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IRS UPDATE

PRESIDENT'S MALARIA INITIATIVE



NEWS, UPDATES, AND RESOURCES

OCTOBER–DECEMBER 2007

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U.S. GOVERNMENT OFFICIALS VISIT ZANZIBAR SPRAY PROGRAM

On August 24, 2007, Michael Leavitt (Secretary of the United States [U.S.] Department of Health and Human Services), Timothy Ziemer (President's Malaria Initiative [PMI] coordinator), Julie Louise Gerberding (Centers for Disease Control and Prevention [CDC] director), and Michael Retzer (the U.S. Ambassador to the United Republic of Tanzania) visited the Zanzibar Malaria Control Program (ZMCP) to observe Zanzibar's indoor residual spraying (IRS) operations.

The group received an introduction to the IRS program by Abdullah Suleiman (the ZMCP manager) and had the opportunity to meet with spray teams, visit the IRS storage warehouse, and examine the program equipment. Mr. Suleiman explained for the group the IRS preparation and implementation processes that are performed, described the relationship with Zanzibar's Ministry of Health (MOH), and highlighted RTI's collaborative approach with local partners.

The group donned spray operator coveralls in order to observe IRS operation in the field, and were also able to view some insecticide-treated nets (ITN) that were distributed to communities with PMI funds. A highlight of the visit was when the group met with community members, particularly young children and pregnant mothers, to discuss the steps they are taking to protect themselves and their children from malaria. The visit was a



U.S. government officials with spray operators and officials from the Zanzibar Malaria Control Program.

great opportunity for officials to observe the successful work achieved by the U.S. government in collaboration with the government of Zanzibar and the local community to combat malaria.

The visit also demonstrated the increased attention paid to endemic malaria by the government of Zanzibar. Mr. Leavitt spoke with Amani Abeid Karume, the President of the Revolutionary Government of Zanzibar, who communicated his appreciation for the U.S. government commitment to fighting malaria in Zanzibar. During this meeting, Sultan Mukheir, Zanzibar's Health Minister, praised the relationship between his government and the U.S. and applauded the increased community support for the government's efforts to fight malaria.

Background of IRS Campaign in Zanzibar

RTI's support for Zanzibar's IRS campaign under the President's Malaria Initiative began in July 2006. The program is run jointly with the Zanzibar Malaria Control Program. Since the IRS program was first implemented in 2006, the incidence of malaria in Zanzibar has dropped significantly. IRS, in conjunction with the implementation of the ITN distribution program, precipitated the islands' first decline in malaria transmission to nearly undetectable levels.

With the current low rates of malaria transmission in Zanzibar, RTI is committed to supporting sustained institutional responses for malaria control that will maintain current gains. This begins by redesigning the epidemiological and entomological monitoring systems, as well as bolstering the capability of Zanzibar's MOH to detect and respond rapidly to future appearances of malaria on the islands.

IRS SAVES LIVES IN TANZANIA

Muleba District, located on the shore of Lake Victoria in northwest Tanzania, experiences endemic seasonal malaria outbreaks. During the rainy season in Muleba, the district hospital was strained by malaria-suffering children, who were often packed three or four to a bed. While ITN use had become widespread in some areas of Tanzania, residents in Muleba have resisted ITN use for various reasons. The dire situation prompted the Minister of Health and Social Welfare (MOHSW) to request USAID assistance in implementing an IRS campaign to prevent future malaria outbreaks.



Muleba children suffering from malaria in Rubya Hospital in 2006.

The IRS program in Tanzania is being carried out as part of the PMI and USAID-contractor RTI is working with the MOHSW, Tanzania's NMCP, and local authorities to implement the IRS campaign. The MOHSW decided to pilot spraying in the most affected areas of Muleba, expanding to other districts as capacity and funding becomes available. Between June 11 and July 13, 2007, the first round of IRS was conducted in 13 wards of Muleba.

