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Ministry of Health of Uzbekistan
Central Project Implementation Bureau (CPIB)

Project "Health-3"
And Additional Financing Phase

Framework Environmental Management Plan

Prepared for:

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ABBREVIATION

EA	Environmental Assessment
EMC	Emergency Medical Care
EMP	Environmental Management Plan
CPIB	Central Project Implementation Bureau
DCM	Decree of Cabinet of Ministries of Republic of Uzbekistan
FEMP	Framework of Environmental Management Plan
Goskompriroda	State Nature Protection Committee of Republic of Uzbekistan
GOU	Government of Uzbekistan
IBRD	International Bank for Reconstruction and Development
MOH	Ministry of Health of Republic of Uzbekistan
NCD	Non-Communicable Diseases
NGO	Nongovernmental Organization
SanPiN	Sanitarian Rules and Norms
SES	Sanitarian Epidemiological Station
RCM	Resolution of Cabinet of Ministers
RCSES	Republican Center of Sanitarian Epidemiological Supervision
RMU	Rayon Medical Union
RUz	Republic of Uzbekistan
WB	World Bank
WHO	World Health Organization

INTRODUCTION

Under the State Healthcare Reform Program, Republic of Uzbekistan (RUz) has undergone restructuring of Primary Health care by improving infrastructure and equipment, developing medical personnel, introducing new management and financing reforms that promote management innovations. The World Bank (WB) provided support to reforming primary of health care (PHC) system. The organization and providing of health care services in Uzbekistan are implementing based on such administrative units as rayons and provinces. District level and cities level inside of health organizations are responsible for providing primary and secondary level health care services. There are 200 health care facilities at the rayon level, of which 171 from them are located in rural areas and 29 located in urban areas. They provide services to 28 million population of country. With the support of WB financed Health I and Health II projects the Government of Uzbekistan (GOU) improved infrastructure and provided equipment in most of rural PHC facilities. A nationwide reforming of Primary Health care was conducted in rural area; it was based on PHC facilities' per capita financing. The medical personnel from the reformed PHC facilities took extensive retraining on general practice/family medicine.

Within the framework of cooperation strategy between the GoU and the WB, it is envisaged to direct intensive investment to inpatient health care services quality improvement at the rayon level and for this purpose there is being developed "Health-3" project. The total project cost is estimated at US$ 101 million equivalent, of which US$93.0 million in IDA Credit. Government will be responsible for all local taxes (estimated at US$ 8.0 million equivalent) associated to the IDA-financed expenditures.

The intended investment envisages solution of problems on medical services quality improvement and population accessibility to inexpensive specialty care at the rayon level. In this respect, the priority issues of project preparation stage will be the hospital care strategic conceptualization, including health care manpower training. Currently the Ministry of Health (MOH) has developed the investment program for capital construction, reconstruction and rehabilitation of rural hospitals for 2010-2014. The project will support the State Welfare Improvement Strategy 2008-2010 of RUz.

1. EXECUTIVE SUMMARY

Under Project "Health-3" the Framework of Environmental Management Plan (FEMP) was developed to provide guidelines on EMPs preparation for all project's objects.

The document consists of the following chapters:

- Project description,
- Institutional Capacity and Arrangements
- Roles & Responsibilities
- Step-by-Step Procedure
- Description of Simplified Simplistic EMP
- Waste Management for Medical Equipment to be Delivered and Installed
- Medical Waste Management Plan

This document presents summary of project information with description of its components and goals, description of WB and Uzbekistan Legislation related to conducting and approval procedure of environmental assessment (EA).

The Framework of EMP (FEMP) was developed based on reviewed impacts on environment. FEMP includes recommended mitigation measures for all stages of project implementation – pre-construction, construction and operation. Recommended measures comply with WB Safeguards

Policy and local environmental legislation. Roles and responsibilities of institutions involved in the process of developing, implementation EMP and further monitoring of environmental norms related with project were defined. The project is not expected to have significant or irreversible negative environmental impacts neither at the construction, nor at the operation phases. Impacts of the construction phase will be typical for all medium scale rehabilitation/construction activities and limited to the project sites which are State owned land plots with user rights already granted to the medical institutions currently operating in these plots. Impacts of the operation phase will be typical for operating medical institutions.

The medical waste management practices in hospitals were reviewed and issues related to medical waste management were analyzed. Based on finding and literature review best available and practicable practices recommendations on wastes disposal were developed. It was mentioned that most acceptable and secure practice for current situation in Uzbekistan is burning wastes in incinerators.

The Check List and Guidelines for Ecological Planning during construction and rehabilitation activity for EMP in the form of checklist are presented in Attachment.

During FEMP preparation consultant held a number of meetings with representatives of State Nature Protection Committee, Republican Center of State Epidemiological Supervision (RSCES), hospitals in Tashkent city, international consultants involved in Project "Health-3" preparation.

2. PROJECT DESCRIPTION

2.1. Project components

The overall objective is improving health system performance in delivery of efficient and quality essential health services and its ability to address the pending epidemic of chronic non-communicable diseases. The specific objectives are: (i) improving quality of medical services in rayon medical unions; (ii) ensuring financial sustainability of upgraded rayon medical unions; and (iii) supporting health promotion and prevention programs targeting NCDs and improving the epidemiological surveillance of communicable diseases through piloting reorganization of the public health laboratory network.

Preliminary design of the "Health-3" project covers 4 components, which include following activities[1]:

Component 1: Improving Health Service Delivery (US$84.04 million equivalent). This component is aimed at improving the quality of care within selected priority clinical conditions responsible for the highest burden of diseases according to quality management principles. This involves the use of comprehensive clinical and public health approaches aimed at reducing the impact of these conditions on the health status of the population while improving outcomes.

Sub-component 1.1: Hospital Services Improvement

This sub-component aims at improving quality of medical services in rayon medical unions and access to specialized inpatient and consultative outpatient care in rayon hospitals through: (i) the provision of medical equipment for central rayon hospitals; (ii) the development and implementation of systematized medical equipment maintenance for these hospitals; (iii) the development, review and implementation of the new clinical standards and protocols of the MoH; (iv) the functional planning of health service delivery for participating RMUs/CMUs, (v) the development of health service referral guidelines and mechanisms. The Government will finance under parallel financing (i)

[1] http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187511&entityID=000262044_20100317164934&cid=3001_177

upgrading of buildings and fixtures of the central rayon hospitals and laboratory facilities; and (ii) recurrent operating costs. The estimates amount of Government contribution is UDS 300 million.

Sub-component 1.2: Primary Health Care Development

This sub-component aims at providing further support to general practice-based Primary Health Care established and supported under the IDA-financed Health I and II projects. It will finance: (i) the expansion of urban primary care model through investment in medical personnel and equipment in urban PHC facilities (all policlinics) in three oblasts: Fergana, Syrdarya and Samarkand; (ii) the extension of training/retraining programs to an additional number of PHC providers from rural Primary Health Care Clinics (SVPs, *Selski Vratch Punckt*) and reformed polyclinics; (iii) establishment of well designed and sustainable equipment maintenance system for PHC facilities developed through Health 2 project; and (iv) provision of energy security technologies to the selected PHC facilities (SVPs and polyclinics).

Sub-component 1.3: Human Resource Quality Enhancement

The key aim of the component is to strengthen the quality of care at primary and secondary health care levels through improvement of the clinical skills and competence of health personnel. This includes: (i) completion of GP re-training for rural health facilities and urban polyclinics; (ii) training of RMU and CMU pediatric and internal medicine doctors and nurses in new Clinical Practice Guidelines (CPGs); (iii) training of trainers in clinical case management; (iii) the development and introduction of up to date relevant and practical guidelines/treatment standards for RMU/CMU internal medicine and pediatrics staff.

Component 2: Strengthening Health Financing and Management Reforms (US$3.14 million Equivalent)

This component aims at: (i) solidifying and institutionalizing per capita based rural Primary Health Care Financing and management reforms that were rolled out nationwide within Health 2, including changes in oblast fiscal allocations; and introducing results-based provider payment system in the hospitals and PHC facilities. It will finance : (i) the development of appropriate regulatory measures to ensure lead role of the oblast/rayon health organs in health budget planning; (ii) staff training in financial management of reformed PHC and hospital facilities; (iii) design and implementation of performance-based incentive scheme for the reformed PHC facilities; (iv) implementation and evaluation of a pilot case-based payment system for the multi-profile hospitals in one oblast: Fergana; (v) the review of the current system of user fee exemptions and a study on the causes for the low utilization of hospital services by middle aged and older population.

