



AMENDMENT NO.2 TO INITIAL ENVIRONMENTAL EXAMINATION AND ENVIRONMENTAL COMPLIANCE FACESHEET

Objective: Investing in People.

Program Area: Health/3.3.1.

Country/Region: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan/CAR/NIS

Funding Period: FY 2007 – FY 2012 **LOP:** 2001-2012

Resource Levels/Amount(s): \$108,000,000 **LOP:** \$253,763,000

Statement Prepared by: Karen Welch, Director, Office of Health and Education

IEE Amendment (Y/N)? Y

DCN of Original IEE: 2001-CAR-001 dated 4/02/2001

DCN of Amendment No.1: 2005-CAR-003 dated 9/16/05

Environmental Media and/or Human Health Potentially Impacted (check all that apply):

air water land biodiversity (specify) human health other
none

Environmental Action(s) Recommended (check all that apply):

1. Categorical Exclusion(s)

2. Initial Environmental Examination:

Negative Determination: no significant adverse effects expected regarding the proposed activities, which are well defined over life of activity. IEE prepared:

without conditions (no special mitigation measures needed; normal good practices and engineering will be used)

with conditions (special mitigation measures specified to prevent unintended impact)

Positive Determination: IEE confirms potential for significant adverse effect of one or more activities. Appropriate environmental review needed/conducted.

EA to be/being/has been (highlight one) to be been conducted, in the event the screening process indicates that USAID activity will have a negative environmental impact (e.g., a significant increase in harmful effluents as a result of agro-processing or pesticide use). Note that the activities affected cannot go forward until the Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) and/or Pollution Prevention Assessment (PPA) is prepared by the project and approved by the Bureau Environmental Officer. The PPA is necessary if meet the project goal is to have environmentally sustainable production and sales of value-added agricultural products by enabling

producers and processors to get ISO, HACCP and other certifications which will be a key factor for the enterprise in competing regionally and globally.

Summary of Findings:

The Amendment No. 2 to the Health IEE (DCN 2001-CAR-001) extends the Funding Period from February 2001- September 2007 to February 2001-September 2012, and increases the Resource Level from \$145,763,000 to \$253,763,000 for USAID/CAR Health Activities. These activities will be carried out under Objective A3 “Investing in People”, Program Area A11 “Health”. The Amendment No. 2 covers active projects, extended and new activities such as Family Planning/Reproductive Health. Health area includes activities under five Program Elements, four of them representing the largest share of project activity and resources. These Elements (approximate % of total project budget) are:

Major Elements:

1. **HIV/AIDS** (33%)
2. **Tuberculosis** (23%)
3. **Other Public Health Threats** (18%)
4. **Maternal and Child Health** (16%)

Minor Elements:

5. **Family Planning/Reproductive Health** (10%)

USAID/CAR, in collaboration with the governments of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, is working towards increasing access to affordable, high-quality health care services for the people of the CAR. Activities include:

Program Element 1: HIV/AIDS

Illustrative activities include technical assistance and training:

- provide sub-contracts and sub-grants;
- training of community to strengthen and mobilize community organizations to inform about HIV/AIDS;
- training health professionals and NGO representatives on different topics including dual HIV/TB infection, monitoring and evaluation (M&E) for HIV programs, antiretroviral therapy, blood safety, and development of grant applications to leverage other donor resources;
- training and educational sessions on HIV/AIDS prevention in schools, colleges and local communities;
- peer-to-peer HIV education;
- production of effective Information, Education, Communication materials;
- distribution of free condoms;
- shipment and storage of condoms;
- improve referral system on STI diagnostic and treatment;
- improve referral System on VCT (Demand Creation, Moving Labs and Referral system to City AIDS Center);
- monitoring of condom availability;
- counseling of vulnerable population and target groups;

- hire and training staff on developing and improving government capacity to manage HIV prevention and treatment program

Program Element 2: Tuberculosis

Illustrative activities include technical assistance and training:

- provide sub-contracts and sub-grants;
- promotion of political commitment and the improving coordination mechanisms such as High Level Working Group on TB (HLWG) at the national level which is one indicator of government commitment to TB control and its readiness to cooperate with the international TB community.
- technical training for TB doctors and PHC Staff on Rayon and Oblast level on TB treatment protocols;
- technical training for laboratory technicians, conducted routine monitoring visits, created checklists and is introducing an external quality assurance system for smear microscopy in the pilot sites;
- procurement, storage and distribution of necessary laboratory equipment (includes microscopes) and reagents for smear examination;
- training of community to strengthen and mobilize community organizations to inform about TB;
- training health professionals and NGO representatives on different topics including dual HIV/TB infection, monitoring and evaluation (M&E) for TB programs, and development of grant applications to leverage other donor resources;
- training and educational sessions on prevention TB in schools, colleges and local communities;
- production, dissemination, and storage of effective Information, Education, Communication materials ;
- mass screening;
- training on improvement of referral system on TB diagnostic and treatment;
- procure, shipment and storage of medical supplies to treat TB patients;
- provision of nutrition to inpatients and food packages for outpatients;
- research on MDR TB

Program Element 3: Other Public Health Threats

Illustrative activities include technical assistance and training:

- provide sub-contracts and sub-grants;
- Provide policy, legal, and technical expertise to provide assistance to MOH in five countries in different areas
 - legal and policy (health care legal base, basic benefits packages, health financing, legal and organizational status of health providers, internal medicine/arterial hypertension)
 - institutional structure, roles, relationships (MOH and OHD Functional Specification and tenders, service delivery);
 - monitoring and evaluation (national monitoring system, PHC monitoring system);

- training health staff to better manage obstetric, perinatal, and reproductive health care; childhood illnesses;
- training of community to strengthen and mobilize community organizations to inform and advocate for safe motherhood, family planning, reproductive health, and child health initiatives;
- training health professionals and NGO representatives on different topics
- training and educational sessions in schools, colleges and local communities;
- production of effective Information, Education, Communication materials

Program Element 4: Maternal and Child Health

Illustrative activities include technical assistance and training:

- provide sub-contracts and sub-grants;
- provide policy, legal, and technical expertise to provide assistance to MOH in five countries in safe motherhood area;
- training of community to strengthen and mobilize community organizations to inform and advocate for safe motherhood, and child health initiatives;
- training health professionals and NGO representatives on different topics
- production of effective Information, Education, Communication materials

Program Element 5: Family Planning/Reproductive Health

Illustrative activities include technical assistance and training:

- provide sub-contracts and sub-grants;
- provide policy, legal, and technical expertise to provide assistance to MOH in five countries in the area of Family Planning/Reproductive Health;
- training health staff to better manage obstetric, perinatal, and reproductive health care; childhood illnesses;
- training of community to strengthen and mobilize community organizations to inform and advocate for family planning, and reproductive health initiatives;
- training health professionals and NGO representatives on FP/RH topics;
- production of effective Information, Education, Communication materials;
- review of what the opportunities and constraints (including financial incentives and disincentives) are for the private sector as it intersects with FP/RH service and product supply provision in the E&E region;
- review of legislation and legal policy governing, constraining and enhancing the private sector as it intersects with FP/RH;
- identify current best practices in E&E bilaterals for investing in the private sector;
- conduct a market analysis of FP/RH service and commodity provision. Examine:
 - Contraceptive methods;
 - Use rates;
 - Availability of methods
 - Manufacturers
 - Price of methods
 - Provider preferences

- Financial barriers to service provision and commodity procurement from:
 - Client perspective;
 - Provider perspective;
 - Public and private sector perspective
- Stratification between public and private sector provision of services and commodities.
- recommend ways to appropriately and strategically broaden:
 - general availability of method mix (whether regionally or by country) and/or
 - availability of specific preferred methods by country.
- recommendations for activities that can be used to build bilateral FP/RH private sector investment in E&E based on the desk reviews and best practice bilateral review;
- provide technical assistance to USAID E&E bilaterals as they implement recommendations;
- procurement, shipment; storage and distribution of contraceptives;
- social marketing of contraceptives, including advertising and community outreach.

Recommended Action: Categorical Exclusion.

