

WP T2 INNOVATION ON TEXTILE WASTE MANAGEMENT

ACTIVITY A.T2.

Deliverable: Current procedures for medical
textile waste management

Additional ENTeR pilot case: Textile waste
coming from medical devices concerning COVID-
19 emergency

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Responsible partner:

LP Centro Tessile Cotoniero e Abbigliamento
(CENTROCOT - Italy)





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ENTeR – Expert Network on Textile Recycling

ENTeR works in five central European countries that are involved in the textile business, to promote innovative solutions for waste management that will result in a circular economy approach to making textiles.

The project will help to accelerate collaboration among the involved textile territories, promoting a joint offer of innovative services by the main local research centres and business associations (“virtual centre”), involving also public stakeholders in defining a strategic agenda and related action plan, in order to link and drive the circular economy consideration and strategic actions.

The approach of the proposal and the cooperation between the partners are oriented to the management and optimization of waste, in a Life Cycle Design (or Ecodesign) perspective.



1. Scope

This report presents the legislation concerning the management of waste deriving from the medical sector. These wastes are identified within the category 18 00 00 of ECW codes. The current legislation for waste management is differentiated by country and each regional legislation refers to European Directives 2004/12 CE and 2008/98/CE.

The current pandemic situation has generated an increase in medical waste such as surgical and respiratory masks due to use not only in the health sector but also by the whole population in order to protect themselves from potential infections. Therefore, all country modified the current legislation to face the increment of waste and manage their flow generated of citizens.

2. Current legislation

2.1. Italy

In the medical field, waste management in Italy is monitored by the Decree of the President of Italian Republic no. 254/03 and by Legislative Decree no. 152/2006 (in order to guarantee high level of environment and health protection and effective controls.

According to the law, medical waste must be managed in such a way as to reduce the danger, to encourage its reuse, recycling and recovery and to optimize its collection, transport and disposal.

The waste disciplined by the aforementioned directive is divided into:

- non-hazardous medical waste;
- medical waste treated as municipal waste;
- hazardous medical waste not at infectious risk;
- hazardous medical waste at infectious risk;
- wastes from exhumations, as well as wastes from other cemetery activities, excluding vegetable wastes from cemetery areas;
- special waste, produced outside of healthcare facilities, which as a risk are analogous to hazardous waste at infectious risk, with the exclusion of sanitary towels.

Among these categories, textile can fall into two categories to their use and end-of-life conditions: medical waste treated as municipal waste and hazardous medical waste at infectious risk.

The first one results to be garments and disposable sheets and those of which the holder intends to discard and they are subject to the legal regime and to urban waste management methods. The second one is waste that come from infectious isolation environments in which there is a risk of aerial biological transmission, as well as from environments where patients stay in infectious isolation with diseases caused by Group 4 biological agents, are contaminated with blood, feces, urine or other biological fluids.

The disposal of sanitary waste treated as urban follows the normal process of solid urban waste, without registration and with possibility of separate collection and recycling.



Medical waste at infectious risk only subjected to thermo-destruction procedure carried out on condition that disposal takes place in dedicated incineration plants. The sterilization process of infectious risk hazardous medical waste is optional and consists in reducing the microbial load such as to guarantee an S.A.L. (Sterility Assurance Level) not less than 10^{-6} .

Sterilization is carried out according to UNI 10384/94, first part, by means of a procedure that also includes shredding and drying for the purposes of unrecognizable and greater effectiveness of the treatment, as well as the decrease in volume and weight of the waste itself. Only hazardous medical waste at infectious risk can be sterilized.

The director, the health manager, or the institutionally competent public subjects must proceed with the validation of the sterilization system before putting them into operation. The validation must be repeated every twenty-four months, and in any case at each extraordinary maintenance of the plant, and the related documentation must be kept for five years at the headquarters of the health facility or at the plant and must be shown at every request from the competent authorities. The sterilization plants are subject to adequate periodic checks by the competent authorities.

Without prejudice to the obligation to keep the loading and unloading registers at the sterilization plant, a register must be kept with progressively numbered sheets in which, for carrying out the checks, the following information must be reported:

- identification number of the sterilization cycle;
- daily quantity and type of waste subjected to the sterilization process;
- date of the sterilization process.

