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Indoor Residual Spraying (IRS 2) Task Order Four

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SENEGAL END OF SPRAY REPORT 2012

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SENEGAL
END OF SPRAY REPORT 2012

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ACRONYMS

AIRS	Africa Indoor Residual Spraying
BCC	Behavior Change Communication
BRH	<i>Brigade Regionale de l'Hygiène</i> (Regional Hygiene Brigade)
DEEC	<i>Direction de L'environnement et des Etablissements Classés</i> (Directorate for the Environment and Classified Factories)
DPV	Direction de la Protection des Végétaux (Directorate for Plant Protection)
DQA	Data Quality Assessment
DREEC	<i>Direction Régionale de l'Environnement et des Etablissements Classés</i> (Regional Branch of the Directorate for the Environment and Classified Factories)
HPN	Health Post Nurse
HV	Home Visit
IEC	Information, Education and Communication
IGA	Income Generating Activity
ITN	Insecticide Treated Nets
LEVP	<i>Laboratoire d'Ecologie Vectorielle et Parasitaire</i>
LLIN	Long-Lasting Insecticide-Treated Nets
M&E	Monitoring and Evaluation
MOHSA	Ministry of Health and Social Action
NGO	Non-Government Organization
NMCP	National Malaria Control Program
PERSUAP	Pesticide Evaluation Report and Safer Use Action Plan
PMI	President's Malaria Initiative
PNLP	<i>Programme National de Lutte contre le Paludisme</i> (National Malaria Control Program)
PPE	Personal Protective Equipment
SBH	<i>Sous-Brigade de l'Hygiène</i> (Hygiene Sub-Brigade)
SC	Steering Committee
SEA	Supplementary Environmental Assessment
SNEIPS	<i>Service National de l'Education et l'Information pour la Santé</i> (National Health Education and Information Service)
SNH	<i>Service National de l'Hygiène</i> (National Hygiene Service)
SOT	Spray Operators' Training
TOT	Training of trainers
UCAD	Université Cheikh Anta Diop de Dakar

USAID
WHO

U.S. Agency for International Development
World Health Organization

I. EXECUTIVE SUMMARY

In August 2011, United States Agency for International Development (USAID) awarded Abt Associates a contract to implement the Indoor Residual Spraying project (AIRS), IRS 2 Task Order 4. AIRS is funded by USAID under the President's Malaria Initiative and covers up to 17 countries in sub-Saharan Africa, including Senegal. Through the AIRS program, Abt endeavors to expand its life-saving malaria prevention and control efforts over the next three years, while supporting the President's Malaria Initiative (PMI).

PMI's support to IRS began in Senegal in 2007, when Nioro, Richard-Toll and Velingara were selected as pilot districts to receive IRS in Senegal. Three years later in 2010, Guinguineo, Malem Hodar and Koumpentoum were added as additional beneficiary districts to the project. Due to the low malaria prevalence in Richard Toll, the IRS Steering Committee decided to stop IRS in this district in 2011. In 2011, the PNLP and IRS Steering Committee selected the health district of Koungheul to be part of the AIRS project, thus bringing to six (6) the number of districts.

Abt began implementing the AIRS project in October 2011 in close collaboration with the Senegalese National Malaria Control Program (known as PNLP in French), the Ministry of Health (central and districts levels), and other key partners such as Universite Cheikh Anta Diop (UCAD), Ministry of Agriculture (DPV), Ministry of Environment (DEEC) and the ChildFund-led consortium. For the project's smooth management and implementation, Abt joined the IRS Steering committee comprised by all AIRS Senegal partners.

AIRS Senegal reached a 98% coverage rate in 2012, in spite of interruptions due to insecticide stock outs during the campaign. The 2012 spray round lasted 48¹ operational days from June 6 to September 3, and covered a total of 306,916 structures out of 312,938 structures found protecting 1,095,093 people, including 220,463 children under five years of age and 26,263 pregnant women.

For this spray round, AIRS Senegal used a total of 106,874 sachets of carbamate insecticide of the 108,820 distributed in the 6 districts. A breakdown of insecticide use by district follows: 10.69% in Guinguineo, 30.36% in Nioro, 7.8% in Malem Hodar, 13.47% in Koungheul, 12.81% in Koumpentoum and 24.88% in Velingara. AIRS Senegal trained 1,011 people to deliver IRS, 926 men and 85 women. In total, AIRS Senegal trained 1,657 people for the 2012 IRS campaign, 1,439 men and 218 women.

Some lessons learned are listed below:

- IEC mobilizers and spray operators' training tools should be shared at least two weeks prior to the start of the training sessions by implementing partners.
- There should be a meeting to define IEC mobilizers and spray operators' roles and responsibilities at least one day prior to the startup of the spraying campaign.
- All IRS commodities including spray tanks, insecticide, and all personal protective equipment (PPE), should be in place in all sites at least one week before training starts.
- The insecticide needs assessment should be based on a census of the number of structures as validated by the various stakeholders (DHMT, Abt, PNLP, IRS Steering Committee).

¹ The campaign took place over a period of 66 calendar days, and because data was entered daily, the weekly M&E reports submitted to PMI show 66 calendar days. These are not to be confused with the operational days (48) when spraying actually took place.

- The MOH should make sure that all recommendations emerging from environmental inspections are duly implemented.
- Timely availability of data to DHMT is crucial for decision making. A technical group should be formed to ensure that data is available to them.
- Increased supervision by the AIRS Senegal team is necessary, particularly at the beginning of the campaign, but throughout all phases of the campaign.

RESUMÉ

En aout 2011, l'Agence américaine pour le développement international (USAID) a attribué à Abt Associates Inc. un contrat de 189 millions de dollars US pour l'exécution du Projet d'Aspersion Intra-Domiciliaire (AIRS), connu sous le nom d'IRS 2 Task Order 4. Le Projet AIRS est financé par l'USAID dans le cadre de l'Initiative du Président Américain contre le Paludisme (PMI) et concerne 17 pays d'Afrique au Sud du Sahara dont le Sénégal. A travers le Projet AIRS, Abt s'emploie à accroître ses efforts salutaires de prévention et de lutte contre le paludisme au cours des trois prochaines années, en appuyant le PMI.

Au démarrage du Projet en 2007, Nioro, Richard-Toll et Vélingara étaient sélectionnés comme districts pilotes devant bénéficier de l'AID au Sénégal. Trois ans plus tard en 2010, Guinguineo, Malem Hodar et Koumpentoum ont été ajoutés parmi les districts bénéficiaires du Projet. Mais, en raison du faible taux de prévalence du paludisme à Richard-Toll, le Comité de Pilotage de l'AIRS décida d'arrêter cette intervention dans ledit district en 2011. La même année (2011), le PMI sélectionna le district sanitaire de Koungheul comme devant bénéficier du Projet AIRS, ramenant ainsi le nombre de districts à six (6).

L'équipe AIRS Sénégal a commencé la mise en œuvre du Projet AIRS en octobre 2012 en étroite collaboration avec le Programme national de lutte contre le paludisme (PNLP) du Sénégal, le Ministère de la Santé (niveaux central et districts) et les autres partenaires clés tels que l'UCAD, le Ministère de l'Agriculture (DPV), le Ministère de l'Environnement (DEEC) le consortium d'ONG dirigé par ChildFund. Pour une bonne gestion et mise en œuvre du Projet, il a été mis sur pied un comité de pilotage composé de tous les partenaires clés de l'AIRS.

Le Projet AIRS Sénégal a atteint un taux de couverture de 98%, en dépit des interruptions dues à la rupture de stock enregistrée pendant la campagne. La campagne d'aspersion de 2012 a duré 48 jours opérationnels du 6 juin au 3 septembre. Cette activité a permis de couvrir un total de 306.916 structures sur 312.938 trouvées et de protéger 1.095.093 personnes, y compris 220.463 enfants de moins de 5 ans et 26.263 femmes enceintes.

Pour cette campagne d'aspersion, Abt Sénégal a utilisé un total de 106.874 sachets d'insecticide de la classe des carbamates sur les 108.820 distribués dans les 6 districts. La répartition de l'utilisation par district est faite ainsi qu'il suit: 10,69% à Guinguineo, 30,36% à Nioro, 7,8% à Malem Hodar, 13,47% à Koungheul, 12,81% à Koumpentoum et 24,88% à Vélingara. AIRS Sénégal a formé 1011 opérateurs (applicateurs, suppléants, chefs de d'équipe et chefs de sites Au total AIRS Sénégal a formé 1657 personnes dont 1439 hommes et 218 femmes.

Quelques leçons apprises sont énumérées ci-après:

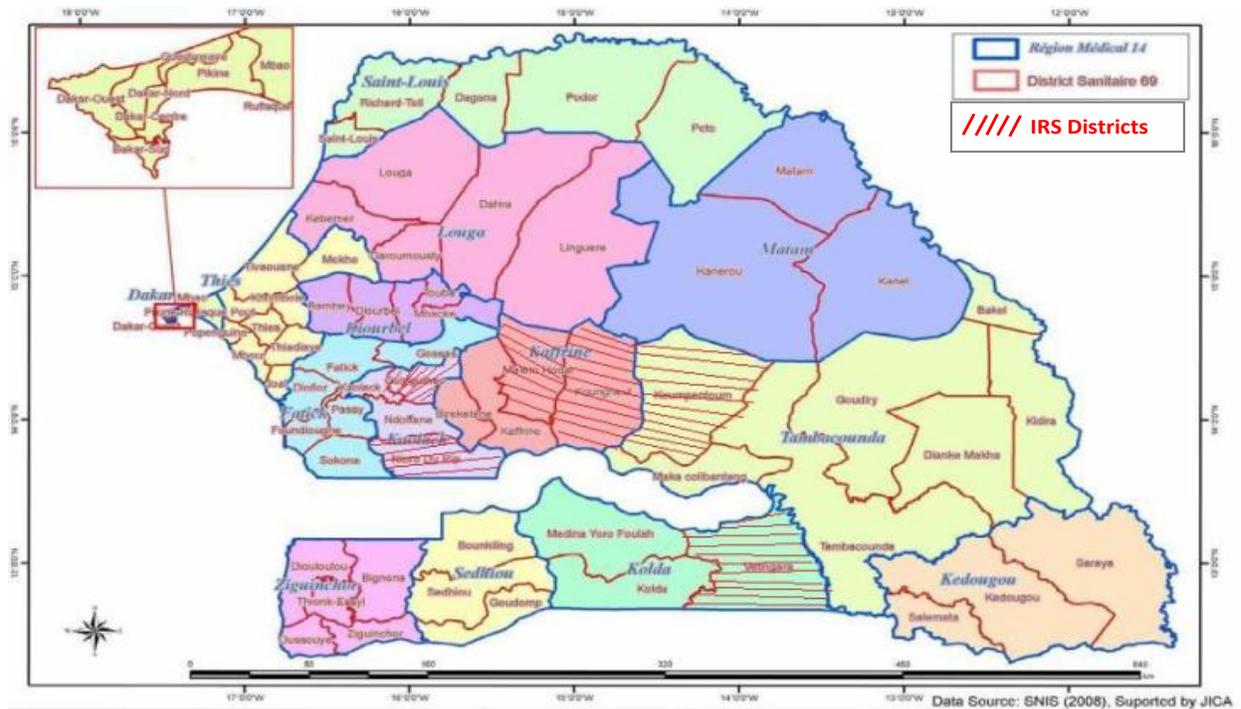
- Les outils de formation des relais IEC et des opérateurs doivent être partagés par les partenaires d'exécution au moins deux semaines avant le démarrage des sessions de formation.
- La tenue d'une rencontre pour définir les rôles et responsabilités des relais IEC et des opérateurs un jour avant le démarrage de la campagne d'aspersion.
- La mise en place de tout le matériel AID y compris les pulvérisateurs, l'insecticide et les EPI dans tous les sites au moins deux (2) semaines avant le démarrage des sessions de formation.

- Etablir l'estimation des besoins d'insecticide sur la base du nombre de structures tel que validé par les différentes parties prenantes (ECD, Abt, PNLP, Comité de Pilotage)
- Le Ministère de la Santé devra s'assurer que toutes les recommandations issues des inspections environnementales sont dument mises en œuvre.
- La mise à disposition à temps des données chez les ECD est essentielle pour la prise de décisions rapide.
- Une supervision accrue de l'équipe AIRS Sénégal est nécessaire particulièrement au début des opérations d'aspersion.

2. COUNTRY BACKGROUND

The PNLP in conjunction with PMI identified and selected Guinguineo, Malem Hodar, Koumpentoum, Kougheul, Nioro and Velingara out of the 16 priority districts with high malaria morbidity and mortality to receive IRS coverage in 2012. These districts are located in the center (Guinguineo, Malem Hodar, Koumpentoum, Kougheul, Nioro) and south east (Velingara) of Senegal. Kougheul, which had not been sprayed during previous campaigns, is located between Malem Hodar and Koumpentoum.

