

## **Phase I: National Report on HCWM – Desk Study**

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### **SLOVENIA**

Executive Summary

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#### **Executive Summary**

Slovenia, with population of two million, can be proud on her well establish public health care system accessible to whole population and with developing private health facilities. As an EU member, Slovenia takes care to implement all EU regulation on waste management, also HCWM. National authorities and field inspectors advice, control and monitor waste producers and collectors. In general waste regulations are well implemented also in health care facilities due to well-educated and sensitive waste-dealing personnel. HWCMs are usually sanitary engineers, who mostly upgrade their knowledge with learning by doing or with post graduate studies; these are more or less all educational possibilities for them, because available seminars and training are usually unattractive and too general. They are more curious on practical guidelines e.g. how to deal with specific issue at their work or some good practises. More or less, they know what should be improved, but the main barrier is lack of money or waste as less prioritise subject. Assessment of the researched field show potential needs for developing a good, practical, issue-solving training /educational material which should also include some good practices feasible also in time of crises / lack of money or with minor money investment in existed situation or/and guidelines for HCWM in case of renovations/new build facilities. Education material should also present cross-cut knowhow on environmental-economical-managerial fields.

#### **1. Introduction**

Slovenian health system is a modern compulsory social health insurance-based system and has a generally good standard of compulsory state funded healthcare. Medical staffs are well trained. Private healthcare is also available in the country. The National Health Insurance Institute oversees the health service in Slovenia and all citizens are entitled by law to equal access to healthcare. The Slovenian healthcare system is funded by compulsory health insurance paid by employers and employees. However, not all healthcare costs are covered by the insurance, but almost all Slovenes also pay voluntary contributions.

Slovenia as part of EU community uses EU waste directives as they are and as background or guidelines. In general Slovenian waste regulations are well developed and also waste system is well established. Major wastes producers and all other handlers in waste cycle life are under national authority control - Slovenian

Environment Agency. Additionally, several inspectors take care for correctness of the waste management implementation on the spots. Slovenian medical facilities are obliged to have Waste management plan. In facilities there are a bunch of personnel who takes care for waste handling, but usually there is one (or two, depend on the facility size) that takes care for management. HCWM are authorised by the director who is legally responsible for waste. For position of HCWM is most commonly requested sanitary engineer education or some similar education. HCWM is managing the waste in accordance with relevant legislation, and local regulations and facilities in house system. HCWM also works together with Commission, Physician and Nurse for the control of nosocomial infections and they together provide several trainings and guidelines.

Vocational trainings are available in some extension and also HCWM are allowed to participate. For National Occupation Standards takes care organisation National Reference Point and in its data base there can be found some NOS which are used for HWC management.

Slovenia situation is presented more in detail in flowed sections.

## **2. Healthcare Sector in Slovenia – Overview**

### **Type and funding**

The health insurance system of Slovenia is based on the Bismarckian social insurance model and it is funded by compulsory health insurance, state revenues, voluntary health insurance (VHI) and out-of-pocket payments (OOP). Compulsory health insurance contributions constitute the major source of health care financing in Slovenia as virtually the entire population permanently living in Slovenia is contributing to it.

Additionally, general national- and municipal-level taxation represents another public source of funding. This primarily covers capital investments in hospital care and health centres, facilities owned by the Ministry of Health or municipalities. The Ministry of Health funds capital investments of the hospitals, specialized health institutions at national and regional levels, national health programmes and medical education and research. Municipalities raise their own revenue for health care and receive additional resources from the central Government. Municipalities fund capital investments of the public health centres and public pharmacies within their territory.

Hence, according to various sources, voluntary complementary health insurance for additional coverage is extended to between 95% and 98% coverage of individuals who contribute to compulsory health insurance.

### **Compulsory health insurance**

The compulsory health insurance covers all population with permanent residence in Slovenia which is covered under the unique compulsory insurance scheme either as mandatory member or as their (family) dependants. Virtually the entire (100%) population is insured.

Compulsory health insurance is provided by the Health Insurance Institute of Slovenia (HIIS). All employed and self-employed persons and all retired persons who receive a pension from a Slovenian insurance provider are insured under the health insurance scheme. The status of insured person can also be obtained by the family members of the insured person if they do not have the possibility of entering the scheme on another basis and if they have permanent residence in the Republic of Slovenia (unless it is defined otherwise by international agreement). Employers must register their employees with the HIIS when a new employee starts work. Employees and employers pay contributions into the healthcare fund. The combined contribution is 13.45 percent of which, 6.56 percent is paid by the employers and 6.36 percent is paid by the employees. Employers also pay an additional 0.53 percent to cover against occupational injuries and diseases. Dependant family members are covered by the contributions paid by employed family members.

The self-employed must pay contributions according to a fixed proportion of their after-tax income. The unemployed, old age pensioners and people on long-term sickness benefit or maternity leave have to pay a fixed amount of healthcare contributions, for example pensioners pay a contribution of 5.65 percent of their gross pension towards the fund a year. Foreigners immigrating to Slovenia without jobs must produce proof of private health insurance in order to obtain their residence permit. A child is health insured as a family member up to the age 15 years, or up to the age of 18 years if (s)he is not insured in other way, and after this age if he is attending school, i.e., to the end of regular education.

The compulsory health insurance defines a benefits package of health services to the insured population. The benefits package comprises the coverage of primary, secondary and tertiary services, pharmaceuticals, medical devices, sick leave exceeding 30 days and costs of travel to health facilities. The state fund covers most medical services including treatment by specialists, hospitalisation, prescriptions, pregnancy and childbirth and rehabilitation. Depending on the specific area of treatment or activity, the shares covered by compulsory health insurance vary from 25% to 95%. The difference to the full price shall either be covered by the insured person himself, or can be covered by the voluntary health insurance policy.

