



“EU-HCWM”



**Assessment and national reports on the existing training
provisions of professionals in Healthcare Waste Management
Industry**

Barcelona May 31st/2014

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1 EXECUTIVE SUMMARY

The introduction of this report highlights two important aspects that will help understand the diversity of the two elements considered under the EU-HCWM project: education and waste regulations.

Spanish has a decentralised government and it affects the development of the VET programmes (in a limited way as at the State level there's a basic development of the professional curricula) and the waste regulation (that has deeply developed at regional level and varies in relation to the administrative and operational aspects).

Chapter three provides an overview of the healthcare sector in the country in relation to its organisation, types of HC centres, dimension and the available data.

Chapter number four provides an overview of the HC waste legislation taking into account both, administrative and operational aspects and intra-centre and extra-centre waste management. Due to the complexity of the HC waste legislation in Spain that has developed twelve regional laws besides the regulations at state level and the regulations regarding specific waste such as radioactive waste and other industrial waste that can be found in a HC centre, the report has considered the requirements of two of the more advanced HC waste legislation (Catalonia and the Basque Country).

Chapter number five introduces the current situation of the VET and national qualification schemes related to the specific profile of the HC waste manager. As there's no specific VET programme for the HC waste manager, chapter number six describes the current vocational education profiles for the medical sector and analyses the contents related to waste management in each of these profiles. This chapter includes also the results obtained regarding private training on healthcare waste management.

Chapter seven summarises the conclusions reached by the team and are the base for the recommendations that are provided in the chapter eight.

2 INTRODUCTION

Club EMAS has conducted an assessment of the current:

- available vocational training and vocational qualifications available for healthcare waste management professionals in Spain
- legal requirements related to the healthcare waste management
- operational criteria for healthcare waste management.

In order to better understand the development of the study and the VET and the healthcare waste management framework, it's important to highlight that Spain is composed by 17 regions and 2 autonomic cities.



As the Spanish central government has decentralized competencies regarding both, education and environment, the survey is based on the information available at State and Regional level due to the fact that each of the autonomous regions has administrative and legislative competencies regarding the abovementioned issues.

The assessment has been developed taking into account:

- Official available information about the VET programmes
- Interview with a representative of the Catalan Education Department – HealthCare VET Area
- Contact with the Ministry of Education, Culture and Sports
- Research and desk study of the current private training programmes related to healthcare waste management
- Waste management legislation at State level
- Waste management legislation at Regional level
- Interview with the responsible of healthcare waste management at the Catalan Waste Agency

- Contact with the Responsible of healthcare waste at the Ministry of Agriculture, Feeding and Environment.

3 HEALTHCARE SECTOR - OVERVIEW

The National Health System in Spain is structured into two health care levels, primary care and specialist care.

Primary Care: The main care facilities are the health care centres, staffed by multidisciplinary teams comprising general practitioners, paediatricians, nurses and administrative staff, and, in some cases, social workers, midwives and physiotherapists. Primary care also provides home care whenever this is necessary. Health care centres also deal with health promotion and disease prevention.

Specialist Care: It is provided in specialist care centres and hospitals in the form of outpatient and inpatient care.

Health Care centres: 3.006 (2011)

Local clinics: 10.116 (2011)

Hospitals and beds by type of care (2011)

	Total	Ratio per 100.000 inhabitants	% Public owned
Total hospitals	790	1,8	44,1
Total beds	162.538	352,5	68,3
Acute care hospitals	577	1,3	49,4
Acute care beds	133.216	288,9	75,6
Psychiatric care hospitals	88	0,2	29,5
Psychiatric care beds	14.440	31,3	33,7
Geriatric and long-term care hospitals	125	0,3	29,6
Geriatric and long term beds	14.882	32,3	36,6

Hospitals

There are 790 hospitals (1.8 per 100.000 inhabitants) operating in Spain, equipped with 162.538 beds (352.5 per 100.000 inhabitants).

Four out of 10 hospitals are public and 6 are private, a proportion that is reversed when we consider ownership of the installed beds, 7 out of 10 installed beds are public and 3 are private.

According to the kind of care provided, 7 out of 10 hospitals are dedicated to care of acute diseases, 1 is a psychiatric hospital and 2 are for geriatric and long-term care. Eight out of 10 beds installed are in acute care

hospitals, 1 in a psychiatric hospital and 1 in a geriatric and long-term care hospital.

According to functional dependency and ownership, half of acute care hospitals and 75% of beds are publicly owned. Thirty percent of psychiatric hospitals and 34% of beds dedicated to this purpose are publicly owned, as are 30% of geriatric and long-term care hospitals and 37% of installed beds.

Hospital-based high technology

Excluding dialysis facilities, computerized axial tomography (CAT) is the most widespread high technology in hospitals and dependent facilities, with a total of 699 units. Magnetic resonance follows with 510 units and mammography units with 572.

Public Healthcare staff

Public healthcare health centres and hospitals employ approximately 272.000 employees, 114.000 physicians and 157.000 nurses. Besides these healthcare staff figures, there are around 19.000 resident physicians who work in public hospitals acquiring postgraduate training.

Health care centre staff: Health centres and local clinics of National Health System employ more than 35.000 physicians (around 29.000 family physicians and just over 6.000 paediatricians) and over 29.000 nursing professionals.

Hospital staff: Just over 79.000 physicians provide their services in National Health System hospitals and specialist care centres, and more than 128.000 nurses.

4 HEALTHCARE WASTE – LEGISLATIVE OVERVIEW

As mentioned in the introduction chapter, there are 17 regions and 2 autonomous cities in Spain and the regional governments have administrative competencies regarding environmental legislation. Environmental legislation from the EU Directives is transposed into the Spanish legal framework through the Spanish Government who develops basic laws at State level (as it happens for the other EU Member States). Then, each Region - based on their administrative competence - develops the basic law into a more concrete/detailed legal act. Currently, there are 12 regions in Spain that have developed specific legislation for HC waste.

Therefore, even if the legal framework for HC waste is the same, we will find a different level of development in each region and also differences regarding the operational and administrative requirements. The classification and the nomenclature are not homogeneous in all the country.

Generally speaking, in Spain legislation regarding healthcare waste applies to the activities carried out by centres for human and animal care and particularly:

- Clinics, sanatoriums and hospitals
- Healthcare centres
- Healthcare professional centres
- Promotion of health and health & social care centres
- Family planning centres
- Laboratories for clinic analysis, public health or medical research, training
- Production of biological products
- Centres of preventive medicine
- Centres for veterinary services
- Centres for animal testing.

Besides this list, other regions in Spain have added in their regional legislation other centres that can generate healthcare waste:

- Centres for drug-addiction treatment and rehabilitation (Balearic Islands)
- Centres or HC units for prevention services (Basque Country)
- Funeral and forensic services and human clinical and forensic thanatology (Balearic Islands and Community of Madrid).