Pursuant to 22 CFR 216(c)(3), the originator of the proposed activities has determined that all USAID support under Program Elements 3 and 4 and most of the activities under Program Elements 1, 2 and 5, with the exception of those noted in points b) below, consists of types of interventions entirely within the categories listed in paragraph (c)(2) of Section 216.2 of Title 22 CFR 216, and therefore are categorically excluded from any further environmental review requirements. The originator of the proposed action has further determined that the proposed activities are fully within the following classes of actions:

- Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities, etc.) [22 CFR 216.2(c)(2)(i)];
- Analyses, studies, academic or research workshops and meetings [22 CFR 216.2(c)(2)(iii)];
- Document and information transfers [22 CFR 216.2(c)(2)(v)];
- Programs involving nutrition, health care or population and family planning services except to the extent designed to include activities directly affecting the environment (such as construction of facilities, water supply systems, waste water treatment, etc.) – [22CFR 216.2(c)(2)(viii)].

For all these activities having no effect on the natural or physical environment

Recommended Action: Negative Determination with conditions: Possible environmental impacts are to be assessed and appropriate monitoring and mitigation activities defined and implemented.

Pursuant to 22CFR216.3 (a)(2)(iii), the originator of the proposed activities recommends a negative determination with conditions for procurement, use, and disposal of medical equipment, reagents, and supplies (Program Elements 1,2, and 5) to ensure unintended effects on the environment are mitigated as discussed in Section 4 part A, B, and C. The originator requests that E&E Bureau approve a negative threshold decision for those activities contingent on the use of review, monitoring, and mitigation measures discussed in Section 4.

Resource Allocation, Training and Reporting Requirements:

The Contracts, Cooperative Agreements with the implementers of the Health Projects will include a requirement to follow all recommendations of this IEE, including completed Environmental Review and Assessment Checklist.

The Implementer's Quarterly reports to USAID shall contain a section specific to Mitigation and Monitoring and will include project summaries along with environmental impacts, success or failure of mitigative measures being implemented, results of environmental monitoring, and any major modifications/revisions to the project, mitigative measures or monitoring procedures. Implementer's annual report will include an annex containing a table indicating the title, date of award, and category of each grant activity.

The Contractor may use the Environmental Status Reports (Annex 3) to provide identified USAID staff with the information on environmental impacts, success or failure of mitigation measures or monitoring procedures.

The Mission will arrange Environmental Training of the implementer(s) by the BEO or his designee prior to start of the activity implementation.

Limitations of the IEE:

This IEE does not cover activities involving:

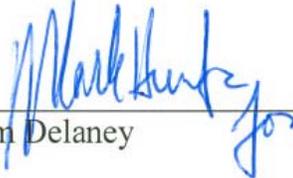
1. Assistance for the procurements (includes payment in kind, donations, guarantees of credit) or use (including handling, transport, fuel for transport, storage, mixing, loading, application, clean up of spray equipment, and disposal) of pesticides (where pesticides cover all insecticides, fungicides, and rodenticides, etc. covered under the "Federal Insecticide, Fungicide, and Rodenticide Act" FIFRA.) or activities involving procurement, transport, use, storage, or disposal of toxic materials, which will require an amended IEE submitted to EE/BEO for approval.
2. Activities involving support to agro-processing, industrial enterprises, and regulatory permitting.
3. Assistance, procurement or use of genetically modified organisms (GMOs), which would require an amendment to the IEE approved by EE/BEO.
4. Construction, reconstruction, rehabilitation, or renovation work.

Revisions:

Implementers will advise the responsible CTO if they are unable to meet these conditions. Pursuant to 22 CFR 216.3(a)(9), if new information becomes available which indicates that activities to be funded by the Health Project might be "major" and the Program's effect "significant", this determination will be reviewed and revised by the originator of the project and submitted to the E&E Bureau Environmental Officer for approval and, if appropriate, an environmental assessment will be prepared.

USAID APPROVAL OF ENVIRONMENTAL ACTION RECOMMENDED:

Clearance:

Acting Mission Director:  Date 8/1/07
Tom Delaney

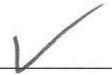
Program Officer:  Date 7/30/07
John Morgan *mybroon*

Mission Environmental Officer (MEO):  Date: 7/30/07
Nina Kavetskaya

HE Office Director:  Date: 7/29/07
Karen Welch

Concurrence:

Bureau Environmental Officer:  Date: 8/01/07
Mohammad Latif

Approved: 

Disapproved: _____

DISCUSSION ON AMENDMENT NO. 2 TO INITIAL ENVIRONMENTAL EXAMINATION (IEE)

Program/Project Data:

Program Objective:	Investing In People
Program Area:	Health
Program Elements:	HIV/AIDS, Tuberculosis, Other Public Health Threats, Maternal and Child Health, Family Planning/Reproductive Health
Country/Region:	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan.
Title of Program:	Health Projects

1. BACKGROUND AND ACTIVITY DESCRIPTION

At independence, the Central Asian countries inherited massive inefficient health systems that they are no longer able to financially support, arguably with the exception of Kazakhstan. These health finance, service delivery, public health and medical education systems in their current forms are simply not able to effectively address the range of problems leading to falling life expectancy in the region. Central Asian countries are experiencing heavy burdens of chronic disease, especially cardiovascular; relatively high infant mortality; high rates of abortion; re-emerging diseases like tuberculosis (TB), syphilis, and malaria; and new diseases, especially HIV/AIDS. At the same time, physicians have not been well prepared to provide high quality evidence-based services that effectively treat the most common and urgent conditions their people are facing. As mechanisms like the Global Fund to Fight AIDS, TB, and Malaria (GFATM) bring money into Central Asian countries to combat these urgent epidemics, it is vital to work on improving the systems that receive and use these funds so that investments will achieve infectious disease control.

A healthier population is crucial to Central Asia's social and economic development and an effective and equitable health care system would be a stabilizing force in a poor and unstable region. Health care is still viewed in the region as a public good that should be universally available. However, continued fiscal and social pressures in all countries but Kazakhstan make change in health care systems inevitable. The question is whether change will result in better health outcomes and better use of scarce economic resources or in reduced access to health services for the poor who comprise the majority of the population.

USAID is providing technical assistance to the governments of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan to make fundamental systemic changes to create a more cost-effective and health care system that improves families' access to equitable, efficient and quality, primary healthcare services. This support includes restructuring financial and health budget systems in pilot oblasts and upgrading the equipment and skills of family doctors, promotion of more effective and efficient delivery of health services and infectious disease control activities addressing tuberculosis, viral hepatitis, and other diseases.

The USAID Central Asia Mission proposes to implement activities to achieve the objectives stated in USAID's CAR Strategy – to increase people's access to and utilization of quality primary health care. To achieve USAID's objectives, the Health Projects will focus on five Program Elements, four of them representing the largest share of project activity and resources as:

Major Elements:

6. **HIV/AIDS** (33%)
7. **Tuberculosis** (23%)
8. **Other Public Health Threats** (18%)
9. **Maternal and Child Health** (16%)

Minor Elements:

10. **Family Planning/Reproductive Health** (10%)

The planned results and illustrative activities for each component are described below.

Program Element 1: HIV/AIDS

Partners will continue to improve HIV-related services, including voluntary counseling and testing, dual infection of HIV and tuberculosis, and antiretroviral therapy; and promote outreach and education among high-risk groups, including drug demand reduction. USAID programs seek to increase national stewardship of the overall response to HIV/AIDS in Central Asia, to improve the region's capacity long-term to contain the epidemic and support those infected and affected by HIV/AIDS.

Partners will support capacity building for HIV surveillance, by continuing to train experts to gather and analyze behavioral and biological data on HIV, syphilis, and hepatitis C. Partners will work with counterparts on the analysis and use of the surveillance data to target prevention efforts. USAID will also continue work to strengthen blood safety through training and laboratory quality control systems.

Partners' work to strengthen stewardship of national HIV/AIDS programs corresponds to an improved legislative, regulatory, and policy framework; educating and empowering high risk populations to protect their health through provision of information on HIV/AIDS, risky behaviors, sexually transmitted infections (STIs), and means of protection; improving the quality and effectiveness of HIV/AIDS services, such as anti-retroviral therapy, dual infection of HIV and tuberculosis (TB), and STIs; and, improving resource use to integrate HIV/AIDS services with primary health care and other health services through integration of HIV/AIDS-related services at the primary health care level.

Containing HIV/AIDS requires a number of approaches, including peer and outreach education activities that support behavioral changes among injecting drug users (IDUs) and prostitutes and improving access to condoms to reduce transmission of STIs and HIV. USAID will work to increase these groups' access to and use of quality drug demand reduction services, social support, and other healthy alternatives to heroin/opiate use.

