ISWA Guidelines on Training Strategies for Healthcare Waste Management

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## Table of Contents

- **Introduction** .................................................................................................................................................. 2
- **Objectives of the HCW Training System** ........................................................................................................ 3
- **Key Stakeholders for HCW** ............................................................................................................................. 4
- **Needs analysis – training** ................................................................................................................................. 5
  - Typical Functions to be trained ........................................................................................................................... 5
- **Sample HCW Training System** .......................................................................................................................... 8
  - The training system at the generator level .......................................................................................................... 8
  - Training System based on the service level of the healthcare facility .............................................................. 10
  - The training system at service provider level ..................................................................................................... 11
  - The training system at supervision level ............................................................................................................ 12
- **Sustainability, Quality Control and Continuing Professional Development (CPD)** ........................................ 14
- **Quality Control and Continuing Professional Development** .......................................................................... 14
- **Conclusion – HCW Training System** ................................................................................................................. 16
Introduction

A high awareness of risks and issues associated with healthcare waste and up to date knowledge on how to manage healthcare waste from the point of generation until final treatment and disposal is key for successful and sustainable healthcare waste management.

The starting point for improvement is raising the awareness of the issues to be managed among the legislative, executive and judiciary authorities in a county. Of special importance is a good understanding and acceptance of the issues among the stakeholders of the healthcare system and directors of healthcare facilities. Sufficient knowledge among the healthcare staff on how to effectively manage healthcare waste is needed, however the supervising and monitoring authorities must be specially trained. To be able to fulfil all responsibilities in a healthcare facility, at least one person (preferably two) should be fully trained on healthcare waste management (HCWM) tasks, how to implement a safe management system and also how to undertake proper measures in case of incidents or crisis. Therefore, the aim of this strategy is to set up sustainable training which includes all sectors and areas.
Objectives of the HCW Training System

The overall objective should be to create a strategy to build capacity on healthcare waste among all involved sectors and should take into consideration three axes (dimensions):

x. The service level of the healthcare facility (primary, secondary, tertiary level)

y. The logistics chain (cradle to grave)

z. The monitoring function (supervision, operation, inspection)

The principle objective should be to create a strategy and framework for an enduring and sustainable training system on healthcare waste based on the “Healthcare Waste Officer (HWO)” and “Healthcare Waste Inspector (HWI)” principle. A secondary objective should be to set up a strategy which takes into consideration the training needs of different types of healthcare facilities located in the specific country.

The target of the training system shall be to have trainees capable of planning, setting up and operating a sufficient management system in their respective healthcare facilities. This shall include the training of colleagues in HCW, the implementation of an occupational exposure response system and the monitoring and supervision of all activities related to healthcare waste management.

Another target is to strengthen the monitoring system for HCW by training responsible inspectors from the health as well as the environmental side on HCW management systems.

The need for training often exists to meet the requirements of the regulations and also due to accreditation standards. Most international accreditation standards require that: hospitals must prepare a plan for the safe management of waste; must implement this plan; must train all relevant staff in their responsibilities regarding waste management and must collect and analyse data to determine the effectiveness of their plans.
Key Stakeholders for HCW

In order to have a successful implementation of a HCW system, the following organisations shall be included in the training and training system:

► Ministry of Health, Ministry of Environment, Ministry of Agriculture;

• State Specialized Inspection Agencies (inspection agencies within the responsible Ministries);

• Public Health Institutes;

► Healthcare waste producers (Public and private hospitals, laboratories, pharmacies, medical supply, etc.);

► Waste transporters and Operators of treatment plants and disposal facilities

► Training institutions

• E.g. School of Public Health, Nursing Schools

• Universities (Health, Science and Technology)

• NGO, INGO, Donor organization

► Other stakeholders involved in the development and implementation of the National Healthcare Waste Management Strategy,

In order to develop a training system, a close cooperation of the Ministry of Health (or governing body in the particular country) with the other organisations will be needed. The setup of a working group, especially for the development of the training curricula, is recommended.
Needs analysis – training

The setup of healthcare waste systems in different countries demonstrated that just training a hospital officer will not be sufficient. For a lasting and comprehensive solution, it will be required to access the training needs of three key-sectors:

1. Waste generation (especially healthcare facilities but also minor HCW generators)
2. Waste Service Provider (Waste hauler, treatment plant operators, etc.)
3. Inspection (responsible governmental oversight unit)
Typical Functions to be trained

It is recommended to set up a training system which will allow the training for the following positions:

1. Master Trainer (MT)

The MT should have relevant trainer experience and hold a bachelor or master’s degree in public health, environment, hygiene or comparable. (S)he shall be responsible for training of trainers (healthcare waste officers / managers) in cooperation with HCW experts and for training of trainers-to-be (Healthcare waste technicians) from primary healthcare facilities. The MT shall also be able to provide HWI training for the relevant inspecting agencies and shall be able to support waste carriers in the training of their staff based on the UN requirements for the transport of hazardous goods on roads. MT could be governmental staff, external consultants or other highly professional persons.