About 464.877 tons per year have been generated in Spain in 2010.

Legal references:

The following table includes the legal references for HC waste management in Spain:

STATE OR REGION	LEGAL ACT
Spain	<p>GENERAL LAW: Ley 10/1998</p>
Spain	<p>BIOLOGICAL WASTE (Corpses and human remains): Reglamento de Policía Sanitaria Mortuoria</p>
Spain	<p>RADIOACTIVE WASTE:</p> <p>REAL DECRETO 35/2008, de 18 de enero, por el que se modifica el Reglamento sobre Instalaciones Nucleares y Radiactivas, aprobado por Real Decreto 1836/1999, de 3 de diciembre.</p> <p>Real Decreto 1349/2003, de 31 de Octubre, sobre ordenación de las actividades de ENRESA, y su financiación.</p> <p>Orden ECO/1449/2003, de 21 de Mayo, del Ministerio de Economía, sobre gestión de materiales residuales sólidos con contenido radiactivo generados en las instalaciones radiactivas de 2ª y 3ª categoría en las que se manipulen o almacenen isótopos radiactivos no encapsulados.</p> <p>Instrucción IS/05, de 26.02.03, del CSN, por la que se definen los valores de exención para nucleidos según se establece en el anexo I del Real Decreto 35/2008 (RINR).</p> <p>Real Decreto 783/2001, de 6 de Julio, por el que se aprueba el Reglamento sobre protección sanitaria contra las radiaciones ionizantes.</p> <p>Real Decreto 35/2008, de 18 de Enero de 2008 por el que se modifica el Reglamento sobre Instalaciones Nucleares y Radiactivas (RINR), aprobado por Real Decreto 1836/1999 de 3 de Diciembre.</p> <p>Real Decreto 1836/1999, de 3 de Diciembre, por el que se aprueba el nuevo Reglamento sobre Instalaciones Nucleares y Radiactivas (RINR).</p> <p>Ley 54/1997, de 27 de Noviembre, del Sector Eléctrico, por la que se modifican diversos apartados tanto de la Ley sobre Energía Nuclear como de la Ley de creación del CSN.</p> <p>El Real Decreto 1522/1984, de 4 de Julio de creación de la Empresa Nacional de Residuos</p>

	Radioactivos, S.A.(ENRESA).
Navarra	SPECIFIC LAWS ON HC WASTE (per each region): Decreto Foral 296/1993, de 13 de septiembre, sobre Gestión de Residuos Sanitarios. BONA de 1 de Enero de 1993, núm. 120.
La Rioja	Decreto 51/1993, de 11 de noviembre de 1993, sobre gestión de residuos sanitarios. BOLR de 16 noviembre de 1993, núm. 139.
Castilla León	Decreto 204/1994, de 15 de septiembre, de Ordenación de la Gestión de los Residuos Sanitarios. BOCYL de 21 de septiembre de 1994, núm. 138.
Comunidad Valenciana	Decreto 240/1994, de 22 de noviembre, por el que se aprueba el Reglamento Regulador de la Gestión de los Residuos Sanitarios. DOGV de 5 de diciembre de 1994, núm. 2401.
Aragon	Decreto 29/1995, de 21 de febrero, sobre gestión de los residuos sanitarios BOA de 6 de marzo de 1995, núm. 27.
Balearic Islands	Decreto 136/1996, de 5 de julio. Consellería Sanidad y Consumo. BO Illes Balears de 20 de julio de 1996, núm. 91.
Galicia	Decreto 460/1997, de 21 de noviembre, por el que se establece la normativa para la gestión de los residuos de los establecimientos sanitarios en la Comunidad de Galicia. DOG de 19 de diciembre de 1997, núm. 245.
Extremadura	Decreto 141/1998, de 1 de diciembre, por el que se dictan normas de gestión, tratamiento y eliminación de los residuos sanitarios y biocontaminados. BOE de 10 de diciembre de 1998, núm. 141.
Catalonia	Decreto 27/1999, de la gestión de los residuos sanitarios. DOGC de 16 de febrero de 1999, núm. 2828.
Madrid	Decreto 83/1999, de 3 de junio, por el que se regulan las actividades de producción y de gestión de los residuos biosanitarios y citotóxicos en la Comunidad Autónoma de Madrid. BOCM de 14 de junio de 1999, núm. 139.
Basque Country	Decreto 76/2002, de 26 de marzo, por el que se regulan las condiciones para la gestión de los residuos sanitarios en la Comunidad Autónoma de País Vasco. BOPV de 22 de abril de 2002, núm. 2355.

Cantabria	Decreto 68/2010, de 7 de octubre, por el que se regulan los residuos sanitarios y asimilados de la Comunidad Autónoma de Cantabria. BOCT de 21 de octubre de 2010, núm. 203.
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Classification of healthcare waste and intra-centre management:

Taking into account the entire legal framework, it's possible to divide the HC waste as follows:

- a) Urban waste: waste generated by the HC centre which is similar to the waste generated at home.
- b) Biological waste assimilable to urban waste: it's a specific waste generated by a HC activity, but it does not have any specific risk of infection (used gloves, gages, bandages, etc.). This waste can be managed together with the domestic waste.
- c) Corpses and human remains with own entity must be managed in accordance to the Regulation of Sanitary Mortuary Police.
- d) Biological waste: waste that has to be specifically managed because of its risk of infection. In this category are also included all sharp items.
- e) Chemical waste: characterised by its chemical pollution potential.
- f) Cytotoxic and cytostatic waste: specifically managed because of their carcinogens, mutagenic or reproduction risks.
- g) Radioactive waste: waste polluted by radioactive substances.

The last 4 groups listed - from d to g- are considered hazardous waste.

In Spain, the waste generated in a Healthcare Centre can be classified in relation to two main groups:

- Waste without risk or with nonspecific risk
- Waste with risk or with a specific risk

From the point of view of the risk and pollution they can cause:

- Biological risk
- Chemical risk

As there's not a unique classification of HC waste in Spain, we will present the current classification according to law in Catalonia which splits in 4 groups:

WASTE	Nonspecific risk	Biological risk	Chemical risk
No risk (Non hazardous)	Group I	Group II	-
With risk (Hazardous)	-	Group II	Group IV

The Basque Country divides HC waste into 3 groups (I Urban waste, II Specific HC waste and III Chemical waste and other waste regulated by specific legal acts) and Madrid classifies HC waste in 7 groups (I General waste, II Biological waste assimilable to urban waste, III Hazardous biological waste, IV corpses and human remain with own entity, V Chemical waste, VI Cytotoxic waste and VII radioactive waste).

Waste without risk or with nonspecific risk (non hazardous waste):

Are considered those that do not require a specific or different treatment outside the centre than the one provided to municipal or domestic waste.