To guarantee the protection of health and the environment, temporary storage, handling within the healthcare facility, preliminary storage, collection and transportation of infectious risk hazardous medical waste must be carried out using special disposable packaging, even flexible, bearing the wording "Hazardous medical waste at infectious risk" and the symbol of biohazard. If it is cutting or pungent waste, special rigid disposable packaging, resistant to puncture, bearing the wording "Hazardous medical waste at infectious risk sharp and pungent ", both contained into second external rigid packaging, possibly reusable after suitable disinfection at each cycle of use, bearing the wording " Hazardous medical waste at infectious risk ".



External packaging must have adequate characteristics to withstand the impacts and stresses caused during their handling and transport. Moreover, they must be made in a colour suitable to distinguish them from the packaging used for the transfer of other waste.



Moreover, the temporary storage of infectious risk hazardous medical waste must be carried out in conditions that do not cause alterations that involve health risks and can have a maximum duration of five days from the moment the container is closed. In compliance with hygiene and safety requirements and under the responsibility of the manufacturer, this term is extended to thirty days for quantities less than 200 litres. Registration on the loading and unloading register must take place within five days.

For the disposal of hazardous medical waste at infectious risk, medical waste must be disposed of by thermal destruction in plants authorized pursuant to Legislative Decree no. 152, with the methods below.

Hazardous medical waste at infectious risk, which also have other dangerous characteristics referred in Annex I of Legislative Decree no. 152 of 2006, must be disposed of only in hazardous waste plants.

Hazardous medical waste at infectious risk only can be disposed of, in compliance with the provisions of the Decree of the Minister of the Environment of 19 November 1997, no. 503, and subsequent modifications:

- in municipal waste incineration plants and in special waste incineration plants. They are introduced directly into the oven, without first being mixed with other categories of waste. Simultaneous loading with other categories of waste is allowed at the mouth of the oven;
- in dedicated incineration plants.

The loading operations of the waste in the oven must take place without direct handling of the waste:

- they can be started in RDF production plants or directly used as a means of producing energy;
- in compliance with the provisions of the Decree of the Minister of the Environment of 19 November 1997, n. 503, and subsequent modifications, can be disposed of in municipal waste incineration plants or in special waste incineration plants under the same economic conditions adopted for municipal waste;

In the case are not RDF production plants, or plants that use sanitized sanitary waste as a means of producing energy, nor thermos-destruction plants, in an adequate number to meet the needs of the waste production region, subject to authorization by the president of the region, can be subject to the legal regime of municipal waste and to the technical regulations governing landfill disposal for non-hazardous waste. The authorization of the president of the region is temporary valid until the creation of a number of heat treatment plants suitable for the regional needs.

In the case the waste are sanitized they may or may not be treated as municipal waste. The waste not assimilated to municipal one is sent to waste-derived fuel (RDF) production plants or sent to plants that use sterilized medical waste as a means of producing energy, and must be collected and transported separately from municipal waste. Sterilized medical waste, assimilated to municipal waste, must be collected and transported using special disposable packaging, even flexible, of a different colour from that used for municipal and other waste assimilated medical



waste, clearly bearing the indelible indication "Sterilized medical waste" to which must be added the date of sterilization.

2.2. Czech Republic

Management of waste from medical facilities is generally governed by the Act No. 185/2001 Coll. on waste. At the same time, the waste producer is obliged to proceed with the management of specific waste in accordance with special regulations.

The health care waste is waste listed in group 18, subgroup 18 01 of the Waste Catalog. It includes waste originating from the provision of health care in inpatient, outpatient medical facilities or similar facilities; waste arising from health care provided in the patient's own social environment; waste generated outside medical facilities (e.g. social care facilities, tattoo parlors, drug centers, etc.). The used PPEs (including the face masks) from health care service facilities generated during the COVID-19 pandemic are considered as infectious waste, therefore must be classified as waste category *18 01 03* wastes whose collection and disposal is subject to special requirements in order to prevent infection (HP 9 - infectivity)*.

