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**Rapid Assessment:**

*Healthcare Waste  
Component of Global Fund  
HIV/AIDS and TB Projects*

**in Kyrgyzstan**

## Rapid Assessment: Healthcare Waste Component of Global Fund HIV/AIDS and TB Projects in Kyrgyzstan

### Supplement to the Healthcare Waste Management Toolkit for Global Fund Practitioners and Policy Makers



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## Abbreviations

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ART	Antiretroviral Therapy	MDT	Multidrug therapy
ARV	Antiretroviral	NEP	Needle exchange programme
BSL	Biosafety level	NGO	Non-governmental organization
CCM	Country Coordinating Mechanism	OST	Opioid substitution therapy
CSS	Community Systems Strengthening	PEP	Post exposure prophylaxis
DDS	Department of Drug Supply	PIU	Project Implementation Unit
DOTS	Directly Observed Treatment, Short-course	PMTCT	Prevention of mother-to-child transmission
FAP	Feldsher and Midwifery Post	PoPs	Persistent organic pollutants
FGP	Family Group Practice	PR	Principal recipient
FMC	Family Medicine Centre	PWID	People who inject drugs
GEF	Global Environment Facility	SES	Centre of Sanitary Epidemiological Surveillance
GF	Global Fund to Fight AIDS, Tuberculosis and Malaria	SOP	Standard operating procedure
GPC	General Practice Centre	SR	Sub-recipient
HBV	Hepatitis B Virus	STI	Sexual transmitted infection
HCV	Hepatitis C Virus	SSI	Small scale incinerator
HIV	Human Immunodeficiency Virus	SW	Sex worker
IDU	Injecting drug use	TB	Tuberculosis
KfW	Kreditanstalt für Wiederaufbau	UNDP	United Nations Development Programme
LFA	Local Fund Agent	WEEE	Waste of electrical and electronic equipment
M&E	Monitoring and evaluation	WHO	World Health Organization
MHIF	Mandatory Health Insurance Fund		
MoH	Ministry of Health		

## Acknowledgements

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- 1 Kühling, J. Rapid Assessment: Healthcare waste component of Global Fund HIV/AIDS projects in Uzbekistan. Rapid Assessment Series Editor: Hamelmann, C. Istanbul, UNDP, 2014.
  - 2 Pieper, U. Rapid Assessment: Healthcare waste component of Global Fund HIV/AIDS, TB and malaria projects in Tajikistan. Rapid Assessment Series Editor: Hamelmann, C. Istanbul, UNDP, 2014.
  - 3 Kühling, J. Rapid Assessment: Healthcare waste component of Global Fund HIV/AIDS, TB and malaria projects in Zimbabwe. Rapid Assessment Series Editor: Hamelmann, C. Istanbul, UNDP, 2014.
  - 4 Kühling, J. Rapid Assessment: Healthcare waste component of Global Fund HIV/AIDS and TB projects in Bosnia and Herzegovina. Rapid Assessment Series Editor: Hamelmann, C. Istanbul, UNDP, 2015.
  - 5 Kühling, J. Rapid Assessment: Healthcare waste component of Global Fund HIV/AIDS and TB projects in Belarus. Rapid Assessment Series Editor: Hamelmann, C. Istanbul, UNDP, 2015.
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# 1 Executive Summary

As in other countries, UNDP has been a strategic partner of the Global Fund to Fight AIDS, Tuberculosis and Malaria (GF) in Kyrgyzstan acting as interim principal recipient (PR) for its grants. In order to deepen the understanding of the environmental impact caused by waste created through its GF project implementations, an onsite assessment of GF health projects with UNDP PR-ship was conducted in the Kyrgyz Republic.

It is part of a series of country assessments within the framework of the development of a toolkit to improve the planning and implementation of healthcare waste systems in future GF grants<sup>6</sup>. Part A<sup>7</sup> and Part B<sup>8</sup> of the toolkit have recently been published and are already been used by the GF to inform its corporate scoping for the introduction of environmental safeguarding strategies. Part C (Waste Management Planning Guide) is in preparation. The lessons learned from this assessment will inform further updates of the toolkit and contribute to the development of Part C.

The assessment in Kyrgyzstan took place from 25 to 30 May 2015 and concentrated on the GF HIV/AIDS and TB grants. The extension of the 1<sup>st</sup> phase of the HIV/AIDS grant will be finalised at the end of 2015 and the second period of the TB grant is planned till 2016.

The results showed that both grants included activities to reduce risks and possible negative environmental impact from the project activities. Some short comings in these activities could be identified and should be rectified. While specific budget lines for the purchasing of waste collection items (sharps containers) are already

included in the programme, budgets to cover treatment and disposal costs for hazardous waste is only partially available. In the most cases Sub-recipients (SR) are covering the costs through their overhead budget. The assessment further identified the high dependence of the HIV/AIDS and TB grants on the national healthcare waste infrastructure.

In the Kyrgyz Republic, the healthcare waste infrastructure is underdeveloped. Treatment capacities for the treatment of chemical waste from health facilities are not available. The treatment methods of pharmaceutical waste are insufficient and not widely implemented. Generally chemical waste is disposed together with household waste or disposed via the sewage line. Kyrgyzstan has signed the Stockholm Convention and the Basel Convention and is following the guidance to use alternative treatment technologies for the treatment of infectious waste in order to prevent the generation of hazardous emissions and ash. In most of the Kyrgyz hospitals gravity autoclaves for the treatment of infectious and sharp waste have been installed. It has to be considered that not all infectious waste can be decontaminated reliably. Therefore more effective or modified technologies are needed. The landfills and dumpsites in the country are not secured – scavengers and animals are present searching for recyclables and food which causes public risks.

If future waste from HIV/AIDS, TB and other healthcare related activities should be treated and disposed of in a safe and environmentally friendly way, major efforts and larger investments are needed. It is recommended that future healthcare waste strategies

6 See footnotes 1-5

7 Kühling, J., Hamelmann, C. Healthcare waste management toolkit for Global Fund practitioners and policy makers. Part A: Rational for environmental safeguarding policies and strategies. Istanbul, UNDP, 2015.

8 Kühling, J., Hamelmann, C. Healthcare waste management toolkit for Global Fund practitioners and policy makers. Part B: Waste stream concept development. Istanbul, UNDP, 2015.

should be pragmatic and needs driven. Currently a National Healthcare Waste Strategy is under development, which is supported by the UNDP GEF project and will include waste management generated by HIV/AIDS and TB activities.

Based on the revised documents, interviews and onsite visits, the following recommendations are outlined:

### **1. Recommendations generally applicable to all GF-financed health programmes**

- a. Provide a dedicated budget for waste treatment and disposal which was generated through the GF grants (hazardous waste)
- b. Strengthen the disposal systems for waste from IDU
- c. Address occupational health and safety risks for outreach workers during sharps collection campaigns
- d. Strengthen laboratory waste management practices through the development of SOPs
- e. Strengthen recycling of waste and segregation of mercury containing waste in the project office

### **2. Context specific recommendations for the GF programme in the Kyrgyz Republic**

- a. Support the development of a national healthcare waste management strategy and implementation plan
- b. Continue support on healthcare waste management in the country
- c. Support the development of a national system on chemical waste management in health settings
- d. Review the supply of safety boxes for NEP points, considering the waste treatment technology used for decontamination of sharps waste, which is insufficient for the treatment of filled safety boxes.
- e. Link up with other healthcare waste management initiatives in the country

## 2 Assessed Projects

UNDP is a long-term partner of the GF and acts as interim PR in several countries, including Kyrgyzstan. The implementation of these grants usually results in the generation of different types of waste which have a possible negative environmental and public health impact. To better understand the current situation, to minimize these impacts and to develop sustainable environmental strategies, assessments of the healthcare waste management of UNDP's GF grants are being conducted in the context of existing healthcare waste management systems at country level. The results of the assessments are used to improve the GF healthcare waste management of existing and future grants and to contribute to the improvement and further development of the Healthcare Waste Management Toolkit for Global Fund Practitioners and Policy Makers<sup>9</sup>.

The assessment of the GF grants implemented in Kyrgyzstan by UNDP as PR was conducted in May 2015. The objective was to assess the current and planned waste management practices of the following projects<sup>10</sup>:

### HIV/AIDS: KGZ-H-UNDP

Name: "Promoting accessibility and quality of prevention, treatment, detection and care services for HIV among the most vulnerable populations in the Kyrgyz Republic":

#### Service delivery areas:

- ▶ Care and Support
  - ▷ Care and support for the chronically ill
- ▶ Prevention
  - ▷ PMTCT
- ▶ Counselling and testing

- ▷ STI diagnosis and treatment
- ▶ Treatment
  - ▷ Antiretroviral treatment and monitoring
- ▶ Community Systems Strengthening (CSS)
  - ▷ Community based activities and services – delivery, use and quality
- ▶ Other
  - ▷ TB / HIV

The grant started in July 2011 and, following two grant extensions, will run until end of December 2015.

