EAST AFRICAN DENTAL AMALGAM PHASE DOWN PROJECT (EADAP)-KENYA, TANZANIA AND UGANDA

COUNTRY REPORT FOR PROJECT IMPLEMENTATION ACTIVITIES IN UGANDA

FEBRUARY, 2014

UGANDA

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Executive Summary

This report presents the results of project implementation activities in Uganda of the project -"East African Dental Amalgam Phase down Project (EADAP)" that was also implemented in Kenya and Tanzania. The principal objective of the project was to explore essential conditions for a phase down approach in the use of dental amalgam by emphasizing "phasing down" instead of "phasing out" dental amalgam. Hence the project focused on dental amalgam in consideration of its potential for environmental release during trade and supply; its environmental release from dental clinics, and its environmentally sound management as waste. The project also considered strengthening oral health promotion and disease prevention through awareness raising.

In Uganda, the Project was implemented by the National Environment Management Authority (NEMA) in collaboration with the Ministry of Health and Uganda Dental Association (UDA). The following project activities were implemented: training of trainer's; trade and waste survey; training oral health personnel/clinic personnel; awareness creation among stakeholders (communities' dentists, technicians, trainers, and policy makers); identification and collaboration with the waste management company; printing and dissemination of dental awareness materials, and supervision of day-to-day project work.

The project activities were implemented through: selection of two National Project Coordinators; selection of three demonstration clinics-one University/teaching hospital, one private clinic and one private-not for profit

hospital; use of questionnaires to collect and validate data on dental amalgam trade data and waste management practices; stakeholder meetings/workshops; training of trainers; presentation of results at the results workshop highlighting findings, challenges and project implementation.

The findings of the project indicate that dental amalgam is still widely used in Uganda though extractions remain the most common procedure; all restorative materials are imported; and there was no standard practice with regard to amalgam and other restorative materials handling waste. In addition, it was found out that there was low acceptability by the dentists to phase-down use of dental amalgam; difficulty in getting various stakeholders to work together because of the cross-cutting nature of the problem of mercury in products and dental amalgam use; non-availability of separators locally; and inadequate project funding.

Finally, the lessons learned include: existence of new technologies of mixing dental amalgam to reduce exposure to mercury; need for further studies/research on other technologies for separation of amalgam other than the use of separators; inserting a clause in the practicing licenses issued to clinics requiring them to reduce the use of dental amalgam; undertake further research in the use of alternatives to dental amalgam and dissemination of medical information on their advantages and disadvantages ; and continue awareness raising and address the challenges of waste management through development of guidelines for handling waste containing mercury.

1. 0 Background/Introduction/Situation Analysis

Dental amalgam, a restorative material that contains mercury, has been widely used for some 150 years, and yet mercury is a notorious heavy metal known to be a potent poison of the nervous system since Greek and Roman times. Mercury has been found to have both health and environmental impacts, although it found use in a wide range of products including dental amalgam. Documented evidence available indicates that dental amalgam use represents more than one-fourth of total global mercury consumption in products or approximately 8% of global mercury consumption. In 2007, an estimated 250-350 metric tons of mercury were used globally in this sector.

In January, 2013 governments took a major step forward to begin lifting the health and environmental impacts of mercury, including its most toxic forms, by agreeing to the text of the Minamata Convention on Mercury which among others, covers emissions and releases. In October 2013 at a Diplomatic Conference held in Minamata and Kumamoto, Japan, the "Minamata Convention on Mercury" was adopted by governments and opened for signature. In the past decades, the awareness and recognition of the environmental implications of mercury have increased and development and use of alternative materials for dental restoration has become increasingly important. One of the measures to reduce the health and environmental impacts of mercury was that Governments through the United Nations Environment Programme (UNEP) Governing Council mandated The Global Mercury Partnership to be a vehicle for immediate action to

reduce mercury pollution. Dental amalgam is one category of mercury-added products that is being addressed by the Global Mercury Partnership.

In 2009, a World Health Organisation (WHO) meeting in collaboration with UNEP was held in Geneva to highlight the future use of materials for dental restoration, and it was concluded that strengthening of disease prevention and health promotion was the most relevant approach to reduce the need for restorative care and that it may be prudent to consider "phasing down" instead of "phasing out" dental amalgam at this stage. Borne out of this concern, the "Norway Overseas Development Assistance (ODA) 2012 project" designed a project to deal with those stages of the life-cycle of dental amalgam pertinent to UNEP's mandate, in particular its potential for environmental release during trade and supply, it's environmental release from dental clinics, and its environmentally sound management as waste. It was also agreed that the WHO would endeavour to strengthen oral health promotion and disease prevention through awareness raising.