The health care waste has to be sorted (separately collected); sorting takes place at the place of waste generation, i.e. at each workplace (surgery, room, operating room, waiting room etc.). Each sorting bin must be labelled according to Decree 383/2001 Coll., including the catalogue code of the waste. Waste collection devices are removed from the workplace of the medical facility (from surgeries, wards, etc.) daily. The removal is carried out immediately after filling the collection bins, or after the end of working hours, in case of the continuous workplaces at the latest once every 24 hours.

The infectious waste must be immediately disposed of in a hazardous waste incinerator. Highly infectious waste must be decontaminated immediately by certified technological facility (facility with validated decontamination technology with verified efficiency).

To decontaminate health care waste, it is possible to use various types of equipment with validated decontamination technology with demonstrably proven effectiveness. The facility operating the decontamination device must be operated only on the basis of an authorisation granted by the relevant local authority. (In Czech Republic, it means that the facility will be granted with ID number - IČZ). If the decontamination device is part of the own waste management system and is located at the place of waste generation (e.g. microbiological laboratory), then the facility is not obliged to apply for authorisation; but waste from other departments (i.e. of the same subject) or from other medical facilities would have not be received and treated at this decontamination device. This method of decontamination is operated at workplaces where highly infectious waste is generated, which must be treated directly by decontamination with certified technological equipment in direct connection with its generation. This is health care waste that is expected to occur with a high probability that it will contain biological agents of the 3rd and 4th class of pathogenicity in the sense of special regulations and must always be modified immediately after its origin. The efficiency of the decontamination equipment has to be checked on the basis of physical, chemical and biological indicators.

It is necessary to highlight that after decontamination, the resulting product remains to be considered waste. It just loses the hazardous property H9 - infectivity. After sorting all hazardous components of the waste, which could make the waste hazardous in terms of other hazardous properties and after decontamination of the waste, it can be managed as other waste and classified under waste category *18 01 04 wastes whose collection and disposal is not subject to special requirements in order to prevent infection*. Decontaminated



health care waste can be burned in municipal waste incinerator or landfilled. Reuse of decontaminated materials might be possible only under the strict safety and hygienic conditions. In principle, such a treated waste shall be initially considered a “hazardous” waste; to classify it as “other”, it would be necessary to do “withdrawal” according to Decree No. 94/2016 Coll. on the evaluation of hazardous properties of waste, issued only by authorised person.

It is also important to notice that actually, the new Act on waste is going to be approved in Czech Republic at autumn 2020 with expected efficiency from 1st January 2021.

Details are available in the document *D.T2.3.4_Pilot Cases Feasibility Study_INOTEX medical devices covid-19*.

2.3. Hungary

After occurrence of pandemia caused by COVID-19, Hungarian Government has introduced series of precautionary measures applicable for professionals and public as well (e.g. compulsory use of respiratory/surgical masks in public areas, restrictive measures regarding the access to Hungary requiring two PCR test in Hungary within 48 hours in case the person entering form country marked with red or yellow does not have the confirmation of two PCR tests made not later than 5 days before entering Hungary).

Due to the growing number of COVID-19 diseases in Hungary the National Public Health Center has published Rules of Procedure containing epidemiological and infection control rules, including guidelines for implementation of existing waste management legislation already in force in Hungary. According to the Rule of Procedure lately amended on 7 November 2020 in the isolation ward or during any care involving the patient in health care, workers and those involved in cleaning, disinfection and waste management must wear the following protective equipment:

- surgical nose / mouth mask (or FFP2 respirator)
- goggles or face shield
- single-use gloves
- protective clothing or cloak
- single-use surgical cap.

Patient's textiles shall be collected in in the ward, preferably in a melting bag with the label "infectious". Counting of soiled textiles is not permitted. When washing textiles, the disinfectant washing procedures used in healthcare shall be applied.