FIGURE I. MAP OF SENEGAL IRS DISTRICTS



3. OBJECTIVES FOR 2012 IRS CAMPAIGN

In close collaboration with the MOHSA, the PNL, and other stakeholders, the project sought to achieve at least 85 percent spray coverage in the IRS target districts, by implementing the following activities:

- Support training, capacity building, and advocacy at the national, regional, and district levels as a means of achieving IRS sustainability. This included building the capacity of the government, counterparts, and partners to lead a high-quality IRS campaign.
- Provide regular M&E support for the IRS program.
- Carry out geographical reconnaissance/logistical assessments as needed, and arrange all procurement, shipping, delivery, and storage of sprayers, spare parts, insecticides, and personal protective equipment (PPE).
- Ensure safe and correct insecticide application, thus minimizing human and environmental exposure to IRS insecticides, in compliance with the Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) and Supplemental Environmental Assessment (SEA).
- Coordinate information, education and communication (IEC), behavior change communication (BCC), sensitization, and mobilization activities with other stakeholders to raise populations' awareness of IRS, and to encourage ownership.
- Promote cost-effectiveness through due diligence and efficiency of operations.

AIRS Senegal set a target of approximately 295,000 structures for spraying in 2012, which would cover approximately 1 million residents.

4. PREPARATION FOR IRS CAMPAIGN

4.1 IRS CAMPAIGN PLANNING

Listed below in Table I are the activities AIRS Senegal led or participated in to plan for and organize the 2012 IRS campaign.

TABLE I. 2012 IRS PLANNING AND ORGANIZATION

Areas	Activities implemented
Abt staff orientation	<ul style="list-style-type: none"> Financial Procedures Regional Workshop (Dakar, January 09 -13) Abt Staff Capacity Building Regional Workshop (Bamako, Mali, February 21- 23) Entomological Monitoring Regional Workshop (Adama, Ethiopia, April 17 - 19) F&A orientation on Management Procedures (Washington, USA, March 2012) Abt COP Conference and AIRS COP retreat (USA June 2012)
IRS Activities Planning	<ul style="list-style-type: none"> IRS Activities Planning Country Workshop (March 8 -9, 2012)
Recruitment of seasonal personnel	<ul style="list-style-type: none"> Abt temporary personnel Coordinators Finance Assistants Logistics Assistants Environmental compliance Assistant Data entry clerks IRS sites seasonal personnel Operators (Operational site manager, team leader, Spray Operator) Auxiliary staff (storekeepers, maintenance technician, washers, guards, water suppliers, etc.)
Personnel Capacity Building	<ul style="list-style-type: none"> Revising existing training manuals IRS Steering Committee validation of training manuals Country level IRS training of trainers Abt staff district training Physicians training on IRS related poison management Training environmental staff in IRS regions
Environment	<ul style="list-style-type: none"> Geographical Reconnaissance conducted in Kougheul, the new district Identification and selection of operational facilities at district and secondary sites Pre-inspection and validation for all IRS sites Report drafting and submission to Home Office for IRS environmental compliance Monitoring secondary IRS site rehabilitation
Monitoring & Evaluation	<ul style="list-style-type: none"> Adapted the M&E documents including: Draft of Country M&E Plan Developed the data collection system manual Adapted and validated data collection tools Indicator Matrix drafted and sent to HO Field data verification tools (spot check) developed, tested and validated by PMI Senegal
Operations	<ul style="list-style-type: none"> Deployment of Abt district personnel Microplanning workshops in the 6 districts Validation of progress plans by Health Post Nurse and DHMT Recruitment of seasonal personnel Seasonal personnel pre-IRS medical examination Health post nurse training on IRS related poisoning management

Areas	Activities implemented
Logistics	<ul style="list-style-type: none"> • Taking physical inventory of existing material from former implementing agency • Needs assessment for IRS material, cleaning and repairing equipment and materials for the 2012 IRS campaign • Local and international procurement of insecticide, commodities and accessories • Renting vehicles for operations • Dispatching materials to districts and secondary sites storerooms • Developing and establishing stock management tools
Communication	<ul style="list-style-type: none"> • Meeting with ChildFund to share and confirm M&E and IEC data collection tools; • IEC/BCC Coordinator participation in microplanning meetings at the district level; • Tripartite meeting with USAID, Abt, and ChildFund to discuss possibilities for collecting eligible structures data.
Partnership	<ul style="list-style-type: none"> • Initial contact visits with strategic IRS partners (PNLP, National Hygiene Service (SNH), Laboratoire d'Ecologie Vectorielle et Parasitaire (LEVP), Toxicology Department, and Directorate of Environment) • Abt introductory/courtesy visit to medical regions, health districts, and administrative and local authorities. • Sharing Abt workplan with PNL • Drafting an IRS MOU between USAID and MOH • Sharing pre-IRS entomological monitoring data with LEVP/UCAD • Peer training on IRS related poison management (by BRISE Kaolack and Malem Hodar DMO) • Empowering regional environmentalists for pre-IRS environmental compliance inspection
Administration & Finance	<ul style="list-style-type: none"> • Establish a payment system for operators and management in the field. • Develop a service provision agreement with gas stations managers for fuel supply during operations

4.2 PRE-SPRAY ENVIRONMENTAL ASSESSMENT

4.2.1 GEOGRAPHICAL RECONNAISSANCE

AIRS Senegal conducted the geographical reconnaissance for Koungheul district on January 16-21, 2012. Geographic reconnaissance was only conducted in Koungheul as it was the only one of the six districts which was spraying for the first time. The team provided questionnaires and documents to surveyors to collect district environmental, logistical, financial data, as well as any other demographic and structural information. At the district level, the team also met with key stakeholders—district health officers, nurses, security forces, administrative authorities, and cultural and religious authorities. In addition to holding meetings and collecting data through surveyors, the project also conducted the following activities as part of the geographic reconnaissance: a) identification of operational sites that were in with the BMP b) identification of ideal location for soak pits and store rooms c) identification of water sources in the area d) assessment of terrain for designing schedules and itineraries for IRS operations. It also included identification of the type of households, existing transportation means, health facilities, schools and religious premises.

The Koungheul health district covers 1 commune and quartiers, 326 villages, and an estimated population of 162,934 inhabitants, including 30,602 children under 5 years of age and 7,369 pregnant women. This district includes 18 health posts and one health center. For the IRS operations, Abt Senegal divided Koungheul into eight (8) operational sites and the same number of spray operator squads. Unfortunately, a structure enumeration exercise was not called for during the geographical reconnaissance exercise. Because the number of eligible structures was based on population estimates provided by the DHMT and not a physical structure count, it resulted in an underestimation of eligible structures.

4.2.2 SOAK PITS

Based on World Health Organization (WHO) standards for IRS best practices, 38 soak pits were set up throughout the six districts at the operational sites, including 22 rehabilitated sites and 16 newly constructed sites. Abt Senegal constructed fencing around the soak pit area and then fitted the fence with locks to keep out non-IRS personnel and animals. The AIRS team used the soak pit area for the progressive rinsing of spray pumps and for the washing of coveralls and other PPE.

Soak pit areas were distributed as follows per district: Nioro (8), Kougheul (8), Velingara (7), Koumpentoum (8), Malem Hodar (3) and Guinguineo (4).

4.2.3 ENVIRONMENTAL ASSESSMENT

In January 2007, the incumbent implementing partner, RTI International, in collaboration with USAID Senegal, prepared a Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) to support USAID's environmental compliance regulations, as required under 22 CFR 216. The 2007 PERSUAP limited geographic coverage to three districts in three different regions. A Supplemental Environmental Assessment (SEA) was developed and approved in 2010 (valid from 2010-2015), allowing for the expansion of IRS to a regional basis and allowing for choice between three insecticide classes (pyrethroids, carbamates, and organophosphates) to be considered in the annual decision-making process. In addition, an amendment to this SEA was approved in June 2012. The expansion allows for IRS in the original six districts, yet it grants PMI liberty to expand to additional districts within the regions of Tambacounda, Kaffrine, Kaolack, Saint Louis and Kolda. Given these circumstances, and the fact that the project did not spray outside of these regions (the newest district, Kougheul, is within Kaffrine), a Letter Report was submitted to PMI for the 2012 spray campaign.

In addition, and per Senegalese environmental regulations, the incumbent conducted a local environmental impact assessment (EIA) in 2011 prior to spray activities. The environmental assessment focused on an environmental analysis of vector control interventions and a situational analysis of IRS activities in the country, including pesticide use (chemical, toxicological, and eco-toxicological features). The IRS program received environmental approvals from Senegal's Commission on Pesticides Management, the Ministry of Environment (MOE), Directorate of Environment and Classified Factories (DEEC), and USAID. Because AIRS Senegal implemented the 2012 spray round based on the 2007 PERSUAP and 2010 SEA, there was no need to update the environmental assessment in 2012.

4.2.4 INVOLVEMENT OF THE REGIONAL ENVIRONMENTAL COMPLIANCE OFFICERS

Six DREEC officers were trained on Environmental compliance related to IRS. Their main role was to conduct inspection of IRS sites for environment compliance before, during and after spraying operations. In addition they co-facilitated the training of SOPs.

Abt played a crucial role in engaging the DREEC through the following activities:

- Developing a detailed implementation plan for field visits
- IRS inspections during the campaign (see summary of first inspection below)
- Implementing the monitoring/evaluation plan

4.2.5 PRE-SPRAY ENVIRONMENTAL COMPLIANCE ACTIVITIES

The directors of the regional environmental branches in Kolda (including Velingara's health district), Kaolack (including Nioro and Guinguineo's health districts), Kaffrine (including Kougheul and Malem Hodar's health district), and Tambacounda (including Koumpentoum health district) took part in the IRS TOT in Kaolack on April 17–18, 2012. All six (06) directors, four males and two females, received Training of Trainers (TOT). Abt also developed an environmental compliance monitoring plan, checklists

for the insecticide storage facilities and soak pits, and the appropriate safety responses required for spray operations.

Before the start of the IRS campaign, the directors of the regional environmental branches in Kolda, Kaolack, Kaffrine and Tambacounda led environmental compliance inspections to ensure that all spray activities conformed to national and international guidelines. On May 14-19, 2012, in collaboration with the AIRS Senegal ECO, the six directors conducted a mission in the various districts to validate the 38 selected IRS sites for the 2012 spray round. The Home Office (HO) reviewed and validated the pre-IRS inspections before their submission to USAID/PMI for approval prior to spraying.

TABLE 2. SUMMARY OF PRE-SPRAY INSPECTION OBSERVATIONS AND ACTIONS TAKEN

Observations	Recommendations / Immediate actions undertaken	Districts concerned
<ul style="list-style-type: none"> • No electricity • Generator not functioning (no cable, oil and fuel) • No generator 	<ul style="list-style-type: none"> • Provided a functioning generator • Supplied fuel 	Velingara, Kougheul, Koumpentoum
Thermometers out of order	Supplied a thermometer from the central warehouse in Kaolack (no stock in Velingara)	Velingara, Kougheul
No retainer for the soak pit area	Placed a retainer to prevent overflow of contaminated water	Velingara, Nioro
Presence of danger pictograms in soak pit areas and FICAM storeroom	Nothing to report (NTR)	Velingara, Malem Hodar, Kougheul, Nioro, Koumpentoum, Guinguineo
Lack of water	Reinforced water reserves	Malem Hodar, Vlingara
Masks with no filters	Supplied masks with filters	Vélingara, Nioro, Kougheul, Malem Hodar, Koumpentoum, Guinguinéo
Inadequate socks	Supplied adequate socks	Velingara, Nioro, Kougheul, Malem Hodar, Koumpentoum, Guinguinéo
Insufficient stock of certain commodities (Boots, visors, visor carriers, soaps)	Reinforced material stock in secondary sites	Nioro, Velingara
Good command of spraying techniques	Reinforced Supervision	Velingara, Nioro, Kougheul, Malem Hodar, Koumpentoum, Guinguinéo
Operators wearing PPE correctly with the exception of 21.	Ensured availability of appropriate sizes for coveralls and boots	6 pairs of boots in Velingara, 8 coveralls in Nioro, 7 pairs of boots in Kougheul
Appropriate progressive rinsing technique not followed	Reinforced Supervision	Velingara, Kougheul, Koumpentoum
Atropine 80% not available	Supplied atropine in health posts	Guinguineo, Koumpentoum

4.3 LOGISTICS PLANNING AND PROCUREMENT

In November 2011 the incumbent's IRS assets were transferred to Abt. With this transfer, the AIRS Senegal team conducted a comprehensive physical inventory of the equipment, insecticide, and PPE available. After the inventory check, the team conducted the procurement needs assessment to determine the amount of additional insecticide, PPE, spray cans, etc. needed. With a clearer picture on the resources needed, AIRS Senegal started international procurement procedures, in coordination with Home Office, while other commodities, such as IT equipment, plastics, tools, etc. were purchased locally in accordance with the Abt and USAID procurement policies. Prior to any local procurement, a requestor would fill out a purchase requisition form, which would need to be approved by the requestor's supervisor and the COP. The procurement coordinator then received the requisition in order to find three or more quotations for the commodities or services requested. Upon receipt of quotations, and depending on the amount of the total purchase, a selection committee including Operations and F&A departments was set up to make final decisions. From May to June 2012, IRS commodities purchased locally arrived in the Kaolack central warehouse for numbering and labeling purposes, and they were later dispatched to the districts albeit not without challenges. These challenges are further described below.

