational centers for DDT waste water collection. In addition, IRS TO1 continued entomological equipment procurement efforts for entomological activities and the Malaria Reference and Training Center insectary.

Current Activities and Accomplishments

Planning and Assessment

Pesticide Selection

For the 2008 IRS campaign, dichloro-diphenyl-trichloroethane (DDT) 75% wettable powder (WP) was used for IRS operations in line with the Ethiopia IRS strategic framework.

Procurement and Logistics

In preparations for the Ethiopia IRS program, IRS TO1 purchased spray pumps and pump parts, PPE, and other needed IRS material. All spray pump equipment and PPE was received in June and July, and distributed to districts once items cleared customs. Additional IRS materials (buckets, tents and progressive rinse barrels) were distributed to districts during the previous quarter.

IEC Development and Implementation

IEC Material Design and Development

During the previous quarter, IRS TO1 developed IEC materials based on IEC materials used in other IRS countries and existing IEC materials used in districts in Ethiopia. IRS TO1 adapted these IEC materials to the local context and language in the form of posters and leaflets. During this quarter, a total of 5,000 posters and 20,000 leaflets were reproduced and distributed to the all target district mobilizers.

Training of IEC Mobilizers

A TOT for IEC was held on June 30 at the Pan Africa Hotel in Adama. Thirty-five people participated in the IRS IEC mobilization training, and in turn mobilized 835 political leaders and IEC mobilizers.

Spraying Operations

Environmental Mitigation Set-up

During the last quarter, sites for evaporation tanks were identified and contractors hired to complete the work. This quarter, as evaporation tank construction proceeded slowly, IRS TO1 developed and implemented an alternative method to capture wash water. In 25 out of 28 sites, water tankers of 3000 liter capacity were put into the ground to collect DDT waste water temporarily and 8 x 2 meter plastic sheeting was used to prevent spillage to the ground from washing basins. The collected DDT wash water was then transferred to evaporation tanks as soon as they were ready.



Plastic sheeting and a 3,000 liter tank are used to handle DDT waste water in lieu of an evaporation tank.



A completed rinse area and covered evaporation tank.

By the end of the quarter, 17 evaporation tanks had been completed, two needed minor corrections and one in Wonji required major work to repair a cracked concrete wall. As of the end of the quarter, IRS TO1 was working with the contractors to correct these issues. In addition, RTI will ensure that necessary fencing of the evaporation tanks is in place during the next quarter.

In line with environmental compliance procedures for IRS, a mid-spray environmental compliance inspection visit was conducted by RTI's Environmental Inspector, Mr. Autman Tembo. This visit highlighted the need for improved storage facilities at district level. As of the end of the quarter, IRS TO1 was assisting the districts to put in place minimum storage facility requirements for this spray campaign, with additional efforts to achieve all FAO storage facility standards by the 2009 campaign. To address Mr. Tembo's recommendations, IRS TO1 put thermometers, fire extinguishers, and double padlocked doors at all storage facilities and skull and cross bone signs in all warehouses and evaporation tanks sites.



A skull and crossbones sign posted outside of a DDT store room.

Recruitment and Training for Spray Teams

Due to the late arrival of PPE, IRS operations were postponed and began on July 22, 2008.

IRS TO1 provided a training-of-trainers session for IRS leadership during the last quarter. A total of 152 people, including squad leaders, team leaders and malaria focal persons, were trained. The training of spray operators and reserve spray operators was conducted over 5 consecutive days between July 7 and July 13 in each of the districts. A total of 839 spray operators and 207 reserve spray operators were recruited and trained in all 19 districts by team and squad leaders. The trainees passed through a series of intensive practical application sessions in order to ensure correct spray technique and application of insecticide on the spray surface. IRS TO1 personnel visited the districts during the operators training to provide assistance and ensure that training was being carried out effectively.

Logistics Support for Spray Operations

To provide transportation for spray operations, IRS TO1 signed an agreement with Sof Omar Car Rental Company to provide 98 vehicles and with Queen of Sheba Car Rental Company to provide 20 vehicles. During the first 10 days of IRS operations, the companies were unable to supply the required number of cars. Furthermore, villages in two districts (Akaki and Liben Zikala) were inaccessible to vehicles due to absence of all weather roads and could only be accessed on foot or by pack animal. Thus, IRS TO1 deployed a total of 74 vehicles for 17 districts and 28 donkeys for IRS operations. Most districts also used motor bicycles to facilitate supervision at the village level and RTI supported all related fuel costs.

Other Activities

Entomological Monitoring

RTI's Technical Specialist for Entomology carried out entomological baseline monitoring activities for spray operations. The baseline monitoring commenced on July 3 and the following activities were conducted:

- Initial collection of mosquitoes to determine malaria vector density in the identified sentinel sites. (Following completion of the spray operations, vector density was also evaluated from September 18 to 26.)
- Morphological identification of female mosquitoes.

- Larval monitoring (in selected mosquito breeding sites).
- Collection of blood fed and gravid *An. gambiae* complex females and maintenance in the laboratory to lay eggs for F1 progeny for future susceptibility tests and bioassay test.

Capacity Building of the MOH

In past campaigns, districts have lacked some of the necessary equipment to implement safe and effective IRS. IRS TO1 facilitated a micro-planning meeting with the target districts to jointly plan the IRS campaign, identify gaps, and determine the quantities and types of equipment for spray operations that they would need for the IRS campaign. Additionally, IRS TO1 increased the districts' capacity to implement an environmentally compliant IRS campaign by constructing evaporation tanks, improving storage facilities and providing proper safety markings as necessary.

Baseline Environmental Monitoring

IRS TO1 conducted baseline environmental monitoring to determine background concentrations of DDT in target districts in Oromia Region. Judith Tukahirwa (RTI IRS Environmental Officer for Uganda) and two environmentalists identified by the Oromia Regional Health Bureau collected baseline environmental samples of mainly soil, sediment, agricultural products stored indoors and crops from outdoor gardens from five districts in three regions of Arsi Zone, East Shoa Zone and West Arsi Zone July 20 through July 29. The samples were stored in a refrigerator awaiting shipment to the lab for analysis, which will take place during the next quarter.

Monitoring and Evaluation

Information Collection Plan

IRS TO1 developed a weekly summary and monthly IRS coverage data template which were distributed to all target districts. The squad leaders reviewed the houses sprayed and the number of people living in each house. This information was summarized and compiled each day and sent to the zonal health office on a weekly basis. Both daily and weekly data were recorded in a database at the zonal level by temporary data clerks.

Progress on Key Indicators

- 316,829 structures were sprayed for 92% coverage.
- 1,000,526 people were protected by spraying
- 839 spray operators and 207 reserve spray operators were trained in IRS and deployed for the campaign.

IRS Indicators for Ethiopia

Zone	Unit Structure			Population		
	Structures Found	Structures Sprayed	%	Target	Achieved	%
East Shoa	171183	153220	89.5	469093	420497	89.6

Arsi	67824	64892	95.7	197722	188854	95.5
West Arsi	105538	98717	93.5	423740	391175	92.3
Grand Total	344545	316829	91.9	1090555	1000526	91.7

Project Management and Administration

Staffing

IRS TO1 Ethiopia hired several important staff during this period: the Finance Officer, Mr. Aklilu Mulate and the Technical Specialist for Entomology, Alemayehu Getachew. IRS TO1 also hired three finance assistants to execute payment of per diems and daily wages for spray personnel.

Office and Warehouse Space

During this quarter, IRS TO1 worked with the districts to complete the warehouse improvements recommended by Tito Kodiaga during the pre-spray environmental compliance inspection. At present, four districts are renting storage space as they could not identify any district owned storage facilities in which to store IRS materials.

Partnership and Collaboration

National Partners

IRS TO1 encouraged increased collaboration between different government authorities, by including environmental focal persons and health workers in all trainings provided to district representatives. In addition, IRS TO1 involved both traditional and local administrative authorities in the implementation of IRS by training them in IEC and utilizing their skills to communicate IEC messages and inform communities about the spray operation schedule.

Outstanding Issues

- Complete construction of evaporation tanks in the remaining four sites.
- Identify adequate storage facilities for IRS materials, equipment, and waste.
- Bio-efficacy of insecticides and insecticide susceptibility testing has yet to be conducted due to outstanding procurement of entomological monitoring equipment. IRS TO1 is working to ensure the arrival of all necessary equipment in October.

Upcoming Activities

Post-spraying Operations

IRS TO1 will participate in the post-spray operations evaluation meeting scheduled for October 22 to evaluate the achievements, challenges and lessons learned of the campaign. IRS TO1 will identify best practices and lessons learned and carry out a micro-planning exercise for the next round.

Other Upcoming Activities

- Assessment of re-plastering rate

- Monthly entomological monitoring
- TOT on spray pump maintenance
- Final analysis of DDT soil samples and development of a report.

Ghana

Background

In collaboration with PMI, MOH and NMCP, IRS TO1 completed a successful first IRS spray round in Ghana in July 2008. Spraying took place in five targeted districts in the Northern Region. By the end of the spray round, 93% of the total households in the districts had been sprayed. In total, 68,252 houses were treated with alpha-cypermethrin, protecting about 601,973 people. Training and capacity building were strengthened this quarter with over 330 spray operators and 138 community volunteers receiving training by the end of the spray round. During spraying, IRS TO1 IEC team conducted house-to-house campaigns as well as school and women's groups sensitizations. Post-spray interviews were conducted in 34 communities covering 282 households. IRS TO1-supported entomological monitoring continued to be a significant component in this quarter as Noguchi Memorial Institute began preparations for post-spray monitoring activities and continued with transmission studies.