Assimilated to urban waste (Group I in Catalonia)

This waste is the one not strictly related to healthcare activities, such as the one generated in the offices, kitchen, bar, restaurants, canteens, gardens, some from the maintenance area, etc. It has the same treatment as the municipal or domestic waste and it includes paper and cardboard, empty plastic packaging, metal packaging, glass and organic waste.

There are some specifications related to each Region, for example in Basque Country it's required to collect this waste in black plastic bags and a minimum gauge 200, in Madrid the bag has to be green, gauge 200 and have a maximum volume of 70 litres.

Specific non hazardous HC waste (Group II in Catalonia)

This group includes non hazardous waste generated in healthcare activities such as materials used in cures, clothing and non reusable material with blood stains, secretions or excretions, empty drainage receptacles, empty urine bags/ blood bags and other biological liquids bags, dialysis filters, sockets, plasters, cotton, gauze, masks, gowns, gloves, non reusable textiles and any other waste that is stained or has absorbed a biological liquid.

If one of the above mentioned wastes has been in contact with a patient in isolated conditions due to specific illnesses, the waste is to be considered within the group III.

As they are considered non hazardous waste, they do not require specific treatment outside the healthcare centre and they are assimilated to municipal waste, however they have to be managed following specific rules while they are in the HC centre. Operational criteria varies from region to region, an example of criteria are:

- They can not be stored within the rooms

- They have to be stored in polyethylene bags with specific characteristics determined by each Regional Authority. These characteristics are related to the minimum thickness (55 microns or gauge 220, 400 depending the region), and other aspects such as breaking strength, single use, the bag has to guarantee the absence of solid materials and sharp items. In certain regions the maximum volume is limited to 90 litres and it has to be externally identified with the name of the manufacturer and the label "G II" (in Catalonia), the bio-hazard symbol and a chemical indicator if the bag will be autoclaved (in Basque Country), etc.
- There is not a specific colour for the bag.
- The bags will have to be deposited, at any time, in a container or support structure.

The Catalan Health Authority has a list of the approved plastic bags providers.

Waste with risk or with specific risks (hazardous waste):

Hazardous waste (Group III in Catalonia)

Hazardous waste requires specific prevention practices for its collection, storage, transportation, treatment and final deposition within the healthcare centre and outside it.

This type of waste includes: blood and blood products contained in bags and other containers that cannot be flushed down the drain, needle and sharp items, live attenuated vaccines, anatomical waste (any human anatomical part that can be identified except corpses, and human parts with own entity derived from abortions, mutilation and surgery), cultures and stock of infectious agents (petri, blood cultures, etc.), animal waste from research and experimentation activities if they have been biologically inoculated and infectious healthcare waste that are able to transmit certain diseases. Each region has its list of diseases.

Example of diseases considered in Catalonia:

- Crimean–Congo hemorrhagic fever (CCHF)
- Lassa hemorrhagic fever (LHF)
- Marburg virus
- Ebola virus disease (EVD)
- Argentine hemorrhagic fever (AHF)
- Bolivian hemorrhagic fever (BHF)
- Encephalic diseases transmitted by arboviruses Absettarow, Hanzalova, Hys, Kumlinge, Kianasur forest disease, Omsk fever, Russian spring-summer encephalitis.
- Malta fever
- Diphtheria

- Cholera
- Creutzfeldt-Jakob encephalitis
- Borm
- Tularaemia
- Anthrax
- Bubonic and pneumonic Pest
- Rabies
- Q fever
- Active tuberculosis.

In this group is also included certain waste from patients with specific isolation needs accordingly to the healthcare centre's criteria.

The following rules apply to the management of Group III waste within the centre:

- Needles and sharp items must be stored in a puncture-proof container as soon as possible. If the container does not have a device in order to separate the needle (group III) from the syringe (group II) without touching the needle, then the whole material has to be thrown in the puncture-proof container.
- Do not exceed the 75% of the container's capacity.
- The waste container must be rigid, watertight, opaque to the eye, breaking strength, waterproof, single use, without any solid or sharpen object outside the container, maximum volume 60 litres, any colour except blue and identified with the label "Hazardous Waste".
- Waste containers for group III must be placed in operating rooms, gynecological services and anatomic pathologies, laboratories and blood banks.

Biological liquid waste should be flushed down the drain except for the one generated by patients with a non endemic infection at local level and the microbiological liquid cultures, in both cases the waste will be treated as a group III waste.

An anatomical part that has been preserved in formalin, this waste has to be treated as a Group IV waste.

Other hazardous (Group IV in Catalonia)

This group includes all the hazardous waste that are not included in group III and the cytotoxic waste: cytotoxic products (cytotoxic drugs and products and any material that has been in contact with a cytotoxic product), radioactive waste, chemical residues, drugs, and other hazardous waste (batteries, fluorescent light bulbs, pacemaker, radiographs, resins, gels, lubricant oils, oils with PCB, mercury, sewage sludge, etc.).

Its management is subject to specific requirements within the HC centre and outside of it.

- Cytotoxic waste has to be stored in non reusable, rigid and watertight containers, opaque to the eye, breaking strength, single use, without any solid or sharpen object outside the container, maximum volume of 60 liters, blue color and labeled "Chemically polluted material. Cytotoxic"
- Cytotoxic containers must be manufactured in polyethylene, polystyrene or polypropylene and be resistant to chemical products and sharpen items.
- Radioactive wastes with long period of decay have to be managed by ENRESA, the unique authorized company in the country.
- Radioactive wastes with short period of decay are stored in the HC centre and, once they lose their radioactivity, they are managed as group I, II or III depending on the nature of the waste.

Intermediate storage at the HC centre:

The intermediate storage is considered the place where the bags and waste containers from the service areas are provisionally stored until they are taken to the final storage.

Waste can only be stored in the service area or in the intermediate storage. If a hospital does not have a specific intermediate storage area, it has to establish an identified and delimited area.

Transportation of waste within the HC centre:

HC waste must be carried to the final storage within 12 hours once the container has reached the recommended capacity.

While the waste is being transferred to the final storage, segregation between the different groups must be guaranteed.

Containers and transport devices must have a maximum capacity of 3.000 liters, they must be easy to be cleaned and disinfected and cannot have any sharp element inside.

Final storage at the HC centre:

According to law, the time for group III waste and cytotoxic waste final storage is different depending on the centre:

- Hospitals have a maximum of 72 hours of final storage. This period can be extended until one week if the storage has an appropriate refrigeration system.

- Other HC Centres can storage waste within the centre depending on their production volume and waste characteristics until maximum one month.

The final storage must comply with the following conditions:

- Ventilated
- Spacious
- Well lit
- Correctly identified
- Conditioned for proper cleaning and disinfection
- Located in order to avoid affections to other neighbouring spaces
- Likely to be closed
- Have an easy access from the exterior
- Protected to outdoor conditions, high temperatures and animals
- Access restricted to authorized personnel only.

