



## INDOOR RESIDUAL SPRAYING FOR MALARIA CONTROL

# Malawi IRS Activity Annual Report

**October 1, 2010 – September 30, 2011**

Indoor Residual Spraying 2 (IRS2) IQC No.GHN-I-00-09-00018-00  
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## Table of Contents

<b>Acronyms:</b> .....	<b>1</b>
<b>1.0 Introduction</b> .....	<b>2</b>
<b>1.1 Project Details:</b> .....	<b>2</b>
<b>1.2 Executive Summary</b> .....	<b>2</b>
<b>1.3 Project Achievements</b> .....	<b>3</b>
<b>2.0 Project Activities</b> .....	<b>5</b>
<b>2.1 Capacity Building through Targeted Training of Ministry of Health Staff</b> .....	<b>5</b>
2.1.1 Micro-planning.....	5
2.1.2 Training of Trainers (TOT) of Spray Operators.....	5
2.1.3 Spray Operators Training.....	5
2.1.4 IE&C/BCC Training.....	6
2.1.5 Clinician Training.....	6
2.1.6 Other Categories of Personnel Trained.....	6
<b>2.2 Capacity Building through Provision of Technical Support to Ministry of Health Staff</b> .....	<b>7</b>
2.2.1 Post IRS Beneficiary Satisfaction Review.....	7
2.2.2 Geographical Reconnaissance.....	9
2.2.3 Review of IRS Guidelines and Development of Training Manuals.....	11
<b>2.3 Environmental Compliance</b> .....	<b>11</b>
<b>2.4 Logistics/ Procurement</b> .....	<b>13</b>
<b>2.5 Community Mobilization</b> .....	<b>13</b>
<b>2.6 Spraying Campaign</b> .....	<b>14</b>
2.6.1 IRS Performance.....	15
<b>2.7 Strengthening Monitoring and Quality Assurance</b> .....	<b>16</b>
<b>3.0 Challenges and Solutions</b> .....	<b>18</b>
<b>4.0 Lessons Learned and Best Practices</b> .....	<b>20</b>
4.1 Lessons Learned.....	20
4.2 Best Practices.....	20
4.3 Success Stories.....	21
<b>5.0 Management and Administration:</b> .....	<b>23</b>
5.1 External Management and Administration.....	24
<b>6.0 Performance Management Plan (PMP)</b> .....	<b>25</b>
<b>7.0 Project Operational Plan Table</b> .....	<b>27</b>
<b>8.0 Annual Inventory Report</b> .....	<b>28</b>

## Acronyms:

ACT	Artemisinin-based Combination Therapy
BCC	Behavior Change Communication
CCN	Cooperating Country National
CDC	U.S. Centers for Disease Control and Prevention
COP	Chief of Party
COTR	Contracting Officer's Technical Representative
DEA	Department of Environmental Affairs
DC	District Coordinator
DEHO	District Environmental Health Officer
DHMT	District Health Management Team
DHO	District Health Offices
EIA	Environmental Impact Assessment
EHO	Environmental Health Officer
EMMP	Environmental Mitigation and Monitoring Plan
FY	Fiscal Year
GIS	Geographical Information System
GOM	Government of Malawi
GPS	Global Positioning System
GR	Geographical reconnaissance
HSAs	Health Surveillance Assistants
IEE	Initial Environmental Examination
IE&C	Information, Education, and Communication
IQC	Indefinite Quantity Contract
IPTp	Intermittent Preventive Treatment of Malaria during Pregnancy
IRS	Indoor Residual Spraying
ITN	Insecticide-Treated Bed nets
IVCC	Innovative Vector Control Consortium
KRA	Key Result Area
LLIN	Long-Lasting Insecticide Treated Nets
MAC	Malaria Alert Center
MOH	Ministry of Health
MOA	Ministry of Agriculture
MOP	Malaria Operational Plan
NMCP	National Malaria Control Program
PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
PIR	Project Intermediate Result
PMI	President's Malaria Initiative
PPE	Personal Protective Equipment
RBM	Roll Back Malaria
SEA	Supplemental Environmental Assessment
SO	Strategic Objective
SOP	Standard Operational Procedures
STTA	Short-Term Technical Assistance
TOT	Training of Trainers
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WHOPES	World Health Organization Pesticide Evaluation Scheme

## 1.0 Introduction

The President's Malaria Initiative (PMI) supported the Ministry of Health in 2007 to explore the feasibility of introducing IRS as a malaria prevention strategy in Nkhosakota District. PMI has since successfully piloted three rounds of spraying in Nkhosakota from 2007 – 2009. Using the lessons learnt from the pilot studies, the MoH scaled up IRS implementation in 2010 to six highly endemic districts along the lakeshore and in the Shire valley.

Chemonics International was awarded a three-year Task Order Contract by USAID Malawi for the implementation of the Malawi Indoor Residual Spraying (IRS) Activity effective July 12, 2010. Under this contract, Chemonics, with subcontractors Malaria Consortium and i+ solutions, implemented indoor residual spraying in Nkhosakota and Salima districts in 2010.

This report covers the progress made over the period from October 1 2010 through September 31, 2011. The report begins by presenting a summary analysis of the accomplishments and results achieved and later an in-depth analysis of progress and results that contributed towards achievement of program objectives. The report further discusses the major challenges encountered during the implementation and management of the program and the solutions that were identified and undertaken to overcome the challenges. The report also highlights the lessons learned, success stories and recommendations for future IRS programming.

### 1.1 Project Details:

<b>Project Name</b>	Malawi Indoor Residual Spraying (IRS) Activity
<b>Reporting Period</b>	October 1, 2010 – September 30, 2011
<b>Project Duration</b>	3 base years, 2 option years
<b>Evaluation Dates</b>	None
<b>Person Responsible</b>	Chief of Party (COP)
<b>Project Objective</b>	To contribute towards reducing malaria related mortality by 50%

### 1.2 Executive Summary

Within Project Year 1, the Malawi IRS Activity completed implementation of the 2010 spray season and registered a number of achievements during the planning, implementation, and review stages of this inaugural campaign. From its capacity building work with the National Malaria Control Program (NMCP) to its monitoring and quality assurance processes, Chemonics was able to implement a number of best practices, leading to numerous successes in the performance of the scope of work. The project also encountered a few key challenges during its first year; these difficulties were documented and captured, and Chemonics has incorporated these lessons learned into planning for future spray seasons.

Chemonics implemented a number of efforts that strengthened the capacity of NMCP and Ministry of Health (MoH) staff to implement IRS both in their target districts, and for future campaigns. Project staff assisted district-level MoH staff in conducting various training workshops in the target districts of Nkhosakota and Salima, including various practicum on environmental compliance, geographical reconnaissance, post IRS beneficiary satisfaction review, behavior change and communication, insecticide entomological monitoring; and program supervision and monitoring for quality assurance. Chemonics also supported the MoH in implementing IRS best practices, by spearheading a review of IRS guidelines and the development of a training manual for district malaria control program staff, communities, and other stakeholders working on IRS programs. These interventions will strengthen the ability of Malawian district and national health staff to implement future IRS campaigns.

The project also implemented a significant number of activities to improve monitoring and quality assurance processes, ensuring that IRS activities are implemented efficiently, adhere to high quality and are cost effective. These activities included close supervision of IRS field implementation, a review of data collection tools and the development of a new M&E database, and periodic performance reviews of the program. The various capacity building efforts and initiatives helped to enhance IRS quality and effectiveness.

*Challenges faced.* The project also documented the key challenges faced during the planning, implementation, and review stages of the 2010 spray season, which are discussed in detail in section 3.0 of this report. Among the major lessons learned were:

- Prior to any IRS campaign, it is important to have accurate baseline information on the sprayable surface area and the number of eligible structures targeted for spraying through geographical reconnaissance, to inform the quantification of IRS commodities and human resource needs;
- Community sensitization is essential for increasing the community's knowledge and acceptance of IRS, as it minimizes refusals and reduce potential side effects from unnecessary exposure to insecticide;
- Integrated IE&C is beneficial in keeping the communities informed of IRS at all levels and increases their understanding and uptake of IRS;
- Close supervision and monitoring of field IRS interventions helps early identification of challenges and allows early response.

