



**“Demonstrating and Promoting Best Techniques and Practices for Reducing Health-Care Waste to Avoid Environmental Releases of Dioxins and Mercury”**

**Healthcare Waste Management Planning in the two Model Facilities**

**Task 4**

**Key Performance Indicators**

**June 2011**

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## **1. Objectives**

This report aims at Set Performance standards and indicators to assess the effectiveness of HCWM practices.

## **2. Definition of Performance indicators:**

Performance indicators compare actual conditions with a specific set of reference conditions. They measure the 'distance(s)' between the current environmental situation and the desired situation (target): 'distance to target' assess.(5)

## **3. Why use indicators?**

From the definition of Performance indicators, it can be deduced that they can assist organizations in understanding their environmental status. It could be said that performance indicators are central to evaluation of environmental performance.

Except for the basis function of performance indicators, the indicators have several varieties of functions:

- Illustrate environmental progress over time;
- Detect potentials for optimization;
- Derive and pursue environmental goals;
- Identify market opportunities and cost reduction potentials;
- Evaluate environmental performance between companies;
- Provide data for communication;
- Provide feedback to inform and motivate staff members;
- Provide technical support for the implementation of the Regulations, ISO 14001and Accreditation.

Additionally, most of the environmental indicators can be quantified. This characteristic facilitates the time series analysis of a specific performance. If the indicators can be reviewed systematically, they allow the abnormal state to be detected at an early stage, act as an "early warning system". Therefore, relevant action can be adopted in good time. Thus, not only do environmental indicators provide information for environmental management, they also serve the general management as well.

Furthermore, appropriate indicators can be used for benchmarking within organizations with similar activities. This helps the organizations to detect their weak points. Often, these weak points are not realized or neglected during operations, whereas it may not be difficult to improve.

So, environmental indicators provide an opportunity for organization to optimize their potentials (4-5-6-11).

#### **4. Classifications of Environmental Indicators**

According to ISO14031, indicators for EPE are categorized into two classes: Environmental Performance Indicators (EPIs) and Environmental Condition Indicators (ECIs). EPIs are subdivided into Management Performance Indicators (MPIs) and Operational Performance Indicators (OPIs).

They all rely on whether they describe an organization's environmental impact, the management's environmental activities or the organization's external condition of the environment (5-10-11).

As defined in ISO14031, Operational Performance Indicators (OPIs) are "a type of environmental performance indicator that provides information about the environmental performance of the organization's operations". They focus on tracing the information directly related to the environmental impacts arising from the organization's operations, and can be used to assess and control of environmental impacts. Namely, they allow the management to know what they are accomplishing through their efforts (5-10-11).

Management Performance Indicators (MPIs) are "a type of environmental performance indicator that provides information about management efforts to influence the environmental performance of the organization's operations". They focus on describing the managerial actions that are being taken to minimize the environmental impacts arising from the organization's operations. For example, tracking the environmental spending demonstrates the organization is putting environmental policy into practice. However, MPIs cannot reflect the organizations environmental impacts straightway, because they do not describe the outcomes of the managerial actions (1-2-3-4-6-7-9-10-11).

Environmental Condition Indicators (ECIs) are indicators that "provide information about the local, national or global condition of the environment" (ISO 2000). They focus on describing the quality of the environment surrounding the organization. However, environmental quality is often determined by many factors, and determining environmental condition indicators is costly (5-10).

#### **5. Considerations for selecting indicators for EPE**

- Consistent with the organization's stated environmental policy;
- Relevant and understandable;
- Obtainable in a cost-effective and timely manner;

- Measurable in units appropriate to the environmental performance;
- Able to provide information on current or future trends in environmental performance;
- Responsive and sensitive to changes in the organizations environmental performance (7-8-9-10-11).

#### **6. List of key performance indicators for waste management in the 2 pilot facilities**

Whilst the development of Key Performance Indicators is ongoing and will be reviewed in light of guidance and legislation, initially the following KPIs can be used to measure performance (5-11).

Performance standard	Performance indicator	Unit of measurement	Calculation method	Source of data	Frequency of reporting	Target	Frequency of analysis	Responsible of analysis
Respect of segregation policy	% of clinical waste vs non clinical	%	% of clinical waste/total waste	Waste Management department	Monthly	10-25%(12)	Trimester/unaccepted result	Waste management officer
Respect of segregation policy	Number of sharp injuries occurring during disposal process due to: Recapping & misplacement	Number and %	Number of sharp injuries during disposal process occurring per month per department: -Recapping -Collection	Waste Management department OHS department	Monthly	0	Trimester/unaccepted result	Waste management officer and OHS officer
Respect of segregation policy	Average infectious waste (including sharps and pathological waste) generation rate in kg per occupied bed per day	KG/Bed/Day	Total weight of infectious waste/ total number of occupied bed per day	Waste Management department	Monthly	1(12)	Trimester/unaccepted result	Waste management officer
Respect of segregation policy by department	Average infectious waste (including sharps)	KG/Bed/Day	Total weight of infectious waste by department/	Waste Management department	Monthly	1(12)	Trimester/unaccepted result	Waste management officer