For the 2012 spray campaign, the PNLN selected carbamates insecticide based on its efficacy against vectors in the target area and its residual effect on wall surfaces. The AIRS Senegal Project procured the selected class of insecticide using the following criteria to assess quotations:

- Duration of efficacy
- Pesticide registration in Senegal
- Pesticide formulation (wetable granules vs. wettable powder)
- Risk to human health
- Risk to the environment, livestock, and the agricultural trade
- Delivery time
- Cost

After analyzing the various vendor proposals, Abt selected FICAM® VC wettable powder 125 (bendiocarb) for the 2012 spray round. On March 12, 2012 Abt Associates received the MOE's official authorization No. 0000381/MEPN/DEEC/DPN for use of this insecticide for the 2012 IRS round.

Abt sent samples of the procured insecticide to the WHO-approved South African Bureau of Standards (SABS) Lab for testing to ensure the product's quality and efficacy. The test results received were all within the compliance range of 775 and 825.

AIRS Senegal distributed the equipment, insecticide and PPE based on the needs per district, though the team encountered various challenges in this process. First, commodity dispatching to the districts started on May 29, 2012, only one week prior to the start of the campaign. Ideally, the team should have started the dispatching two weeks prior to the campaign. Due to delayed dispatching, some districts started spraying with insufficient PPE (i.e. wrong sized boots, or not enough gloves) which should not have happened. Next year, AIRS Senegal will not start the campaign until all commodities, including every piece of PPE, are available in the right quantities in each district. Fortunately, the AIRS Senegal team resolved these PPE distribution problems during the first week of the spray campaign.

To monitor the distribution, AIRS Senegal set up a committee that met daily to discuss and address issues in coordination with field teams as they came up in response to the distribution inadequacies. Before the end of the first week the committee stabilized and maintained the supply chain distribution. In addition, Abt had a lot of help from partners to identify and remedy the issues. Unfortunately, despite

these efforts, AIRS Senegal still encountered more challenges towards the end of the campaign, particularly with respect to insecticide stock as will be described in greater detail in section 6.4.

4.4 HUMAN RESOURCES

4.4.1 TRAININGS

In 2012, AIRS Senegal's trainings were decentralized in terms of locations and subject matter. The trainings covered topics such as spraying techniques, poisoning case management, and environmental compliance monitoring.

At the national level, stakeholders from the Ministry of Health (SNH both central and regional levels), and University Cheikh Anta Diop (UCAD) attended trainings. AIRS Senegal also led the Training of Trainers (TOT) prior to the Spray Operators (SOP) trainings in the four intervention regions: Kaffrine, Kaolack, Kolda and Tambacounda.

Moreover, Abt led the physicians' training on IRS-related poisoning management in Kaolack. Medical officers (if not previously trained) operating in the IRS intervention districts attended this training. These medical officers were then in charge of training the health post nurses (if not previously trained) in their respective districts. Furthermore, Abt ran the environmental agents' training in the four regions that cover IRS districts; the training focused on pre and post IRS environmental inspection. This year, the training included environmental monitoring for SNH staff in order to engage them in this area during their supervision.

Abt edited the 2012 IRS training manuals based on the recommendations and lessons learned from the 2011 IRS round. The Steering Committee (SC) approved all these training tools prior to their implementation. The AIRS Senegal team also introduced "The Spray Operator's Manual," during the 2012 IRS training.

4.4.2 DESCRIPTION OF TRAININGS

Training of Trainers (TOT): SNH staff from the national level and the IRS regions (Kaolack, Kaffrine, Tambacounda and Kolda) participated in the TOT, which was led by the national level Steering Committee from April 6-8, 2012. The training included spray techniques, data collection, IRS message delivery to beneficiaries, and teaching methodology. The TOT was the same for all SNH staff in the IRS beneficiary regions and districts.

Spray Operators Training (SOP): Potential spray operators attended SOP training at the 38 training areas on theoretical and practical spray techniques. Teams of trainers conducted the SOP trainings from May 29 – June 02, 2012. At the end of the session, trainers selected operational site managers, team leaders, spray operators and substitutes based on merit.

Technical Maintenance Training: SNH staff led the maintenance technicians' training (two technicians in each of the 38 IRS sites in six districts except Velingara commune) on spray tank components, and their proper maintenance. In Velingara commune however, there were 3 maintenance technicians for the 2 spray groups using the same site.

IRS-related Poison Management Training: Trained District Medical Officers (DMO), or their deputies on IRS-related poison management techniques, who in turn trained their Health Post Nurses (HPN). Upon completion of this training, health districts provided health facilities with appropriate antidotes.

Coordinators Training: Abt held a training session for district coordinators on March 28 – 30, 2012. This training sought to strengthen coordinators' basic knowledge of the IRS program, and their organizational and managerial capacities. At the end of their training, coordinators received a program

roadmap that included the timeline of activities to be implemented and the key aspects of IRS implementation, such as logistics, environmental safety and finance management.

Logistics Training: The logistics training included both coordinators and finance assistants. The program addressed the following issues:

- General IRS logistics
- Material and insecticide stock management and monitoring
 - How to complete stock cards, delivery forms, and pesticide management cards
 - Pesticide storage standards and environmental safety
- Soak pit area construction and environmental safety compliance
- Vehicle and fuel management
- Pesticide transport and environmental standards compliance
- Supply procedures
 - Request for quotes for product supply or service delivery
 - Administrative procedures compliance
 - How to complete a purchase requisition and a purchase order

Training of Other Abt Local District Teams: Finance assistants and data clerks, who are also part of Abt’s district staff, received training on general IRS techniques and environmental concerns. Then Abt staff gave employees specific trainings in their skill area (management, logistics, finance, data entry). Logistics assistants led district level and secondary sites storekeepers in logistics courses while the data clerks learned about completing data collection forms during the SOP training. Finally, district coordinators and their teams trained washers on PPE cleaning techniques and taught drivers and security guards the required safety measures.

TABLE 3. GOVERNMENT OPERATIONAL LEVEL STAFF AND SEASONAL PERSONNEL TRAINED

Categories of people trained	Training for IRS implementation												Other trainings				Total		
	Trainers' Training		Spray Operators' Training		Data Entry		Logistics & Finance Training		Technical Maintenance		IRS related poisoning management		PPE Cleaning		Fire Safety			Transport Safety	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		M	F
DEEC/DREEC															4	3			7
Districts Coordinators	4	2																	6
DMO	9	0																	9
Nurse											89	31							120

Categories of people trained	Training for IRS implementation														Other trainings				Total
	Trainers' Training		Spray Operators' Training		Data Entry		Logistics & Finance Training		Technical Maintenance		IRS related poisoning management		PPE Cleaning		Fire Safety		Transport Safety		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
SNH Supervisor of Spray Operators (national level)	16	0																	16
SNH Supervisor of Spray Operators (regional level)	59	0																	59
Spray Operator and substitutes			748	68															816
Operational Site Manager			34	5															39
Team Leader			144	12															156
Data Entry Clerks					13	9													22
Storekeepers							40	5											45
Finance Assistants							3	3											6
Logistics Assistants							3	3											6
Maintenance Technicians									77	0									77
Washers													0	77					77
Drivers																	119	0	119
Guards															77	0			77
TOTAL M/F	88	2	926	85	13	9	46	11	77	0	89	31	0	77	81	3	119	0	1657
TOTAL/ Training		90		1,011		22		57		77		120		77		84		119	1657

5. IEC ACTIVITIES

The ChildFund NGO consortium, comprised by Africare, Plan international, World Vision and ChildFund, was responsible for the implementation of IEC mobilization activities for the 2012 IRS Campaign. The consortium was divided in the target districts as follows:

- ChildFund: Guinguineo and Medina Gounass (Velingara district)
- World Vision: Malem Hodar and Velingara
- Africare: Koumpentoum and Kougheul
- Plan International : Nioro

The role of Consortium member NGOs was to provide technical and financial assistance to districts in IEC implementation. Specifically, NGOs did the following:

- Planning IEC activities in relation to the district
- Providing districts with resources for IEC implementation
- Ensuring monitoring and coordination for IEC activity implementation

Abt also provided assistance to districts in the coordination and monitoring of IEC activities and served as interface between the Consortium, districts and our teams in the field.

5.1 PREPARATIONS

As part of the advocacy, communication and social mobilization preparation, the AIRS Senegal team held several meetings with the National Health Education and Information Service (SNEIPS) and Abt under ChildFund's leadership.

During the first meeting held at ChildFund's office on March 5, 2012, ChildFund presented IEC tools (mobilizer's manual, trainer's manual and flyers). Abt in turn presented IEC data collection tools (IEC card, IRS household card) recommended from the Bamako regional M&E training. During this meeting, all three stakeholders shared and revised the monitoring tools. They later finalized the IEC tools in a subsequent meeting on March 15.

In an effort to increase collaboration between ChildFund and Abt, the ChildFund consortium members and Abt met on May 21 at Abt's office. The major coordination recommendations that resulted from the meeting are as follows:

5.1.1 AT THE NATIONAL LEVEL

The Steering Committee, which includes all IRS partners, continues to be a consultative group.

- Both Abt and ChildFund IEC focal points ensure coordination through frequent communication.
- The committee is mandated to discuss issues that involve significant resources from either organization.
- Members report any issues to their respective superiors, and when relevant, address pertinent issues, specifically strategic issues, to the steering committee.

5.1.2 AT THE DISTRICT LEVEL

Abt and ChildFund should ensure that their field agents (at both district and site levels) create a more collaborative work atmosphere, specifically through:

- Constant communication between Abt and ChildFund field teams.
- Participation in internal district meetings.
- Holding daily meetings at the site level.

All these guidelines and instructions were posted in both Abt and ChildFund's offices.

5.2 ROLES AND RESPONSIBILITIES

ChildFund committed to:

- Distributing IRS cards to households and completing the IEC activity only
- Sharing the following with Abt/MOH/PMI
 - The work schedule (dates of IEC mobilizers' training, supervision, etc.)
 - Reports and satisfaction surveys
 - The focal points' contact lists
 - Any other useful information as needed

Abt committed to:

- Providing IRS (household) cards
- Sharing spray operations schedules
- Providing any other useful information as needed

5.3 PROPOSAL FOR INTRODUCING MONITORING TOOLS

In order to have up-to-date IRS structure data in the target districts, AIRS Senegal raised the question about conducting a census of eligible structures in those districts. The project also questioned IEC mobilizers' education level for recording census data and funding issues. USAID held an arbitration meeting on May 15, 2012 to decide whether Abt or ChildFund would be responsible for this task. Unfortunately, the debate could not be settled and USAID decided to postpone the census until the 2013 campaign and recommended that Abt use the IRS structure data from 2011 for the 2012 campaign planning.

In addition, AIRS Senegal proposed an IEC activity monitoring tool that followed Home Office guidelines, specifically an IEC card for IEC data collection and a household card that allowed for better IEC activity tracking.

However, the approval process was subject to several long discussions, as the tools had to be implemented by the ChildFund-led consortium. As a result of the discussions, the proposed IEC card had to be modified, which prevented IEC data collectors from gathering the denominator (or total number of eligible structures), which was one of the card's intended objectives. Therefore, the distribution of the IRS (household) card was not done by Childfund as it had been agreed. Consequently, the objectives of this tool could not be achieved as the cards were not available in all households.

5.4 IEC MOBILIZERS TRAINED PER DISTRICT

According to ChildFund, IEC mobilizer training sessions were organized by health post nurses (HPN) under the health district's supervision, from May 14 – 24, 2012 at the intervention health posts.

