



SOP ON COLOR CODING FOR THE DISPOSAL OF HEALTHCARE WASTE







Ministry of Health and Wellness
MAURITIUS

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Approval Form

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STANDARD OPERATING PROCEDURE ON COLOR CODING FOR THE DISPOSAL OF HEALTHCARE WASTE			
	NAME	SIGNATURE	DATE
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PEER REVIEW

Dr. D. Nuckchady (Specialist in Infectious Diseases).

This document was sent for review to the Director of Nursing and to the Chief Hospital Administrator.

This document was reviewed by the IPC teams in October 2023 and no changes were recommended – this version is being extended to 2025.

Date of next review: July 2025

Updates

June 2022

- Red bags will no longer be used for anatomical waste, thereby aligning this protocol with prior guidelines laid out by the Ministry of Health and Wellness.
- Red bags should be used for linen that require rinsing and washing before being sent to an outside cleaning department.
- White bags will be used for linen that do not require washing before being sent to an outside cleaning department.
- The use of green bags is no longer being recommended since most hospitals have not procured them and the green color is generally reserved for recycling purposes.
- Due to some contention, additional clarifications have been added regarding the disposal of some hospital items.
- More information is given about the disposal techniques that are being used in the country and about the washing of laundry.

Version history

Version	Date
Version 1.0: Created	4 July 2021
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Version 2.0: Revised	30 July 2022
Version 2.0: Approved	24 August 2022

Standard Operating Procedure on Color Coding for the Disposal of Healthcare Waste

Introduction

The World Health Organization strongly advises the use of color coding to dispose of healthcare-related waste. Color coding helps to segregate waste which facilitates identification of the contents of each bag and simplifies transport to its respective destination.

Progress since the last version

While healthcare workers are more informed about the importance of triaging waste properly, due to intermittent scarcity of bags of certain color, waste segregation remains inadequate. In addition, green bags have not been bought by most hospitals for the transport of dirty linen, domestic waste is regularly being thrown away in yellow bags, bags that contain dirty laundry have been occasionally sent to the incinerator by mistake (since anatomical waste and linen were both discarded in red bags), and syringes are being disposed of in yellow bags instead of sharps containers due to a scarcity of sharps boxes.

Moreover, it is being observed that:

- (a) Linen is triaged into 3 categories: stained laundry is bleached with hypochlorite and washed manually in cold water before being sent to an external cleaning organization, lab coats and towels are laundered using a washing machine, dried and reused, while other items (such as bed sheets, blankets, pillowcases and aprons) are sent directly to the outside cleaning department (while being bundled, wrapped and tied together in a piece of cloth); of note, the US CDC recommends washing all hospital linen in hot water (with a detergent but without necessarily the presence of a disinfectant although bleach can be used for destaining) to avoid nosocomial infections and it also mentions the inefficacy of dry cleaning alone;^{1,2} and
- (b) ‘Very dirty’ (including items from COVID-19 positive patients) and ‘less dirty’ laundry are often seen being mixed at the linen facility instead of being properly segregated from each other.

After discussing with the external cleaning organization, the Ministry was informed that hospital linen was disinfected with peracetic acid, all hospital laundry was washed in hot water at 55°C to 80°C and sheets were ironed at 175°C to 180°C while body linen was steamed at 100°C to 130°C.

Purpose

Color coding is important in order to identify what sort of waste goes where, without needing to inspect it, which can be dangerous. Different sorts of waste must be treated through separate methods before being destroyed or recycled. In particular, general waste can be disposed of through landfilling, infectious waste

is usually disinfected before being incinerated, autoclaved or microwaved, anatomical waste should be either incinerated or buried deeply underground, and sharps should be contained in puncture-proof containers to avoid needlestick injuries. Special care must be taken when transporting waste that is potentially infectious since it can represent a biohazard.

Emerging technologies for waste disposal include plasma pyrolysis, superheated steam reforming, ozonation, promession, gas phase chemical reduction, base-catalysed decomposition, supercritical water oxidation, sodium reduction, vitrification, Fe-TAML / peroxide treatment, biodegradation, mechanochemical treatment, sonic technology, electrochemical technologies, solvated electron technology, and phytotechnology.⁴

In the public sector of Mauritius, anatomical waste is often incinerated while most other healthcare waste (domestic, infectious and sharps) is buried deeply at 3 to 4 meters underground and embedded in lime at Mare Chicose Landfill & Waste Disposal Site. Since the incinerators at Jawaharlal Nehru Hospital and Brown Sequard Mental Health Care Centre are fully functional, infectious waste and sharps are being incinerated there. Due to complaints from citizens about the dispersion of ashes in the environment and the concerns regarding air pollution, the incinerators at Dr. Abdool Gaffoor Jeetoo Hospital and at Victoria Hospital are not used to their full capacity.