COVID-related medical waste has been generating from two main sources: from households disposed by the population (mainly form disposal of single-use personal protection equipment and tissues) and from health-care services and related facilities (e.g. inpatient, outpatient medical facilities, social care facilities, ambulance service etc.). While COVID-specific recommendations were issued for medical professionals and institutions, providing special guidances and indicating appropriate application of specific rules already in force in Hungary applicable for medical waste, no pandemic–specific rules and guidelines were issued for medical waste generated by the public at the general level, despite of the fact these wastes are carrying potential risk of infection.



Although some recommendations of local waste management public service providers were published on their websites (e.g. such as face masks used during the COVID pandemic shall be packed in double trash bags, and disposed in municipal waste after a rest of 2 days), these recommendations because of their non- compulsory local character remained mostly unknown to the public, thus, for population-generated medical waste the general rules on waste are applicable and this type of waste is treated as solid urban waste.

- Decree No 11/2017. (VI. 12.) EMMI of the Minister on Human Resources on waste management activities related to pharmaceutical waste generated in public pharmaceutical supply
- Decree No 12/2017. (VI. 12.) EMMI of the Minister on Human Resources on the treatment of waste generated in health service facilities
- Act No CLXXXV of 2012 on Waste
- Act No CXXV of 2013 on Classification of Waste Management Public Service
- Government Decree No 68/2016. (III.31.) on detailed rules related to National Waste Management Public Service Plan
- Government Decree No 439/2012. (XII. 29.) Korm. on the registration of waste management activities and official licensing thereof
- Government Decree No 246/2014. (IX. 29.) Korm. on rules of design and operation of the waste management facilities
- Government Decree No 385/2014. (XII. 31.) Korm. on conditions of providing waste management public service
- Government Decree No 309/2014. (XII. 11.) Korm. on registration and reporting obligations relating to waste
- Government Decree No 442/2012. (XII. 29.) Korm. on packaging and waste management activities relating to packaging waste
- Government Decree No 225/2015. (VIII. 7.) Korm. on the conditions on activities related to hazardous waste
- Decree No 20/2006. (IV. 5.) KvVM of the Minister of Environment and Water Management on waste disposal, as well as certain rules and conditions relating to the landfill
- Decree No 29/2014. (XI. 28.) FM of the Minister of Agriculture on technical requirements and operating conditions for incineration of the waste and the emission threshold values of the incineration process.

Management of waste from medical facilities is primarily governed by Decree No 12/2017. (VI. 12.) EMMI of the Minister on Human Resources on the treatment of waste generated in health service facilities with the background rules provided by Act No CLXXXV of 2012 on Waste and by Government Decree No 225/2015. (VIII. 7.) Korm. on the conditions on activities related to hazardous waste. Recommendations and guidelines issued by the Minister on Human Resources



and the National Public Health Center are focusing on COVID-19 specific treatment of disposable and non-disposable textile and other medical equipment, protective clothing and mask. According to Handbook for the Prevention and Therapy of New Coronavirus (RARS-CoV-2) Infections (COVID-19) Identified in 2020 :

- after removing protective clothing the disposable ones shall be placed in the collection container for infectious hazardous waste, while reusable ones in a collection container placed for equipment waiting for disinfection;
- during the treatment or washing of contaminated textiles procedures applicable for washing soiled textiles with other dirty, potentially infectious secretions must be applied;
- it is prohibited to wipe, arrange, folding and counting the contaminated textiles in the ward, it is also forbidden to throw them on the floor even temporarily, as well as to take out textiles already placed in the laundry bag;
- contaminated textiles shall be collected in place of their generation, preferably in a melting bag that - after its closing - shall be placed in another (preferably transparent) bag with the label indicating the risk of infection;
- for healthcare providers rules of Decree No 12/2017. (VI. 12.) EMMI of the Minister on Human Resources on the treatment of waste generated in health service facilities are applicable.

According to Decree No 12/2017. (VI. 12.) EMMI infectious health care wastes shall be considered as special medical hazardous wastes that shall be:

- kept in hermetically sealed containers, that cannot be opened without destruction after closing, marked with the relevant international warning symbol for biological hazard and with the yellow code of risk of infection;
- collected separately from any other waste in the place of its generation;
- kept for maximum 48 hours without refrigeration or in a chilled storage condition - at maximum 5 C degrees - until it is disposed off, but maximum for 30 days.