TABLE 4. IEC MOBILIZERS TRAINED PER DISTRICT

District	Number of IEC mobilizers trained
Malem Hodar	216
Koungheul	300
Guinguineo	396
Koumpentoum	350
Nioro	587
Velingara	349
TOTAL	2,198

5.5 IEC ACTIVITIES

The ChildFund consortium led the IEC activities in every district except for Malem Hodar. The Malem Hodar district had signed a previous implementation agreement between the district and World Vision. World Vision provided only financial support to Malem Hodar without appropriate technical support. The AIRS Senegal IEC coordinator worked closely with the DHMTs to provide the technical support needed including planning, and follow up on the implementation of IEC activities. DHMTs, especially health education supervisors and health post nurses, were crucial for IEC implementation as they ensured most of the coordination and supervision for IEC mobilizers.

For the most part, IEC activities were properly conducted in the target districts. During the spray campaign, spray operators did not face systematic refusal of IRS related to a lack of information. However, IEC mobilizers did report small problems. For example, in almost all districts, spray operators found villages that had not been informed of the spraying, and as such, had not prepared their homes for IRS. These cases were managed by either spray operators or health post nurses in collaboration with the Consortium NGO managing the area. Unfortunately however, this led to occasional operational delays. Another challenge encountered in some areas was that spray teams did not always inform the mobilizers of spray schedule changes which also caused unnecessary delays.

IEC mobilizers conducted home visits (HV) in each district including Koungheul; however in Malem Hodar HVs could not be completed as planned, possibly due to the fact that there was delay in training before the campaign and there was not enough time to implement planned visits. In Malem Hodar, Home visits were only conducted 24 to 48 hours before spraying.

5.6 IEC COORDINATION

The AIRS Senegal IEC/BCC Coordinator and ChildFund's IEC/IRS focal point were the key people in charge of coordinating IEC at the central level. To coordinate the work, both parties held several meetings to define roles and discuss possible issues.

At the district level, the AIRS Senegal IEC/BCC Coordinator was in constant contact with districts teams and NGOs to coordinate stakeholders and monitor field activities. District teams and NGO representatives would meet regularly to coordinate actions in every district, except Koumpentoum, where there was no resident NGO (Africare) partner. In Malem Hodar, activities were implemented under the district leadership, based on a contract with World Vision. In Velingara, the district appointed focal points to monitor IEC.

5.7 IEC SUPERVISION

AIRS Senegal assigned IEC activity supervision to health post nurses, but implementation varied from one district to the other, and even from one health post to another, depending on the health post nurse's involvement. Nevertheless, in all districts, management teams supervised IEC activities.

Additionally, the AIRS Senegal IEC/BCC Coordinator conducted IEC supervision in all districts jointly with the Consortium from June 17-24, 2012. The PNLP IEC officer also conducted supervision in the six IRS districts from July 8 to 14, 2012. As for Guinguineo and Velingara, regional health education officers were tasked with supervision.

The tables below summarize some of the IEC results as shared with Abt by ChildFund in the IRS Evaluation Workshop.

TABLE 5. IRS SENSITIZATION RESULTS (HOME VISIT (HV))

Districts	Males	Females	Total
Guinguineo	17,910	33,648	51,558
Koumpentoum	47,899	59,184	107,083
Koungheul*	7,712	11,199	18,911
Malem Hodar	44,624	58,158	102,782
Nioro	51,572	104,976	156,548
Velingara*	61,906	66,796	128,702
Total	231,623	333,961	565,584

Source: programme santé USAID/ Santé communautaire, Phase 2, 20011-2016. Présentation des résultats du volet IEC AID par Child Fund-, Atelier d'évaluation campagne 2012
*Final data was made available to Abt until 2/4/2013 and ChildFund expressed that there were issues with data completeness.

TABLE 6. IRS SENSITIZATION RESULTS: (OTHER COMMUNICATION CHANNELS: COMMUNITY MEETINGS, ADVOCACY AND GROUP TALKS)

Districts	Males	Females	Total
Guinguineo	4,256	10,476	14,732
Koumpentoum	32,880	42,435	75,315
Koungheul*	NA	NA	NA
Malem Hodar	30	0	30
Nioro	14,650	27,196	41,846
Velingara	49,835	60,358	110,193
Total	101,651	140,465	242,116

Source: programme santé USAID/ Santé communautaire, Phase 2, 20011-2016. Présentation des résultats du volet IEC AID par Child Fund-, Atelier d'évaluation campagne 2012
*Final data still not made available to Abt but home visits were conducted.

TABLE 7. IRS CAMPAIGN COMMUNICATION MATERIALS

Item	No. Distributed/ PRODUCTS
Poster	5,250
Flyer	12,650
Trainer's Guide	214
IEC mobilizer's Manual	2,160

Source: programme santé USAID/ Santé communautaire, Phase 2, 20011-2016.
Présentation des résultats du volet IEC AID par Child Fund-,
Atelier d'évaluation campagne 2012

6. IMPLEMENTATION OF IRS ACTIVITIES

6.1 SPRAY CAMPAIGN LAUNCH CEREMONY

The 2012 IRS launch ceremony took place in the new IRS district of Kougheul on June 5, 2012. The ceremony was chaired by the prefect of Kougheul and attended by all departmental authorities and PNLN representatives. The launch day was marked by high public participation. In his speech, the prefect of Kougheul welcomed the IRS program and called on the community to support the project. There was also a spray demonstration conducted for the administrative and health authorities.

6.2 SPRAY OPERATIONS

The IRS campaign started on June 6, 2012 in the 6 districts. For its implementation, 38 operational site managers, 156 team leaders, 692 spray operators and 433 auxiliary staff were mobilized in the various operational sites. Throughout the 48 operational days (with a minimum of 36 days in Guinguineo and maximum 48 in Velingara), spray operators were supervised by SNH staff on a daily basis.

The project also held the following operations coordination and monitoring meetings:

- DHMTs, Abt's District Coordinator, and IEC representatives met with the district steering committees.
- AIRS Senegal staff met daily for monitoring of activities
- National IRS Steering Committee members met four times for: IRS orientation, validation of training manuals, national planning, and extension of IRS operations.

6.2.1 OPERATIONS SUPERVISION

The overall objective of supervision was to support spray operators' performance for quality spraying with mitigated effects on actors, beneficiaries and the environment.

1. The specific objectives of supervision were as follows:
2. Support the operations' effective start in the field
3. Provide assistance to spray operators in terms of spray techniques and completing data collection forms
4. Ensure environmental safety
5. Ensure good management of insecticide stock, solid wastes and liquid effluents
6. Participate in identification of problems and finding solutions
7. Conduct spray operators' evaluation based on a predefined checklist.

The AIRS Senegal teams in the six (6) districts conducted daily supervision of spray operations to ensure that:

- Vehicles and fuel were available and operational for the transport of spray operators and other supervision teams

- Personal protective equipment (PPE) was available in appropriate quantities and sizes
- The recommendations emerging from the environmental inspection regarding insecticide storage and use, the use of PPE, solid and liquid wastes management were properly implemented
- Necessary arrangements were made for regular payment of seasonal personnel
- A supervision plan is operational for the daily operations monitoring by SNH staff and inspections by the regional level environmental staff
- The daily verification of data prior to their entry by data clerks.

Abt, PNLP, PMI and ChildFund put in place a system for regular monitoring of spray operations. This diversified monitoring effort enabled Abt to get real time information and take corrective measures when needed. See table 18 in Section 9 for a summary of PMI's concerns during their supervision visits and AIRS Senegal's response to each.

Various supervision visits reported on the delay in dispatching IRS commodities, data collection forms, and equipment to the field. They also pointed out issues related to environmental compliance and spraying technique. The AIRS Senegal team addressed the commodity gaps by the end of the first week of the campaign. We also increased supervision visits, and implemented corrective measures to address various issues as raised in supervision reports from PMI and other stakeholders.

Furthermore, AIRS Senegal experienced two insecticide stock outs due to poor insecticide stock management and mistakes in the quantification process. The two stock outs led to 2 interruptions of 8 and 18 days of spraying respectively, in both Niore and Velingara. Emergency supplies of insecticide were shipped from Mali and Benin to fill the gap, which led to the extension of the spray period in the 2 largest districts. More detailed information on the insecticide stock outs can be found in section 6.4.

TABLE 8. SPRAY OPERATIONS SUPERVISION AND MONITORING

Level	Organization	# of visits	Supervised Activities
National	PNLP	2	Spray Operations, Monitoring & Evaluation and Data Collection, Organization of Supervision, Environmental Compliance
	PMI/USAID	3	Field organization, environmental compliance, partner relationships, supervision, storekeeper management, availability and status of stock, IEC
	Abt	Throughout spray operations	Spray techniques, environmental compliance, spray operators behavior, supervision of SNH supervisors, management of storekeepers and stock cards, supervision of Abt field staff, IEC, partner relationships
	Abt/ChildFund	1	IEC component
	SNH	2	Spray Operations, Organization of Supervision, Environmental Compliance
Regional	BRH	3	Spray Operations, Organization of Supervision, Environmental Compliance
	DREEC	3	Environmental Compliance (Pre spray, mid spray and post spray inspection) Spray Operations

Level	Organization	# of visits	Supervised Activities
District	DHMT	Throughout spray operations	IEC, spray operations, and beneficiary acceptance
	IEC Coordinator of district	Throughout spray operations	IEC Training, IEC during campaign, Spray operations, Environmental Compliance
	Hygiene Agents from District Health	During spray operations	Spray Operations, Quality of the Spraying, Environmental Compliance by Spray Operators and Washers, during campaign

6.2.2 MID-SPRAY ENVIRONMENTAL INSPECTION

6.2.2.1 SAFETY AND ENVIRONMENTAL COMPLIANCE DURING IRS

Prior to the start of spray operations, 1,163 staff (including spray operators, team leaders, operational site managers, washers, and storekeepers) underwent a general medical examination to assess their medical fitness for IRS activities. All female spray operators, team leaders, and washers underwent pregnancy tests. At the end of the spray round, spray personnel received an additional medical examination from which no adverse effects were reported.

Spray operators' occupational exposure to the insecticide was minimized by the use of PPE. The spray operators were provided helmets, face shields, nose and mouth masks, long-sleeved cotton overalls, rubber gloves, pairs of cotton-rich stockings, robust gum boots, and neck covers.

However, as alluded to earlier, during the first two days of the campaign, there was a lack of adequate boot sizes; therefore, some spray operators wore their own shoes to spray while the team corrected the boot supply issue. Next year, the campaign shall not start until all IRS commodities are in the district storerooms in adequate quantities and sizes. The team will do a "dress rehearsal" at least 48 hours before the start of the spray campaign to ensure that all operators have the correct PPE.

During the 2012 spray round, 11 insecticide-related adverse events were reported, including nine among the spray operators. Fortunately, all cases were minor and were managed by health nurses with no lasting effects (Incident Reports were submitted as attachments to this report, and a summary of the incident reports was also submitted to PMI Washington in English).

With respect to non-target wildlife, 1 horse and 3 goats were reported dead after ingestion of spray residues in spray operators buckets.

The actions below were taken before and during IRS activities to minimize exposure to the insecticide and its potential adverse effects:

- Prohibiting spray staff from eating, drinking, or smoking at work (to avoid dermal exposure, inhalation, or ingestion exposure);
- Ensuring that workers washed their hands and faces with soap and a large quantity (about half a gallon, or 2 liters) of clean water after spraying and before eating, smoking, or drinking (to avoid dermal exposure, inhalation, or ingestion exposure);
- Washing of coveralls by the washers to avoid dermal exposure, inhalation, or ingestion exposure;
- Advising workers to wash the affected area(s) with soap and water immediately in cases of accidental spillage of insecticide on the skin (to avoid prolonged dermal exposure);

- Advising spray operators and washers to immediately inform the supervisor or team leader about any adverse side effects of the insecticide (to seek health care early);
- Advising parents, guardians, or home care providers to prevent children from coming into contact with sprayed surfaces after returning to the home (to avoid the transitory side effects of the insecticide).

Next year AIRS Senegal will continue to reinforce these actions, particularly with respect to the thoroughness with which operators wash their hands so as to avoid any risks of contamination after they have concluded daily spray operations. This is perhaps the one supervision action that would have prevented most of the adverse effects cases this year.

A USAID Environmental Compliance Officer conducted a supervisory visit during the first two days of the campaign (June 6th-8th 2012) and provided several recommendations to AIRS Senegal. The table below summarizes these recommendation and the steps taken by the team to address them.