Component 3: Improving Public Health Service Delivery (US$2.76 million equivalent)
This component is aimed at improving selected essential public health functions related mainly to NCDs and also for which there is strong counterpart buy-in and support. The proposed activities could include:

Sub-component 3.1: Health Promotion and NCDs Prevention. This sub-component would build on current efforts to improve health promotion. Specifically it would support the development and implementation of a comprehensive national level Health Promotion program focused on the promotion of healthy lifestyles and prevention of NCDs.

Sub-component 3.2: Strengthening Health Surveillance Systems. The sub-component would encompass the strengthening of surveillance systems and of the capacity of the Institute of Health to use data for policy making and program planning, and for monitoring NCDs.

Component 4: Project Management (US$3.84 million equivalent)

This component would finance project's administrative and fiduciary requirements such as project coordination, monitoring, evaluation, procurement and financial reporting.

2.2. Iinformation on medical equipment to be delivered and installed

Under the Project "Health-3" it is being designed Master Plan for conducting rehabilitation works in hospitals to improve their operation and their ability to adapt to new medical technologies, communication system improvement and enhance of power efficiency. The problem of handling with medical wastes is planned to be considered. In the framework of WB funds it is planned to procure equipments for diagnostic centers (X-ray cabinets, electrocardiograph, and ultrasonic scanning devices), and for laboratories (incinerators).

2.3. Waste Management Practice in Uzbekistan

In Uzbekistan, the Rules of waste management is regulated by Law of the RUz "On Wastes" (2000), where stated the agencies involved into the process of waste management, their authorities, obligations, as well as wastes category and by number of regulatory documents (Sanitary norms and regulations (SNR), Regulation documents (RD)) determining procedure of waste management and their classification. Also the GOU has initiated a new national program to address the management of wastes, under which it prepared a National Waste Management Strategy and identified an associated action plan adopted as government policy. It covers all forms of waste—from municipal to industrial, including hazardous substances—and includes options for source reduction/ minimization, collection, storage, treatment and disposal. The action plan will emphasize not only technical solutions but also a range of policy measures focused on identifying least-cost approaches to waste management, including the use of economic incentives.

Medical Wastes Management Plan includes designed "Instruction on medical waste disposal" (Appendix No.12 to the Health Ministry's Order No.600 issued on December 29, 2007), "Sanitary norms and regulations for wastes collecting, storing and utilizing in medical and preventive treatment institutions" – No.0149-04 issued on 12.05.04. Classifications of medical and hospital wastes are stipulated in the instruction, and according to their classification it is given the procedure of their utilization – instillation, burning, discharge into centralized sewerage system and treatment in special factories (plastic and paper wastes). However, the present practice of medic wastes treatment does not meet environment requirements and besides it may be hazardous for population health. Consequently, not all hospitals equipped with solid wastes burning facilities with proper technical performance. Existing outdated wastes burning muffle furnaces and equipments do not meet hygienic and environment standards. Exception is several hospitals and research centers in different provinces in Uzbekistan where there were installed modern incinerators[2] within the frameworks of International Loan. Consequently, as there are lack of waste burning equipments, solid medical wastes either buried or wasted together with garbage. Before being utilized to the centralized sewage system, the liquid wastes are to be chlorinated (according to the above mentioned standards). However, due to the lack of proper control and financial difficulties, these wastes are not always disinfected and they are delivered to the sewerage system. After the practice of medical wastes management in Uzbekistan had been reviewed, it was ascertained the necessity in development and adaptation of efficient medical wastes management system, including minimization of wastes generation, seperative collection, the use of modern environmentally sound technologies and control for the process of their utilization. Due

[2] WB Project E1681 " Uzbekistan - Avian Influenza Control and Human Preparedness and Response Project"
http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&theSitePK=523679&entityID=000011823_20070719172151&searchMenuPK=64187283&theSitePK=523679

to the lack of proper control and equipments needed for safety medical wastes utilization, there are great risks first of all for the people, working directly with medical wastes.

3. INSTITUTIONAL CAPACITY AND ARRANGEMENTS

The Ministry of Health (MOH) of the Republic of Uzbekistan is core agency of State Health Management and it is under the Cabinet of Misters of the RUz.

Implementation of "Health – 3" Project will be made by Ministry of Health via Central Project Implementation Bureau (CPIB). For approaching the objectives, the CPIB will conduct bidding for selecting local and international consultants. It will include: preparation bidding documents for rehabilitation works and procurement of equipments according to the consultants' recommendation; construction works control in accordance with developed specifications (including EMP) in cooperation with representatives of local Hokimiyats; organization and conducting training programs for medical and technical personnel development for mastering new equipments and providing their maintenance.

The Local (district) Hokimiyats, which acts both as a client and a customer, will be obligated to conduct biddings for construction works with the participation of CPIB experts.

4. ROLES & RESPONSIBILITIES

It is recommended to establish position of environmental-engineer (staff unit) under CPIB. The environmental-engineer will be responsible for:

- development of EMP for each invented objects;
- tracking of EMP involvement to the bidding documentation for conduction construction works;
- providing the further monitoring on EMP implementation during construction works;
- preparing six-monthly report on project implementation;
- assisting in adaptation of medical wastes management system, developed together with International environment-engineer.

For installing the incinerators, the managers of hospitals will be responsible for preparing EA as well as its approval in accordance with Environmental Legislation of the RUz, by involving appropriate project organizations.

Contractor, who implements construction works, should ensure EMP execution, which will be the part of the TOR. After construction works and medical equipments being completed and installed, the hospital administration will be responsible for equipment operation and wastes treatment. External monitoring on medical wastes treatment will be conducted on established schedule by representatives of District Sanitary and Epidemiological Station (SES), District MOH and District Committees for Nature Protection.

5. STEP-BY-STEP PROCEDURE

For indicating negative impact on environment and development measures for its mitigation, it is required to conduct environmental assessment (EA) on the stage of Project designing in accordance with WB policy for environmental safeguard (OP/BP 4.01) and the Environmental Legislation of the RUz. In accordance with WB regulations on OP 4.01, the project facilities belonging to Category B that requires preparation of EMP for each individual facilities, as far as rehabilitating works will be implemented within the existing hospital territory and there no land acquisition for construction is

provided. This framework is a guideline for development of EMP which responds to WB requirements on safeguard policy and designed in accordance with local environment law.

There are various national Laws and Decrees for environmental protection in Uzbekistan that is valid for this project, these are: "On Nature Protection" (1992), "On Water and Water Use" (1993), "On Atmospheric Air Protection" (1996), "On Wastes" (2002), "On Environment Expertise" (2000), Decree of the Cabinet of Ministers of the RUz (DCM RUz) "On adoption of the Decree on State Environment Expertise" (No.491, issued from 31.12.2001). The Head Department of State Environment Expertise (Glavgosexpertiza) is responsible for conducting environment expertise (EE), and it belongs to the State Nature Protection Committee (Goskomprirodi) of Uzbekistan. The Law of the RUz "On Nature Protection" (1992) says that the State Environment Expertise is mandatory measure for nature protection, that precedes business decision-making.

Without any new land allocation for construction works, in accordance with local legislation, rehabilitating works require no any local environment assessment within existing framework. However, as per Appendix No.1 DCM No.491, installation of new incinerators, as biological treatment technology of Class 2, requires development and submission of EA Project material to its agreement with Glavgosexpertiza under the Goskomprirodi (according to the procedure stipulated in this Decree).

Thereby, EMP for each hospital should be prepared by environment-engineer of CPIB in accordance to the WB policy for Safeguards and Local Environment Law, Contractor who conducts construction works in the field will be responsible for its implementation. EA for installation of new incinerators will be prepared by design institute which will develop feasibility study on rehabilitation/construction works. The CPIB environment-engineer will be responsible for monitoring on EMP implementation. The Environmental Management Checklist for Small Construction and Rehabilitation Activities will be used if installation of new equipments requires refurbishment of the existing buildings and construction of new small buildings., (see the template provided in Attachment 1).

6. ENVIRONMENT MANAGEMENT FRAMEWORK

6.1. General content of FEMP

116 hospitals were selected for the Project "Health-3" involvement during the project preparation. From it 81 hospitals locate in the regions which will be full covered by project and 35 partly:

#	Province	Project involved hospitals
1	Andijan	14
2	Fergana	15
3	Namangan	11
4	Kashkadarya	13
5	Samarqand	14
6	Karakalpakstan	14
7	Bukhara	6
8	Jizzah	4
9	Navoi	4
10	Syrdarya	4
11	Surhandarya	4
12	Khorezm	6
13	Tashkent	5

The project is designed for implementation over the period of 5 years. The project will support, rehabilitation work and equipping for selected hospitals. The scope of rehabilitation work will be reviewed separately for each case, but all works are planning to conduct on the existing sites belonging to hospitals without land acquisition and increasing number of serviced patient. The project will also support procurement of medical waste management equipment and capacity building of healthcare workers in occupational safety practices, healthcare waste management steps from source to disposal and equipment usage and maintenance.