Within the final storage, group I and group II waste can be compacted while waste from groups III and IV can never be compacted.

Measurement and monitoring of waste production:

It is compulsory for the HC centres to keep records regarding the production and management of group III and cytotoxic wastes. The record must provide information about each waste load and I provides:

- The name of the healthcare centre
- The manager or medical director
- The HC waste manager
- Address
- Town
- Telephone
- The name of the waste transportation company
- The authorized company for waste management
- The plastic bags and containers' providers
- Remarks.

This information must be updated.

Waste management plan:

A waste management plan is compulsory only for hospitals. It must describe:

- The responsible of the waste management plan
- The procedure for waste classification, collection and storage within the centre
- The training programme for the personnel involved in the HC waste management

- Control and monitoring of the plan.

Healthcare waste management outside the centre:

Groups I and II:

As they are assimilated to municipal waste, they can be compacted for its transportation jointly or separately.

Groups III and cytotoxics:

They can never be compacted and they have to be kept separately as they have a different treatment.

The HC centre is allowed to contract only authorized waste transport companies. The waste transportation vehicles must comply with specific requirements:

- The load area of the vehicle must be waterproof and delimited by even surfaces, cleanable and easy to disinfect surfaces.
- The structure of the vehicle and its closure system has to avoid leaks and spills.
- They must be provided with containers and devices for the waste collection in case of emergency.
- They have to be identified with the group III waste label and cytotoxic label.
- In case of collecting waste in a route longer than 72 hours, the vehicle has to be refrigerated and has to keep a temperature not higher than 4°C.
- Moreover, even if the waste transport company has been authorized by the authority, each vehicle has to have its own technical inspection certificate, transport cards, and its homologation for hazardous goods transportation.

In case of accident during the transportation, the company has to report it to the competent authority.

HC waste final treatment and deposition:

Waste	Treatment
Urban waste	<ul style="list-style-type: none"> - Recycling for all the recyclable waste - Incineration in a municipal waste incinerator for non recyclable waste
Non hazardous HC waste	<ul style="list-style-type: none"> - Incineration in a municipal waste incinerator - Landfill
Hazardous HC waste	<ul style="list-style-type: none"> - Sterilization (vacuum phase, pressured and

	<p>saturated water vapor, trituration).</p> <ul style="list-style-type: none"> - Deposition in a landfill as municipal waste once sterilized. - In case of a small quantity of sharp items, this can be sterilized within the HC centre, but it is not a real feasible option for Hospitals who usually use external services.
Cytotoxics	Incineration in a specific Hazardous waste incinerator with temperatures above 1.100°C and special filters for the air emissions.
Radioactive waste	<ul style="list-style-type: none"> - Radioactive wastes with long period of decay managed by ENRESA, the unique authorized company in the country. - Radioactive waste with short period of decay are stored in the HC centre and, once they lose their radioactivity, they are managed as group I, II or III depending on the nature of the waste.
Chemical waste	Incineration in a specific Hazardous waste incinerator or chemical neutralization.
Drugs	Incineration or chemical neutralization.
Solvents	Regeneration of solvents or incineration.
Batteries	Recycling
Mineral oils	Regeneration of mineral oils or energy production
Fluorescent light bulbs	Recycling and recovery of metal and metallic compounds
Gases and gas tanks	Recycling of metals and recovery of chemical substances
Oils with PCB	Incineration in a specific Hazardous waste incinerator with temperatures above 1.100°C and special filters for the air emissions.
Mercury	Recovery of mercury.
Sewage sludge	Neutralization, evaporation, incineration or landfill.

Documents for the authority's control:

The HC Centre has to:

- Be registered as a waste producer by the competent authority. This document allows the competent authority to know how many waste producers are there in its territory.
- Choose a provider or providers for the waste management and to sign an acceptance fiche with the chosen service provider.
- Fill in and sign a HC waste monitoring sheet per each waste delivery. The document contains all the information regarding the waste

(group, quantity, date of delivery, origin, destination and specific safety and emergency recommendations). The document is issued in 4 copies and is signed at each stage by involved parties (the HC centre, the waste transportation company and the waste treatment plant). Once the waste arrives to the treatment plant, the 4th copy of the document with the final signature has to be sent back to the HC centre.

- Fill in and sign the Itinerant waste monitoring sheet as an alternative to the previous sheet and it is used when a company collects waste from different HC centres in the same vehicle.
- Fill in the HC waste control record. It contains information about each waste delivery: date, quantity (groups III and cytotoxics), number of the acceptance fiche, number of waste monitoring sheet and the signature of the responsible of the HC centre.
- Report yearly to the competent authority the total amount of waste generated (in m³). This activity must be carried out before march 31st.

The records and documents required in each region vary as well as the frequency and format of reporting depending on the specific legislation.

5 HEALTHCARE WASTE MANAGERS – NATIONALLY ACCEPTED QUALIFICATIONS AND SKILLS

With respect to vocational training in medical waste management, there is no established education programme in Spain that specifically qualifies professionals for the position of Head of Waste in hospitals. The knowledge required to do so is included in different subjects of the vocational training programmes and different published guides and management plans, through both public and private institutions, that are designed to provide training for the different professions in the healthcare sector.

In the absence of a specific education programme of this type, this report will focus on studies within the current frame work of Vocational Training (training programmes) in the area of healthcare.

At present, the administration of education in Spain is decentralised, with the consequent transfer of authority and operations to the Autonomous Regions. This implies a disruption of uniformity in the system rather than unity, and this is the case throughout the country. Also to be considered is the issue of teaching of and in the different languages of the Autonomous Regions in those that use a language other than Castilian (Spanish).

The dates that educational authority was transferred to the different Autonomous Regions varies by region. The process began in 1980 with Catalonia and the Basque Country, and was finalised in 1999 with Asturias, Castilla-La Mancha, Castilla-Leon, Extremadura, Madrid and Murcia. Thus, in 2000 the process of the decentralisation of education was considered complete.

Therefore, and in order to understand how Vocational Training operates in Spain and the training programmes that exist in the field of healthcare, one has to take into account this decentralisation of management and curricula in 17 Autonomous Regions, as well as the territories still managed by the Ministry of Education itself, such as the autonomous cities of Ceuta and Melilla.

General functioning of Vocational Training

The current Spanish education system offers a choice of different training options to suit every interest or situation, in order to provide qualifications that facilitate entry into the labour market with the best possible preparation.

In this regard, the studies most related to jobs and the labour market are the Vocational Training programmes and, at present, due to its broad range, modular nature and ease of access, including via Internet, Vocational Training is a very attractive option because it allows relatively rapid job placement.

Vocational Training in Spain comprises around 150 training courses, with theoretical and practical components corresponding to diverse professional fields. The qualifications are valid throughout the country, and have accredited academic and professional value. The Ministry of Education, Culture and Sports is responsible for the design and approval of the minimum curricula required for each Vocational Training qualification, which each Autonomous Region shall meet but also has the ability to augment¹. Qualifications obtained through Vocational Training in Autonomous Regions are valid and recognized throughout Spain.