Trained community mobilizers paved the way for spray operators in the communities, and they worked to increase each community's awareness of and acceptance for the IRS campaign through door-to-door education and pamphlet distribution. More than 128 spray operators were selected among the targeted communities and trained to support the IRS spraying. Safe use of insecticide, proper use of personal protective equipment, and insecticide waste management techniques were stressed during the training that each operator received.

Fighting malaria in Muleba has been complicated for several reasons. Organic farmers in Muleba were concerned that insecticides used for malaria control would taint agricultural products and affect exports. Community



Trained spray operators leave for the communities to begin spraying.

mobilizers met extensively with farmers—explaining that IRS pesticides are sprayed in very small quantities indoors, where there is no disruption to agriculture—and this effort helped reduce IRS resistance by the farmers. Muleba's remote location and lack of good roads also made transportation to and in the district to conduct IRS difficult. The IRS team conducted a detailed mapping of the district and utilized motorbikes and 4-wheel drive vehicles to access remote households.

IRS has now become a widely accepted and successful form of malaria control in Muleba. Since spraying is conducted once every six months, IRS has been more widely accepted and is seen as less burdensome than ITN's. A total of 40,197 households were targeted and 34,691 were sprayed (86 percent coverage) during the first round of IRS in Muleba. Reaching greater than 85 percent of coverage in the area ensured that most people living in the area—about 200,000 people—were protected against malaria.

ACRONYMS

CDC	Centers for Disease Control
COP	Chief of party
IEC	Information, education and communication
IRS	Indoor residual spraying
MOA	Ministry of Agriculture
MOE	Ministry of Environment
MOH	Ministry of Health
MCP/ NMCP	National malaria control program
PERSUAP	Pesticide evaluation report and safe use action plan
PMI	United States President's Malaria Initiative
RTI	RTI International
U.S.	United States of America
USAID	United States Agency for International Development
WHO	World Health Organization

The results of IRS in Muleba have been dramatic. Whereas 60 children died in the Rubya District Hospital in June 2006, only three deaths were recorded in June 2007. There were 1,600 malaria admissions to the hospital in June 2006 and less than 400 in June 2007. Malaria infection related indicators such as parasitaemia, severe anaemia, and blood transfusions were below monthly averages for each of the previous 10 years. The usual June-July seasonal transmission peak was not recorded, even in home treatment and outpatient clinics in the operation area. The people of Muleba attribute the malaria incidence reduction to the IRS intervention, and they look forward to both the return of IRS spraying in 2008 and a malaria free future in the years to come.

the areas selected for spraying: Huambo and Huila provinces. Approximately 600 people from these areas were trained and employed as spray operators, supervisors, team-leaders, and monitors and over 200 were employed as community and IEC mobilizers.

BENIN

Spraying in Benin is scheduled for April 2008 before the May rainy season begins. In October, RTI met with the USAID Mission, Benin’s MOH, and other local partners (including Malaria Research Centre of Cotonou-Benin [CREC], MOE, Ministry of the Interior, Ministry of Family and Community Affairs, PMI, WHO, and the World Bank) to establish a timeline for upcoming IRS activities and determine the roles of IRS partners. In November, the Ouémé Department and three of its communes were selected for upcoming spraying. However, entomological testing determined that two sites contained primarily Culex (nuisance) mosquitoes and CREC requested that the sites be modified. In early December, the MOH requested that the program consider spraying only the province of Cotonou instead of the 4 finalized sites in Ouémé Department. This request was a concern for the IRS team because new sites would require a baseline and logistics survey, and mosquitoes in Cotonou are more resistant to the pesticide selected, which would be an issue since there is funding for only one annual spray round.