6.2.Potential Negative Environment Impact and Mitigation Measure

The project impact on environment during construction and operation hospitals stages was reviewed to develop EMP.

Potential impacts during rehabilitation/construction work:

Dust, exhaust, noise, increasing traffic. Dust and noise will generate during construction work, from vehicles used for construction and transport. During construction work increasing of traffic is expected. It could lead to inconveniences in resident's everyday life and local shopkeepers may experience reduced income as a result. Also increasing of traffic will lead to intensity on road particularly near to schools and kinder gardens.

Impact from Asbestos handling. Work with asbestos is possible during rehabilitation of hospitals. Asbestos had been used as constructional material for roofing.

During construction (rehabilitation) work asbestos will not be used. This will be specified in bidding documents for the Contractors.

Impact on soil

Soil contamination by fuel and lubricants are expected during construction works. It could lead to ground water contamination as well.

Impact on flora and fauna
Some trees growing on the hospital territory probably will be cut.

7. Procurement and Use of Medical Waste Equipment

Medical Waste from Healthcare services

Liquid and solid wastes will be generated during rehabilitation/construction works.

Inadequate waste handling can lead to soil, surface and ground water contamination. Solid wastes will be generated as removed concrete, bricks and other construction materials.

On operation stage the main impact of hospital will be through medical wastes. Medical waste management plan are presented in following sections.

On the delivering and installing medical equipment generation of wastes are expected as packing materials – carton, foam plastic, cellophane and various plastic fasteners. .

7.1.Type of medical wastes

In condition of lack of clear environmental procedures and standards on medical waste management, it exists the treat of contaminated diseases disposal with communal wastes which could be the reason of diseases spreading as well as soil and ground water contamination. As it was above mentioned, existing in the Republic waste disposal practice consists in burning some part of the wastes in mufflers or in local hand made burning facilities, burying, discharge to sewage network and disposal on the landfills. Inadequate handling and disposal of medical wastes may lead to transmission of HIV, hepatitis, meningitis and other infectious diseases through injuries caused by syringe needles contaminated by human blood. The groups most at risk are medical care workers, waste management operators and scavengers. The management of medical wastes requires diligence and care from a chain of people, starting with medical care staff, continuing through collection workers, and finishing with disposal operators. If any of these are lacking of knowledge and careless in their work, or allow scavengers or children access to the waste, the chain is broken and dangers of infection follow.

In according to "Medical waste disposal guideline" developed by Ministry of Health of RUz from October 29, 2007, wastes generated in medical facilities divided on contaminated (infected) and non-contaminated. Medical wastes generated in hospital included in this project could be separate on following groups:

- Infectious waste: Wastes which are suspected to contain pathogens (laboratory cultures, wastes from hospital isolation wards, tissues, materials or other belongings being directly in contact previously with infected patients, discharge);
- Pathologic waste: Human tissues or liquids (parts of body, blood and other body liquids)
- Sharps: Needles, infusion sets, scalpels, knifes, blades, broken glass
- Pharmaceutical waste: Wastes containing drugs, items being in contact or containing drugs (vials, ampoules, boxes)
- Chemical waste: Waste containing unused chemical reagents (lab reagents, X-ray film reagents, disinfecting expired or expiring liquids, solvents)
- High pressure containers: (gas bottles, cartridges, containers and aerosol cans)
- Heavy metals: Waste with a high content of heavy metals (batteries, broken thermometers, mercury thermometers

7.2.MITIGATION MEASURES TO DEAL WITH POTENTIAL NEGATIVE IMPACTS

During Construction:

No tree felling will be completed by the Contractor without the consent of the Environmental Engineer. Merchantable timber will be removed from site. Non-commercial species and smaller trees, shrubs,

branches and slash from the harvest will be cut and piled for disposal. After completing rehabilitation/construction works, replanting activity should be done on the place of removed plants. The slash could be disposed by different way: Grind or chip the slash into a mulch that can be used to amend topsoil for restoration and/or mixed with other spoil material within the disposal sites; or track-pack the slash with heavy machinery into the disposal pile in lifts small enough to ensure there is no loss of stability of the disposal pile as the material decomposes. No slash or debris will be disposed of within the riparian zone buffer strip (15 m from either bank of any watercourse). There will be no disposal of any material by burning

During construction work particularly demolition of building's parts special attention should be given to asbestos handling with using proper prevention equipment. The exposed workers and other personnel must ware protective gear. Asbestos containing waste should be handled and disposed off as prescribed by national legislation for managing hazardous material. The disposal of waste into surface waters or in the sites at their immediate vicinity is prohibited.

Generated liquid wastes (domestic, oil spills and paints) will be properly disposed. Domestic sewage will be disposal to central sewage network, for case lack sewage network – to septic tanks. Biotoilets could be installed in accordance with hygienic norms on the constructions sites on demand.

Spilled oil and fuel should be disposed in accordance with procedure described in previous section.

Existing building elements (walls, foundations, ground cement slabs etc.) should be carefully demolished and the debris should be sorted and removed. Used concrete blocks could be crushed and reused as gravel substitute in road and construction projects. All valuable materials (doors, windows sanitary fixtures etc.) should be carefully dismantled and transported to the storage area assigned for the purpose. Valuable materials should be recycled within the project activity or sold. Debris should be stored on the special sites on the hospital's territory, be covered and under agreement with hokimiyats regularly transporting for disposal on the rayon's landfills. Crashing the disposed concrete blocks for reuse as gravel substitute is suggested.

- All repair works and fueling operating of machinery should be done on specially equipped concrete sites to prevent oil occurring in soil;
- Implement measures mentioned in Attachment 2 to prevent oil spills;
- Provide adequate containment for fuel and oil products and ensure that all containers are properly labeled;
- Place oil sorbent sheets and/or containers under vehicles and equipment parked in high risk areas i.e., adjacent to watercourses) for longer than 2 hours or immediately under any vehicle or equipment that is leaking;
- Ensure that all fuel vehicles are parked only in designated areas on site with brakes applied and wheels chocked;
- Ensure that any employees and/or contractors fuelling equipment understand the environmental risks of the area and are equipped with adequate spill prevention and response measures;
- Locate emergency spill response kits in areas where oil and fuel filled equipment will be working and provide additional spill response materials in sufficient quantities on site to catch drips, minor leaks and spills;
- Appropriate fuel storage facilities will be constructed ensuring a minimum containment volume of 120% of the fluids being stored.

Managing Construction Waste:
It is recommended to sprinkle water on construction site, control of vehicle's speed limits (in accordance with Rules of Road) to decrease level of dust pollution. Soil, sand and other construction materials on transport vehicles shall be covered. Construction site should be fenced from hospital site in case hospital

operating during construction work. All heavy equipment and machinery shall be fitted every day in full compliance with the national (SNPC) and local regulations with regards to emissions. To address noise and vibration related issues, all work will be conducted within normal working hours (i.e. 07:00 – 19:00 hrs) unless otherwise appropriately authorized. To minimize impact from intensity on road using of bypass is recommended. In case if using of bypass is impossible residents should be informed about possible risks on roads.

Occupational Safety for Construction Workers:

The workers should use the special preventive measures (personal protection equipment) on asbestos handling and its proper disposal. These workers need training on asbestos handling. If asbestos is located on the project site, it shall be marked clearly as hazardous material. When possible the asbestos will be appropriately contained and sealed to minimize exposure. The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust. Asbestos will be handled and disposed by skilled & experienced professionals. If asbestos material is being stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site. The removed asbestos will not be reused

Managing Equipment Installation and Usage

Medical waste equipment will be procured as per the specifications recommended for specific types of waste. Installation will be as per design guidelines of the MOH and will be in compliance with all national environmental requirements. Incinerators to be procured must meet international standards for environmental pollution (Attachment 2 includes international guidelines for Incinerators for Medical Waste Management)

Healthcare workers designated to operate these equipment should be trained by equipment expert or manufacturer/distributor of the equipment. The hospitals which obtain new equipment must have maintenance contracts for an extended duration of time and must allocate adequate resources (financial, physical and manpower) for effective operations of the equipment.

Medical Waste Management

Generally Medical Waste Management Practice should be conducting in accordance with Law on Wastes of RUz (2002) and Sanitarian Norms and Rules mentioned in section 2.3. To specify and assure effective medical waste management practice the following activities are required:

Waste separation

To compliance with developed guideline and assurance environmental approach to waste management it is necessary to provide segregation of wastes: medical and household.

Medical wastes

Medical wastes generated in hospital could be separated on sharp (syringes and needles, infusion sets) and non-sharps. The sharp wastes should be disposal during medical manipulation or immediately after that. Every room should be equipped with special puncture-proof containers for collecting sharps, syringes and needles after medical manipulations. When containers are filled-up to 75% of its capacity inlet is closed and either transported to burning place or after disinfection spread concrete, alabaster or clay over and disposal at the landfill.