Performance standard	Performance indicator	Unit of measurement	Calculation method	Source of data	Frequency of reporting	Target	Frequency of analysis	Responsible of analysis
	generation rate in kg per occupied bed per day, broken down by department		total number of occupied bed per day by department					
Increase staff's environmental awareness	Average of Training coverage of staff in waste management globally and by category of staff (%)	%	Number of staff received the WM training/Total number of hospital staff per staff category	Waste Management department Human resources department	After WM training sessions	100%	Yearly	Waste management officer and Human resources manager
Quality control of WM training sessions and staff awareness	Average grade of competency tests of waste handlers	%	Total grades of WM competencies tests done by the staff/number of the staff	Waste Management department Human resources department	Yearly	100%	Yearly	Waste management officer and Human resources manager
Stock control of waste equipment	Availability of plastic bags and bins (color coding)	Number	Number of stock depletion of plastic bags and bins (color coding) per month	Waste Management department Purchasing department	Monthly	0	Trimester/ unaccepted result	Waste management officer and purchasing manager

Performance standard	Performance indicator	Unit of measurement	Calculation method	Source of data	Frequency of reporting	Target	Frequency of analysis	Responsible of analysis
Stock control of personal protective equipment	Availability of personal protective equipment	Number	Number of stock depletion of personal protective equipment per month	Waste Management department OHS department	Monthly	0	Trimester/ unaccepted result	Waste management officer and OHS officer
Respect of “declaration of spillage” policy by department and by type of spillage	Frequency of reported spillages by department and by type of spillage	Number/%	Number of reported spillages per month by department and by type of spillage	Waste Management department And OHS department	Monthly		Trimester/ unaccepted result	Waste management officer and OHS officer
Respect of OHS policy	Average of waste management staff vaccinated for Hepatitis B and Tetanus	%	Number of waste management staff vaccinated for Hepatitis B and Tetanus/total number of waste management staff	Waste Management department and OHS officer		100%	Yearly	Waste management officer and OHS officer



Performance standard	Performance indicator	Unit of measurement	Calculation method	Source of data	Frequency of reporting	Target	Frequency of analysis	Responsible of analysis
Respect of collection policy	Average of complaints from the wards concerning full bins and non-respect of ¾ rule	% or number of complaints per day	Number of complaints from the wards concerning full bins/days number per month	Waste Management department and House keeping	Monthly		Trimester	Waste management officer and HK officer
Control of respect of storage policy	Average of storage duration before treatment for the medical wastes	%	Number of non-conformities for storage duration per month	Waste Management department	Monthly	0	Trimester/unaccepted result	Waste management officer
Control of compliance with the recycling policy	Increase the Income from the recycling wastes	%	(Income from recycling waste per type this year minus Income from recycling waste per type for previous year/ Income from recycling waste per type this year)*100	Waste Management department With the financial department	Yearly	It is better to be above zero	Yearly	Waste management officer and financial manager
Respect the	Percentage of	%	(Weight of	Waste	Monthly	< %	Yearly	Waste

Performance standard	Performance indicator	Unit of measurement	Calculation method	Source of data	Frequency of reporting	Target	Frequency of analysis	Responsible of analysis
effort of waste minimization at source	reduction in waste comparing to previous years by waste type		waste by type this year minus weight of waste by type for previous years / Weight of waste by type this year) * 100	Management department		of previous year		management officer
Respect of Waste minimization policy	Percentage reduction of average total waste generation rate in kg per occupied bed per day	%	(Weight of total waste this year per patient per day minus of weight of total waste per patient per day last year/ Weight of total waste this year per patient per day) * 100	Waste Management department	Monthly	2.5-3 (12)	Trimester/ unaccepted result	Waste management officer
Respect of green purchasing policy	Compliance with the green purchasing policy	%	Number of non-conformities purchases/total number of	Waste Management department Purchasing department	Monthly	0%	Trimester/ unaccepted result	Waste management officer and purchasing manager

Performance standard	Performance indicator	Unit of measurement	Calculation method	Source of data	Frequency of reporting	Target	Frequency of analysis	Responsible of analysis
			purchases					
Control of the Financial aspects of health care waste management	-direct costs of supplies and materials used for collection, transport, storage, treatment, disposal, decontamination, and cleaning; -training costs (labor and material); - costs of operation and maintenance of on-site treatment facilities; -costs for contractor services	\$/patient/day or \$/kg of waste	Addition of all types of running costs	Waste Management department With the financial department	Trimester		Yearly	Waste management officer and financial manager
Control of the Financial aspects of health care	Change in HCWM costs across years	%	(Cost of HCWM this year minus cost of HCWM last year/ cost	Waste Management department With the financial	Yearly		Yearly	Waste management officer and financial manager

Performance standard	Performance indicator	Unit of measurement	Calculation method	Source of data	Frequency of reporting	Target	Frequency of analysis	Responsible of analysis
waste management			of HCWM this year) *100	department				

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