Current Activities and Accomplishments

IEC Development and Implementation

IEC Campaign Implementation

During this quarter, the IRS TO1 IEC campaign conducted in-school IRS sensitizations. Twenty-five schools were visited and a total of 5,230 students and 216 teachers were educated on malaria prevention strategies and the IRS program. The IEC team also met with 17 women's groups, reaching a total of 728 women. The women learned about malaria prevention strategies, specifically during pregnancy and for children under 5 years of age, and the IRS program.

Other IEC strategies used in getting the IRS messages to the community members and general public included the use of radio spots and discussions, information vans, IRS sign posts, football matches and other community social events. The use of such a wide variety of media, facilitated the dissemination of IRS messages and information to the widest possible audience for maximum spray coverage.

A research study commissioned by USAID/Ghana on the community acceptability of the IRS program produced a preliminary report, which was shared with USAID and other partners for their inputs and comments. The final report is expected during the next quarter.

Coordination with Spray Operations

The IRS TO1 IEC team carried out house-to-house campaigns with IRS messages and spray schedules in all five beneficiary districts covering 19,913 houses. They informed families about the spraying date and time and the roles they were expected to play before, during and after the spraying.

Post-spray interviews were conducted by IRS TO1 in 34 communities covering 282 houses during the quarter. Responses from the interviews were very positive. About 95% of the

interviewees maintained that IRS is an effective method for combating malaria. There was no report of any adverse effects of the spraying.



Top: IRS TO1 IEC teams visited schools to inform students and teachers of the purpose of IRS and steps to take before, during, and after spraying. Bottom left: A community soccer game is held to raise awareness about IRS. Bottom right: A sign posted at the entrance to a beneficiary community alerts visitors to the benefits of IRS.

Spraying Operations

Environmental Mitigation Set-up

Environmental compliance standards were adhered to throughout spray operations.

Environmental compliance and monitoring activities included the following:

- IRS operational sites were regularly monitored using unannounced spot checks and monitoring visits to ensure environmental compliance. This monitoring was conducted by IRS TO1 in collaboration with Ghana Environmental Protection Agency (EPA).
- Poisoning management training was held for pharmacists, nurses and supervisors of health facilities in the West Mamprusi district.

Other Activities

Entomological Monitoring

IRS TO1 engaged Noguchi Memorial Institute for Medical Research (NMIMR) to carry out entomological monitoring of the IRS operations in the beneficiary districts. This monitoring included the testing of the efficacy of the pesticide that was used for the spray exercise (*alpha-cypermethrin*) through cone wall assays.

End of Round Events

On July 22, 2008, a closing ceremony for the first round of IRS operations was held at Gushegu, one of the beneficiary districts, as part of the commissioning of the new district hospital. During the ceremony, the spray operators performed a spray demonstration for the dignitaries. In attendance were the Minister of Health, Courage Quashigah; the USAID Mission Director, Mr. Robert Hellyer; and the Senior Adviser for PMI, Dr. Paul Psychas.



Spray operators demonstrate spray techniques at the closing ceremony in Gushegu.

Monitoring and Evaluation

Progress on Key Indicators

At the end of the first round of IRS operations approximately 93% of total households in the five beneficiary districts were sprayed. In total, 68,252 houses were treated with *alpha-cypermethrin* as part of IRS operations, protecting about 601,973 people. The total number of structures sprayed was 254,305.

A table detailing population protected and IRS coverage is located below.

IRS Indicators for Ghana

District	Population protected			IRS coverage by structure		
	Total Pop	Children < 5 years	Pregnant Women	Unsprayed	Sprayable	Coverage rate
Savelugu-Nanton	116,579	19,678	2,428	5837	50447	88%
Tolon Kumbungu	160,043	29,231	3,965	6,519	74,701	91%
West Mamprusi	160,067	27,145	3,465	3,512	77,037	95%
Gushegu	89,994	17,759	2,325	2,012	40,886	95%
Karaga	75,290	14,311	1,784	101	29,215	100%
Total	601,973	108,124	13,967	17,981	272,286	93%

Partnership and Collaboration

RTI's COP, Napoleon Graham, presented a progress report on the Ghana IRS Program to the PMI Malaria Operational Plan (MOP) writing team and participated in Second Annual Stakeholder Meeting with PMI/Ghana on July 15–17, 2008.

RTI's COP, IEC Coordinator, Logistics Officer and District Operation Managers participated in the Ghana Health Service mid-year performance review meeting in Tamale from August 19–21, 2008. Ghana IRS operations featured in the Northern regional malaria data.

The COP presented Ghana's experience with IRS operations, including a demonstration on IRS by spray teams from IRS TO1 and AngloGold Ashanti, to USAID Administrator Henrietta Fore and her entourage during a tour of the NMCP headquarters as part of the High Level Forum on Aid Effectiveness organized in Accra, Ghana from September 2–4, 2008.

RTI's IEC Officer represented RTI at the USAID health partners meeting on September 25, 2008 to review country data, discuss USAID operational plan and reporting procedures.

Outstanding Issues

- IRS TO1 will establish an IRS oversight committee to involve key stakeholders.
- IRS TO1 is working diligently to resolve the issue of solid waste disposal in Ghana by researching options for incineration of empty insecticide sachets.
- For future spray rounds, IRS TO1 will register all spray operators with the Ghana EPA and ensure that each spray operator receives an identification card from them.
- For future spray rounds, IRS TO1 will mobilize IEC staff well before the start of spray operations to ensure effective implementation of the IEC strategy.

Madagascar

Background

During the fourth quarter of fiscal year 2008, from July 1 to September 30, IRS TO1 conducted planning and preparation for upcoming spray operations that will take place in six malaria epidemic-prone districts of Madagascar's Central Highlands, Anjozorobe, Ankazobe, Betafo, Ambositra, Ambatofinandrahana, and Ambohimahasoia. IRS TO1 initiated procurement of the insecticide and PPE, both scheduled to arrive in October 2008.

IRS TO1 worked throughout this quarter in collaboration with SLP, UGP, and the Ministry of Environment to conduct IEC preparations; recruitment of spray operators, store managers, district logisticians and finance assistants; renovations of warehouses and secondary storage spaces; construction of soak pits; geographical mapping for IRS operations; and environmental mitigation for the spray round beginning in November 2008.

Current Activities and Accomplishments

Planning and Assessment

Logistics Assessment

In July, IRS TO1 prepared district-level spray operations countdown calendars for the districts of Betafo, Mandoto, Ambositra, Ambatofinandrahana, and Ambohimahasoia.

The SLP, the USAID/Madagascar environmental officer, and the MOE worked to identify central warehouses in Antananarivo and Ambositra to be used for IRS operations. In September, the chosen warehouses were approved by the SLP and USAID/Madagascar and renovations of the warehouses were initiated soon after. As of the end of the quarter, improvements and renovations in the warehouses in Antananarivo and Ambohimahasoia are currently underway. At the same time, the logistics manager and district logistics specialists initiated a process to identify 105 communal warehouses to be leased for two months each to store insecticide and PPE to be used during the spray campaign. They also identified storekeepers and guards for these communal warehouses.

Procurement and Logistics

During this quarter, procurement needs (insecticide, PPE, and sprayers) for the November-December spray campaign were quantified and procurement processes were implemented. Compression sprayers arrived in Madagascar in September; and other commodities are expected to arrive in October. With input from USAID/Madagascar and the SLP, alphacypermethrin was selected as the insecticide to be used and the order for delivery was placed.

IEC Development and Implementation

The IRS TO1 team worked with the SLP and the L'Unité de Gestion du Programme (Program Management Unit; UGP), the principal recipient of GFATM funds, to review IEC

materials that will be used during the campaign. These materials were revised during a workshop held in September. The SLP has taken the lead in the development and implementation of the IEC campaign; IRS TO1 continues to provide the necessary assistance as needed.

Spraying Operations

Recruitment and Orientation for District Administration

In July, the IRS TO1 team initiated the recruitment of district logisticians and finance assistants. Job announcements were posted in the local newspaper. As of the end of the quarter, all candidates had been identified and were in the process of being hired.

Environmental Mitigation Set-up

To minimize environmental exposure to sprayers and beneficiaries, IRS TO1 took the following steps in compliance with the approved Madagascar Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP):

- Warehouses and secondary storage spaces were renovated, following the WHO and FAO rules and regulations.
- IRS TO1 worked to ensure that liquid and solid waste from the previous and current campaign will be collected and properly disposed.
- In September, IRS TO1 with the SLP identified the areas that will be designated to build soak pits and where progressive rinsing will be carried out. The construction of soak pits has been initiated.
- IRS TO1 worked closely with the SLP and UGP/GFATM to develop a work plan to ensure that all the partners are following the same technical quality and environmental safety components during the spray campaign.

Project Management and Administration

Staffing

A finance assistant was hired in August to help with the financial processes in the Antananarivo office.