The medical waste with sharp ends and edges shall be collected in rigid wall container, while fertilising waste shall be collected in container resistant to moisture and chemicals. Containers suitable for collection of specific medical waste are specified in Annex 2. of the to Decree No 12/2017. (VI. 12.) EMMI.

It is forbidden to open a closed container containing special medical hazardous waste until the waste has been disinfected or incinerated.

The shipment of medical waste and pharmaceutical waste within the premises of the healthcare provider may be performed without a waste management permit.

If medical waste or pharmaceutical waste is generated in an ambulance and ambulance vehicle during patient care, the waste must be transported to a collection point at the healthcare provider's premises.



Special medical hazardous waste can only be treated by incineration or disinfection, however cannot be compacted before treatment.

Control tests related to disinfection must be performed by an accredited laboratory in with the frequency specified in point 6 of Annex 3 of the Decree No 12/2017. (VI. 12.) EMMI.

When disinfecting special medical hazardous waste, technology approved by the national environmental authority may be used. When using sterilization equipment for disinfection of special medical hazardous waste, the waste must be shredded. Sterilization system must be validated in accordance of requirements specified in Annex 3 of the Decree No 12/2017. (VI. 12.) EMMI before putting them into operation.

The waste producer shall keep records of the medical waste generated at the health care provider with the content specified in Annex 4 of the Decree No 12/2017. (VI. 12.) EMMI and shall send this register by 1 February of each year to the district office. Aggregated register at national level is kept by Chief Medical Officer of the National Public Health Center.

2.4. Poland

Treatment of medical waste in Poland is regulated by the following legal acts:

- Act of December 14, 2012 on waste (Journal of Laws of 2020, item 797, as amended);
- Regulation of the Minister of Health of 24 July 2015 on types of medical waste and veterinary waste, the recovery of which is allowed (Journal of Laws of 2015, item 1116);
- Regulation of the Minister of Health of October 5, 2017 on the detailed method of handling medical waste (Journal of Laws 2017, item 1975);
- Regulation of the Minister of Health of October 21, 2016 on the requirements and methods of neutralizing medical and veterinary waste (Journal of Laws of 2016, item 1819);
- Regulation of the Minister of the Environment of 13 January 2014 on the document confirming the neutralization of infectious medical waste or infectious veterinary waste (Journal of Laws of 2014, item 107).

Contagious medical waste should be neutralized, with some exceptions, in the area of the voivodeship where it was produced. Pursuant to Art. 94 of the Act on waste, it is forbidden to recover medical waste, with a few exceptions, e.g. surgical and surgical instruments and their remains, cloth or plaster dressings, bedding, disposable clothes, diapers, chemicals, including chemical reagents (based on the Regulation of the Minister of Health of 24 July 2015 on types of medical waste, the recovery of which is allowed (Journal of Laws of 2015, item 1116). Infectious medical waste is neutralized by incineration in hazardous waste incineration plants. It is forbidden to neutralize infectious medical waste in waste co-incineration plants. By way of a Regulation, the Minister of Health issued a document on the detailed method of handling medical waste on October 5, 2017 (Journal of Laws of 2017, item 1975). Detailed requirements and methods of medical waste disposal are specified in the Regulation of the Minister of Health of October 21, 2016 on the requirements and methods of medical and veterinary waste disposal (Journal of Laws of 2016, item 1819). The processing of medical waste may be carried out in accordance with a relevant permit.



Medical waste is collected in the places where it is generated, taking into account its properties, treatment or recovery. The above-mentioned medical waste resulting from the provision of health services should be removed by persons providing health services and, with appropriate precautions, immediately transferred to the room or device for the storage of medical waste. Medical waste, except waste with sharp ends and edges, is collected in disposable containers or bags made of polyethylene film of various colours:

- red - infectious waste;
- yellow - hazardous waste, other than infectious;
- other than red or yellow - other non-hazardous waste.