### Tuberculosis: KGZ-S10-G08-T

Name: "Consolidation and Expansion of the DOTS Programme in Kyrgyzstan by Providing Access to Diagnostics and Treatment of Drug-Resistant Tuberculosis Strengthening of DOTS Strategy and Improving National Tuberculosis Programme, Including Multidrug Resistance and Infection Control, in Kyrgyzstan"

In Kyrgyzstan, TB re-emerged as an important public health problem after the independence and its burden remains high in the country. The case notification rate is 117 per 100,000 populations and is the third highest among the 53 countries of the WHO European Region. According to the Drug Resistance Survey in 2007, Kyrgyzstan faces a very high multi drug-resistant TB (MDR-TB) prevalence of 25 percent among new positive cases and 54 percent among previously treated cases. The programme consolidates Round 6 TB grant by strengthening TB information system, patient incentives, support to local authorities and community involvement in TB control. The goal of the programme is to reduce the burden of TB by strengthening the DOTS framework and by scaling-up the management

<sup>9</sup> see footnotes 7 and 8

<sup>10</sup> All information has been extracted from the GF webpage: <http://portfolio.theglobalfund.org/en/Country/Index/KGZ>



of Drug Resistance-TB (DR-TB). The programme is implemented using a Dual-Track Financing approach under 2 PRs, Project Hope and UNDP. This grant focuses on several activities such as strengthening the human and infrastructural capacities, establishing routine drug resistance surveillance throughout the country, upgrading the laboratory services and providing up-to-date treatment of DR-TB cases with appropriate patient support to ensure adherence. The assessment includes only the programme components under the UNDP PR-ship.

**Service delivery area:**

- ▶ Other
  - ▷ Improving diagnosis

The grant period of this TB project, which includes a grant extension, is from January 2011 to March 2016. Table 1 shows the management structure of the GF projects in Kyrgyzstan.

**Table 1: Management structure – GF projects in Kyrgyzstan**

<b>Position</b>	<b>Organization</b>
Fund Portfolio Manager	Global Fund
Country Coordination Mechanism	National stakeholders and development partners
Principal Recipient	UNDP Kyrgyzstan (HIV/AIDS and TB), Project Hope Kyrgyzstan (TB)
Local Fund Agent	Crown Agents, Kyrgyzstan

# 3 Background Information

## Key Country Data:

- Full Name:** Kyrgyz Republic
- Total Population (2014 estimated):** 5,604,212
- Area:** 199,951 sq km
- Life expectancy at birth m/f in years (2014):** 65.89/74.51
- Infant mortality rate (2014):** 28.71 deaths/1,000 live births
- Hospital bed density (2012):** 4.8 beds/1000 population
- GDP per capita (2014)\*:** \$1,269
- Total expenditure on health as % of GDP (2013):** 6.7
- People living with HIV/AIDS (2013 estimated):** 8,000

Sources: Central Intelligence Agency's The World Facebook  
\*World Bank – World Development Indicators

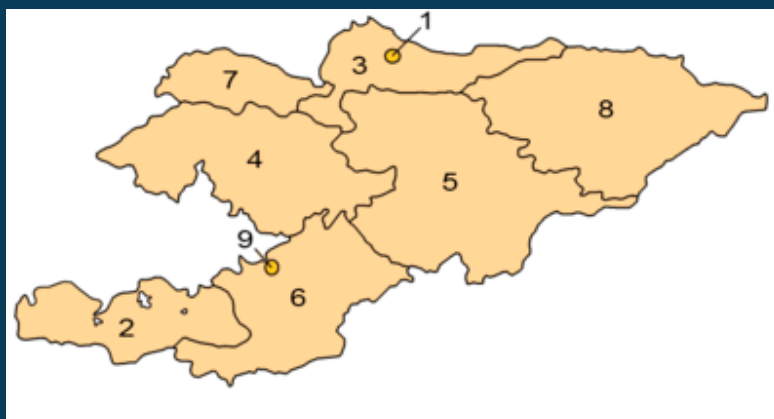
Kyrgyzstan is a country located in Central Asia. Landlocked and mountainous, it is bordered by Kazakhstan to the north, Uzbekistan to west, Tajikistan to the southwest and China to the east. Its capital and largest city is Bishkek. Administratively, it is divided in 7 regions (oblasts) and 2 independent cities (Figure 1).

Each region comprises a number of districts (raions), administered by government-appointed officials

(akim). Rural communities (ayıl ökmötü), consisting of up to 20 small settlements, have their own elected mayors and councils. Kyrgyzstan's population was estimated at 5.6 million in 2013, 34.4% are under the age of 15 and 6.2% are over 65. About two-third of the population lives in rural areas. The average population density is 25 people per km<sup>2</sup>. The nation's largest ethnic group are the Kyrgyz, a Turkic people, who comprise 72% of the population (2013 estimation). Other ethnic

**Figure 1:**  
**Regions and independent cities**

- 1) City of Bishkek
- 2) Batken
- 3) Chuy
- 4) Jalal-Abad
- 5) Naryn
- 6) Osh
- 7) Talas
- 8) Issyk-Kul
- 9) City of Osh



Source: Wikipedia, <http://en.wikipedia.org/wiki/Kyrgyzstan>, accessed in May 2015

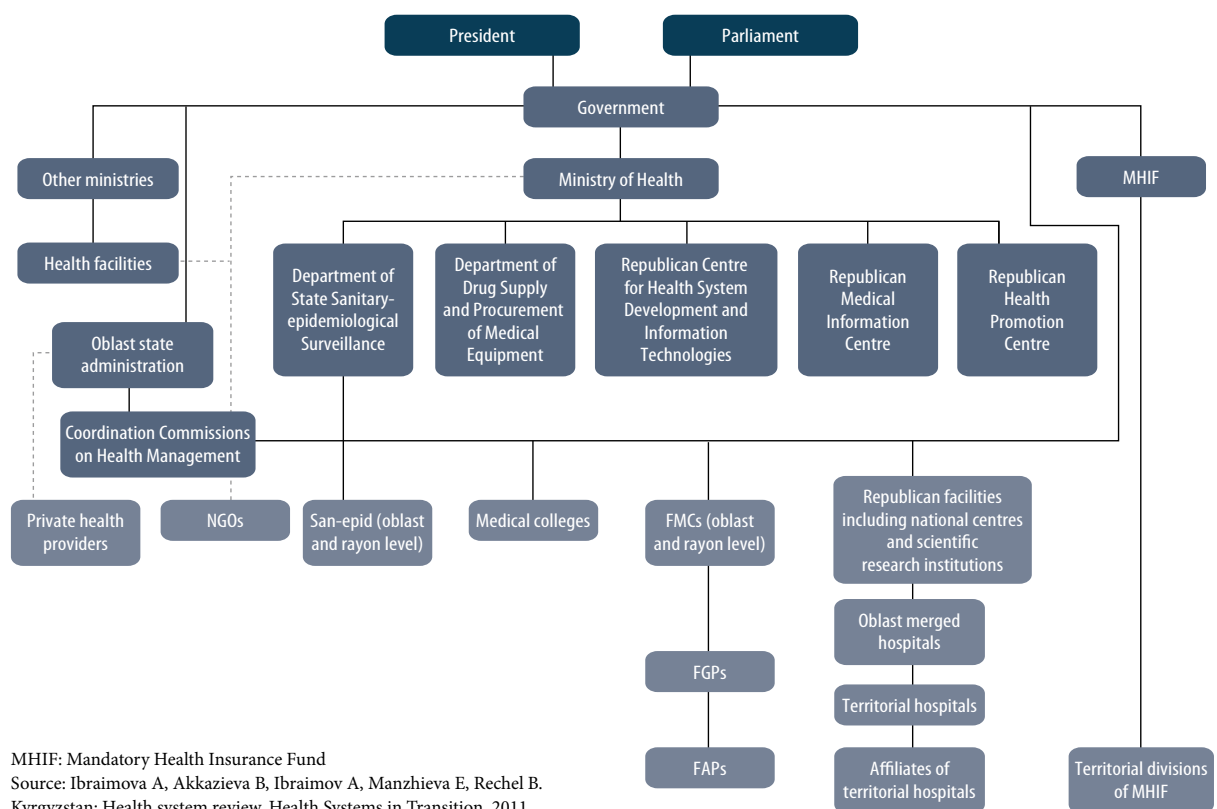
groups include Russians (9.0%) concentrated in the north and Uzbeks (14.5%) living in the south. Small but noticeable minorities include Dungans (1.9%), Uyghurs (1.1%), Tajiks (1.1%), Kazakhs (0.7%), and Ukrainians (0.5%) and other smaller ethnic minorities (1.7%). The country has over 80 ethnic groups<sup>11</sup>.

Figure 2 outlines the organizational structure of the health system in Kyrgyzstan. Table 2 summarises the general public health service structure and details about the HIV and TB service providers.

**Table 2: Healthcare levels and facility structure in Kyrgyzstan**

Treatment Level	Administrative Level	Health Facility
<b>Tertiary healthcare</b>	National Level	Tertiary Hospitals
<b>Secondary healthcare</b>	National and Oblast Level	Specialized hospitals (TB hospitals, children’s hospitals, maternity houses etc.)
	Oblast Level	Oblast merged Hospitals
	City and Rayon Level	Territorial Hospitals
<b>Primary healthcare</b>	Oblast and Rayon Level	General Practice Centre (GPC) / Family Group Practice (FGP)
	Oblast and Rayon Level	Family Medicine Centre (FMC)
	Rayon Level	Feldsher and Midwifery Post (FAP)

**Figure 2: Organizational structure of the health system in Kyrgyzstan**



MHIF: Mandatory Health Insurance Fund  
 Source: Ibraimova A, Akkazieva B, Ibraimov A, Manzhieva E, Rechel B. Kyrgyzstan: Health system review. Health Systems in Transition, 2011

11 Wikipedia (<http://en.wikipedia.org/wiki/Kyrgyzstan>), accessed in May 2015

### 3.1 The Ministry of Health

According to the 2005 Health Protection Law and MoH regulations, the MoH has the following responsibilities:

- ▶ Preparing and implementing legislative act, laws and MoH decrees; including HCWM
- ▶ Developing and implementing national programmes to improve the health of the population
- ▶ Arranging the delivery of health services and restructuring and optimizing the health system to meet the population's need for health services; developing and implementing measures for improving access to health services for socially vulnerable population groups, including access to expensive and high-technology treatment; and developing and implementing activities for the quality management of health services
- ▶ Ensuring the national registration of health professionals and selecting managers for health care organizations
- ▶ Licensing medical and pharmaceutical activities and overseeing the accreditation of health care organizations
- ▶ Developing regulatory mechanisms for health financing, SES, public health services and the pricing of health services, pharmaceuticals and medical products
- ▶ Regulating, coordinating and controlling the performance of both public and private organizations in the health system, including health care providers, SES services, research institutes and institutions of higher education
- ▶ Monitoring and evaluating the health status of the population, implementing health programmes and reforms, and achieving the health related Millennium Development Goals (MDGs)
- ▶ Collaborating with other governments and international organizations, and implementing intergovernmental and international agreements related to health

The Minister of Health is appointed by the President. The Minister has one State Secretary and three Deputy Ministers, who are appointed by the Prime Minister.