The lessons learned from the 2010 IRS campaign, along with the experiences of predecessor projects from previous initiatives, will be used to improve programming and decision making for future project and MoH IRS campaigns, contributing to more effective implementation in 2011 and beyond. These improvements will ultimately contribute to the overall mutual goal of both PMI and the MoH Malaria Strategic Plan for Malawi (2011 – 2015), the achievement of universal coverage in the prevention and treatment of malaria, and the reduction of malaria morbidity and mortality in Malawi by half.

### **I.3 Project Achievements**

- Conducted an environmental impact assessment to cover the four classes of insecticides certified by WHOPES for IRS.
- Conducted Mapping of environmentally sensitive areas to prevent spraying within 50 meters along the water bodies.
- Implemented social mobilization and community sensitization to increase acceptability and coverage of the IRS program.
- Strengthened quality control across IRS interventions through training, ongoing supportive supervision and monitoring at various levels.
- Sprayed 72.6% of the estimated 134,000 target structures to protect 364,349 residents.
- Implemented a geographical reconnaissance exercise in Salima and Nkhotakota to determine the physical measurement of the structures used for sleeping. This exercise was essential in establishing the average measurement of the sprayable surface area. The reconnaissance involved physical measurement of a sampling of houses to determine the average sprayable surface area of the structures used for sleeping. The information was used as one source of data to quantify the amount of insecticide needed for spraying and will further provide guidance in quantifying the amount of insecticide needed for future spray rounds.
- Conducted post IRS beneficiary satisfaction review to establish community satisfaction with IRS implementation, and document challenges and lessons learned. The information

generated during the review will be used to improve the implementation of future IRS activities, including strengthening community partnerships.

- Held review meetings with NMCP to review progress of the IRS activities and to discuss ways to improve spray campaign activities;
- Collaborated with Malaria Alert Centre (MAC) on monthly entomological monitoring of insecticide decay and effectiveness of pirimiphos-methyl (Actellic 50EC) used for IRS in Nkhotakota and Salima Districts;
- Organized and provided guidance in the stakeholder workshop for review of IRS guidelines and development of IRS training manual and IE&C strategy. The workshop was held on September 30-31 and the following institutions participated: NMCP, USIAD/PMI, WHO (Both Malawi and Regional offices), malaria Alert Center (MAC), Nkhoma Hospital, NkhataBay DHO, Nkhotakota DHO, mangoch DHO Chancellor College of the University of Malawi and Chemonics (IRS LLC Inc). The NMCP will use contributions from workshop participants to finalise review of IRS guidelines and development of a training manual and IE&C strategy.

## 2.0 Project Activities

### 2.1 Capacity Building through Targeted Training of Ministry of Health Staff

Chemonics supported the Ministry of Health in conducting a number of planning initiatives and training interventions in the target districts of Nkhotakota and Salima, contributing to the capacity building of district-level staff. The close inclusion of MoH staff in planning and training activities will allow district-level staff to lead IRS campaigns in the future. The interventions included the following:

#### 2.1.1 Micro-planning

From September 10-12, 2010, Chemonics led a three day micro-planning workshop, training 58 District Environmental Health Officers and Senior Health Surveillance Assistants; of these, 32 were from Salima District and 26 from Nkhotakota. The workshop resulted in the development of a detailed IRS implementation plan for both Nkhotakota and Salima. In future campaigns, DHO staff will use the experience gained to facilitate micro-planning meetings.

#### 2.1.2 Training of Trainers (TOT) of Spray Operators

A six day training of spray operator trainers' course was conducted from September 15-20, 2010 in which 90 Environmental Health Officers from the seven countrywide IRS implementing districts participated; 40 of these participants were from Salima and Nkhotakota districts. The comprehensive curriculum included modules on the basics of malaria vector and transmission, IRS operational strategy, the insecticides used in IRS, environmental compliance in IRS, the safe storage, transportation, and disposal of insecticide, emergency preparedness, IEC and social mobilization, data collection and reporting tools, commodity tracking, M&E and quality assurance, logistics management, pump preparation, handling, and maintenance, and IRS field operations and spraying techniques.

A post-training assessment revealed that some trainers had difficulty learning spraying techniques, which required more practice before they could be considered capable of transferring the same skills to the spray operators. Therefore, Chemonics conducted a supplementary three-day practical training for the trainers from November 10-12, 2010, utilizing the standard WHO IRS training manual. This workshop focused on further mastery of training skills needed to impart proper IRS techniques and guidelines to the spray operators. A follow-up assessment found mastery of these skills was improved.

#### 2.1.3 Spray Operators Training

In preparation for the November spraying campaign, the two districts of Nkhotakota and Salima implemented a six day spray operators training from November 15- 20, 2010, involving a combined 666 spray operators. Training sessions were conducted simultaneously at each operational site in the two districts. They included three days of theory and two days of practical training on spraying techniques. Top trainees who demonstrated best skills were selected as team leaders and were given one extra day of training on team supervision.



### 2.1.4 IE&C/BCC Training

Community sensitization through the Information, Education, and Communication/Behavior Change Communication (IE&C/BCC) campaign is essential for increasing the communities' knowledge of spraying and consequently, their acceptance the intervention. In this way, sensitization minimizes beneficiary refusals and reduces side effects from unnecessary beneficiary exposure to insecticide, thereby improving the success of IRS implementation. The IE&C/BCC campaign is delivered to beneficiaries primarily via mobilizers, comprised of DHO staff and community volunteers. These campaign members travel to various villages throughout the districts in advance of spray teams to convince communities to accept IRS, and prepare them for the intervention.



*Spray operators undergoing spray techniques training*

A two-day TOT training was conducted from November 6-8, 2010 for 24 mobilizer trainers drawn from the two districts. The training focused on equipping the mobilizers with effective community mobilization and supervisory skills to facilitate door-to-door IRS mobilization. They in turn conducted a one-day mobilizers' training for 884 Health Service Assistants (HSA) and other volunteers from areas with very low HSA coverage who were selected to serve as mobilizers.

The training was based on materials drawn from an IRS training guide developed by the previous contractor, which was reviewed for the 2010 spray season by a team from NMCP and Chemonics. The training was comprehensive,

and included sessions on the purpose of communication, practicing good communications skills, core messages, the role of mobilizers, communities, and traditional leaders in an IRS campaign, the proper use of mobilization forms, and supervision of community mobilization efforts. Chemonics has since supported the MoH in the development of a draft IRS communication strategy for 2011; this document is expected to be finalized in 2012.

The table below indicates the number of HSAs and volunteers trained in each district:

**Table 1: Number of Mobilizers Trained**

District	Health Service Assistants	Community Volunteers	Total
Nkhotakota	285	150	435
Salima	342	107	449
<b>Total</b>	<b>627</b>	<b>257</b>	<b>884</b>

### 2.1.5 Clinician Training

Clinicians providing health care in the health facilities in the IRS target areas were trained on emergency management of insecticide poisoning. The one day training was conducted on November 23, 2010 for Nkhotakota and on November 24, 2010 for Salima. The training prepared 52 health care providers to respond to cases that present with adverse effects from overexposure to insecticide.

### 2.1.6 Other Categories of Personnel Trained

The following support personnel were trained in compliance related tasks:

- 8 data clerks were trained on data management (4 per district)
- 39 store keepers were trained on management of stores including insecticide accountability
- 12 wash persons and 60 drivers were trained on proper handling of insecticide contaminated commodities.

The training was based on adaptations from the Food and Agriculture Organization (FAO) and WHO environmental compliance guidelines.

Table 2 below is an illustration of key trained IRS implementers divided by district, category and gender.

