**On-site Treatment and Disposal of Blood Transfusion Products – Guidance**

**Document Number: 522**

*Note: This guidance document is provided as a template and must be customized to accommodate facility specific procedures and terminology.*

# Purpose

# The purpose of this document is to provide guidance on disposal of blood transfusion products —such as whole blood and plasma, blood containers, and blood bags — for blood transfusion facilities located in developing countries.

# Scope

This document covers the requirements for disposing of blood transfusion products that are generated by a blood transfusion center and by health care facilities. It relates to the disposal, by autoclaving and incineration, of blood products that are contained in the blood transfusion bags that typically have a volume of 500 ml. It also covers sanitary sewer disposal and chemical decontamination of liquid laboratory waste.

The document is applicable to all personnel who have to deal with blood in any form and with the associated transfusion waste products. It provides details of the responsibilities of the relevant members of staff, equipment needed and the requirements to achieve compliance with legal and other specifications.

All bulk blood and blood products, unless tested and found to be free of pathogens, should be considered as highly infectious waste and need to be managed to minimize risk in the health care setting. The main risk is from the potential for harboring pathogenic organisms, which may cause the spread of infectious diseases. Infectious waste has the potential to harm anyone who comes into contact with it, so it is vital that it is stored, handled and disinfected correctly before being discarded to the environment. Procedures need to be followed to safeguard all those who may come into contact with blood and body fluid waste, to avoid the spread of infection.

# Definitions

## Blood and blood products ‒ include discarded bulk human blood and blood products in free draining, liquid state. Blood products are the elements of blood, such as red blood cells, white blood cells, platelets, plasma and biochemical substances contained in the plasma that are obtained from blood processing. This may also include bags of blood that have been donated, but are unusable because they are out of date, because they have been found to contain HIV or other pathogens, or because they have failed a blood bank’s quality control procedures for any reason. Examples of blood/blood products include:

* Blood from open wounds, wound draining, cleaning and spill response, transfusions and other activities, excluding pathological waste, such as body parts, tissues and placenta.
* Body fluids, including secretions, but excluding excreta, unless from patients in isolation.
* Waste materials contaminated with free-flowing blood
* Laboratory samples containing blood or body fluids.

## Disinfectants ‒ the germicidal agents capable of destroying microorganisms but not necessarily their spores.

## Disinfection ‒ the reduction or removal of pathogens to minimize the potential for disease transmission. Or, the process of killing microorganisms, but not usually spores, for prevention or control of infectious disease.

## High-level disinfectants ‒ these kill vegetative bacteria, fungi and viruses but not necessarily spores. Examples include hydrogen peroxide, formaldehyde, glutaraldehyde and peracetic acid.

## Infectious waste ‒ any waste that may contain pathogenic organisms and may overlap with the other medical waste categories of sharps, pathological and anatomical waste, all of which can be infectious.

## Intermediate-level disinfectants ‒ these kill vegetative bacteria and most of virus and fungi but not resistant bacterial spores. Examples include alcohols, hypochlorite and iodophores.

## Low-level disinfectants ‒ these kill most vegetative bacteria and some fungi and viruses such as HBV, HCV and HIV but do not kills spore and mycobacteria. These are often used to clean surfaces. Examples include phenol and quarternary amorous compounds.

## Pathogens ‒ micro-organisms that may cause disease.

## Sterilization ‒ involves the destruction of all microbial life.

# Responsibilities

# The departmental manager shall ensure that all relevant personnel are:

* + 1. Adequately trained on the hazards of and safe handling, storage, treatment and disposal of wastes containing free-flowing blood and blood products, including spill incident response.
		2. Wearing the required PPE, which is clean and maintained in a good state.
		3. Following procedures correctly where blood and blood products require treatment and disposal and addressing any non-conformances to avoid harm to people and the environment.
		4. Ensuring that any non-conformances are addressed to avoid harm to people and the environment.
		5. Recording any incidents relating to the disposal of blood products, with the root cause established, reported and actions taken to prevent a recurrence.
		6. Reviewing, within a reasonable period, the effectiveness of any actions taken following an incident to prevent a recurrence.
		7. Reporting in full and on time to the waste management committee and/or relevant regulatory authorities in terms of legal requirements.
	1. Personnel
		1. All employees and long-term contractors shall be trained in the waste management procedure, how to safely handle wastes.
		2. All employees will carry out waste disposal in accordance with the procedures in which they have been trained.
		3. Personnel disposing of waste must maintain appropriate records.
		4. Personnel shall report any incidents involving wastes to the relevant departmental manager immediately. Those involved must prepare a written report of the incident to establish root cause and steps to be taken to prevent a recurrence. The report must be submitted to the relevant departmental manager and Waste Management Committee for addressing the issues.