The bags must be durable, resistant to moisture and chemicals, and can be closed once. Containers or bags should be filled to 2/3 of their volume in a way that enables their safe closure. Containers or bags should be changed as often as the storage conditions and the properties of the medical waste collected in them allow it, not less frequently than every 72 hours. Highly infectious waste may be stored at the place of its origin for no longer than 24 hours. The room intended for the initial storage of medical waste should have technical protection against the spread of stored medical waste, including the collection of possible leachage from this waste. After each disposal of medical waste, the room or device should be disinfected and then washed.

Internal transport of medical waste from the place of its origin to the place of storage, disposal or collection is carried out by means of transport intended solely for this purpose. For the internal transport of medical waste, closed trolleys or trolleys transporting closed containers are used. In the case of small amounts of waste, closed transport containers can be used for internal transport.

In facilities where health services are provided, a place for disinfection, washing and storage inside the company means of internal transport of medical waste and reusable containers should be designated.

3. Modification related at COVID-19 pandemic

3.1. Lombardy region

In the pandemic situation caused by COVID-19, there is an increment of medical single-use personal protection equipment and consequently an increment of the medical waste not only deriving from hospitals and clinics but also from the population with a mass use to prevent the spread of the virus. Therefore, there has been an increase in medical waste, which in case of use of the population is thrown together with municipal waste, making these potential dangerous. In fact, Istituto Superiore di Sanità (Italian National Institute of Health- ISS) has created guidelines on how to manage this waste by defining simple rules. In order to guarantee correct waste management, from collection service to recovery and final disposal, Lombardy Region has signed an ordinance in this emergency connected to COVID-19, which has identified extraordinary, temporary and special forms of management waste also in derogation from the current provisions.

Among the indications provided to the municipalities there are those concerning the classification, collection and management of waste produced in domestic in compliance with the indications



provided by ISS, dividing the habitations in two categories: habitation with positive or quarantine or isolation subjects or not.

The waste produced by domestic users when positive subjects, in isolation or in compulsory quarantine are present, separate waste collection is abolished, all waste must be collected in the unsorted bin using at least two bags without crush them, closed with laces or adhesive tape. Moreover, during the operations of collection, the citizens must use protective gloves and waste must be disposed daily. Instead, in case of no positive subjects, waste must be collected according to current legislation of separation, except for handkerchiefs, mask and gloves, which are disposed in the unsorted bin closed using at least two bags without crush and disposed daily.

Moreover, all plants that treat waste with ECW code 20 03 01 have been given instructions to operate ensuring the health protection of their employees, under penalty of the inability to collect such waste. In particular, the provisions issued provide for the use of PPE for operators, especially the FFP2 or FFP3 masks compatibly with the assessment of the expected risk. In addition, it undertakes to clean overalls and work clothes, minimizing the possibility of dispersing the virus in the air, subjecting the clothes to daily washes with particular procedures that require washing at temperatures of at least 60°C with common detergents, with the addition of disinfectants such as hydrogen peroxide or fabric bleach. A further prevention for operators involves the replacement of non-disposable work gloves, difficult to sanitize, each time the operator signals that he has handled a broken and/or open bag.

Disposal, pursuant to Decree 520 and to Ordinances of the President of Regional Council no. 502 issued on 1st April 2020 and no. 554 issued on 29th May 2020, provides for sending to incineration of municipal waste from homes that house positive subjects in the habitation, in isolation or mandatory quarantine. The managers of the incinerators plants must promptly inform the Region of requests for the transfer of extra-regional municipal waste related to the emergency in progress, in order to guarantee regional self-sufficiency and to be able possibly arrange specific contingent measures. In addition, to manage the increase in material also coming from the sanitary sector, all municipal waste incinerators are temporarily authorized to withdraw the ECW codes 18 01 03* and 18 01 04. Only infectious risk medical waste can be treated in municipal waste incinerators also without separate loading, taking all the measures to avoid direct handling, minimize the residence time of these waste in the pit and mixing it with other waste.

3.2. Czech region

The Czech National Reference Centre and Ministry of Environment have published recommendations and guidances for safe handling of waste related to COVID-19. According to these recommendations, the methods of handling the used face masks vary depending on whether or not the waste comes from a source without risk of infection or from a source where infection can be expected.