COUNTRIES UPDATES

ANGOLA

RTI’s support for Angola’s IRS program was originally provided under USAID’s Integrated Vector Management (IVM) project and was transferred to the IRS IQC in early 2007. RTI is currently supporting the country’s third spray round, which began in November and is expected to reach 140,000 households by February 2008. Prior to the launch of spray operations, RTI hired a team from the Faculty of Sciences to conduct an entomological baseline survey in

IRS Countries and Population Covered

Estimated Population Covered by the PMI-sponsored IRS Program where Spraying has Occurred

Angola	612,776
Ethiopia	3,890,00
Kenya	3,459,207
Malawi	126,126
Mozambique	1,036,503
Rwanda	720,764
Senegal	678,971
Tanzania (mainland)	159,579
Tanzania (Zanzibar)	1,120,381
Uganda	1,865,956
Zambia	3,400,000
TOTAL	17,070,263



* Numbers are based on estimates of the number of people per household sprayed, and include countries in which PMI-sponsored spraying data was available through 12/31/07.

However, in late December, USAID/Benin and the MOH agreed that the sites to be sprayed would be the 4 that had already undergone a baseline survey (not Cotonou). RTI is now beginning the next stage of planning.

ETHIOPIA

RTI provided USAID and CDC an operational plan detailing RTI's proposed involvement in Ethiopia's IRS spray campaign, which is scheduled to begin in June 2008 and reach over 85,000 households. In October, RTI visited

Ethiopia to begin scoping IRS operations and to prepare for supplemental environmental assessment (SEA) public comment meetings that were held in November. A draft of the SEA was submitted to USAID in January 2007, and RTI is still waiting to receive Mission and MOH comments, which are necessary to finalize the document. Separately, RTI initiated a subcontract for the Carter Center, which will coordinate the country's malaria indicator survey. The IRS team is making arrangements to organize spray logistics, begin equipment procurement, and initiate other planning activities early in 2008.

FEATURE COUNTRY UPDATE

Mozambique

IRS spraying in Mozambique began on October 1 and is expected to last until early February 2008. The program is on track to cover its targeted 337,204 households in 6 districts. Over 600 spray operators, supervisors, team leaders, and coordinators were trained in September to support the spraying effort. Community mobilizers preceded spraying with door-to-door public education, and as a result, spray operators reported that overall acceptance rates for household spraying increased in the country. Spray operations are progressing well at this time. However, the IRS program experienced a number of challenges early on in the program.

Delays in the arrival of personal protective equipment (PPE) limited the pace at which IRS operations could initially be scaled up. During the often long process of registering as a business in Mozambique, RTI relied on assistance from partner Crown Agents (CA) for importation of PPE and spray cans. The MOH acted as the consignee for the shipments, and for various reasons, the shipment of spray cans was detained in Maputo. RTI, CA, and the MOH worked to get the equipment released from customs, but this caused a delay in the availability of equipment for training and spraying purposes.

Another challenge faced by the IRS program was the slow initial progress made by spray operators in several districts, which caused operations to fall substantially behind schedule. The IRS team found that the issue was due to

lack of engagement and motivation by provincial government supervisors and spray operators. To address the problem, the team worked with the provincial director of public health to consider incentives that would improve performance. The director of public health also met with supervisors to communicate the importance of the IRS program and insist that they improve the pace and quality of spraying. To address the problem over the long term, RTI is working with the MOH and its employees in relevant roles to strengthen supervisory and monitoring capacity in the IRS program.

The IRS program has also experienced delays in the transportation of insecticide from the port of Beira to the central DPS (provincial health department) warehouse in Quelimane. While defining partner roles and responsibilities during the planning of the IRS program, it was determined that the MOH would oversee the shipment of insecticide to Beira and DPS would transport DDT to the central warehouse, from where RTI would collect DDT for the districts. However, due to funding shortages, the DPS requested RTI's assistance with the transport of DDT from Beira to Quelimane on numerous occasions in order to prohibit the further delay and possible halt of spray operations in the districts.