As a pilot project, the three East African countries of Kenya, Tanzania and Uganda were selected to conduct the "East African Dental Amalgam Phase down Project (EADAP)". The project was funded by the Norwegian Overseas Development Assistance (ODA) 2012. UNEP Chemicals and WHO Oral Health Programme jointly coordinated the project implementation in collaboration with the World Dental Federation (FDI), International Association of Dental Manufactures (IDM-Australia), and the NGO iLima.

In Uganda the project was implemented by the National Environment Management Authority (NEMA) in collaboration with the Ministry of Health and the Uganda Dental Association (UDA).

The following activities were implemented:

(i) Training of trainer's workshop/meeting.

(ii) Trade and waste survey: validation of results of country dental amalgam trade data and waste management practices; and gathering of information about current dental amalgam management in dental clinics and local waste management systems.

(iii) Training oral health personnel/clinic personnel on dental amalgam waste management at the three demonstration sites (University/Dental School), Private Hospital (not for profit), and Private Hospital (for profit) on Best Management Practices (BMP) on dental amalgam waste.

(iv) Awareness creation among stakeholders (communities' dentists, technicians, trainers, and policy makers) on phase down of dental amalgam.

(v) Identification and collaboration with the waste management company.

(vi) Printing and dissemination of awareness materials.

(vii) Follow-up with the waste management company and conducting evaluation meetings with Ministry of Health, Uganda Dental Association and the Pilot Clinics.

(viii) Supervision of day-to-day work of the project.

2.0 Project Objectives

The principal objective of the project was to explore essential conditions for a phase down approach in the use of dental amalgam. This is one of the methods to be used to reduce the use of mercury-added products. The main objectives were to:

(i) Investigate the current supply and trade of dental amalgam and materials alternative to amalgam and make recommendations for future information systems.

(ii) Assess the current waste management practices in the three East African countries.

(iii) Create awareness of preventive dental care and encourage a switch to appropriate alternatives to dental amalgam, when clinically indicated, among dentists and patients.

(iv) Demonstrate environmentally sound management of dental restoration materials waste in selected dental facilities in the three countries.

3.0 Project Design/Methodology

In Uganda, the projects objectives where achieved through the following methodology:

(i) Selection of two National Project Coordinators (Mr. Alex K. Winyi from NEMA and Dr. Margaret Wandera from the UDA).

(ii) Selection of demonstration site dental clinics-three clinics were selected; one University/teaching hospital (Mulago Densitry Training

School), one private clinic (M/s Jubilee Dental Clinic) and one private-not for profit hospital (Mengo Hospital-founded by the Church of Uganda).

(iii) Use of questionnaires to collect and validate data on dental amalgam trade data and waste management practices.

(iv) Stakeholder meetings/workshops-used to sensitize and inform stakeholders about the project.

(v) Training of trainers to impact skills on selected Practitioners and Technicians to provide training to stakeholders and install amalgam separators at selected demonstration sites.

(vi) Results workshop to present the findings, challenges and project implementation in Dar-es-salaam, Tanzania.

4.0 Strategy/Activities Implemented

The following activities were implemented in Uganda.

(1) Training of trainer's workshop/meeting: This activity was implemented in March, 2013. Though the activity was implemented in Uganda, it was for stakeholders/participants from the three East African countries: Kenya, Tanzania and Uganda. It comprised of the Project Coordinators, Dentists, and Dental Technicians from the three countries.

(2) Trade and waste survey: validation of results of country dental amalgam trade data and waste management practices and gathering of information about

current dental amalgam management in dental clinics and local waste management systems (A **detailed report was sent to UNEP**)-**Annex 1 to this report**).

(5) Training oral health personnel/clinic personnel on dental amalgam waste management at the three demonstration sites (University/Dental School), Private Hospital (not for profit), and Private Hospital (for profit) on BMP on dental amalgam waste.

(4) Awareness creation meeting with stakeholders (communities' dentists, technician, trainers, and policy makers) on phase down of dental amalgam (**details are contained in the mid-term report sent to UNEP - Annex 2 to this report**).

(5) Demonstration of best practices in the environmentally sound management of dental amalgam waste: source reduction, use of dental amalgam separators, collection of waste, with the pilot clinics and coordination with the waste management company.

