

Environmental Health Risk Management Plan (EHRMP)

National Institute of Animal Biotechnology

Proposal entitled: Complete solution for molecular diagnosis of COVID19 multiplex assay along with screening for other related respiratory diseases

(i) Brief description of the proposed activity				
<p>The activity at NIAB involves validation of the material transport medium (MTM) and the nucleic acid purification kits developed and manufactured by Huwel Lifesciences. For this, the following activities will be carried out</p> <p>a) Bacteria or viruses, which are handled under biosafety level 2 shall be mixed with MTM and nucleic acids (genomics, plasmid) will be extracted at various times.</p> <p>b) The efficiency of nucleic acid extraction and its use for further down-stream applications shall be evaluated.</p>				
(ii) List of environment related regulatory clearances required for the activity.				
a) Institutional biosafety committee (IBSC)				
Institutional Arrangement				
Area of Risk	Yes	No	Details	Proposed Plan
1. Is there a designated full-time staff for Environment Health and Safety (EHS) issues?		X		A committee of research scientists oversees EHS activities and this committee will be consulted. Will employ an EHS Consultant as and when required during the Project.
2. Does the EHS staff handle the following?			the internal safety committee serves to oversee the activities	The internal and institutional biosafety committees are tasked with waste management, regulatory clearances, recording accidents and other procedures, training of students & research personnel as well as other compliances
Occupational Health and Safety		X		
Waste Management		X		
List of consents and regulatory clearances		X		
Record keeping of accidents and procedures		X		
EHS trainings for staff		X		
Environment Management Framework compliance for Innovate in India Project		X		

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3.	Is there a reporting structure in place regarding EHS issues?	X		Describe: Yes, in the order of individual laboratory heads to internal safety committee to institutional biosafety committee to academic/research head to the highest competent authority	A proper reporting structure will always be ensured during the course of project.
4.	Are regular EHS trainings provided to staff?	X		Frequency: Once a year	Training will be provided as and when required to all the existing as well as newly recruited staffs
5.	Institutional Bio-Safety Committee (IBSC)	X		Meets twice a year	
6.	Ethics Committee (EC)	X*		Yes for animal ethics	*No for human ethics, but in the process of registration. Project will begin only after getting approval from Ethics Committee (EC). Periodic review and meeting will be scheduled.

General Occupational Health and Safety

	Area of Risk	Yes	No	Details	Proposed Plan
7.	Are there Standard Operating Procedures for accidents, hazards, and other emergencies (chemical spills, heat hazards, fire hazards, radioactive hazards etc.)?	X		Laboratory safety manual consisting of safety procedures and action against emergencies available	The existing SOP will be followed. All the new joining and existing staff will be trained time to time for handling any such situation.
8.	Are the following in place?			Eye wash & shower stations in each lab module; first aid kit and registers in centralized place; fire extinguishers on each floor; incidence registry maintained with campus security	Facilities will be upgraded as the activities increase and proper records will be maintained.
	Chemical spill kits	X			
	Eye wash	X			
	Shower stations	X			
	First Aid Kit	X			
	Fire Extinguishers	X			
	Register of accidents / injuries	X			
9.	Are proper signage and storage system in place?	X		Display, signage, storage done as required	Facilities will be upgraded as the activities increase.
	Display of Material Safety Data Sheet (MSDS) where relevant	X		All MSDS maintained by the store/purchase department; signage posted where required	For storage of flammable materials and solvents, systems will be upgraded as and when the need arises.
	Display of emergency numbers and procedures (Person to Contact, Doctor, Ambulance, Fire Emergency, Police)	X		Displayed in prominent places, including lifts and main passageways	

