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USAID Unveils New Technology for African Manufacturers for the Mechanized LLIN Treatment of Mosquito Nets

The USAID NetMark program unveiled a new mechanized process for converting regular mosquito nets into long-lasting insecticide treated nets (LLINs) at a unique technical meeting in Nairobi that brought together all major African net manufacturers, owners of LLIN technologies, and organizations supporting the expansion of LLIN availability. More than 60 representatives from 29 companies joined 25 staff members from international organizations promoting ITN use to review new and existing LLIN technologies.

The meeting was opened by Cheryl Anderson, Deputy Director of the USAID's Regional Economic Development Services Office for East, Central, and Southern Africa (REDSO) who noted the unique nature of a public health meeting with so many private company representatives and the important role that the commercial sector plays in producing the products needed to fight malaria. Dr. Cornelia Davis, Senior Technical Advisor at REDSO, noted that the REDSO office has been helping to improve quality control and production efficiency among African net manufacturers for the past two years. International companies shared information on existing and forthcoming LLIN technologies and the potential for technical cooperation with African manufacturers to increase LLIN production. LLINs have been shown to be one of the best means of preventing malaria; however, a global shortage has led to ordering delays of 6-18 months for the two brands of LLINs now in the market—the PermaNet® by Vestergaard Frandsen and the Olyset Net® by Sumitomo and A-Z Textiles. These companies have increased production capacity, but still cannot keep up with the growing demand from governments and donor agencies.



Recognizing the LLIN shortage problem and new technical developments that were occurring, NetMark served as a catalyst to form a partnership with Bayer Environmental Science and SiamDutch Mosquito Netting Company aimed at developing a mechanized process that could be used to treat finished nets on a mass scale. Bayer was on the verge of introducing a LLIN treatment product for nets. SiamDutch, one of the world's largest net manufacturers, was

interested in building a new net factory in Thailand if it could find an LLIN product and process it could use. NetMark utilized textile engineers from Anovotek LLC of South Carolina, USA to create a factory process that could use a new Bayer LLIN formulation to treat nets. After reviewing all industrial treatment options, the Anovotek engineers selected the most viable option and enlisted the support of textile experts from Texchine of South Carolina and Washex of Texas to adapt their machines to LLIN treatment.

This NetMark technical team, joined by experts from Bayer and SiamDutch conducted lab trials and tests at nearby factories in South Carolina that led to the development of a “Misting Approach” that injected the LLIN formulation (insecticide and binding agent) into an industrial washer system combined with a large dryer to quickly dry the nets for packaging. This system proved to be very effective and met all of the criteria established by NetMark and its commercial partners for a mechanized process:



- provide rapid and high quality mass treatment of finished nets
- be easily installed at the end of the net production line
- use off-the-shelf, reliable industrial equipment as much as possible

NetMark LLIN Process Technical Team

- can be scaled to match the desired LLIN output capacity using equipment of various prices and sizes (from 23 kg. to 455 kg. capacity)
- can potentially be used with several types of insecticide treatments
- be environmentally friendly by limiting amounts of insecticide used and worker exposure, and
- be available to all companies because the USAID investment.

Based on the success of the lab and limited factory trials, SiamDutch agreed to purchase and install a set of the largest machines consisting of an industrial washer and dryer and an insecticide feed system. The machines were installed in its new Tana factory in Bangkok in August with the assistance of Anovotek, Texchine, and Bayer engineers and are going through a testing and refinement stage. SiamDutch covered all equipment costs; Bayer provided the chemical treatment and testing facilities; and NetMark provided overall coordination and the technical services of Anovotek



staff. Following the factory test phase, SiamDutch plans to start producing millions of LLINs a year, thus already ensuring a major impact on public health from this modest USAID investment.

All meeting participants were provided with a technical manual on the new mechanized process, and other materials related to the process will be placed on the NetMark website at www.netmarkafrica.org

Other LLIN Technologies: Presentations were also made by Sumitomo and Vestergaard Frandsen on their LLIN technologies with Sumitomo expressing the willingness to consider production partnerships with manufacturers and sell their netting to stitchers. Vestergaard announced its intention to expand PermaNet production from VietNam and Thailand to Bangladesh, thus maintaining all production in Asia. Syngenta described the LLIN treatment product that it is developing based on its Iconet product; Bayer discussed its K-OTab 1-2-3 field treatment kit that has been submitted to WHOPES; and BASF announced that its treatment product had just received WHOPES 1 certification. Both BASF and Syngenta have asked NetMark to test their new LLIN products with the mechanized process.

LLIN Procurement: A panel of organizations that procure large numbers of nets expressed their general preference for purchasing LLINs with WHOPES certification, but would consider other products given the supply shortage. African manufacturers noted that the emphasis on LLINs and huge orders made it impossible for them to win some of the tender business. They asked that bundled nets still be considered. Groups that participated in tenders requested that information on future orders be made as soon as possible so that there was time for production to meet the procurement deadlines. Many of the procurement organizations noted that they often receive little advance notice before governments ask them to put out a tender for bid.

African Net Manufacturers Association: A group of African net manufacturers announced the launch of an association with the goals of:

- 1) creating more local jobs;
- 2) educating the public on malaria;
- 3) improving employee environmental standards;
- 4) advising MOHs on standard regional policies;
- 5) working closely with donor agencies on buying nets from Africa for Africa;
- 6) maintaining quality control standards set by the association;
- 7) enhancing relations among members; and
- 8) monitoring and sharing information with its members on new products and technologies.



An interim steering committee was established and membership dues were agreed upon. An initial staff member will be recruited and posted at Polo Industries in Nairobi, and the election of a Board of Directors will be conducted at the MIM meeting later in the year. Subhash Sonigra of

Polo will serve as the interim chairman of the board that includes Nnamdi Orji of Rosies Textiles/Nigeria; Gary Dodd of Nets & Ropes/Zimbabwe, Olajide Williams of Mabol/Nigeria; and Antony Haji of TMTL/Tanzania.

Meeting Outcomes: A number of participants stated that this was the best meeting that they had attended in years. A Nigerian manufacturer noted that “I came to this meeting thinking that I would never have an LLIN technology. Now I find I am shopping among different options.” The presence of all the key companies involved in LLINs and African net production created a special and exciting dynamic. All in attendance received a status report on the major LLIN technologies and a picture of the public and commercial sector markets for ITNs and LLINs; and were presented with a new mechanized process that was now in the public domain for use by all. Just as important as the discussions held inside the meeting hall were the dozens of meetings that occurred outside that hall as the 29 companies explored opportunities for joint ventures for production and marketing. The NetMark technical team held confidential meetings with a number of companies seeking advice on how to adopt one of the LLIN technologies. Before the end of 2006, it will become clear that some major partnerships were formed at this Technical Meeting that will greatly increase the number of LLINs in the market and the ability of African companies to produce LLINs.

Organizers: This Technical Meeting was organized by the USAID NetMark Program with the assistance of Anovotek, Siamdutch, and Bayer. Financial support was provided by the USAID Regional Economic Development Services Office for East, Central, and Southern Africa (REDSO), USAID’s West Africa Regional Program (WARP) and USAID’s Bureau for Global Health. NetMark is implemented by the nonprofit Academy for Education Development (AED).

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Technical details on the LLIN treatment process developed by NetMark and its partners may be found at www.netmarkafrica.org	