Vocational Training courses are organised in the following categories:

- Specific professional modules of Initial Professional Qualification programs.
- Intermediate Vocational Training programmes.
- Advanced Vocational Training programmes.
- Specialization courses (legislation pending publication).

These courses should address a professional profile, and comprise professional modules of varying length that are organized so as to be compatible with the lives of people with other activities and responsibilities.

Likewise, they are adaptable to students with special educational needs, to guarantee for them access, attendance and progression in education.

At present, there are around 150 courses falling into 26 professional fields of either intermediate or advanced level.

Access to training programmes²

To enter an Intermediate Vocational Training programme you need:

- A school-leaving certificate.
- A Technician or Assistant Technician degree.
- A pass in advanced secondary school studies (BUP).
- A pass in the Intermediate Vocational Training entrance test (candidates must be at least 17 years of age in the year the test is taken).

¹ Current professional fields (LOE, Organic Law 2/2006 of 3 May, on Education)

² Royal Decree 1538/2006, of 15 December establishing general regulations for vocational training within the education system.

To enter an Advanced Vocational Training programme you need:

- An advanced secondary school certificate (GCSE or equivalent).
- A Senior Technician or Specialist Technician degree.
- A pass in the University Orientation Course (COU).
- A pass in the Advanced Vocational Training entrance test (candidates must be at least 19 years of age in the year the test is taken, or 18 if they have completed an Intermediate Vocational Training programme).

How the different Vocational Training courses can be studied

- **In face-to-face mode (presential)**
- **In distance mode via Internet**
- **Through examinations for direct qualification**

Examinations for direct qualification are offered as an alternative way of obtaining the titles of Technician or Senior Technician without having to follow the full courses of Intermediate or Advanced Vocational Training programmes in person or remotely. They are intended for people who already have significant training in a particular professional field but do not have the specific qualification, and who are able to plan their study individually without support, sitting a single examination for each professional module.

6 HEALTHCARE WASTE MANAGEMENT – VOCATIONAL TRAINING AND NATIONAL OCCUPATIONAL STANDARDS OVERVIEW

Even in there's no specific VET programme for Healthcare waste management, according to the previous Organic Law on General Organisation of the Education System (LOGSE)³ and the new Organic Law on Education (LOE)⁴ there are different Vocational Training Programmes in the field of healthcare. Some of them include training on healthcare waste management.

These are the Vocational Training programmes in the field of healthcare that currently exist in Spain:

- **Intermediate Vocational Training programmes**

- Auxiliary Nursing (LOGSE)
- Pharmacy (LOGSE)
- Pharmacy and Parapharmacy (LOE)
- Health Emergencies (LOE)

- **Advanced Vocational Training programmes**

- Hearing Aids (LOGSE)
- Prosthetic Audiology (LOE)
- Pathological Anatomy and Cytology (LOGSE)
- Dietetics (LOGSE)
- Healthcare Documentation (LOGSE)
- Oral and Dental Hygiene (LOGSE)
- Diagnostic Imaging (LOGSE)
- Clinical Laboratory Diagnosis (LOGSE)
- Orthoprosthetics (LOGSE)
- Orthoprostheses and Assistive Products (LOE)
- Dental Prostheses (LOGSE)
- Dental Prostheses (LOE)
- Radiotherapy (LOGSE)
- Environmental Health (LOGSE)

³ Organic Law 1/1990, of 3 October 1990, on Education

⁴ LOGSE programmes are being updated and will be replaced by LOE programmes of identical or similar names. Current professional fields (LOE, Organic Law 2/2006 of 3 May on Education)

Healthcare LOE⁵ (Technician, intermediate-level training)

An intermediate-level training programme in Spain comprises 2000 hours, of which 400 correspond to workplace training.

The pre-requisites for access are:

- Direct access:
 - The Compulsory Secondary Education certificate (ESO) or a higher-level certificate.
 - A Technician or Assistant Technician degree or other academic equivalent.
 - A pass in advanced secondary school studies (BUP).
- Access by entrance exam (for those who do not have the above).
- A pass in the Intermediate Vocational Training entrance test (candidates must be at least 17 years of age in the year the test is taken).

Technician in Health Emergencies⁶

This training programme includes some components that relate to waste management:

- Professional module 0052: Preventive Vehicle Maintenance (Module total 90 hours)
Precautionary measures: Classification and disposal of waste. Safety and environmental protection regulations.
- Professional module 0053: Healthcare Logistics in Emergencies (Module total 175 hours)
Supply and waste control in the disaster area.
Excreta disposal and waste treatment: Types of waste: urban, hospital and hazardous.
Excreta disposal procedures. Waste management procedures.
Health risks related to water and food supply, and waste disposal.
- Professional module 0054: Healthcare Provision (Module total 125 hours)
Occupational Risk Prevention in the maintenance of sanitary conditions of the patient environment and the sanitary materials and equipment in the vehicle.
Procedures in the case of biohazardous accidents and other types of workplace accident.
Separate collection of waste by type.
Selective removal of activity-specific waste, biosanitary and hazardous.
Identification of risks derived from the handling of different cleaning, sterilization and disinfection products.

Compliance with regulations on environmental protection.

⁵ LOE, Organic Law 2/2006 of 3 May, on Education

⁶ ORDER ESD/3391/2008, of 3 November, establishing the curriculum for Intermediate Vocational Training for the qualification Technician in Health Emergencies.

Technician in Pharmacy and Parapharmacy⁷

One module in this programme includes training that relates to waste management:

- Preparation of Master Formulas: Waste disposal procedures.

Healthcare LOE⁸ (Senior Technician, advanced-level training)

An advanced-level training programme in Spain comprises 2000 hours, of which a certain amount must correspond to workplace training (between 60 and more than 700 hours).

The pre-requisites for access are:

- Direct access:
 - An advanced secondary school certificate (GCSE or equivalent).
 - A pass in second-year studies of any form of Baccalaureate or equivalent.
 - A Senior Technician or Specialist Technician degree or other academic equivalent.
 - A pass in the University Orientation Course (COU).
 - A university degree or equivalent.
- Access by entrance exam (for those who do not have the above).
- A pass in the Advanced Vocational Training entrance test (candidates must be at least 19 years of age in the year the test is taken, or 18 if they have completed an Intermediate Vocational Training programme).

Senior Technician in Prosthetic Audiology

This programme includes no subject matter or training that relates to waste management.

Senior Technician in Orthoprotheses and Assistive Products⁹

One module in this programme includes training that relates to waste management:

⁷ Order EDU/2184/2009, of 3 July, establishing the curriculum for Intermediate Vocational Training for the qualification Technician in Pharmacy and Parapharmacy.

