	Standard Operating Procedure (SOP)	SOP No: AIIMS/Micro/VRDL/SOP/xx
	Section: Virology	Date 1 st Created:
	Document title: Biomedical waste management, Disinfection and Biosafety in COVID Testing Lab	Date last Revised:
		Rev No.:
		Page No:

1. Purpose: - The purpose of this SOP is to provide guideline for Handling, Treatment and Disposal of Waste Generated during Diagnosis of COVID-19 Patients. This would also provide as a guideline for disinfection and biosafety protocols to be followed in the COVID testing laboratory.

2. Scope: - This SOP will be useful for the Doctors, Research Scientists, Laboratory Personnel and Housekeeping Staff as a guide during waste management which includes Handling, Collection, Transportation and Disposal of bio-medical waste and general waste generated from COVID-19 Testing Molecular Laboratory.

3. Introduction: - COVID-19 Biomedical waste refers to all waste generated during diagnostic testing of COVID-19 from R-VRDL at AIIMS Jodhpur. This includes samples from COVID-19 patients (nasopharyngeal and oropharyngeal swabs, other biological samples) & the laboratory reagents and consumables used for the diagnostic testing (including disposable syringe, needles, and used cotton-swabs) and the various Personal Protective Equipment (viz. coverall suits, face shield, N95 masks, gloves etc.) used by the laboratory personnel which need to be effectively disposed in accordance with the rules for safe disposal.

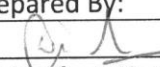
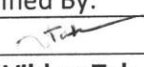
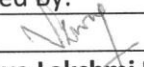
Considering the global pandemic and the infectious nature of the virus all biomedical waste generated during sample collection, processing and diagnostic testing would be appropriately segregated, securely stored and transported and safely disposed according to the guidelines laid down by Central Pollution Control Board, New Delhi.


4. RESPONSIBILITY

3.1 The BMW Committee is responsible for overall COVID-19 waste management at R-VRDL Laboratory.

3.2 It is the responsibility of the Head of the Department of Microbiology to ensure that the SOP is correctly followed for COVID-19 testing.

5. Waste Disposal Protocol

	Prepared By:	Verified By:	Approved By:
Signatures			
Name	Dr. Sarika P Kombade	Dr. Vibhor Tak	Dr. Vijaya Lakshmi Nag
Designation	Assistant Professor	Associate Professor	Professor & Head

	Standard Operating Procedure (SOP)	SOP No: AIIMS/Micro/VRDL/SOP/xx
	Section: Virology	Date 1 st Created:
	Document title: Biomedical waste management, Disinfection and Biosafety in COVID Testing Lab	Date last Revised:
		Rev No.:
		Page No:

5.1 Keep separate colour coded bins/ bags/ containers and maintain proper segregation of waste as Bio-Medical Waste Management (BMWM) Rules 2016, as amended and Central Pollution Control Board (CPCB) guidelines for implementation of BMW Management Rules.

5.2 As precaution double layered bags (using 2 bags) should be used for collection of waste from Sample collection room, BSL2 facility and PPE doffing area so as to ensure adequate strength and no-leaks.

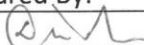
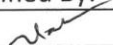
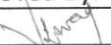
5.3 These bins and bags would be clearly labelled as COVID-19 BMW waste.


5.4 The various categories of BMW to be segregated in the following colour coded bins: -

Yellow	Red	White puncture proof sharp container	Blue
Nasopharyngeal swab sticks Oropharyngeal swab sticks N 95 Mask Triple layered surgical mask Disposable PPE Cotton swabs Contaminated tissue/paper	Plastic coverall suits Face shields Goggles Gloves Plastic Shoe covers Pipette tips Viral Transport Media Containers Eppendorf tubes Plastic Cryovials Vacutainers	Needles Metallic sharps	All glass items (broken/intact)

5.5 Pre-treatment of Laboratory waste: - All Microbiology laboratory waste would be microwaved/ autoclaved at Waste Management Complex before being handed over to Common Biomedical Waste Treatment Facility. It should be marked as "Lab COVID 19" on the bag with a marker.

5.6 Safe Disposal of the Liquid waste: - All the wet waste from RNA isolation (manual/automated Qiacube) using Qiagen viral RNA mini kit should be treated with detergent and water and then treated with 1% Sodium hypochlorite solution before disposing it in effluent treatment plant (ETP). All liquid waste would go to ETP for treatment.

	Prepared By:	Verified By:	Approved By:
Signatures			
Name	Dr. Sarika P Kombade	Dr. Vibhor Tak	Dr. Vijaya Lakshmi Nag
Designation	Assistant Professor	Associate Professor	Professor & Head

	Standard Operating Procedure (SOP)	SOP No: AIIMS/Micro/VRDL/SOP/xx
	Section: Virology	Date 1 st Created:
	Document title: Biomedical waste management, Disinfection and Biosafety in COVID Testing Lab	Date last Revised:
		Rev No.:
		Page No:

5.7 General waste which includes Non-infectious waste like-Paper, plastic cover of kits, consumable, remains of food, etc. should be disposed as per Solid Waste Management rules, 2016.

6. Collection of Biomedical Waste from R-VRDL Laboratory

Collect and store all biomedical waste generated at R-VRDL laboratory separately in covered bins prior to transporting it to Waste Management Complex in a dedicated covered trolley for COVID 19 waste. In the Waste Management Complex all bio-medical waste from R-VRDL would undergo microwaving/ autoclaving before handing it over to Common Bio-medical Waste Treatment and Disposal Facility (CBWTF) i.e. M/s. Sales Promoter. Use a dedicated collection bin labelled as "Covid-19 to store COVID-19 waste and keep it separately in a temporary storage room prior to handing over to authorized staff of M/s. Sales Promoter. This marking would enable CBWTFs to identify the waste easily for priority treatment and disposal immediately upon the receipt. Appropriate logs would be maintained for all Biomedical Waste.