Used disposable face masks from healthy persons can be disposed of in mixed municipal waste if they are placed in a small plastic bag and then in a plastic waste bag.

Waste from people with confirmed COVID-19 disease in home isolation and people in home quarantine should not be sorted. All the non-sorted waste (including face masks and tissues) generated in their household shall be disposed of in the plastic bags with minimum thickness 0,2 mm. When the bag is full (but no later than within 24 hours), the bag shall be tightly tied, treated



with disinfectant on the surface and left only in the disposal bin or container for mixed municipal waste.

The used PPEs coming from workplaces without risk of infection (administrative offices, shops,...) shall be listed under the code *20 03 01 Mixed municipal waste*. This waste should be placed into the two plastic bags and tightly tied, surface of the outer bag shall be treated with disinfectant; bags shall be disposed in the disposal bins or containers for mixed municipal waste.

In case of industrial enterprises without risk of infection, waste from the used PPEs shall be listed under the code *15 02 03 Absorbents, filter materials, wiping cloths and protective clothing* (other waste). To dispose it, waste should be handled at the same manner as described in previous cases: to use double plastic bags packaging, to disinfect outer bag's surface and to leave the bag only in the waste container.

Used disposable PPEs from workplaces with risk of infection must be considered as hazardous waste. Handling of them is governed by the general rules for management of infectious waste. These waste shall be listed under the code *15 02 02* Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances (HP 9 - infectivity)*. The used PPEs must be placed safely in labelled, separated, closed and mechanically resistant packagings and disposed of immediately in a hazardous waste incinerator.

Waste from the medical and similar facilities must be listed under the code *18 01 03* Wastes whose collection and disposal is subject to special requirements in order to prevent infection (HP 9 - infectivity)*. This waste is under the scope of the medical waste legislation and must be handled as described in chapter 2.2.

More details are available in the document *D.T2.3.4_Pilot Cases Feasibility Study_INOTEX medical devices covid-19*.

3.3. HU region

There are no prevention measures at local level in Hungary as the whole country is one region.

3.4. Polish region

In Poland, it has also become necessary to introduce procedures related to the COVID-19 pandemic. Among other things, the obligation to wear masks in a public place has been introduced, medical transport personnel are required to wear protective clothing against the SARS-CoV-2 virus. This has led to an increase in the amount of waste that is reasonably suspected to contain biological pathogens that are hazardous to humans. Therefore, the Minister of Climate and the Chief Sanitary Inspectorate have introduced guidelines on the handling of waste generated during the occurrence of SARS-CoV-2 coronavirus infections and COVID-19 disease. The changes mainly concern waste generated in quarantine or isolation facilities by people infected with or exposed to the SARS-CoV-2 coronavirus and those suffering from COVID-19.

Municipalities should, if possible, provide bags in a specific color, marked with a symbol to uniquely identify household waste with sick or at risk of infection. Bags with waste should be collected at least every 7 days and sent directly to municipal waste disposal installations or municipal waste collection points from households subjected to isolation. Waste containers and means of transport should be disinfected. It is recommended to fill the bag up to $\frac{3}{4}$ of its volume,



spray it with a virucidal preparation and wait 72 hours, then wrap it in another bag using gloves, tie it and mark the date and time of placing it in a designated place. Waste is stored in closed containers or marked containers, protected against access by unauthorized persons and animals. It is recommended that selectively collected waste should be stored, if possible, for 9 days before being sent for processing. Waste collected from people at risk should not be processed with sorters. If it is not technically possible to process only on fully automated lines without human intervention, the waste should be sent directly to neutralization (incineration or direct storage is recommended, preferably in landfills with an active degassing installation). People who have direct contact with waste collected from infected people or those from a risk group are advised to use appropriate personal protective equipment, such as goggles, helmets, masks, gloves, work and protective clothing.

Waste generated by healthy people, such as: preventive measures (masks, gloves) used, for example, in the workplace, public transport, during shopping, in order to minimize the risk of infection and spread of the coronavirus, should be thrown into a mixed waste container/bag.