### **Voluntary health insurance (VHI)**

The majority of the population is included in the complementary VHI scheme. Approximately 98% of the coverage of individuals who contribute to compulsory health insurance and for approximately 85% of the whole population (children under 18 years and students under 26 years are excluded from co-payments). VHI is provided by the Vzajemna, a non-profit-making public insurance company obliged by law to provide VHI for co-payments, along with Adriatic-Slovenica, Triglav and Merkur. These latter three are profit-making insurance companies.

Complementary VHI provides insurance to cover co-payments only, whereas supplementary VHI provides for a higher standard and a wider scope of benefits than the compulsory insurance. Contrary to procedures in other European countries, complementary VHI insurance does not reimburse the patient, but the provider charges the respective VHI companies directly. Voluntary supplementary insurance is contracted only by a small fraction of the population.

In Slovenia, co-payments can be covered by VHI, which determines the services and respective percentages of costs to be covered by compulsory health insurance. The co-payment rates with regard to the range quoted in the Health Care and Health Insurance Act are proposed by the HIIS and must be approved by the Government.

Since it is not possible to opt out of the compulsory scheme, there are no voluntary “full coverage” schemes. VHI covers co-payments for the benefits within the compulsory health insurance package, as well as complementary and supplementary benefits which are not covered at all by compulsory health insurance (for further information on VHI).

### **The Health Insurance Card**

The Slovene health insurance card system provided the insured persons with a smart card and set up data links between the health care service providers and health insurance providers (the Health Insurance Institute and the two voluntary health insurance providers). The health insurance card is electronic personal document, issued, free of charge, to every person upon the first regulation of the compulsory health insurance status. The card needs to be presented at a doctor visit.

## Structure

The Slovene health care system remains relatively centralized and the responsibility of local communities is still limited. The Ministry of Health has the task of planning health care for the entire health field beholden to the State and for the entire health care system. All administrative and regulatory functions of the system take place at the national level; the subnational levels predominantly have executive duties. Compulsory health insurance is also centrally managed and administered, whereas the local levels conduct only those tasks and activities that were previously assigned to them from the central level. The professional chambers and organizations also operate at state level or through their regional branches. Public health activities are mainly designed, implemented and monitored by the IPH-RS (Institute of Public Health of the Republic of Slovenia) and its nine regional institutes.

Privatization within the health care system has taken place gradually and at a constantly increasing pace. It is developing towards the termination of employment relationships for medical doctors and other medical workers in the public service sector by encouraging establishment of their own practices.

The level of health care in Slovenia, provided through the public health service network, which also includes private service providers on the basis of concessions, is entirely comparable with the level of health care in the advanced countries of Europe. Primary health care services in Slovenia are organised locally, such that they are equally accessible to all people without discrimination.

Medical activity is carried out at the primary, secondary and tertiary levels. A health care service at the primary level comprises primary care and pharmacy. The health sector at the secondary level comprises specialist outpatient and inpatient activity. The health sector at the tertiary level comprises the occupation clinics and institutes and other authorized health institutions. As a special activity specialist at secondary and tertiary levels of social-performing, hygienic, epidemiological and health and environment activities.

The Slovene health care system is built around countrywide family medicine-centred primary care, with specially trained doctors and nurses. Primary care is provided by public primary health care centres (including emergency medical aid and general practice), health stations and an increasing number of private GPs who participate in the public health care network and are reimbursed by the HIIS (Health Insurance Institute of Slovenia). The provision of primary care is based on the idea that health care should be brought to the local communities and that various types of care should be integrated and brought to specific target group populations.

Specialized outpatient services at the secondary care level are provided by hospitals (or polyclinics), spas and private facilities, while 75% of specialist services are provided by hospitals either as inpatient or outpatient care. Access to secondary care requires referral by the patient's personal physician (GP - General practitioner or paediatrician). Cooperation between services at different levels leaves much to be desired and is mainly limited to referrals and exchange of test results.

In Slovenia there are 36 daily health centres all across the country. The health centres only provide outpatient care but do offer a wide variety of specialist services. Medical services provided by health centres include, general practice, maternity care, child healthcare and dental care. They also provide emergency medical aid as well as laboratory, radiology, and other diagnostic services.

Emergency care is available free for everyone including those without state health insurance. However, once your condition is stabilised the hospital request proof of your insurance status, and the doctors ask you for a fee for their services. Emergency treatment is provided at the emergency room of all major state hospitals. Emergency departments are open non-stop all year. You may use their services if you need immediate attention, or if your GP refers you to them, or if there is no GP service available.

There are private practices in Slovenia provided by independent office-based doctors and specialists. The premises, equipment and personnel are funded largely by private insurance contributions, but it is used only

by a small percentage of people because the services are fairly expensive. Private medicine is sometimes used as a top up to the basic state healthcare and to cover them for the services deemed non-essential.

List of hospitals and other big public health institutions in Slovenia:

*Medical university centres*

- *University Medical Centre Ljubljana - Ljubljana*
- *University Medical Centre Maribor - Maribor*

*General hospitals*

- *General Hospital Brežice*
- *General Hospital Celje*
- *General Hospital Izola*
- *General Hospital Jesenice*
- *General Hospital Murska Sobota*
- *Dr. Franc Derganc General Hospital Nova Gorica*
- *General Hospital Novo Mesto*
- *Dr. Jože Potrč General Hospital Ptuj*
- *General Hospital Slovenj Gradec*
- *General Hospital Trbovlje*