Lastly, the IRS team has found it challenging to maintain appropriate control over DDT, which is stored and distributed from the MOH-owned warehouse. Small quantities of DDT

were siphoned from last year's government-run IRS program and illegally sold to homeowners, so the IRS team was understandably concerned about a recurrence in this year's PMI-sponsored operation. RTI worked to strengthen chain-of-custody procedures and monitoring responsibilities in order to detect any insecticide diversions. The team also invited district representatives from the Ministries of Agriculture (MINAG) and Coordination of Environment Affairs (MICOA) to join in the monitoring and supervision of the IRS program. Each has assigned one representative per district, and these individuals have been incorporated into the supervisory team, which also contains representatives from the MOH and RTI. MINAG and MICOA representatives attended spray training to learn about IRS activities and also to educate operators on the importance of protecting against chemical leakage. This is the first time a multi-sectoral approach has been implemented during Mozambique's IRS campaigns.

Steady progress is now being made by spray operators to make up for the slow program start. Integral to the program's progress is the fact that the Mozambique government is very supportive of the program and receptive to incorporating the IRS team's suggestions to improve effectiveness. The IRS program has in turn helped reinforce the government's capabilities by temporarily funding several new positions that will support the MOH's ability to monitor and supervise the IRS program.

GHANA

RTI is beginning to establish program operations in Ghana in order to prepare for Ghana's 2008 spray activities, which are scheduled to begin in April 2008 and projected to reach 100,000 households. RTI conducted strategic planning and environmental assessment visits in Accra and Tamale November 26 - December 7. During this visit, RTI met with the Ghana Environmental Protection Agency (EPA), Ngouchi Memorial Institute for Medical Research, Ghana Health Service/NMCP and USAID. Following partner discussions, the Ghana Health Service has decided to focus 2008 IRS activities in the northern region of the country. USAID and the NMCP have agreed to focus IRS activities in the first year in 8 districts, which include Tolon/ Kumbungu, Saveluga/Nanton, Karaga, Gushegu, Saboba/ Chereponi, West Mamprusi, East Mamprusi and Bunkpurugu/Yunyoo. RTI and the NMCP conducted a 3-day visit to the region to meet with the regional director of health services, regional malaria coordinator, and district health and disease control officers from several districts to understand the malaria burden in the region, examine household patterns and housing structures, and discuss IRS operations and start up activities. RTI is also in the process of recruiting key IRS personnel, including a chief of party, finance officer, and logistics officer.