Alternatively, needles can be removed from the syringe immediately after use by a manual needle cutter, which cuts off the needle and the hub of the syringe (see equipment). After disinfection the syringe can be placed in the bin for household waste. The needle cutter technology is at present under investigation by the WHO. Liquid contaminated wastes (biological wastes) are discharged to sewage network.

Infected (contaminated) wastes are recommended to burn in incinerators with firing temperature no less than 1200 ^{o}C to prevent dioxins discharge which generated during organic matter burning with temperature lower 1200 ^{o} C. Also infected medical wastes (biomaterial) could be buried on the hospital's territory in the special fenced waste pits with cover. Every time after using pit should be cover with 10-15 sm soil layer, when pit will be filled-up covering soil layer shouldn't be less than 50-60 sm. But it has been noted that properly waste burning in the incinerators are more effective and safe method of medical waste disposal.

Alternatively infectious waste can be disinfected or autoclaved and then placed in a container for household waste.

Junior hospital stuff is responsible for medical wastes collection. Hospitals chief nurse supervises waste management in hospitals on compliance with requirements.

General wastes

General waste separated by organic, inorganic and recycled wastes should be collected in different special marked containers. Organic wastes (food debris) should be daily transporting from hospital territory. Inorganic household wastes should be collected in containers on sites with asphalt or concrete covering and transporting on landfills for further disposal. Wastes will collected from hospital territory regularly based on agreement between hospital administration and contractor waste disposal company under the local/municipal government (not less than two times per week).

Occupational Safety for Healthcare Workers:

The hospital management will ensure a meticulously planned sanitation system as this is of primary importance to avoid infections. Good occupational health and safety measures include:

- proper training
- personal protective clothing and equipment
- effective occupational health programmes including immunisation (against hepatitis B) and post exposure prophylaxis along with medical surveillance
- conveniently placed hand washing facilities**.**

Each hospital will develop a system for response to injuries that will include: a) immediate first aid measures; b) reporting of needle stick injuries; c) proper surveillance; d) adequate prophylactic treatment available within stipulated time.

An Infection Control Committee must be established in each hospital to review occupational safety issues, supervise and monitor implementation and ensure training and retraining of staff in good practices and also be responsible for good healthcare waste management.

Training program

Training courses on wastes management and related risks will be conducted for all involved in the project "Health-3" hospitals. Training will include occupational good practices and procedures for the segregation, treatment, disposal and management of medical wastes as well as emergency procedures in the event of accidental exposure (e.g. needle stick injury). Facility staff will also receive training on other aspects of environmental management Training on occupational safety and waste management will also be provided to laboratory technicians.

The training courses will be organized by the Ministry of Health in association with Central Bureau Project Implementation.

8. CONSULTATION

During project design and implementation, a consultation plan will be developed to include local communities and non-governmental organizations (NGOs) in the development of the project. The site-specific EMPs will be shared with NGOs and local communities. Environmental Engineer of CBPI will be responsible and reporting for conducting these consultations. Consultation activities will also include community and NGO participation in facility design, scheduling construction hours, traffic management, effects on local businesses, and establishing a system for the public to register complaints related to project activities. The plan should include an approach to public liaison so that NGOs and communities are engaged with the facilities throughout their operating life.

Communities adjacent to the proposed activities will be provided with an opportunity to request information about the proposed project and provide feedback during the project's progress. The contractor under CPBI Environmental Engineer guidance will develop a process for public consultation appropriate to the scale of the proposed activities.

9. MONITORING AND ACTION PLAN

Evironmental Construction Engineer hired by the CPIB will review, assess and supervise environmental aspects of all construction, including site-specific EMPs and Consultation activities. Site-specific reports will **be prepared by the consultant and provided to the CPIB.**
These reports will be compiled and reviewed annually by CPIB and also by the World Bank.

During Mid-term Review, CPIB will undertake an independent detailed survey of construction, installation of medical waste equipment and their operations. The review will also include operational and occupational practices within hospitals, from source to treatment and disposal.
A Training Plan for occupational safety medical waste management will be developed by CPIB for undertaking training in all RMUs and city hospitals. Training of equipment technicians and laboratory personnel will also be defined and monitored on an annual basis.

Sub project environmental screening table

Type of Category	Environmental Documentation Required	Applicable To:
I	1. Environmental Assessment (EA) prepared in accordance with WB Safeguard Policy with Environmental Management Plans (EMP) for each individual construction (sub project) 2. EA prepared in accordance with Law on Environmental Expertise of RUz approved by Goscompriroda	New buildings Installation of incinerators Installation of new medical waste equipment
II	Environmental Assessment (EA) with Environmental Management Plans (EMP) for each individual construction (sub project)	New buildings Installation of incinerators
III	Site-specific EMPs for each hospital in form of a checklist	Small extensions on existing buildings, small new construction, rehabilitation of existing buildings, and incinerators

Environmental Management and Monitoring Framework

Type of activity	Expected input	Mitigation measure	Type (Methodology) of Monitoring	Responsibility		
				Responsible agency	Time /\Frequency of Monitoring	Agency carrying out monitoring
1	2	3	4	5	6	7
CONSTRUCTION PHASE						
Site clean-up works	Dust and noise Contamination of water and soil	Fence off the construction site. Confine noise and vibration generating activities to the daytime. Notify neighbours or local community if work is going to occur outside of those hours. Water usage should be monitored Ensure drainage permissions are agreed. Accumulate polluted water in septic tanks and special sewage water collection pits. Once filled up, discharge into the operating sewerage network existing at all the sites. Minimize waste generation of waste. Avoid waste disposal in the areas at the immediate vicinity of surface water. Ensure appropriate resources for waste collection and transportation.	On-site inspection during the course of the whole construction process.	Contractor	Permanent monitoring for the whole period of construction After completion of clean-up.	CPIB Supervisor contractor Local government Design company (design company is responsible for authorship supervision during the entire rehabilitation/construction process)
Groundwork	Generation of dust	Water the site minimum twice	On-site inspection	Contractor	Permanent	CPIB

Type of activity	Expected input	Mitigation measure	Type (Methodology) of Monitoring	Responsibility		
				Responsible agency	Time /\Frequency of Monitoring	Agency carrying out monitoring
1	2	3	4	5	6	7
	Damage to the existing engineering systems Damage to the existing vegetation Damage to topsoil in affected areas around the buildings. Damage to cultural/historical monuments. Disposal of excavated waste at uncontrolled dumping sites	daily. Vehicle transporting bulk should be covered Cover the exiting vegetation with protective box-like grates. Removal of faded plants and re-planting. Remove and store top layer of soil in designed places, cover to prevent water flushing and after finishing replace it. Limit all works to the designated work sites. In case of chance find of historical/cultural artifacts in the course of earth works, immediately suspend activity on the site and resume works only upon receiving written permission from the client. Waste is disposed strictly in the area assigned by local government.	during the course of the whole construction process.		monitoring for the whole period of construction, After completion of recovery works.	Supervisor contractor Local government Design company
Building frame development	Potential damage caused by the falling objects or loads	Fence off safety zones at the time of the lifting machinery. Place blockers. Provide safety belts and	On-site periodical inspection Tracking safety of workers during frame development	Contractor	Periodic monitoring	CPIB Local government Design company

Type of activity	Expected input	Mitigation measure	Type (Methodology) of Monitoring	Responsibility		
				Responsible agency	Time /\Frequency of Monitoring	Agency carrying out monitoring
1	2	3	4	5	6	7
		helmets to the workers				
Demolition	Dust Generation of the construction waste/debris Damage to internal engineering systems	Dampen down dry areas; cover trucks transporting debris while traveling public highways; blacktop temporary roads to minimize dust. Carefully demolish existing elements of buildings; pile up debris in the designated storage areas and remove periodically to avoid accumulation of vast amounts of waste.	Visual observation. Control for the whole period of demolition works.	Contractar	The whole period of works	CPIB Supervisor contractor Local government Design company
Disposal of construction waste	Disposal of waste at uncontrolled dumping sites leading to soil and groundwater contamination	Minimize volumes of generated waste. Crashing the disposed concrete blocks for reuse as gravel substitute is suggested. Descend the construction waste in closed containers and transport in covered body trucks The demolition/construction waste is disposed strictly in the area assigned by local government. The disposal of waste into surface waters or in the sites at their immediate	Visual observation. Control for the whole period of demolition works	Contractor	The whole period of works	Local government

