

# **Developing an EU Standardised Approach to Vocational Qualifications in Healthcare Waste Management**

T. Manoloudis<sup>1</sup>, L. Karagiannidis<sup>1</sup>, S.Crossett<sup>2</sup>, J.Peer<sup>2</sup>,

<sup>1</sup>Sigma Consultants Ltd, 10 P. Ioakim St., Thessaloniki, Central Macedonia, 54622, Greece

<sup>2</sup>ICERMS Limited, 5 Station Road, Fairlie, Ayrshire, KA29 0DX, Scotland – United Kingdom

**Corresponding authors:** A.Manoloudis@sigmaconsultants.gr

## **ABSTRACT**

In regard to healthcare waste management, the EU presents a diversity of approaches to the practicalities of the waste management itself within healthcare institutions as well as in regard to vocational educational training in the sector. There are a number of different systems employed in healthcare facilities to manage the healthcare waste and there are a number of different technology suppliers and manufacturers supplying new technologies for consideration by healthcare waste managers. There are also differences in how different EU member states manage waste arising from healthcare facilities with some preferring to encourage on site treatment of the waste while other specifically preclude on site treatment of the wastes. In this latter regard more and more healthcare facilities are sub- contracting the waste to the private sector through public private partnership arrangements. It is imperative therefore that we have close co-operation with all key stakeholders in the EU to ensure that any occupational standard developed by the project addresses the variety of issues relevant to a modern EU wide healthcare delivery service.

The “Developing an EU Standardised Approach to Vocational Qualifications in Healthcare Waste Management” (EU-HCWM) project aims to provide a unified approach to the development of National Occupational Standards (NOS) and Vocational Educational Training (VET) Programmes for Healthcare Waste Management (HCWM) across EU Member States, through the development of a new healthcare waste management qualification framework, and e-learning platform. The project is elaborated within 11 EU countries. In each participating country surveys were carried out among healthcare waste managers and healthcare providers as well as a strong representation from vocational education training to obtain first-hand data on the work requirements and qualifications as well as the VET systems for healthcare waste managers. Based on the results of the surveys and direct contacts with the staff of operating healthcare facilities in the 11 EU countries, EU-HCWM project has developed a suite of 28 vocational training units to cover a range of activities normally associated with delivery of healthcare waste management. These units are based on a set of 28 National Occupational Standards.

The new qualification framework developed during the project duration, will enable the EU labour force in the sector to gain a standardised set of skills regardless of the member state in which they undertook the vocational training programme. This will ensure that future health-care waste managers will have genuine EU educational currency and therefore enabling greater mobility within the EU for this specific labour force.

*Keywords: Healthcare Waste, Management, Facilities, Managers, Qualifications Framework, Vocational Training.*

## **1. INTRODUCTION**

Currently there is no unified approach to healthcare waste management NOS and VET across the EU Member States. Different member states have differing approaches to this subject area and some of these approaches are linked to waste management site permitting and inspection regulations however there is a lack of VET in regard to healthcare waste management within the healthcare facility and most member states are focused on the activities in the waste management industry and outwith healthcare facility.

In order to underpin the work done at waste management facilities for the treatment and disposal of healthcare waste it is imperative that the healthcare facility producing that waste adopts high standards of waste management particularly in areas of waste segregation. Even in what are considered technically advanced member states the issue of healthcare waste management is still a challenging area within the overall field of waste management.

In a fact sheet (World Health Organisation, 2004) stated that – “To reduce the burden of disease, health-care waste needs sound management, including alternatives to incineration”. This challenge was also reflected in a Pan European Market Insight report (Frost & Sullivan, 2010) where they reflected on the different paces of development of the healthcare waste management sector within the EU Blok. There was a trend whereby hospitals were subcontracting the waste management function to larger waste management industry players who had the ability to invest in the technology and equipment to manage this function as an external service provider.

This trend further distances the hospital itself from the waste it produces and it is imperative that the hospital has a qualified waste manager to provide a credible interface with the industry partner. This is a two way communication process and the industry sector also needs a credible partner at the healthcare facility in order to ensure that the system operates effectively and safely between both parties.

EU-HCWM project covers this gap by developing a common professional qualification framework in line with the directions of the EU educational and training policies. The outcome is a range of standardized profiles suitable for the different levels of HCWM qualifications.