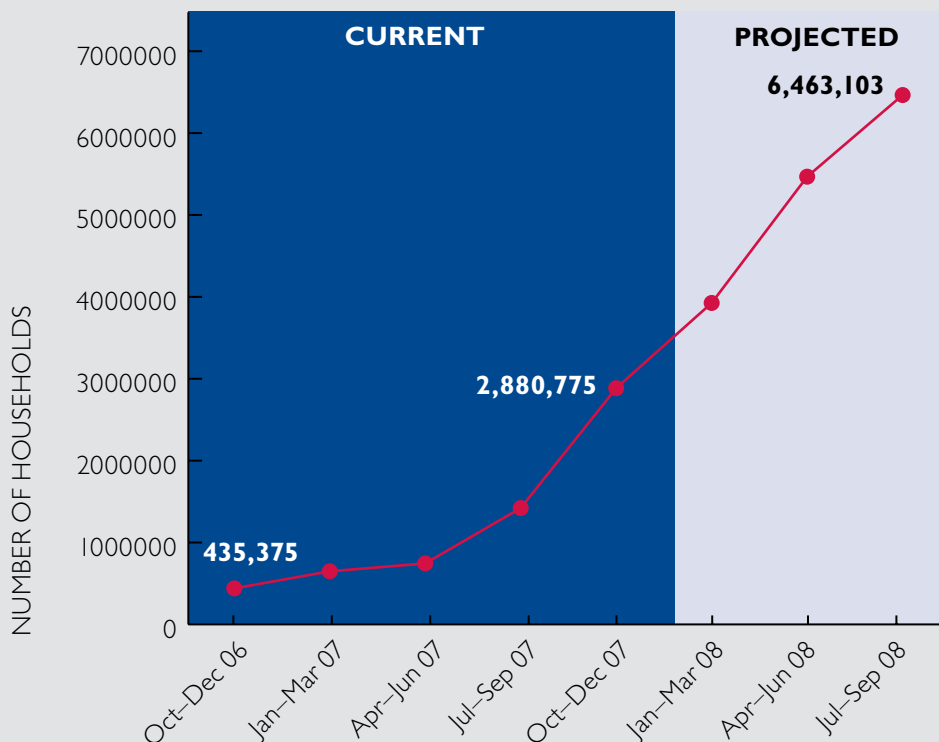
KENYA

RTI worked with the Kenya PMI team (USAID Kenya and the Kenya Division of Malaria Control [DOMC]) to plan the launch of the IRS program in Kenya. The launch took place on October 17 at the MOH and was officiated by USAID and the Minister of Health. RTI demonstrated IRS operations at the event by showing operators in full gear and carrying spray pumps. RTI also sponsored a two-day post IRS assessment meeting October 10-12 in Nairobi with DOMC and its district, province, and national level representatives. The meeting identified "lessons learned" from DOMC's first large IRS program conducted earlier this year, and RTI is working with the MOH to make significant program improvements in areas including IRS logistics planning, program supervision, personnel capacity, and financial management. The program is expected to reach 400,000 households in 2008.

MADAGASCAR

Madagascar's MOH is managing its own spray program, and RTI is supporting the NMCP with financial management of spray operations, environmental monitoring and compliance, procurement of IRS commodities, and staff training. RTI visited Madagascar in September to conduct a planning assessment and begin organizing upcoming

Households Sprayed by the IRS Program



spray operations that were initially scheduled for December 2007 and expected to reach 250,000 households in the country's central highlands. RTI conducted an assessment of insecticide storage facilities in October and determined that the MOH would need to remove co-located hospital supplies, rent new facilities, or renovate alternative facilities. While the program was delayed due to a slow administrative set up in the country, RTI coordinated the procurement of IRS commodities, including spray pumps, personal protection equipment, and insecticide, in October and November. Training of trainers was completed on November 30 and included 36 participants from Antananarivo and Fianarantsoa provinces. In December, RTI resolved the delayed delivery of motorbikes needed to support IRS activities. The training of spray operators and the subsequent IRS spraying was rescheduled to January and February.

MALAWI

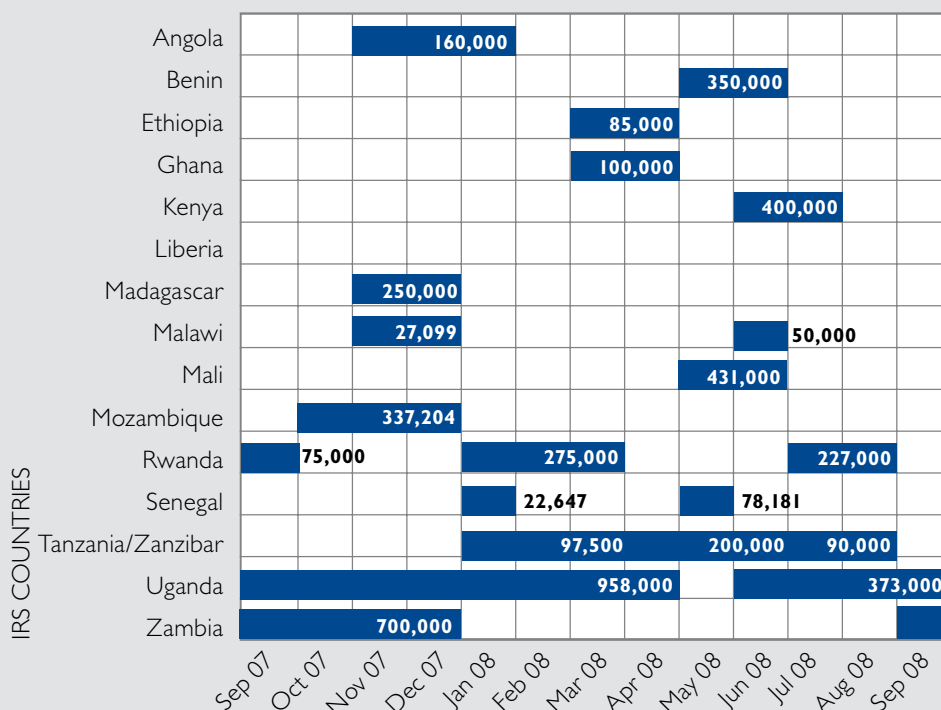
IRS program spraying began in Malawi on November 19 and ended the first week in January. Due to start up delays and the impending rain season, the operation had been accelerated to under two months in duration. This was made possible by doubling the number of personnel engaged and by borrowing additional spray cans and protective suits from the Tanzania IRS program. The program is expected to reach 26,500 households (4,500 of