*Psychiatric hospitals*

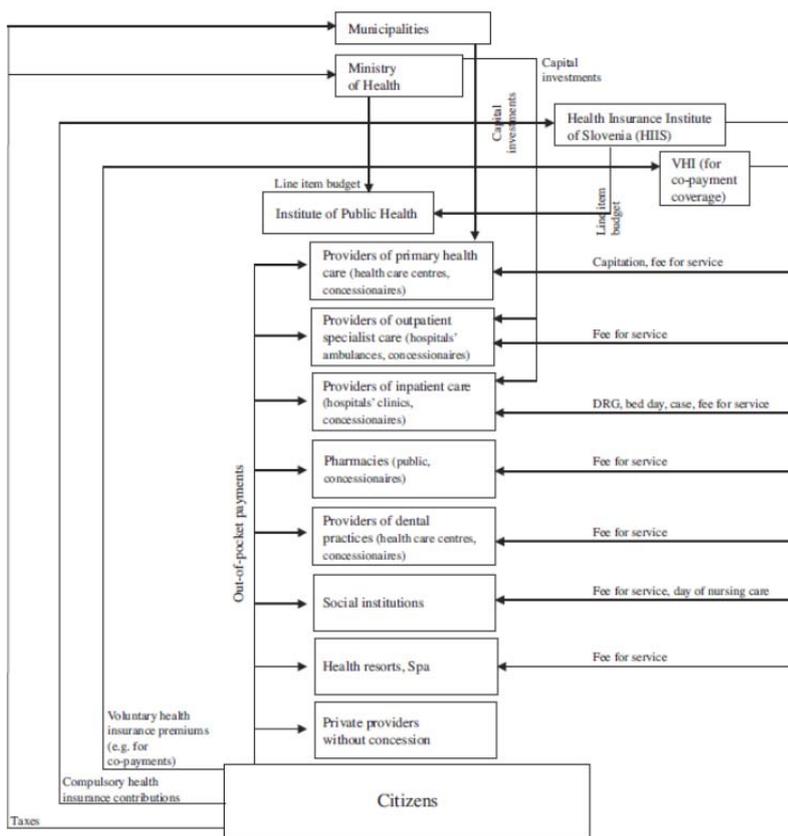
- *Psychiatric Hospital Begunje*

- *Psychiatric Hospital Idrija*
- *Psychiatric Hospital Ormož*
- *Psychiatric Hospital Vojnik*
- *University Psychiatric Clinic Ljubljana*

*Special hospitals*

- *Centre for Children's Health Care Šentvid pri Stični*
- *Gynaecology and Obstetrics Hospital Kranj*
- *Hospital Topolšica*
- *Institute of Oncology Ljubljana*
- *Obstetrics and Gynaecology Hospital Postojna*
- *Orthopaedic Specialty Hospital Valdoltra*
- *University Clinic of Respiratory and Allergic Diseases Golnik*
- *University Rehabilitation Institute, Republic of Slovenia*

Fig. 3.1 Financial flow chart of the Slovene health care system



Source: Authors' own compilation.

Notes: HIIS: Health Insurance Institute of Slovenia; VHI: Voluntary health insurance; IPH-RS: Institute of Public Health (of the Republic of Slovenia); DRG: Diagnosis-related group(s).

### 3. Healthcare Waste – Legislative Overview

#### National (EU – Slovenian) regulations

With Slovenia's membership to the European Union, EU legislation is now valid and is directly applied also in Slovenia. Decrees of the EU are directly transferable to the Slovenian legal order, without the need for any amendments. They become valid upon the date of their translation into the Slovenian language. EU directives (guidelines) are the most frequently used legal basis. Member states may only define the form or the directive with which it will manage the problems covered by the directive.

In Slovenia, the protection of the environment is regulated by the Environmental Protection Act (ZVO).<sup>1</sup>

Key executive acts regarding the treatment of waste are the Rules on the Management of Waste which is harmonised with EU directives on waste, defining the mandatory management and other conditions for waste collection and transport and the processing and removal of waste. Important is the provision that waste must be processed when technical and other possibilities exist as well as removing waste which cannot be processed in such a way which will not excessively burden the environment.<sup>2</sup>

The rules define the classification of wastes and hazardous wastes while also prescribing the mandatory recordkeeping and monitoring of waste management by keeping records. It also defines that producers of wastes are required to have a waste management plan if the annual quantity exceeds 150 tons of waste

and/or 200 kg of hazardous waste. Each year, by 31 March, a report on waste must be prepared if the annual quantity exceeds 5 kg of hazardous waste and/or 80 tons of other waste.

The Rules on the management of waste originating from healthcare activities and subsequent research<sup>3</sup> is a regulation which prescribes in detail, the mandatory management of waste originating from healthcare activities and all research related. Provisions of the Rules are not used for body parts and organs, inclusive of blood bags and conserved blood and for waste dental amalgams.

Producers of waste are required to ensure the delivery of medical waste to waste collectors. The producer must ensure that medical waste are transported within the area in which health care activities are carried out only in such appropriately-marked containers and bags intended for the storage of medical wastes. Only transportation modes intended for the transport of these types of wastes can be used. Waste producers must name an authorised person who will carry out all prescribed tasks. The Rules also set forth the conditions for the set-up of collectors intended for storage of these wastes. Furthermore, the Rules define the collection and removal of wastes originating from health care activities. The Rules obligates Heads of health care establishments to prepare and implement waste management plans for wastes arising from health care activities. These plans must be prepared for a period of four years, reviewed annually and financially evaluated.

Decree on management of packaging and packaging waste<sup>4</sup> was adopted in order to regulate the area of packaging and waste packaging in Slovenia. These Rules define handling the production, transport and use of waste packaging and subsequent collection, reuse, recycling and removal of waste packaging. The Rules apply to all packaging put into circulation and all waste packaging originating in industries, by craftsmen, and other trade services and activities.