Type of activity	Expected input	Mitigation measure	Type (Methodology) of Monitoring	Responsibility		
				Responsible agency	Time /\Frequency of Monitoring	Agency carrying out monitoring
1	2	3	4	5	6	7
		vicinity is prohibited. Ensure wearing of protecting gear by workers handling asbestos containing waste; switch off the internal supply of water, gas and electricity prior to commencement of demolition.				
Building and renovation works	Accidental spillage of fuel, machine-oil, lubricants, etc Use of toxic materials	Work out accidental discharge preventing measures. Ensure construction machinery is well maintained with regular check-ups of possible sources (places) of discharge. Coordinate deliveries to avoid peak traffic periods; agree site access/exit points with client /subcontractors /suppliers. Make sure equipment is turned off when not in use. Select environmentally sound goods and services (described in Attachment 2 "Guidelines on Ecological Planning") as much as possible. Exclude usage of asbestos containing construction materials. Avoid the use of PVC (Polyvinyl Chloride) in plumbing lines and waste lines.	Review of the design documents to avoid environmentally non-friendly construction materials. Control during all period of the building and renovation works	Design company Contractor	Careful review of the design documents upon design completion. Monitoring for the whole period of works	CPIB Supervisor contractor Design company

Type of activity	Expected input	Mitigation measure	Type (Methodology) of Monitoring	Responsibility		
				Responsible agency	Time /\Frequency of Monitoring	Agency carrying out monitoring
1	2	3	4	5	6	7
		Use nontoxic material for the exposed plumbing and pipe insulation. Use lead-free solder for water pipes. Locate incoming cables underground.				
OPERATION PHASE						
Hospital in operation	In adequate handling of hazardous waste water, waste gases and inadequate handling of medical waste during hospital operation. Collection and co-disposal non-disinfected medical wastes with household waste at uncontrolled dumping sites leading to soil and groundwater contamination and risk of spread of diseases.	Assign clear responsibility for waste management to members of management team. Developed a waste management plan for the project assisted hospitals, with the emphasis on minimization of waste -segregation, source reduction, treatment and proper disposal Train hospital staff, including health care professionals, who produce waste. Envision waste disposal stores in hospital designs for full control of medical waste waiting for off- site transportation. Burn infected medical wastes in incinerators in compliance with specification (in case if incinerators are planning to	Waste management responsible person (senior nurse or epidemiologist) carries out daily monitoring of the healthcare waste management system. Periodic evaluation and review of the waste management program	Hospital administration	Daily Periodic	District Branches of MOH Municipal Government Hospital administration District Branches of SES

Type of activity	Expected input	Mitigation measure	Type (Methodology) of Monitoring	Responsibility		
				Responsible agency	Time /\Frequency of Monitoring	Agency carrying out monitoring
1	2	3	4	5	6	7
		install). Treat infectious waste prior to disposal. Dispose waste only in landfill areas assigned by the local governments (project hospitals do not implement on-site incineration of infectious waste). Ensure that adequate resources are allocated for health care waste management, including plastic bags, waste collection bins, sharp containers, trolleys, etc.				

ATTACHMENTS

Attachment 1.Environmental Management Checklist for Small Construction and Rehabilitation Activities

General Guidelines for use of EMP checklist:

For low-risk topologies, such as school and hospital rehabilitation activities, the ECA safeguards team developed an alternative to the current EMP format to provide an opportunity for a more streamlined approach to preparing EMPs for minor rehabilitation or small-scale works in building construction, in the health, education and public services sectors. The checklist-type format has been developed to provide "example good practices" and designed to be user friendly and compatible with safeguard requirements.

The EMP checklist-type format attempts to cover typical core mitigation approaches to civil works contracts with small, localized impacts. It is accepted that this format provides the key elements of an Environmental Management Plan (EMP) or Environmental Management Framework (EMF) to meet World Bank Environmental Assessment requirements under OP 4.01. The intention of this checklist is that it would be applicable as guidelines for the small works contractors and constitute an integral part of bidding documents for contractors carrying out small civil works under Bank-financed projects.

The checklist has three sections:

Part 1 includes a descriptive part that characterizes the project and specifies in terms the institutional and legislative aspects, the technical project content, the potential need for capacity building program and description of the public consultation process. This section could be up to two pages long. Attachments for additional information can be supplemented when needed.

Part 2 includes an environmental and social screening checklist, where activities and potential environmental issues can be checked in a simple Yes/No format. If any given activity/issue is triggered by checking "yes", a reference is made to the appropriate section in the following table, which contains clearly formulated management and mitigation measures.

Part 3 represents the monitoring plan for activities during project construction and implementation. It retains the same format required for EMPs proposed under normal Bank requirements for Category B projects. It is the intent of this checklist that Part 2 and Part 3 be included into the bidding documents for contractors, priced during the bidding process and diligent implementation supervised during works execution.

CONTENTS

EMP Checklist for Construction and Rehabilitation Activities

PART A: GENERAL PROJECT AND SITE INFORMATION

INSTITUTIONAL & ADMINISTRATIVE				
Country				
Project title				
Scope of project and activity				
Institutional arrangements (Name and contacts)	WB (Project Team Leader)	Project Management	Local Counterpart and/or Recipient	
Implementation arrangements (Name and contacts)	Safeguard Supervision	Local Counterpart Supervision	Local Inspectorate Supervision	Contactor
SITE DESCRIPTION				
Name of site				
Describe site location			Attachement 1: Site Map [ ]Y [ ] N	
Who owns the land?				
Description of geographic, physical, biological, geological, hydrographic and socio-economic context				
Locations and distance for material sourcing, especially aggregates, water, stones?				
LEGISLATION				
Identify national & local legislation & permits that apply to project activity				
PUBLIC CONSULTATION				
Identify when / where the public consultation process took place				
INSTITUTIONAL CAPACITY BUILDING				
Will there be any capacity building?	[ ] N or [ ]Y if Yes, Attachment 2 includes the capacity building program			

PART B: SAFEGUARDS INFORMATION

ENVIRONMENTAL /SOCIAL SCREENING			
	Activity/Issue	**Status**	**Triggered Actions**
Will the site activity include/involve any of the following??	A. Building rehabilitation	[ ] Yes [ ] No	See Section **A** below
	B. New construction	[ ] Yes [ ] No	See Section **A** below
	C. Individual wastewater treatment system	[ ] Yes [ ] No	See Section **B** below
	D. Historic building(s) and districts	[ ] Yes [ ] No	See Section **C** below
	E. Acquisition of land[3]	[ ] Yes [ ] No	See Section **D** below
	F. Hazardous or toxic materials[4]	[ ] Yes [ ] No	See Section **E** below
	G. Impacts on forests and/or protected areas	[ ] Yes [ ] No	See Section **F** below
	H. Handling / management of medical waste	[ ] Yes [ ] No	See Section **G** below
	I. Traffic and Pedestrian Safety	[ ] Yes [ ] No	See Section **H** below

[3] Land acquisitions includes displacement of people, change of livelihood encroachment on private property this is to land that is purchased/transferred and affects people who are living and/or squatters and/or operate a business (kiosks) on land that is being acquired.

[4] Toxic / hazardous material includes but is not limited to asbestos, toxic paints, noxious solvents, removal of lead paint, etc.