**Table 2: Trained Personnel**

Type of Training	Nkhotakota District		Salima District		Total Male/Female		Total
	Male	Female	Male	Female	Male	Female	
TOT: Spray Operators	18	0	19	3	37	3	40
Spray Operators	241	74	264	87	505	161	666
Supervisors	19	0	27	3	46	3	49
Team Leaders	48	10	48	16	96	26	122
TOT: Mobilizers	12	0	8	4	20	4	24
Mobilizers	245	190	288	161	533	351	884
Clinicians	21	11	15	5	36	16	52
Data Clerks	2	2	1	3	3	5	8
Store keepers	18	1	16	4	34	5	39
	<b>624</b>	<b>288</b>	<b>686</b>	<b>286</b>	<b>1310</b>	<b>574</b>	<b>1884</b>

## 2.2 Capacity Building through Provision of Technical Support to Ministry of Health Staff

Chemonics supported the MoH at the national level in enhancing quality assurance in IRS implementation through a number of capacity building interventions. This included the development of national IRS guidelines and a training manual for implementation, and collaboration on a national IE&C strategy. The project also supported the implementation of IRS best practices through geographical reconnaissance, post IRS beneficiary satisfaction review, and the provision of technical support. The following presents a detailed analysis of the capacity building initiatives undertaken:

### 2.2.1 Post IRS Beneficiary Satisfaction Review

Communities that are beneficiaries of IRS campaigns are essential resources for collecting data on best practices. Chemonics conducted beneficiary satisfaction reviews in Nkhotakota on February 18-22, 2011 and in Salima on February 12-16, 2011. The focus of the review was to capture the acceptability of IRS to beneficiaries, their experience with the campaign, and their concerns about the implementation. The reviewers discussed the communities' impression of the IRS processes, their interaction with the implementers, and their experience with the malaria vector after the spraying. In total, Chemonics held a total of 32 focus group discussions with over 491 participants in 16 communities in Nkhotakota and

Salima, involving a diverse cross-section of community members including farmers, business people, teachers, and religious leaders. The project plans to incorporate this feedback in the plans for subsequent spray rounds.

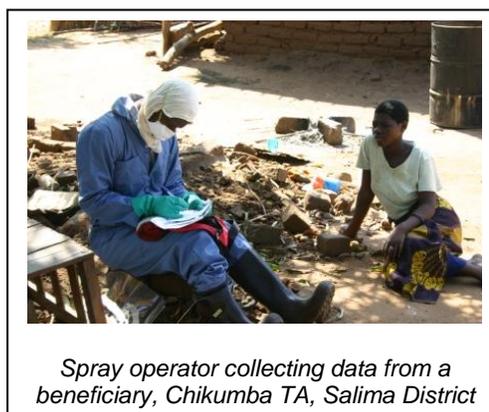
In preparation for the community satisfaction reviews, Chemonics conducted a one-day training for 4 enumerators and 4 district supervisors (two from each district) on February 11, 2011. The training focused on strengthening their skills in interacting with the communities and in data collection and recording. In addition, the M&E and IE&C/BCC officers from Chemonics provided technical leadership, guidance, and supervision and oversight in the implementation of the reviews as a capacity building initiative for the MoH staff.

**Table 3: Personnel Trained on Post IRS Beneficiary Satisfaction Review**

Category	Nkhotakota		Salima		Total (Male/Female)		Total Participants
	Male	Female	Male	Female	Male	Female	
Team Leaders	2	0	2	0	4	0	4
Enumerators	1	1	1	1	2	2	4
<b>Total</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>6</b>	<b>2</b>	<b>8</b>

The review revealed that the IRS communities appreciated the malaria control interventions. This was repeatedly voiced by the participants in the focus group discussions. Key findings from the post IRS review were as follows:

- Most of the families visited expressed:
  - Appreciation of the 2010 spray round and especially the type of insecticide used (Actellic 50EC) since it had an immediate effect on mosquitoes, other flying insects, and rodents;
  - Willingness to have their houses sprayed in the future;
  - Satisfaction with the spray operators' and mobilizers' conduct, specifically a reduction in rudeness and disrespect as compared to previous campaigns;
  - Readiness to support IRS activities in future spraying rounds.
- The door-to-door interactive mobilization was the most effective approach for reaching most of the population. Of the participants interviewed, 80 percent of beneficiaries in Salima and 90 percent in Nkhotakota stated that mobilizers were the main source of IRS information. Only 40 percent of participants from both districts reported hearing about IRS from traditional leaders through community meetings.
- Involvement of volunteers and community leaders in sensitization ensures that communities are informed at all levels to increase understanding and acceptance of IRS, and contributes to smooth and effective implementation of IRS activities.
- The review also identified some areas for improvement:
  - A few community members in one village were suspicious that the spray operators were not using all the insecticide. There was also a suspected case of pilferage; however, this could not be confirmed when a team went out for follow-up.



*Spray operator collecting data from a beneficiary, Chikumba TA, Salima District*

- Some families who refused spraying in their houses did so based on a rumor that the insecticide was being used for birth control and would affect their fertility, and that some people had died after their houses were sprayed.
- Some traditional leaders were not active in mobilizing the communities for IRS, although they had been provided with information to share with the communities. This was because they expected to be given some financial incentives despite it being considered part of their responsibilities as leaders, and was to be incorporated in their daily interaction with communities in meetings.

As a follow up to the issues identified above a draft communication strategy has been developed to guide dissemination of key messages to communities. In addition, the program has intensified engagement of traditional and religious leaders and training of mobilizers to strengthen dissemination of correct IRS messages to communities.

### 2.2.2 Geographical Reconnaissance

Geographical reconnaissance (GR) is important for IRS as it provides accurate baseline information on the number of eligible structures targeted for spraying, and their sprayable surface area. This information is used for the quantification of IRS commodities and human resource needs for the IRS campaign.

Chemonics led the geographical reconnaissance exercise in Salima and Nkhotakota. On February 14, 2011, Chemonics trained 40 district-level Ministry of Health staff members in the theory and practice of house measurements. The participants were health surveillance assistants (HSAs) and environmental health officers drawn from the Salima and Nkhotakota district health offices. In addition, Chemonics staff provided supportive supervision for the field and training activities. Table 4 below illustrates the number of personnel trained, segregated by district, category and gender.

**Table 4. Personnel Trained in House Measurement**

Category	Nkhotakota		Salima		Total (Male/Female)		Total Participants
	Male	Female	Male	Female	Male	Female	
Team Leaders	6	0	5	1	11	1	12
Enumerators	12	0	9	3	21	3	24
Data Clerks	0	2	1	1	1	3	4
<b>Total</b>	<b>18</b>	<b>2</b>	<b>15</b>	<b>5</b>	<b>33</b>	<b>7</b>	<b>40</b>

*Field House Measurement.* Once they completed their training, the trainees were divided into six teams, each comprised of two enumerators and a team leader. The measurement of the sprayable surface area of each structure used for sleeping was conducted on February 14-20, 2011. A total of 72 villages or clusters were selected from the 16 district subdivisions, known in Malawi as Traditional Authorities (TAs), using cluster sampling with probability proportionate to size (PPS). A list of villages with estimated number of households was used in each district as a sampling frame. Of these 72 villages, 38 villages were from Salima and 34 from Nkhotakota. In total, 1,065 structures from 716 households were selected, of which 811 were reportedly used for sleeping, and their sprayable surface areas measured. The study report was finalized on April 10, 2011. The study found that:

- The average surface areas in structures used for sleeping, and thus targeted for IRS, was 87.68 sq.metres in Salima and 105.43 sq.metres Nkhotakota. The results of this exercise revealed that structures used for sleeping in Nkhotakota are significantly larger than those in Salima.

- The average number of structures used for sleeping per household was 1.156 in Salima and 1.120 in Nkhotakota.

The results from the house measurements will be used in combination with the results from the geo-coding of eligible structures (house units used for sleeping) to quantify the insecticide requirements for future spray rounds.