An environmental specialist has been identified and will be brought on board as a consultant for a period of approximately six months. The consultant is expected to begin work immediately after receiving the contract and will continue to support the IRS TO1/SLP team after the spray campaign. He will also work in close collaboration with the environmental specialist based in Nairobi, who will visit Madagascar before spray operations begin to do the pre-spray environmental compliance inspection in October. In addition, the consultant will work with the MOE to fully integrate them into the program for the next campaigns.

Ms. Bijou Muhura assumed HOTM responsibilities from Dr. Volkan Cakir who had been acting HOTM since April.

Outstanding Issues

The IRS TO1 Madagascar team participated in national malaria control technical committee meetings on August 6 and September 23, 2008. The following decisions are notable:

- The first round of spray operations will be conducted by the SLP with support from IRS TO1 from November 10 to December 15, 2008.
- A second round of spray operations will be conducted in other highland areas by UGP/GFATM and will be carried out in two phases, the first beginning on December 1, 2008, and the second between January 12 and March 3, 2009.
- Women will be recruited to play roles other than IEC in spray operations, including being recruited as spray operators.
- As in other countries' spray campaigns, stickers will be placed on household structures during the geographical reconnaissance/mapping. During the campaign, these stickers will be signed or marked when IEC mobilizers and spray operators pass through.
- IRS TO1 will work with SLP to train storekeepers on stock management and safety protocols and train drivers on transportation protocol, to ensure compliance with environmental and safety regulations.

Upcoming Activities for the next quarter

- The TOT workshop for zone and sector managers will be conducted in Antananarivo.
- Training workshops will be held for sprayers, IEC mobilizers, community health agents, drivers, storekeepers, zone and sector managers, and RTI district assistants.
- IEC mobilizers, sprayers, storekeepers, and guards will be recruited.
- Geographical reconnaissance and mapping and quantification of the number of structures and population will be finalized.
- PPE and insecticide will be distributed to communal warehouses.
- Warehouses and secondary storage spaces will be renovated, following USAID's and the FAO environmentalist's recommendations.
- Spray operations will commence November 10, 2008.

Malawi

Background

As the fourth quarter of FY08 preceded the beginning of the October 2008 spray operations in Malawi, IRS TO1 undertook the selection, procurement and delivery of pesticides and PPE during this quarter. To best inform the upcoming spray operations, IRS TO1 held a lessons learned workshop to review the lessons of the first round of IRS and to plan for the second round. The workshop was attended by representatives of six districts scheduled to conduct IRS in the future. A new COP, Juliette Chateauf, was recruited by RTI during this quarter and began her duties in September. IRS TO1 also recruited spray operators from the experienced sprayers of round one.

The pre-spray environmental compliance inspection took place at the end of the quarter. The inspection made recommendations for upgrades and changes in procedures and the inspector supervised the environmental components of the spray operator training.

Current Activities and Accomplishments

Planning and Assessment

Pesticide Selection

For the 2008 spray round, IRS TO1 solicited bids for any WHO-approved pyrethroid registered for use in Malawi. IRS TO1 presented the qualifying bids along with technical recommendations to the NMCP for consideration and comment. After deliberation, NMCP concurred with the recommendations as presented and IRS TO1 placed an order for lambda cyhalothrin 10% capsule suspension (ICON 10CS).

Procurement and Logistics

Pesticides

For the 2008 spray round in Nkhosakota, IRS TO1 procured 24,000 sachets (1,500 kilograms) of ICON 10CS. The shipment arrived in Malawi on September 28.

Spray Pumps and Parts

No new spray pumps were procured for this year's spray round. IRS TO1 borrowed 12 Hudson Xpert spray pumps from Mzimba District and serviced and refitted eight of them were refitted with new gaskets and parts. The other four required extensive rebuilding, which will be conducted by IRS TO1 during the next quarter. After the end of the spray round, these pumps will be returned, fully rebuilt and refitted, to Mzimba District.

PPE

IRS TO1 assessed the need for additional PPE for the upcoming round and found that as fewer spray operators are participating in the upcoming round than did in round one, the PPE requirements are reduced. Thus, IRS TO1 did not procure additional coveralls, helmets, or

boots for this round. However, gloves, masks, face shields, and other PPE with short life spans were replenished in preparation for round two.

IEC Development and Implementation

IEC Material Design and Development

In August, RTI NRO Director, John Chimumbwa, and the Home Office Technical Manager for Malawi, Jake O'Sullivan, reviewed and revised the IEC materials from round one in consultation with Nkhotakota District Health Management Team (DHMT) staff. These materials were then submitted to NMCP for concurrence and translated into Nkhotakota-specific language. The presentation, translation, and size of the materials were improved based on feedback and lessons learned from round one.

Training of IEC Mobilizers

Approximately 125 mobilizers, mostly health surveillance assistants from the MOH received three days of training on IEC activities from IRS TO1, DHMT, and Illovo Sugar Estates. Training took place in Dwangwa from September 15–17 for the first group one and from September 18–20 for the second group. Along with IEC mobilization modules, the training covered “IRS misconceptions and community concerns” based on feedback gathered in the community open meetings conducted after round one.

IEC Campaign Implementation

IEC activities started on September 18 following training of the first group of IEC mobilizers. IRS TO1 began community meetings, distribution of IEC materials (brochures and leaflets), and door-to-door visits in each village to raise the level of community understanding of IRS and the importance of integrated malaria control activities. Mobilizers worked to involve villagers to ensure high acceptance and coverage by conducting village meetings with influential leaders including chiefs, school teachers, religious leaders and political leaders. IRS TO1’s mobilizers also confirmed the eligible structure count for geographic reconnaissance.

Village chiefs and village volunteers were selected to be used as community mobilizers in their respective villages. A total of 703 chiefs and village volunteers (representatives from more than 500 villages) attended one-day training sessions in their respective centers. The trainings were conducted in 10 sites September 25–27. The trainings discussed the negative impact of malaria in the community, the importance of IRS, and how to deliver appropriate and accurate information to the community and address concerns regarding the IRS.

Spraying Operations

Geographic Reconnaissance and Detailed Planning

In preparation for the 2008 spray round, the IRS TO1 team in Nkhotakota conducted a detailed updating of the spray area mapping and quantification during September.

Environmental Mitigation Set-up

Autman Tembo, RTI’s Senior Environmental Inspector, visited Malawi in September to conduct a pre-spray environmental compliance inspection. The inspection visit extended past

the end of the current reporting period. Mr. Tembo's full report is expected in the next quarter. During his trip, he supervised the environmental components of training for all classes of spray staff. He certified that the clinicians' training took place, pregnancy testing was conducted for female spray operators, and emergency medicines were in place in the spray area health facilities (with the exception of activated charcoal, which the District Medical Office will procure).

Recruitment and Training for Spray Teams

The recruitment of operators took place on September 22. Operators who participated in the first spray round were invited through local radio to come and sit for the exam and apply for positions in round two. Of the 194 operators who applied, 189 sat for the theoretical exam on September 22, and 159 passed and were selected. Additional testing and training is planned for the following quarter to field a total of 150 spray operators for round two.

Other Activities

End of Round Evaluation

- On August 26, IRS TO1, PMI, NMCP and the Nkhotakota DHMT conducted a one-day lessons learned workshop in Lilongwe to review the lessons learned from round one of IRS in Nkhotakota. Six other districts planning on implementing IRS in the future sent participants to the workshop in order to facilitate their planning for future spray rounds. The workshop included presentations from PMI, NMCP, Nkhotakota DHMT, Illovo Sugar, College of Medicine/Malaria Alert Centre, and IRS TO1.

Lessons learned from round one include:

- Start earlier in the year to finish before the rains begin.
- Conduct thorough and timely community IEC and mobilization to increase coverage and ease the burden on spray operators.
- Oversight and supervision are key to a successful IRS operation
- Conduct geographical reconnaissance before starting spray operations
- Communicate well-defined monitoring indicators to all key stakeholders
- Involve chiefs and village volunteers.

All of the lessons learned from round one have informed and contributed to the organization of round two.

Monitoring and Evaluation

Information Collection Plan

In August, John Chimumbwa and Jake O'Sullivan worked closely with Carl Campbell of CDC/Malawi to redesign the reporting system used during spray operations. They developed a daily spray card to record field data by spray operators. The new card design was shared with NMCP and translated into Chichewa. In October, Carl Campbell, RTI's Mohammed Saleh and the DHMT IRS team will train staff in data gathering and data entry and to oversee the implementation of the new system.

Project Management and Administration

Staffing

RTI recruited a COP, Juliette Chateauf, who began work in September 8 with her orientation in Nairobi at IRS TO1's Program Planning Week. She assumed duties in Lilongwe on September 15.

Office and Warehouse Space

IRS TO1 renovated the rented warehouse space in Dwangwa by fixing the windows, doors, and locks to achieve security of the facility. The temporary warehouse used in Dwambazi was also renovated in the lead-up to the spray round.

Upcoming Activities

Round two of Nkhotakota IRS will be launched on October 16. The initial schedule has the round ending on November 22, barring weather or other delays. It will cover the same territory and population as round one. Trainings will be completed in October before the round begins. During the round there will be another environmental compliance inspection. Following the round there will be community open meetings to gather community responses to IRS and the wider malaria program in Nkhotakota. These meetings will be implemented by the Nkhotakota DHMT with assistance from IRS TO1.

The project will supply Illovo Sugar with pesticide so that they can spray the housing within the Dwangwa Sugar Estate.