Decree on the landfill of waste<sup>5</sup> prescribe the mandatory management of landfills and conditions and measures connected with the planning, construction, operation and closure of landfills and subsequent steps to be taken upon their closure. Waste must be assessed and given an appraisal of their important characteristics. This is known as waste estimation. Waste estimates must include a denotation with the name or description of the waste and its characteristics, estimated admissibility for removal to landfills, an assessment of the expected consequences, the characteristics of the disposed waste and a description of prior or additionally required processing of the waste and determination of any hazardous characteristics as defined in Rules on the landfill of waste.

The Order for the management of separately collected fractions in the public service of urban waste management<sup>6</sup> defines the minimum scope and contents for management of separately collected fractions which must be ensured within the scope of local public service regarding the management of municipal waste. Management includes the separate collection of fractions as a part of municipal waste originating in the area of the local community as household waste and due to their nature and make up, household waste similar to industrial or commercial waste regarding activities by craftsmen and other service providers, inclusive of the waste packaging all considered urban waste.

The Decree on environmental tax for environmental pollution caused by waste disposal<sup>7</sup> prescribes the amount, manner of calculation, assessment and payment of taxes for environmental pollution for disposal of wastes and the measure and conditions for refunding remitted environmental tax.

The aim of the tax for environmental pollution is to acquire funds for the execution of operative programs of environmental protection in the area of municipal waste management including the creation of prepared works for the construction and implementation of infrastructure facilities for the incineration of municipal waste.

The environmental tax ensures the decrease in the quantity of waste at its origin, the disposal of as little waste as possible, the decrease in the quantity of biologically degradable waste, the acceleration of separation of collections of individual fractions of municipal waste intended for processing, or respectively recycle and a gradual increase in the scope of reprocessing and utilisation of waste.

The Contagious Diseases Act<sub>8</sub> treats measures for preventing and managing contagious diseases. The prevention and management of hospital diseases is prescribed in Article 44: Each natural or legal person performing a health activity must implement a program for the prevention and management of hospital infections. The program is prepared by expert management of the organisations performing health activities. The program must contain doctrines on sterilization, disinfection, cleaning and handling of wastes.

The Health Inspectorate carries out inspections supervising the implementation of laws and regulations also in the area of infectious wastes which originate while performing health care activities. The Health Inspection Act<sub>9</sub> obliges the inspector to carry out inspection and upon having performed an inspection, to prescribe the procedure for getting rid of any irregularities. Most often, inspectors will perform the ridding of irregularities through a decision.

#### List of regulations:

- 1 Environmental Protection Act (Official Gazette of the RS, No. 39/06;
- 2 Rules on the management of waste (Official Gazette of the RS, No. 84/98; modifications and amendments - Nos. 45/00, 20/01, 13/03;
- 3 Rules on the management of waste generated by health services and related research activities (Official Gazette of the RS, No. 47/04);
- 4 Decree on management of packaging and packaging waste (Official Gazette of RS, No. 84/06);
- 5 Decree on the landfill of waste (Official Gazette of the RS, No. 32/06;
- 6 Order on the management of separately collected fractions in the public service of urban waste management (Official Gazette of the RS, No. 21/01);
- 7 Decree on environmental tax for environmental pollution caused by waste disposal (Official Gazette of RS, Nos. 129/04, 68/05, 28/06;
- 8 Contagious Diseases Act (Official Gazette of RS, No. 69/95, 112/04, 33/06);
- 9 Health Inspection Act (Official Gazette of RS, Nos. 36/04, 47/04 – official consolidated text);

#### Medical waste categories

Medical waste can be defined as waste generated as a result of diagnosis, treatment, and immunisation of humans or animals. It is useful to categorise the overall waste stream into the following four categories which are compliance with EU waste Catalogue. See Table 3-1 below.

European Waste Catalogue	Categories of health-care waste (WHO)
18 01 01 sharps (except 18 01 03)	Sharps
18 01 02 body parts and organs including blood bags and blood preserves (except 18 01 03)	Pathological waste
18 01 03* wastes whose collection and disposal is subject to special requirements in order to prevent infection	Infectious waste
18 01 04 wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers)	Non-risk or "general" health-care waste
18 01 06* chemicals consisting of or containing dangerous substances	Chemical waste Waste with high content of heavy metals
18 01 07 chemicals other than those mentioned in 18 01 06	Chemical waste
18 01 08* cytotoxic and cytostatic medicines	Genotoxic waste
18 01 09 medicines other than those mentioned in 18 01 08	Pharmaceutical waste
18 01 10* amalgam waste from dental care	Waste with high content of heavy metals
15 01 11* metallic packaging containing a dangerous solid porous matrix (for example asbestos), including empty pressure containers	Pressurised containers
National regulation [EU proposal: COM(2003) 32 final]	Radiological waste
(*) Indicates waste classified as hazardous	

**Waste** - According to the Environmental Protection Act<sup>1</sup>, waste is defined as any substance or object the owner of which is unknown or any substance or object, which the generator, owner or holder discards or intends to discard, or is required to discard. Waste is any solid, liquid or gaseous substance or object the owner of which is unknown or which is no longer required or desired by its producer, owner or holder which must, due to its harmful effects or in the interest of environmental protection or other public interest, be handled, processed or disposed of as prescribed. Waste is any substance or object which has been classified as a waste within a group of wastes defined in the European Waste Catalogue.

**Hazardous wastes** are substances which if unprocessed can, due to their physical, chemical or infective properties pose a threat to health if not isolated from the environments, which indirectly or directly have an effect on the organism by exposure or imposition via the food chain, or because of reciprocal effects or other factors. Wastes are considered hazardous until proven to be nonhazardous. Hazardous waste is defined as waste that may cause or significantly contribute to mortality or serious illness or pose a substantial hazard to human health and the environment if improperly managed or disposed of.

