

Subsector Analysis (Summary): Medical Waste Management

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CURRENCY EQUIVALENTS
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Currency unit	–	togrog (MNT)
MNT1.00	=	\$0.000723
\$1.00	=	MNT1,384

ABBREVIATIONS

GASI	–	General Agency for Specialized Inspection
PPP	–	public–private partnership

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SUBSECTOR ANALYSIS (SUMMARY): MEDICAL WASTE MANAGEMENT

A. Framework

1. The establishment of the legal and regulatory framework for medical waste management began in 1999. In 2001, the joint resolution by the Minister of Health and the Minister of Environment (Order No 249/201, 2001.10.17) “on the improvement of health care waste management in Health Organizations” was issued. In 2011, the new regulation on “Health care waste segregation, collection, storage, transportation, disinfection, and disposal in Health Care Facilities” was approved by a joint order of the Minister of Health and the Minister of Environment (Order No 305/320, 2011.09.28) to replace the meanwhile outdated former joint resolution.

2. The current regulation is supported by different technical orders. These include (i) Order No 93 (2011) on the financing of medical waste treatment, (ii) Order No 158 (2011) which includes guidelines for medical waste management, (iii) Order No 179 (2011) on required waste management equipment and infrastructure, (iv) the Order 305/320 (2011) for providing further advice on medical waste management, and (v) the Order 380 (2011) on the treatment of medical waste. Despite the absence of some aspects such as the management of chemical and pharmaceutical medical waste, overall a sufficient legal framework exists to implement a comprehensive medical waste management system in Mongolia.

3. The regulation and orders provide a good foundation to implement a medical waste system, but enforcement must be stressed further in the future. While the financing of the medical waste treatment expenses is theoretically ensured with Order 93, other medical waste management costs such as consumables (e.g., sharps containers) are not sufficiently covered. An analysis of the annual budget of one *aimag* (province) hospital showed that only MNT12,565 was budgeted for medical waste, while in reality more than MNT2 million was spent just on recurrent costs.

4. A maintenance system for minor and major medical waste management and treatment equipment is the responsibility of the operator of the equipment (hospitals or private disposal company). A preventive maintenance system is so far not introduced and maintenance activities concentrate mainly on corrective maintenance and repair. A validation system for waste decontamination systems does not exist. The budget for equipment is included in the overhead budget of the health care facilities, specific budget lines do not exist.

B. Key Issues

1. Key Issues related to Medical Waste Management and Medical Waste Treatment¹ in Mongolia

5. Investments in medical waste management concentrated in the past mainly on the provision of waste treatment equipment for the three main cities (Ulaanbaatar, Darkhan, and Erdenet), and some selected *aimag* and district hospitals. Those investments were mainly done to support the shift from incineration to non-burn technologies. Investments in infrastructure such as waste storage areas or waste treatment buildings were not made. In addition, very

¹ a: Treatment of medical waste refers to the engineering process of changing the characteristics of the waste, for example using an autoclave to eliminate pathogens from medical waste. b: Management of waste includes the entire waste handling process such as classification, segregation, logistics, training, monitoring, and supervision.

limited funding for the medical waste logistics system was provided. Currently, nearly all hospitals lack medical waste management equipment and infrastructure and do not dispose of the basic medical waste package as it is required under Order 179. Consequently, hospitals are not or only partly able to implement waste management procedures as outlined in the Order 158. Depreciation aspects for medical waste equipment were in the past only considered for the equipment of the central waste treatment plant in Ulaanbaatar, which itself was leased to a private entity. The estimated depreciation time of 20 years for the equipment is too long. A basic financing and budgeting system for medical waste management has been developed. This requires further review and adjustment, as certain aspects, such as the financing of consumables, have not been considered. The main financial issue for the day-to-day medical waste management is the financing of recurrent costs, in particular the financing of simple consumable goods such as plastic bags, sharps containers, or personal protection equipment. Institutionalization of the medical waste costs has been developed only for the treatment costs, and hospitals as well as governmental entities reported problems to do adequate budgeting for medical waste.