The MoH is responsible for the safe management of healthcare waste at the health facilities and liaise with

the State Agency on Environmental Protection and Forestry on environmental issues and the treatment and disposal of hazardous waste outside the health facilities.

### 3.2 Assessment strategy

Before traveling to the country, the consultant conducted a review of relevant and publicly available GF grant documents. The focus of the analysis was on waste streams, waste amounts, available waste treatment systems and disposal options in Kyrgyzstan and the current procurement processes.

During the visit, the consultant worked closely with the UNDP country office in order to receive further information relevant to the project. Several stakeholder interviews were conducted in Kyrgyzstan with the GF grant practitioners, including PR and SRs and different governmental authorities (see table 5). Other international organisations like the WHO, UNICEF and the Swiss Red Cross had been visited previously.

Furthermore, project sites and implementing organisations (Republican AIDS Center, Republican Centre of Addictions, National Phthysiology Center and the NGO Aman Plus) were visited in order to receive direct information and impressions of the project operations as well as the awareness and opinions of the

Figure 3: Assessment methodology



staff. In addition, the consultant joined the collection of filled sharp containers from NEP points and the transport of the waste to a heating plant in Bishkek where the waste was incinerated.

### 3.3 Provided and reviewed project documents

The following documents were reviewed as part of the assessment:

- A. Downloads from the GF webpage
  - a. Programme grant agreements of both grants (KGZ-S10-G08-T and KGZ-H-UNDP)
  - b. Grant performance reports of both grants (last update 28.01.2015)
  - c. Grant Scorecard of KGZ-S10-G08-T
- B. Project documents provided by the UNDP PIU
  - a. HIV/AIDS: Promoting accessibility and quality of prevention, treatment, detection and care services for HIV among the most vulnerable populations in the Kyrgyz Republic (KGZ-H-UNDP)

- ▶ annex – programme grant agreements
- ▶ procurement and supply management plan
- ▶ performance framework: Indicators, targets and periods covered
- ▶ detailed budget
- b. TB: Consolidation and Expansion of the DOTS Programme in Kyrgyzstan by Providing Access to Diagnostics and Treatment of Drug-Resistant Tuberculosis Strengthening of DOTS Strategy and Improving National Tuberculosis Programme, Including Multidrug Resistance and Infection Control, in Kyrgyzstan (KGZ-S10-G08-T)
  - ▶ annex – programme grant agreements
  - ▶ procurement and supply management plan
  - ▶ performance framework: Indicators, targets and periods covered
  - ▶ detailed budget

**Note:** For the TB grant only the UNDP service delivery area has been assessed.

# 4 Legal Framework

## 4.1 International conventions

The assessment of relevant international conventions for healthcare waste management showed that Kyrgyzstan has so far signed all major Conventions

and the Montreal Protocol, with the exemption of the European Agreement concerning the international carriage of dangerous goods by road (ADR / UNECE) and the Minamata Convention.

**Table 3: Status of ratification of international Conventions**

Name of Convention	Status of ratification	Year
Basel Convention: Technical guidelines on environmentally sound management of biomedical and healthcare waste (UNEP 2003)	Accession <a href="http://www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/1290/Default.aspx">http://www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/1290/Default.aspx</a>	13/08/1996
Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade	Signature <a href="http://www.pic.int/Countries/Statusofratifications/tabid/1072/language/en-US/Default.aspx">http://www.pic.int/Countries/Statusofratifications/tabid/1072/language/en-US/Default.aspx</a>	11/08/1999
Vienna Convention for the protection of the ozone layer and its Montreal Protocol on substances that deplete the ozone layer	Accession <a href="http://ozone.unep.org/new_site/en/treaty_ratification_status.php?treaty_id=&amp;country_id=92&amp;srchcrit=1&amp;input=Display">http://ozone.unep.org/new_site/en/treaty_ratification_status.php?treaty_id=&amp;country_id=92&amp;srchcrit=1&amp;input=Display</a>	Both on 31.05.2000
Stockholm Convention on persistent organic pollutants (POPs)	Signature <a href="http://chm.pops.int/Countries/StatusofRatifications/tabid/252/Default.aspx">http://chm.pops.int/Countries/StatusofRatifications/tabid/252/Default.aspx</a>	16/05/2002
European Agreement concerning the international carriage of dangerous goods by road (ADR / UNECE)	- <a href="http://www.unece.org/trans/danger/publi/adr/legalinst_53_tdg_adr.html">http://www.unece.org/trans/danger/publi/adr/legalinst_53_tdg_adr.html</a>	-
Minamata Convention on mercury (UNEP 2013)	- <a href="http://www.mercuryconvention.org/Countries/tabid/3428/Default.aspx">http://www.mercuryconvention.org/Countries/tabid/3428/Default.aspx</a>	-

## 4.2 National legal healthcare waste framework

Currently, the legal framework for healthcare waste management is under development and it is planned to update the relevant guidelines and regulations.

The most significant regulation pertaining to healthcare waste management is the Law “On waste production and consumption” (2002). According to Article 8 of

the Act, the unauthorized disposal of waste, which can be a source of environmental pollution, is prohibited. Under the same law, the burning and incineration of waste on the premises of enterprises, institutions, organizations, and communities is prohibited. Under this Act, a “National programme for the use of waste production and consumption” was approved in 2005, which provides a strategy for a sector-wide system of collection and processing of medical waste.

The Law “On the sanitary-epidemiological welfare of the population” (2003) defines the powers of the state in this area, as well as requirements for the collection, use, processing, transportation, storage and disposal of production and consumption.

Medical waste management issues are also reflected in the Law “On protection of the health of citizens in the Kyrgyz Republic” (2005). According to this law, local administrations in the field of public health protection

ensure the destruction of biological and medical waste. Article 39 states that the national authority in charge of healthcare shall describe the management and storage of biological material and medical waste. In addition, the regulation of waste management is reflected in other legal documents.

A “National strategy on the management of medical waste” and “National instructions on the safe handling of medical waste” are currently developed by the MoH.

**Table 4: National legal and regulatory documents on healthcare waste management**

- ▶ National Health Reform Programme in the Kyrgyz Republic for 2012-2016 (Den Sooluk)
- ▶ Kyrgyz Republic law “On sanitary and epidemiological well-being of the population” (May 31, 2001)
- ▶ Kyrgyz Republic law “On waste production and consumption” (October 18, 2002)
- ▶ Kyrgyz Republic law “On radiation safety of the population” (June 17, 1999)
- ▶ The MoH Order No. 393 “On introduction and primary realization of target programme on waste management and hospital acquired infection control in Kyrgyz Republic” (September 18, 2002). Introduce a strategy of safe medical waste
- ▶ Law of the Kyrgyz Republic “On industrial and consumption wastes” (November 13, 2001), № 89
- ▶ Resolution of the Government of the Kyrgyz Republic (KR) “On adoption of the State Programme on Use of Industrial and Consumption Wastes and of the Resolution on State Cadastre of Wastes and Certification of Hazardous Wastes” (August 19, 2005), № 389
- ▶ Basel Convention:
  - a. Resolution of the Assembly of People’s Representatives Zhogorku Kenesh of KR of 30 November 1995 №225-1 “On ratification by Kyrgyz Republic of the Basel Convention on control of transboundary movement of hazardous wastes and their disposal”.
  - b. Resolution of the Assembly of People’s Representatives Zhogorku Kenesh of KR of 18 January 1996 №304-1 “On accession of Kyrgyz Republic to the Basel Convention on control of transboundary movement of hazardous wastes and their disposal”.
  - c. Resolution of the Government of the Kyrgyz Republic of 14 May 1997 №276 “On implementation of the Basel Convention on control of transboundary movement of hazardous wastes and their disposal and the Agreement on control of transboundary movement of hazardous and other wastes”.
  - d. Resolution of the Government of the Kyrgyz Republic of 6 April 1999 №193 On Provision “On the state regulating of transboundary movement of hazardous and other wastes”.
- ▶ Criminal Codex of KR of 1 October 1997 №68 (entered in force by the Law of KR of 1 October 1997 №69).
- ▶ Law of KR of 16 June 1999 №53 “On the environment protection” (in ed. of the Laws of KR of 4 February 2002 №22, 11 June 2003 №101).
- ▶ Law of KR of 16 June 1999 №54 “On ecological expertise” (in ed. of the Laws of KR of 11 June 2003 №102).
- ▶ Law of KR of 24 June 2003 №109 “On the protection of atmospheric air”.
- ▶ Resolution of the Government of KR of 9 April 2002 №261 “On measures on implementation of the Law of Kyrgyz Republic “On production and consumption wastes”.
- ▶ Order of the Ministry Health Kyrgyz Republic September 17, 2004 N 428 “Instructions on the procedures for the destruction of expired and not used drugs and medical products”.

# 5 Assessment of the Healthcare Waste Situation

## 5.1 Input-output analysis – HIV/AIDS grant

The goal of the HIV/AIDS grant is to slow down the spread of HIV infection among key populations with higher risk of HIV infection through improving access and quality of HIV prevention, treatment and care services.