*Geo-coding of structures.* Chemonics further subcontracted Chancellor College of the University of Malawi to undertake the second part of the geographical reconnaissance exercise – geo-coding of structures – in Nkhotakota in order to determine the number of IRS eligible structures in the target areas. Although the initial plan was to conduct the exercise in both Nkhotakota and Salima, this was modified to just Nkhotakota after PMI downsized the project’s scope to one district. The exercise started on June 20, 2011 and finished on August 22, 2011. The exercise also involved Environmental Health Officers drawn from the Salima and Nkhotakota district-level MoH offices. In addition, Chemonics participated in the training and field activity for supervision and technical support.



*Chikondi Chagoma, mobilizer, distributes IEC/BCC brochures and interacts with spray operators in Ngodzi, Salima*

*Community mobilization for geographic reconnaissance.* In preparation for the geo-coding exercise, briefing sessions were conducted in Nkhotakota on June 16 and 17, 2011 to orient the District Executive Committee (DEC) members and local leaders from all six traditional authorities – Kanyenda, Kafuzira, Mphonde, Malengachanzi, Mwadzama, and Mwansambo. The Traditional Authorities later oriented their respective group village heads and village headmen. The project also engaged local community radio through a collaborative effort with the District Health Office to air geo-coding messages to the communities, further facilitating community awareness regarding the exercise.

*Training of enumerators.* On June 20-21, 2011, 32 enumerators and 4 district health staff from the Ministry of Health were trained in the theory and practice of GIS, and on the use of GPS equipment to successfully conduct geo-coding of structures for IRS. Table 5 below illustrates the number of personnel trained, segregated by district, category, and gender. The training was divided into three sections:

- Theory:** Each participant was allocated a Garmin 62C GPS receiver to use. Participants were oriented on all the basic components of the GPS unit, including its data capture facilities, and were taken through all the necessary steps of using a GPS unit. Included in this orientation was including session on how to approach the communities during the geo-coding exercise. This ensured that communities had a clear understanding of the purpose of the exercise and allowed the enumerators to carry out the geo-coding work.
- Practicum:** The Participants had a one-day field practice on the use of GPS units to geo-code structures in three selected villages in Kanyenda Traditional Authority. The villages were Gweula, Denja and Ngondo in group village Mbuna.
- Quality assurance of the field practicum:** The supervisors monitored the activities in the field to ensure enumerators were adhering to the guidelines provided in class and that they were filling in the data collection forms correctly. Chemonics’ technical staff provided overall leadership and coordination of the exercise, as well as further monitoring and supervision of field activities through spot checks.

**Table 5. Personnel Trained in Geo-Coding of Structures**

Category	Nkhotakota		Salima		Other Participants		Total (M/F)		Total Participants
	M	F	M	F	M	F	M	F	
Enumerators	0	0	0	0	16	10	16	10	26
Team Leaders	0	0	0	0	5	1	5	1	6
Supervisors (DHO staff)	3	0	1	0	0	0	4	0	4
<b>Total</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>21</b>	<b>11</b>	<b>25</b>	<b>11</b>	<b>36</b>

### 2.2.3 Review of IRS Guidelines and Development of Training Manuals

To ensure effective IRS implementation, it is important that all IRS implementers in Malawi follow the same operational standards. Therefore, Chemonics co-led a stakeholder workshop with the NMCP in order to review nationwide IRS guidelines, and to draft a national IRS training manual. The workshop also led to the development of a national IE&C strategy to guide the training of all district malaria control program staff, communities, and other stakeholders working on IRS programs.

The workshop was held on September 30-31, 2011 with participants from the following institutions:

- NMCP
- USAID/PMI
- WHO (Malawi and Regional offices)
- Malaria Alert Center (MAC)
- Nkhoma Hospital
- Nkhata Bay DHO
- Nkhotakota DHO
- Mangochi DHO
- Chancellor College of the University of Malawi
- Chemonics

Following the workshop, the NMCP will incorporate contributions from workshop participants to finalize their review of IRS guidelines, and the development of a training manual and IE&C strategy. Once finalized, the training manual will provide quality guidance for the training of IRS implementers and provide standards for the supervision and monitoring of IRS implementation, while the IE&C strategy will serve as a handbook of recommended messages and methods to sensitize local communities, contributing to increased knowledge, and therefore increased acceptability and demand of IRS among communities. This manual is expected to be finalized by 2012. Overall, these processes are expected to contribute towards improving IRS quality and effectiveness.

## 2.3 Environmental Compliance

Environmental compliance in IRS is essential to prevent unnecessary human exposure to the insecticide and avoid environmental contamination. Several activities were therefore undertaken to prepare for the IRS activities in Nkhotakota and Salima.

*Construction of staging sites.* Twelve staging sites were prepared in accordance with WHO environmental guidelines. At each of these sites, soak pits and washing area slabs were constructed and fenced in to prevent entry of unauthorized personnel.



*Washers at Chikumba site warehouse soak pit triple rinsing used PPE.*

*Pregnancy testing.* All female participants were tested for pregnancy before training. Of the 216 female participants – spray operators, washers and store keepers – 18 tested positive. Those who tested positive did not participate in the IRS to prevent fetal exposure to contamination.

*Environmental impact assessment.* Before the implementation of any IRS activity or the introduction of a new insecticide, the Malawi Environmental Affairs Department (EAD) requires that an Environmental Impact Assessment (EIA) is carried out to ascertain the safety of the insecticide and its impact to both humans and the environment. Additionally, the EAD required that an EIA be completed before spraying could start, due to the scaling up of the spraying areas from one district to seven districts. Chemonics engaged a consultant to conduct the EIA in November 2010

covering all the seven districts that were to implement the IRS activity.

“Overall, Chemonics is doing a good job implementing the PMI IRS Malawi program in Salima and Nkhonkhotakota districts. The soak pits are well designed and constructed, and the storage facilities meet BMP specifications.”  
– EMCAB Report

The report was also discussed with the National Executive Council of Environmentalists (NEC) and based on the report, the NEC allowed Chemonics to proceed with spraying. However, Chemonics was advised to subject the insecticide to further tests for confirmation of its safety for use. Samples of Actellic 50 EC were sent to Malawi Bureau of Standards for laboratory analysis; however, the facility does not have the capacity to analyze the samples and this was shelved.



Protected soak pit and wash area; warning sign outside soak pit

*Pre-spray inspection.* Pre-spraying environmental compliance inspection was conducted in all 12 staging sites in Nkhonkhotakota and Salima to ensure they met the compliance requirement. Compliance issues included the use of storage facilities that were too small relative to the quantity of commodities to be stored. Corrective measures were implemented in the sites that did not meet compliance criteria before commencing the spraying campaign.

*Mapping of highly sensitive environmental areas.* Highly sensitive environmental areas that lie less than 50 meters from the water bodies were identified and mapped to ensure that the structures within these areas were not sprayed. A total of 1,355 structures were identified, 113 in Nkhonkhotakota along the Chia Lagoon and Lake Malawi, and 1,242 in Salima along Lake Malawi.

*Storage facilities.* A major central warehouse in Lilongwe was secured and prepared for storage of commodities and equipment. Additionally, a central storage facility was identified in each district to serve as a hub for the satellite warehouses in each of the 12 operational sites. These sub-district facilities were rehabilitated and had their security enhanced in preparation for the spraying campaign. Of these 14 district-level storage facilities, only three were Ministry of Health-owned.



Rehabilitation of Dwangwa storage facility

*Decommissioning of the operations sites.* At the conclusion of the spray season, the 12 satellite operations sites were decommissioned. This involved moving all commodities to the main warehouse in Lilongwe, and extensive cleaning. Soak pits fences were removed, and soak pits and washing slabs were covered and protected in preparation for their re-use in the next spray campaign.