# Material and Equipment

* + - PPE should include:
		- Gloves - to protect against any sharp items, chemicals, biological materials, heat or cold – the type of gloves must be chosen according to the hazard(s) present.
		- Strong and closed shoes – to protect skin from splashes of hazardous material and/or to protect your feet from items that may be dropped onto them.
		- Overalls or a lab coat - to protect skin and clothes from splashed liquids that may be hazardous, including infectious material.
		- Masks - to protect against respirable particles, chosen according to the hazard and the mask specification.
		- Goggles or a face shield – to protect from splashes that could get into the mouth or eyes.
* Disinfectant ‒ the type and concentration of disinfectant needed will depend on the application. Detailed information can be found in the references to this document as well as in Doc 304: Biological Spill Cleanup — SOP and Doc 526: Chemical Decontamination of Laboratory Waste — SOP. The following are easily available and used for disinfecting non-critical surfaces such as floors, furniture, and walls:
	+ - Sodium or calcium hypochlorite is the most commonly used disinfectant. Hyprochlorite can be used for disinfecting blood at a concentration of 5,000ppm. These disinfectants should be made fresh every day.
		- Hydrogen peroxide based disinfectants have the advantage of degrading to water and oxygen, so have no long term environmental effect. They also need to be made up on the day of use.
		- Phenol-based disinfectants are persistent so their efficacy must be balanced against their potential to contaminate sewage systems and the wider environment after discharge.
		- Quaternary ammonium disinfectants can be effective under the right circumstances but can react with cotton cleaning cloths, which reduces their effectiveness.

# Hazards and Safety Concerns

* 1. A risk assessment should be undertaken to find ways to identify hazards, assess the risks and minimize the potential for harm to people and the environment. Any personnel who may handle infectious waste should be trained to do so safely and, where required, wear adequate personal protective equipment. PPE must be regularly cleaned and maintained.
	2. Spills should be contained to minimize the area affected and cleaned up immediately. All incidents should be reported to the departmental manager as soon as possible.

Refer to Doc 304: Biological Spill Clean-up — SOP for details.

* 1. It is critical that blood bags are made noninfectious as close to the point of generation as possible. The preferred method for treating discarded blood bags is autoclaving. Other methods are disposal to sewer, with or without chemical disinfection, and incineration.
	2. Blood saturated wastes must never be discarded to the sewer system as they can cause blockages and pose a risk to staff who then have to clear the pipes.
	3. To prevent leakage during transportation, wastes should be placed in a leak-proof container with a sealable lid and labeled appropriately. See Document 502: On-site Handling of Health Care Waste — Guidance.
	4. Due to the organic nature of this waste stream, which will biologically decay, especially in warm temperatures, storage should be avoided if possible or the duration minimized. See Document 502: On-site Handling of Health Care Waste — Guidance.
	5. Sticks or cuts from needles.
	6. Exposure to blood and blood-borne pathogens.

# Procedures

# Autoclaving of blood bags

Refer to Doc 529: Disposal of Filled Blood Bags by Autoclaving — SOP.

## Incineration of blood bags

Refer to Doc 528: Disposal of Filled Blood Bags by Incineration —SOP.

## Chemical decontamination

Refer to Doc 526: Chemical Decontamination of Laboratory Wastes — SOP.

## Disposal to sanitary sewer

Refer to Doc 521: Sanitary Sewer Disposal of Liquid Laboratory Waste — Guidance.

# Legal and other requirements

## International regulations

There is no international legislation on the treatment and disposal of blood products.

## National and local regulations

Where national and local legal requirements exist, they must take precedence over the procedures contained in this document, though wherever possible the most stringent requirements should be followed to safeguard health of people and the environment. In particular, some waste management regulations will specify that blood products must be incinerated. However, other options are preferable under the right circumstances, including disposal to the sewer system and autoclaving.

# Reporting and Recordkeeping

8.1 Where blood products are subject to treatment, they should be recorded in the same way as other wastes.

8.2 Any incidents relating to the disposal of blood products are recorded, with the root cause established, reported and actions taken to prevent a recurrence.

# References

# World Health Organization. Blue book. Marketing authorization of pharmaceutical products with special reference to multisource (generic) products: a manual for National Medicines Regulatory Authorities (NMRAs) – 2nd ed. Geneva: WHO; 2011. 148 p.

# <http://whqlibdoc.who.int/publications/2011/9789241501453_eng.pdf>

# United Nations Development Programme‒Global Environment Facility (UNDP‒GEF), Global Healthcare Waste Project. Guidance on the microbiological challenge testing of healthcare waste treatment autoclaves. New York (NY): UNDP‒GEF; 2010. 9 p.

## <http://gefmedwaste.org/downloads/Guidance%20on%20Microbiological%20Challenge%20Testing%20for%20Medical%20Waste%20Autoclaves-%20November%202010.pdf>

#  Centers for Disease Control and Prevention. [Internet]. Healthcare-associated infections. [cited 2013 July 8]. Available from: http://www.cdc.gov/hai/

# Related Documents

* Doc 529: Disposal of Filled Blood Bags by Autoclaving — SOP
* Doc 530: Autoclave Operation — SOP
* Doc 26a: Disposal of Filled Blood Bags by Incineration — SOP
* Doc 534: Diesel-fueled Incinerator Operation — SOP
* Doc 526: Chemical Decontamination of Laboratory Waste — SOP
* Doc 309: Incident Log
* Doc 308: Incident Reporting Form
* Doc 21: Biological Spill Clean-up Procedures

# Attachments

None