6. The analysis of existing medical waste treatment equipment showed that the majority of the equipment was nonfunctioning. Hospitals stated that the internal maintenance service is technically not able to carry out corrective or preventive maintenance for this equipment. Another key issue is the lack of a budget for maintenance, resulting in problems with the procurement of spare parts.

7. While promising advances in the legal medical waste framework have been noted, the development of the administrative system for medical waste received less support in the past and is today underdeveloped. There is no designated or appointed agency or institution available, which systematically collects medical waste data and evaluates medical waste indicators. Regular reports indicating potential weak points are not prepared and opportunities for improvement have been missed. In 2010, the first public–private partnership (PPP) model for medical waste was developed in Ulaanbaatar and should also act as model for other cities. The evaluation of the PPP contracts indicated several potential points of conflict such as the duration of the contract, land ownership arrangements, and supervision of maintenance requirements. These uncertainties and insecurities are resulting in a problematic relationship between the private and the public partner. Another problem area is the mass of recently developed orders on medical waste which are partly incoherent, require further harmonization, or are missing required aspects such as the management, treatment, and disposal of solid or liquid hazardous chemicals and pharmaceuticals; the disposal of decontaminated biohazardous waste; and the disposal of pathological waste.

8. The key for any sustainable medical waste management system is a high awareness level regarding the medical implications among health care workers and decision makers. Over the last 2 years, the Ministry of Health and their partners developed a comprehensive national training and capacity building system. Currently, the financing of the training system relies on external resources. Trainings are only offered case by case, but not on a regular, demand-driven basis. The training curriculum for undergraduate medical staff does not treat the institutionalization and integration of medical waste management training. This is a lost opportunity for the sustainability of the newly developed system.

9. Quality assurance for medical waste management systems requires the regular monitoring and supervision by internal but also external entities. The General Agency for Specialized Inspection (GASI) is the main inspection agency for medical waste in Mongolia. The inspection strategy of GASI was reformed at the end of the last decade, now using a risk based

approach. The available technical equipment and the limited medical waste management knowledge of the inspectors do not allow the carrying out of more sophisticated inspections. Inspections are therefore primarily done visually and technical assessment of treatment plants is mainly based on secondary factors such as the availability of medical waste records or of the existence of personal protection equipment. Inspectors are not able to judge if a plant is technically capable of decontaminating waste. Similar problems exist for the type-testing of steam treatment plants, the commissioning of steam treatment plants and the regular validation and calibration of systems. Due to the decision to change from the incineration of medical waste to decontamination, a large number of steam based medical waste treatment systems entered the country and more will be imported in the future. National or international technical standards for this technology, such as the European Norm 285 for large sterilizers, are not used to assess the conformity of imported equipment in advance. The Mongolian Agency for Standardization and Metrology, which is responsible for this verification, stated that even if technical standards for treatment plants would be available, the agency would not be in a position to test if this imported equipment meets standards, as they do not have either the technical capacity and or equipment to do this. Furthermore, the agency stated it is currently unable to carry out validations or calibrations of steam based waste treatment systems.

2. Specific Issues with regard to Medical Waste Treatment in Mongolia

10. Biohazardous medical waste, such as infectious waste or sharps waste, is treated either by steam based treatment systems (autoclaves) or is burnt in incinerators. The existing central as well as on-site incinerator systems show severe problems and do not meet national or international standards. The assessed autoclaves systems showed fewer operational problems. In Ulaanbaatar, the biohazardous medical waste treatment is centralized; however, the available treatment capacity by the autoclave and the incinerator is insufficient. This insufficient treatment capacity results in a reduction of the required decontamination time of the autoclave. If the existing central incinerator has to be decommissioned, this would further reduce the available treatment capacity of medical waste in Ulaanbaatar. To compensate for this and to ensure a safe future treatment of the biohazardous waste, the steam treatment plant capacity has to be tripled (from currently ~ 150 kg/h to 450 kg/h).