*Inventory and stock taking, and solid waste disposal.* After the end of the spraying campaign, all the commodities were transferred to the main district warehouses for storage. The PPE and the spray cans were cleaned and properly stored. All contaminated solid waste was collected in the central warehouse in each district. Empty insecticide bottles were recounted and quantities were compared with the quantities issued to each district at the beginning of the spray campaign to ensure proper insecticide utilization. Based on recommendations by the EMCAB environmental audit and the EIA, an appropriate incinerator in compliance with environmental safety standards was identified for the incineration of the plastic insecticide containers and other contaminated solid waste. Therefore, insecticide bottles were packed, weighed, and transported to Lilongwe St. Gabriel Hospital facility on June 1<sup>st</sup> 2011 for incineration, while all other contaminated waste was sent to Nkhotakota General Hospital; St. Gabriel's was selected for the bottle incineration as it had already been approved for plastics incineration by Chemonics and the EIA consultant based on environmental compliance standards.

## 2.4 Logistics/ Procurement

Chemonics procured various commodities in preparation for the 2010 spray round. These included:

- *Insecticide.* 35,520 liters of Actellic 50 EC were procured from Syngenta in Denmark. A sample of 2 liters was sent to the Malawi Bureau of Standards for testing, as required by the Malawi EAD.
- *Spray cans.* Hudson X-Pert® spray cans were delivered in the country on November 17, 2010. Some of the spray cans had manufacturing defects that caused leakages and could not be used for spraying. Hudson was alerted and they provided replacements for 170 cans.
- *Personal Protective Equipment (PPE).* Personal protective equipment procured overseas arrived in the country later than expected, due to shipping difficulties; this pushed the arrival time by two weeks delaying it till November 25, 2010.
- *Transportation of IRS implementers.* The project hired 66 vehicles for the daily transportation of the spray teams to the field. Minibuses that met the requirements of safety and road worthiness through inspection and clearance by the traffic police were assigned to each of the operational sites. The minibuses remained in the operational sites for the entire spraying period.



## 2.5 Community Mobilization

Successful implementation of IRS requires community acceptance of the intervention, brought about through the use of effective information, education, and communication (IE&C) interventions. Chemonics



Warehouse assistant unloading IEC materials at Salima warehouse.

collaborated with the District Health office the target district to implement the following interventions, aimed at increase IRS acceptability within the communities.

*Social mobilization and community sensitization.* The Chemonics team conducted informational meetings with key groups in Nkhotakota and Salima districts to prepare for the spraying campaign. One meeting was held with the District Executive Committee (DEC) to introduce the IRS program and identify areas of collaboration. In addition, several meetings were held with the Area Development Committees (ADCs) in each of the 17 areas where they operated (7 in Nkhotakota and 10 in Salima). At these meetings, Chemonics’ staff prepared beneficiaries in advance of IRS

implementation by raising awareness of IRS practices and benefits.

*Door to door sensitization/mobilization.* In addition to these meetings, and in order to ensure that all beneficiaries received accurate IRS messages, trained HSAs and volunteers conducted door-to-door visits to each of the targeted households in the two districts. Mobilization activities commenced three days before the spray campaign. The mobilizers interacted with the family members and distributed IE&C brochures.

*Mass sensitization.* To reinforce the sensitization, the program collaborated with the districts to air messages in the local radio and used ministry of information vans that drove in the villages providing messages through the megaphone. This helped clarify wrong information and increased community awareness and acceptance of IRS.

## 2.6 Spraying Campaign

The 2010 spraying campaign in the two districts of Salima and Nkhotakota started later than initially planned due to delays in the approval and procurement of spray commodities. Nkhotakota started on November 22, 2010 and Salima on November 30, 2010. Unfortunately, spraying was prematurely halted after 21 days of spraying due to a stock-out of insecticide. This stock-out was a direct result of an error in the quantification of the amount of insecticide needed to complete the campaign; this error is discussed in larger detail in section 3.0. At the time that spraying was halted, the campaign had covered 72.6 percent of the proposed target structures in the two districts.



Spraying inside house, Chikumba, Nkhotakota.

Despite the premature termination of the 2010 spraying campaign, the program registered a number of achievements during pre-planning and implementation which have provided a strong foundation for future Indoor Residual Spraying rounds.

## 2.6.1 IRS Performance

*Structure Coverage.* During the 21 days of spraying, a total of 104,099 structures were found out of which 97,329 were sprayed. This accounted for 93.5 percent coverage of structures found, while sprayed structures represented 72.6% of the 134,000 estimated target structures provided by the MOP. The percentage of structures found but left unsprayed is largely attributable to owners who were away attending to social, cultural, or economic affairs. Table 6 below summarizes the cumulative structures found and sprayed.

**Table 6: Cumulative Structures Found and Sprayed**

District	Number of Estimated Target Structures	Number of Structures Found	Sprayed structures		Percentage Coverage of Estimated Target Structures
			Number of Structures Sprayed	Percentage Coverage of Structures Found	
Nkhotakota		54,956	51,163	93.10%	
Salima		49,143	46,166	93.90%	
<b>Total</b>	<b>134,000</b>	<b>104,099</b>	<b>97,329</b>	<b>93.50%</b>	<b>72.6%</b>

*Population Protected.* As spraying occurred, spray operators were tasked with collecting data on the number of people who lived in each sprayed structure. This data was used to calculate the population ratio protected by IRS. From 97,329 structures sprayed, the total population protected was 364,349; of that total, 77,217 or 21.2 percent of persons protected were children aged less than 5 years, and 10,424 or 2.9 percent were pregnant women.

**Table 7: Cumulative Population Protected**

District	Total Population in Sprayed Structures	Children < 5yrs Protected		Pregnant Women Protected	
		Number of Children <5yrs	Percentage of Children < 5yrs	Number of Pregnant Women	Percentage of Pregnant Women
Nkhotakota	188,726	38,061	20.20%	5,669	3.00%
Salima	175,623	39,156	22.30%	4,755	2.70%
<b>Total</b>	<b>364,349</b>	<b>77,217</b>	<b>21.20%</b>	<b>10,424</b>	<b>2.90%</b>

### Notes:

- *Number of children < 5 years protected = Number of children aged <5 years reported living in the sprayed structures. The percentages are calculated based on the total number of children living in the sprayed structures divided by the population reported living in the sprayed structures, thus 20.20% in Nkhotakota and 22.30% in Salima.*
- *Number of pregnant women protected = Number of pregnant women reported living in the sprayed structures. The percentage is calculated based on the number of pregnant women reported living in the sprayed structures divided by the total population reported as living in the sprayed structures, thus 3.0% in Nkhotakota and 2.7% in Salima.*

*Insecticide utilization.* For the 97,329 structures sprayed, 35,192 liters of Actellic 50 EC was used. A post-spray assessment indicated that the insecticide utilization ratio in Nkhotakota was slightly higher, at 1 liter for every 2.5 structures sprayed, while the ratio in Salima measured at 1 liter for every 3.1 structures. This consumption ratio was confirmed during Chemonics' GR exercise to measure sprayable surface area, which indicated that Nkhotakota has larger houses used for sleeping in comparison to Salima; the average surface areas in structures used for sleeping was 87.68 square meters in Salima and 105.43 square meters in Nkhotakota.