Illustrative activities include technical assistance and training:

- provide sub-contracts and sub-grants;

- training of community to strengthen and mobilize community organizations to inform about HIV/AIDS;
- training health professionals and NGO representatives on different topics including dual HIV/TB infection, monitoring and evaluation (M&E) for HIV programs, antiretroviral therapy, blood safety, and development of grant applications to leverage other donor resources;
- training and educational sessions on HIV/AIDS prevention in schools, colleges and local communities;
- peer-to-peer HIV education;
- production of effective Information, Education, Communication materials;
- distribution of free condoms;
- shipment and storage of condoms;
- improve referral system on STI diagnostic and treatment;
- improve referral System on VCT (Demand Creation, Moving Labs and Referral system to City AIDS Center);
- monitoring of condom availability;
- counseling of vulnerable population and target groups;
- hire and training staff on developing and improving government capacity to manage HIV prevention and treatment program

Program Element 2: Tuberculosis

Partners implement the ongoing Tuberculosis (TB) Control Program based on the World Health Organization (WHO) DOTS strategy, the internationally recognized approach to TB control. Partners will assist with training and monitoring TB grants from the Global Fund to Fight AIDS, TB, and Malaria, will strengthen the TB monitoring systems; continue developing laboratory quality assurance and drug susceptibility testing protocols; help organize regional Stop TB Partnership; conduct regional TB management workshops; issue guidance for a Logistics Management Information System; hold a Drug Management Workshop; and implement CAR countries' TB communication strategies. Activities provide the national programs with tools that seek to assure the quality of all aspects of TB case management, to help the countries control them TB epidemic and reduce the threat of resistance.

Partners will work to strengthen TB laboratory networks; increase and strengthen human resource capacity for TB control; develop electronic-based case management surveillance; support rational drug management systems; and improve program management, supervision, and evaluation of treatment outcomes.

Continued assistance is required for DOTS Expansion and Enhancement to maintain quality and develop policy and tools at the national level to ensure sustained, successful implementation of DOTS. Work to improve laboratory capacity and quality assurance are included. Also work on TB Care and Support, with national communication strategies increasing community awareness of and responsiveness to TB. Reducing stigma related to TB diagnosis is a necessary step to increase case detection and improve treatment outcomes. Host Country Strategic Information Capacity must be developed in order to avoid drug shortages and interrupted treatment.

Illustrative activities include technical assistance and training:

- provide sub-contracts and sub-grants;
- promotion of political commitment and the improving coordination mechanisms such as High Level Working Group on TB (HLWG) at the national level which is one indicator of government commitment to TB control and its readiness to cooperate with the international TB community.
- technical training for TB doctors and PHC Staff on Rayon and Oblast level on TB treatment protocols;
- technical training for laboratory technicians, conducted routine monitoring visits, created checklists and is introducing an external quality assurance system for smear microscopy in the pilot sites;
- procurement, storage and distribution of necessary laboratory equipment (includes microscopes) and reagents for smear examination;
- training of community to strengthen and mobilize community organizations to inform about TB;
- training health professionals and NGO representatives on different topics including dual HIV/TB infection, monitoring and evaluation (M&E) for TB programs, and development of grant applications to leverage other donor resources;
- training and educational sessions on prevention TB in schools, colleges and local communities;
- production, dissemination, and storage of effective Information, Education, Communication materials ;
- mass screening;
- training on improvement of referral system on TB diagnostic and treatment;
- procure, shipment and storage of medical supplies to treat TB patients;
- provision of nutrition to inpatients and food packages for outpatients;
- research on MDR TB

Program Element 3: Other Public Health Threats

While acknowledging the need to reform, CAR governments continue to need assistance with the development of funding systems, as well as methods to improve overall capacity and quality of care. Partners' assistance in primary health care will provide a direct approach to help redress the resource and access disparities between urban and rural populations.

Partners will work on evidence-based medicine and clinical practice guidelines to improve health outcomes for major causes of morbidity and mortality. Improvements in applied epidemiology strengthen the capacity of the ministries of health to respond to public health threats, training epidemiologists to conduct outbreak investigations and apply findings. Partners will assist to ensure equity in quality standards of care for the full population.

Illustrative activities include technical assistance and training:

- provide sub-contracts and sub-grants;

- Provide policy, legal, and technical expertise to provide assistance to MOH in five countries in different areas
 - legal and policy (health care legal base, basic benefits packages, health financing, legal and organizational status of health providers, internal medicine/arterial hypertension)
 - institutional structure, roles, relationships (MOH and OHD Functional Specification and tenders, service delivery);
 - monitoring and evaluation (national monitoring system, PHC monitoring system);
- training health staff to better manage obstetric, perinatal, and reproductive health care; childhood illnesses;
- training of community to strengthen and mobilize community organizations to inform and advocate for safe motherhood, family planning, reproductive health, and child health initiatives;
- training health professionals and NGO representatives on different topics
- training and educational sessions in schools, colleges and local communities;
- production of effective Information, Education, Communication materials

Program Element 4: Maternal and Child Health

Partners will continue to strengthen priority programs, including safe motherhood. Assistance will continue with the implementation and replication of WHO's Effective Perinatal Care strategies, development of clinical guidelines and national standards. Partners will continue to support pilot sites and promote national roll-out. As a result of prior USG activities on ILBD implementation, many countries committed to apply ILBD nationally in 2008. Work will continue to assist with preparations, including a curriculum on ILBD for medical colleges and universities. Pilot activities will continue on related tools to guide development of effective action plans that will decrease mortality.

Partners will continue to support the implementation of maternal and child health (MCH) activities in collaboration with the Ministries of Health and international donors. MCH services will be improved at the community, rayon, and oblast levels. Evidence-based medicine will serve to guide the development of related clinical protocols and guidelines. Partners assistance will help expand access to quality service approaches including safe motherhood, the Integrated Management of Childhood Illness, ILBD, and training for all levels of service providers.

Partners will continue to strengthen policies, systems, and programs that improve the quality of services for safe motherhood, newborn care, and management of childhood illnesses. Partners will work to improve equitable access and utilization of these services at the primary care level, thereby promoting desired reductions in maternal, infant, and child mortality. Service delivery improvements will focus on pilot sites, at all levels of care, from the community to primary health care facilities and hospitals.

Illustrative activities include technical assistance and training:

- provide sub-contracts and sub-grants;

- Provide policy, legal, and technical expertise to provide assistance to MOH in five countries in safe motherhood area;
- training of community to strengthen and mobilize community organizations to inform and advocate for safe motherhood, and child health initiatives;
- training health professionals and NGO representatives on different topics
- production of effective Information, Education, Communication materials

Program Element 5: Family Planning/Reproductive Health

The USG seeks to expand access to high-quality voluntary family planning services and information, to reduce unwanted pregnancies, abortions, and maternal and child morbidity and mortality. To promote family planning, service providers need to overcome method bias, misinformation, and limited skills in interpersonal communication and patient counseling. Similarly, the public needs to be educated on the health benefits for women and children of family planning and appropriate timing between births. Two important approaches to reduce unwanted pregnancies and repeat abortions include more family planning information and improved post-partum and post-abortion services. Contraceptive security is another challenge.

Partners will assist with implementing models to enhance family planning services in the public sector. For the general population partners will support education and counseling of women and men to access new services and improve health behaviors. Improving health care systems and increasing training for rural midwives will ensure that services are available through primary health care settings.

Illustrative activities include technical assistance and training:

- provide sub-contracts and sub-grants;
- provide policy, legal, and technical expertise to provide assistance to MOH in five countries in the area of Family Planning/Reproductive Health;
- training health staff to better manage obstetric, perinatal, and reproductive health care; childhood illnesses;
- training of community to strengthen and mobilize community organizations to inform and advocate for family planning, and reproductive health initiatives;
- training health professionals and NGO representatives on FP topics;
- production of effective Information, Education, Communication materials;
- review of what the opportunities and constraints (including financial incentives and disincentives) are for the private sector as it intersects with FP/RH service and product supply provision in the E&E region;
- review of legislation and legal policy governing, constraining and enhancing the private sector as it intersects with FP/RH;
- identify current best practices in E&E bilaterals for investing in the private sector;
- conduct a market analysis of FP/RH service and commodity provision. Examine:
 - Contraceptive methods;
 - Use rates;
 - Availability of methods
 - Manufacturers

- Price of methods
- Provider preferences
- Financial barriers to service provision and commodity procurement from:
 - Client perspective;
 - Provider perspective;
 - Public and private sector perspective
- Stratification between public and private sector provision of services and commodities.
- recommend ways to appropriately and strategically broaden:
 - general availability of method mix (whether regionally or by country) and/or
 - availability of specific preferred methods by country.
- recommendations for activities that can be used to build bilateral FP/RH private sector investment in E&E based on the desk reviews and best practice bilateral review;
- provide technical assistance to USAID E&E bilaterals as they implement recommendations;
- procurement, shipment; storage and distribution of contraceptives;
- social marketing of contraceptives, including advertising and community outreach.