Mali

Background

During the fourth quarter of fiscal year 2008, from July 1 to September 30, IRS TO1 conducted spray operations in two malaria epidemic-prone districts, Koulikoro and Bla. Spray operations began on July 5 and ended on August 30, lasting for 50 days. In total, 107,638 structures were sprayed and 420,580 people were protected.

IRS TO1 worked throughout this quarter in close collaboration with NMCP, the Malaria Research Training Center (MRTC), USAID/Mali, Ministry of Environment, Ministry of Agriculture, Ministry of Social Development, DRS Koulikoro and Segou, community health centers (Centres de Santé Communautaire; CSCOMs), Community Health Associations, CSREF, mayors, sub-prefect, village chiefs, and community radio stations to conduct IEC, training, and spray operations.

Current Activities and Accomplishments

Planning and Assessment

Environmental Assessment and Compliance

Approval was received in July for the EIA submitted in May of 2008 to National Department of Sanitation, Pollution, and Nuisance Control (DNACPN), allowing spray operations to proceed.

The pre-spray environmental compliance inspection was conducted in July by Mr. Gaspard Bikwemu, an RTI environmental specialist based in the NRO. During his visit, Dr. Bikwemu met with stakeholders involved in IRS activities and spent time in the field with the RTI environmental consultant Mr. Bakary Toure, Dr. Alhassane Ag. Haiballa of the NMCP, and Maiga Alhousseyni of DNACPN. The team made sure that all environmental rules and regulations were followed and that the program was in compliance with the recommendations prior to spraying.

Pesticide Selection

ICON insecticide was used for this round of spray operations in Mali. Though ICON is approved by WHO to be used in IRS activities it was not registered for use in spray operations in Mali. IRS TO1, in collaboration with NMCP, requested that the Ministry of Agriculture provide a temporary importation waiver for ICON. The approval from the Ministry of Agriculture was received prior to the start of spray operations on July 5.

Procurement and Logistics

Pesticides

The shipment of 3,600 liters of ICON was received at the central warehouses of Koulikoro and Bla on July 5, 2008, allowing spray operations to commence.

Spray Pumps and Parts and PPE

WHO-approved Hudson X-Pert compression sprayers were procured for each spray operator, with extras for each team for emergency and repair situations. PPE, in accordance with WHO specifications, was provided to each spray operator, team leader, washer, and driver.

Environmental Compliance

In order to abide by the rules and regulations of FAO regarding the storage of hazardous material, the central warehouses of Bla and Koulikoro were renovated, as were 42 secondary storage facilities (17 located in Koulikoro and 25 in Bla). Renovations included installing additional doors, windows and ceiling fans in the central warehouses of Bla and Koulikoro where the pesticide will be stored to enhance ventilation. The central warehouses were also portioned so that there is clear separation between where the pesticides are stored and where all other equipment including PPE, compressions sprayers, and liquid and solid waste were stored. All other FAO rules were followed. Soak pits were constructed at the 42 secondary storage facilities. Barrels were placed at all 42 sites, located next to the soak pits so that progressive rinsing can be used when cleaning the compression sprayers at the end of each spray day.

IEC Development and Implementation

IEC Campaign Implementation

IRS TO1 conducted door to door IEC by IEC mobilizers and hosted meetings with community leaders and community health workers to increase IRS coverage during spray operations. Additionally, local radio stations broadcast public service announcements about IRS; interviews with beneficiaries, and a song about IRS to inform communities about the benefits of IRS and the steps to be taken before, during, and after IRS.

Spraying Operations

Environmental Mitigation Set-up

IRS TO1 worked closely with the Regional and Circle offices of the MOE and the Ministry of Agriculture, who provided qualified staff to monitor spray operations and ensure that environmental safeguard processes were followed. Monitors were also tasked to ensure that insecticide sachets were being handled safely, the proper use of PPE, the proper marking of areas designated for cleaning equipment, the proper marking of progressive rinsing areas, and the proper channeling of contaminated water into soak pits. These functions were incorporated into the duties of RTI's quality control monitors.

Recruitment and Training for Spray Teams

Community leaders recruited spray operators and used the system of health workers already in place in the country to identify and recruit spray operators. The NMCP led the selection process and IRS TO1 staff supported the process by evaluating selected candidates against the required criteria: ability to read and write, physically fit, and for women, not breast feeding or pregnant. Spray operators were selected at the CSCOM level and organized in teams.

IRS Launch

The IRS launch ceremony was held on July 1 in the Circles of Bla and Koulikoro simultaneously. In Koulikoro Circle, the launch ceremony was held in Tienfala and was officiated by the Minister of Health, Mr. Oumar Ibrahima Toure. In Bla, the ceremony was held in Touna, and was officiated by the PMI representative, Mr. Sixte Zigirumugabe.



Picture: USAID/Mali Director, Alex Newton, Mali Minister of Health, Mr. Oumar Ibrahima Toure , and WHO representative in Mali, Dr. Fatoumata Bintou Diallo at the IRS launch watching a spray operator demonstrating how progressive rinsing is done.

Post-spraying Operations

Post-spray operations were conducted in close collaboration with the NMCP and the MOE. All equipment stored in the 42 storage facilities was collected and stored in the central warehouses of Koulikoro and Bla. All PPE was cleaned and stored to be used in the following round. The remaining pesticide has been stored according to guidance from the RTI environmental specialist, USAID/Mali, the NMCP, and the Malian MOE.

Monitoring and Evaluation

Progress on Core Indicators

257,660 people in the Circle of Bla and 162,920 people in the Circle of Koulikoro were protected by IRS, for a total of 420,580 people. Results of the spray operations are outlined in the following table.

IRS Indicators for Mali

	Structures identified	Structures sprayed	% Coverage
Circle of Bla	74214	66342	89%
Circle of Koulikoro	44980	41296	92%
Total	119194	107638	90%

Project Management and Administration

Staffing

In July, RTI recruited a new Office Manager, Kadidiatou Dembele, and in August, a Finance Manager, Minata Sidibe.

Partnership and Collaboration

USAID Partners

On August 15, 2008, IRS TO1 hosted the U.S. Secretary of Health and Human Services, Michael O. Leavitt; the PMI Coordinator, Admiral Timothy Ziemer; the Mali CDC Director Dr. Julie Gerbenbeng, the USAID/Mali Director, Alex Newton; the WHO regional director, Dr. Luis Gomes Sambo; the WHO representative in Mali, Dr. Fatoumata Bintou Diallo; and the Mali Minister of Health, Mr. Oumar Ibrahima Toure.



Picture: PMI Coordinator, Admiral Timothy Ziemer; the Malian Minister of Health, Mr. Oumar Ibrahima Toure, and the U.S. Secretary of Health and Human Services, Michael O. Leavitt visit IRS operations.

Upcoming Activities

- Present results from the July-August spray operations to the Mali IRS Task Force.
- Prepare for and conduct meetings in local communities to discuss results from spray operations in Bla and Koulikoro.
- Begin preparing for the next IRS campaign.

Mozambique

Background

During the fourth quarter of FY08, IRS TO1 conducted planning, preparation and mobilization of resources for the 2008 spray operations which began on August 11 in Zambezia province. IRS TO1 procured PPE, spray pumps and spare parts, and other IRS materials; established district training centers; undertook recruitment and trainings; prepared base sites for IRS operations; put in place environmental safe guard measures, and, during September, launched and implemented IRS seasonal activities in the 6 target districts.

IRS TO1 consolidated the previous season's activity data to develop a database and performed macro and micro level planning in collaboration with the Provincial Department of Health (Departamento Provincial de Saúde; DPS), paying special attention to refocusing the program to reduce some of the logistical costs. As a result of this planning, IRS TO1 and the provincial health team developed the 2008-2009 IRS activity plan targeting 503,000 houses in 48 localities in 6 districts and the resource mobilization plan. IRS TO1 then estimated quantities and defined specifications of necessary items and procured all PPE and IRS related material. Gearing up for the spray campaign, IRS TO1 facilitated the participation of 14 brigade chiefs (district IRS coordinators) in the national TOT session, planned and facilitated the establishment of five district training centers in collaboration with the DPS and district malaria programs, and carried out district-level training for spray operators and community mobilizers during a 15-day training session. Concurrently, IRS TO1 planned and established district operational base centers with adequate environmental safe guard measures in all six target districts. IRS TO1 also supported an entomology and vector resistance management course for malaria control for provincial malaria coordinators and biologists.

Current Activities and Accomplishments

Planning and Assessment

Logistics Assessment

Assessments were done by IRS TO1 to support the procurement of PPE, spray pumps, and other commodities for the 2008-2009 IRS season. A broader geographical, programmatic, and logistical assessment was performed to detail the necessary activities to successfully cover 503,000 target houses within 60 working days, employing 846 operators, 141 community mobilizers, and transporting supervisors from the NMCP, the Ministry of Coordination and the Environment (MICOA) and the Ministry of Agriculture. .

Environmental Assessment and Compliance

A pre-spray environmental compliance inspection was performed during this period. The report was submitted to the PMI team by the regional RTI environmental inspector, Mr. Autman Tembo. All recommendations indicated in the report were adhered to in all 6 districts.

Procurement and Logistics

IRS TO1 successfully procured 15-gallon spray pumps and spare parts, PPE, and other IRS materials for the 2008-2009 activity season. IRS TO1 also procured office equipment, 1500 promotional and educational T-shirts, and two sample storage refrigerators.