## 2.7 Strengthening Monitoring and Quality Assurance

The project made significant efforts on monitoring and quality assurance processes to ensure that IRS activities are implemented efficiently, adhere to high quality and are cost effective. The lessons learned were documented and shared on an ongoing basis for programming and decision making. The following are the major activities carried out over the year:

- Finalized and submitted Performance Monitoring Plan (PMP) to USAID/PMI for review on December 22<sup>nd</sup>, 2010. It incorporated recommendations from USAID/PMI received on the first PMP submitted earlier in November 2010.
- Chemonics organized IRS review and planning meetings for the District IRS Technical Committee members on March 15 and 16, 2011, in Salima and Nkhotakota respectively, to discuss findings from the IRS community reviews. Findings were used to develop interventions for the improvement of IRS implementation.
- Provided field supervision and monitoring to ensure quality geo-coding and data collection of eligible structures through spot checks; also conducted on-site visits to the villages that had been geo-coded for verification to ensure full coverage.
- Supported the NMCP and other partners to review IRS guidelines and develop IRS training manual and IE&C strategy.
- Carried out a review and modification of the data collection and analysis tools (spray operator data collection form, mobilization form and database) in consultation with USAID/PMI and in collaboration with NMCP. Data clerks were then trained on data management and reporting. Chemonics supported the NMCP to develop supervisory checklists for all the levels of the IRS participants.
- Finalized development of a new database (in MS Access & MySQL) to replace the Excel one used in previous spraying campaigns. Upon completion, the database will be pre-tested during the training of data clerks for validation. Apart from PMI-supported IRS districts, the database will also be used by Government of Malawi (GoM) supported IRS districts and is expected to significantly improve analysis and storage of IRS data and generation of reports, thereby strengthening IRS data management and quality assurance.
- Developed and implemented a supervision and monitoring mechanism which included the following elements:
  - IRS spray operators were closely monitored throughout the campaign. Supervision was conducted at several levels to ensure quality. First, 123 team leaders directly supervised the 666 spray operators, and were themselves supervised by 40 team supervisors. This



*Store Manager demonstrating data collection and planning at Mkaika site warehouse, Nkhotakota*

ensured strengthened supportive supervision throughout the campaign. Therefore, each team supervisor was assigned 3 teams at each operational site and each team leader was responsible for 5 spray operators. Furthermore, a senior level team of supervisors from the district and national level provided additional supportive supervision to all the teams to ensure adherence to IRS principles and guidelines. For the upcoming 2011 spray campaign, supervision will be intensified. The program plans to engage 345 spray operators who will be divided into teams of five, each supervised by a team leader. In addition, each team supervisor will supervise two teams.

- Data collection was carried out by the spray operators. Data quality was monitored in the field by the team leaders and supervisors, and at the data entry point by the M&E officer.
- Environmental compliance was monitored at all levels by team leaders, supervisors, and site managers to ensure compliance with environmental protection and human safety standards.
- Weekly IRS progress reviews were held at the district level to share lessons learned, assess level of progress, and address issues faced by the teams
- IRS performance data was analyzed and compiled on a daily basis and weekly reports were shared with PMI and other stakeholders.
- Collaborated with the Malaria Alert Centre (MAC) on entomological monitoring activities. MAC identified Nkhotakota as the point of reference for the M&E of Actellic 50EC insecticide for the two districts. Since January 2011, MAC has been conducting monthly assessments of the decay and effectiveness of pirimiphos-methyl (Actellic 50EC) insecticide used for IRS in Nkhotakota and Salima Districts. Bio-assay tests were conducted on the walls of structures that had been sprayed on a monthly basis from January to May 2011. Results from February’s assessment indicated that after two months of spraying, Actellic was still effective with a mortality rate of greater than 83 percent as indicated in the table below:

**Table 9: Wall Bioassay results for Actellic 50 EC (Jan-Feb 2011 monitoring)**

District	Site Name	Wall Type	Type Of Test	January, 2011			February, 2011		
				n	Number Dead	Percentage of Mortality	n	Number Dead	% of Mortality
Nkhotakota	Kapeta	Mud/brick	Control	60	1	1.60%	40	0	0%
Nkhotakota	Kapeta	Mud/brick	Test	180	179	99.40%	120	100	83.30%
Nkhotakota	Mgomba 2	Cement	Control	50	0	0%	50	0	0%
Nkhotakota	Mgomba 2	Cement	Test	150	150	100%	150	145	96.70%

*(Source: Monthly reports on insecticide decay rates of pirimiphos-methyl (Actellic, Syngenta), 20 January and 22 February 2011, Malaria Alert Centre, Malawi)*

The March wall cone bio-assay results (three months after spraying) indicated reduced residual effects of the insecticide, with only 30 percent vector mortality rates on the cement walls and 2.2 percent on mud walls, far below the 80 percent WHO acceptable effectiveness level. These results confirm that Pirimiphos-methyl residually lasts only 2-3 months on sprayed surfaces, which is within the WHOPES evaluation results range (WHOPES 2009). These results will be helpful to NMCP in making decisions on insecticide selection in future IRS activities.

### 3.0 Challenges and Solutions

Throughout implementation, Chemonics continuously documented and shared its progress and experiences on IRS activities with USAID/PMI, and other partners and stakeholders. Challenges faced were discussed and solutions were identified to inform decision-making and contribute to best practices in malaria prevention and control. The following are the major challenges experienced and shared with PMI/USAID, NMCP and other partners:

*Insecticide miscalculation.* During the planning stages of the 2010 spray season, there was no reliable data on the number of sprayable structures or the sprayable surface area in the target area. Initial data on these two factors for the two districts, critical in calculating the quantities necessary for the campaign, was inaccurate.

Specifically, an initial quantification was conducted, based on a sprayable surface area of 215 square meters; this figure had been used in previous spray campaigns in Malawi, campaigns where plenty of insecticide remained after completion. This information was presented to technical experts at insecticide manufacturer Syngenta. After review, Syngenta provided a revised quantification estimate based on their experience, which used an estimate of an average sprayable surface area of 35 square meters. Unfortunately, this estimate was inaccurate, and when combined with uncertainty on the number of structures, led to an under-quantification of the insecticide.

As a result, the quantities procured covered only a portion of the MOP target of 134,000 structures. Ultimately, the spray season was prematurely terminated, as additional insecticide could not be procured before the onset of the rainy season.

To avoid this situation in the future, Chemonics conducted a geographic reconnaissance exercise in 2011, measuring the sprayable surface area and carrying out geo-coding, to determine the number of structures in the target area. This assessment was used for the quantification of insecticide and other IRS resource required for the 2011 spray campaign and beyond.

*Storage facilities.* The warehouses utilized in each of the operational sites initially required a level of rehabilitation work that was beyond what was anticipated, due to the poor state of structures available for use by the IRS program. In addition, most of the facilities that were rehabilitated and used for the IRS are private property. Of the 14 facilities, only 3 are owned by the MOH (Salima Old Hospital, Nkhotakota Old Hospital and Lupashi health facility).

For future spray campaigns, Chemonics will collaborate with the DHMT to identify government structures that can be rehabilitated and available for IRS in all IRS rounds.

*Inadequate understanding of IRS by beneficiaries.* Despite the IE&C campaign, some families did not grasp the importance of removing all the household items before spraying. This led to a loss of spraying time, as houses were not prepared for spraying when spray operators arrived. Additionally, some communities wrongly believed that the insecticide would kill children and livestock, based on false rumors.

As a result, the project intensified implementation of IE&C activities to diffuse misconceptions. The project also identified the need for future spray campaigns to intensify community sensitization, and increase supervision of the spray operators and team leaders to ensure they pre-inspect the structure before spraying.

*Late procurement of international commodities for 2010.* A delay in receiving the necessary approvals to purchase spray equipment and personal protective equipment led to a delay in the start-up of the spraying campaign and resulted in conducting spraying during the rainy season. Therefore, in future campaigns, the procurement process will commence in May after a needs assessment is conducted, and will be based on the geographical reconnaissance to ensure timely delivery.

*Delays in procurement process for 2011.* Several factors outside of the Contractor's manageable control led to delays in the purchase and delivery of insecticide in country. This included a potential change in the selected insecticide from pirimiphos-methyl to bendiocarb. This discussion occurred after Chemonics had already mobilized Arysta, the distributor of the Actellic 50 EC brand of pirimiphos-methyl to deliver the required amount of insecticide. Chemonics engaged Arysta to delay the shipment until the matter was resolved, leading to a delay in delivery in-country.

Other factors that led to a delay in purchase for the 2011 spray season included discussions on the potential purchase of insecticide by an entity outside of the project, the scaling down from two districts to one, and the delay in receiving CO approval and an insecticide waiver. In the future, there is a need for improved decision making throughout the project management cycle by all stake holders.

*Fuel shortages.* Malawi continues to experience shortages in available diesel fuel, affecting both the supply and cost of fuel necessary for implementation of the spray campaign. In response, Chemonics has explored the possibility of purchasing and storing fuel in bulk in collaboration with other partners in the target area. The project will also continue liaising with partners on the ground to brainstorm innovative solutions should a diesel shortage continue.

