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Disposal of Expired ARVs in Nigeria

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BACKGROUND

- Nigeria HIV prevalence is 3.4% (NARHS 2007).
Approx 5 million people living with HIV.
- As at the last quarter of 2010, approximately, 400,000 men, women and children in Nigeria were on treatment, up from 5,000 when the PEPFAR program (2004) commenced in Nigeria.
- In Nigeria, the United States through the PEPFAR program has committed \$2 billion since 2004 to address HIV/AIDS.



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BACKGROUND CONTD.

- PEPFAR has contributed over 80% to this increase in service with over 2 million people having to be tested and counselled.
- Large quantities of commodities (Pharmaceuticals, test kits, laboratory reagents, etc.) procured by the Government of Nigeria, PEPFAR program, Global Funds, Clinton foundation and other donors.
- With such scale up in programming, it is expected that a certain percentage of commodities will be wasted as a natural course of logistics.



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WHY ARVS AND TEST KITS EXPIRED?

- **Product Selection**
 - ✓ multiple testing algorithms
 - ✓ shift in formulation used for pediatrics treatment from liquids to solids (FDCs)
 - ✓ change in treatment protocol for both adults and pediatrics especially on Stavudine based regimen
- **Quantification**
 - ✓ multiple forecasts and multiple forecasting methods,
 - ✓ short-term forecasts, without long range national plans
 - ✓ paucity of data quality (morbidity, patients, logistics service)
- **Procurement**
 - ✓ multiple procurement mechanisms
 - ✓ procurement schedules, time frames
 - ✓ uncoordinated procurement mechanisms coupled with shifting targets for rapid scale up
- **Coordination**
 - ✓ incomplete or non-existent coordinating mechanisms which were not focused on supply chain
 - ✓ facilities were receiving their commodities from parallel supply chains
- **Inventory management and Distribution**
 - ✓ inadequate central storage facilities in public sector
 - ✓ weak public sector distribution system
 - ✓ lack of a coordinated and comprehensive functional national reporting system/LMIS



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INADEQUATE DISPOSAL METHOD





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MANAGEMENT OF EXPIRED COMMODITIES - LABELING

- Data collection tools developed to capture the quantity of commodities, formulation, pack size, date of expiry and batch number.
- Data collection template designed for labelling and packaging (in cartons) of the expired commodities.

IP NAME:	APIN/HARVARD
NAME OF DRUG:	LAMIVUDINE 150mg TABLETS
PACK SIZE:	60
QUANTITY:	192

IP NAME:	APIN/HARVARD
NAME OF TEST:	BUNDI KITS
NUMBER OF TESTS PER KIT:	25
BASIC UNIT:	1
QUANTITY:	114



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MANAGEMENT OF EXPIRED COMMODITIES

- Approval for the treatment and disposal process was obtained from Federal Ministry of Health, and the National Agency for Food Drug Administration and Control (NAFDAC).
- Use of a third party (registered) logistics company was selected as means of transporting the expired commodities to the treatment facility.





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THE TREATMENT PROCESS

- Commodities from 14 USG PEPFAR Partners, on arrival following a timetable, were inspected to ensure proper packaging, counted, weighed (a total of 6,999 cartons weighing 63,587.8kg) and stored in a lock up container.
- This process was monitored by representatives of the partners as a means of ensuring a complete trace of their environmental footprints from transportation through to storage, treatment and disposal.





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INCINERATION OF THE COMMODITIES





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MONITORING OF THE TREATMENT PROCESS BY NAFDAC





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RESULTS

		June 2010		July 2010	
S/No	PARAMETERS	FEPA Limits (mg/m ²)	RESULTS (mg/m ²)	FEPA Limits (mg/m ²)	RESULTS (mg/m ²)
1	SO ₄	0.05	0.003	0.05	0.0023
2	H ₂ S	0.008	0.002	0.008	0.0001
3.	NH ₃	0.20	0.018	0.20	0.004
4	NO ₂	0.085	0.010	0.085	0.002
5	CO	1.0	0.08	1.0	0.45
6	HCL	0.006	0.003	0.006	0.002
7	Hydrocarbon	2.0	0.000	2.0	0.000
8	Particulates	0.15	0.05	0.15	0.006

*Results are from tests conducted at the BOSKEL Thermal factory in Portharcourt, River State, Nigeria.



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- The 7 week exercise was monitored by representatives of two IPs, AIDSTAR-One (Injection safety and healthcare waste management project), SCMS (Supply chain management systems) on behalf of the USG Mission in Nigeria and NAFDAC.
- Temperature readings taken daily at three stages throughout the process; (at start up, during the process and towards shut down) ranging between 700°C-1150°C.
- Flue gas samples were taken three times during the incineration period.



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CHALLENGES

- The incineration exercise was projected to last for 3 weeks based on the size of the incinerator (500kg/hr) and quantity of waste (63,587.8kg), but the following factors contributed to the delay:
 - combustion rate and high thermal properties of the various pharmaceuticals being incinerated led to breakdowns.
 - Increase in the quantity of commodities estimated from 50 tons to 63 tons.
 - Plant in the Niger delta part of Nigeria where there is frequent rain.



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MAINTENANCE WORK ON THE INCINERATOR





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RECOMMENDATIONS

- The use of registered 3PL(third party logistics) in the long distance transport of hazardous wastes was a contributing factor to the success of the waste drive.
- This exercise has shown that high temperature incineration with quenchers and scrubbers should be used to treat expired pharmaceutical commodities and other hazardous healthcare waste.
- It is recommended that most high profile campaigns (polio immunization, measles and HIV programs) should factor in HCWM in their program while planning and budgeting and not as an ad-hoc activity.
- Adequate arrangement should be made to ensure reverse logistics is put in place from the planning stage of a program when commodity procurement is being considered.
- The final disposal option chosen for the resultant ash (fixation) is environmentally friendly in the absence of a sanitary landfill.



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CONCLUSION

- Host governments backing and commitment is integral to facilitate the development and implementation of health care waste management systems in developing countries.
- These systems once in place are able to cope with wastes in smaller quantities and much closer to the point of generation.



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FINAL PRODUCT





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