IEC Development and Implementation

IEC Material Design and Development

Radio spots emphasizing the importance of community involvement in house spraying were developed by the DPS and IRS TO1. These two radio spots for provincial and district radio transmission were broadcast for two weeks at intervals before the initiation of the IRS campaign. Guides and teaching materials for community mobilizers were also developed and used during the training for IRS community mobilizers.

Training of IEC Mobilizers

In each district, the district IRS coordination team (including IRS TO1) carried out the training of community mobilizers. A total of 143 community mobilizers were trained on mobilization and malaria control activities during a five-day session in each of the IRS target districts.

IEC Campaign Implementation

IRS TO1's IEC team conducted door-to-door mobilization of households a day in advance of the planned spray date for each locality. Any negative outcomes during the mobilization efforts were reported to the operational base supervisors and discussed with local authorities, and resolved through local council group interaction with the target community. Each mobilizer covered the geographical area sprayed by one spray team and covered about 60–80 house structures per day.

Spraying Operations

Geographic Reconnaissance and Detailed Planning

To reinforce sustainable operations and follow national strategies such as selective or targeted spraying, revised micro level planning was carried out during the current quarter by the DPS and IRS TO1. As a result of this planning, it became clear that there was a need to withdraw from certain localities where IRS operations would be less cost effective and unsustainable. IRS TO1 and the DPS developed a refocused plan, targeting approximately 503,000 houses (a reduction from initial estimate of 550,000) in 48 localities in the six districts. Accordingly, there were reductions in the number of operators (by 15%), mobilizers (by 10%), and vehicles (by 40%).

Recruitment and Orientation for District Administration

Preparation and implementation visits were conducted in all 6 districts. IRS TO1 and the district administration discussed steps necessary for preparing the training centers to be used for spray operator training and the importance of thorough supervision. To address this matter, each district drew up a supervision plan with the NMCP/MICOA and Ministry of

Agriculture counterpart staff. These plans were reviewed by the DPS Director and Coordinator and shared with IRS TO1.

Environmental Mitigation Set-up

IRS TO1 ensure environmental safeguards to prevent DDT soil contamination in all 23 operational bases. Sets of 50-liter containers were set up for the daily triple washing of pumps and the DDT contaminated rinse water was recycled for spraying the following day. IRS TO1 also adopted triple rinsing of overalls to further minimize the risk of environmental contamination. The storage facilities for DDT at operational bases were protected 24 hours a day by three alternating guards to prevent intrusion and theft of material.

Recruitment and Training for Spray Teams

Recruitment of spray operators was done through a local community religious leader organization called Programa Inter-religioso de Combate Malaria. Potential operators were reviewed and recommended for training by the DPS and district malaria coordinators of the NMCP. The process for recruiting IEC mobilizers was similar, with priority given to women since they are not allowed to perform actual spray activities during this IRS season as per NMCP guidelines.

About 60 supervisors from previous years of IRS operations were selected by DPS to act as trainers during the sessions and were paid instructor allowances. The district IRS chief of brigade (district coordinator) was in charge of the district training sessions.

In total, 1139 spray operators, 143 community mobilizers were trained. The training program consisted of theory, practical sessions, and a field testing day and lasted 15 days for operators and 5 to 7 days for mobilizers.

Logistics Support for Spray Operations

CA-Mozambique provided logistics support, guaranteeing vehicles hired from local sources and payment of spray operators and mobilizers. As of the end of the quarter, a total of 815 spray operators, 138 team leaders, 49 laundry personnel, 24 storekeepers, 6 pump repair technicians, 70 security guards, 140 community mobilizers and 57 supervisory staff were being paid by CA for implementing IRS activities in the six districts. All the payments for NMCP and DPS supervisory staff were made by the RTI office in Quelimane.

IRS TO1 hired a total of 60 vehicles to facilitate the daily transport of operators. Transport for M&E supervision required an additional five vehicles, provided by IRS TO1.

Other Activities

Capacity Building of the MOH

RTI's COP, Mr. Chandana Mendis, facilitated a vector biology and resistance monitoring course offered by the NMCP for 20 biology graduates who were later posted to provinces as provincial coordinators of malaria control programs. The course took place over 10 days, of which Mr. Mendis tutored and facilitated 4 days.

Baseline Environmental Monitoring

To comply with mitigation measures included in USAID's Supplemental Environmental Assessment (SEA) for IRS operations in Mozambique, IRS TO1 conducted baseline environmental monitoring to determine background concentrations of DDT in the target districts of Nicoadala, Quelimane and Namacurra in Zambezia Province. Approximately 240 samples (48 duplicates and 191 regular) were collected. The samples were stored in a refrigerator as they await shipment to the lab for analysis. Once final analysis data has been received, IRS TO1 will draft a report for circulation.

Project Management and Administration

Office and Warehouse Space

RTI maintains a central office in Maputo and a field operations office in Quelimane. Two warehouse buildings (one for storage of PPE and pumps and the other for insecticide waste and unused insecticides) are also maintained in Quelimane.

Partnership and Collaboration

National Partners

IRS TO1 supported its national partner the NMCP by facilitating the vector biology course and supporting the participation of Zambezia province representatives at the training course in Beira.

In addition, IRS TO1 supported the training and participation of MICOA representatives in baseline sample collection for monitoring the use of DDT in various target districts in Zambezia. This training will encourage sustainability and ownership of such monitoring activities by the Zambezia MICOA.

Outstanding Issues

- Construction of evaporation tanks and establishment of district storage facilities
- Procurement of vehicles
- Entomological activities through LATH subcontract
- Renewing and resigning of MOU with DPS Quelimane for 2008–2010 period
- Establishment of insectary and entomological monitoring activities in Zambezia province
- Rehabilitation of central entomology laboratory in Maputo

Upcoming Activities

- Implementation of the current IRS activities, including monitoring and data collection, until the end of November
- Placement of DDT storage structures in district bases through partner CA-Mozambique by December

Rwanda

Background

The second round of spray operations was launched in Rwanda in August 2008. Approximately 195,872 houses in 5 districts were targeted during the spray round, which will be completed in October. In July, more than 2236 spray operators were trained in IRS by 72 IRS-TO1 trained National Integrated Malaria Control Program (Programme National Intégré de Lutte contre le Paludisme; PNILP) spray supervisors using RTI's IRS training manual. IEC activities were conducted in 36 sectors. IEC activities included radio spots, distribution of brochures and stickers, and house-to-house sensitization. In total, IRS TO1 supported the training of 192 IEC implementers at the district level and 3,036 at village level, of which 1407 were female. RTI's environmental specialist, Tito Kodiaga, led a team of PMI and PNILP staff in the efforts to finalize a solution for disposal of IRS solid waste in Rwanda. In the area of entomological monitoring and capacity building, Dr. Josephat Shililu completed plans for the construction of an entomology lab and a training course manual to increase capacity of field technicians in entomological surveillance.

Current Activities and Accomplishments

Planning and Assessment

Environmental Assessment and Compliance

Mr. Tito Kodiaga, RTI's environmental specialist, visited the Rwanda IRS program from July 12 to August 5 to conduct the environmental compliance assessment. Mr. Kodiaga visited all five districts during his visit and inspected soak pits, storage facilities for ICON and PPE at the district and sector level, the central warehouse in Kigali, and PPE, spray cans, barrels, and gloves. Mr Kodiaga also researched the disposal of empty pesticide sachets and presented three options to PNILP and PMI:

- Purchase and replace filter at Kigali Teaching Hospital Incinerator.
- Purchase and install new incinerator at Kigali Teaching Hospital site.
- Purchase new incinerator and install it at CAMERWA (Centrale d'Achats des Médicaments Essentiels du Rwanda/Central Purchasing of Essential Drugs, Medical Consumables and Equipment in Rwanda) compound.

IRS TO1 expects to have a solid waste disposal solution in place prior to the start of the next spray round in January 2009.

In September, Ms. Jeanne Chabrier conducted the mid-spray inspection on environmental compliance. She visited all five districts and found the environmental compliance to be satisfactory.

Procurement and Logistics

IRS TO1 procured the necessary materials and equipment for round two spray operations in Rwanda, including spray pumps, PPE, pregnancy test kits, and insecticide. All of the materials arrived in Rwanda prior to the spray operation launch date of August 26,

IEC Development and Implementation

IEC Material Design and Development

The IEC strategic plan, developed in July through a joint collaboration between IRS TO1, PNILP, PSI, and the Health Communication Center (HCC), detailed community mobilization activities for target districts. As a part of the plan, a total of 206,000 IEC brochures and 231,000 stickers were designed, produced, and distributed by September 30, 2008.

Training of IEC Mobilizers

From July 25 to August 2, 82 IEC implementers were trained at the sector level, 192 at the district level, and 3,036 at village level, of which 1407 were female. The IEC implementers were trained by PNILP, PSI, HCC, and IRS TO1 staff on community safety and IRS with financial support from IRS TO1.

IEC Campaign Implementation

Under IRS TO1, IEC activities were conducted in all 36 sectors. IEC implementers carried out house-to-house sensitization campaigns to inform beneficiary populations of what do to before, during, and after IRS. Five private and national radio stations were used to communicate IRS messages to the community.

Spraying Operations

Environmental Mitigation Set-up

Before spray operations began, IRS TO1 constructed 36 soak pits at the sector level throughout the five districts.