(6) Printing of dental awareness materials developed by the WHO, FDI, and IDM.

(7) Supervision of day-to-day work of the project and project implementation at the national level, including monitoring and performance of the amalgam separators at the three project demonstration sites.

(8) Presentation of the results project implementation in Uganda in Dar-es-salaam, Tanzania in November, 2013.

5.0 Outputs/ Results of Project Implementation

The followings outputs/results were achieved though implementation of project activities.

5.1 Training of Trainers (ToT) Training

This was a two days Training of Trainers (ToT) Workshop funded by FDI and organized in collaboration with UNEP, WHO and IDM.

It was a capacity building training focusing on dental amalgam best management practices, prevention and alternative materials. The Mode of training was by lectures and practical demonstration for dental clinicals on location. Trainers were drawn from the collaborating institutions - UNEP, WHO, FDI and IDM - while the trainees were two dental surgeons and one dental technician from each of the three East African countries. In Uganda, three trainers (two dental surgeons and one technician) benefitted from this training. These trainees were tasked with continuing the training to the stakeholders in their respective countries for the duration of the project.

5.2 Validation of Results of Country Dental Amalgam Trade Data and Waste Management Practices

The validation study was conducted to compare findings of cross-sectional survey conducted in November 2012, online; in the three East African countries of Kenya, Tanzania and Uganda, with regard to:

- Current practice of amalgam use, other dental restorative materials and their waste management;

- Estimated environmental cost of externalities/avoidance costs with non amalgam use; and
- Dental amalgam trade flow.

The findings were in consonance with the earlier survey that:

- Amalgam is still widely used in Uganda though extractions remain the most common procedure;
- All restorative materials are imported; and

There was no standard practice with regard to amalgam and other restorative materials handling waste.

The **study limitations were that:** (i) the study was only conducted in the capital city; and (ii) some clinics import the dental amalgam directly for their use.

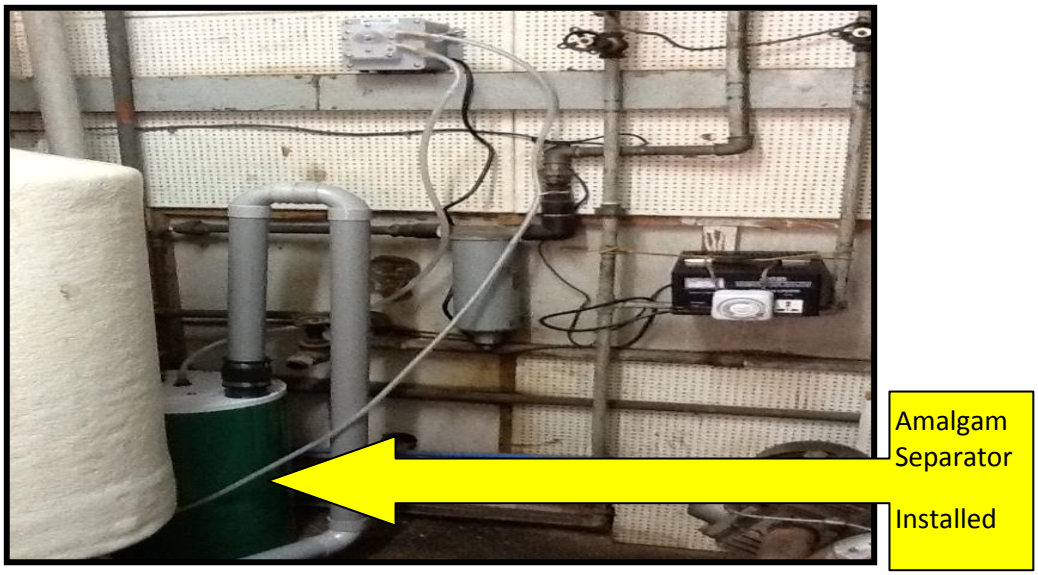
5.3 Three demonstration dental health clinics selected based on criteria set by the IDM

Three pilot hospitals/clinics of Mulago Dentistry Training School, Mengo Hospital and Jubilee Dental Clinic, were selected and separators installed as follows:

5.3.1 Mulago Dentistry Training School

The DNRA BU10-30 Amalgam separator was installed to the wet suction system. Piping connections were done, and a run test of this suction system after installation was also done.