This standard operating procedure (SOP) aims to homogenize the disposal of waste throughout the public healthcare facilities in Mauritius by specifying the color code of bags that should be used. It is outside the scope of this SOP to discuss the management of liquid waste, radioactive waste, pharmaceutical waste, chemical waste, microbiological waste from the laboratory and confidential waste from offices.

Standard operating procedure

Color	Type of waste	Disposal technique
<i>Black</i>	<u>General waste or domestic waste</u> Domestic refuse, packaging, food, newspaper, plastic bottles, paper towels, needle caps and kitchen waste	Landfill or deep burial
<i>Yellow</i>	<u>Infectious or clinical waste</u> Personal protective equipment including gloves, tampons and other sanitary items, bandages, intravenous infusion tubing, waste from isolation areas, bodily fluids, human excrement, liquids from operating theatres, dressings, catheters, colostomy / stoma bags, urine bags, intravenous infusion bags, nasogastric tubes, disposable linen, disposable drainage bags, diapers, gauze, swabs and bottles	Incineration or deep burial

	(including saline pints) that may contain pharmaceutically active products <u>Anatomical waste</u> Human tissue, organs like placenta, amputated body parts, foetus, blood products and histopathological specimens	
<i>Red</i>	<u>Grossly soiled or soaked linen with high microbial load</u> Laundry splashed with blood, stained with urine or vomit, or dirtied with excreta or amniotic fluid	Rinse and clean before sending to the external cleaning department to wash in hot water with detergent
<i>White</i>	<u>Linen without any evidence of obvious stains</u> Laundry that is not stained and does not appear dirty to the naked eye	Send directly to the external cleaning department to wash in hot water with detergent
<i>Sharps container</i>	<u>Sharps</u> Needles, surgical blades, scalpels, glass ampoules, empty vials, razors, stitch cutters, broken glass, syringes and cannulas	Incineration or deep burial

Infusion sets often have sharp and piercing spikes at their ends and should be disposed of in sharps containers.

Although some incinerators have encountered difficulties burning diapers, the latter should ideally be disposed of through incineration since they contain infectious excrement. However, when incineration is not available, deep burial is an alternative.

Even though syringes are not sharps, they are typically disposed of in sharps containers since the needles at their ends should not be removed manually after use (so as to avoid needlestick injuries). Syringes that are not connected to needles can be thrown away in yellow bags.

Data regarding the disposal method of general waste from isolation rooms or flu clinics are lacking; it is often stipulated that such waste can be disinfected or should be stored for a minimum period of time (e.g., 3 days for microbial deactivation) prior to being sent for landfill. Since in Mauritius healthcare waste are not discarded in landfills, general waste from isolation rooms or flu clinics can be placed into black bags.

Linen that is heavily soiled with blood and that will not be washed, can be thrown away in yellow bags.

Bags should be intact and not leaking while being moved. Attendants who are disposing of infected waste should wear thick rubber gloves and gowns. Boots, masks and face shields may be needed depending on risk assessment. All bags should be tied before being thrown away and sharps containers should be locked.

The hazardous waste storage site should be found in a secluded zone, the area should be locked, and a biohazard signage should be clearly visible in the surrounding.

Contingency planning

1. If plastic bags of a particular color are not available:
 - a. Use plastic bags of any color but ensure that the bags are properly labelled as “Domestic waste”, “Infectious waste”, “Soiled linen” or “To Dry Cleaning Services”.
2. If there are not enough sharps containers:
 - a. Use plastic bottles that are made of heavy-duty and puncture-resistant material, and that have a tight-fitting lid.³
 - b. Discard infusion sets in yellow bags after the pointed tapering part is removed using a hub cutter and thrown away in a sharps container. If a hub cutter is not available, scissors may be used but care must be taken to avoid splash injuries.
 - c. Remove needles from syringes by using needle clippers or pliers or by sliding the needle in the groove of the sharps container – do not manipulate the needle using your hands. It may be more difficult to remove needles that are screwed on syringes using this technique. The syringes can then be discarded in yellow bags.
 - d. Vials and ampoules without sharp edges can be thrown away in yellow bags. Broken glass should still be thrown away in sharps boxes.
 - e. Consider the purchase of larger size sharps containers.

References

1. Centers for Disease Control and Prevention, USA. Healthcare-Associated Infections (HAIs) - Appendix D – Linen and laundry management: Best Practices for Environmental Cleaning in Healthcare Facilities: in RLS. March 27, 2020.
2. Centers for Disease Control and Prevention, USA. Guidelines for Environmental Infection Control in Health-Care Facilities: Background G. Laundry and Bedding. November 5, 2015.
3. Centers for Disease Control and Prevention, USA. Strategies for Sharps Disposal Container Use During Supply Shortages: For Managers and Purchase Agents. 30 Mar 2021.
4. Yves Chartier, Jorge Emmanuel, Ute Pieper et al. Safe management of wastes from health-care activities. World Health Organization. Second edition, 2014.