**Medical wastes** - Wastes from healthcare and related research are defined in detail in the Rules on the management of waste which originate from the performance of healthcare activities and related research.<sup>3</sup> Medical wastes are all wastes which arise from the performance of medical services in health care institutions and research establishments including institutions, both social and laboratories, connected with healthcare services. This group also includes smaller and dispersed sources of waste which originate in personal healthcare and dental care establishments and in homecare.

Wastes originating from healthcare include wastes from natal care, diagnosis, treatment or prevention of disease in humans, sharps, dressings, plaster casts, linen, disposable clothing, diapers, hazardous chemicals, chemicals which are not classified as hazardous, cytotoxic and cytostatic medicines, medicines which are not classified as hazardous waste and wastes from dental care.

**Infectious wastes** are medical technical supply materials and objects for single-use which have come into contact with infected persons, or body secretions or fluids from infected patients. These are culture implements used in laboratory work with infectious materials, equipment parts, clothing, gloves, towels and other hygiene accessories used during dialyses, patient wastes in isolation, all other substances containing viable micro-organisms or their toxins which are known or reliably believed to cause disease in man or other living organisms. Infectious waste is generally defined as waste that is capable of producing infectious disease. Other terms used include bio-hazardous waste, biomedical waste, or "red bag" waste. Infectious waste must be treated and decontaminated before landfilling (Directive 99/31/EC). Infectious waste is estimated to be 15% or less of the overall waste stream. By introduction of efficient waste segregation and classification systems based on a real threat from infectious waste, the amount might be reduced to 3 - 5%. Although infectious waste is only a small part of the total waste generated by medical facilities, it makes up a considerable part of the costs of medical waste disposal.

**Municipal wastes** are wastes originating in households and due to their nature and make-up, are comparable to wastes from production, trade, services and other activities. Municipal solid waste includes recyclable or compostable materials.

**Cytostatic wastes** - Cytostatics are substances which originate from cell growth and procreation. All materials which have been in contact with cytostatics, either directly or indirectly are considered contaminated wastes.

**Low-level radioactive waste** is waste that exhibits radiologic characteristics such as radioactive decay.

**Other wastes** - In addition to the aforementioned, there are also other kinds of wastes which originate both in health institutions and other places and are therefore, unspecified with regard to activity. Into this group, we could classify bulky wastes, metals, plastic, glass, wood, electrical and electronic equipment, various solutions (photo chemicals such as fixers and developers, leftover paint, varnishes, solvents, etc.), batteries, accumulators, construction waste, used cars, water preparation wastes, etc. In healthcare and all related

activities in hospitals, a large variety of biodegradable wastes originate such as kitchen wastes (food rests, oil, lard, etc.), wastes arising from the maintenance of lawns and gardens and other wastes which are biodegradable when exposed to anaerobic processes of breakdown.

## Strategies for waste management in healthcare

The majority of requirements covering waste management in healthcare originate from the Rules on the management of waste and the Rules on the management of waste generated by health services and related research activities. The Rules on the management of waste generated by health services and related research activities clearly specify that the waste holder must ensure its processing and disposal through disposal at a collection site. The rules further specify that he processes or disposes of it according to the prescribed procedures or that he forwards the waste to a processing or disposal facility. The generator of waste arising from the performance of healthcare activities and related activities must ensure the following:

1. **Collection** - The generator of the waste must ensure that the waste originating from healthcare is collected in a location as close as possible to its point of origin, that it is placed into containers or bags which are adapted to the physical, chemical, biological and other properties of the waste and in accordance with the quantity and manner for temporary storage and it be processed according to the European Waste Catalogue.
2. **Markings/Labelling** - Waste must be appropriately marked in such a way that prior to the transfer of waste to a container or bag, a denotation and label depicting the bar code with recorded data on the waste' place of origin, type and quantity and time of origin are visible. The classification number of the waste should also be included, as well as the title of the authorised consignee (collector, processor or disposal company) and all possible warning signs.<sup>13</sup> Wastes originating from healthcare may not be mixed with other wastes, or may not be combined with each other if they are different varieties of waste according to the list of wastes.

Organisational unit:	DEPARTMENT OF THORACIC SURGERY
Type of waste:	GLASS PACKAGING
Classification no.:	15 01 07
Consignee:	SUROVINA MARIBOR
Warning:	POSSIBLE INJURY!
Special requirements:	EMPTY PACKAGING
Date	8.4.2005

Figure 1: An example of proper labelling of an individual type of waste

Waste generator: Maribor General Hospital	
Address: Ljubljanska ulica 5	
2000 Maribor	
Tel.: (02) 3211000	
Name: WASTE MEDICINES (cytostatics)	
(name given in the European Waste Catalogue)	
Waste classification number: 18 01 08	
(classification number of the waste)	
<u>Warnings</u>	
R22	Harmful if swallowed.
R52/53	Harmful for aquatic organisms: Can cause long-term harmful effects to the aquatic environment.
<u>Notices</u>	
S24/25	Prevent contact to skin or eyes.
S35	The contents and packaging must be safely disposed of.
NET WEIGHT: 150 KG	No. of packaging units: xxxx