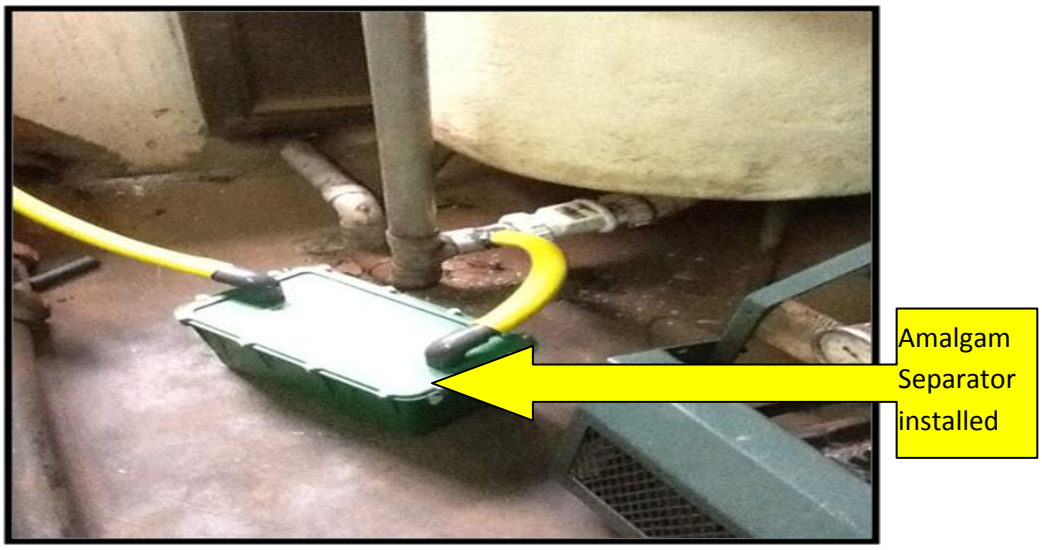
Figure 1: Amalgam Separator installed at the School



5.3.2 Mengo Hospital-Dental Department

A small Amalgam separator (green) of 9kgs was installed to the wet suction system. Piping connections to the drainage and a run test of the suction system after installation were done. The system functioned well.

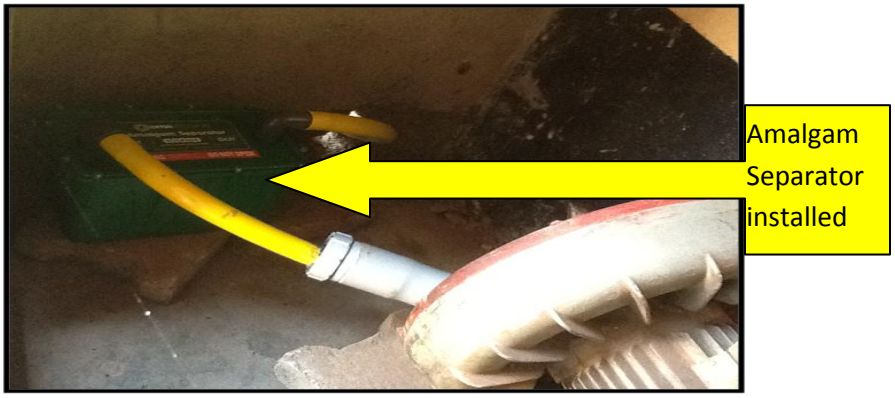
Figure2: Amalgam Separator installed at the clinic



5.3.3 Jubilee Dental Clinic

A small Amalgam separator (green) of 9 Kgs connected to the dry vacuum suction system was installed. It involved installation of piping connections to the drainage and a run test of the suction system after the installation**.**

Figure 3: Amalgam Separator installed at the clinic



5.4 Training of Oral Health Personnel/Clinic Personnel on Dental Amalgam Waste Management

After the installation of the Amalgam Separators at the three demonstration sites, the trainings were conducted as shown on the following dates:

1. Jubilee Dental Clinic – 20th June 2013,
2. Mengo Dental Clinic – 12th July 2013, and
3. Mulago Public Health Dental Officers School - 29th July, 2013.

At the clinics, all dental surgeons, dental officers, administrative staff, and chair-side assistants participated in the trainings.

Presentations were conducted and in summary they covered the following topics: Introduction and project overview; dangers of mercury, handling of amalgam and

alternatives restorations; waste management and amalgam separators; and environmentally sound disposal of the waste.

In addition, the demonstration clinics received the equipment (amalgamator and light cure machine) as well as some restorative materials that were donated for the project. Copies of the awareness literature for patients, dentists, and the community were provided to the clinic.