2.0 BASELINE COUNTRY AND ENVIRONMENTAL INFORMATION

Health conditions in the countries of the Former Soviet Union including Central Asia are very poor, severe enough to at least hinder if not threaten economic and political progress. The trends of infectious diseases in the CAR reflect the deterioration of health care systems since the breakup of the Soviet Union in the early 1990s. This breakup facilitated the spread of infectious diseases, including HIV, STIs, TB and MDR-TB.

The HIV/AIDS epidemic in Central Asia is currently concentrated among most-at-risk populations, primarily injecting drug users, prostitutes and prisoners. While the overall prevalence is less than one percent in the general population, it is greater than five percent in several of these groups practicing high-risk behaviors. For instance, a study conducted by CDC found that 25 percent of injecting drug users were HIV positive in Temirtau, Kazakhstan. In Uzbekistan's Yangiyul city, the figure is almost 40 percent. Injecting drug use continues to be the most common method of transmission, although data on increasing heterosexual transmission, fuelled by the growing numbers of female drug users engaged in prostitution, indicate that the epidemic could potentially spread beyond these groups. Recent World Bank projections indicate that mortality rates in the region could increase nearly tenfold from 2005 to 2020 as a result of HIV/AIDS.

Among the former Soviet republics, the five Central Asian Republics are all in the top for estimated tuberculosis case rates. Kazakhstan has the highest incidence rate, with 178 cases per 100,000 population in 2002. In addition, multidrug-resistant TB (MDR-TB) has become a serious problem. The Third Global Report on Anti-Tuberculosis Drug Resistance Surveillance, cosponsored by the World Health Organization (WHO) and the International Union Against Tuberculosis and Lung Disease, recently identified Kazakhstan as having the highest proportion of MDR-TB (more than 14 percent of newly diagnosed cases) among countries surveyed.

At independence, the Central Asian countries inherited massive inefficient health systems that they are no longer able to financially support, arguably with the exception of Kazakhstan. These health finance, service delivery, public health and medical education systems in their current forms are simply not able to effectively address the range of problems leading to falling life expectancy in the region. Central Asian countries are experiencing heavy burdens of chronic disease-especially cardiovascular; relatively high infant mortality; high rates of abortion; re-emerging diseases like tuberculosis (TB), syphilis, and malaria; and new diseases, especially HIV/AIDS. At the same time, physicians have not been well prepared to provide high quality evidence-based services that effectively treat the most common and urgent conditions their people are facing. As mechanisms like the Global Fund to Fight AIDS, TB, and Malaria (GFATM) pour money into Central Asian countries to combat these urgent epidemics, it is vital to work on improving the systems that receive these funds so that investments will achieve effective infectious disease control.

USAID and other donors have tackled health reform and health service delivery system restructuring in a number of former Soviet Union countries since approximately 1992. In Central Asia, these efforts have met with real achievements: multiple components of the health system in Kyrgyzstan reformed-health finance, health insurance, family medicine, and the health information system; results in specific reform areas in Kazakhstan - health finance and health information systems; and in Uzbekistan - rural primary health care reform established and rapidly being extended. Tajikistan is only beginning the health reform process, but making excellent progress to date in family medicine retraining, and taking the first steps in health finance reform. In Turkmenistan, where comprehensive health reform is unlikely, clinical retraining has been the focus.

USAID will support the Governments of the Central Asian Republics in building capacities to respond to these challenges of infectious and non-communicable diseases and other problems of health care systems.

3.0 EVALUATION OF ACTIVITY/PROGRAM ISSUES WITH RESPECT TO ENVIRONMENTAL IMPACT POTENTIAL

Activities on HIV/AIDS, TB, Other Public Health Threats, Maternal and Child Health, Family Planning/Reproductive Health which involve technical assistance, training, analyses, studies, academic workshops and meetings, document and information transfers under project elements (1-5) are not expected to have an adverse impact on the environment.

The quality commercial laboratory equipment, laboratory reagents and other consumables possess low risk to health and environment if used properly. The risk to human health is determined primarily by the improper utilization, handling, storage and disposal of the equipment and waste. Medical waste includes (but is not limited to): antigen kits, other diagnostic kits and reagents. Special precautions need to be taken if plastics are to be burned as they release very carcinogenic chemicals like furans. Therefore, in order to address any significant environmental effects possible from procurement, use, and disposal of medical equipment, reagents, and supplies (elements 1,2,5); a system of environmental screening, review, monitoring, and mitigation measures as presented in Section 4 of this IEE will be followed by Implementers, including the Implementer's Procedures presented in that section.

As described in Section 1, all of the specific activities planned under the Elements 3 and 4 and most of those under Elements 1, 2 and 5 of the Health Project, in particular those consisting of technical assistance, training, analysis, policy advising and information sharing, qualify for a categorical exclusion.

4.0 RECOMMENDED MITIGATION ACTIONS (INCLUDING SCREENING, REVIEW, MONITORING AND EVALUATION)

A. Environmental Screening and Review: The environmental screening and review procedures presented below require that Implementers will put in place specific mechanisms to conduct environmental review for their activities. These procedures are presented in Annex 1 as the Environmental Review and Assessment Checklist.

All activities will be individually screened by BEO-approved environmental impact specialist using the procedure explained in "Summary of Procedures." Implementers will use the form to categorize the level of environmental concern for each activity. For "Recommended Action" (a), (b), and (c) projects, Environmental Review Reports, including Mission Environmental Officer (MEO) review will be completed prior to funding. No "Recommended Action" (d), (e), or (f) activities will be approved without adequate alterations in the activity and will then be subject to a new activity review process which will include BEO concurrence. All awards will contain clauses stating that funding of "Recommended Action" (a), (b), or (c), activities is contingent on findings, recommendations and clearance of the environmental documentation. Copies of each screening form and (signed) Environmental Review Report will be kept in the Implementers file materials as part of the grantee's application.

Implementers' progress reports to USAID shall contain a section specific to Mitigation and Monitoring (M&M) and will include project summaries along with environmental impacts, success or failure of mitigating measures being implemented, results of environmental monitoring, and any major modifications/revisions to the project, mitigating measures or monitoring procedures.

Implementers' annual report will include an annex containing a table indicating the title, date of award, and category of each grant activity. The M&M section in the quarterly report and the Annex from the Annual Report will be submitted to the BEO for review of compliance measures per 22CFR216.10.

B. Implementer Procedures (Abt Associates Inc., Project HOPE, JSI and other implementers to be determined): In addition to the attached Environmental Review and Assessment Checklist (Annex 1), Implementers will also employ the following process for procurement, use, and disposal of medical equipment, reagents, and supplies (components 1-3); and remain cognizant that the IEE checklist will be used as a quantitative evaluation guideline by Implementers:

- In administering the program the Implementers shall exercise due diligence and follow the standard conditions for the operation and management of medical

- equipment, supplies and reagents storage and medical waste disposal (Annex 2a & 2 b). They will encourage, promote and monitor the adherence to protocols concerning the proper handling, storage, use and disposal of medical materials, equipment, supplies and other related substances; they will examine the storage, use and disposal practices of each participating facility, providing information, operational manuals, and additional training as appropriate; and they will assist facilities to strengthen medical waste use, storage and disposal practices.
- Implementers will be required to review all sub-contracts should sub-contractors be involved in an activity implementation.
 - Implementers will be required to review all sub-contracts should sub-contractors be involved in an activity implementation. Implementers' qualified (BEO-approved) environmental impact specialist will assess and recommend further environmental actions to be taken for each project. The specialist will also comment on projects which show potential for significantly adverse environmental impact.
 - Any activity indicating positive or the potential for positive determination (adverse environmental impact) will be critically reviewed by the BEO approved environmental impact specialist. Prior to approval, Implementers must incorporate appropriate mitigation and monitoring measures into the project activity design. No activity having potential adverse environmental impacts shall be implemented unless a Mitigation and Monitoring Plan or an Environmental Assessment (EA) is completed and approved by the BEO. Compliance with the Mitigation and Monitoring (M&M) Plan will be incorporated into the agreement document.
 - Host country laws and regulations for environmental protection and management will be followed in implementing the activities, unless otherwise specified. For project activities categorized as "potential risks" or definitive risks" of environmental impact, Implementers will obtain a letter from the local or regional office for environment protection stating that this office (a) has been contacted by Implementers concerning the project activity; (b) will be aware of the potential environmental impacts of the project to help ensure that no detrimental impact will results from this activity. In this way Implementers maintain the integrity by continuing to place the responsibility with local environment experts and governmental departments.
 - Monitoring will be conducted during the project (beginning with a baseline) to determine the environmental impact (positive and/or negative) of all project activities. The Implementers shall use only qualified staff for overseeing the mitigation and monitoring work. Monitoring shall occur on an as-needed basis. The Implementers will ensure that the environmental procedures are implemented, potential impacts mitigated, and indirect and cumulative effects are considered for each activity. If negative environmental impacts are discovered through regular monitoring and evaluation of project activities, immediate actions will be taken to rectify the situation.