TABLE 9. SUMMARY OF USAID ECO ISSUES IDENTIFIED AND HOW THEY WERE ADDRESSED

Issues registered by ECO USAID	How they were addressed
Insufficient number of boots, visors, suits, socks, tees, towels, masks, gloves at the time of the start of activities at site level.	By June 10, 2012, all of the sites had received protective gear in sufficient quantity.
Quality of masks: dust masks instead of filtering masks	By June 13, 23,500 filtering masks were distributed to the 6 districts in replacement of dust masks.
Level of DREEC involvement on IRS operators training and supervision	Noted. DREEC will be involved in future operator trainings and in supervision. DREEC fully participated as agents for the environmental inspections. They were not in the field on the first IRS operational day (World's Environment day was June 6th), but their inspections did start the following day (June 7 th). Next year we will be sure to have DREEC presence on the first day.
The incumbent reportedly ensured that monitoring and compliance of environmental norms were met at every step of the operations by hiring a doctoral "Environmental Sciences" student to accompany each team throughout all steps of the spaying activity. They were also keen on enlisting the support of the DREEC offices to provide oversight.	In light of eventually transferring competencies to the government, this year we experimented giving more responsibility to governmental agents for inspection and compliance aspects of the campaign. This experience was evaluated at the end of this round and the decision for the next campaign is to include agriculture agents at the departmental level to ensure that DREEC's inspection recommendations are addressed.

As soon as the report was received, the recommendations were addressed by AIRS Senegal. The team also increased supervision visits with emphasis on environmental compliance. The team's responses to the report were shared with the Mission during the campaign.

6.2.3 MID-SPRAY ENVIRONMENTAL COMPLIANCE

Six staff from DREEC conducted IRS environmental compliance inspection in all six target districts. They scheduled inspections within three periods as follows:

- From June 6-10, 2012, environmental compliance monitoring was conducted by DREEC agents in collaboration with the ECO for the health districts of Velingara, Koumpentoum and Koungeul, and with the Assistant/ECO for the districts of Nioro, Malem Hodar and Guinguineo. The first

inspection was conducted in the beginning of spraying and documented in a report listing achievements and shortcomings related to environmental compliance (e.g., spray operators, infrastructure, health management, IEC).

- From June 20-24, 2012, inspection was conducted by DREEC agents for 2 to 3 days in the six districts. The purpose of this second inspection was to follow up with the status of recommendations and safety measures highlighted in the first inspection. A summary of this inspection can be found in Table 11 below.
- The post IRS environmental inspection was conducted by the DREEC in Kaolack (covering Guinguineo and Nioro), Tambacounda (covering Koumpentoum) and Kaffrine (covering Malem Hodar and Kougheul) July, 6-13, 2012. In Velingara, the inspection was conducted from August 27 to September 1 by the AIRS Senegal ECO.

Moreover, from July 3-6, 2012, the ECO and her assistant went to all districts to train assistant logisticians' in managing IRS solid wastes (inventory, conditioning, storage, transport and centralization at districts storerooms).

Logistics assistants were also trained on the standards and implementation plan for the rehabilitation of secondary sites including:

- Post IRS soak pit management
- Site rehabilitation prior to post IRS environmental inspection by DREEC offices
- Inventory, cleaning and storage of first aid kits and danger pictograms posted in the sites.

TABLE 10. SUMMARY OF SECOND INSPECTION OBSERVATIONS

Observations	Recommendations / Immediate actions undertaken	Districts concerned
<ul style="list-style-type: none"> • No electricity • Generator not functioning (no cable, oil and fuel) • No generator 	<ul style="list-style-type: none"> • - Provided a functioning generator • - Supplied fuel 	Velingara, Kougheul Koumpentoum
Compliance with progress plan	Nothing to report (NTR)	
Lack of discipline by some spray operators	Sanctioned by warning or blacklisting for 2013 spray round	Velingara, Malem Hodar Kougheul, Nioro Koumpentoum, Guinguineo
Good spraying techniques were being followed	Reinforce supervision	
Lack of water	Reinforce water reserves	Malem Hodar
Masks with filters were available	NTR	
Socks were available	NTR	
There was sufficient stock of all commodities	NTR	
Good command of spraying techniques	Supervision to be reinforced	
Operators wearing PPE correctly	NTR	
Progressive rinsing technique improved	Supervision to be reinforced	Velingara, Kougheul Koumpentoum
Atropine available except for Guinguineo	Supply atropine in the health posts in	Guinguineo,

Observations	Recommendations / Immediate actions undertaken	Districts concerned
	Guineo	

6.3 LOGISTICS AND STOCK MANAGEMENT

For the 2012 IRS campaign, Abt rented a large central warehouse in Kaolack, six district secondary stores, and 38 site stores. For each one of the stores, the project used stock cards, Receipt and Issue Vouchers, and Delivery Notes to record the movement of each item. Before any transaction, an issue voucher was signed by the district coordinator for approval. Then the storekeeper registered the details of the transaction such as the type, quantities, destination and carrier on the delivery note. After delivery of equipment, the transaction was recorded on the receipt voucher and the stock card related to the equipment in question. The stock cards for insecticide in every storeroom were closely monitored. Storekeepers updated the cards daily with the movement of stock in or out of the storage facility, and conducted routine physical stock counts to ensure that the actual stock matched the stock card.

Prior to the dispatch of commodities from the central warehouse to operational site stores, the team numbered spray pumps and PPEs to reflect a complete set of PPE for an operator, and according to needs per district. The number of insecticide boxes for each store was labeled to track them to the intended destination. A dispatch note was used to track distribution from the warehouse to the operational store, which was returned with a signed proof of delivery.

In the operational sites stores, insecticide sachets were only issued to team leaders, who filled and signed the issue forms. The store keeper would immediately enter this on the Stock Card to obtain the stock balance record. At the end of each spray day, spray operators turned in their used and unused sachets to the team leader, who collated and submitted them to a store keeper. The store keeper recorded the full sachets on the stock card as a positive adjustment, updated the stock balance, and returned the unused sachets to the full stock. The used/empty sachets were recorded on the daily utilization record form that tracks each store’s empty sachets and utilization trend. Despite this tracking, the project still faced serious insecticide stock management issues as will be described in greater detail in section 6.4 below.

6.4 CHALLENGES WITH INSECTICIDE QUANTIFICATION

This section is meant to provide some background on AIRS Senegal’s challenges with insecticide quantification for the 2012 campaign.

In the 2011 IRS database, 244,855 structures were registered for the five target districts. The average number of structures per district was 50,000 structures. Based on this average calculation, the AIRS Senegal team estimated the 2012 target to be 295,000 structures (466,163 rooms) given that Kounghoul was added as new district.

There are several ways to calculate insecticide needs for IRS programs. The two ways most commonly used by PMI IRS programs are 1) using the total sprayable wall surface area as a base; and 2) using the historical individual insecticide usage rate of the spray region as a base. The initial quantification for AIRS Senegal was done using the latter method.

The historical insecticide usage rate in Senegal was 4.5 rooms per sachet of insecticide. The first mistake made in the quantification of insecticide was the use of a more ambitious usage rate of 5 rooms per sachet of insecticide. This error alone theoretically lowered the insecticide quantity required by 10%. The second mistake, was the use of a lower number as the projection of rooms to be sprayed. The AIRS Senegal team made a decision to use 98% of the target number of structures as a projection in the

calculation. This went against the established guidelines for IRS insecticide quantification of using 100% of the target rooms

A third mistake, that compounded the two above, was adding a buffer to the quantity to be procured, and not to the total needs assessed. Normally a buffer of 10-20% is added to the total need assessed. The net result of the 3 missteps above was a divergence from the true need of about 20%.

When this quantification was sent to Abt HQ and compared with another quantification carried out by Bayer using method I (total sprayable surface area), it was noted that they were very close, with only a 5% difference. With the stock at hand in mind, it was decided that the Bayer estimate (78,000) would be used. Mistake number four was therefore changing the quantification method and assumptions midway. The impact of this mistake was noted early, and remedial action was taken to reverse it, with the procurement and delivery of an additional 5,600 sachets prior to the launch of spraying.

As the spraying progressed, and the distribution of stock by operating site got underway, the magnitude of the quantification error slowly became apparent causing two different stock-outs. To address this, 9,600 sachets were acquired from Mali (first stock out), and 7,000 from Benin (second stock-out).

Overall, 108,520 sachets were made available, against a true projection of 105,631 sachets needed. This means that ultimately, AIRS Senegal received enough insecticide to complete spraying the targeted number of eligible structures.

The table below shows how insecticide quantities were originally estimated. The data was all based on what was available in the 2011 IRS database with the exception of Kougheul for which population estimates (162,934 people) and an average density of people per room (2.87) were used to estimate the number of targeted structures. However, these estimates were subsequently not used for procurement; instead, the Bayer estimate of 78,000 sachets was used as described above.

TABLE I. CALCULATION FOR THE QUANTIFICATION OF INSECTICIDE NEEDS

<i>District</i>	<i>Guinguineo</i>	<i>Koumpentoum</i>	<i>Kougheul</i>	<i>Malem Hodar</i>	<i>Nioro</i>	<i>Velingara</i>	<i>Total</i>
<i>Eligible Rooms</i>	<i>45781</i>	<i>96 411</i>	<i>56623</i>	<i>34020</i>	<i>114984</i>	<i>118 344</i>	<i>466 163</i>
<i>98% (treated rooms target)</i>	<i>44 865</i>	<i>94 483</i>	<i>55 491</i>	<i>33 340</i>	<i>112 684</i>	<i>115 977</i>	<i>456 840</i>
<i>No. of rooms per sachet</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>
<i>Insecticide sachets needed</i>	<i>8 973</i>	<i>18 897</i>	<i>11 098</i>	<i>6 668</i>	<i>22 537</i>	<i>23 195</i>	<i>91 368</i>
<i>Stock in place*</i>	<i>8320 sachets + 78000 sachets</i>						<i>86 320</i>

* 8,320 sachets had been inherited from RTI, and the initial procurement of insecticide included 78,000 sachets + 5,600 (second shipment completed prior to the spray campaign) for a total of **91,920 sachets** available before the start of the campaign.

6.4.1 THE FIRST STOCK-OUT

The team found out of the first stock out five weeks into spray operations, when there were only an estimated 7,363 sachets left in stock. The mistakes described in the section above led to this stock out, but it was also compounded by the fact that there was poor and insufficient insecticide tracking both at the district and national level by the AIRS Senegal Team.

As a first step to manage the imminent stock-out, the team decided to re-deploy all of the remaining insecticide available in Nioro and Velingara to the other 4 districts to allow them to end their IRS

Operations. Guinguineo, Malem Hodar, Koumpentoum and Kougheul were thus able to finish their spray campaigns on time. In Nioro and Velingara however, the stock-out led to an eight day interruption.

Secondly, the team made an assessment of the additional insecticide needed based on the updated progression plans. This assessment led to the conclusion that an additional 9,600 sachets were needed to complete spraying in Nioro and Velingara. To fill this gap, AIRS Senegal borrowed 9,600 sachets from AIRS Mali to continue spraying in these two districts.

6.4.2 THE SECOND STOCK-OUT

Despite having received the additional shipment from Mali, AIRS Senegal experienced yet another stock-out prior to finalizing the campaign. The second stock-out primarily took place due to insufficient supervision of insecticide tracking and insufficient needs estimation.

PNLP and PMI recommended that AIRS Senegal continue IRS operations until all mobilized structures were covered. To address the second stock-out, an additional 7,000 sachets were borrowed from AIRS Benin to complete IRS operations in Nioro and Velingara between August 26th and September 3rd. The second stock-out caused an 18-day delay in the campaign for both districts. The table below demonstrates how the needs were estimated. Please note that at the time of ordering the sachets from Benin, an estimated 22% buffer was added to the final amount of 5,701 requested from the team to ensure that the campaign would be able to close with a comfortable buffer remaining.

TABLE 12. CALCULATION FOR THE QUANTIFICATION OF INSECTICIDE NEEDS (SECOND STOCK-OUT)

District	Nioro	Velingara	Total
Rooms	7206	13525	20731
Average number of rooms/sachet	4	4	4
Buffer	10%	10%	10%
Ficam needed (sachets)	1982	3719	5701

6.4.3 MEASURES TO BE TAKEN IN 2013 TO AVOID STOCK-OUTS

1. Add a 20% buffer to estimated quantity of insecticide based on structures found in 2012
2. Train team on quantification of IRS commodities, equipment and supplies
3. Involve relevant stakeholders in the quantification process
4. Train and support country team on distribution and dispatch of IRS commodities, equipment and supplies to operating sites.
5. Provide close support to country team in during preparations in the run-up to the launch of the spray campaign.
6. Implement and enforce the use of the Spray Performance Tracking Sheet during spray operations.
7. Ensure that all insecticide storerooms have updated stock cards and insecticide management system in place

8. Increased supervision by AIRS Senegal Senior Management on insecticide and commodity supply chain
9. Enumeration exercise to inform procurement process and avoid mistakes with quantification

6.5 RTT GROUP LTD (RTT) ASSESSMENT FINDINGS

RTT Group Ltd (RTT) conducted an assessment in Senegal from June 23-30, 2012. Their visit consisted of a logistics review to assess warehousing and inventory management systems and processes followed during the 2012 spray campaign. The assessment identified areas for improvement, and made recommendations to support spraying commodity logistics management from the perspective of warehousing and distribution.