Recruitment and Training for Spray Teams

From July 25-29, 72 PNILP spray supervisors took part in a training of trainers in all aspects of IRS. From August 1 to 6, 2,236 spray operators were trained by the PNILP trainers to conduct spraying for the spray round conducted this quarter. Due to some sprayers dropping out or becoming pregnant, 1,885 spray operators took part in the spray round.

Spray Operations

The second round of IRS operations in Rwanda was officially launched on August 26 by Ms. Caroline Kayonga, the Permanent Secretary of the MOH and the Rwanda USAID Mission Director. Operations were conducted in the selected 5 districts (Kicukiro, Gasabo, Nyarugenge, Nyanza and Kirehe) with 195,872 households targeted to be sprayed during the eight-week campaign. Spray operations continued into the next quarter.



Dignitaries attend the launch of the second round of IRS operations in Rwanda.

The monitoring of spray operations in all districts was carried out jointly by PNILP and IRS TO1. The monitoring helped the IEC team to identify and respond to households that were refusing to participate. Sector Managers and IEC implementers worked with local leaders to increase community participation, and eventually the refusal cases consented to having their houses sprayed.

Other Activities

Entomological Monitoring and Capacity Building of the MOH

From August 24–September 8, Dr. Josephat Shililu, IRS-TO1 Consultant, provided technical support to the PNILP to strengthen entomological surveillance at 11 sentinel sites and to support the building of an insectary. The following specific activities were conducted:

- Completed groundwork for the design and construction of an insectary
- Provide technical assistance for the design and development of an insectary within the Kigali Health Institute, advising on the procurement of the required equipment and supplies
- Examine the capacity of 11 sentinel sites and central level for entomological surveillance.
- Develop basic entomological data collection tools for the sentinel sites.
- Assess in-country training needs and develop/adapt the draft field entomology training plan for field technicians to include sampling, identification techniques, and data entry for entomological surveillance as part of routine monitoring and reporting practices.
- Work closely with the PNILP to identify field technicians targeted for the training, and develop a training plan and proposed dates for field entomology training.
- Identify entomological equipment and supplies required for the insectary.
- Identify additional entomological equipment and supplies required for sentinel site entomological surveillance and for the field entomology training program.

Project Management and Administration

Staffing

Dr. Adama Kone joined RTI in Rwanda on September 29 as the COP. Dr. John Chimumbwa, the Regional Nairobi Office Director, traveled to Rwanda in September to introduce Dr. Kone to key stakeholders and to provide orientation to the project.

Outstanding Issues

- Disposal of empty ICON sachets, gloves, and masks is a critical issue which needs to be resolved before the next spray round in January. Solutions for disposal are under investigation: the replacement of the incinerator filter at Kigali Teaching Hospital and building a new or renovating an existing incinerator at the CAMERWA compound. The options are currently being discussed by PMI and PNILP.
- Discussions between IRS TO1 and PNILP regarding whether to use a long lasting insecticide for the third round. IRS TO1 explained the benefit of long lasting ICON CS and PNILP is recommending conducting a test in one pilot district which would be monitored and documented for country-wide use in the future.

Upcoming Activities

- Finalize a solution for disposal of empty ICON Sachets and other waste materials
- Plan third round of IRS operations activities scheduled for January 2009 in collaboration with PNILP and other partners
- Conduct entomology training for field technicians
- Construct an insectary.

Senegal

Background

During this quarter, IRS TO1 focused its activities on the end of the second IRS round implementation in Velingara and Nioro districts and the preparation and implementation of the third round in Richard Toll. IRS TO1 collaborated with the Hygiene Service and MOH to train 140 spray operators, of which 13% were women. The total spray coverage for structures by district was 94.1%, 95.1%, and 95.4% for Velingara, Nioro, and Richard Toll, respectively.

Current Activities and Accomplishments

Planning and Assessment

Environmental Assessment and Compliance

Before start up of operations, IRS TO1 in collaboration with the Plant Protection Division of the Senegalese Ministry of Agriculture and the Hygiene Service undertook an environmental assessment in the three targeted districts and confirmed the choice of storage areas.

Procurement and Logistics

Using information from the first round of spray operations in 2007, IRS TO1 conducted a logistics needs assessment to determine additional IRS commodities required for spray operations in 2008. IRS TO1 arranged all procurement, shipping, delivery, and storage of compression sprayers, spare parts, sprayer maintenance kits, insecticides and PPE.

Car rental agreements were coordinated by district logistics assistants and all spray material was delivered to the respective IRS centers in the districts of Nioro, Velingara, and Richard Toll.

IEC Development and Implementation

IEC activities were managed and led by the Christian Children's Consortium in collaboration with IRS TO1, district authorities, and the PNLP. The following IEC activities were implemented within this time period:

- Community meetings held by IEC implementers in collaboration with local leaders, women's groups, and health workers.
- Training of radio presenters on IRS and IEC information and the placement of IRS advertisements on local radio stations.
- Development of an IEC implementer operational schedule by the Christian Children's Fund (CCF) IEC coordinator and the chief nurse within each health post/facility.
- Training of IEC implementers in collaboration with community health nurses.
- Distribution of IEC posters in schools.

Spraying Operations

Recruitment and Training for Spray Teams

In Richard Toll district, the recruitment of spray operators was undertaken by the district health authorities and operators were selected after a medical visit attesting to their physical fitness. The training of spray operators was done 10 days before the start of the spray round. The training personnel were composed of Hygiene Service, MOH, and Plant Protection Division staff.

The spray operator training results were as follows: 6 group leaders including 2 women; 24 team leaders including 4 women; and 110 sprayers including 12 women. In total, 140 operators were trained, and 13% were women.

In addition to the spray operators training, pump technicians were trained by the spray can specialist from the Plant Protection Division in spray can calibration, new valve assembly, and the maintenance of old spray cans.

IRS Operations

Prior to spray operations in the Richard Toll district, IRS TO1 presented the IRS spray calendar to the district health officer and head nurses for approval. Group leaders were instructed to conduct field reconnaissance on the eve of each spray day.

The third round of IRS in Senegal began with a launch ceremony held on July 10 in the rural community of Ross Bethio. During the launch, a spraying demonstration intended to reassure reluctant beneficiaries was conducted in the Sub-Prefect's house. Following the launch, spray operations commenced in the entire health district of Richard Toll.

As the IRS operations drew to a close, two days were required for mop-up operations before completion. In Vélingara, spray operations were completed on July 10. In Nioro, IRS operations were completed on July 17. Spray teams from Keur Maba and Medina Sabakh, having already completed spraying in their areas, were mobilized to support those behind schedule.

In Richard Toll, the IRS activities went smoothly and with no major problems. Populations adhered to the spraying program. The third IRS round in Richard Toll ended on August 18.

The final IRS results in the three districts are indicated below:

IRS Indicators by District

District	Number of structures		Sprayed				Unsprayed
	Sprayed	Unsprayed	Number of rooms	Total Pop.	Children <5 years	Pregnant Women	Number of rooms
Nioro	68,683	3,502	103,522	269,104	64,115	8,058	8,842
Richard Toll	21,721	1,039	55,176	129,074	22,280	2,701	5,303
Vélingara	63,538	3,956	102,294	247,168	58,430	10,956	6,622
TOTAL	153,942	8,497	260,992	645,346	144,825	21,715	20,767

The percentages of structures sprayed are 94.1%, 95.1%, and 95.4% for Vélingara, Nioro, and Richard Toll, respectively.

Supervision

The IRS TO1 management team and the Hygiene Service provided technical supervision to ensure that spray operations were conducted in accordance with prescribed technical procedures for dose dispensation on the wall, ceiling, eaves, and other surfaces suitable for mosquito resting. Corrective actions for the spray operators' mistakes were taken immediately to improve performance and efficiency of the team.

Post-spraying Operations

In each district, an end-of-spray ceremony was organized for spray teams in the presence of local authorities and other IRS partners. End-of-spray round certificates were awarded to all spray operators.

After the completion of spray operations in each health district, IRS TO1 conducted an inventory and storage facility assessment; collected all IRS equipment and conducted equipment maintenance, stored empty ICON sachets and other solid waste in the central warehouse, conducted post-spray medical examinations for spray operators, and held debriefing meetings with district authorities and key stakeholders.

Project Management and Administration

Anna Thompson, the former IRS Home Office Technical Manager for Ghana, Rwanda, and Senegal, visited Senegal June 30–July 5 to see the IRS operations progress. She expressed her satisfaction after her visit to the Nioro team and provided some recommendations in terms of securing the ICON storeroom. She had a project oversight meeting with IRS TO1 team in Dakar to ensure effective supervision of IRS operations in the field.

Partnership and Collaboration

USAID Partners

PMI Technical Advisor Dr. Robert Perry visited Richard Toll (village of Diadam 3 in the health area of Mboundoum) and observed spray operators to ensure the quality of spraying. He also participated in the review of IRS TO1's spray operations training manual, where edits for a final version were discussed.

Outstanding Issues

- For future rounds, ensure the availability of medicines for the management of poisoning cases
- For future rounds, procure female-sized boots, which are not available in the Senegalese market.

Upcoming Activities

- The next spray round for Richard Toll is planned for January–February 2009.
- A local solution for the incineration of solid waste is being discussed and it is anticipated that IRS TO1 will be ready to move forward before the end of 2008.
- Work with partners to finalize the Spray Operations Manual for the Senegal IRS program, to be completed next quarter.