⁸ LOE, Organic Law 2/2006 of 3 May, on Education

⁹ Royal Decree 905/2013, of 22 November, establishing the qualification Senior Technician in Orthoprotheses and Assistive Products and defining the minimum teaching requirements.

- Professional module 0328: Development and Adaptation of Custom-made Orthotics (Module total 110 hours)
Prevention of exposure to pollutants and waste: Duration and frequency of use of medical orthoprosthesis products.

Senior Technician in Dental Prostheses¹⁰

This programme includes the following components that relate to waste management:

- Professional module 0854: Functional Design of Prostheses (Module total 135 hours)
Legislative aspects in waste treatment and environmental protection.
- Professional module 0855: Complete Dentures (Module total 175 hours)
Regulations governing waste management.
Classification and storage of waste.
Treatment and collection of waste.
Compliance with regulations on environmental protection.
Environmental management.
- Professional module 0856: Orthodontic Apparatus and Occlusal Splints (Module total 215 hours)
Regulations governing waste management.
Classification and storage of waste.
Treatment and collection of waste.
Compliance with regulations on environmental protection.
Environmental management.
- Professional module 0857: Restorations and Metal Structures in Fixed Dentures (Module total 180 hours)
Regulations governing waste management.
Classification and storage of waste.
Treatment and collection of waste.
Compliance with regulations on environmental protection.
Environmental management.
- Professional module 0859: Restorations and Cosmetic Coatings (Module total 180 hours)
Regulations governing waste management.
Classification and storage of waste.
Treatment and collection of waste.
Compliance with regulations on environmental protection.
Environmental management.
- Professional module 0860: Dental Implant Dentures (Module total 140 hours)
Legislation on waste and environmental protection: European, national and regional.

¹⁰ Order ECD/109/2013, of 23 January, establishing the curriculum for Advanced Vocational Training for the qualification Senior Technician in Dental Prostheses.

Healthcare LOGSE¹¹- unrepealed (Technician, intermediate level training)

(Example from the Autonomous Region of Catalonia, transferred education)

These training programmes are of 1400 hours duration.

The pre-requisites for access are:

- Direct access:
 - The Compulsory Secondary Education certificate (ESO) or a higher-level certificate.
 - A Technician or Assistant Technician degree or other academic equivalent.
 - A pass in advanced secondary school studies (BUP).
- Access by entrance exam (for those who do not have the above).
- A pass in the Intermediate Vocational Training entrance test (candidates must be at least 17 years of age in the year the test is taken).

Technician in Auxiliary Nursing¹²

This programme includes some training that relates to waste management in the following module:

- Credit 6: Hygiene in the Hospital Environment and Cleanliness of Materials. (Total 90 hours)
Waste Management: Remains disposal: materials, protocol. Specific regulations.

Healthcare LOGSE¹³- unrepealed (Senior Technician, advanced level) (Example from the Autonomous Region of Catalonia, transferred education)

The duration of these programmes varies between 1400-2000 hours (second year).

The pre-requisites for access are:

- Direct access:
 - An advanced secondary school certificate (GCSE or equivalent).
 - A pass in second-year studies of any form of Baccalaureate or equivalent.

¹¹ LOGSE Organic Law 1/1990, of 3 October 1990, on Education

¹² Annex to DECREE 203/1997, of 30 July, establishing the curriculum for Intermediate Vocational Training in Auxiliary Nursing (DOGC no. 2464, of 28 August 1997).

¹³ LOGSE Organic Law 1/1990, of 3 October, on Education

- A Senior Technician or Specialist Technician degree or other academic equivalent.
- A pass in the University Orientation Course (COU).
- A university degree or equivalent.
- Access by entrance exam (for those who do not have the above).
- A pass in the Advanced Vocational Training entrance test (candidates must be at least 19 years of age in the year the test is taken, or 18 if they have completed an Intermediate Vocational Training programme).

Senior Technician in Pathological Anatomy and Cytology¹⁴

Duration: 2000 hours

This programme includes the following components of training that relate to waste management:

- Credit 2: Necropsy (Total 120 hours)
Waste Management: Identification of polluting waste.
Disposal of waste in compliance with regulations.
- Credit 11: Workplace Training (Total 680 hours)
Referring to preparation of the work room and autopsy material: Disposal of waste material in suitable containers, following established standards for disposal.
Referring to preparation of the workspace: Cleaning and disinfecting non-disposable equipment and storage of reagents and samples processed.
Disposal of waste material in suitable containers, following established standards for disposal.

Senior Technician in Dietetics¹⁵

Duration: 2000 hours

This programme includes the following components of training that relate to waste management:

- Credit 4: Food Control (Total 180 hours)
Compliance with regulations for waste storage and disposal.
- Credit 5: Microbiology and Food Hygiene (Total 180 hours)
Waste storage and disposal.
Identification of the system and conditions of waste storage and disposal.
Compliance with regulations for waste storage and disposal.

¹⁴ Annex to DECREE 54/1998, of 3 March, establishing the curriculum for Advanced Vocational Training in Pathological Anatomy and Cytology (DOGC no. 2624, of 22 April 1998).

¹⁵ Annex to DECREE 50/1998, of 3 March, establishing the curriculum for Advanced Vocational Training in Dietetics (DOGC no. 2622, of 20 April 1998).

Senior Technician in Healthcare Documentation¹⁶

Duration: 1400 hours

This programme includes no element of training that relates to waste management.

Senior Technician in Oral and Dental Hygiene¹⁷

Duration: 1400 hours

This programme includes no element of training that relates to waste management.

Senior Technician in Diagnostic Imaging¹⁸

Duration: 2000 hours

This programme includes a module that addresses waste management:

- Credit 8: Radiation Protection (Total 90 hours)
Referring to the management and treatment of radioactive waste: Identification of applicable regulations, identification of the type and origin of waste, identification of the characteristics of waste: weight, volume, form, activity, other.
Referring to classification: Determination of the method for disposal, storage or incineration. Diluting/preparing waste for removal, where necessary.
Removal.
Records.

Senior Technician in Clinical Laboratory Diagnosis¹⁹

Duration: 2000 hours

This programme includes various components that relate to waste management:

¹⁶ Annex to DECREE 180/1998, of 8 July, establishing the curriculum for Advanced Vocational Training in Healthcare Documentation (DOGC no. 2693 of 31 July 1998).

¹⁷ Annex to DECREE 348/1997, of 25 November, establishing the curriculum for Advanced Vocational Training in Oral and Dental Hygiene (DOGC no. 2551, of 7 January 1998).

¹⁸ Annex to DECREE 353/1997, of 25 November, establishing the curriculum for Advanced Vocational Training in Diagnostic Imaging (DOGC no. 2551, of 7 January 1998).

¹⁹ Annex to DECREE 202/1997, of 30 July, establishing the curriculum for Advanced Vocational Training in Clinical Laboratory Diagnosis (DOGC no. 2464, of 28 August 1997).