PART C: MITIGATION MEASURES

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
0. General Conditions	Notification and Worker Safety	(a) The local construction and environment inspectorates and communities have been notified of upcoming activities (b) The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) (c) All legally required permits have been acquired for construction and/or rehabilitation (d) The Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. (e) Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) (f) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
A. General Rehabilitation and /or Construction Activities	Air Quality	(a) During interior demolition debris-chutes shall be used above the first floor (b) Demolition debris shall be kept in controlled area and sprayed with water mist to reduce debris dust (c) During pneumatic drilling/wall destruction dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site (d) The surrounding environment (side walks, roads) shall be kept free of debris to minimize dust (e) There will be no open burning of construction / waste material at the site (f) There will be no excessive idling of construction vehicles at sites
	Noise	(a) Construction noise will be limited to restricted times agreed to in the permit (b) During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible
	Water Quality	(a) The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers.
	Waste management	(a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. (b) Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. (c) Construction waste will be collected and disposed properly by licensed collectors (d) The records of waste disposal will be maintained as proof for proper management as designed. (e) Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)
B. Individual wastewater treatment system	Water Quality	(a) The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities (b) Before being discharged into receiving waters, effluents from individual wastewater systems must be treated in order to meet the minimal quality criteria set out by national guidelines on effluent quality and wastewater treatment (c) Monitoring of new wastewater systems (before/after) will be carried out (d) Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
C. Historic building(s)	Cultural Heritage	(a) If the building is a designated historic structure, very close to such a structure, or located in a designated historic district, notification shall be made and approvals/permits be obtained from local authorities and all construction activities planned and carried out in line with local and national legislation. (b) It shall be ensured that provisions are put in place so that artifacts or other possible "chance finds" encountered in excavation or construction are noted and registered, responsible officials contacted, and works activities delayed or modified to account for such finds.
D. Acquisition of land	Land Acquisition Plan/Framework	(a) If expropriation of land was not expected but is required, or if loss of access to income of legal or illegal users of land was not expected but may occur, that the Bank's Task Team Leader shall be immediately consulted. (b) The approved Land Acquisition Plan/Framework (if required by the project) will be implemented
E. Toxic Materials	Asbestos management	(a) If asbestos is located on the project site, it shall be marked clearly as hazardous material (b) When possible the asbestos will be appropriately contained and sealed to minimize exposure (c) The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust (d) Asbestos will be handled and disposed by skilled & experienced professionals (e) If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site. (f) The removed asbestos will not be reused
	Toxic / hazardous waste management	(a) Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information (b) The containers of hazardous substances shall be placed in an leak-proof container to prevent spillage and leaching (c) The wastes shall be transported by specially licensed carriers and disposed in a licensed facility. (d) Paints with toxic ingredients or solvents or lead-based paints will not be used
F. Affected forests, wetlands and/or protected areas	Protection	(a) All recognized natural habitats, wetlands and protected areas in the immediate vicinity of the activity will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities. (b) A survey and an inventory shall be made of large trees in the vicinity of the construction activity, large trees shall be marked and cordoned off with fencing, their root system protected, and any damage to the trees avoided (c) Adjacent wetlands and streams shall be protected from construction site run-off with appropriate erosion and sediment control feature to include by not limited to hay bales and silt fences (d) There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.
G. Disposal of medical waste	Infrastructure for medical waste management	(a) In compliance with national regulations the contractor will insure that newly constructed and/or rehabilitated health care facilities include sufficient infrastructure for medical waste handling and disposal; this includes and not limited to: ▪ Special facilities for segregated healthcare waste (including soiled instruments "sharps", and human tissue or fluids) from other waste disposal; and ▪ Appropriate storage facilities for medical waste are in place; and ▪ If the activity includes facility-based treatment, appropriate disposal options are in place and operational
H Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction	(b) In compliance with national regulations the contractor will insure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to ▪ Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
	activities	of all potential hazards ▪ Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes. ▪ Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement ▪ Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public. ▪ Ensuring safe and continuous access to office facilities, shops and residences during renovation activities, if the buildings stay open for the public.

PART D: MONITORING PLAN

Phase	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Cost (if not included in project budget)	Who (Is responsible for monitoring?)
During activity **preparation**							
During activity **implementation**							
During activity **supervision**							

ATTACHMENT 2
Stockholm Convention on Persistent Organic Pollutants
New Guidelines on Best Available Techniques for Medical Waste Incineration:

Error! Reference source not found. Under the guidelines, "single-chamber, drum and brick ncinerators" are not allowed. An incineration plant should consist of the following units:

1. Furnace or kiln as the primary combustion chamber
2. Afterburning chamber as the secondary chamber
3. Flue gas cleaning device system
4. Wastewater treatment plant if a wet flue gas cleaning system is used.

The thermal treatment process used in the furnace or kiln could be one of the following: pyrolysis or gasification, rotary kiln, grate incineration specially adapted for healthcare waste, fluidized bed incineration, or modular excess air or controlled air incineration.

Emission Limits
For best available techniques, performance levels in air emissions of dioxins should not exceed 0.1 nanograms I-TEQ/normal cubic meter at 11% O_2. Moreover, dioxins in the wastewater of treatment plants treating effluents from any gas treatment scrubber effluents should be well below 0.1 nanograms I-TEQ per liter.

General and Organizational Measures
When incinerating wastes that contain chlorine and heavy metals (as is generally the case for medical waste), a combination of primary and secondary measures, as described below, are needed to meet the emission limits. Health-care wastes should be incinerated only in dedicated incinerators or in larger incinerators for hazardous waste. If a dedicated incinerator is not used, a separate charging system should be used.

Operation of the incinerator requires trained, qualified personnel. The personnel should wear protective clothing. Periodic maintenance should include cleaning of the combustion chamber and de-clogging of air flows and fuel burners. As part of secondary measures, frequent cleaning of those sections of the incinerator wherein flue gas passes especially at the critical temperature range is important. There should be regular and/or continuous measurement of pollutants, as well as auditing and reporting systems.

Primary Measures
The guidelines list the following primary measures to reduce dioxin emissions:

1. Introduction of the waste in the combustion chamber only at temperatures of 850 °C; the plant should have an automatic system to prevent waste feed before the above-mentioned temperature is reached
2. Installation of auxiliary burners (for start-up and shut-down operations)
3. Avoidance of starts and stops of the incineration process
4. Avoidance of temperatures below 850°C and no cold regions in the flue gas
5. Control of oxygen input depending on the heating value and consistency of feed material
6. Minimum residence time of 2 seconds above 850°C in the secondary chamber after the last injection of air, or at 1100°C for wastes containing more than 1% halogenated organic substances (as is generally the case for medical waste), and 6% O_2 by volume
7. High turbulence of exhaust gases and reduction of air excess by injection of secondary air or re-circulated flue gas, pre-heating of the air-streams, or regulated air inflow
8. On-line monitoring for combustion control (temperature, oxygen content, CO, dust), and operation and regulation of the incinerator from a central console.

Cold starts, upset conditions, and shutdowns generally create the conditions for dioxin formation. Therefore, preheating and initial co-firing with a clean fossil fuel is recommended, and continuous operation (as opposed to batch processes) should be the method of choice. Upsets should be minimized through periodic inspection and preventive maintenance. Operators should not feed waste during severe combustion upsets or during a filter bypass (dump stack) operation.

Secondary Measures
In order to reduce dioxin emissions to less than 0.1 ng TEQ/m^3, the secondary measures below (an appropriate combination of dedusting and other equipment to further reduce dioxins) should be applied as best available techniques.

1. Dedusting
   - Fabric filters used at temperatures below 260 ºC
   - Ceramic filters used at temperatures between 800 to 1000 ºC
   - Cyclones used for pre-cleaning of flue gases
   - Electrostatic precipitators used at temperatures of around 450 ºC
   - High-performance adsorption units with activated charcoal (electrodynamic venturi)
2. Techniques to further reduce emissions and PCDD/F
   - Catalytic oxidation
   - Gas quenching
   - Catalyst-coated fabric filters
   - Different types of wet and dry adsorption systems using mixtures of activated charcoal, coke, lime and limestone solutions in fixed bed reactors (adsorption with activated charcoal or open hearth coke), moving bed reactors, or fluidized bed reactors (entrained flow or circulating fluidized beds with activated coke/lime or limestone followed by the use of fabric filters).

Notes: Fabric filters used at temperatures above the critical temperature range for dioxin formation can reduce emissions efficiently. However, the operating temperatures would depend on the type of fabric material used. Cyclones are efficient only in removing the larger particles. Note that electrostatic precipitators could promote *de novo* synthesis of dioxins especially if operated at the critical temperature range for dioxin formation. Electrostatic precipitators are inefficient for removal of fine particles and may result in higher NO_x emissions. High-performance adsorption units with activated charcoal can be used for removal of fine dust.

Disposal of Residues
Fly and bottom ash, as well as wastewater, should be treated appropriately. Proper treatment of these residues includes:
- Disposal in safe sanitary landfills (Note: Examples of disposal methods are land filling in proper double-walled containers, solidification and subsequent land filling, or thermal post-treatment)
- Catalytic treatment of fabric filter dusts
- Scrubbing of fabric filter dusts by the 3-R process (extraction of heavy metals by acids)
- Thermal post-treatment (e.g., rotary kiln or Hagenmeier trommel followed by a fabric filter and scrubber; plasma technology)
- Vitrification of fabric filter dusts and subsequent land filling
- Immobilization methods (e.g., solidification with cement) and subsequent land filling.

Bottom and fly ash should be handled, transported and disposed of in an environmentally sound manner, including the use of covered hauling and dedicated sanitary landfills.

Monitoring

With regards to monitoring, carbon monoxide, oxygen in the flue gas, particulate matter, hydrogen chloride, sulfur dioxide, nitrogen oxides, hydrogen fluoride, airflows and temperatures, pressure drops, and pH in the flue gas should be routinely monitored.

Periodic measurement or semi-continuous measurement (continuous sampling and periodic analysis) of polychlorinated dioxins and furans help insure that the incinerator is operating properly. Unfortunately, sampling and analysis of dioxins are difficult and expensive for most developing countries. In general, stack sampling requires 4 to 8 hours of continuous isokinetic sampling, and analysis is carried out using high resolution gas chromatography-high resolution mass spectrometry.[i] Stringent quality control procedures are required. For waste incinerators with a capacity of less than 2 tons per hour, simplified bioassay methods for dioxins could be used for periodic measurements.[ii]

Attachment 3: ENVIRONMENTAL GUIDELINES

3.1 Introduction

The Environmental Guidelines section details the specifics to be addressed in the concept, design and planning of small-scale projects for the upgrading of health infrastructure. The guidelines cover the selection of construction materials and construction methods with limited impact on the environment, energy saving methods as well as the handling of medical and non-medical wastes under project supported activities. In selecting suitable construction methods and materials for the clinics, great attention should be paid to locally available traditions, skills and resources in the project sites.