*Change in scope.* Ambiguity about the availability of funds for the program caused an unexpected disruption to technical work in 2011, as the field team was requested by USAID to halt all activities and continue at a minimum operating cost until the matter was resolved. This request for scale down led to a delay and eventual backlog of technical activity implementation, specifically geographical reconnaissance, incineration of solid waste, and the replacement of the Technical Operations Coordinator.

## 4.0 Lessons Learned and Best Practices

During the year under review, the program learned a number of lessons on community mobilization, partnership, district involvement and capacity building, which will help the project to improve future IRS campaigns. The following are the major lessons learned and best practices which were documented and shared with NMCP, USAID/PMI, and other partners:

### 4.1 Lessons Learned

- Close supervision and monitoring of field IRS interventions helped early identification of challenges and allowed early response. This aspect requires maintaining and strengthening for early identification of challenges to enable prompt development of solutions/corrective measures and enhance the quality of the IRS programs. The project will continue to strengthen community partnership through increased involvement of volunteers, and traditional and religious leaders to enhance monitoring of IRS implementation and early reporting of suspicious behavior and malpractice, and ensure an immediate and timely response. Moreover, more involvement and leadership from the district health teams in IRS activity planning, implementation, and monitoring are key steps in building their sense of ownership to ensure continuity and sustainability of the IRS effort.
- The program used a variety of IE&C techniques and various channels to create awareness, which proved very effective in dispelling community misconceptions and increasing IRS acceptability. There is a need to develop an IE&C strategy that integrates IRS in other health education activities. This strategy will focus on encouraging district executive committees to engage community leaders in discussing with their villages the importance of IRS as part of their daily activities. This will ensure continuous community sensitization well in advance of the spray campaign, and strengthen community partnership through an increased ownership of the success of IRS implementation.
- Monitoring of insecticide decay rates on sprayed surfaces is essential to inform decision makers on the choice of insecticide. Therefore, this exercise should be maintained for successful malaria control programs



### 4.2 Best Practices

Best practices were documented and analyzed during IRS implementation and the post spraying period. The following are the major best practices and success stories documented and shared during the 2010 IRS campaign period.

Chemonics introduced the district IRS technical committees as the implementing team in the field and guided the districts to strengthen their roles and responsibilities. This involved developing their Terms of Reference (ToR) for their day-to-day involvement in IRS activities, which will guide them in planning and management of IRS activities at the district level, encourage ownership, and contribute towards the sustainability of IRS activities. Chemonics will continue to support and monitor the districts to ensure the finalization and implementation of these tasks in future spray campaigns.



*Spray operator sprays a house door frame, Chikumba, Salima.*

Chemonics successfully planned for and carried out geographical reconnaissance as a best practice in IRS. The exercise was comprised of two parts: house measurement to determine the average sprayable surface area of structures, and geo-coding of enumeration of houses in target districts. For phase two, Chemonics subcontracted Chancellor College of the University of Malawi to undertake the geo-coding of structures in Nkhotakota district in order to determine the number of IRS eligible in the target areas. The exercise provided important baseline information which will be used for estimating insecticide requirements. The challenges and lessons learned were shared with NMCP, other partners, stakeholders working in IRS, and other malaria prevention programs. The experience gained will inform future IRS programming and guide planning for estimating insecticide requirements, manpower, and the monitoring of insecticide dosages deposited on sprayed walls.

In addition, MoH personnel participated in Chemonics-led training for GR and field data collection. This exercise contributed to building the capacity of district MoH personnel to conduct similar exercises in the future. Based on this exercise, Chemonics clearly

defined IRS-targeted and eligible structures for Malawi. This action is important for planning, and monitoring and evaluation of IRS and other malaria control and prevention activities. It is recommended that all future IRS campaigns should start by conducting a geographical reconnaissance in all planned target areas.

Chemonics supported district health staff in implementing a post IRS beneficiary review to establish community satisfaction and concerns regarding IRS implementation. The review is a participatory process that involves identifying IRS implementation successes, challenges, and concerns as viewed by the communities. The review also provides recommendations for improvement of IRS activities. The results were documented, shared with the districts and NMCP and will be used to inform future programming of IRS activities.

### **4.3 Success Stories**

Success stories are an important component of raising awareness of USAID efforts through external communication. Both during and after the implementation of the spray campaign, the project captured interviews with beneficiaries to illustrate examples of the development impact of IRS for presentation to external audiences.

*Malaria Becomes History.* Monitoring visits were made to beneficiary communities to document their individual experience with the implementation of spraying. These recorded interviews and testimonials will form the basis of future communications tools, and will possibly be



*Beneficiary of IRS campaign, Nkhotakota.*

packaged for future use in IEC/BCC campaigns. One of the villagers in Nkhotakota, whose house had been sprayed for the 4<sup>th</sup> consecutive year, stated:

*“...a sick person has no peace of mind. My family and I used to frequently suffer from malaria but with the coming of this IRS program, life has changed greatly in my house. I am glad to say, I cannot recall the last time when my family members suffered from malaria. I really thank the Malawi government for the initiative and urge them and indeed the donors to continue doing so that in a few years time, malaria becomes history...”*



*IEC/BCC Officer shares interview via FlipCam with beneficiary, Mchoka, Salima.*

*IEC/BCC Campaign.* Success stories not only contribute to external awareness of USAID’s development impact, but also can be used as an integral part of an IRS campaign’s IEC/BCC efforts. To that end, the project recorded testimonials on the effectiveness of the insecticide from villagers whose houses were sprayed and shared it with communities whose structures were not yet sprayed. This acted as an additional BCC tool to use with households who initially were not willing to have their structures sprayed. Upon hearing the testimonials, households started demanding IRS services and this led to improved coverage. This illustrates how innovative BCC techniques can help with program implementation.

Moreover, IEC/BCC is an important component of any IRS campaign to increase acceptance among beneficiaries. After the door-to-door campaign was completed in the Kachule Area of the TA Kuluunda in Salima, the expectation was that the communities were ready to allow the spray operators to spray their houses. However, when spray operators arrived, the whole community refused to allow them access to their houses, stating that the insecticide was intended as family planning and would make them infertile.

To dispel the misconception, the District Health Officer and the IRS IEC team visited the community to discuss the problem. The team used mass media, such as megaphones mounted on mobile vehicles, to provide accurate information on IRS. This successfully dispelled the rumors in the community, leading to acceptance and uptake of IRS.

*Behavior Change is For Everyone.* While behavior change is often focused on the beneficiaries, sometimes change is needed for spray implementers as well. During the post-spray community review meetings, some communities indicated that spray operators from previous campaigns were very rude resulting in some households turning spray operators away in order to protect their own dignity. The project therefore focused on improving spray operator behavior towards the community, as it contributes greatly to refusal or acceptance of IRS.

To address this concern, training in the qualities of a good spray operator was included as one of the key components of training in the 2010 spray round. This helped improve spray operators’ attitudes towards beneficiaries, eventually leading to the increased community motivation to have their houses sprayed.