Figure 2: An example of proper labelling of hazardous waste

3. **Packaging** - Wastes are collected in packaging which identify the wastes contained within. These forms of packaging must be adapted to the physical-chemical, biological and other properties of the wastes. When dealing with hazardous wastes, packaging must also comply with regulations on the approval of packaging for the transport of dangerous goods. Packaging (bags, containers, crates etc.) must be manufactured in a way which allows for undisturbed disposal of wastes into its opening while simultaneously avoiding its leakage upon packaging. Materials which constitute the packaging must be resistant to sharps, fluids, chemically aggressive substances and the like. The constitution of materials must not present an ecological burden. Containers must be air-tight to prevent the emission of gases. Proper labelling (description, colour) of the packaging is mandatory.
4. **Transport** - The waste generator must ensure adequate transport for the transfer of wastes within the area in which healthcare activities are performed. This means that waste generator must ensure safe passage, loading and unloading and temporary storage for these types of wastes. The vehicles and containers for waste transport must have smooth, air-tight and water-proof surfaces that can be easily and satisfactorily cleaned, disinfected and dried. They should be constructed so as to allow easy loading and unloading while preventing the shaking of substances or spilling of fluids. Internal transport includes the collection of wastes in hospital departments, inclusive of transport to a temporary storage facility.
5. **Temporary storage** - Wastes are not stored at their place of origin, but are regularly transported to a temporary storage facility. The waste generator must ensure a temporary storage facility for wastes collected within the establishment to ensure protection against pollution of the environment or threats to human health. The generator must also ensure that the consignee has undisturbed access to the wastes. Storage time is up to 30 days.
6. **Collection areas** - Waste collection areas must be in compliance with requirements for such types of storage areas intended for dangerous wastes and must be separated from remaining areas. The location should be chosen so as to allow undisturbed access to vehicles transporting wastes. Temporary storage or waste collection areas must be visibly marked and labelled, prohibiting access to unauthorised persons and warning of the danger. Access must be protected and monitored (locked, fenced in). The walls and ceiling of the collection area must be composed of materials allowing for their easy cleaning and disinfection. The collection area must have a sufficient number of collection bins for the containment of possible spills of dangerous fluids and ventilating devices with filters for controlling emissions to the atmosphere. Temperature control may be needed for thermally liable and highly volatile materials. The collection area must have a timetable for the consignment of wastes from organisational units or hospital departments.
7. **Recordkeeping** - Recordkeeping allows for the monitoring of wastes from their place of origin to their final disposal, the so-called crabel to grave manifest. The healthcare waste generators must name an authorised person for the management of the wastes and keeping of records on waste management: The waste generator, depending on the type and quantity of wastes, must keep the following records:
  - wasted produced and their origin,
  - wasted in storage,
  - wastes placed in waste collectors,
  - wastes which the facility processes or disposes of on its own,
  - wastes consigned to processing or disposal companies, if the waste generator does not perform these activities on its own, and
  - wastes which are processed or disposed of abroad.

A special form is needed for this procedure with controls carried out on a number of levels (entry materials, used quantities...). Records are kept separately for each type of waste. Wastes which are transported outside of the health institution must be labelled and packaged in accordance with

legislation regulating the transport of dangerous substances. Each waste must be accompanied by a manifest which becomes a part of the waste's records. The manifest is filled out by the waste generator, confirmed by the consignee or by the processing or disposal facility accepting the waste. Waste generators must archive documentation regarding annual records for a minimum period of five years.

8. **Waste management plan** - The waste management plan is a mandatory document prepared by the waste generator and is defined in the Rules on the management of waste when over 150 tons of waste is produced annually and/or exceeds 200 kg of dangerous wastes annually. Depending on its contents, it can be taken as a planning document for the area in question. The head of the health establishment is responsible for the preparation and implementation of the waste management plan. The waste management plan for the healthcare industry is prepared for a 4-year period and annually reviewed and updated or supplemented if necessary. The waste management plan for healthcare must contain the following data:
- type, quantity and sources of wastes and any foreseen changes in future medical waste,
  - manner of separation of individual types of medical wastes,
  - manner of labelling containers and bags and the type of materials of which the bags and containers are made,
  - transport of wastes from the area of health care activities,
  - waste collectors and their maintenance and cleaning,
  - temporary storage of medical wastes in a waste collection facility,
  - a waste consignment timetable,
  - internal instructions on the handling of medical and other wastes originating from healthcare activities,
  - recordkeeping and reports on the production of waste, consignment to collectors or directly to processing or disposal facilities for all varieties of wastes in compliance with the Rules on the management of waste,
  - agreements for the consignment of medical waste to consignees,
  - staff training in medical waste handling,
  - employees authorised by the generator of the wastes for medical waste management from their origin to their disposal to consignees,
  - protective measures regarding the effects of dangerous wastes,
  - a financial assessment of the medical waste management plan and
  - a time plan for the implementation of the medical waste management plan.
9. **Tasks and expert qualification of staff working with wastes** - A person must be employed for the waste collection facility, defined by the internal acts for work with wastes. The expertly qualified person in the waste collection facility is responsible for ensuring that:
- all wastes consigned to waste collection are properly marked with stickers,
  - the quantities of wastes are weighed and recorded in the prescribed record document,
  - wastes in the storage facility are stored according to type of waste, time limits of storage and deadlines for consignment to further processing,
  - wastes are placed on plinths which can be cleaned and disinfected and are lifted off the floor,
  - packaging containing a diversity of wastes are stored separately and placed in a way preventing damage or spillage or shaking of the wastes,
  - the surface area or space is cleaned immediately after a spillage of the wastes occurs due to an earthquake,
  - records on the waste are kept,
  - records on wastes are archived for a period of five years and
  - reports on the production and handling of waste are prepared and submitted for the previous calendar year.

#### **10. Requirements for security persons handling wastes**

- All employees coming into direct contact with wastes must be equipped with personal protective equipment (clothing, footwear, gloves, if necessary goggles and headgear).
- They must be acquainted with the dangers and procedures to be taken in the case of damage to packaging or if a shake-up or spillage occurs.
- They must participate in training with an assessment of knowledge in the area of hazardous waste management.