- Relevant environmental mitigation and monitoring measures established in this IEE and required for compliance with the MMP will be incorporated into the award performance criteria for all prime partners and implementers.
- Provide documentation of proper disposal of medical equipment or material waste generated and report its disposal with quantities. Photo documentation should be provided from both the generation and disposal sites. Attach a copy of any local permits that were obtained by the project.

C. Examples of mitigation measures: For illustrative purposes the following list describes some of the types of environmental impacts that could require monitoring and mitigation measures:

- If the procured equipment produces any disruption to facilities outside of the laboratories where the equipment will be provided, the work of the equipment should be scheduled to minimize it; e.g., conducted only with the specific written authorization of the facility administrator.
- Through communications and training, ensure that personnel be extremely conscientious that they, through their work in surveillance and infectious disease outbreak investigations, could actually be infection and disease spreaders.
- Examine the storage, use, and disposal practices of each participating facility.
- Provide information, manuals, and training as appropriate on these practices.
- Assist facilities to strengthen medical waste use, transport, storage, treatment, and disposal practices, and periodically monitor implementation of those practices.
- Where relevant, Implementers will develop succinct best management practices (BMPs).
- Additional guidance prepared by WHO for dealing with medical waste is available from: [http://www.who.int/water_sanitation_health/medicalwaste/wastemanag/en /](http://www.who.int/water_sanitation_health/medicalwaste/wastemanag/en/).
- These BMPs will be approved by the BEO/MEO before implementing this component of program activity.
- Replaced and/or discarded equipment/materials will be disposed of in designated landfill approved by local municipal authorities.
- Facility maintenance personnel will be trained in the methods and techniques for all new equipment.
- Branded materials will be handled and used in accordance with manufacturer's instructions and recommendations.

5.0 SUMMARY OF FINDINGS:

Following is a summary of the recommended threshold determinations for the proposed activities:

Environmental Determination for Projects in Health Area

Recommended Action: Categorical Exclusion.

Pursuant to 22 CFR 216(c)(3), the originator of the proposed activities has determined that all USAID support under Program Elements 3 and 4 and most of the activities under Program Elements 1, 2 and 5, with the exception of those noted in points b) below, consists of types of

interventions entirely within the categories listed in paragraph (c)(2) of Section 216.2 of Title 22 CFR 216, and therefore are categorically excluded from any further environmental review requirements. The originator of the proposed action has further determined that the proposed activities are fully within the following classes of actions:

- Education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities, etc.) [22 CFR 216.2(c)(2)(i)];
- Analyses, studies, academic or research workshops and meetings [22 CFR 216.2(c)(2)(iii)];
- Document and information transfers [22 CFR 216.2(c)(2)(v)];
- Programs involving nutrition, health care or population and family planning services except to the extent designed to include activities directly affecting the environment (such as construction of facilities, water supply systems, waste water treatment, etc.) – [22CFR 216.2(c)(2)(viii)].

For all these activities having no effect on the natural or physical environment

Recommended Action: Negative Determination with conditions: Possible environmental impacts are to be assessed and appropriate monitoring and mitigation activities defined and implemented.

Pursuant to 22CFR216.3 (a)(2)(iii), the originator of the proposed activities recommends a negative determination with conditions for procurement, use, and disposal of medical equipment, reagents, and supplies (Program Elements 1,2, and 5) to ensure unintended effects on the environment are mitigated as discussed in Section 4 part A, B, and C. The originator requests that E&E Bureau approve a negative threshold decision for those activities contingent on the use of review, monitoring, and mitigation measures discussed in Section 4.

Resource Allocation, Training and Reporting Requirements:

The Contracts, Cooperative Agreements with the implementers of the Health Projects will include a requirement to follow all recommendations of this IEE, including completed Environmental Review and Assessment Checklist.

The Implementer's Quarterly reports to USAID shall contain a section specific to Mitigation and Monitoring and will include project summaries along with environmental impacts, success or failure of mitigative measures being implemented, results of environmental monitoring, and any major modifications/revisions to the project, mitigative measures or monitoring procedures. Implementer's annual report will include an annex containing a table indicating the title, date of award, and category of each grant activity.

The Contractor may use the Environmental Status Reports (Annex 3) to provide identified USAID staff with the information on environmental impacts, success or failure of mitigation measures or monitoring procedures.

The Mission will arrange Environmental Training of the implementer(s) by the BEO or his designee prior to start of the activity implementation.

Limitations of the IEE:

This IEE does not cover activities involving:

1. Assistance for the procurements (includes payment in kind, donations, guarantees of credit) or use (including handling, transport, fuel for transport, storage, mixing, loading, application, clean up of spray equipment, and disposal) of pesticides (where pesticides cover all insecticides, fungicides, and rodenticides, etc. covered under the “Federal Insecticide, Fungicide, and Rodenticide Act” FIFRA.) or activities involving procurement, transport, use, storage, or disposal of toxic materials, which will require an amended IEE submitted to EE/BEO for approval.
2. Activities involving support to agro-processing, industrial enterprises, and regulatory permitting.
3. Assistance, procurement or use of genetically modified organisms (GMOs), which would require an amendment to the IEE approved by EE/BEO.
4. Construction, reconstruction, rehabilitation, or renovation work.

Revisions:

Implementers will advise the responsible CTO if they are unable to meet these conditions. Pursuant to 22 CFR 216.3(a)(9), if new information becomes available which indicates that activities to be funded by the Health Project might be "major" and the Program's effect "significant", this determination will be reviewed and revised by the originator of the project and submitted to the E&E Bureau Environmental Officer for approval and, if appropriate, an environmental assessment will be prepared.

Annex 1.



ENVIRONMENTAL REVIEW (ER) AND ASSESSMENT CHECKLIST

Location: (Attached is a location map as well as site photos in color)

Type of Project/Activity: Health Project

Project/Activity Description: (One or two paragraphs to present activity description for impact analysis purpose)

Name of reviewer: (attached a letter showing person has been approved by the E&E/BEO)

Date of Review:

The purpose of this *Environmental Assessment Checklist (EA Checklist)* is to determine whether the proposed action (scope of work) encompasses the potential for environmental pollution or damage and, if so, to determine the scope and extent of additional environmental evaluation, mitigation, and monitoring necessary to fulfill federal U.S. environmental requirements. The *EA Checklist* is intended to be used by Cognizant Technical Officer (CTO) to ensure that environmental consequences are taken into account.

A. CHECKLIST FOR ENVIRONMENTAL CONSEQUENCES: Check appropriate column as Yes (Y), Maybe (M), No (N) or Beneficial (B). Briefly explain Y, M and B checks in next Section, "Explanations". A "Y" response does not necessarily indicate a significant effect, but rather an issue that requires focused consideration.