3.3 Energy Efficiency, Insulation and Ventilation

Insulation should be tailored to the seasonal impacts of climate, internal thermal load, and characteristics of exposure. Vapor barriers should prevent moisture intrusion in the roof insulation and outer wall cavities.

Window location should be determined by view, ventilation, light, thermal gain, privacy control and interior space functions.

Plumbing should be coordinated to minimize plumbing and also water service to toilets, kitchen and utility rooms. Water-saving faucets, ring mains and other devices also require consideration. All plumbing lines should preferably be copper, with waste lines in cast iron to avoid PVC outgassing. Exposed plumbing and pipe insulation should be of nontoxic material.

3.4 Filtration

Electrostatic, activated charcoal, and high-efficiency filters can greatly improve the indoor air quality. Filters that remove particulates down to 0.3 microns are advisable for capture of microbial agents. Molecular absorbing filters can be used to remove toxic gases originating from internal and external sources. Self-actuating electrostatic filters are easy to clean, less expensive, and use no electricity. Electrical electrostatic filters should have an activated charcoal filter in order to subsequently remove ozone that can be generated by the particles on the filter. When sequential filtering for primary particles, HEPA (high efficiency particulate air filtration) is used, then the use of charcoal, potassium permanganate, or other molecular absorbers plus negative ionization at the delivery point of distribution are desirable. Smoking areas or rooms, if any, should be isolated by partitions and equipped with outside exhaust that creates a negative pressure in the space. Certain medical equipment, copy machines, as well as other reproduction equipment, should be adequately ventilated to remove their particulates and gases. Maintenance, including duct cleaning, filters cleaning and changes, and cleaning positive plate receivers and ionizing tips, should be routine and included in recurrent maintenance budgets.

3.5 Electrical Systems

Incoming cables should be located underground. Main entrance feed and panel located away from places of work and waiting is prudent to avoid electromagnetic fields. Ground fault wiring near any plumbing fixture is a precaution. Selecting the most energy-efficient light fixtures, lamps, appliances and equipment will reduce energy demand but can introduce undesirable electromagnetic fields. Be aware that close proximity to table, floor and desk halogen, fluorescent and other high-efficiency fixtures and lamps can cause an exposure to harmful electromagnetic fields.

3.6 Cabinetry and Wood

Nontoxic finishes are available but expensive. Selecting the least toxic finishes is advised. All materials should have appropriate permissions on quality and safety (appropriateness certificate and sanitary-epidemiologic conclusion).

3.7 Finishes

Water-based interior nontoxic, no allergenic paint for drywall or plaster surfaces is preferable to latex or oil-based paints from a respiratory standpoint. Any enamel coating for doors or other surfaces that require a more durable finish is advised to be applied away from interior spaces and be fully aired for over a month before installation. Indoor space should not be occupied until odor and toxins of the paint or finish have been adequately aired.

3.8 Flooring

Nontoxic grouts and methods of installation should be used.

3.9 Window Treatments

Vertical blinds provide light control, are easy to maintain, and require minimal stacking room. Horizontal blind can in combination with a white or light ceiling reflect daylight more deeply into a room. Exterior roller blinds, operable from the interior, are particularly effective in controlling solar thermal gain and interior heat loss, and give the benefit of security. The choice will depend on climate and geographical conditions of hospital location as well as project funds.

3.10 Exterior and Interior Colors

White or very light-colored ceilings and interior side walls allow for deeper reflective penetration of natural light. Doors between interior room spaces can act as reflectors. Gloss white lacquer or enamel doors in the path of incoming daylight can lighten adjoining spaces. Interior paints and finishes can affect patients and staff directly. Outdoor finishes with odorous and toxic emissions can also have an effect upon persons indoors through windows, doors and other openings.

3.11 Demolition work

Existing building elements (walls, foundations, ground cement slabs etc.) should be carefully demolished and the debris should be sorted and removed as directed by the EMP. All valuable materials (doors, windows, sanitary fixtures, etc) should be carefully dismantled and transported to the storage area assigned for the purpose. Valuable materials should be recycled within the project or sold.

3.12 Selection of Construction Materials and Construction Methods

Environmentally sound goods and services should be selected. Traditionally well-tried materials and methods should be chosen before new and unknown techniques. Construction sites should be fenced off in order to prevent entry of public, and general safety measures would be imposed. Temporary inconveniences due to construction works should be minimized through planning and coordination with contractors, neighbors and authorities. In densely populated areas, noisy or vibration generating activities should be strictly confined to the daytime.

Attachment 3. Meetings with Project Stakeholders and Beneficiaries

NAME/TITLE	INSTITUTION
Dr. Koroleva Nina Deputy Head, Environmental Expertise Department	State Nature Protection Committee
Dr. Agzamkhodjaeva Dilnoza Deputy Head Doctor	Republican Scientific Cancer Center
Dr. Gaffarov Said Head, Sanitarian-Hygiene Department Republican SES	Ministry of Health
Mr. John Malmborg Construction Engineer	Project “Health-3”

Option 2
Environmental Guidelines

All contractors are required to use environmentally acceptable technical standards and procedures during the implementation of construction works. All construction contracts will contain the following requirements:

- Take necessary precautions against negative impacts on the environment, any environmental damage or loss through prevention or suppression measures (where it is possible), instead of liquidation or mitigation of negative consequences.
- Observe all national and local laws and rules on environmental protection.
- Identify officers responsible for the implementation of activities on environmental protection conforming to instructions and directions received from the construction and design or environmental protection agencies.
- Minimize dust, smoke and particulate emissions to avoid or minimize negative impacts on air quality.
- Provide pedestrian crosswalks and roads to ensure access to public places.
- Prevent or minimize vibrations and noise from the operation of vehicles and machinery during construction activities.
- Minimize damage to natural setting and vegetative cover and assure vegetation recovery.
- Protect surface and underground water from pollution sources. Assure adequate water collection and distribution.

Minutes

Public Consultations on Health III Project

Venue: Tashkent Institute of Postgraduate Medical Education

Within the framework of cooperation strategy between the Government of Uzbekistan (GOU) and the World Bank, it is envisaged to direct intensive investment to inpatient health care services quality improvement at the rayon level and for this purpose there is planned implementation of Health III project. The main objective of Health III project is to improve functioning of health care system in order to provide effective and qualitative health services and its capability on prevention of non-communicable chronic diseases outbreaks.

Preliminary design of health III project consists of four (4) components that include the following types of activity:

Component 1: Improvement of health care services quality
Component 2: Strengthening of health financing and management reforms
Component 3: Improvement of public health services delivery
Component 4: Project management

Public consultations as a part of Environmental assessment (EA) process

In accordance with the WB policy on protective measures and ecological legislation of the Republic of Uzbekistan the process of public consultations is one of the important elements of EA procedure. Public consultations enable to solve simultaneously two tasks: to identify main ecological problems and to bring the results of preliminary environmental assessment to public; get comments regarding proposed activities on reduction of environmental impact.

The public consultations on Health III project, as a part of the process for disclosure of information on the project, were conducted in a small conference hall of the Tashkent Institute of Postgraduate Medical Education (TIPME) on the 29th of November, 2010 at 15.00. The public consultations were advertised in the national newspaper "Uzbekistonda soglikni saklash – Zdravookhraneniye Uzbekistana (Healthcare of Uzbekistan)" #47 (808) dated November 26, 2010 (see Annex 1). Also there was published an article about planned Health III project. The document Environmental Management Plan was disclosed at the official web-site of the Ministry of Health. Alongside with the above mentioned publications and advertisements of the public consultations official invitation letters were sent to different agencies of the Republic.

58 persons participated the public consultations among them there were representatives of various medical institutions of Tashkent city and regions of the Republic, State Sanitary and Epidemiological services, State Nature Protection Committee and citizens of Tashkent. In his opening speech Mr. D.D. Maksumov, Deputy Executive Director of JPIB, shortly informed about objectives of Health III project and purposes of the public consultations. After that Ms. Madina Khalmirzaeva, environmental engineer of the project introduced the presentation opening principal provisions of the Environmental Management Plan.

The presentation was followed by a number of questions and proposals on the subject of the public consultations. Roza G. Mukhamediyarova, IDA Project Coordinator, and the environmental engineer answered the questions.