Objectives:

- ▶ To strengthen community systems for increasing access of vulnerable groups to HIV prevention and treatment services
- ▶ To increase efficiency in HIV prevention among vulnerable population groups and in health care facilities
- ▶ To assure improvement of universal access to prophylaxis, diagnostics, care and support people living with HIV

Target groups/beneficiaries:

- ▶ People living with and affected by HIV/AIDS
- ▶ IDUs
- ▶ SW
- ▶ Men who have sex with men
- ▶ Prison inmates
- ▶ Mobile population groups
- ▶ Young people
- ▶ Infants and children (through prevention of mother to child transmission)

Relevant healthcare waste streams can be expected in the process of the following activities:

- ▶ Improve quality of services for harm reduction, including increasing the efficiency of NEP points and providing methadone substitution therapy

- ▶ Increase access to diagnosis and treatment of HIV and TB for IDU
- ▶ Prevent HIV in the penitentiary system
- ▶ Provide ARV therapy to HIV-positive adults and children
- ▶ Prevent and treat opportunistic infections
- ▶ Reinforce laboratory diagnostic of HIV infection and associated infections
- ▶ PMTCT of HIV
- ▶ Provide care and support for people living with HIV

Other planned activities such as improve social support for injecting drug users, address HIV/TB co-infection for people living with HIV and reduce stigma in all institutions are mainly capacity strengthening activities. The main input is human power and office materials; therefore the expected waste output will be mainly general non-hazardous office waste.

### 5.1.1 General activities – management and support

General activities like human resources, infrastructure and overheads conducted in the current grant period are office based. The physical input of the grant includes the operation of the UNDP office, the procurement and usage of office consumables and equipment and the procurement or hiring of transportation equipment (cars, etc.).

Output from these activities will be general, non-hazardous and hazardous office waste like cartridges, waste of electrical and electronic equipment (WEEE), disposable and reusable packing materials and waste from the maintenance of the transportation equipment (including used tyres, used oil, etc.).



### 5.1.2 Analysis of the objective to strengthen community systems for increasing access of vulnerable groups to HIV prevention and treatment services

In order to reach this objective, the following relevant material *inputs* have been used in the current grant period (2011-2015):

- ▶ Input for communication and awareness on HIV/AIDS
  - ▷ Various brochures and guidelines on HIV, PEP, pre-tests counselling and resting etc. (see list in the Annex)
- ▶ Input for infection control
  - ▷ Face shields

The expected waste *outputs* from this objective are:

- ▶ General, non-hazardous waste
  - ▷ packing waste (cardboard, foil, etc.)
  - ▷ paper waste
  - ▷ general waste (unsorted)

### 5.1.3 Analysis of objective to increase efficiency in HIV prevention among vulnerable population groups and in health care facilities

In order to reach this objective, the following relevant *inputs* were used:

- ▶ Input on infection control
  - ▷ safety eye shields
  - ▷ equipment for the setup of infectious and sharp waste treatment: Autoclaves, needle removing devices, scales, metal container, plastic container
- ▶ Input for PMTCT
  - ▷ syringes, condoms, conventional catheter IV with injection port, gastric probes, endotracheal tubes, epidural catheter, suction catheters, catheter nelaton, blood transfusion systems, caesarean section instrument kits, cusco speculum, diagnostic rapid tests for MDTs, diagnostic rapid tests for MDTs (HIV)
- ▶ Input on medications
  - ▷ medication for drug substitution: methadone

The expected waste *outputs* from this objective are:

- ▶ General, non-hazardous waste

- ▷ packing waste (plastic from decontaminated syringes, cardboard, foil, etc.),
- ▷ paper waste
- ▷ general waste (encapsulated decontaminated needles, decontaminated syringes, unsorted other waste)
- ▶ Hazardous waste
  - ▷ infectious waste (syringes, contaminated catheters, blood bags, probes etc.)
  - ▷ sharps waste (needles, lancets, etc.)
  - ▷ pharmaceutical waste (expired methadone)

### 5.1.4 Analysis of objective to assure improvement of universal access to prophylaxis, diagnostics, care and support people living with HIV

In order to reach this objective, the following relevant *inputs* are needed:

- ▶ Input for infection control
  - ▷ safety eye shields
- ▶ Input for ART treatment and diagnosis
  - ▷ various lab equipment like HEPA-filters for PCR laboratory, deep freezer, drying cabinets, biosafety cabinet (BSC) II Class, aerosol photometer, probe, generator, hood, pipetors etc. (see list in the Annex),
  - ▷ HIV 1/2 Ag-Ab rapid tests (4<sup>th</sup> generation tests), HIV 1/2 Ab rapid tests (3<sup>rd</sup> generation tests), diagnostic rapid tests for PMTCT, PEP (HIV), diagnostic rapid HIV tests for labs at 10 express diagnostics points (HIV)
- ▶ Input for PMTCT
  - ▷ protective clothing (for medical staff): aprons, gloves
- ▶ Input for M&E
  - ▷ thermometers (electronic, rooms)
- ▶ Input on medications
  - ▷ pharmaceutical products (see list in the Annex)

The expected waste *outputs* from this objective are:

- ▶ General, non-hazardous waste
  - ▷ packing waste (cardboard, foil, etc.),
  - ▷ paper waste
  - ▷ general waste (unsorted)
- ▶ Hazardous waste
  - ▷ infectious waste (used aprons, gloves, etc.)
  - ▷ pharmaceutical waste (expired or unusable medicines and test kits)

## 5.2 Input-output analysis – TB grant (UNDP GF)

The goal of the grant is to reduce the incidence and mortality rate of TB in the Kyrgyz Republic; and to reduce the burden of TB in Kyrgyzstan by consolidation of the DOTS framework and its expansion by scaling up the management of drug resistant TB.

Objectives:

- ▶ Consolidation of the DOTS framework through strengthening programme management, improving TB case detection, TB diagnosis and quality of TB treatment
- ▶ Expanding access to diagnosis and treatment of drug-resistant TB

The target groups/beneficiaries are:

- ▶ All TB and MDR TB patients
- ▶ Healthcare personnel and TB service staff
- ▶ General population

Relevant healthcare waste streams can be expected in the process of the following activities:

- ▶ Improving TB case management
- ▶ Strengthening primary health care involvement in TB control,
- ▶ Enhancing infection control in the TB facilities at the regional level
- ▶ Conducting drug resistance surveillance and diagnosis of drug resistant TB cases
- ▶ Treating drug resistant TB cases

Other planned activities such as improving the legal and regulatory basis for TB control, strengthening management, coordination, monitoring and evaluation of the National TB Programme or conducting resistance surveillance are mainly management, data management and capacity strengthening activities. The main input is human power and office materials; therefore the expected waste output will be mainly general office waste.

### 5.2.1 General activities – management and support

During the 2<sup>nd</sup> phase of the TB grant a major part of the budget has been spent for pharmaceutical products. The physical input of managerial activities of the grant includes administration, procurement and supply, monitoring and evaluation, training and usage of office consumables and investment products (computers, furniture) and the procurement or hiring of transportation equipment (cars, etc.).

Output from these general activities will likewise be general, non-hazardous and hazardous office waste like cartridges, WEEE, disposable and reusable packing materials and waste from the maintenance of the transportation equipment.

### 5.2.2 Analysis of objective to consolidate the DOTS framework through strengthening programme management

In order to reach this objective, the following relevant material *inputs* are needed:

- ▶ Input for microscopy
  - ▷ sputum container: plastic, disposable, 45 to 50 ml, screw-cap,
  - ▷ slides for microscope, applicators, filter paper, Immersion oil (ml),
  - ▷ carbon fuchsine (gr), methylene blue (gr), phenol detached crystals (dangerous good – UN 1671, class 6.1),
  - ▷ sodium hypochlorite
- ▶ Input for culture and drug susceptibility testing
  - ▷ various reagents and consumables (see the list in the Annex)

The expected waste *outputs* from this objective are:

- ▶ General, non-hazardous waste
  - ▷ packing waste (cardboard, foil, etc.)
  - ▷ paper waste
  - ▷ general waste (unsorted)
- ▶ Hazardous waste
  - ▷ infectious waste (e.g. waste from microscopy activities)
  - ▷ chemical waste (reagents used in the lab, staining liquids, x-ray films)

### 5.2.3 Analysis of objective to expand access to diagnosis and treatment of drug-resistant tuberculosis

In order to reach this objective, the following relevant *inputs* are needed:

- ▶ Input to TB treatment
  - ▷ 2nd line medicines, 3rd line medicines, other medicines (see list in the Annex)
- ▶ Input for biochemical tests for patients on the 2nd line treatment
  - ▷ serum creatinine, serum potassium, thyroid-stimulating hormone, aspartate aminotransferase (AST), alanine aminotransferase (ALT)
- ▶ Input on medical products and consumables
  - ▷ water for injections, syringes (5 ml), face mask grade FFP3, surgical mask,
- ▶ Input to laboratory maintenance activities
  - ▷ maintenance of BSC II, autoclave, mycobacteria growth indicator tube (MGIT) and ventilation systems
- ▶ Input to x-ray diagnosis
  - ▷ x-ray film 30 x 40 cm

The expected waste *outputs* from the second objective are:

- ▶ General, non-hazardous waste
  - ▷ packing waste (cardboard, foil, etc.),
  - ▷ paper waste
  - ▷ general waste (unsorted)
- ▶ Hazardous waste
  - ▷ highly infectious waste (e.g. cultures from laboratory)
  - ▷ infectious waste (syringes)
  - ▷ pharmaceutical waste (expired TB medicines)
  - ▷ chemical waste (used reagents, x-ray films)

## 5.3 Generated waste quantities

For both grants (HIV/AIDS and TB) a standardized recording system for the quantities and types of waste generated has not been established. Exemptions are the recording of expired pharmaceuticals. The PR is directly accountable in case of the disposal of

pharmaceutical waste, which is following the national legal regulations. In general the waste which is generated by the SR is managed by the SR themselves, without support of UNDP GF programme. However in 2014 some specific supportive activities on healthcare waste management have been financed by the UNDP GF programme: waste management equipment for the collection and treatment of infectious and sharps waste was delivered through the HIV/AIDS grant to identified healthcare facilities and several NEP points receive financial support through the grant for the sharps collection as well as the treatment and disposal of the filled sharps boxes.