7. Spill Management in COVID-19 Laboratory

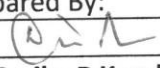
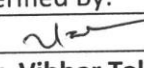
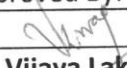
Wear appropriate PPE. Cover the spill area with absorbent paper towel and then put freshly prepared sodium hypochlorite solution depending on the volume of spill. If spillage <10 ml it would be decontaminated by freshly prepared 1 % Sodium hypochlorite and allow contact time of 30 minutes and then clean with a mop using detergent and hot water. If spill volume >10 ml, put sodium hypochlorite 10% Sodium hypochlorite for 30 minutes and then clean the contaminated area with detergent and water. The paper towels would be discarded in yellow bin.


8. Decontamination/ Disinfection Protocol

8.1. Disinfection of the Laboratory Floor and walls - Visible pollutants shall be completely removed before disinfection and handled in accordance with disposal procedures of blood and bodily fluid spills. Disinfect the floor and walls with 1% Sodium hypochlorite through floor mopping, spraying or wiping. Make sure that disinfection is conducted for at least 30 minutes. Carry out disinfection three times a day and repeat the procedure at any time when there is contamination.

8.2. Disinfection of Object Surfaces in the Laboratory

8.2.a The surface of laboratory work-benches, machines and instruments used for the diagnostic procedures (such as pipette-holders etc.) need to be disinfected routinely. Wipe the surfaces of objects with 1% Sodium hypochlorite; wait for 30 minutes and then

	Prepared By:	Verified By:	Approved By:
Signatures			
Name	Dr. Sarika P Kombade	Dr. Vibhor Tak	Dr. Vijaya Lakshmi Nag
Designation	Assistant Professor	Associate Professor	Professor & Head

	Standard Operating Procedure (SOP)	SOP No: AIIMS/Micro/VRDL/SOP/xx
	Section: Virology	Date 1 st Created:
	Document title: Biomedical waste management, Disinfection and Biosafety in COVID Testing Lab	Date last Revised:
		Rev No.:
		Page No:

rinse with clean water. Perform disinfection procedure at least three times a day (repeat at any time when contamination is suspected). Biosafety cabinets, pipettes to be disinfected each time before and after use. The cotton swabs used for disinfection by Sodium hypochlorite would be discarded in yellow bin.

8.2.b Air Disinfection Air circulating within the BSL-2 Extraction area of COVID Testing diagnostic labs needs to be sterilized appropriately. Use ultraviolet lamps for half an hour each time before and after use of the biosafety cabinet.

9. Biosafety of laboratory personal working in COVID-19 Testing Lab- The laboratory personnel handling COVID-19 samples are highly prone to occupational exposure and hence need to take the following important considerations to prevent infection during the handling of COVID-19 samples:

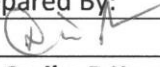
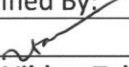
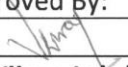
9.a. Skin exposure: The skin (or wounded skin) can be directly contaminated by exposure to visible body fluids/secretions obtained from the patient. In such conditions, remove the contaminants with clean tissues or gauze, then apply 0.5% iodophor or 70% alcohol to the skin and let the solution sit for at least 3 minutes for disinfection. Then, thoroughly flush with running water.

9.b. Mucous membrane exposure: Mucous membranes, such as the eyes and respiratory tract are directly contaminated by visible bodily fluids/secretions obtained from the patient. In such conditions, flush with plenty of normal saline or 0.05% iodophor for disinfection.

9.c. Sharp object injury: Piercing of the body by sharp objects that were directly exposed to visible bodily fluids/secretions obtained from the patient. Squeeze blood out from proximal end to distal end and flush the wound with running water. Then, disinfect with 70% alcohol or 0.5% iodophor.

9.d. Direct exposure of respiratory tract: Falling off of a mask, exposing the mouth or nose to a confirmed patient (1 meter away) who is not wearing a mask. Immediately leave isolation area. Gargle with plenty of normal saline or 0.05% iodophor. Dip a cotton swab into 70% alcohol, and wipe in a circular motion the nasal cavity gently. Issued by the Office of Principal Scientific Adviser to the Government of India, April 11, 2020.

10. References:

	Prepared By:	Verified By:	Approved By:
Signatures			
Name	Dr. Sarika P Kombade	Dr. Vibhor Tak	Dr. Vijaya Lakshmi Nag
Designation	Assistant Professor	Associate Professor	Professor & Head



Standard Operating Procedure (SOP)	SOP No: AIIMS/Micro/VRDL/SOP/xx
Section: Virology	Date 1 st Created:
Document title: Biomedical waste management, Disinfection and Biosafety in COVID Testing Lab	Date last Revised:
	Rev No.:
	Page No:

1. Guidelines for handling treatment and disposal of waste during treatment diagnosis and quarantine of COVID-19 patients.
https://www.tnpcb.gov.in/pdf_2020/Guideline_COVID_19_waste.pdf
2. Interim Laboratory Biosafety Guidelines for Handling and Processing Specimens Associated with Coronavirus Disease 2019 (COVID-19)
<https://www.cdc.gov/coronavirus/2019-ncov/lab/lab-biosafetyguidelines.html>
- 3 Biomedical waste management rules 2016
https://dhr.gov.in/sites/default/files/Biomedical_Waste_Management_Rules_2016.pdf

	Prepared By:	Verified By:	Approved By:
Signatures			
Name	Dr. Sarika P Kombade	Dr. Vibhor Tak	Dr. Vijaya Lakshmi Nag
Designation	Assistant Professor	Associate Professor	Professor & Head