Uganda

Country Background

Funded by PMI through USAID, IRS TO1 is providing strategic, technical, management, operations, and financial support to the Uganda NMCP to expand the use of IRS as an intervention for malaria prevention and control. This report provides a summary of activities conducted under this project during the period July to September 2008 and highlights potential opportunities for future programming. During the reporting period, activities were conducted in the districts of Apac, Kabale, Kitgum, Kanungu, Oyam, Pader and Rukungiri. Not enough time to do more on this.

Current Activities and Accomplishments

Project activities including social mobilization and IEC efforts in target communities, training of spray personnel, procurement and distribution of commodities, management and safe disposal of waste, and the coordination, monitoring, and reporting on progress of IRS implementation were conducted in the districts of Oyam, Apac, Kitgum, Pader, Kabale, and Kanungu.

Planning and Assessment

Logistics Assessment

IRS TO1 completed mapping of the distance from each operational center (sub-county or a camp for internally displaced persons) to the most distant villages in Kabale, Kanungu, Rukungiri, Oyam, and Apac districts to assist in planning IRS activities.

Environmental Assessment and Compliance

Environmental compliance activities under this program were carried out by IRS TO1 in collaboration with district environment officers in Kitgum and Pader districts. Because both Kitgum and Pader districts conducted both rounds of the IRS campaign using ICON CS, some of the soak pits and storage facilities used during the first round were renovated for reuse in the second round. However, because some residents have relocated to satellite camps near their homes (in Kitgum), and to some extent in Pader to their homes, new soak pits and bath shelters were constructed for the new operational centers used to spray these areas. During the IRS campaigns, the IRS TO1 environmental compliance team visited Palabek Ogili, Palabek Kal, Kitgum town council, Lokung, Padibe East, Padibe West, Palabek Kal, Palabek Ogili, Palabek Gem, and Pajemo to observe environmental compliance activities and make recommendations for improvement where necessary. Post-spray compliance activities will be reported in the October–December quarterly report.

Procurement and Logistics

Logistics

PPE, spray pumps, insecticide, rinse materials, and other IRS materials were procured and distributed to Pader and Kitgum districts. Warehouses were renovated, burglarproofed, and

double- or triple-padded to control insecticide pilferage and to limit public access. A total of 43 soak pits and 43 temporary bath shelters were built and fenced with poles and papyrus mats to ward off stray animals and birds. Forms and checklists for tracking distribution and consumption of insecticides were developed and used daily at operational centers (sub-counties). A total of 51 large trucks and one pickup truck were hired for safe, daily transportation of spray personnel, equipment, insecticide, and other supplies to and from communities to 43 operational centers in Kitgum and Pader districts. Screening of prospective vehicles was achieved using Uganda Police Traffic guidelines along side district traffic officers and representatives of the District Internal Security Organizations.

IEC Development and Implementation

IEC Campaign Implementation

IRS TO1 distributed brochures; organized community meetings at district, sub-county, and parish levels; and held radio talk shows and film van shows to optimize community adherence to human and environmental safety guidelines during the implementation of the IRS exercises.

Spraying Operations

Recruitment and Training for Spray Teams

IRS TO1 identified the spray personnel using MOH guidelines and with the assistance of the District Health Offices and local government councils at sub-county, parish, and village levels. Spray personnel (supervisors, team leaders, spray operators, wash persons, and storekeepers) were trained to conduct safe and effective IRS with ICON 10% CS insecticide in Kitgum and Pader districts.

Two sets of trainings were conducted: a two-day TOT and a three-day spray operator training. The trainings were conducted by a team of MOH and IRS TO1 staff. During the TOT, supervisors were taught basic skills associated with IRS, including basic spraying techniques, team management, environmental compliance and safety, and spray-data collection. The trainers then facilitated the training of spray operators in similar topics. Training on IRS-related topics was conducted in accordance with WHO protocols and guidelines, and trainees had to demonstrate proficiency during the practical sessions. Spray personnel were also examined by the MOH Senior Medical Officer for fitness to participate in the spray program. All females were tested for human chorionic gonadotropin levels in urea to rule out pregnancy and positive cases were replaced immediately.

Refresher training sessions were provided to returning personnel in each district. About 70 percent of the spray personnel who participated in the first round conducted in 2007 were re-trained. The following table outlines the beneficiaries of training efforts of IRS in Pader and Kitgum districts.

Training of health workers for round two was not conducted in Pader and Kitgum districts because clinicians and medical doctors trained in round one were available for managing serious adverse events (SAEs) which could occur among spray personnel and residents during IRS implementation because of accidental or occupational exposure to insecticides. Medicines for managing SAEs, such as atropine and hydrocortisone, were also provided to

health center IVs and hospitals to cater for any eventualities. Environmentalists were also trained to serve as monitors for ensuring compliance of spray personnel and communities to safety standards and to control insecticide pilferage.

Human Capacity Strengthened to Deliver IRS in Pader and Kitgum

Category	Pader	Kitgum	Total
Supervisors	38	42	80
Team leaders	159	140	299
Spray operators	796	191	987
Wash persons	80	71	151
Store keepers	19	22	41
Clinicians and medical doctors	21*	32*	53
Environmentalists	1	0	1

*Clinicians and medical doctors trained in 2007 round one were available for SAEs, so no new training was conducted there.

Post-spraying Operations

Post-IRS environmental compliance inspections continued in Oyam and Apac districts and all 21 evaporation tanks were cleaned up to minimize environmental contamination with DDT insecticide. The central warehouse in Apac district was cleaned and decontaminated with caustic soda and officially handed over to the landlord.

Waste generated by IRS with ICON 10% WP insecticide from June 2006 to March 2008 in the districts of Kabale (rounds 1 and 2), Kanungu (round 1), Gulu (round 1), Amuru (round 1), Kitgum (round 1), and Pader (round 1) was sorted, weighed, and incinerated at Kagarama Health Center II in Kabale district according to PERSUAP and WHO guidelines and procedures.

Type and Quantity (kg) of Waste Incinerated in Kabale District

No.	Type of waste (description)	Weight (kg)
1	Empty ICON WP sachets	713
2	Nose and mouth mask	264
3	White polythene	117
4	Haversacks	513
5	Black polythene	194
6	Used gloves (short and long)	399
7	Towels/filter cloth	108
8	Broken basins/Jeri cans	31
9	Empty ICON boxes	1,229
10	Unusable overalls	130
11	Broken face shields	11
12	Broken barrel covers	29
13	Damaged barrels	10
Total		3,748

In addition, the remaining waste generated in Gulu district and stored in Gulu regional warehouse along with waste from Oyam and Apac districts was transported to Gulu, sorted and weighed in preparation for safe disposal.

Type of Waste and Quantity Generated in Oyam, Apac, and Gulu Districts

No.	Itemized description of IRS waste	Districts	Total (kg)
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		Apac	Gulu	Oyam	
1	Empty sachets	455	396	560	1,411
2	Nose and mouth masks	50	215	230	495
3	Black polythene sheets	10	194	244	448
4	Spillage (accidental contamination)	791	36	349	1,176
5	Harver sacks	179	413	252	844
6	White polythene sheets	81	109	n/r*	190
7	Gloves (short and arm length)	204	394	219	817
8	Towels & filter cloth	61	108	46	215
9	Broken plastics (basins and jerricans)	5	31	n/r*	36
10	Empty (wooden) boxes/containers	17	882	109	1,008
Total		1,853	2,778	2,009	6,640

N.B. n/r* denotes "no data recorded."

Other Activities

Database Design and Implementation for Monitoring Spatial Coverage

An external database of 19 operational centers with 86 respective parishes and 1,057 villages in Pader district was designed and linked to the existing IRS database of Pader district to assist in monitoring and evaluating the geographical (spatial) and chemotherapeutic coverage of the exercise, allowing complete data collection on indicators. Such an integrated data model presents a new opportunity for real-time verification of the validity of house and population output indicators for a target district in a GIS environment.

Entomological Monitoring

Discussions regarding a scope of work and budget for entomological monitoring support in Uganda took place between RTI, USAID/Uganda, and LATH. A final budget and scope of work was agreed on October 1 and entomological monitoring activities will be conducted in the next quarter (October – December 2008).

Monitoring and Evaluation

Progress on Key Indicators

The end-of-round status of core IRS program output indicators registered in Pader and Kitgum districts during round two for the period (July–September) are summarized in the following table. In Pader district, the program achieved 93.3% coverage of targeted structures. The relatively drier weather in August and improved condition of motorable surface together contributed to higher productivity gains. Spray teams were able to access communities and spray the target structures daily. Moreover, these structures were found open and prepared for IRS as residents had little or reduced farming activity.

However, persistent rains in the month of July led to flooding and reduced truck mobility, coupled with a conducive environment for on-farm activities such as planting, weeding, and or harvesting, resulting in lower spray coverage (83.9%) in Kitgum. Target structures were not sprayed with a residual insecticide, not because of low compliance, but because residents were farming.