### 5.3.1 Estimation of generated waste – HIV/AIDS grant

One objective of the HIV grant is the support of the NEP. A stock of syringes has been purchased in 2013, which have been used also in 2014. Therefore the average usage of syringes for 2014 has been calculated based on the 2 years consumption. This resulted in 7,322,824 syringes and needles for 2014. According to the procurement list 45% of the syringes are 5 ml, 35% 2 ml, 12% 10 ml and 9% are 1 ml syringes. The weight of 2 ml syringes is about 0.65 kg per 100 pieces and about 0.31 kg for 100 pieces of 1 ml syringes<sup>12</sup>. Considering that used syringes will contain some liquids, an average weight of 0.5 kg is assumed per 100 pieces.

NEP points are supplied with syringes together with disposable 5 litre safety boxes. 32,584 safety boxes (5 litres) have been used in the NEP points per year. Each of them can be filled with 0.5 kg of sharps waste, which results in about 16,292 kg in 2014 (5,865,120 syringes and needles).

Needles and syringes used at other sources than at NEP points (1,457,704 syringes and needles) are resulting in 7,289 kg sharp waste in 2014.

Total number of people tested on HIV by this programme was 454,794 in 2014 (different HIV rapid tests). Each test requires the usage of one lancet, which has to be disposed of as sharps waste. In addition, each test requires the usage of various one-way products (e.g. single-use test device, developer solution,

12 Source: SAAPP (FZC) LLC

specimen collection loops). Estimating that per test 0.1 kg of waste was generated on average, the total amount of waste was about 45,479 kg in 2014. This does not include confirmatory testing for positive test results.

Based on these calculations, the total amount of sharps waste from NEP points, other sources and rapid HIV test (needles, syringes, safety boxes and lancets) was about 69.06 tons in 2014.

Most of the filled safety containers collected from NEP points in Bishkek are burned in the furnace of the water heating system of Bishkek. The costs per sharps box are about 5.0 KGS (0.08 US\$ per 0.5 kg). Taking this calculation as base for the treatment of the complete sharp waste amount in 2014 (69.06 tons) generated through the programme, the treatment costs would be 690,604 KGS (11,050 US\$) per year.

Currently a separate budget line for the treatment of sharps waste is only available for the NEP points which are managed by the Narcotic Center. Other SRs who are operating NEP points do not have the financial resources or possibilities to dispose the sharps waste safe and environmental friendly. Illegal open burning of the waste is the result.

Pharmaceutical waste management is implemented based on the Order of the MoH No. 428 "Instructions on the procedures for the destruction of expired and not used drugs and medical products." This order outlines the organisational and technical methods for the destruction and disposal of expired or not used medicines and products. In accordance to the Department of Drug Supply (DDS) of the MoH no



Storage of expired and unusable pharmaceuticals, warehouse in Bishkek

pharmaceutical waste was officially destroyed and disposed in the last 2 years. The procedure outlines that the organisation which stores expired or unused medical products needs to inform the DDS which forwards the information to the pharmaceutical waste Committee. The MoH is investigating the reasons of expiry and then the committee is deciding which destruction and disposal method needs to be used. The waste generating entity is responsible to finance the destruction and disposal.

In 2014 the following medicines of the UNDP GF expired and are currently stored in the warehouse for further processing:

- ▶ RHE (Rifampicin 150mg / Isoniazid 75mg / Ethambutol 275mg)
  - ▷ 1,906 tablets
- ▶ RH (Rifampicin 150mg / Isoniazid 75mg)
  - ▷ 424 tablets

The weight and method of destruction is not yet known, as the official destruction process has not started yet, which is determining the method of destruction.

### 5.3.2 Estimation of generated waste – TB grant

The first main source of waste generated through the TB grant will originate from expired or unusable medicines and from the TB testing of patients. The Kyrgyz government is very strict concerning the import of pharmaceuticals. A maximum 20 % of the expiry time of a pharmaceutical product is allowed to have passed at the time the product is arriving at the customs in Kyrgyzstan. Pharmaceuticals with short expiry times need a special approval by the MoH.

The second main source of hazardous waste (mainly infectious waste) will originate from the operation of TB laboratories and TB wards. Most liquid infectious media like the Löwenstein–Jensen medium (used as growth medium for the culture of *Mycobacterium tuberculosis*) is disinfected by chlorine solution after use and disposed in the sewage. Solid infectious waste from TB labs is decontaminated by autoclaving and disposed as general non-hazardous waste.

Chemical waste is also generated in the TB laboratories. The Ziehl–Neelsen stain is a special bacteriological stain used to identify acid-fast organisms like *Mycobacterium*





Material provided to PWID



Filled sharp boxes



View inside a filled sharp box

and onsite treatment of infectious and sharps waste by autoclaving systems. Vehicles for the collection of infectious and sharps waste have been delivered in order to transport the waste to centralised waste treatment facilities in Bishkek. Although the system was implemented successfully, a budget to continue these activities has not been approved for 2015.

Beside these activities the HIV/AIDS grant supports the waste treatment and disposal system of the SRs mainly through the supply of sharps containers, especially for sharps waste generated by PWID. The sharps waste from PWID is collected in supplied sharps boxes (5 l safety box, corrugated cardboard, WHO standard) at NEP points. The outreach workers are collecting the sharps from the PWID directly or the PWID use sharps boxes by themselves. Some PWID are transporting the used syringes and needles in a plastic bag directly to the NEP points. Open carrying of filled needle containers in public areas can cause interference with the police. Recapping of needles is a frequent practice. As a high amount of sharps containers have been purchased in 2012, there are still sharps container

packages available in the warehouse of the UNDP GF. 97,750 safety containers have been delivered to the NEP points in the last three years (2012 to 2014).

The Narcotic Centre in Bishkek is receiving funds from the HIV/AIDS grant for the collection, transport and treatment of collected sharps boxes from PWID. The treatment of the sharps boxes by incineration is approved by the State Agency of Environment Protection and Forestry (SAEP&F) at the central heating plant of Bishkek. Other needle exchange points do not have a specific solution for treatment and disposal of waste and burn the waste illegally openly or in private stoves.

Generated general waste in the NEP points or in the healthcare facilities is handled as domestic waste and disposed by using the municipal waste services.

To reduce risks for the public caused by discharged syringes and needles, some outreach workers carry out clean-ups of public places which are frequently visited by PWID.



Collection of sharp boxes from PWID



Transport of filled sharp boxes from PWID to treatment plant



Incineration of filled sharp boxes



*Plastic cups – methadone programme*

Through the OST programme of this grant, methadone is dispensed to those who abuse heroin and other opioids. Here mainly waste of plastic cups and urine tests is generated. Both are disposed as general waste. As plastic bags for the waste collection are not available, the cups and tests are sometimes caught by wind and are scattered around the general waste storage. As methadone has an expiry period of 3 years, methadone has not been wasted during the programme time.

Waste generated during HIV or HCV testing is separated into general waste and infectious waste. For infectious waste disposal, the waste system of the respective healthcare facility is used. More and more facilities in Kyrgyzstan are equipped with autoclaves for the decontamination of sharps and infectious waste. UNDP GF funded some autoclaves for the decontamination of infectious and sharps waste in 2014. Other waste is disinfected by chlorine solution and disposed as general waste.

Training on healthcare waste management was only provided at hospitals which received an autoclave for the decontamination of infectious and sharps waste.

#### **5.4.3 Analysis of waste management procedures within the TB grants**

The TB grant managed by UNDP is supplying mainly pharmaceuticals for the diagnosis and treatment of TB.

Furthermore reagents and products for the laboratory and x-ray films have been delivered. Support on specific waste management has been provided through the delivery of an autoclave and other waste equipment for the National Phthisiology Center in Bishkek.

No pharmaceutical waste from TB activities has been generated in the last years. Kyrgyzstan has strict customs rules, that pharmaceuticals must enter the country with at least 80% of the due time. A national waste management system for pharmaceuticals waste is available but rarely used.

The National Phthisiology Center received a BSL-3 laboratory from the German Government (KfW) including a double door vacuum autoclave for the treatment of infectious waste. After treatment the waste is disposed of at the general waste storage area. Laboratory consumables are delivered through the TB grant.

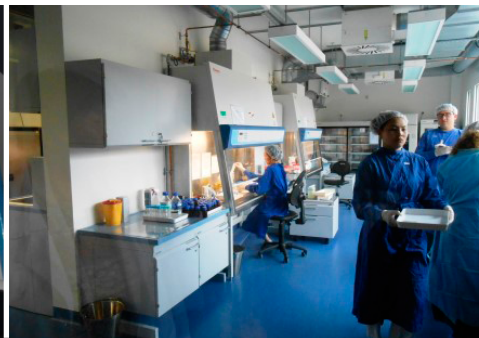
Infectious waste generated in TB wards is managed in accordance with the existing procedures for waste in the respective healthcare facility. The waste is autoclaved and disposed as general waste. Liquid chemical waste from the laboratories such as liquids used for staining or liquid reagents is disposed of via the sewage system. There is no system for solid chemical waste like mercury waste (fluorescent lamps) available.