which sprayed by the Dwangwa sugar estates) in this round. The program initially found that it was not reaching the target population estimates in Malawi despite exceeding the number of households estimated by the district health office (DHO). The IRS team determined that spray teams found more houses in the field than had been planned. The program also found that approximately 2,300 homes refused spraying. The IRS team met with village chiefs and determined that all refused homes will be sprayed by a "mop-up" team. RTI's logistics director met in October with the U.S. Ambassador in Malawi, who was interested in learning about the IRS program.

MALI

RTI is establishing Mali's IRS program in preparation for the country's first spray round that is scheduled to begin in May 2008 and expected to cover 80,000 households. In October, RTI consultants worked with the CDC to collect entomological baseline data to support Mali's IRS program. The collected data is being used to determine districts and insecticide selection for spraying. RTI visited Mali in November to meet with program partners and stakeholders and to set up the IRS program office. In December, RTI met with key ministries and local partners that will work with the IRS project. Following these meetings, USAID realized that some key officials had not been officially notified about the IRS project and RTI's role. As a result,

IRS Estimated Schedule and Households to be Covered



the Mission asked RTI to wait on making proper introductions until the operational plan was signed and official notifications sent. Local partners also determined that an IRS steering committee will be established at central and regional levels, and that this committee will include both decision makers and technicians. Technicians will include entomologists and parasitologists from the Malaria Research and Training Center (MRTC). RTI is currently evaluating the potential program impact of a government change in which the NMCP has been moved from under the direction of the National Directorate of Health to the MOH.

RWANDA

Following completion of logistics and entomological assessments, and the approval of the PERSUAP, Rwanda completed its 2007 spray operations in mid October. 159,063 houses were sprayed and 96 percent coverage was achieved in three Kigali districts, and this exceeded the 145,000 targeted number of households. The post IRS stakeholders meeting was organized by the MOH's Center for Treatment and Research on HIV/AIDS, Malaria, Tuberculosis and other Epidemics (TRAC-PLUS) and held on November 27 in Kigali. Round one of IRS activities was seen as a major success in malaria control among key stakeholders. Two doctors overseeing district hospitals in the Nyarugenge and Gasabo districts reported reduced cases of malaria following completion of IRS activities. RTI completed an environmental compliance assessment for Rwanda IRS operations in October. Areas for further enhancement of environmental and human safety included cultural tailoring of IEC messages to more clearly convey the goals of IRS to local communities and address the misperception that spraying will result in the complete absence of mosquitoes. On December 28, the IRS team completed the recruitment of district staff to support expanded spraying in Kirehe and Nyanza districts, and other planning for February 2008 spray operations is currently underway.