According to RTT's assessment, although the AIRS operations run smoothly and efficiently, there are some potential areas for improvement. Some were recommendations related to simplification of operations, while others concerned areas to reduce costs. In addition recommendations varied from very simple and easy to address, to complex actions needing significant investment (i.e. automating the entire supply chain across the country). Some of their major recommendations are summarized below:

- The central warehouse should be fitted with roughly 10 roof ventilators. The temperature reports show that it goes up significantly. It is not very useful to record temperature if nothing can be done to reduce it when it goes up.
- All district warehouses should have the same computer to record and share the inventory data.
- Logistics must expand the product list by 20 or 30 items to accommodate every size of boots (10 - 15), overalls (5 to 6) and gloves. Each size must be inventoried, forecasted as a single item.
- A proper mobile phone system at each of the warehouse (district and central) with enough credit is necessary as the inventory levels of each district and site should be available, with the central warehouse information.
- A purchasing evaluation form must be used with 4 signatures: requestor, Management, Finance and Operations must be used systematically for the evaluation.
- Orders forms for suppliers should relate to the purchasing form which includes Delivery time - Minimum order Quantity - details and pricing.
- It would be useful to record, as an inventory line, the daily mileage of each vehicle. A simple SMS could be sent to Logistics to record the daily mileage.
- Finally, RTT noted that the AIRS processes are similar in many countries and Abt has very well harmonized the processes and the operations. It concluded that improvements can be developed and shared amongst countries.

Given that the report was received nearly at the end of the campaign, their recommendations were not immediately addressed. All RTT recommendations will be considered when planning for 2013 campaign.

7. MONITORING AND EVALUATION

7.1 APPROACH

Monitoring and Evaluation (M&E) for the 2012 IRS campaign closely followed the processes outlined in the 2012 AIRS Senegal work plan and the M&E Concept Paper developed by the AIRS Core team. M&E activities were led by the AIRS Senegal M&E Manager and the Database Manager.

7.2 KEY OBJECTIVES

The key objectives of AIRS Senegal M&E activities are:

- To emphasize accuracy of both the data collection and data entry process through comprehensive training and supervision at all levels;
- To streamline and standardize data information flow, and minimize error and facilitate timely reporting;
- To ensure IRS data security and storage for future reference through the establishment and enforcement of proper protocols;

7.3 DATA COLLECTION

The following changes to the 2011 database were made to accommodate the required 2012 PMI indicators:

- Disaggregated population counts by gender;
- Insecticide sachet counts for tracking and management, as was added to the Daily Spray Operator Form;
- Removal of long-lasting insecticide-treated mosquito nets (LLINs) data fields.

For the 2012 spray campaign, Abt Senegal recruited 16 data clerks and six data supervisors, and posted the clerks in the six IRS districts. Each of the data clerks received a laptop that contained the AIRS Senegal Access database.

Data clerks entered spray operators forms into the Access database and transmitted the results to the central office within 24 hours of the receipt of the data. Once entered, the paper forms were filed and archived at the data entry site.

One to two days following spray, supervisors and/or data entry clerks randomly visited at least once a week a sample of sprayed structures to verify the reliability of the data collected by spray operators.

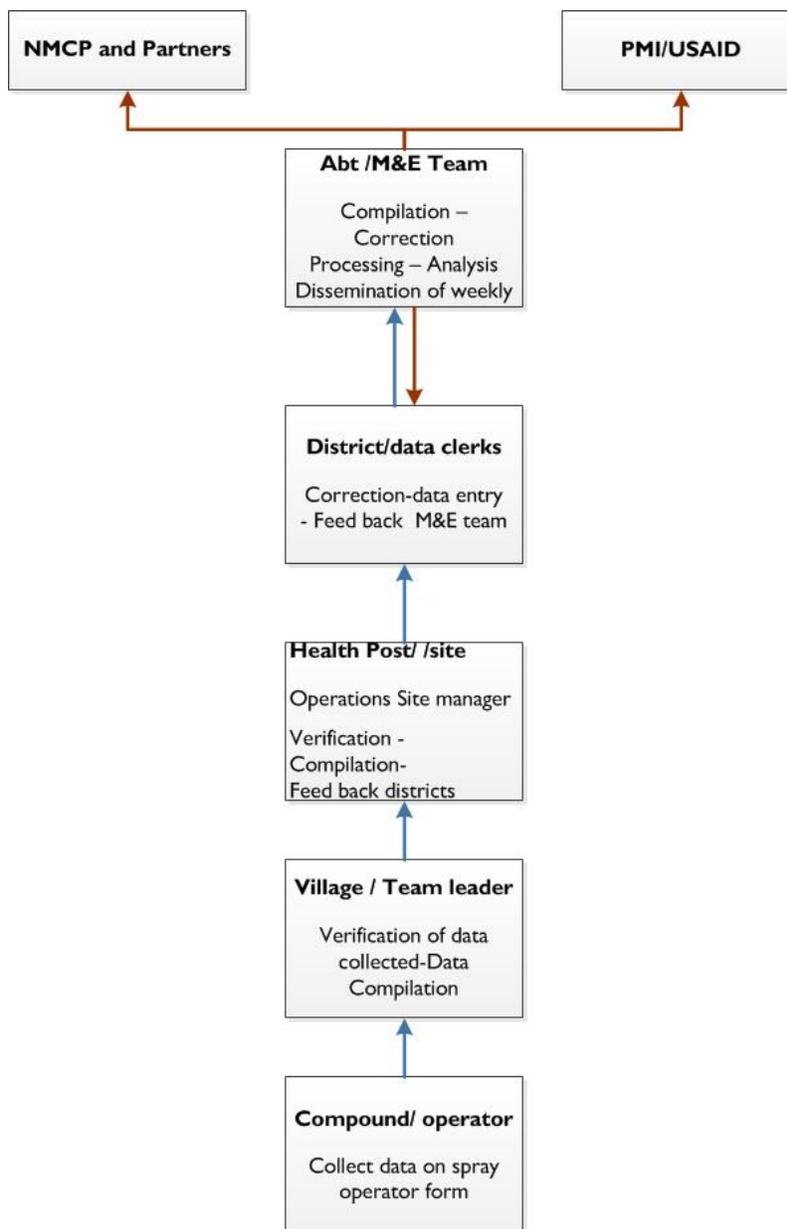
In addition, supervisors performed a random data audit by crosschecking paper forms with the data entered into the database before authorizing the data transmittal to the Database Manager. The Database Manager would verify all data entered into the database daily and would refer to the data clerks and their supervisors for clarification, in the event of a discrepancy.

In 2012, Abt developed a spot check tool based on PMI's recommendation in order to verify the reliability of collected data by external persons (i.e. SNH supervisor, operational site manager). This tool, which was still in the testing phase, was tested during the last two weeks of the campaign. Consequently, data clerks were able to make corrections to the paper forms themselves without having

to send the forms back to the field for correction. Data clerks were allowed to complete only specific data fields that they could confirm to be correct (e.g. completing structure, village or site ID, spray operator names, etc.) This quality control tool increased the level of speed at which data were entered once paper forms no longer needed to be unnecessarily verified in the field for a second time.

Increased data entry allowed AIRS Senegal to produce the Weekly Spray Reports with the most up-to-date data. The Weekly Spray Reports, written by the M&E Manager, presented data on various spray indicators, such as spray progress, populations protected, and insecticide stocks. The data from these reports were taken from the database, thus the importance of DEC speed and accuracy. The Weekly Spray Progress Reports were then sent to PMI Senegal, PNLP and partners and PMI Washington by the COP. This reporting method allowed AIRS Senegal, Abt's Home Office, PMI Senegal, and PMI Washington monitor spray progress, adjust the campaign as needed, and immediately report any issues that arose to the client.

FIGURE 2. DESCRIPTION OF DATA COLLECTION SYSTEM



7.4 SPRAY RESULTS

Using 2011 data for structures found by SOPs in each district except the new district (Koungheul), Abt Senegal planned to complete spray operations within 30 working days. Unfortunately however, as explained in section 6.4 above, AIRS Senegal did not accurately estimate the insecticide needs, so even with a 10% buffer, the supply was too low to reach all eligible structures found this project year. While waiting for insecticide replenishment and completing spray operations in Nioro and Velingara districts, the AIRS Senegal campaign completed in 48 operational days (minimum of 36 days in Guinguineo and a maximum of 48 days in Velingara). Table 13A provides the total number and breakdown of structures sprayed vs. found by district and demonstrates populations protected by IRS during the 2012 spray campaign which was conducted from June 6 to September 3. We have also included table 13B that shows IRS results for the 2011 campaign for the sake of comparison.

TABLE 13 A: SUMMARY OF 2012 IRS RESULTS

District	Total # of eligible structures found by SOPs	Total # of eligible structures sprayed	% of total structures sprayed	Population protected	Pregnant women protected	Children under 5 protected	% of population protected	Eligible Rooms ²	
								Found	Sprayed
Guinguineo	27,987	27,441	98.05%	103,290	1,901	17,957	98.21%	47,543	46,616
Koumpentoum	42,975	42,430	98.73%	138,654	4,020	29,382	98.96%	49,650	48,931
Koungheul	54,744	53,284	97.33%	168,924	4,237	34,327	97.91%	68,653	66,611
Malem Hodar	29,529	28,398	96.17%	89,613	1,927	18,336	96.87%	35,670	34,314
Nioro	80,366	79,016	98.32%	324,908	7,061	68,013	98.51%	140,678	138,373
Velingara	77,337	76,347	98.72%	269,704	7,117	52,448	98.84%	127,303	125,696
Total	312,938	306,916	98.08%	1,095,093	26,263	220,463	98.39%	469,497	460,541

TABLE 13 B: SUMMARY OF 2011 IRS RESULTS (FROM 2011 EOSR)

District	Total # of eligible structures found by SOPs	Total # of eligible structures sprayed	% of total structures sprayed	Population protected	Pregnant women protected	Children under 5 protected
Guinguineo	27,091	26,439	97.6%	101,108	1,790	19,358
Koumpentoum	39,172	38,716	98.8%	147,479	23,533	49,147
Koungheul	NA	NA	NA	NA	NA	NA
Malem Hodar	28,431	27,857	98%	83,965	1,929	17,639
Nioro	76,536	75,177	98.2%	308,350	7,002	68,319
Velingara	73,625	72,581	98.6%	246,413	9,135	53,307
Total	244,855	240,770	98.3%	887,315	43,389	207,770

² Please see Appendix I for the PMI approved Senegal Structure Definition Document.

FIGURE 3. SPRAY COVERAGE PER DISTRICT (BASED ON ALL ELIGIBLE STRUCTURES FOUND BY SPRAY OPERATORS)

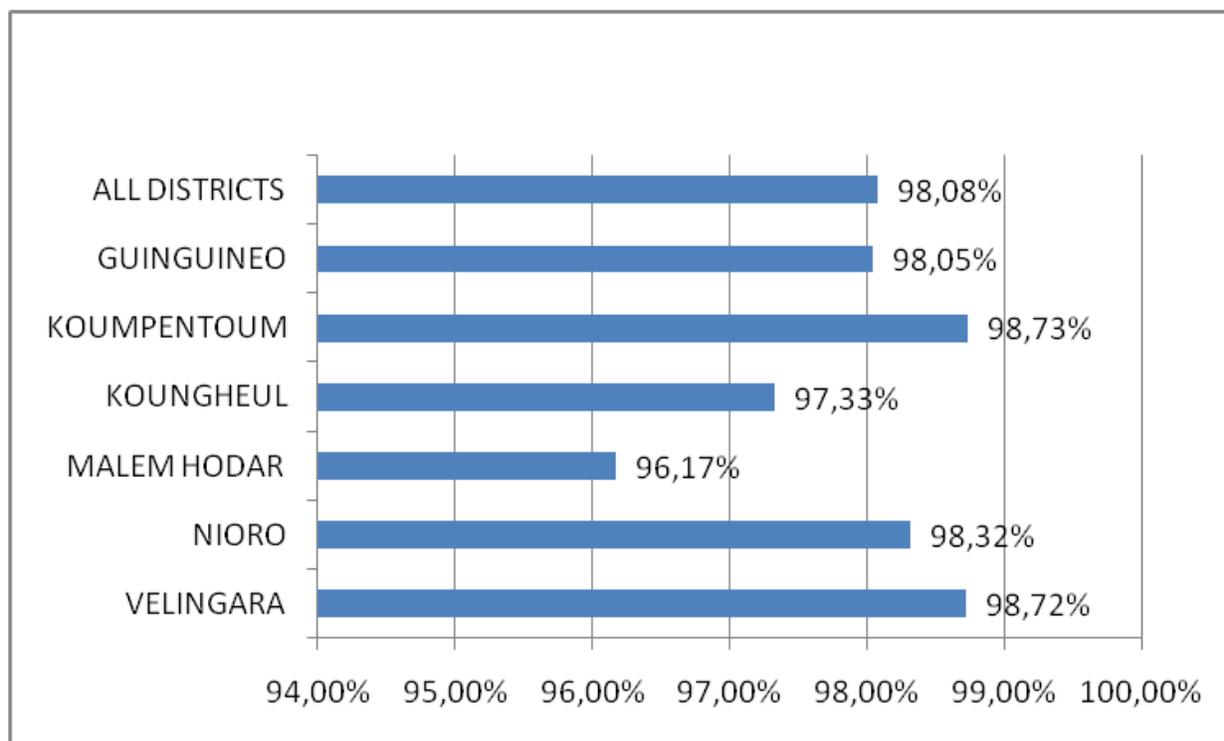


TABLE 14. INSECTICIDE USAGE AND SPRAY OPERATOR PERFORMANCE

District	Eligible structures found by SOPs	Number of Sachets Used	Number of Structures Sprayed	Average Number of Structures Sprayed per Sachet
Guinguineo	27,987	11,428	27,441	2.40
Koumpentoum	42,975	13,696	42,430	3.10
Koungheul	54,744	14,392	53,284	3.70
Malem Hodar	29,529	8,336	28,398	3.41
Nioro	80,366	32,431	79,016	2.44
Velingara	77,337	26,591	76,347	2.87
Total	312,938	106,874	306,916	2.87

The spray progress rate was monitored in order to identify issues related to the progression plan. It is calculated based on the number of structures sprayed by an operator per day in each operational site.