*Storage of pharmaceutical products from UNDP GF in a hospital pharmacy*



Testing kit for the TB lab



BSL-3 laboratory



Double door autoclave BSL-3 laboratory

## 5.5 Current healthcare waste treatment and disposal practices in Kyrgyzstan

The legal analysis showed that regulations for the management of healthcare waste are insufficient; a clear strategy, comprehensive regulations, guidelines and SOPs are lacking.

The development and implementation of a healthcare waste management model at identified healthcare facilities in Kyrgyzstan was financed by the Swiss Agency for Development and Cooperation and carried out by the Swiss Red Cross in collaboration with the Republican Centre for Infection Control of the MoH of the Kyrgyz Republic in the last years until 2014. This system is based on the decontamination of infectious and sharps waste by gravity autoclaves. The Kyrgyz Republic is aiming to implement a nation-wide system based on alternative waste treatment systems which are not generating hazardous emissions like dioxin and furans. This practice is also in accordance to the Stockholm and Basel Convention which has been signed by the country.

The UNDP GEF project “Protect human health and the environment from unintentional releases of PoPs and mercury from the unsound disposal of healthcare waste in Kyrgyzstan” is supporting the MoH to improve the situation of healthcare waste in the country. The main objective of the project is to adapt and implement Best Environmental Practices (BEP) and Best Available Technologies (BAT) in healthcare facilities in Bishkek to improve the management, treatment and disposal of healthcare waste. A number of activities are planned

during the period 2014 to 2017 to achieve the following objectives: strengthening of the national regulatory framework for healthcare waste management, support the implementation of BAT and BEP and initiate the phasing out of mercury containing devices from healthcare facilities.

### *Non-hazardous, general waste*

Municipal non-hazardous waste is segregated and collected in containers or placed at open sites on hospital compounds. In general this waste is collected by the municipality, private companies or by the hospitals themselves and then transported to the nearest landfill or dumpsite. The informal sector is collecting valuable materials at the unsecured dumpsites. In some health facilities the general waste is openly burned.

Other health facilities which own an autoclave for the decontamination of infectious and sharps waste are selling the decontaminated plastic syringes and needles for recycling.

Recycling of paper, glass or other plastic goods is so far not implemented.

### *Infectious waste including sharps items*

A number of hospitals are using autoclaving systems for the decontamination of infectious and sharps waste. The system components include mechanical needle cutters, segregation using autoclavable containers (enamelled buckets), transport and storage, autoclave treatment, recycling of sterilized plastic and metal parts, and documentation.



NEP points are using 5 l safety boxes for the collection of sharps waste. Filled safety boxes cannot be safely decontaminated by the available gravity autoclaves. Therefore in some cases an exception was obtained from the authorities to incinerate this waste in the public heating plant. Organisations which do not possess such exceptions are burning the generated waste openly in SSIs or in private ovens.

Other health facilities especially at primary level are still using chlorine solution for chemical disinfection of the waste followed by open burning, burning in SSIs or disposal as general waste.

*Pathological waste*

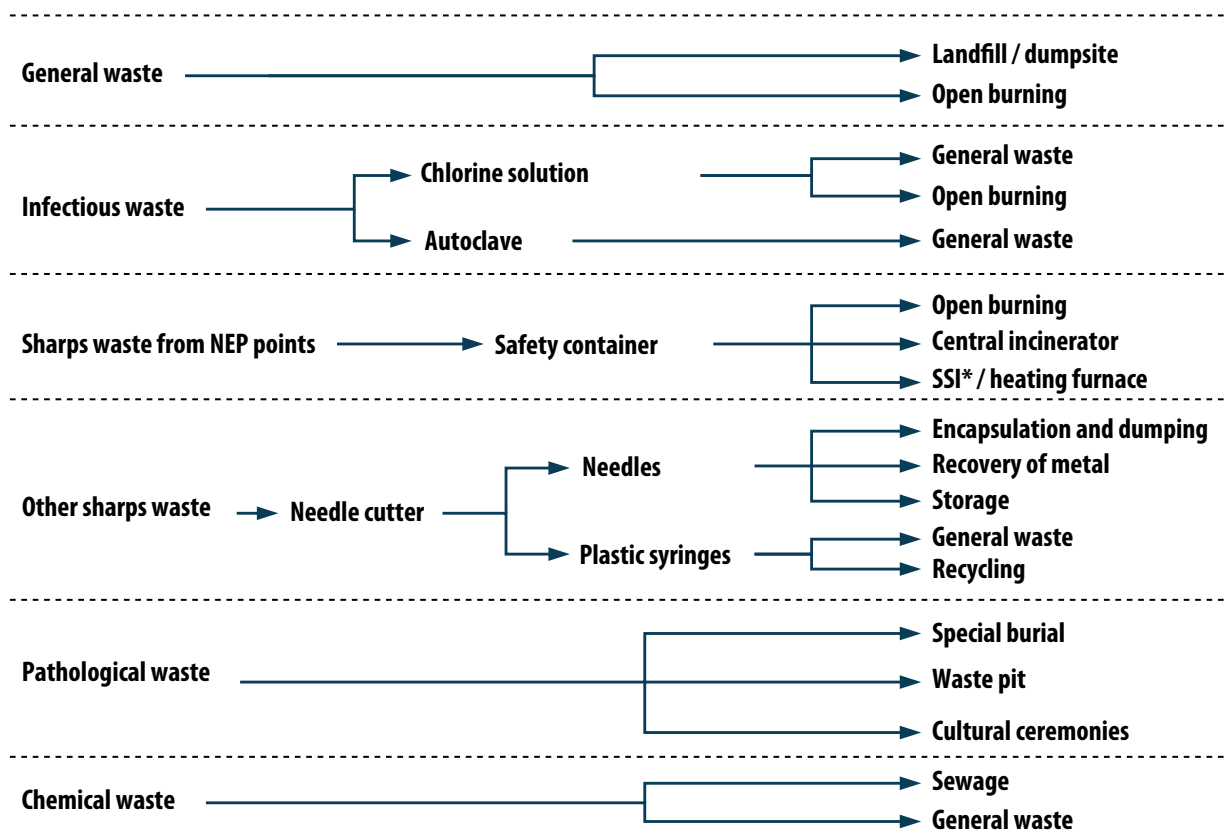
Pathological waste is collected separately, disinfected with chlorine powder and either handed over for disposal on special sites at cemeteries or disposed in

waste pits. In some regions the mothers are taking their placenta home for cultural ceremonies.

*Pharmaceutical waste*

Healthcare facilities intend to affirm that no pharmaceutical waste is generated, as there is a lack of pharmaceuticals for the patients. Furthermore they are providing the medicines to the patients who take them back home. A national system for the destruction and disposal of unused or expired pharmaceuticals is available but it seems to be used only by international organisations. Following this system a committee investigates the circumstances about expired pharmaceuticals and prescribes the methods for destruction and disposal in accordance with the Order N 428 “Instructions on the procedures for the destruction of expired and not used medicines and medical products.”

**Figure 4: Current disposal scheme of healthcare waste streams**



\*SSI = Small scale incinerator

#### *Chemical waste*

A national regulative framework for the management of chemical waste generated in health facilities is neither available nor implemented. Solid chemical waste (mercury containing waste, x-ray films, etc.) is disposed as general waste and liquid chemical waste (x-ray solutions, disinfectants, laboratory reagents etc.) is disposed via the sewage system.

#### *Radioactive waste*

The management of radioactive waste is regulated in the Kyrgyz law “On radiation safety of the population”

(June 17, 1999). Radioactive waste generated in health service facilities is only generated in Bishkek and is under the responsibility of the regulatory authority, the State Agency on Environmental Protection and Forestry.

Figure 4 shows the general schemes of disposal for the different healthcare waste streams in the Kyrgyz Republic.

# 6 Findings and Recommendations

## 6.1 Recommendations, generally applicable to all GF-financed health programmes

### a) Provide a dedicated budget for waste treatment and disposal which was generated through the GF grants (hazardous waste)

**Current situation:** By providing pharmaceuticals and other medical products hazardous waste is generated.

**Justification/impact:** Although responsibilities are defined within the law on pharmaceutical and healthcare waste and subsequent in the regulations on the management of healthcare waste, uncertainties exist in regard to the coverage of cost for the disposal of hazardous waste which might result in inadequate, unsafe and environmentally harmful disposal of the waste generated.

**Recommended activities:** Review and clarify funding policies and procedures related to this matter. Include a budget line for hazardous healthcare waste treatment and disposal or include a take-back duty for expired or unusable medicines for suppliers in future contracts.

### b) Strengthen the disposal systems for waste from IDU

**Current situation:** While efficient systems for the collection of used syringes and needles are installed, a specific budget for disposal of the collected waste is not fully calculated in the grants and has to be paid mostly from own funds of the SRs or from the general overhead budget.

**Justification/impact:** Without dedicated and transparent funding, the correct treatment and disposal of collected sharps waste might create problems for the SRs. If resources are lacking or safe disposal capacities

missing, this will result in inadequate, unsafe and environmentally risky disposal of this waste.

**Recommended activities:** Include in GF grants a strategy and activities for the waste collection, treatment and disposal with dedicated budget lines.

### c) Address occupational health and safety risks for outreach workers during sharps collection campaigns

**Current situation:** Outreach workers are collecting used syringes from PWID at public places. For personal protection, only thin latex gloves are available.

**Justification/impact:** A risk of infection through needle-stick accidents exists for outreach workers during the syringe collection campaigns.

**Recommended activities:** Provide needle-stick protection gloves to SRs whose outreach workers collect sharps items.

### d) Strengthen laboratory waste management practices through the development of SOPs

**Current situation:** Different practices exist for the disposal of decontaminated laboratory waste, for the monitoring of waste treatment plants and for the evaluation of waste treatment systems.