Y. M. N or B

1. **Earth Resources**
 - a. grading, trenching, or excavation in cubic meters or hectare _____
 - b. geologic hazards (faults, landslides, liquefaction, un-engineered fill, etc.) _____
 - c. contaminated soils or ground water on the site _____
 - d. offsite overburden/waste disposal or borrow pits required in cubic meters or tons _____
 - e. loss of high-quality farmlands in hectares _____

2. **Agricultural and Agrochemical**
 - a. impacts of inputs such as seeds and fertilizers _____
 - b. impact of production process on human health and environment _____
 - c. other adverse impacts _____

3. **Industries**
 - a. impacts of run-off and run-on water _____
 - b. impact of farming such as intensification or extensification _____
 - c. impact of other factors _____

4. **Air Quality**
 - a. substantial increase in onsite air pollutant emissions (construction/operation) _____
 - b. violation of applicable air pollutant emissions or ambient concentration standards _____
 - c. substantial increase in vehicle traffic during construction or operation _____
 - d. Demolition or blasting for construction _____
 - e. substantial increase in odor during construction or operation _____
 - f. substantial alteration of microclimate _____

- 5. **Water Resources and Quality**
 - a. river, stream or lake onsite or within 30 meters of construction _____
 - b. withdrawals from or discharges to surface or ground water _____
 - c. excavation or placing of fill, removing gravel from, a river, stream or lake _____
 - d. onsite storage of liquid fuels or hazardous materials in bulk quantities _____

- 6. **Cultural Resources**
 - a. prehistoric, historic, or paleontological resources within 30 meters of construction _____
 - b. site/facility with unique cultural or ethnic values _____

- 7. **Biological Resources**
 - a. vegetation removal or construction in wetlands or riparian areas in hectare _____
 - b. use of pesticides/rodenticides, insecticides, or herbicides in hectare _____
 - c. Construction in or adjacent to a designated wildlife refuge _____

- 8. **Planning and Land Use**
 - a. potential conflict with adjacent land uses _____
 - b. non-compliance with existing codes, plans, permits or design factors _____
 - c. construction in national park or designated recreational area _____
 - d. create substantially annoying source of light or glare _____
 - e. relocation of >10 individuals for +6 months _____
 - f. interrupt necessary utility or municipal service > 10 individuals for +6 months _____
 - g. substantial loss of inefficient use of mineral or non-renewable resources _____
 - h. increase existing noise levels >5 decibels for +3 months _____

- 9. **Traffic, Transportation and Circulation**
 - a. increase vehicle trips >20% or cause substantial congestion _____
 - b. design features cause or contribute to safety hazards _____
 - c. inadequate access or emergency access for anticipated volume of people or traffic _____

- 10. **Hazards**
 - a. substantially increase risk of fire, explosion, or hazardous chemical release _____
 - b. bulk quantities of hazardous materials or fuels stored on site +3 months _____
 - c. create or substantially contribute to human health hazard _____

- 11. **Other Issues** (to be used for categories not captured under 1 through 10 above)
 - a. Substantial adverse impact _____
 - b. Adverse impact _____
 - c. Minimal impact _____

B. EXPLANATION OF ENVIRONMENTAL CONSEQUENCES: explain Y, M and B responses

C. RECOMMENDED ACTION (Check Appropriate Action):

- a) The project has no potential for substantial adverse environmental effects. No further environmental review is required.

- b) The project has little potential for substantial adverse environmental effects; however the recommended mitigation measures will be developed and incorporated in the project design. No further environmental review is required.

- c) The project has substantial but mitigatable adverse environmental effects and required measures to mitigate environmental effects. Mitigation and Monitoring (M&M) Plan must be developed and approved by the BEO and/or REO prior to implementation. M&M Plan is to be attached to the Scope of Work.

- d) The project has potentially substantial adverse environmental effects, but requires more analysis to form a conclusion. **A Scoping Statement must be prepared and be submitted to the BEO for approval. Following BEO approval an Environmental Assessment (EA) will be conducted. Project may not be implemented until the BEO approves the final EA.**
- e) The project has potentially substantial adverse environmental effects, and revisions to the project design or location or the development of new alternatives is required.
- f) The project has substantial and unmitigable adverse environmental effects. Mitigation is insufficient to eliminate these effects and alternatives are not feasible. The project is not recommended for funding.

D. IDENTIFIED SIGNIFICANT ENVIRONMENTAL IMPACTS (including **physical, biological and social**), if any: (Use ER tools such as **Leopold Matrix** to identify significant environmental impacts)

E. RECOMMENDED MITIGATION MEASURES (if any):

F. RECOMMENDED MONITORING MEASURES (if any):

APPROVAL:

Implementer Project Director/COP: _____ Date: _____

USAID/ Project CTO: _____ Date: _____

USAID Mission Environmental Officer: _____ Date: _____

COPY TO:

USAID Bureau Environmental Officer, AIDW: _____ Date: _____

Annex 2a:**Standard Conditions for Medical Waste Disposal**

Medical waste disposal activities occur in association with a wide variety of development projects financed by USAID. Medical waste is **Uncontaminated** or **Biohazardous**. **Uncontaminated** waste means there is no biohazardous, chemical or radioactive contamination. **Biohazardous** waste includes the following: primary human cell lines and tissue cultures; organisms with recombinant DNA; cultures and stocks of infectious agents; potentially infectious bacteria, viruses, and spores, toxins; live and attenuated vaccines; blood and blood products. If biohazardous waste is also contaminated with chemical and/or radioactive materials, it should not be disposed as medical waste, and requires special procedures. Both uncontaminated and/or biohazardous medical waste should be sorted in various types of containers. Containers for medical waste include: Sharp containers; Biohazard containers; Pathological containers; Trash containers (blue lined); and Cardboard containers.

1. For *Uncontaminated* Or Contaminated Only With *Biohazardous* Waste: Disposal in *Sharps Container*

Waste includes:

Uncontaminated:

- Needles.
- Needles w/syringes.
- Needles w/attached tubing.
- Blades (razors, scalpels, ets).

Biohazardous:

- Broken glass.
- Pasteur pipettes.
- Other glass pipettes.
- Microscope slides
- Other contaminated sharps items

Disposal procedures include:

- Closing the Sharps container when 2/3 full.
 - Disposing in either a biohazards container or grey biohazard pickup container.
- Both containers need red biohazards bags before disposing harps container.
- Filling out medical Waste Accumulation Log.

2. For *Uncontaminated* or Contaminated only With *Biohazardous* Waste: Disposal in *Biohazard Container*.

Waste includes:

Uncontaminated:

- Plastic syringes w/out needles.

Biohazardous:

- Plastic pipettes.
- Pipette tips.
- Culture dishes.
- Plastic centrifuge tubes.
- Eppendorf tubes.
- Glass vials
- Vacutainers
- Disposable gloves
- Wipes

- Surgical drapes
 - Other contaminated nonsharps items.
- Disposal procedures include:
- Closing the red biohazard bag.
 - Keeping the bag secondarily contained during transportation
 - Disposing bag into a grey biohazard pickup container.
 - Filling out medical Waste Accumulation Log.
 - Transferring all biohazardous waste to the pickup.

3. For *Uncontaminated* or Contaminated only With *Biohazardous* Waste: Disposal in *Pathological Container*

Waste includes:

Uncontaminated and/or Biohazardous:

- Large tissue specimens.
- Animal carcasses.
- Other recognizable human or animal body parts and tissues.

Disposal procedures include:

- Closing the red biohazard bags.
- Keeping the bag in a red Pathological Waste container (or freezer until pickup time).
- Filling out medical Waste Accumulation Log.
- Transferring all pathological waste to the pickup site.

4. For Disposal of *Uncontaminated* Medical Waste: Medical Waste Disposal in *Trash Container*

Waste includes:

Uncontaminated:

- Plastic pipettes.
 - Pipette tips.
 - Culture dishes.
 - Plastic centrifuge tubes.
 - Eppendorf tubes.
 - Disposable gloves.
 - Wipes
 - Surgical drapes.
 - Reagent bottles (intact)
 - Other uncontaminated nonglass items
- Disposal procedures: The janitors will dispose.

5. For Disposal of *Uncontaminated* Medical Waste: Disposal in *Cardboard Box Container*

Waste includes:

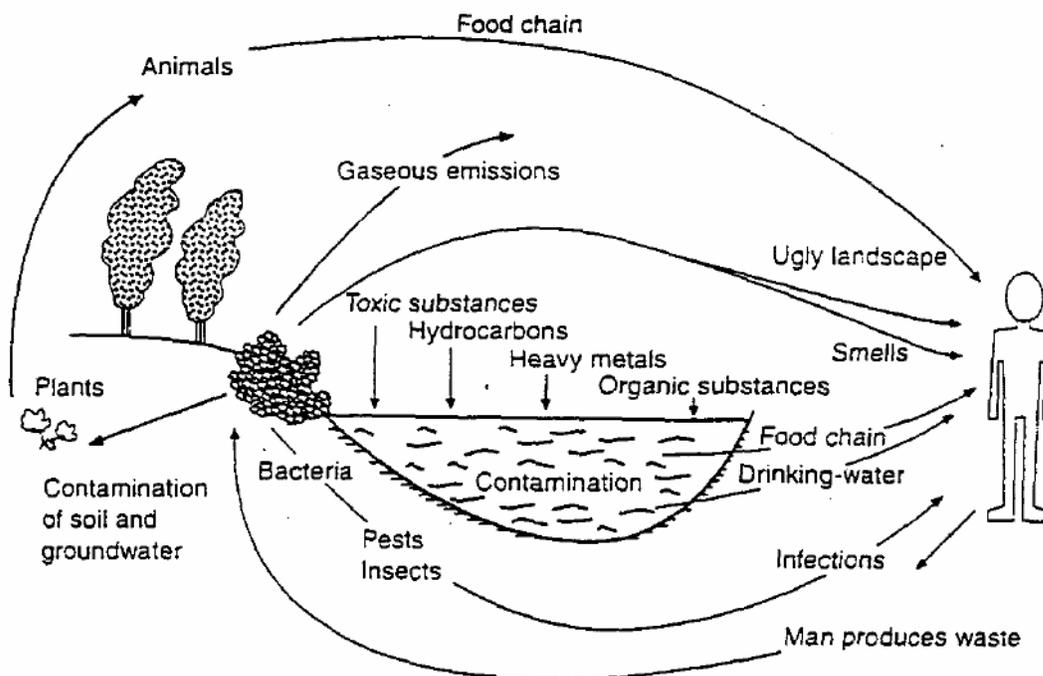
Uncontaminated:

- Broken glass.
- Pasteur pipettes.
- Other glass pipettes.
- Microscope slides.
- Glass vials.
- Vacutainers.
- Other uncontaminated glass items

Disposal procedures include:

- Sealing box closed and labeled "Broken Glass".
- Setting out for janitorial pickup.

6. Biohazardous Waste, Pathological Waste, and Full Sharps Containers can not accumulate onsite for more than 7 days above 32F (0C)

ANNEX 2b - SAFE MANAGEMENT OF WASTES FROM HEALTH-CARE ACTIVITIES**Figure 1. Routes of exposure to hazards caused by open dumping****Land disposal****Municipal disposal sites**

If a municipality or medical authority genuinely lacks the means to treat wastes before disposal, the use of a landfill has to be regarded as an acceptable disposal route. Allowing health-care waste to accumulate at hospitals or elsewhere constitutes a far higher risk of the transmission of infection than careful disposal in a municipal landfill, even if the site is not designed to the standard used in higher-income countries. The primary objections to landfill disposal of hazardous health-care waste especially untreated waste may be cultural or religious or based on a perceived risk of the release of pathogens to air and water or on the risk of access by scavengers.

There are two distinct types of waste disposal to land -- *open dumps* and sanitary landfills.

- Open dumps are characterized by the uncontrolled and scattered deposit of wastes at a site; this leads to acute pollution problems, fires, higher risks of disease transmission, and open access to scavengers and animals. Healthcare waste should not be deposited on or around open dumps. The risk of either people or animals coming into contact with infectious pathogens is obvious, with the further risk of subsequent disease transmission, either directly through wounds, inhalation, or ingestion, or indirectly through the food chain or a pathogenic host species (see Fig. 1).
- Sanitary landfills are designed to have at least four advantages over open dumps: geological isolation of wastes from the environment, appropriate engineering preparations before the site is ready to accept wastes, staff present on site to control operations, and organized deposit and daily coverage of waste. Some of the rules applicable to sanitary landfills are listed in Box 1. Disposing of certain types of health-care waste (infectious waste and small quantities of pharmaceutical waste) in sanitary landfills is acceptable; sanitary landfill prevents contamination of soil and of surface water and groundwater, and limits air pollution, smells, and direct contact with the public.

Box 1. Some essential elements for design and operation of sanitary landfills

- Access to site and working areas possible for waste delivery and sits vehicles.
- Presence of site personnel capable of effective control of daily operations.
- Division of the site into manageable bases appropriately prepared before landfill starts.
- Adequate sealing of the base and sides of the site to minimize the movement of wastewater (leachate) off the site.
- Adequate mechanisms for leachate collection and treatment systems if necessary.
- Organized deposit of wastes in a small area, allowing them to be spread, compacted, and covered daily.
- Surface water collection trenches around site boundaries.
- Construction of a final cover to minimize rainwater infiltration when each phase of the landfill is completed.

Upgrading from open dumping directly to sophisticated sanitary landfills may be technically and financially difficult for many municipalities. It has often been found impossible to sustain such efforts from the available local resources. However this is no reason for municipal authorities to abandon the move towards safer land disposal techniques, perhaps by a gradual approach, such as that outlined in Box 2.

In the absence of sanitary landfills; any site from a controlled dump upwards could accept health-care waste and avoid any measurable increase in infection risk. The minimal requirements would be the following:

- an established system for rational and organized deposit of wastes which could be used to dispose of health-care wastes;
- some engineering work already completed to prepare the site to retain its wastes more effectively;
- rapid burial of the health-care waste, so that as much human or animal contact as possible is avoided.

It is further recommended that health-care waste be deposited in one of the two following ways:

- In a shallow hollow excavated in mature municipal waste in the layer below the base of the working face, and immediately covered by a 2-metre layer of fresh municipal waste. Scavenging in this part of the site must be prevented. The same method is often used for hazardous solid industrial wastes; it is specifically intended to prevent animals and scavengers from re-excavating the deposited healthcare waste.
- In a deeper (1-2m) pit excavated in mature municipal waste (i.e. waste covered at least 3 months previously). The pit is then backfilled with the mature municipal waste that was removed. Scavenging in this part of the site must be prevented.

Alternatively, a special *small burial pit* could be prepared to receive health-care waste only. The pit should be 2m deep and filled to a depth of 1-1.5m. After each waste load, the waste should be covered with a soil layer 10-15cm deep. If coverage with soil is not possible, lime may be deposited over the waste. In case of outbreak of an especially virulent infection (such as Ebola virus), both lime and soil cover may be added. Access to this dedicated disposal area should be restricted, and the use of a pit would make supervision by landfill staff easier and thus prevent scavenging. A typical example of pit design for health-care waste is shown in Fig. 2.

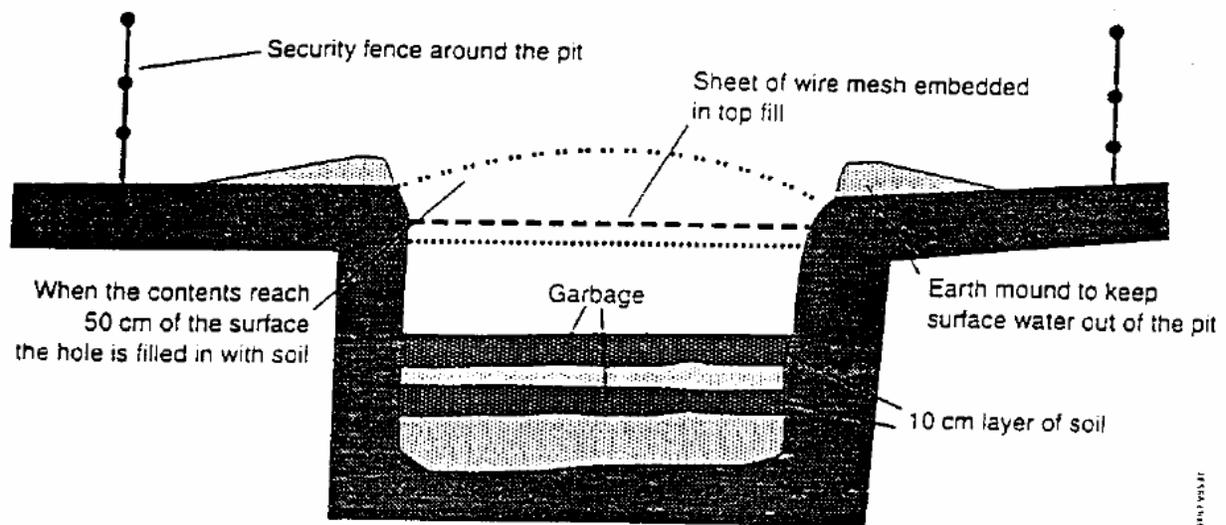
Box 2. Proposed pathway for gradual upgrading of landfills¹

1. **From open dumping to "controlled dumping"**. This involves reduction of the working area of the site to a more manageable size (2ha for a medium-size town), covering unneeded areas of the site with soil, extinguishing fires, and agreeing rules of on-site working with scavengers if they cannot be excluded completely.
2. **From controlled dumping to "engineered landfill"**. This involves the gradual adoption of engineering techniques to prevent surface water from entering the waste, extract and spread soils to cover wastes, gather wastewater (leachate) into lagoons, spread and compact waste into thinner layers, prepare new pans of the landfill with excavation equipment, and isolate the waste from the surrounding geology (e.g. with plastic sheeting under the waste).
3. **From engineered landfill to "sanitary landfill"**. This involves the continuing refinement with increasing design and construction complexity, of the engineering techniques begun for engineered landfill. In addition, there should be landfill gas control measures, environmental monitoring points and bore holes (for monitoring air and groundwater quality), a highly organized and well trained work force, detailed record-keeping by the site office, and, in some circumstances, on-site treatment of leachate.