## **2. THE EUROPEAN SURVEY**

A survey, in 11 European countries (Albania, Austria, Belgium, FYROM, Germany, Greece, Italy, Poland, Slovenia, Spain and the UK), was carried out among healthcare waste managers and healthcare providers, respective business associations and authorities and training organizations to obtain first-hand data on the work requirements and qualifications as well as the vocational training courses provided to healthcare waste management.

The purpose of the questionnaire was to gather information about the post and role of a healthcare waste manager as well as a set of draft unit titles for an award in healthcare waste management and treatment. There were two distinct outputs expected from this process. Firstly, it was to learn from current waste managers what their job roles entailed, how they got these jobs and what qualifications and skills they had which made them candidates for the post of healthcare waste manager.

Secondly, it was to get their collective opinions on a draft list of units which would make up the new award on healthcare waste management and treatment. In addition, they were also invited at this point to suggest additional titles which they thought would be better suited to their job roles. The project team could then create a benchmark for the person specification fulfilling the role of healthcare waste manager and also the job specification for the role.

## **3. THE COMPARISON REPORT**

Based on the European survey findings, a comparison report was synthesized. The comparison report examined three distinct aspects of the healthcare systems in each of the partner member states:

- Overview of the Healthcare Systems
- Overview of the Healthcare Waste Management Legislation and Practices
- Overview of Skills, Competencies and Training of involved Personnel in Healthcare Waste Management

In all cases examined the partner member states have a system of healthcare provision which to a greater or lesser extent is a blend between State provision and Private sector provision.

In terms of the provision of healthcare waste management services then there is a similar situation whereby healthcare waste management service are either provided directly by the State or there is a sub contraction to the private waste management companies for the provision of waste management services.

This private sector provision is either on the basis of waste type, by individual hospital or on a health board/regional basis depending on the member state agreements on provision of waste management services to the state sectors.

It is clear however is that, in terms of legislation and practice, all of the partner member states are working to national interpretations of EU waste legislation and practices of segregation which share, at least in principle, similar core foundations. This ensures that on a very basic level that non-hazardous and hazardous waste arising from the healthcare sector are segregated at source to minimise risk to health and the environment.

In regard to vocational training and education in the sector there is a significant difference across the member states participating in the assessment process. In some cases there is a defined formal route for VET in HCWM, in others there is a less formal route and lastly there are cases where there is no VET for healthcare waste managers.

There is therefore an opportunity through EU-HCWM to develop a unified and formal approach to VET in the healthcare waste management sector.

#### 4. THE HEALTHCARE WASTE MANAGEMENT QUALIFICATIONS FRAMEWORK

EU-HCWM project has developed a suite of 28 vocational training units to cover a range of activities normally associated with delivery of healthcare waste management. These units are based on a set of 28 National Occupational Standards.

These units can be undertaken in 3 distinct pathways depending on the job role of the candidate. All of the units are underpinned by either practical exercises or question and answer sheets to ensure that the candidate demonstrates competence in the unit being undertaken. All of the training materials will be included in the training manual.

The manual has four basic sections to assist the trainer in delivering the course programme:

- Structure of the Awards in a Unit Context
- Assessment Guidance for the Qualification
- Methodology for the Delivery of the Awards
- Course Programme

It is important to allocate enough time for the award delivery and to ensure that sufficient emphasis is placed on the practical tasks and site visits. The trainer should take the approach that where appropriate candidates are placed in small teams to encourage discussion and team building. To achieve the full qualification, candidates must complete all Mandatory Units outlined in the chosen pathway.