**Justification/impact:** Unclear and not standardized waste management practices might result in unnecessary high waste management cost and create problems during inspections and accreditation.

**Recommended activities:** Develop and implement SOPs for the management, treatment and supervision of laboratory waste management systems.

#### e) Strengthen recycling of waste and segregation of mercury containing waste in the project office

**Current situation:** The waste from the programme office is disposed without comprehensive planning. Only paper is segregated and collected for recycling. Mercury waste is not considered in the waste system of the office.

**Justification/impact:** A recycling sector is available in the country – a phasing-out system for mercury containing devices from healthcare facilities is currently piloted at selected health facilities (UNDP GEF project). Recyclables are reducing the amount of waste which is disposed on unsecure landfills. Mercury waste resulting from broken fluorescence lamps or batteries is hazardous waste which needs to be treated and disposed accordingly.

**Recommended activities:** The recycling system in the office should be revised. A collection and storage area for fluorescence lamps and batteries should be implemented.

## 6.2 Context specific recommendations for the GF programme in the Kyrgyz Republic

#### a) Support the development of a national healthcare waste management strategy and implementation plan

**Current situation:** A national healthcare waste management strategy is currently under development which will support possible investments in this field.

**Justification/impact:** As no national strategy and implementation plan is available yet, investments are uncoordinated or are not executed.

**Recommended activities:** Support the development of a national healthcare waste management strategy including the implementation plan through a coordinated inclusive engagement with the authorities and the UNDP GEF project in Kyrgyzstan.

#### b) Continue support on healthcare waste management in the country

**Current situation:** The UNDP GF programme supported the implementation of management systems for infectious and sharps waste, which was successfully implemented in 2014. The activities could not be continued due to lack of funding. The country is still lacking treatment capacity for infectious and sharps waste. A safe and environmental friendly treatment method is not available for the decontamination of sharps waste packaged in safety boxes collected by NEP points.

**Justification/impact:** In many health facilities, especially on primary level, infectious and sharps waste is still decontaminated by chlorine solution and either openly burned or disposed of as general household waste. As most of the landfills in Kyrgyzstan are uncontrolled major risks arise for the scavengers or from uncontrolled burning of the waste causing the production of persistent organic pollutants like dioxin and furans. The filled safety boxes from NEP points are burned which also generates hazardous flue gases like dioxins and furans.

**Recommended activities:** Support the Kyrgyz Republic to implement a nation-wide environmentally friendly medical waste treatment and waste management strategy in accordance with the Stockholm Convention.

#### c) Support the development of a national system on chemical waste management in health settings

**Current situation:** Kyrgyzstan has currently no chemical waste management guidelines, procedures or treatment processes for the generated chemical waste in healthcare settings. This includes the management of mercury containing waste.

**Justification/impact:** As no other opportunities are available, liquid and solid chemical waste is disposed of via the sewage system or is disposed of together with the general household waste.

**Recommended activities:** Support the government to develop guidelines and SOPs, and support the phasing-out of mercury containing products from healthcare facilities.

**d) Review the supply of safety boxes for NEP points, considering the waste treatment technology used for decontamination of sharps waste**

**Current situation:** Safety containers filled with sharps waste cannot be decontaminated safely by the widely used gravity autoclaving systems.

**Justification/impact:** For the treatment of sharps waste packaged in cardboard safety boxes, different packaging systems or other treatment technologies are required.

**Recommended activities:** Evaluate different sharps waste packaging for the safe decontamination in the available gravity autoclaves, or identify specific waste treatment options suitable for filled safety boxes or liaise with relevant authorities to receive approval to burn the sharps containers in a centralised system.

**e) Link up with other healthcare waste management initiatives in the country**

**Current situation:** There is no national healthcare waste management strategy or standardized management of healthcare waste in the country. Therefore management of healthcare waste generated

by GF grants faces challenges. Currently the UNDP GEF project “Protect human health and the environment from unintentional releases of PoPs and mercury from the unsound disposal of healthcare waste in Kyrgyzstan” is supporting the MoH and the State Agency for Environmental Protection and Forestry on the improvement of the national healthcare waste management system.

**Justification/impact:** A standardized and regulated healthcare waste management system in the Kyrgyz Republic is needed, in order to manage healthcare waste generated by UNDP GF projects in a safe way which follows international environmental standards.

**Recommended activities:** Strengthen standardized and safe healthcare waste management systems as a critical GF health system strengthening component. Link up with the MoH / UNDP GEF project on the development of a national strategy on healthcare waste management and the development of guidelines and safety operation procedures for the specific programme areas like the management of sharps waste from PWIDs.

# 7 Annexes

## 7.1 Input analysis – HIV

### A. Pharmaceuticals

- ▶ Methadone HCl solution
- ▶ Didanosine (DDI)
- ▶ Lamivudine (3TC), oral solution
- ▶ Lopinavir/ritonavir (LPV/r)
- ▶ Nevirapine (NVP), blister pack
- ▶ Nevirapine (NVP), oral solution
- ▶ Tenofovir (TDF)
- ▶ Tenofovir (TDF) + Emtricitabine (FTC)
- ▶ Zidovudine (AZT), blister pack
- ▶ Zidovudine + Lamivudine (AZT + 3TC), blister pack
- ▶ Amoxicilline + Clavulanic acid tabs
- ▶ Amoxicilline tabs
- ▶ Azithromycin tabs
- ▶ Aciclovir (injection)
- ▶ Ampicillin/sulbactam injection
- ▶ Clarithromycin tabs
- ▶ Clindamycine tabs
- ▶ Clindamycine (injection)
- ▶ Doxycycline tabs
- ▶ Ferrum hydroxide 50 mg/ml
- ▶ Amykacin (injection)
- ▶ Primaquine tabs
- ▶ Pyremethamine tabs
- ▶ Sulfamethoxazole/Trimethoprim tabs
- ▶ Sulfamethoxazole/Trimethoprim (injection)
- ▶ Sulfamethoxazole/Trimethoprim (suspension)
- ▶ Ceftriaxone (injection)
- ▶ Ciprofloxacin tabs
- ▶ Ganciclovir (injection)
- ▶ Sulfadiazine tabs
- ▶ Fluconazole 0.2% (injection)
- ▶ Fluconazole tabs
- ▶ Itraconazole tabs
- ▶ Folic Acid tabs
- ▶ Levofloxacin tabs

- ▶ Acetilcistein tabs
- ▶ Loratadine tabs
- ▶ Quifenadine hydrochloride tabs
- ▶ Diclofenac 2,5%
- ▶ Ketoprofen tabs
- ▶ Terbinafine tabs
- ▶ Terbizil
- ▶ Clotrimazole

### B. Health products

- ▶ Autoclaves
- ▶ Aerosol photometer, probe, generator, hood, fan, oil concentrate
- ▶ Ag HCV
- ▶ Alcohol (antiseptic) swabs
- ▶ Anemometer
- ▶ Anti – Chlamydia trachomatis IgG (standard)
- ▶ Anti – Herpes simplex virus (1-2) type IgG
- ▶ Anti – Treponema pallidum (total antibodies)
- ▶ Anti – Urea-plasma urealyticum IgM, IgA and IgG
- ▶ Anti-Toxoplasma gondii DNA
- ▶ Anti-HCV (anti-HCV mixed titer performance panel)
- ▶ Anti-HIV-1 (anti-HIV-1 mixed titer performance panel)
- ▶ Anti-HIV-2 (HIV-2 mixed titer performance panel)
- ▶ Benchtop clinical centrifuge with accessories
- ▶ Biosafety cabinet class II (with a set of spare HEPA filters)
- ▶ C3/CD4, CD3/CD8 cell counter
- ▶ CD3/CD4 CD3/CD8 test kits
- ▶ Chlamydia trachomatis DNA (standard)
- ▶ Cleaning solution “Cleans”
- ▶ Clinical chemistry analyser blood
- ▶ CMV DNA (CMV DNA linearity panel)
- ▶ Consumables for Cyflow Counter test systems
- ▶ Cyflow Counters