¹ Adapted from Rushbrook & Pugh(1997).

Before health-care wastes are sent for disposal, it is prudent to inspect Landfill sites to ensure that there is sensible control of waste deposition.

Figure 2. Example of a small burial pit for health-care waste



Encapsulation

Disposal of health-care waste in municipal landfills is less advisable if it is untreated than if it is pretreated. One option for pretreatment is encapsulation, which involves filling containers with waste, adding an immobilizing material, and sealing the containers. The process uses either cubic boxes made of high-density polyethylene or metallic drums, which are three-quarters filled with sharps and chemical or pharmaceutical residues. The containers or boxes are then filled up with a medium such as plastic foam, bituminous sand, cement mortar, or clay material. After the medium has dried, the containers are sealed and disposed of in landfill sites.

This process is relatively cheap, safe, and particularly appropriate for establishments that practice **minimal programs** for the disposal of sharps and chemical or pharmaceutical residues. Encapsulation alone is not recommended for non-sharp infectious waste, but may be used in combination with burning of such waste. The main advantage of the process is that it is very effective in reducing the risk of scavengers gaining access to the hazardous health-care waste.

Safe burial on hospital premises

In health-care establishments that use minimal programs for healthcare waste management, particularly in remote locations, in temporary refugee encampments, or in areas experiencing exceptional hardship, the safe burial of waste on hospital premises may be the only viable option available at the time. However, certain basic rules should still be established by the hospital management:

- Access to the disposal site should be restricted to authorized personnel only.
- The burial site should be lined with a material of low permeability, such as clay, if available, to prevent pollution of any shallow groundwater that may subsequently reach nearby wells.
- Only hazardous health-care waste should be buried. If general hospital waste were also buried on the premises, available space would be quickly filled up.
- Large quantities (>1 kg) of chemical wastes should not be buried at one time. Burying smaller quantities avoids serious problems of environmental pollution.
- The burial site should be managed as a landfill, with each layer of waste being covered with a layer of earth to prevent odors, as well as to prevent rodents and insects proliferating.

The safety of waste burial depends critically on rational operational practices. The design and use of the burial pit are described in the previous section and illustrated in Fig. 2. The bottom of the pit should be at least 1.5 meters higher than the groundwater level.

Land disposal of residues

After disinfection or incineration, infectious health-care waste becomes non-risk waste and may be finally disposed of in landfill sites. However, certain types of health-care waste, such as anatomical waste, will still have an offensive visual impact after disinfection, and this is culturally unacceptable in many countries. Such wastes should therefore be made unrecognizable before disposal, for example by incineration. If this is not possible, these wastes should be placed in containers before disposal.

Inertization

The process of "inertization" involves mixing waste with cement and other substances before disposal in order to minimize the risk of toxic substances contained in the waste migrating into surface water or groundwater. It is especially suitable, for pharmaceuticals and for incineration ashes with a high metal content (in this case the process is also called "stabilization").

For the inertization of pharmaceutical waste, the packaging should be removed, the pharmaceuticals ground, and a mixture of water, lime, and cement added. A homogeneous mass is formed and cubes (e.g. of 1m³) or pellets are produced on site and then can be transported to a suitable storage site. Alternatively, the homogeneous mixture can be transported in liquid state to a landfill and poured into municipal waste.

The following are typical proportions for the mixture:

- 65% pharmaceutical waste
- 15% lime
- 15% cement
- 5% water

The process is reasonably inexpensive and can be performed using relatively unsophisticated equipment. Other than personnel, the main requirements are a grinder or road roller to crush the pharmaceuticals a concrete mixer, and supplies of cement, lime, and water.

The main advantages and disadvantages of the various treatment and disposal options addressed in this handbook are outlined in Table 1.

Table 1. Summary of main advantages and disadvantages of treatment and disposal options.

Treatment/ disposal method	Advantages	Disadvantages
Rotary kiln	<ul style="list-style-type: none"> • Adequate for all infectious waste, most chemical waste and pharmaceutical waste. 	<ul style="list-style-type: none"> • High investment and operating costs.
Pyrolytic incineration	<ul style="list-style-type: none"> • Very high disinfection efficiency. • Adequate for all infectious waste and most pharmaceutical and chemical waste. 	<ul style="list-style-type: none"> • Relatively high investment and operating costs.
Single-chamber incineration	<ul style="list-style-type: none"> • Good disinfection efficiency • Drastic reduction of weight and volume of waste. • The residues may be disposed of in landfills. No need for highly trained operators. • Relatively low investment and operating costs. 	<ul style="list-style-type: none"> • Significant emissions of atmospheric pollutants. • Need for periodic removal of slag and soot. • Inefficiency in destroying thermally resistant chemicals and drugs such as cytotoxins.
Drum or brick incineration	<ul style="list-style-type: none"> • Drastic reduction of weight and volume of waste. • Very low investment and operating costs. 	<ul style="list-style-type: none"> • Destroys only 99% of microorganisms. • No destruction of many chemicals and pharmaceuticals. • Massive emission of black smoke, fly ash, toxic flue gas, and odors.
Chemical disinfection*	<ul style="list-style-type: none"> • Highly efficient disinfection under good operating conditions. • Some chemical disinfectants are relatively inexpensive. • Drastic reduction on waste volume 	<ul style="list-style-type: none"> • Requires highly qualified technicians for operation of the process. • Uses hazardous substances that require comprehensive safety measures. • Inadequate for pharmaceutical, chemical and some types of infectious waste.

Table 1 continued.

Treatment/ disposal method	Advantages	Disadvantages
Wet thermal treatment*	<ul style="list-style-type: none"> • Environmentally sound • Drastic reduction in waste volume. 	<ul style="list-style-type: none"> • Shredders are subject to frequent breakdowns and poor functioning. • Operation requires qualified technicians. • Inadequate for anatomical, pharmaceutical, and chemical waste and waste that is not readily stream-permeable.
Microwave irradiation	<ul style="list-style-type: none"> • Good disinfection efficiency under appropriate operating conditions. • Drastic reduction in waste volume. • Environmentally sound 	<ul style="list-style-type: none"> • Relatively high investment and operating costs • Potential operation and maintenance problems.
Encapsulation	<ul style="list-style-type: none"> • Simple, low-cost, and safe • May also be applied to pharmaceuticals. 	<ul style="list-style-type: none"> • Not recommended for non-sharp infectious waste.
Safe burying	<ul style="list-style-type: none"> • Low costs. • Relatively safe if access to site is restricted and where natural infiltration is limited. 	<ul style="list-style-type: none"> • Safe only if access to site is limited and certain precautions are taken.
Inertization	<ul style="list-style-type: none"> • Relatively inexpensive. 	<ul style="list-style-type: none"> • Not applicable to infectious waste.

* May not apply to more sophisticated, self-contained, commercial methods.

It should be kept in mind that safe on-site burial is practicable only for relatively limited periods, say 1-2 years, and for relatively small quantities of waste, say up to 5 or 10 tonnes in total. Where these conditions are exceeded, a longer-term solution, probably involving disposal at a municipal solid waste landfill, will need to be found.

Leopold Matrix – Health Potential Impacts

Project Component ↓ Environmental component →		PHYSICAL ENVIRONMENT								BIOLOGICAL ENVIRONMENT								SOCIAL ENVIRONMENT													
		Agricultural Land	Soil Erosion	Slope Stability	Energy/Mineral Resources	Surface Water Quantity	Surface Water Quality	Ground Water Quantity	Ground Water Quality	Air Quality	Noise	Aquatic Ecosystems	Wetland Ecosystems	Terrestrial Ecosystems	Endangered Species	Migratory Species	Beneficial Plants	Beneficial Animals	Pest Plants	Pest Animals	Disease Vectors	Public Health	Resource/Land Use	Distribution Systems	Employment	At Risk Population	Migrant Population	Community Stability	Cultural/Religious Values	Tourism/Recreation	Nutrition
PLANNING & DESIGN																															
Construction																															
OPERATION																															

KEY: Beneficial: **○** - High; **○** – Medium; **○** – Low Adverse: **■** - High; **■** – Medium; **■** – Low