**11. Responsibilities of waste collectors** - Waste collection can only be performed by persons obtaining the appropriate permission for this activity and are denoted on a list which is kept by the Ministry of the Environment– the Environmental Agency of the Republic of Slovenia. Waste collectors must have a medical waste collection plan which contains the following data:

- territory of medical waste collection,
- types of medical wastes to be collected,
- anticipated annual quantities of all consigned medical wastes and annual quantity of medical wastes which the waste collector guarantees the processing, or disposal,
- type and resource capacities and equipment for collection and transport,
- type and capacities of equipment or devices for disinfection of medical wastes if collecting medical waste with a classification number of 18 01 03\* and accompanying direct disposal or incineration,
- environmental protection measures for the prevention of uncontrollable effects on the environment when managing medical wastes and
- technical equipment for keeping records on medical wastes.

**12. Responsibilities of waste disposal employees** - Medical waste disposal can only be performed by persons with an environmental protection permit for the disposal of medical wastes as prescribed by regulations covering waste management. If the waste disposal employee is also the waste collector, this must be denoted on the permit received by the waste collector.

## **4. Healthcare Waste Managers – Nationally Accepted Qualifications and Skills**

In Slovenia, the directors are legally in charge for waste management, but they nominate someone who leads/manages the waste in the facility. Most frequently this is HCWM, who is most commonly educated and experienced as sanitary engineers or other similar professional profiles with technical / biological / chemical and health related knowledge/education e.g. high graduated nurses, other engineers, etc.

HCWMs aware that for their work they need several knowledge from different fields e.g. environmental protection, management, team leading...therefor some of them continue to gain knowledge on post graduate studies (specialisations, master degree, Ph.D. etc. on environment protection, health, management etc.)

**Official short job description of Sanitary engineer** - most common requested education of HCWM: (Bachelor of sanitary engineering). Sanitary Engineer performs all forms of medical-ecological control, coordinates the sanitary work in the field of drinking water supply and waste management and sewage.

Work tasks: Work of the sanitary engineer includes a set of different tasks in the medical-ecological, socio-medical and hygienic-epidemiological field. He also participates in the planning and design of settlements, industrial zones, infrastructure, settlements and municipal facilities. Carry out all forms of medical-ecological control. He works in the areas of preventive health activities leading education; manages and coordinates the work of sanitation in public institutions, companies and institutions in the fields of supply of drinking water,

food, waste, sewage, hazardous materials, and participates in the control of the hygienic-epidemiological and ecological problems; follow outcome of scientific research, incorporating them into their daily work and carry out professional work in the field of disinfection, disinfestation, rat extermination and decontamination.

Areas of work: Major work areas are: protection of the human environment, nutrition and health of food and objects of general use, sanitary inspection and supervision, corporate governance and individual organizational units for drinking water supply, waste and sewage management, preventive health care services and management of the administrative-inspection of administrative bodies and educational and research work.

Used tools: Sanitary engineers at work use a variety of devices and documents. Among the most important documents of the profession belong Official Journal, sectoral norms and regulations.

Products and services: Sanitary engineer in his work uses the methodology of monitoring, recording, analysis and evaluation of results. According to studies done on the basis of the results obtained an expert opinion or estimate.

Knowledge and Skills: Sanitary engineer must have a broad professional and technical knowledge in the field of medical-ecological activities. He must be trained to work independently, with the ability for individual and rapid decisions as well as group work. They must independently decide on the basis of measurements, sampling and laboratory analyses, and individual professional judgment; know about the harmful effects of technology on the environment, and modern ecological knowledge using epidemiological methods. He has to monitor and analyse the causal relationship between the adverse action of agents on the human organism and the resulting health consequences and the ways and methods of effective preventive-health action. The work also requires physical and mental healthy person who has a well-developed senses, sight, hearing, smell, taste and occupational accurate and accountable. Depending on the nature of the work they must be able to communicate with people and expertise to justify their decisions.

Working conditions: Working conditions are often heavy and noxious. The work is outreach, possible contact with disease and toxic substances.

Dangers: During the work he may come in touch with toxic substances, and therefore he needs to know, how materials/substances work and what the possible damages are.

Education: For the practice of the profession is required finished high school health professional direction.

Related professions: Sanitary technician or/and pest control person

## **5. Healthcare Waste Management – Vocational Training and National Occupational Standards Overview**

### **National Occupational Standards Overview**

National Reference Point for Occupational Qualifications – Slovenia (NRP SLO) is establish in order to enhance transparency on Vocational Qualifications and to establish the system for the issue of certificate supplements in an official national language with the possibility of translation into one European language or more; and to setting up of a National Reference Point responsible for providing information on national occupational qualifications. The National Reference Point is a national partner in the European Network of Reference Points. A National Reference Point in every EU Member State gives access to information on vocational education and training systems. National reference points are networked.

The National Reference Point is the first point of contact when questions pertaining to national qualifications, certificates and certificate supplements arise. It is the access provider of relevant information, or to contact point with national institutions which hold the important information.

The website of NRP SLO offers information on occupational qualifications in Slovenia. The following pieces of information are available:

- vocational education and training, as well as the certification system of accreditation of informally acquired competences (legal basis, key institutions in vocational education and training, and in the certification system, as well as their powers);
- occupation classification and national occupational standards forming a basis for acquiring national occupational qualifications, both through the formal education system and certification process;
- educational programmes in lower and upper secondary vocational education, as well as in secondary professional and higher professional education with all key elements;
- catalogues of standards of professional knowledge and skills constituting a basis for the certification, and bodies awarding occupational qualifications ( accredited assessing agencies for occupational qualifications through the certification system, and agencies for publicly approved programmes in vocational education and training);
- assessment and accreditation procedures of national occupational qualifications.

A transparently structured system containing all important information on vocational education and training contribute to greater transparency in this area at the national level. At the same time, it enables international comparability of occupational qualifications, thereby promoting labour force mobility and facilitating Slovenia's integration into the EU.