TABLE 15. RATE OF SPRAY PROGRESS

Districts	Structures sprayed	# of days	# of spray operators	Rate per structure
Guinguineo	27,441	36	64	12
Koumpentoum	42,430	33	128	10
Koungheul	53,284	33	128	13
Malem Hodar	28,398	37	52	15
Nioro	79,016	47	170	10
Velingara	76,347	48	150	11

8. POST-SPRAY ACTIVITIES

8.1 GENERAL POST-SPRAY ACTIVITIES

Post-Spray activities included campaign evaluation meetings at the site, district and national level, demobilization of commodities, site rehabilitation, and solid waste management. The table below provides details on each post-spray activity.

TABLE 16. POST-SPRAY ACTIVITIES

Activities	Actors	Results
Post IRS medical examination	DMO	All districts. No cases reported
Site level IRS evaluation	Health post nurses (HPN), Steering Committee , Abt, IEC mobilizers, Spray Operators, ChildFund	All sites except for the site of Guinguineo
District level IRS evaluation	Administrative authorities, elected officials, DHMT, RHMT, ChildFund, HPNs, Abt, IEC mobilizers, Spray Operators	All districts
National level IRS evaluation	DHMT, RHMT, ChildFund, PNL, Abt, UCAD, IRD, PMI/USAID, SNH, DREEC	Conducted
IRS site closing	Abt district staff	All sites have been closed
Post IRS environmental inspection	DREEC	All districts
Redeploying the material from sites to district storerooms	Abt district staff	Done in all districts
Material and solid wastes inventory	Abt Country staff, logisticians and storekeepers	Done in all districts
Redeploying the material from district storerooms to central warehouse	Operations Section	completed
Data filing and archiving	M&E	completed
Solid wastes recycling	ECO	Started October 3-22, 2012 in Thies by Proplast Industrie
Solid wastes incineration	ECO	October 22 – November 23, 2012 at Diourbel Hospital

8.2 POST-SPRAY ENVIRONMENTAL ACTIVITIES

8.2.1 DEMOBILIZATION LOGISTICS AND WASTE DISPOSAL

Following completion of spray operations, stocks of insecticide, equipment and PPE were moved from the 38 operational sites to the district level warehouses and then to the central warehouse in Kaolack.

Solid waste from the campaign, including packaging materials, torn gloves, and used disposable nose masks, were packaged in WHO-recommended yellow bin liners, and stored in the central warehouse.

A post-spray environmental compliance assessment was completed and documented. The safety signs on soak pits doors are in place, and there is plant growth around the soak pits, which do not show signs of polluted soil or contamination.

8.2.2 POST-IRS ENVIRONMENTAL COMPLIANCE

From July 23 to August 4, 2012, the post IRS inspection was conducted by DREEC staff in 4 out of the 6 target districts. The inspection covered 23 sites distributed as follows: Guinguineo (4 sites) conducted by the DREEC office in Kaolack, Malem Hodar (3 sites) and Kounghoul (8 sites) conducted by the DREEC office in Kaffrine, and Koumpentoum (8 sites) conducted by the DREEC office in Tambacounda.

As for the health districts of Nioro and Velingara, the post IRS inspections were conducted September 12-14, 2012, by the respective DREEC offices in Kaolack and Kolda. The rehabilitation of 34 sites was deemed very satisfactory, whereas 4 sites were not satisfactory in Guinguineo. The reported inadequacies were addressed before handing over the premises to the respective landlords.

On September 27, 2012, an MOU was signed between PNL, PROPLAST and DREEC of Thies for the recycling of 1,065 kg of plastic materials including gloves, sachets and plastic sheets. The recycling process was completed between October 3rd and October 22nd 2012.

In August/September 2012 PNL in collaboration with Abt, DREEC offices in Louga and Diourbel, Pikine hospital and SOCOIM cement plant engaged in identifying incinerators for the disposal of the 2012 solid wastes. Final selection was the Diourbel hospital incinerator because it was not possible to get timely information from other eligible incinerators according to PNL. On October 15, 2012, PNL signed with the Directorate of Diourbel hospital a service agreement for the incineration of 2,880 kg. The incineration process started October 23, 2012 and is expected to be completed by end of November.

8.2.3 INVOLVEMENT OF THE ENVIRONMENTAL DIRECTORATE

Only DREEC offices (regional level) have actively taken part in the 2012 IRS activities. The absence of the DEEC (central level) was noted in the 2012 IRS campaign implementation, following the failure to sign the MOU between the Ministry of the Environment and the Ministry of Health. This MOU addressed the details for the project's Environmental and Social Management Plan's monitoring and evaluation.

9. STRENGTHS AND LIMITATIONS IDENTIFIED IN EVALUATION MEETINGS

A one day evaluation meeting was conducted in each district chaired by local authorities and attended by all stakeholders. Meetings were held in July (Malem Hodar, Guinguineo and Kougheul), August (Koumpentoum) and September (Nioro and Velingara). The national evaluation meeting (held on September 17th and 18th 2012) was chaired by PNLP and attended by SC members, all district MCDs, MCR, SNH, ChildFund consortium and representatives from the community. During the evaluation meeting, presentations were done on: IRS planning and implementation in all districts, environmental compliance activities by DREEC, IEC activities conducted by ChildFund, SNH supervision, among others. The following strengths and limitations, lessons learned and recommendations were identified during this meeting.

9.1 STRENGTHS

The following strengths were identified for the 2012 campaign:

- The recruitment of an AIRS Senegal IEC/BCC focal point for monitoring, coordination and information on the IEC component
- Introduction of monitoring tools for IEC activities
- Commitment demonstrated by DHMTs and administrative authorities as well as strong involvement from health post nurses
- Strong population support
- Good monitoring system for operations through daily coordination meetings at national level
- Partner involvement in operations supervision (PMI, PNLP, DHMTs, etc)
- Responsiveness of various stakeholders (solutions and corrective actions undertaken as operations were transpiring)
- Operational sites provided free of charge in : Guinguineo (1), Malem Hodar (1), Kougheul (3)

9.2 LIMITATIONS

Despite these strengths, the following limitations of this campaign noted from the field, the evaluation meetings, and from various trip reports are worth pointing out:

- Poor coordination and information sharing within ChildFund Consortium as well as with other partners
- Poor IEC data collection, reporting and information distribution
- Improper distribution of IRS commodities including PPE and insecticide to the districts prior to the start-up of spraying activities
- Poor distribution and completion of IRS household cards by IEC mobilizers and spray operators
- Poor distribution of data collection forms

- Poor insecticide needs assessment which led to insecticide stock-outs, and two brief campaign interruptions
- Review of progress plan by site managers, but the information is not often shared with the hierarchy
- Spraying speed was low in some sites; and non-respect of working hours by operators in others
- Lack of information of beneficiaries before the arrival of the spraying team
- Some sites were difficult to reach during the raining season
- The rental cost of some secondary facilities was relatively high
- Delay of payment of rental cars because of non-conformity of bank information
- Insufficient supervision related to security (not wearing PPE) and bad behavior of some supervisors
- Interruption of IRS operations because of insecticide/FICAM stock out in Nioro and Velingara
- Extension of the duration of the IRS campaign
- Lack of clarity with respect to human resources management.

10. LESSONS LEARNED AND RECOMMENDATIONS

The following recommendations have been provided for future successful IRS rounds:

- IEC mobilizers and spray operators' training tools should be shared by implementing partners prior to the start of trainings for seasonal personnel.
- There should be a meeting to clarify and coordinate IEC mobilizers and spray operators' roles and responsibilities prior to the startup of the spraying campaign.
- All IRS commodities should be in place in all sites at least one week before trainings begin.
- The insecticide need assessment should be based on the number of eligible structures validated by the various stakeholders (DHMT, Abt, Consortium, PNLP)
- Distributing IRS commodities to district storerooms at the latest one week prior to spray operators' training.
- Better distribution of materials to districts.
- Encourage speedy signing of the MOU between the Ministry of the Environment and the Ministry of Health addressing the details for the IRS project's Environmental and Social Management Plan's monitoring and evaluation.
- Inform beneficiaries to prepare their households for spraying on a timely basis.
- Ensure that the IEC plan is always consistent with the spray progression plans.
- Ensure that all criteria are met for spray operators' selection.
- Put more emphasis on spray operators' roles and responsibilities during training sessions.
- Conduct an enumeration exercise to have more accurate denominator data (total number of eligible structures) prior to the start of next spray campaign for a better needs assessment of insecticide.
- Enforce environmental compliance and safety standards for spray operators and beneficiaries to follow.
- Integrate a community supervision system that accompanies the teams and implements sanctions if necessary.
- Discuss other forms of participation/motivation for spray operators like negotiating a cost for the work, lump sum, or flat rate.

The table below provides a summary of the problems identified by PMI for the 2012 campaign. The second column provides a response and addresses how these issues will be prevented in the 2013 campaign.

TABLE 17. PMI CONCERNS AND HOW THEY WERE ADDRESSED

	PMI Concern	Abt Response
1	<p>Poor monitoring of insecticide stock. A tool for district insecticide management introduced in Bamako was not implemented in Senegal, apparently due to misunderstanding / language barrier. In addition, a poorly thought through tool for database management of insecticide was abandoned and not put in its place. Consequently, Senegal experienced an insecticide stock out that was detected only a few days before (by the PMI local team), requiring stopping IRS activities in two districts while waiting for insecticide to be delivered from Mali.</p>	<p>We recognize the late introduction of the spray performance tracking tool and its poor use. Following the recommendation of the AIRS Operations Manager and Technical Coordinator, the team implemented the tool in all districts by week three of the campaign. The team appreciated the usefulness of the tool to monitor activities at the site level including insecticide use trends, and overall performance of spray teams. We are confident that next year, a more timely and widespread use of this tool will allow us to track insecticide usage more closely so as to prevent any insecticide stock-outs.</p> <p>More importantly however, after this year’s spray campaign coupled with next year’s enumeration exercise we will have a more accurate estimate of insecticide needs.</p> <p>We would like to emphasize however that insecticide use was being tracked through the project database as was done last year. Contrary to the comment, this tool was not abandoned during the 2012 campaign.</p>
2	<p>Salaries and lengths of contracts decreased sufficiently that high quality / experienced personnel – district management staff, data clerks, and sprayers – turned down the jobs, and inexperienced or lower caliber staff were hired in their place. For example, among the 25 data clerks with previous IRS data entry experience, only one accepted the contract. The data clerks who worked previously were sufficiently unhappy that they wrote a joint letter to USAID stating their concerns.</p>	<p>Abt carried out an open competition for the data clerk positions, and all other seasonal worker positions. The length of the data clerk contract was indeed reduced to 2 months as opposed to 5 months because we did not think there was enough work for data clerks to do over a 5 month period. In fact, no other AIRS country hired their data clerks for 5 months. In our view, that would have been inefficient and unnecessary use of resources. Our job advertisement for data clerks attracted more than 800 applicants including former data clerks. Six former clerks were interviewed and only two accepted the position, largely due to the shorter contract length. Because there were many other perfectly qualified candidates willing to do the job for a two month period, we did not consider this a grave issue. We regret the fact that former data clerks wrote a complaint letter to USAID which inevitably caused alarm and confusion. At the time however, we held no contractual obligation with those data clerks and were simply holding a free and open recruitment process. We strongly feel that the data clerks that were identified have performed very well despite not having previous IRS experience. With the exception of some delays in Niore, data clerks were generally very timely and very cognizant of data quality.</p>
3	<p>Spray operators are paid by the day, thus motivating them to work slowly to extend the spray season and thus increase their payments. This question will be subject to further consideration between Abt and partners (steering committee, DHMTs, local administrative and political authorities). The results will be taken into consideration in the future as far as the seasonal personnel’s contracts are concerned.</p>	<p>This payment methodology (payment for days worked) has been adopted since the start of IRS in Senegal. For the 2013 campaign, Abt will engage in conversations with PMI, the IRS steering committee, DHMTs, and local authorities to determine whether or not a new payment methodology (e.g. performance based) can be implemented next year for all seasonal personnel.</p>