Summary of IRS Output Indicators for Pader and Kitgum Districts

Indicator	Kitgum	Pader	Total
Total houses found	94,325	170,794	265,119
Houses fully sprayed	79,141	159,294	238,435

Indicator	Kitgum	Pader	Total
Houses partly sprayed	4,759	2,987	7,746
Houses not sprayed	10,425	8,513	18,938
Percentages of houses partly or fully sprayed	88.9	95.0	92.9
Percentage of houses fully sprayed	83.9	93.3	91.3
Percentage of houses partly sprayed	5.0	1.75	2.93
Percentage of houses not sprayed at all	11.1	4.98	7.2
Total population protected	386,094	661,327	1,047,421
Total population unprotected	42,670	28,681	71,351
Target population	428,764	690,008	1,118,772
Percentage of targeted population protected	90.0	95.8	93.7
Percentage of houses sprayed with ICON 10% CS insecticide	100.0	100.0	100.0
Average number of houses sprayed per ICON 10% CS sachet	2.0	2.34	2.21
Number of children under five protected	88,360	152,186	240,546
Percentage of protected population that is female	48.3	54.6	51.5
Number of pregnant women protected	13,517	46,150	59,667
Number of mosquito nets found	64,771	161,125	225,896
Number of children under 5 sleeping under net	54,722	111,478	166,200

Project Management and Administration

Staffing

Two people were recruited in this period, a Program Manager (Doreen Kabasindi Wandera) and a Finance Manager (Moses Luboyera).

Administrative Support

Twenty-one RTI staff attended a three-day retreat workshop in Entebbe to review IRS program activities and develop a work plan with budget for the September 2008–March 2009 period. A draft work plan and budget for IRS activities from September 2008–March 2009 were prepared and submitted to USAID for review and approval.

Upcoming Activities

- Conduct district sensitization activities in preparation for round 3 spraying in Kitgum and Pader.
- Conduct a TOT and refresher training for spray operators in Kitgum and Pader.
- Identify and renovate stores at operation centers.
- Procure insecticide, PPE, services, and spare parts required for spray activity.
- Repair or construct soak pits and bath shelters in Kitgum and Pader.
- Conduct pre-IRS compliance inspections and clinical examination for the spray operator applicants for round 3.
- Conduct entomological baseline survey in three districts.
- Dispose waste (DDT used in Apach and Oyam; ICON from Kitgum and Pader).
- Collect and analyze post-spray environmental samples.
- Conduct post-IRS environmental inspections in Oyam and Apach districts.
- Maintain and clean evaporation tanks (Apach and Oyam).

Zambia

Background

During this quarter, IRS TO1 worked to support Zambia's spray operations which began at the end of September. IRS TO1 procured and received pesticides, spray pumps and parts for the 2008 round. Pyrethroid pesticides were openly competed by class, and since no single vendor was able to supply Zambia with enough of any single pyrethroid insecticide, IRS TO1 and the National Malaria Control Center (NMCC) chose a mix of different chemicals from different vendors. Zambia's SEA update, which included a cost analysis of pyrethroid pesticides and DDT for future planning purposes, was finalized and submitted by IRS TO1 during this reporting period. The project also began construction on wash bays, evaporations tanks and soak pits in the 15 districts taking part in USAID-supported IRS.

Current Activities and Accomplishments

Planning and Assessment

Environmental Assessment and Compliance

The SEA for Zambia for 2008 was completed and submitted during this quarter.

Cost Analysis

IRS TO1 conducted a cost analysis comparing the use of DDT and pyrethroid insecticides to enable all stakeholders participating in IRS in Zambia to make informed decisions on what chemicals to use. This analysis was based on several key assumptions that influence the decision of what insecticide to use, including the following:

- One round of spraying per year with either DDT or a pyrethroid will be sufficient to substantially reduce the anopheline vector population and malaria transmission in the treated areas.
- The regulatory systems currently in place in Zambia for registration and regulation of DDT are adequate.
- The bilateral agreement between Zambia and South Africa, under which insecticide-contaminated waste generated in Zambia may be transported to and disposed of in South Africa, will remain in force.

With these assumptions in place, the study concluded that the estimated cost savings associated with changing from a mix of pyrethroid and DDT insecticides to pyrethroid only would be 4.1% of estimated program costs for the current program. This conclusion has significant cost implications for future IRS planning.

Environmental Monitoring

Because the IRS program in Zambia currently uses DDT, the cost analysis included a summary of the environmental monitoring requirement for Zambia. During this quarter, IRS TO1 prepared an environmental monitoring plan specific to the use of DDT in Zambia. This

plan included baseline sampling to estimate existing concentrations of DDT in soil, sediment, selected biota, and crops and additional sampling following the 2008 spray round to determine whether use of DDT in the IRS program has resulted in any increase compared to background levels of DDT.

NMCC, IRS TO1, and USAID/Zambia resolved that DDT monitoring will begin during the 2008 spray round and will be conducted in collaboration with the University of Zambia.

Pesticide Selection

As part of the procurement process for the September spray round, bids were solicited for any WHO-approved pyrethroid registered for use in Zambia. As no vendor could supply enough of any single pyrethroid in the quantities needed for this round, IRS TO1 presented possible combinations of pyrethroids, along with recommendations, to NMCC for consideration and comment. After careful deliberation, NMCC concurred with the recommendations as presented and the order was placed for a mix of alpha-cypermethrin and deltamethrin. The project also procured DDT. DDT is the only organochlorine class insecticide approved by WHO and has been a part of the IRS strategy in Zambia since it began.

Procurement and Logistics

Pesticides

Pesticides were procured for the 2008 spray round. Waste recapture and disposal of DDT waste were included in the requirements of this procurement.

Spray Pumps and Parts

Hudson Xpert sprayers and parts were procured for the 2008 spray round. Spray pumps and spares were procured earlier than pesticide so they could be available for training of spray operators.

Spraying Operations

In Zambia, spray operations are conducted by the government; IRS TO1 supports these operations by procuring pesticides and spray equipment and by conducting the annual supplemental environmental assessments and environmental compliance inspections. IRS TO1 also supports the construction of wash bays, soak pits and evaporation tanks to facilitate hazardous/toxic waste from the IRS program. The launch date for the 2008 spray round was set for September 1, but was delayed for several weeks following the untimely passing of the president, and began at the end of September.

Environmental Mitigation

To safely dispose of pesticide waste generated during spray operations and to safely clean spray hardware and PPE used in spray operations, IRS TO1 took steps to address the quality and quantity of wash facilities, of evaporation tanks for DDT, and of soak pits for pyrethroid liquid waste. IRS TO1 engaged a consultant in Zambia, Edwin Katota, to visit all the districts in the USAID-supported spray area to inspect existing wash facilities and possible sites that could be refurbished and brought into compliance for expanded spraying. On Mr. Katota's recommendation, IRS TO1 and NMCC met to work out a design for wash bays, soak pits,

and evaporation tanks. It was agreed to refurbish or construct one unit each of a combined evaporation tank/washing bay and a soak pit, unless otherwise noted. The designs were bid and IRS TO1 selected the following four based on the lowest prices per site, due diligence, and personal on-site visits confirming that they would be able to perform and deliver:

- Kachame (bid on all 16 sites, 22 units)
- Pros Construction (bid on 5 sites with 7 units to be constructed: total)
- ProNet (bid on 4 sites with 4 units to be constructed)
- Uloso (Bid on all 16 sites, 22 units)

The project engaged a Zambian engineer, George Sibanyama, to oversee the building/refurbishment of the evaporation tanks and soak pits and to ensure quality of work. Mr. Abrar Sattar, RTI's Project Administrative Specialist backstopping Zambia, travelled to Lusaka to facilitate the contracting necessary to coordinate work across the multiple sites and contractors.

Jacob Williams visited Zambia September 13—28 to conduct the Environmental Compliance Inspection mandated by the SEA for each spray round. He collaborated with the NMCC to facilitate compliance of 2008 IRS operations with the full range of safeguards outlined in the SEA. This mandate included assuring adequate protection of all categories of IRS workers and target communities and working to ensure best practices during spray operations.

Other Activities

Environmental Monitoring

During this quarter, IRS TO1 had planned to send Judith Tukahirwa of IRS TO1 Uganda to Zambia to collect baseline samples and establish a baseline for DDT in the environment. These samples would have been taken to Kenya for analysis. However, at the request of Dr. Chizema of NMCC and in consultation with USAID/Zambia, it was decided that IRS TO1 should move ahead with a formal agreement with the University of Zambia to do the testing, and work with local staff and institutions to do sampling and analysis. As of the end of this reporting period, the project was working with USAID to reach an agreement with NMCC, Environmental Council of Zambia and the University of Zambia so that this important task may proceed.

Project Management and Administration

Staffing

IRS TO1 had included in its work plan the hiring of a COP and a Finance Manager for Zambia. After discussions with the Mission, it was agreed to combine these roles into a single Program Manager with strong finance and technical skills. Recruiting for this position began during this quarter and was delayed following a request by the NMCC to withdraw the original advertisement for applicants and resubmit after changes recommended by NMCC. At the end of this reporting period, a short list of candidates had completed initial interviews and further interviews were ongoing. The project expects to fill the post in October or November 2008.

Upcoming Activities

In the next quarter, the project will complete construction of the wash bays, evaporation tanks, and soak pits started this quarter.

The project will come to an agreement with University of Zambia to conduct environmental monitoring of DDT testing and analysis and to establish a baseline for future environmental monitoring.

The project will select and orient a Program Manager and establish an in-country presence for the first time. This presence should greatly enhance the responsiveness and efficiency of the project.