- ▶ Control kit for CyFlow counter
- ▶ Consumables for trainings: Test-systems (HIV, HBV, HCV, Syphilis)
- ▶ Condoms
- ▶ Cryovials (general needs + trainings)
- ▶ Deep Freezer for PCR lab
- ▶ Diagnostic rapid tests for labs/10 express diagnostics points (HIV)
- ▶ Diagnostic rapid tests for PMTCT, PEP (HIV)
- ▶ Disposable obstetric underwear and napkins
- ▶ Disposable sterile gloves
- ▶ Drying cabinets, incl. starter kit
- ▶ ELISA test-systems (HIV, HBV, HCV, syphilis, chlamydia, toxoplasma, HSV, CMV, mycoplasma, urea plasma) for development of control samples
- ▶ Flow count
- ▶ Flow cytometer/viral load (incl. starter kits and installation)
- ▶ PCR workstation – AC632LFUVC
- ▶ HBsAg (HBsAg mixed titer performance panel)
- ▶ HBsAg confirmatory test system
- ▶ HBsAg test system
- ▶ HCV Ag confirmatory test system
- ▶ HCV Ag test system
- ▶ HCV RNA
- ▶ Haematology analyser
- ▶ HEPA-filters for PCR laboratory
- ▶ Hepatitis B DNA
- ▶ HIV 1/2 Ag-Ab rapid tests 4th generation
- ▶ HIV 1/2 Ab rapid tests 3rd generation on capillary whole blood
- ▶ HIV 1/2 diagnostics test system (ELISA) 3rd Generation)
- ▶ HIV 1/2 Western Blot test kits
- ▶ HIV-1 p24 antigen (HIV p24 antigen mixed titre performance panel)
- ▶ HIV-1 RNA (HIV RNA genotype performance panel)
- ▶ HSV DNA
- ▶ Immune prep reagent system
- ▶ Immunoblot tests for HIV, HCV for development and approval of control samples
- ▶ Indicator stickers for sterilization control, 132 and 180 °C
- ▶ Isotonic solution (21 l)
- ▶ Lab chemicals: Brinidox, Pro-Clean300, Na<sub>2</sub>Cl, lysoformine, H<sub>2</sub>SO<sub>4</sub>, disinfectants for PCR laboratories)
- ▶ Lab top cooler rack for microcentrifuge tubes & cryogenic vials
- ▶ Milk formulas
- ▶ Mycoplasma hominis IgM, IgA and IgG
- ▶ Needles for vacutainers
- ▶ Negative donor plasma
- ▶ New-born kit
- ▶ PCR DNA test systems (dried blood drops)
- ▶ PCR test-systems
- ▶ PCR workstation
- ▶ Pill organizers for ART patients
- ▶ Pipetors, single channel
- ▶ Pipetors tips
- ▶ Plastic (autoclavable) bags
- ▶ Positive serum or plasma of human blood containing antibodies to Mycoplasma (anti-Mycog IgG),
- ▶ Positive serum or plasma of human blood containing antibodies to Toxoplasma (anti-Toxo IgG)
- ▶ Positive serum or plasma of human blood containing antibodies to Urea-plasma (anti-Urea IgG)
- ▶ Positive serum or plasma of human blood containing only antibodies to hepatitis C virus (anti-HCV)
- ▶ Positive serum or plasma of human blood containing only antibodies to human immunodeficiency virus (anti-HIV-1)
- ▶ Positive serum or plasma of human blood containing only antibodies to II type human immunodeficiency virus (anti-HIV-2)
- ▶ Positive serum or plasma of human blood containing only hepatitis B surface antigen (HBsAg)
- ▶ Positive serum or plasma of human blood containing only human immunodeficiency virus p24 antigen (HIV-1 p24 Ag)
- ▶ Positive serum or plasma of human blood containing only IgG antibodies to Chlamydia trachomatis (anti-Ch. trachomatis)
- ▶ Positive serum or plasma of human blood containing only IgG antibodies to CMV (anti-CMV IgG)
- ▶ Positive serum or plasma of human blood containing only IgG antibodies to HSV (anti-HSV IgG)

- ▶ Positive serum or plasma of human blood containing only IgG antibodies to *Treponema pallidum* (anti-Tr. pallidum)
- ▶ Protective clothing (for medical staff) + apron + gloves
- ▶ Reagents for portable cell counter
- ▶ Refrigerator and freezers
- ▶ Safety eye shields
- ▶ Stripe semi-automatic urine analyser
- ▶ Syphilis test system, kit = 96 tests
- ▶ Syringes (2 ml / 10 ml)
- ▶ Test tubes (blue)
- ▶ Thermometer for block heater, teflon coated
- ▶ Thermometer for freezer
- ▶ Thermometer for refrigerator
- ▶ Thermometers (electronic, rooms)
- ▶ Thermometers (for PCR lab)
- ▶ Thermomixer with thermo block
- ▶ Vacutainer tubes
- ▶ Viral load instrument
- ▶ Western blot processing system
- ▶ Calibration solution, flow check, internal control sample

### C. Non Health Products

- ▶ Materials for rehabilitation and reconstruction of healthcare facilities including furniture (Infrastructure)
- ▶ Van
- ▶ Plastic container
- ▶ Metal bucket with cover
- ▶ Metal bucket with cover
- ▶ Scales (up to 100 kg), mechanical, platform
- ▶ Needle destructors
- ▶ Barcodes, voltage stabilizer, power lines, UPS packs
- ▶ Educational printing materials, leaflets, manuals

## 7.2 Input analysis – TB

### A. Pharmaceuticals

2<sup>nd</sup> line medicines:

- ▶ Capreomycine
- ▶ Levofloxacin
- ▶ Kanamycine
- ▶ Protionamide
- ▶ Cycloserine
- ▶ Para-aminosalicylic acid

- ▶ Amicacine
- ▶ Pyrazinamide
- ▶ Ethambutole

3<sup>rd</sup> line medicines:

- ▶ Moxifloxacin
- ▶ Clofazimine
- ▶ Amoxiclav (Amoxicillin & Clavulanate)
- ▶ Isoniazid

Other medicines:

- ▶ Amitriptyline
- ▶ Aluminium hydroxide
- ▶ Beclometasone
- ▶ Diclofenac sodium
- ▶ Diazepam
- ▶ Famotidine
- ▶ Hydrocortisone acetate
- ▶ Paracetamol (acetaminophen)
- ▶ Levothyroxine sodium
- ▶ Loperamide
- ▶ Metoclopramide hydrochloride
- ▶ Omeprazole
- ▶ Ondansetron hydrochloride
- ▶ Oral rehydration salt
- ▶ Potassium chloride
- ▶ Pyridoxine (vitamin B6)
- ▶ Fluconazole
- ▶ Phenytoin sodium
- ▶ Promethazine hydrochloride
- ▶ Ibuprofen
- ▶ Hydrocortisone acetate
- ▶ Prednisolone
- ▶ Dexamethasone phosphate
- ▶ Salbutamol

Biochemical tests for 2<sup>nd</sup> line medicine users:

- ▶ Serum creatinine
- ▶ Serum potassium
- ▶ TSH
- ▶ AST, ALT

Medical products

- ▶ Water for injections
- ▶ Syringes
- ▶ Face mask grade FFP3
- ▶ Surgical mask



**B. Health Products**

- ▶ Water for injections
- ▶ Syringes (5 ml)
- ▶ Face mask grade FFP3 NR D with exhalation valve and nose clip, with 4 straps, individually packed
- ▶ Surgical mask
- ▶ Sputum container, plastic, disposable, 45 to 50 ml, screw-cap, permitting full hermetic closure
- ▶ Slides for microscope, 25 mm x 75 mm, 1.1-1.3 mm thick
- ▶ Applicators, wooden
- ▶ Carbon fuchsine (gr)
- ▶ Methylene blue (gr)
- ▶ Immersion oil (ml)
- ▶ Filter paper, round, diameter 15cm, MN 615 thickness 16mm, weight 70 g/m<sup>2</sup>, filtration speed 22(boxes)
- ▶ Phenol detached crystals, general purpose grade (dangerous goods, UN code 1671, class 6.1\* (gr)
- ▶ Sodium hypochlorite
- ▶ NALC
- ▶ NaOH
- ▶ Natrium citrat
- ▶ Na<sub>2</sub>HPO<sub>4</sub>
- ▶ KH<sub>2</sub>PO<sub>4</sub>
- ▶ Löwenstein-Jensen medium base
- ▶ Glycerol – 98% min GRG
- ▶ Test tubes with thread GL 18 borosilicate glass

- ▶ BBL™ MGIT™ tube
- ▶ BD BACTEC™ MGIT™ 960 – supplement kit
- ▶ BD MGIT™ TBc ID test
- ▶ BACTEC™ MGIT™ 960 SIRE Kit
- ▶ BACTEC™ MGIT™ 960 PZA medium
- ▶ BACTEC™ MGIT™ 960 PZA Kit
- ▶ BD Falcon conical tube flip-top
- ▶ Disposable pasteur pipettes, graduated, volume 1,0ml, graduated 1:0,25, sterile
- ▶ INH (Isoniazid)
- ▶ RMP (Rifampicin)
- ▶ SM (Streptomycin)
- ▶ EMB (Ethambutole)
- ▶ NAA (Nicotinamide)
- ▶ OFL (Ofloxacin)
- ▶ KAN (Kanamycin sulfate-ultra pure grade)
- ▶ AMI (Amikacin disulfate)
- ▶ CM (Capreomycine)
- ▶ ETH (Ethionamide)
- ▶ PAS (Sodium 4-aminosalicylate dihydrate)
- ▶ CS (D-Cycloserine)
- ▶ X-ray film 30x40cm

**C. Maintenance**

- ▶ BSC II
- ▶ Autoclave
- ▶ Maintenance of MGIT
- ▶ Ventilation

## 7.3 Organizations and persons met

**Table 5: Stakeholders consulted**

<b>Organization</b>	<b>Name / Title</b>
UNDP	Paula Ghrist / Programme Manager
UNDP	Daniyar Saliev / HIV Programme Specialist
UNDP	Bolot Kalmyrzaev / HIV Health System Strengthening Specialist
UNDP	Oksana Katkalova / HIV Vulnerable Groups Specialist
UNDP	Chinara Israilova / Procurement Specialist
UNDP	Urmat Doolbekov / Logistic Specialist
UNDP	Aldara Baldanova / Assistant to Programme Manager
WHO	Dr. Nikoloz Nasidze / Medical Officer
Swiss Red Cross	Gelminus Siupsinskas / Programme Manager
Infection Control Unit, Republican AIDS Center	Ainura Esenalieva / Head of Laboratory
Republican Center for Infectious Control	Gulmira Jumalieva, Waste Management Coordinator
Republican Centre of Addictions	Ruslan Tokubaev / Director
National Phthysiology Center	Berdibek Seyitkanov / Head Doctor,
National Phthysiology Center	Gulzat Kydyralieva / Head Nurse
NGO Aman Plus	Andrei Pallastrov / Head of NGO Aman Plus (NEP point / Drop-in center)
Department of Drugs Supply (DDS)	Oskon Stamkulov / responsible for humanitarian aid
Department of Drugs Supply (DDS)	Aida Egimbaeva / Head of Pharmaceutical Inspection Unit



*Empowered lives.  
Resilient nations.*