- Credit 3: Instrumental Techniques (Total 210 hours)
Referring to the processing of waste: Identification of the type of waste. Identification of material for the collection of waste. Locating the spill site or dumping ground. Selecting the type of processing. Collection, treatment and storage, where applicable.
Verification of compliance with regulations for safety, personal hygiene and environmental protection.
Determination of the measures to be taken under contingency.
- Credit 4: Clinical Biochemistry (Total 210 hours)
Referring to conservation and storage of equipment and material: Collection, treatment and storage of waste and toxic products.
Referring to the processing of waste: Identification of the type of waste, identification of material for the collection of waste. Locating the spill site or dumping ground. Selecting the type of processing. Collection, treatment and storage, where applicable.
Verification of compliance with regulations for safety, personal hygiene and environmental protection.
Determination of the measures to be taken under contingency.
- Credit 5: Microbiology (Total 210 hours)
Referring to the processing of waste: Identification of the type of waste, identification of material for the collection of waste. Locating the spill site or dumping ground. Selecting the type of processing. Collection, treatment and storage, where applicable.
Verification of compliance with regulations for safety, personal hygiene and environmental protection.
Determination of the measures to be taken under contingency.
- Credit 6: Immunology (Total 90 hours)
Referring to the processing of waste: Identification of the type of waste, identification of material for the collection of waste. Locating the spill site or dumping ground. Selecting the type of processing. Collection, treatment and storage, where applicable.
Verification of compliance with regulations for safety, personal hygiene and environmental protection.
Determination of the measures to be taken under contingency.

Senior Technician in Radiotherapy²⁰

Duration: 1700 hours

With regard to waste management, this programme includes these components:

- Credit 7: Fundamentals and Techniques of Brachytherapy Treatments (Total 120 hours)
Storage of sources and waste management.
Control of solid and fluid organic waste.
- Credit 8: Radiation Protection (Total 90 hours)

²⁰ Annex to DECREE 195/1999, of 13 July, establishing the curriculum for Advanced Vocational Training in Radiotherapy (DOGC no. 2950, of 11 August 1999).

Management of radioactive material: Control of material and radioactive waste generated. Effluent and waste.
Management and treatment of radioactive waste: Identification of applicable regulations. Identification of the type and origin of waste.
Identification of the characteristics of waste: weight, volume, form, activity, other.
Classification.
Determination of the method for disposal.
Storage or incineration.
Diluting/preparing waste for removal, where applicable.
Removal.
Records.

Senior Technician in Environmental Health²¹

Duration: 2000 hours

This education profile is the most complete with respect to content relating to waste management, and the career opportunities it leads to include Waste Management Technician.

Components of the programme that relate to waste management include:

- Credit 4: Chemical Products and Vectors of Interest in Public Health (Total 210 hours)
Waste management
- Credit 5: Solid Waste and the Built Environment (Total 150 hours)
Municipal, industrial and other types of waste: Definition, origin, classification, hazards. Physical state of waste. Composition. Weight/volume. Fluid content. Intrinsic parameters. Significance of volume. Applied ratios.
Municipal waste: ordinary, special and voluminous. Industrial waste: Special, non-special and other types (sanitary, soil contaminants, livestock excrement, demolitions and pesticide packaging).
Regulations governing waste.
Management systems: Collection, transport, storage, evaluation, disposition and resale of debris. Sorting and relocation plants.
Methods of collection. Used elements. Selective/non-selective collection. Specific containers. Other systems.
Waste treatment systems: environmental and health impacts. Controlled repositories for different types of waste. Energy recovery (incineration), composting, specific treatments for sanitary waste and recycling. Methods.
Production sources of municipal waste. Rapid evaluation. Habits of the population. Actions of public awareness to reduce waste production and increase separate collection of the different fractions.

²¹ Annex to DECREE 318/2004, of 22 June, establishing the curriculum for Advanced Vocational Training in Environmental Health (DOGC no. 4161, of 25 June 2004).

Surveillance and control programs. Monitoring urban collection.
Establishment of additional services: furniture and garbage collection.
Municipal waste sample acquisition methods for leaching tests.

Waste derived from livestock activity.

Applicable regulations.

Waste management: Competent administration in waste management. Management programmes for different types of waste. Waste production sources. Selective collection and transport. Treatment systems: Recovery, incineration, physiochemical, controlled dumps. Classification of waste according to current regulations. Identification codes for industrial waste. Competent bodies. Waste Catalogue for Catalonia, (CRC). European Waste Catalogue. Minimization of waste. Options for recovery. Priorities for treatment and disposition of debris. Waste that cannot be minimized. Sample acquisition methods for toxic and hazardous waste.

Methods of waste characterization: Waste composition. Plastics: Types. Glass: Types. Classification. Waste analysis techniques. Techniques for the identification of pollutants in municipal waste. Leaching tests; waste flashpoints. Flammability of waste in contact with water. Other parameters for solids in leaching.

Analysis of pollutants in liquids obtained from leaching tests.

Public facilities and spaces: Technical standards of habitability. Regulations governing waste collection: Urban or comparable and industrial. Volume. Specific treatments. Waste management facilities: Composting plants, sorting plants, relocation plants, energy recovery plants, controlled dumps.

Regulations for the collection and treatment of sanitary toilet waste. Selective collection.

Quality standards for public facilities. Operating licenses. Administrative procedures. Processing and resolution of licenses, grants and denials. Binding reports. Competent bodies. Classification of activities: Annoying, unhealthy, harmful and dangerous. Regulations. Corrective measures. Regulatory by laws. Regimen of minimum distances. Application. Hygienic and sanitary conditions.

Epidemiology: Impact of waste management on health. Environmental impact of waste management. Details of processes.

Inspection of waste management systems: Collection and transportation of municipal, industrial and other waste. Identification of inspection points. Identifying types of waste. Identification of the type of process to be used to manage the waste. Collection of data on management. Assessment of the results on management.

Inspection of treatment systems: Identification of inspection points. Identification of the treatment process. Identification of selection techniques. Collection of data on the treatment system. Assessment of results.

Detection/inspection of controlled dumps for different types of waste: Identification of the site. Identification of the type of waste that has been deposited. Evaluation of the controlled waste dump. Identification of the hazard index. Data relationships. Sampling, if applicable. Pictures. Information to superiors and/or competent bodies.

Legal procedure for inspection of private places and sampling:

Identification of protocol for action. Identification of legal requirements for carrying out the procedure. Record of proceedings. Sampling of toxic and hazardous municipal waste. Identification of relevant sampling points. Identification of equipment required. Application of regulations and measures of implementation. Application of regulations for storage and transportation. Respect for health, environment and work safety: Consideration for one's own health and that of others in the handling and disposal of samples and laboratory products. Consideration of the effects of municipal waste discharges, of unknown toxicity, on health and the environment and of the interaction with nature.