SENEGAL

Following the completion of a logistics assessment and approval of the PERSUAP, RTI conducted spray operations for the first IRS round in Senegal from May 21 to August 11. The spraying covered 76,279 households and achieved 97.5 percent coverage to protect approximately 630,264 people in three districts (Velingara, Nioro, and Richard Toll). Although spray operations were completed successfully, a technical management and environmental compliance visit by RTI identified several areas needing improvement, including a need to retrain spray operators

on best practices for wash areas, progressive rinsing, and spray application techniques to ensure quality of operations at field level. Following a meeting between RTI, USAID, the NMCP, and the University of Dakar in November to discuss "lessons learned" from the first spray round, logistics and management planning was immediately begun for 2008 spray operations, which are scheduled to begin in the Richard Toll district in January 2008. During this meeting, partners agreed to enhance operations at the district level by improving the training of trainers and the supervision of spray operations, as well as intensifying IEC activities. RTI invited representatives from the MOE to visit the program warehouse and collaborated with the MOE and NMCP to determine insecticide storage and disposal plans for the country. Additionally, RTI informed IRS partners of its intention to identify a regional source to verify insecticide quality. The logistics plan for Richard Toll January operations is complete and the procurement process for IRS commodities is well underway.

TANZANIA

A total of 212,551 households were sprayed during the third round of IRS operations ending September 2007 in Zanzibar. The current state of malaria transmission in Zanzibar has now reached very low levels following this targeted spraying and use of other malaria control interventions in the region. As such, RTI, USAID, CDC, and the NMCP came to agreement in October on a new entomological and epidemiological surveillance strategy to track transmission patterns and inform the Zanzibar MCP where and when selective intervention is needed. In November, RTI completed a logistics assessment in Karagwe district and is conducting a range of planning activities in preparation for two mainland Tanzania spray rounds—Muleba and Karagwe districts scheduled for January and February 2008 respectively. When asked to share their experiences of the July 2007 IRS spray round, residents of Muleba reported an increase in fleas and wanted to know if this was related to IRS. Unfortunately, this issue resulted from an unfortunate confluence of weather and other conditions ideal to flea populations. However, perceived links to issues like this are of real concern to the IRS team because they can result in people refusing spraying.

UGANDA

RTI completed the training of spray operators and community mobilizers in October in preparation for the spraying campaign in Amurru district, which was completed in November and reached 163,000 households. Spray operations to reach 113,000 additional households

in Gulu district are now planned to begin in January 2008. This start date was pushed back following shipping delays as the insecticide manufacturer struggled to fill demand for multiple countries. However, a district sensitization workshop was held in Gulu in December as part of IEC activities and in preparation for spray operations. Uganda plans to expand IRS to a total of 15 districts in 2008, and will use DDT for a pilot IRS program in Apac and Oyam districts. RTI has submitted to USAID an updated supplemental environmental assessment, which includes a report on a public forum to discuss DDT use. The IRS team held a planning retreat December 19-21 to prepare for upcoming spraying activities and the program's expansion to new districts. The team is working to hire additional program staff to support its expanding role with the IRS program.

ZAMBIA

Zambia's 2007 spray round, which is being managed by Zambia's MOH, was conducted in December in three regions and seven districts. The program reached over 604,984 households and achieved over 90 percent coverage (however, these are not final numbers). To support the country's IRS program, RTI developed environmental monitoring and storage rehabilitation plans in order to improve the pesticide storage and safer use processes. In November, RTI completed an environmental compliance inspection, which determined that many aspects of the program are working well, including operator use of personal protection equipment and the reduction of female operators using pesticides.

Overview of the IRS Program

The IRS Update is developed by RTI International.

RTI was awarded the USAID IRS indefinite quantity contract in September 2006. This IQC reflects a new and substantial commitment from USAID to support the use of an effective malaria control intervention in Africa. Funded by the U.S. President's Malaria Initiative (PMI) through USAID, RTI is providing technical and financial support to countries supported by the PMI to expand the use of IRS as an intervention for malaria prevention and control. RTI is supported in this effort by four subcontractors: Crown Agents, Howard Delafield International, Liverpool Associates in Tropical Health, and Medical Research Council.

The main objectives of the project are to:

- Introduce the appropriate, effective, and efficient use of IRS in African countries not previously using it as part of systematic malaria 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.

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