	PMI Concern	Abt Response
4	District management personnel not empowered to make decisions locally. For data management, they have not been given the capacity to use data locally. The data entered in the database is sent to the central level for synthesis, and only weekly reports are sent, thus depriving the districts of the data needed to make daily decisions.	The implementation of the spray performance tool tested in 2012 will enable a better daily monitoring of spray data at the district level. This tool, which is filled out by the District Coordinator, will help better monitor the speed of spray teams and insecticide stock management. Abt district staff was trained on management, finance and logistics during a 4-day training designed to empower them for decision-making. We recognize however that there are still varying skill levels on data analysis and their ability to manage the campaign using daily data. In order to continue delivering accurate data analysis and reporting, Abt will continue providing this daily information from the Dakar office after verification. However, in the coming years we fully intend to continue building the capacity of our staff and district health officers in the use and analysis of data for decision-making. We will provide daily data reports to DHMTs during the campaign as well.
5	More than usual intoxication cases were reported, including 3 dead goats and a dead horse (livestock fatalities never before reliably caused by IRS in Senegal). Either the cases were not adequately investigated, or issues with exposure need to be addressed. In this context, the decision not to conduct post-spray medical visits for the sprayers is incredibly irresponsible and opens PMI/USAID up to liability.	All the poisoning cases, including the two that you mentioned concerning goats and a horse were inventoried and properly investigated. Livestock fatalities caused by ingestion of the contaminated liquid were immediately reported by Abt's district coordinators and duly documented. Abt will take necessary actions in the next spray round to prevent incidents of livestock or human poisoning. With respect to post-IRS medical check-ups, After discussions with PMI Senegal, it was determined that post-spray medical visits were to be carried out this year. This may be revisited for the next campaign however given that revised WHO guidelines do not require post-spray visits in countries using carbamates.
6	IEC has been a perpetual problem due to implementation by a consortium of NGOs. This led to patchy implementing of IEC messages and poor IEC coordination.	We anticipate that more recommendations will be generated from the districts and that we will have the opportunity to address all of them during the national evaluation meeting.
7	PNLP should put in place a formal IRS task force to guide planning and operations, with members including PNL, Abt team, PMI local, National Hygiene Service, SNEIPS, UCAD, National Direction of the Environment, and the National Direction of Livestock Protection.	Abt had initiated this process with the former PNL coordinator. Abt will continue discussion with the newly appointed PNL coordinator so that this can be put in place for the next IRS campaign.
8	A standard checklist of all materials and supplies required for spray site should be drafted. Physical verification of the presence of all checklist materials on site should be conducted a week before operations start.	Observation is duly noted. We will be sure to improve this process next year, and will ensure that all commodities are in place prior to the start of spray operations.
9	Abt Dakar needs to be present in the field for supervision during the first week of operations.	Duly noted; we recognize that this was a weakness in the 2012 campaign so Sr. Level supervision from Dakar will be strengthened in 2013.

	PMI Concern	Abt Response
10	To promote better functioning of the Abt Dakar team, a re-arrangement of roles may be necessary. The PMI local team is available for further discussion on this matter.	Abt is happy to consider PMI's suggestions; this will be discussed with the IRS Steering Committee and Abt Home Office.
11	Given the relatively short contracts for temporary personnel, contracts and salaries should be adequate to allow recruitment of qualified personnel. Duration of contracts should also be sufficient to account for unforeseen extension of the spray season. Thought should be given to restructuring the contracts of spray operators to compensate them fairly, while motivating them to finish spraying in the allotted time.	Abt is happy to reassess this for the next campaign so long as the duration of the contracts do not exceed the actual needs of the program.
12	Data clerks at the district level need to be trained to synthesize and use the database to produce daily reports to aid the district in day to day management, including monitoring of insecticide levels with forecasting to assure adequate insecticide to finish spraying.	Duly noted.
13	Proper investigation of presumed intoxication and post-spray medical visits for all spray personnel, including stock managers and washers.	After discussions with PMI Senegal, it was determined that post-spray medical visits were to be carried out this year. This may be revisited for the next campaign however given that revised WHO guidelines do not require post-spray visits in countries using carbamates. With respect to investigations of presumed intoxication, Abt has properly carried those out throughout the campaign and incident reports have been shared with PMI.
14	We noted highly involved and very capable district teams including the District Chief Medical Officers, Health post Chief Nurses, and Hygiene Service personnel functioning in all districts. Transfer of responsibilities should be considered as smoothly and speedily as possible.	AIRS Senegal worked in perfect harmony with DHMT.

ANNEX A:

PMI APPROVED STRUCTURE DEFINITION DOCUMENT

(APPROVED VERSION WAS IN FRENCH)

Le nombre de bâtiments éligibles dans une zone ciblée pour l'Aspersion Intra Domiciliaire (AID), le nombre de bâtiments éligibles pulvérisés et la couverture de pulvérisation $[(\text{nombre de bâtiments pulvérisés}) / (\text{nombre total de bâtiments éligibles dans une zone cible}) \times 100]$ sont tous les indicateurs PMI de base. En tant que tel, le PMI donne une définition générale de ce qui constitue un “ bâtiment”, mais tient compte des différences de règlement et de réalités culturelles dans chaque pays où l'AID est mise en œuvre en permettant réserves de définition à être défini par pays.

Le but de ce document est de définir clairement définition d'une “bâtiment” au Sénégal afin de fournir une compréhension claire de cette définition à la fois parmi tous les collaborateurs AID et l'ensemble du programme AID Sénégal³. En outre, il permet de fournir des éclaircissements sur ce sujet, le document présente des exemples des différents types de bâtiments on trouve couramment dans les districts ciblés par le Sénégal.

I. Définitions de concepts

Au Sénégal, il existe trois types de structures à différencier en termes d'habitation humaines:

- La concession
- Le bâtiment
- La pièce

- a. Concession: Une concession est un espace fermé avec un ou plusieurs chef ménage. Elle est constituée d'une maison avec un ou plusieurs bâtiments.

³ Cela répond à l'objectif de PMI d'avoir une définition claire et cohérente de la «structure» dans un pays, mais pas nécessairement entre les pays.

PHOTOS REPRÉSENTANTS DES CONCESSIONS

Concession à Kouthiagaïdy Koumpentoum
(vue de face)



Concession à Kouthiagaïdy Koumpentoum
(vue de l'intérieur)



- b. Bâtiment: C'est une construction pouvant comprendre une ou plusieurs pièces. Toute construction isolée est considérée comme bâtiment. Il peut s'agir d'une chambre, d'une toilette ou autre, etc.

EXEMPLE D'UN BATIMENT AVEC DEUX OU PLUSIEURS PIECES

Bâtiment avec plusieurs
pièces à Guinguinéo



Bâtiment avec deux pièces à
Guinguinéo



Bâtiment à une pièce à
Guinguinéo



- c. Pièce: Est un local servant de lieu de repos ou de dortoir à un ou plusieurs habitants. La pièce est considérée comme bâtiment si elle est isolée mais comme un élément du bâtiment dans une construction avec plusieurs compartiments (chambres, toilettes, couloirs, vérandas, escaliers, ...). Etant l'unité indivisible, en tenant compte des réalités locales en termes d'habitation au Sénégal, la pièce est considérée comme structure et est utilisée dans le calcul de l'indicateur de couverture.

EXEMPLES D'UNE PIÈCE

Une pièce à Guinguinéo



Une pièce à Guinguinéo



- II. Surfaces à traiter
 a. Notions de surfaces à traiter

Les surfaces à traiter sont les supports d'habitation pouvant servir de lieux de repos aux moustiques (ciment, banco, bois, pailles).

TABLEAU RECAPITULATIF DES SURFACES CONVENABLES OU NON CONVENABLES

Structures/surfaces convenables au traitement	Structures/surfaces <u>non</u> convenables au traitement
Pièces d'habitation	Faces externes des parois
Murs intérieurs des vérandas fermées	Plancher
Murs intérieurs des vérandas semi fermées	Toit métallique
Magasins ne contenant pas de produits alimentaires	Porte métallique
Toilettes intérieures avec toit	Vitres
Latrine avec toit	Latrines sans toiture, Sièges des mobiliers (à recouvrir)
Couloirs intérieurs	Intérieur des armoires et placards
Toitures non métalliques	Rideaux, matelas et oreillers
Avant toits extérieurs (cases)	Magasins de produits alimentaires ou greniers
Portes en bois ou en paille	Cuisines
Derrière les cadres de photo	Enclos des animaux
Les deux faces de la porte principale (si véranda fermée)	Bureaux ou structures commerciales
Portes en bois, nattes ou en paille	Lieux de culte et locaux administratifs et scolaires
Surfaces inférieures de certains meubles (table, Armoires, fauteuils, etc.)	Les pièces abritant des malades qui ne peuvent pas sortir

III. Notion d'éligibilité d'une structure

La définition générale est qu'une "structure éligible" est une pièce qui l'unité.

- C'est un regroupement de pièces (chambre, toilettes, vérandas, couloir, ...) en bloc qui constitue un bâtiment.
- Toutes les structures isolées dans une concession sont considérées comme bâtiment. Ainsi un bâtiment peut avoir une ou plusieurs pièces.

Exemples de bâtiments communs éligibles trouvés au Sénégal (généralement retrouvés dans les colonies peulhs), on a:

- les murs faits de nattes de paille seulement crues;
- des murs faits de nattes de paille recouvert de plâtre de boue;
- des murs faits de nattes de paille recouvert de sacs jut;
- des murs faits de nattes de paille recouvert de sacs en plastique.

(Après avoir conféré avec l'entomologiste CDC, il a été confirmé que ceux-ci sont tous considérés comme des "pulvérisables" et, par conséquent, les bâtiments éligibles.

PLUS D'EXEMPLES DE BÂTIMENTS ÉLIGIBLES

Photo 1a & 1b



Cas particuliers
Chaque photo représente un bâtiment avec une pièce

Photo 2a



Bâtiment

- Ce bâtiment (2a) de deux étages est considéré comme un bâtiment avec plusieurs pièces à pulvériser.
- Les membres de la famille passent la nuit dans ces pièces les vérandas (constituant des pièces semi-fermées) sont également considérées comme pièces à pulvériser.

Photo 2b



Cette photo montre un bâtiment qui a plusieurs portes menant à l'intérieur. Une fois à l'intérieur de chaque porte, il y a une ou plusieurs pièces à pulvériser.

Photo 2c



Cette photo représente l'intérieur de l'une des portes de la photo 2 b. A l'intérieur, il y a deux pièces à pulvériser. Le couloir aussi est considéré comme une pièce

Photo 3



Latrines

Comme mentionné ci-dessus, des latrines couvertes sont des structures à pulvériser.

Cette photo montre un bâtiment avec deux pièces à pulvériser.

IV. Notion de structure non éligible

On dit qu'une structure n'est pas éligible lorsque:

- a. le type de matériau utilisé pour le revêtement est en métal
- b. le type de matériau pour le revêtement est peu absorbant
- c. il n'est pas protégé contre la pluie et les rayons solaires (sans toit)

EXEMPLES D'UN BÂTIMENT INÉLIGIBLE

Photo I



Ce bâtiment est un exemple d'un bâtiment inéligible pour la pulvérisation puisque les matériaux dont il est fait ne sont pas à pulvériser (par exemple: revêtement en étain ou métallique.)

Ce document a été rédigé par le Sénégal M&E Manager for Africa AID en Février 2012. Il a été mis à jour 28-Jun-2012. Collaborateurs des partenaires IRS sont invités à commenter et donner plus de clarté aux mises en garde du Sengal spécifiques de définition de "bâtiment" figurant dans le présent document.