Private training and tools on healthcare waste management:

Besides the above mentioned VET programmes, there is an available offer on private centres related to healthcare waste management.

Grupo EGS Sanidad

On line training course

Duration: 100 hours

Programme:

- Introduction
- Legislation
- Terms and definitions
- Healthcare Centres
- Classification of HC waste management
- Intra-centre management
- Responsibilities in HC waste management
- Extra-centre management

It provides a certificate from the Universidad Pública Rey Juan Carlos.

VANDER Formación

On line training course

Duration: 200 hours

Programme:

Healthcare waste management

- Introduction and basic concepts
- Introduction
- Types of waste management
- Terms and definitions
- What we have learned
- Test

Classification of waste

- Introduction
- Non hazardous waste. Group I: Waste assimilable to urban waste
- Non hazardous waste. Group II: Non specific HC waste
- Hazardous waste
- Group III: Hazardous HC waste
- Group IV: Waste considered under specific legislation
- Group IV: Waste under specific legislation: Cytostatic and Cytotoxic waste
- Group IV: Waste under specific legislation: Chemical waste.
- Group IV: Waste under specific legislation: Radioactive waste
- Group IV: Waste under specific legislation. Hazardous waste different from those generated specifically by the healthcare activities.
- What we have learned
- Test

Waste management in healthcare centres

- Introduction
- Waste minimization
- Segregation and packaging
- Collection and internal transportation: Intra-centre management
- Evacuation to external waste companies: Extra-centre management
- What we have learned
- Test

Healthcare activities and the environment

- Projects related to environmental health
- Sustainable hospitals
- Air control in hospitals
- What we have learned
- Test

Environmental awareness

- Introduction to environment
- Depletion of the environment
- Pollution
- Air pollution
- Waste
- The nearest environment: the city
- The reaction from the public administration
- The reaction from the community
- The individual reaction
- Some information about environmental legislation
- What we have learned
- Test

Centro IIR España

On line training course

Duration: 50 hours

Programme:

- Types of waste
- Waste legislation
- Waste management
- Integrated waste management systems
- Hazardous waste
- Solid urban waste
- Industrial waste
- Waste from agriculture, forest management and livestock
- Healthcare waste
- Waste sampling.

The course provides a certificate: Waste production and management. Issued by IIR e-Learning and Bureau Veritas Formación (the training area of a certification body).

INESEM Formación Continua

On line training course

Duration: 300 hours

Programme (issues related to waste):

MÓDULO II. Waste management. Healthcare waste management at regional level.

- General aspects
- HC waste management in Andalucía
- HC waste management in Aragón
- HC waste management in Canary Islands
- HC waste management in Cantabria
- HC waste management in Castilla y León
- HC waste management in Catalonia
- HC waste management in Extremadura
- HC waste management in Galicia
- HC waste management in la Rioja
- HC waste management in Madrid
- HC waste management in Navarra
- HC waste management in Comunidad Valenciana
- HC waste management in the Basque Country

Double certificate issued by EUROINNOVA BUSINESS SCHOOL and supported by the Escuela Superior de Cualificaciones Profesionales.

7 CONCLUSIONS

There's no specific curricula and **VET programme** for healthcare waste management in Spain.

The public offer of training in medical waste management in Spain comprises integrated and auxiliary courses in some of the vocational training programmes in the field of healthcare, the Advanced Vocational Training programme in Environmental Health (LOGSE) being the programme that addresses these issues in greater depth and specificity.

Even if the basic VET programme includes healthcare waste management, training is not homogeneous as the number of training hours is not strictly determined and the contents and dedication can vary depending on the training institute and the teacher. Teachers with more knowledge and experience in this issue are likely to dedicate more time and work deeply on waste management.

Another aspect that influences the training on HC waste management is related to the availability of training tools and materials. Teachers that have access to good and practical tools have a better capacity to design their classes and their assessment tools.

Some training tools have been developed mainly manuals and guides but there's a lack of interactive tools and more dynamic training kits. Teachers do not have access to a specific centralised tool kit.

Besides the VET programmes for the healthcare sector, there's a limited offer through private education, especially online and distance courses, meaning that professionals responsible for waste management in hospitals currently have to complete their training in the private sector, with distance learning options being available in most cases.

Even if Spain has a decentralised educational system, all the VET programmes are recognised in the whole country, so professionals do not have any formal difficulties in mobility across the country. Although, certain obstacles can arise in relation to the legal and operational aspects of healthcare waste management as it varies from region to region.

The complexity of the **environmental legal framework** in Spain underlines the necessity to adapt training programmes taking into account specific needs related to the legal aspects and to the authorities control and inspection procedures.

The Ministry of Agriculture, Feeding and Environment has an internal working group specifically dedicated to the healthcare waste to which all representatives of healthcare waste from the regional authorities participate.

Within the working group and individually some of the regional waste authorities are considering:

- To develop a manual on healthcare waste management
- To review the legislation (the main legal act at state level dates back to 1998)

- To define common elements across all the regions in order to have a basic and improved framework based on the experiences of each region.

8 RECOMMENDATIONS

After the study and the assessment of the current status in the VET in Spain, the team has reached the following recommendations:

1. The project should consider the opportunity to create a toolkit and a **library of available training materials** in different languages.
2. Training materials should consider **dynamic and interactive tools** such as videos, schemes, on-line tests and exercises, in order to facilitate the training process and to increase its results.
3. In order to overcome potential language barriers, training tools developed within the project should consider the opportunity to use **visual supports** that can be easily adopted in any training course across Europe.
4. The training programme could also include interviews to healthcare waste managers in **front runner** healthcare centres in order to share good environmental practices and practical knowledge. This could also make the training programme more attractive to potential participants.
5. Training materials should consider information about the **intra-centre waste management as well as the extra-centre management** and provide information about how is healthcare waste managed at the final destination as usually people do not have access to this information and to the treatment plants.
6. Besides the creation of a specific VET programme for the healthcare waste manager that could be too long due to the fact that the VET programmes in Spain require about 1400-2000 hours, the project should consider the development of a **shorter but specific training programme with didactic modules adapted to each of the healthcare professional profiles** so that it can be included in the current curricula.
7. The training programme should intensively work on **waste prevention** as it is the first level in the waste management hierarchy in the legal framework and as it can positively influence an environmental aware attitude in the healthcare personnel and it also positively affects the environmental and economic results of the healthcare centre.
8. The training **should consider the different levels of healthcare professionals** and be able to reach all the levels. At certain levels of professional development personnel is reluctant to accept that waste management is part of their responsibility thus relegating the task to the cleaning staff, nursing staff and the healthcare waste manager.

A wide approach should be developed as the healthcare waste manager will need to be able to involve all the areas and the maximum of staff in order to really improve the management of healthcare waste. Specific training tools should be available for the HC waste manager in order to facilitate his work.