11. Hazardous liquid and solid chemical and pharmaceutical wastes currently are not included in the centralized medical waste collection system and are disposed of via the municipal waste stream or via the sewage system. This disposal practice creates severe risks for the environment and the public. The Government of Mongolia envisions the set up of a centralized industrial hazardous waste treatment facility. A review of their feasibility study showed that the treatment plant would be able to accept liquid and solid medical chemical and pharmaceutical waste. It is however expected that it will take about 5 to 10 years before the plant will be operational.

12. Sharps waste is considered one of the main hazardous medical waste streams, especially in regard to blood-borne diseases such as hepatitis B and hepatitis C. Mongolia has one of the highest worldwide hepatitis B and hepatitis C rates and health care workers dealing with blood contaminated products such as needles or scalpels are at risk of infection. Sharps containers cost approximately MNT1,000 each, which is out of reach for the nearly nonexistent medical waste budgets. This is compounded by problems in the supply and distribution. Safety equipment is missing and sharps waste is collected without or with unsuitable protection.

13. Increasing health care provision standards and new health care services are resulting in increasing amounts of to be managed hazardous and nonhazardous waste. The change of the national medical waste treatment strategy from incineration to non-burn technologies is also

resulting in an increase of the waste amounts, as the waste residues after decontamination are about 3–5 times higher compared with incineration. This results in an increase of waste needing disposal and thus in a reduction of the already limited capacity of the landfills. Typical countermeasures such as the introduction of recycling of medical waste and strengthening reuse of materials can only sporadically be found in the hospitals.

C. Key Challenges

14. The key challenges that need to be addressed in the medical waste management system include:

- (i) Increased investments for medical waste management must
 - (a) ensure full treatment and disposal security for all biohazardous waste generated in Ulaanbaatar. The waste treatment capacity of the central medical waste facility in Ulaanbaatar must be tripled (adding of 300 kilograms per hour treatment capacity);
 - (b) avoid the risk of inadequate management of hazardous waste disposal. A waste collection and treatment/storage system for hazardous liquid and solid chemical and pharmaceutical waste must be established;
 - (c) reduce the demand on the financing of recurrent costs. A safe and more cost efficient system for the collection, transportation, and treatment of sharps waste must be established in Ulaanbaatar;
 - (d) support the development of the medical waste management system at aimag level. Supply equipment and infrastructure in accordance with the Order 179 to allow the implementation of medical waste management systems in accordance to Order 158; and
 - (e) enable hospitals to reduce the amount of waste for landfills. Support for the establishment of recycling systems, especially for plastic waste, is needed.
- (ii) A system to ensure the future maintenance (preventive as well as corrective) of all supplied equipment has to be set up.
- (iii) The legal and administrative system for medical waste management must be strengthened. This should include
 - (a) the harmonization and improvement of the legal system and the development of new orders such as an order for solid and liquid chemical and pharmaceutical medical waste management and an order for the disposal of decontaminated biohazardous waste and pathological waste;
 - (b) the establishment of a medical waste management data, reporting and evaluation system at the National Institute for Public Health as recommended by the Ministry of Health;
 - (c) A review of the Order 93 to better institutionalize the financing system for medical waste management and the provision of technical support in budget planning; and
 - (d) the review of the current PPP contract and support for the development of a new, adapted PPP system, based on lessons learned.
- (iv) The recently developed national medical waste training system should be continued, strengthened, and institutionalized. Key parts of the trainings should at a minimum be included in the training curriculum of undergraduate nurses.
- (v) A testing and standardization system for steam based decontamination systems at the Mongolian Agency for Standardization and Metrology should be

developed, as well as the technical reinforcement of the medical waste inspection system of GASI for quality assurance.