As one village headman in Chimunda village, Nkhotakota district stated during a focus group discussion:

*“... previously, the spray operators were rude. At one time I turned him away for not respecting me. This time, spray operators were very friendly. Nobody in my village complained about their behavior. You taught them good manners this time.”*

## 5.0 Management and Administration:

### Partnership and Collaboration:

- Chemonics held review meetings with district IRS committees on March 15 and 16, 2011, in order to assess project performance and enhance IRS preparedness and effectiveness.
- Chemonics participated in two PMI partners meetings on February 8, 2011, and March 29, 2011, to share experiences and challenges in malaria control interventions.
- The PMI/USAID M&E team conducted a field visit to Salima on March 1, 2011, and Nkhotakota on March 2, 2011, to review the project performance and data quality assurance systems. During the visit, the team held discussions with DHMT representatives, including District Environmental Health Officers, hospital administrators, and human resource officers, as well as the warehouse managers. They conducted one community focus group discussion in each district. The PMI/USAID team also implemented a data quality assurance assessment (DQA) at the Chemonics office in Lilongwe on March 24, 2011. The team provided Chemonics with a report of their findings and recommendations for incorporation in the planning and implementation of future spray rounds in order to enhance data quality.
- The Senior Malaria Advisor from Malaria Consortium visited the Malawi IRS project to provide short term technical assistance on measurement of sprayable surface area. He provided leadership in the process while working with and supervising district health staff from February 15-18.
- Chemonics held planning meetings with district IRS committees in Nkhotakota on June 1, 2011 and Salima on June 17, 2011, in order to discuss progress on preparedness for the next spray round.
- Chemonics participated in a USAID health partners meeting on June 2, 2011 and a PMI partners meeting on June 07, 2011 to share experiences, challenges, and plans in malaria control interventions.
- Following the data quality assessment (DQA) exercise conducted at the Chemonics office in Lilongwe on March 24, 2011, the PMI/USAID team provided Chemonics with a report of their findings on May 6, 2011. Chemonics will incorporate the recommendations provided by the team in the planning and implementation of future spray rounds.
- Two Chemonics staff (M&E Officer and IE&C/BCC Officer) participated in a GIS training for USAID Partners coordinated by Feed the Children, on May 24 and 25, 2011. Apart from gaining skills in GIS data acquisition (GIS and GPS basics, data capture for mapping, and production of database), the course helped in providing technical and monitoring support to the GR exercise and will further help in guiding future GIS activities.
- Two Chemonics staff (M&E Officer and IE&C/BCC Officer) participated in a five-day training course in database design (developing applications in MS Access & MySQL). The skills gained will help Chemonics to develop a new database to replace the Excel one currently in use, and provide technical support to NMCP in order to strengthen IRS data management and quality assurance.



## 5.1 External Management and Administration

- Environmental compliance audits were completed by three separate entities: EMCAB auditors from Washington, officers from the Malawi Environmental Affairs Department, and an independent Malawian national environmental compliance consultant contracted by the project. These auditors provided summary reports of their inspection with findings and recommendations for improvement.
- The Senior Malaria Advisor from Malaria Consortium visited the Malawi IRS project to provide short term technical assistance and program evaluation. He spent three days in the field working with the program managers supervising the IRS teams and looking at different aspects of the program such as data tools, program evaluation tools, warehouse data and documentation and program organization.
- Partnership and Collaboration: The project conducted ongoing planning and review meetings with NMCP and district hospital staff throughout the quarter in order to enhance preparedness and IRS effectiveness.
- Chemonics provided oversight and management support for the project through short-term technical assistance provided by its home-office project management unit on short intermittent trips throughout the year. Home-office Director provided STTA on three separate trips, including participation in meetings with PMI. Home-office Manager provided start-up and management support on two occasions. Two separate field accounting auditing visits were also provided per Chemonics' standard practice, and a communications specialist from Chemonics' home office provided short term technical support on IE&C during the spraying campaign.

## 6.0 Performance Management Plan (PMP)

Chemonics developed the PMP and submitted it to PMI in December 2010. It was officially approved by PMI on September 30, 2011. However, Chemonics will need to update the PMP to reflect the new indicators that will be used to assess progress in light of the reduction of the target area from two districts to only Nkhotakota district.

The following table provides Progress on Operational Plan Indicators for the period October 1, 2010 – September 30, 2011:

INDICATOR	FY09 Target	FY10 Actual	FY10 Target	FY10 Result	Notes/Explanation
1. Number of personnel trained to deliver IRS in the target districts (M/F) ( <i>assumption male is 75% of total</i> )	N/A	N/A	991 M =744 F=247	1884 M=1310 F=574	The number increased due to an increase in the number of mobilizers trained. During the micro planning, it was established that the number of mobilizers proposed was insufficient to cover all the areas.
2. Number of structures sprayed with residual insecticide in the most recent round with USG funds	N/A	N/A	134,000	97,329	This was due to the partial spraying arising from insecticide stock out
3. Proportion of structures targeted in specified districts fully sprayed (# of structures sprayed/# of structures in the district) ( <i>At least 85%</i> )	N/A	N/A	104,099  97,329	93.50%  72.60%	Percentage of the sprayed structures/found (operations Target)  Percentage of the total sprayed/estimated target of 134,000 ( district coverage)
4. Number of people residing in houses sprayed/ number of people protected against malaria with IRS	N/A	N/A	670,000	364,349	These are the people reported as residing in the sprayed structures
5. Number of districts sprayed in each spray round	N/A	N/A	2	2	The districts were not fully covered due to insecticide stock out, leading to partial spraying
6. National curriculum for IRS in collaboration with the NMCP	N/A	N/A	1	N/A	Curriculum was not developed by the time of the training, but will be addressed in 2011
7. National IRS guidelines developed with the NMCP	N/A	N/A	1	N/A	The guidelines will be developed in 2011 before the spraying
8. Number of IRS materials printed and disseminated to target communities	N/A	N/A	230,000 Brochure	253,000 brochures	

INDICATOR	FY09 Target	FY10 Actual	FY10 Target	FY10 Result	Notes/Explanation
9. Number of people reached with IRS messages (at least 50% of the estimated 670,000 population)	N/A	N/A	335,000	446,000	Although a higher number of people were reached with the messages, it was not easy to estimate as various channels were used to dissemination information (i.e. radio, mass gatherings, and door to door).the door to door reached about 253,000 population and most of the others through at least one of the other channels
10.Number of storage facilities/stores identified	N/A	N/A	13	15	12 satellite stores, 2 district stores and 1 main warehouse in Lilongwe
11.Number of staging sites (wash areas and soak pits) constructed	N/A	N/A	12	12	

## 7.0 Project Operational Plan Table

INDICATOR	Quarter 1 (Oct 1 <sup>st</sup> – Dec 31 <sup>st</sup> 2010)	Quarter 2 (Jan 1 <sup>st</sup> – Mar 31 <sup>st</sup> 2011)	Quarter 3 (April 1 <sup>st</sup> – Jun 30 <sup>th</sup> 2011)	Quarter 4 (Jul 1 <sup>st</sup> – Sept 30 <sup>th</sup> 2011)
Number of structures sprayed with insecticide with USG support	97,329	-	-	-
Number of people trained in malaria treatment or prevention with USG funds	1,884	48	36	
▪ Number of women	574	9	11	
▪ Number of men	1,310	39	25	
Number of people protected by IRS	364,349	-	-	-
Number of children under 5 protected by IRS	77,217	-	-	-
Proportion of households targeted in specified districts fully sprayed	72.6%	-	-	-
Number of pregnant women protected in sprayed structures	10,424	-	-	
Number of districts sprayed in each spray round	2	-	-	-
National curriculum for IRS developed in collaboration with the NMCP	-	-	-	Draft IRS training manual developed
National IRS guidelines developed with the NMCP	-	-	-	IRS guidelines revised.
Number of IRS materials printed and disseminated to target communities				
▪ Brochures	253,000	-	-	-
▪ Posters	800	-	-	-
▪ Banners	14	-	-	-
▪ Door stickers	253,000	-	-	-
▪ T shirts	220	-	-	-
▪ Polo shirts	25	-	-	-
▪ Caps	220	-	-	-
Number of people reached with IRS messages	335,000	-	-	-

\*Notes: The number of people trained refers to trainings carried out as follows:

Quarter 2 (January - March)

- Geographical Reconnaissance (House measurement) – 40 (7 females and 33 males)
- Post IRS community satisfaction survey – 8 (2 females and 6 males)

Quarter 3 (April – June)

- Geographical Reconnaissance (geo-coding of structures) – 36 (11 females and 25 males)

## **8.0 Annual Inventory Report**

As per Attachment J.3 of the referenced task order, an updated inventory list of all non-expendable property purchases and information technology resources valued over \$500 is included as an attachment to this report.