2. Healthcare Waste Technician, Officer, Manager (HWT/O/M)

The HWT/O/M will be an employee of the waste generator side (primary, secondary, tertiary healthcare facilities). HWT/O/M will be responsible for HCW management in their facilities. It is recommended that participants will receive education credits towards a degree in their respective country based upon educational requirements.

3. Healthcare Waste Inspectors (HWI)

The HWI will be a government employee (i.e., national, regional or provincial inspection agency) who has to monitor healthcare facilities. They will follow a general HCW training programme and will be trained in methods to monitor healthcare waste facilities.

4. Healthcare waste carriers (HWC)

Healthcare facilities or companies which have the task to collect and transport hazardous healthcare waste shall employ drivers who are trained in the transport of hazardous goods on public roads.

5. Treatment Plant Operator (TPO)

The treatment of healthcare waste shall only be carried out by trained operators. It is recommended that operators shall participate in a training course, covering aspects on the operation of treatment plants, maintenance, monitoring systems, and on all aspects of occupational health and safety.
External Support

HCW Master Trainer (Capacity Building)

train

HWT
(Soum / Health C. Facilities)

train

Staff of own Healthcare Facilities

HWO
(Almag / Distr. Hospitals)

train

Staff of own Healthcare Facilities

HWM
(Large Hospitals)

train

Staff of own Healthcare Facilities

HWI
(Government Inspect. Agency)

train

Staff of own Healthcare Facilities

Monitoring / Supervision

HWC
(Healthcare Waste Carriers)

TPO
(Treatment Plant Operator)
Sample HCW Training System

The training system at the generator level

The efficient management of HCW starts at the source, at the generation point. Also risks from healthcare waste are typically highest during generation and initial segregation. Accordingly, the highest training demands exist at this level.

Awareness Raising at the Managerial Level

Successful HCW management systems depend on the full support from the management level. In order to raise awareness of healthcare waste problems and to secure the necessary financing, it is necessary to carry out strategy and awareness raising workshops for healthcare facility managers. When organising workshops, the service level of the respective healthcare facility shall be taken into consideration.

HCW Training Strategy – at facility level

An internationally proven and cost-effective method for implementing HCW management systems in healthcare facilities is the creation of a position of a person responsible for HCW who will be officially appointed by the director of the healthcare facility. The person shall be personally and legally responsible for the implementation and operation of the new HCW system. This person is the strategic head for HCW in the facility. (S)he is responsible for the supervision of the waste management system, for the introduction of new waste management methods and for the training of hospital staff (in-house training). Typically, the person responsible for HCW is an employee of the technical department, the housekeeping department, or has an infection prevention background. The main tasks of the person responsible for HCW have been summarised below (please note these are just some of the main tasks and is not an exhaustive list):

1. Information and Motivation:
   - Informing stakeholders, staff, patients and the public about HCW management activities in hospitals
   - Carrying out HCW training and awareness raising programmes in institutions
   - Ongoing sensitisation and motivation of hospital staff to appropriately manage HCW

2. Initiative and Innovation:
   - Driver for new and better waste management and treatment methods
• Provide recommendations and advice on purchasing of environmentally-sound disposables and investment goods

• Introduction of environmentally sound procedures, replacement of disposables, reduction in the use of mercury, collection of recyclable waste, etc.