**Figure 1:** The EU-HCWM developed 28 vocational training units with delivery of healthcare waste management

Unit No.	Unit Title
1	Complying with Waste Management Legislation
2	Understanding Waste Management in the Environmental Management System
3	Contribute to the selection of personnel for activities
4	Create effective working relationships
5	Conducting an Internal waste management audit and pre-acceptance auditing at a healthcare facility
6	Ensure protection of the environment at healthcare facilities, treatment or transport operations
7	Developing Healthcare Waste Management Policy and Plan Documents
8	Climate Change Adaptation Auditing & Reporting at a Healthcare Facility
9	Manage a budget to Supporting the efficient use of resources
10	Contribute to the development of tender/bid documentation, selection of, implement and manage, sub contracted services
11	Preparing for and Delivering In-house Healthcare Waste Management Training
12	Implementing a Waste Management Plan, Record Keeping and Reporting
13	Implementing a Waste Minimisation Programme, including the sorting and storage of recycled materials, at a healthcare facility
14	Injection Safety
15	Sharps Waste Management and Biosecurity at a Healthcare Facility (unit merged)
16	Manage the collection of hazardous and non-hazardous waste from a healthcare facility
17	Manage the movement, sorting and storage of hazardous and non-hazardous waste
18	Manage improvements to waste management operations/practices at a healthcare facility, treatment centre or transport operations
19	Effectively Manage Environmental Incidents and Emergencies
20	Monitor the procedures to control risks to health and safety of the waste management function at a healthcare facility/healthcare treatment facility
21	Managing Waste Transportation operations for the transfer of hazardous and non- hazardous healthcare waste at a healthcare facility (Dangerous Goods Safety Adviser)
22	Review the performance of teams and individuals
23	Prepare an Installation with an Environment Permit for an Inspection Visit (Permit Holder)
24	Monitor the procedures to control risks to health and safety during healthcare waste transport operations
25	Manage the reception of infectious wastes at a healthcare waste treatment facility
26	Manage site operations for the treatment of infectious healthcare waste at a healthcare facility
27	Manage the disposal of outputs and residues from infectious healthcare waste treatment operations or, healthcare waste transfer operations, at a healthcare facility
28	Manage maintenance and other engineering operations at a healthcare facility, infectious healthcare waste treatment facility or during healthcare waste transport operations

#### 4.1. Structure of the Awards in a Unit Pathway Context

Achievement of the qualification demonstrates competence by the learner to operate appropriately and in accordance with employment requirements as determined by the units selected, within the Healthcare Waste Management Industry.

The qualification is assessed 'on-the-job' at a suitable facility, or a number of suitable facilities. The qualification is designed for those working in the field of the delivery of Healthcare Waste Management services, and covers a range of activities, including; environmental protection, risk assessments, waste treatment, health & safety, climate change adaptation, legislative compliance, etc. The award has been split into pathways to suit different requirements, and can be achieved on a unit by unit basis, or as individual units are accredited.

The three suggested pathways are as follows:

- Pathway 1: Managing Healthcare Waste at a Healthcare Facility
- Pathway 2: Managing Healthcare Waste treatment Operations – Infectious Waste
- Pathway 3: Managing Healthcare Waste Transport Operations

The suite of award units, shown in Figure 1, have been designed to meet the needs of waste management professionals working in the healthcare sector. The suite of awards can be undertaken following a set number of recognised pathways. These pathways reflect key roles in the waste management function within the healthcare sector. The units comprising the award pathways have been designed as management units, and should be undertaken by persons working in management or supervisory capacities.

#### 4.2. Assessment Guidance

This award will be a formal qualification and will ONLY be delivered by vocational training centres registered with the National Qualification Authority. In this regard the centre must have the following personnel capable of delivering the training programme and in line with the requirements of the National Qualification Authority guidelines on vocational training centres and vocational qualification delivery:

- Internal Verifier

An Internal Verifier is the person within the centre that internally verifies the decisions made by the assessors at the centre. Internal Verifiers must be qualified in line with National requirements.

- Assessor

The Assessor is the person at the centre who assesses the competence of the candidates undertaking vocational qualifications through the centre. Assessors must be qualified in line with National requirements.

- Trainer

The trainer is the person at the centre who is providing the candidates with the training programme which underpins the formal qualification. Trainers must be approved by the competent authority.

The vocational centre MUST be the subject of annual external verifications by the National Qualification Authority. The types of assessment methods used can vary, depending on a number of factors. Ultimately, it will be left at the discretion of the assessor to determine which assessment method to assess competence in any given situation.

#### 4.3. Training Course Programme

The structure of the training course has been outlined below (Figure 2). There are 28 Units in the suite and these are underpinned by 56 Power Point modules which contain embedded exercises and which also have associated tasks.

Candidates are expected to provide evidence from their workplace to support their attainment of competence. A suggested list of such evidence is outlined in the last column of the table. Product evidence provided by the

candidate must meet the requirements laid out within the assessment strategy developed for the delivery of the units.

The concept of vocational training infers that the candidate is assessed at their place of work and in this regard the trainer or assessor delivering the training has a number of options in relation to this assessment process. In the last column of the table a number of possible assessment methods have been proposed for the assessment of the candidate undertaking the specific unit.

Figure 2 illustrates an example of the structure of the training course of a technical management qualification for complying with waste management and Environmental legislation.