Questions, asked by the participants of meetings

№	The questions and comments, suggested by the participants of meetings	The answers of project employees
1	Z.Zh. Mutalova (Director of the Republican Institute of Health and medical statistics). "Is there supposed to conduct such operations – incinerators installation in Tashkent?	"No, under this project, conduction of such operations is planned at rayon level; Tashkent city didn't enter this project.
2	B.M. Mamatkulov (Director of School of Public Health of Tashkent Medical Academy) has proposed to include the personnel of the department into the department specialists' group members.	Multiple meetings with different specialists (inclusive of personnel of your department) are planned to be held at the phase of projects implementation.
3	Z.Yarulina (Chief specialist of the State Nature Protection Committee). "Will it be necessary to carry out the ecological expert examination for the sites of reconstruction/construction as well as for getting a favourable conclusion of Environmental Expertise?	As far as all construction/reconstruction works shall take place at the area of hospitals, subsequently, according to local legislation, there is no need in carrying out of ecological expert examination.
4	S.Sotvoldiyev (Chief of MPTF (medical and preventive treatment facility) department of SSES Center of Tashkent city). "Why did you entitle your document as Environmental Management Plan? Your works are related to medical wastes; the document's title should be revised.	The Environmental Management Plan (EMP) includes the activities on reduction of negative effect, which may occur at handling of works on reconstruction/construction; medical wastes management turns up to be just a part of the whole plan.
5	T.B.Lee (Director of Ecology Department of Republican SES). "Shall your work on medical wastes management lie only in incinerators installation? It won't be enough to provide their steady operation.	The following activities are planned to be implemented under the project: development of strategy on medical wastes management, development of standards, regulatory documents. This shall allow improving on the situation in this area.
6	L.V.Kudasheva. "We have the experience in similar projects implementation under the work with UNICEF on incinerators installation. However, not all of them are operating as we would like it to be, in particular because of that the personnel lacks the required skills".	With a view to assure further stability of the project, the training component is considered to be one of the important components. It includes training of medical facilities' personnel on operation and maintenance of new equipment, being delivered (inclusive of incinerators).
7	V.Zh.Baratova (Deputy Director of the Republican SES). "Shall the same works on local waste utilization be carried out, specifically, installation of incinerators in the territory of Tashkent city?"	"No, under this project, conduction of such operations is supposed to be done at rayon level; where Tashkent city is not involved".
8	A.N.Aripov (Head specialist on laboratory service of the Ministry of Health).	I think that holding of such public consultations is very useful, as it allows attracting the specialists (who are facing directly this problem) to the issues of ecology, inclusive of medical waste utilization. I hope that such public consultations shall be held in future too.

Public consultations were ended at 4.30 p.m.

Annex 1

O'zbekistonda sog'liqni saqlash
Zdravookhraneniye Uzbekistana
#47 (808) dated November 26, 2010 (see Annex 1).

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Within the framework of cooperation strategy between the Government of Uzbekistan (GOU) and the World Bank, it is envisaged to direct intensive investment to inpatient health care services quality improvement at the rayon level and for this purpose there is planned implementation of Health III project.

Within the framework of this project there was developed Environmental Management Plan (EMP) to reduce possible negative environmental impact associated with the project implementation. Public consultations are planned to be conducted to discuss proposed EMP.

The public consultations will take place on the 29th of November, 2010 at 15:00 in the office of Health II and Woman and Child Health Development Joint Projects Implementation Bureau, located in the building of the Tashkent Institute of Postgraduate Medical Education to the address:

51, Parkentskaya Street, Tashkent city

All interested persons are invited to participate the public consultations.

Health II and Woman and Child Health Development
Joint Projects Implementation Bureau

Annex 2

List of Participants of Public Consultations on the Environmental Management Plan of Health III project

November 29, 2010

#	Name	Position	Signature
1	Mustanov A.N.	Head physician	*signature*
2	Sherkazarev F.	Surkhandarya obl SSES	*signature*
3			
4	Abdullayev R	Namangan obl SSES	*signature*
5	Korayev B.B.	Andijan obl SSES	*signature*
6	Maminiv E.	Ferghana obl SSES	*signature*
7	Latipov H.	Djizak SSES	*signature*
8	Mamatkulov B.M.	Director of SPH, TMA	*signature*
9	Avezova G.S.	SPH, TMA	*signature*
10	Kosimova D.A.	SPH, TMA	*signature*
11	Urazaliyeva E.R.	SPH, TMA	*signature*
12	Normukhamedova N.A.	TMA, Training Center # 1	*signature*
13	Mutalova Z.J.	Institute of Health	*signature*
14	Kosimova G.A.	Family Polyclinic # 53	*signature*
15	Honkhodjayeva Sh.M.	"ECOSAN" Intern. Foundation	*signature*
16	Isamukhamedov H. B.	Chief of Zangiota RMU	*signature*
17	Yuldasheva M.Sh.	Coordinator, Zangiota RMU	*signature*
18	Baratova V.D.	Deputy Head Physician, Republic SSES	*signature*
19	Li T.B.	Chair person, Department of Ecologyl	*signature*
20	Gaffarov S.G.	Head of Sanitary Department of Resp. SSES	*signature*
21	Sativaldiyev E. Yu.	Head of Dep. SSESC, Tashkent	*signature*
22	Hoshimirzayev A.H.	Associate Prof., Hygiene Chair, TIPME	*signature*
23	Kalanov N.B.	Head of Department	*signature*
24	Abdujabbarov A.S.	Civil engineer	*signature*
25	Kudasheva L.V.	Head of Epidemiological dep., Rep. SSES	*signature*
26	Rajabov G.H.	Deputy Director of Republican AIDS Center	*signature*
27	Yarullina Z.R.	Main specialist of State Nature Protection Committee	*signature*
28	Yusupov B.Sh.	Sanitary Physician Rep. SSES	*signature*
29	Boymatov O.L.	Head Physician of RMU, Kibrai, Tashkent oblast	*signature*
30	Isamukhamedova M.A.	JPIB Consultant	*signature*
31	Mirshina O.P.	MOH Main Specialist	*signature*
32	Telichkin A.I.	Uztibloyikha	*signature*
33	Djalilov A.A.	Director of Training center, TPMI	*signature*
34	Djurayev I.O.	Undergraduate of Irrigation Institute	*signature*
35	Kosimov Sh. Z.	Head of Chair on PME of GPs, TIPME	*signature*
36	Konnova D.B.	Undergraduate of Irrigation Institute	*signature*
37	Tolipov J. H.	State Nature Protection Committee	*signature*
38	Zaylobiddinov G.B.	JPIB Consultant	*signature*

List of Participants of Public Consultations on the Environmental Management Plan of Health III project

November 29, 2010

#	Name	Position	Signature
1			
2			
3	Ergashev B.T.	Head of MOH Operational Department	*signature*
4	Kalanov N. B.	Head of Department for Development of Material and technical base, MOH	*signature*
5	Atabekov N.S.	Director of Rep. AIDS center	*signature*
6	Uldashev R. Sh.	Head of Kashkadarya OHD	*signature*
7	Hamriyev A.K.	Minister of Health, Karakalpak Republic	*signature*
8	Sharipov F.R.	Head of Sirdarya OHD	*signature*
9	Khakimov	OHD	*signature*
10	Bekjanov E.Z.	Head of Khorezm OHD	*signature*
11	Arzikulov T.S.	Head of Surkh. OHD	*signature*
12	Khusanbayev Sh. Y.	Head of Ferghana OHD	*signature*
13	Malikov Y. R.	Head of Navoi OHD	*signature*
14	Nariyev E. U.	Head of Djizak OHD	*signature*
15	Yuldashev R.Sh.	Head of Kashk. OHD	*signature*
16	Abdusattarov	Head of Samarkand OHD	*signature*
17		Coordinator, Zangiota RMU	*signature*
18	Narziyev I.	Head of Bukhara OHD	*signature*
19			*signature*
20			*signature*
21	Djusubatova	Director	*signature*
22	Halilov M.A.	Deputy Director	*signature*
23	Muminov M.	Deputy Head of Department for Development of Material and technical base, MOH	*signature*
24	Normukhamedova N.A.	TMA, Training Center # 1	*signature*

Список участников общественных слушаний «План экологического управления» проекта «Здоровье-3»

26 ноября 2010 г. СБРП.

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Список участников общественных слушаний «План экологического управления» проекта «Здоровье-3»

26 ноября 2010 г. СБРП.

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[i] See European Committee for Standardization Method EN 1948, U.S. Environmental Protection Agency Method 23, Association of German Engineers VDI Method 3499, Environment Canada Methods EPS 1/RM/2 and 1/RM/3, and Japan Industrial Standards Committee K0311.

[ii] Possible bioassay methods include the CALUX Assay, P450 Human Reporter Gene System, AhR Luciferase Assay, and the Dio-Quicker enzyme immunoassay methods.