Figure 4: Training at Mengo Dental Clinic

5.5 Creating Awareness among Stakeholders (Communities, Dentists, Technician, Trainers and Policy Makers) on Phase Down of Dental Amalgam

The training mainly focused on stakeholders involved in the use and handling of mercury, directly and indirectly as indicated above. The main topics handled included: Mercury management in Uganda - overview; 'Promoting the phase down of dental amalgam - a case of three East African countries'; 'Objectives of the project and operating details'; 'Status of project implementation in Uganda'; 'Dental amalgam, use, impact and why the phase down?'; and 'Environmentally Sound Management of Mercury Wastes, and Best Management Practices for Dental Amalgam Wastes'.

5.6 Printing and dissemination of dental awareness materials developed by the WHO, World Dental Federation (FDI), and International Association of Dental Manufacturers (IDM) to the dental health sector staff (dentists, dental aides, and other dental personnel in the clinics).

Posters and flyers were printed and distributed to provide information to patients, dentists, Ministry of Health (Chief Dental Officers) and National Dental Associations. They have also been provided to the three demonstrations clinics and other stakeholders/agencies, including, among others Ministry of Water and Environment, National Environment Management Authority. In total, 6800 flyers and 1800 posters were printed.

6.0 Challenges and Opportunities

6.1 Challenges

(i) Low acceptability by the dentists on the phase down use of dental amalgam.

(ii) Difficulty in getting various stakeholders to work together because of the cross-cutting nature of the problem of mercury in products and dental amalgam use, for example traders/importers, dental health sector, regulators and the public.

(iii) Non-availability of separators locally: Blockage/filling up of the separators requires installation of new separators as quickly as possible: however, these are not available locally and yet there was no funding provided for this.

(iv) Inadequate funding: The approved budget for the project was not sufficient relative to the scope of work to be done in relation to the sustainability of the project.

(v) Awareness raising and sound management of mercury waste were/are still a challenge for this project and the future phase-down on the use of dental amalgam, beyond the life of this project.

6.2 Opportunities

The availability and support of these institutions contributed to the success of the project.

(i) **Ministries –**Ministry of Water and Environment, Ministry of Trade, Industrial and Cooperatives and Ministry of Health among others.

(ii) **Government agencies-NEMA, Uganda Revenue Authority (URA), Uganda National Bureau of Standards (UNBS), etc.:** project coordination and secretariat support by NEMA; participation by the other agencies in project activities.

(iii) **Civil Society Organisation and Non Governmental Organisations (NGOs).**

(iv) **Uganda Dental Association (UDA):** Willingness and availability to provide support in terms of co-coordination of project activities and technical backstopping.

(v) **Various pieces of legislation (e.g. the National Environment Act, Cap. 153, the National Environment (Waste Management Regulations), 1999), etc:**

These regulations provide for management of hazards waste**,** hence providing a framework within which to handle mercury issues.

(vi) **Political will/leadership:** Willingness and availability of political leadership of the Ministry of Water to participate in stakeholders meetings.

(vi) **Availability of Dental Surgeons and Technicians:** These resource persons have been very useful during the installation of the separators and subsequent training of staff of the three pilot clinics.

7.0 Lessons learned

(i) Conventional ways of mixing the amalgam have evolved over time and new technologies of mixing to reduce exposure to mercury have been introduced. These need to be studied to find out how they can help to reduce the impacts of mercury exposure.

(ii) Medical waste containing mercury has been handled like any other medical waste through disposal by incineration and other methods like landfilling. This is not an environmentally sound waste management for mercury. It was recommended that proper collections, segregation, storage and final disposal of the waste should take place in the landfill after mercury waste has been stabilsed.

(iii) There is need to undertake further studies/research on other technologies for separation of amalgam other than the use of separators because they are not easily affordable.

(iv) One way of ensuring that the cause of phasing down dental amalgam is achieved, could be through inserting a clause in the practicing licenses issued to clinics before operation, requiring them to reduce the use of dental amalgam. The regulator - Ministry of Health and UDA - could assist in this policy area.

(v) Further research needs to be undertaken in the use of alternatives to dental amalgam and medical information on the advantages and disadvantages should be disseminated to all the stakeholders.

(vi) There is need to continue with awareness raising and to put in place measures to address waste management through development of guidelines for handling waste containing mercury, and continued consultation with the Ministry of Health and the NEMA using the existing pieces of legislations and regulations to ensure that these concerns are addressed.