**Currently in the base are following NOS which somehow (partly) address HCW issue:**

- **2263 - Environmental and occupational health and hygiene professionals (Sanitary Engineer)**
- 3222 - Environmental health, hygiene and related associate professionals
- 1342 - Health services managers
- 5139 - Personal care and related workers not elsewhere classified
- 2221 - Nursing professionals
- 2143 - Environmental engineers
- 3257 - Environmental and occupational health inspectors and associates

## **Vocational Training**

Currently is in Slovenian base 651 vocational qualifications but none out of them is dealing with management of healthcare wastes or similar issues.

There are few private organised seminars (not part of VT) for those who are already dealing with healthcare waste but only in order to give them some legal updates or some good practice. Those seminars are mostly organised by licensed waste contractor, or some other medicine / medical material provider. In case of major changes in regulation requests also ministry or some other authorities organise seminars or prepare guidelines.

**Example of two private organised seminars:**

*Some topics covered by a seminar hold after launching of new regulation in 2013:*

- *Review of legislation in the field of waste management in health care (types of waste in health care, general requirements for waste management, practical information to meet the requirements of legislation, waste hierarchy under the new regulation)*

- *Procedures for the proper classification of waste (required documentation; keeping of records; reporting on the quantities of waste generated to new regulation; creating a plan on waste management, organizational instruction)*
- *The obligations of waste producers (the objectives of the management of waste from health care; description of health care waste, the methods of waste management in health care (infectious waste, waste pharmaceuticals, medical devices, mercury waste, etc.); collection, transport and storage of waste from health care; an example of segregation and management of waste from health care)*

*Training organising oriented organisation ISQ usually, twice a year, organise seminar 'Waste management in health care' and invite all those responsible for waste management that does not know the correct answers to the following questions:*

- *What are the general requirements for waste management in our country?*
- *What are the essential requirements for waste management in health care and how to do them in practice?*
- *Which problems most frequently encountered in the management of waste in health care?*
- *What are the obligations which have agents and assignees waste?*
- *What records must be kept and how to prepare the report?*
- *How to prepare a Waste Management Plan in healthcare?*

*They promise that they will teach them about the obligations imposed by the Regulation on waste management in the field of health care and other related regulations. Individual requests and responses will be explained using practical examples. Seminar content is:*

- *general requirements for waste management in Slovenia;*
- *essential requirements for waste management in healthcare;*
- *obligations of agents and transferees of waste;*
- *practical information to meet the requirements in practice, record keeping and preparation of reports.*

*Methods of work: The seminar comprises lectures and discussion with the participants on the principle of two-way exchange of information and experience. Participants at the seminar actively participate and have the opportunity to ask specific questions.*

*Target groups:*

- *Responsible for the management of waste from health (human medicine and veterinary medicine) and related activities;*
- *public service, taking care of waste (municipal, state);*
- *planners and responsible for interventions in the area or to the environment;*
- *environmental experts, ecologists and environmental engineers;*
- *all interested public.*

*Lecturer Zornik Marjanca is a director of Formica Ltd., which mainly deals with counselling in the field of environmental protection; she also advises on the management plan and waste management. In SIQ, she is an auditor for management systems according to ISO 9001, ISO 14001, EMAS, OHSAS 18001 and ISO 50001 and is co-author of the book Responsible environmental performance. In addition, she did environmental training at Ökoprofit Akademie (Graz, Austria). She has several years of experience with environmental legislation - among other things; she is also the Inspector for Environmental Adviser as a status of the main republican inspector.*

## 6. Conclusions

Slovenia has a very positive approach toward healthcare, with overall wellbeing treated with equal importance to general health. However, challenges remain in the areas of efficiency enhancement in order to match growing demands, and increasing costs for (innovative) treatments with limited resources. Lack of health care personnel, long waiting periods for some services, the introduction of home care services for long-term care patients (including respective changes in the insurance system) and the sustainability of the e-Health strategy are further areas in which challenges remain.

Problems associated with medical waste are in Slovenia regulated by the environment protection act, Waste management legislation and other implementing regulations. At the level of local communities this is regulated by municipal documents - Ordinance on the management of municipal waste. Medical waste constitutes a burden for environment, because it is much indefinite in practice in terms of handling and separation by types, in addition, the quantity of medical waste is arising from year to year. Table below show quantity and type % of waste in some major hospital in year 2010:

Hospital	Total amount of all waste (kg)	Infected medical waste	Non infected medical waste	Other hazardous waste	Mixed municipal waste	Recycled hazardous waste
UKC Ljubljana	3.368.108	6%	27%	2%	37%	28%
UKC Maribor	1.661.833	5%	15%	1%	22%	57%
SB Celje	1.099.144	4%	47%	0%	22%	27%
SB Nova Gorica	566.424	7%	12%	0%	43%	38%
SB Murska Sobota	537.274	6%	0%	1%	71%	23%
SB Novo Mesto	506.634	4%	40%	1%	26%	29%
SB Izola	368.674	13%	10%	0%	51%	26%
SB Slovenj Gradec	348.875	8%	28%	1%	17%	47%
SB Jesenice	339.928	6%	42%	1%	14%	37%
SB Ptuj	244.278	2%	27%	0%	42%	28%
SB Trbovlje	133.423	2%	31%	3%	46%	18%
SB Brežice	118.827	10%	27%	0%	52%	11%

HCWM is facilitated in accordance with legislations requirements, but HCW managers miss some practical guidelines e.g. common national practical guidelines prepared by supervising authorities in order to get higher standards and one sufficient common approach.

Furthermore, HCW manager and all other personnel in charge for waste handling do not have many possibilities to further education expect official professional education programs, due to a lack of suitable trainings which would provide additional practical knowledge.

No matter that in general the systems are well established, in reality, waste-dealing personnel have to impellent obligation based on learning by doing approach (internal trainings) and/or by improvising with the existed equipment and space, due to lack of money or space or even due to categorising waste management as not so prioritise topic in whole facility management.