3. Monitoring and Supervision:

• Supervision of the internal waste logistics including segregation, collection, storage and disposal

• Supervision of the supply of waste collection materials

• Monitoring environmental training in the hospital

4. Reporting and Documentation:

• Reporting on accidents and incidents related to HCW

• Documenting waste activities in an institution, setting up of waste balance sheets and waste stream analysis

• Carrying out waste audits in compliance with local policy and national legislation

5. Operational waste management:

• Organisation and management of daily waste collection services

• Responsibility for setting up and carrying out waste collection schemes

• Responsibility for safe treatment and disposal of collected HCW

While for smaller facilities often one trained person in HCW can be sufficient and can perform the described work on a part time basis, it is recommended for secondary and tertiary healthcare facilities to delegate the tasks to at least two individuals. Whilst the first person is responsible for the operational aspects of healthcare waste management (task 4 and task 5) and is from the technical department or the housekeeping, the second person is typically responsible for monitoring and training (task 1 and task 3) and may also be part of the infection control committee. The cooperation between the two functions is illustrated further in the following diagram:
Training System based on the service level of the healthcare facility

Depending on the size and the service level, healthcare facilities generate a different range of HCW streams that need to be managed. While practitioners typically only generate small amounts of domestic waste and minimal amounts of hazardous waste (mainly sharps), primary level healthcare facilities such as clinics generate more domestic waste and some amounts of hazardous waste (infectious waste, sharps, heavy metal waste and certain chemical waste streams). Secondary level hospitals generate significant amounts of domestic waste and hazardous waste (e.g. district hospitals) and tertiary level hospitals (e.g. regional treatment and diagnostic centres, specialized centres and University hospitals) generate between 50-75 different types of hazardous waste streams, including waste streams difficult to manage such as cytotoxic or radio-active waste.

The complexity of disposal logistics systems differs between the service levels of healthcare facilities. As the services offered become more complex so do the associated wastes. It is recommended that the demands relating to the qualification of the person responsible for HCW are adapted to meet real needs. A recommended training system which can serve three levels of healthcare facilities (primary, secondary and tertiary level) should be set up. Depending on the level of the hospital, the training duration and content should be adjusted.
The following system is recommended:

- **Primary level healthcare facilities**
  - Education level: Basic knowledge in HCW Management
  - Certification: Healthcare Waste Technician (HWT)
  - Estimated duration\(^1\) of training: 1 day

- **Secondary level healthcare facilities (District Hospitals, 2 person)**
  - Education level: General knowledge in HCW Management
  - Certification: Healthcare Waste Officer
  - Estimated duration of training: 3 days (+1 day HWT training)

- **Tertiary level healthcare facilities (Regional/Special hospital, 2 person)**
  - Education level: Advanced knowledge in HCW Management
  - Certification: Healthcare Waste Manager (HWM)
  - Estimated duration of training: 3 days (+1 day HWT + 3 day HWO)

In order to put pressure on healthcare facilities to send their employees to training sessions to obtain qualification, healthcare institutions should have a clear duty to employ at least one qualified and registered person to be responsible for HCW. This duty shall be prescribed in the national regulations for HCW.

\(^1\) The quality of training is important. Duration of training may vary depending on the type of training methods used.
The training system at service provider level

A good knowledge on healthcare waste, the typical characteristics of the different types of healthcare waste, the risks for the environment and the human health are a pre-condition for the successful operation of any service company for healthcare waste.

For the training of staff responsible for the transport of healthcare waste, the training requirements as outlined in the “Recommendations on the Transport of Dangerous Goods, Model Regulations” New York and Geneva, United Nations, 2013 and/or the ADR, European Agreement concerning the international carriage of dangerous goods by road should be followed. It should be noted that ADR is updated every two years.

**HCW Training Strategy**

The training demand can be divided into three target groups: managerial staff, treatment staff and transport staff.

The managerial staff of a service company will be responsible for the safe operation of the entire system and the required administration and communication with the governmental authorities. Healthcare waste training should include health and safety aspects, legal aspects, document management such as consignment notes and the different treatment methods for the different healthcare waste streams. Of special importance will the training on the legal requirements in regard to transportation, storage, treatment and disposal. The training should also include human resource management and legal requirements in regard to health and safety of staff (vaccination needs, etc.). The total duration of training for managers of healthcare waste treatment plants should be not less than 3 days.

The training of the treatment plant operator can be divided in a general training on healthcare waste which should include training on the general characteristics of healthcare waste, specific risks, emergency response, occupational health and safety and first aid. Additional specific training on the operation of the treatment plant including resolving operational issues should be provided. The typical training should be not less than one day and should be practical oriented.