**Figure 1:** A matrix for complying with waste management and Environmental legislation

UNIT	TOPIC	Power Point Modules	Practical Exercises & Evidence List
1	Complying with Waste Management and Environmental Legislation	Mod01 – Unit Overview  Mod02 – Complying with Waste Management Legislation	<b>PE1</b> <i>Draft a list environmental legislation relevant to the activities at your facility or for your operations</i> <b>Questions and Answers</b> <b>Practical Exercise</b> <b>Product Evidence</b> <b>Observation</b> <b>Photographic/Film</b> Schedule of Environment/Waste Legislation Licence or Permits Regulatory Inspections

It is anticipated, that the developed qualification framework will contribute to a wider understanding of the roles, responsibilities, activities and tasks required by healthcare waste managers in order to effectively and sustainably manage different healthcare waste facilities.

#### 4.4. Course Delivery Methodology

As a consequence of the 3 different pathways the time required to deliver the units in those pathways varies enormously. If however the candidate group is to undertake all 28 units then it is suggested that this be done in a 28 week time frame with a gap of perhaps a week between units. This will give the candidates time to gather evidence from the workplace relevant to the unit. Overall however candidates should take between 6 and 15 months to complete the course depending on the time they allocate OR which is allocated to them by their employer to complete the course.

All of the materials for the course are available on the attached DVD and the course consists of the following training materials:

- 56 Modules in Power Point Format
- Set of Question and Answer Sheets
- Set of Practical Exercises
- List of Training Support Documentation

## 5. CONCLUSION

Some member states have systems or part systems in place in a vocational training framework while others have nothing in place at all. This has ramifications for the labour force in the EU and it means that a section of that labour force is missing out on the opportunity to acquire essential skills in a dynamic sector within the overall environment or waste industry in the EU.

In addition and in relation to healthcare waste management from a regulatory point of view, different member states have different entities responsible for the management of healthcare waste in hospitals and the healthcare waste manager needs to be aware of the importance of these different interfaces in the system.

In order for this initiative to be implemented on a sustainable footing, it is imperative that the key EU stakeholders agree on the basis of the national occupational standard and agree on the relevance of the underpinning training materials and vocational qualification(s) for healthcare waste managers. The project has included a cross section of partners and has tried to include as far as possible partners who have a pan European approach to this subject area.

The research and development of the new proposed professional qualifications for HCWMs and the promotion of the new proposed VET courses for the training of staff working in the field of Healthcare Waste Management were fully related to the general innovative perspectives and final results of the EU-HCWM project aiming to the creation of new job positions, the strengthening of healthcare waste facilities' environmental performance and sustainable development.

The importance of bringing together the industry users with the service providers was integral, in terms of the approach to the long term sustainability of the project outputs and the multiplier effect of the inclusion of the pan European associations and federations was also a crucial factor in the consideration of the project outputs and their sustainability.

It was also important to ensure that existing systems of VET and NOS's developed in the sector by EU member states were not ignored, and the development of the 3 year implementation plan specifically taking cognisance of existing systems and products was key to the synergy between existing and new systems, thus facilitating greater sustainability in the project outputs.

In addition it is important to note that for many of the partners in the consortium, the delivery of training programmes in the sector is a core business activity and this new award framework will be seen as another opportunity for them in the sector. This is a marketing opportunity and through the current project partnerships they have an established relationship with the customer via the pan European networks established through the project initiative.

It is expected that the project partnerships will last and that project outputs will continue to be promoted by the waste and healthcare industries and that they will continue therefore to be delivered by the VET providers.

The establishment and maintenance of national networks in regard to the project initiatives will no doubt serve to further strengthen those links and promote the project products.

## **6. ACKNOWLEDGEMENTS**

This research has received funding in the framework of Lifelong Learning Programme under the action of LEONARDO DA VINCI Multilateral Projects for Development of innovation (541982-LLP-1-2013-1-UK-LEONARDO-LNW) under Grant Agreement No. 2013 - 4928 / 001 - 001, Project Acronym: EU-HCWM, Project Full Title: “Developing an EU Standardised approach to Vocational Educational Training Awards in Healthcare Waste Management”, Project Duration: 2014-2016.

## **7. REFERENCES**

Frost & Sullivan (2010) Pan European Market Insight report: “Is Health Recession Proof? - An Analysis of Status of Healthcare Industry in Some Developed Nations” <http://www.frost.com> (May 27, 2015).

World Health Organisation (2004) WHO Fact sheet No. 281. “To reduce the burden of disease, health-care waste needs sound management, including alternatives to incineration”  
<http://www.who.int/mediacentre/factsheets/fs281/en/index.html> (May 27, 2015).