The training demands for the healthcare waste carriers (truck drivers, etc.) is often legally defined. For example in countries were the ADR has to be followed, the training demand for staff transporting potentially infectious waste (Category B Infectious Waste - UN3291) is divided into the transport of small quantities (< 333 kg gross weight) and major quantities (>333 kg gross weight). For small quantities the training requirements include a general awareness training, a function-specific training which commensurate directly with their duties and safety training. The total training time is approximately one day.
Specific training is required for any driver which transports more than 333 kg gross mass of UN 3291 waste at once in a transport vehicle. This training has to be provided by fully qualified trainers and the training duration and content is fixed (e.g. Basic training is 18 units, each unit 45 minutes). After 5 years, a refresher training of 9 unit’s is required.

During the regular monitoring of healthcare facilities the task of the governmental inspection agencies shall be to check whether the healthcare facilities employ the required HWT/O/M trained and certified in accordance with the level of healthcare facilities.

**The training system at supervision level**

Experiences from different countries show that the training of Inspectors is of special importance to ensure a good monitoring of the healthcare waste stream from the point of generation until its final treatment and disposal. Inspections might be carried out by different authorities e.g. for inspections at generator level, inspections of treatment plants or the inspection of the hazardous waste transportation. Generally the introduction of a risk based inspection system for healthcare waste should be favoured. If an internal monitoring and supervision system is introduced, also the internal inspectors should be adequately trained.

The relevant governmental Inspectors should receive special training on best practice healthcare waste management and the different risks and hazards combined with the different types of healthcare waste. The training duration should be not less than two days and should be divided in one day of theoretical training and one day of practical training (e.g. sample inspection of a treatment plant, shadowing an audit of a healthcare provider).
Sustainability, Quality Control and Continuing Professional Development (CPD)

Sustainability of the system shall be ensured by:

1. Involvement of local training provider

   It is recommended to include, if possible from the very start of the training sessions, a local training provider (e.g. school of public health) who shall be responsible for continuing the developed trainings. All training materials which have been developed shall be handed over to this training provider.

2. List of training requirements:

   a. A waste generator is obliged to employ skilled staff:

      The duty of waste generators to employ skilled and certified staff or to train their own staff shall be included in the national guidelines. Additionally, the job description for these staff shall be included.

   b. Certified staff are obliged to update knowledge

      The duty for the certified staff to regularly participate in training courses shall be included in the national guidelines.

      During the regular monitoring of healthcare facilities the task of the State or Local Inspectorate shall be to check whether the healthcare facilities employ the required HWT/O/M trained and certified in accordance with the level of healthcare facilities.

Quality Control and Continuing Professional Development. After attending the training sessions, each HWT, HWO or HWM trainee should complete a certification examination. After they have successfully passed this exam, the trainees will be provided with a certificate to indicate the level of the knowledge they have achieved. Additionally, the name and details of the successful applicants shall be registered with the Ministry of Public Health & Sanitation or similar. The records shall be kept in accordance with local requirements, a period of at least four years is recommended.

Individuals registering as HWT/O/M, must continue to learn and develop their experience throughout their professional careers. This is necessary to keep up-to-date with legislative requirements and best practice. It is imperative that registered individuals participate in refreshment courses, such as 1 – 2 days at least every two years. After attending this course, the
enrolment in the register shall be automatically prolonged for two years. Register keeping shall be e.g. a task of the Ministry of Health or any other responsible authority.

In addition to continuing professional development it is important that new staff are adequately trained. This should be as soon after they commence work as possible.
Conclusion – HCW Training System

The safe management of healthcare waste requires practical and detailed knowledge. A structured and official training and training system at a national level is required to ensure that staff involved in the different steps of healthcare waste management know what to do and how to react in case of emergencies. The national healthcare waste training system should be officially recognised and the training requirements should be specified. It will be important to include all involved sectors in the national training system and to ensure that official training providers (e.g. public school of health, environmental health institutes, etc.) are available and appointed. If other official training requirements exist which are overlapping with healthcare waste training (e.g. training requirement from ADR), it will be important to integrate these training requirements.

Experiences demonstrate that the cost benefit ratio of healthcare waste training is positive. Strong knowledge on healthcare waste management results in the reduction of hazardous waste streams and in the reduction of occupational accidents.
These Guidelines were prepared by the

**ISWA Working Group on Healthcare Waste**

The Working Group on Healthcare Waste (WGHCW) works on promoting the integrated provision of the infrastructure for the safe management of health care waste world-wide, within the framework of the objectives, activities and means of implementation established by Agenda 21 of the United Nations Conference of the Environment and Development.

For more information about the activities of this working group, please visit www.iswa.org
ISWA – the International Solid Waste Association
is a global, independent and non-profit making association, working in the public interest
to promote and develop sustainable and professional waste management worldwide