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	displayed in all critical places				
	Signage across the facility (labs, storage, hazardous areas, etc.)	X		Displayed	
	Are flammable materials appropriately stored to prevent fire hazards?	X		Stored in clearly identified areas	
10.	Are smoke detectors, fire alarms, automatic safety/shut off systems, overflow preventors, etc. in place and regularly maintained?	X		List: Fire alarms, automatic systems, overflow preventors in place, and regularly monitored and maintained by dedicated staff	Facilities will be maintained and upgraded as the activities increase. The current safety systems will be maintained on regular basis.
11.	Are there control measures for VOC, air emissions, high operating temperatures, pathogens/vectors etc. in place?	X		List: Fume hoods, laminar flow hoods, biosafety cabinets, exhaust cabinets	Existing control measures for air emissions, high operating temperatures, pathogens/vectors etc., will be continuously monitored to maintain the safety parameters.
12.	Are regular mock drills conducted for emergency preparedness and safety?	X		Frequency (type wise): annual drills for chemical, biological, radiological and fire safety	Will ensure that this process will be regularly followed as per schedule
13.	Are staff provided with OHS training?	X		Describe: classroom training once a year; security staff provided other periodic training on fire safety, snake bite prevention, other emergencies	Will ensure that this process will be regularly followed.
Biomedical Waste (BMW)					
	Area of Risk	Yes	No	Details	Proposed Plan
14.	Is there generation of biomedical waste (as described in Bio-Medical Waste Management Rules, 2016) in the grantee?	X		If Yes, provide a list of biomedical waste produced in the facility <ul style="list-style-type: none"> • Microbiology and biotechnology waste – from prokaryotic & eukaryotic cell culture, bacteria & viruses, plasmids & recombinant DNA – both solid and liquid • Experimental animal waste – tissues, dead bodies, biological fluids – both solid 	BMW generated will be treated adhering to Bio-Medical Waste Management Rules, 2016

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				and liquid If No, provide a list of all waste produced in the facility.		
15.	Is there trained staff to handle biomedical waste in the grantee?	X		All research personnel and laboratory or facility supervisors are trained	Will ensure that this process will be regularly followed.	
16.	Has the grantee obtained authorization from State Pollution Control Board /Pollution Control Committee?	X		Authorization from SPCB	Authorizations will be renewed from time to time.	
17.	Is the biomedical waste segregated at point of generation in the facility and stored in suitable containers?			Yellow	X	Very little blue waste generated; white containers will be used for the same.
				Red	X	
				White	X	
				Blue		
18.	Is the bar code system for the segregated waste in place?		X		Currently only following segregation based on color coding; the waste collector has barcoding system in place, which will be extended to the institute in the immediate future	
19.	Is the biomedical waste being sent to an authorized common BMW facility?	X		Name and address of CBMWF: GJ Multiclave, Hyderabad Distance from facility: They pick up Frequency and Mode of transport: As and when informed Who transports? GJ Multiclave	Will continue this process and agreement with authorized facility will be renewed from time to time.	
20.	Does the grantee have an in-house BMW treatment facility?	X		Reason: As per requirement of SPCB	In house autoclaving will be followed. The BMW will be carried and treated by the in house authorized people and we will keep a	
	Is the treatment facility own (individual)?	X		Authorization: SPCB		

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	Is the treatment facility a shared facility in an industrial park?		X	Distance of nearest CBWM from facility: Not applicable Types of treatment: Most of the microbiology and biotechnology waste is autoclaved before disposal; all of the liquid waste is treated with hypochlorite before disposal into drain; certain liquid material is disposed into red/hot drains, which are connected to an industrial boiler, before disposal.	record of these.
21.	Are lab waste, microbiological waste and chemical liquid waste pre-treated before storing and sending to treatment facilities according to guidelines prescribed in BWM, 2016 regulations?			Types of treatment: Most of the microbiology and biotechnology waste is autoclaved before disposal; all of the liquid waste is treated with hypochlorite before disposal into drain; certain liquid material is disposed into red/hot drains, which are connected to an industrial boiler, before disposal.	Will continue this process as per BWM rules 2016.
22.	Is the liquid waste checked for active cells before sending to treatment plant?		X	No transportation is involved, and liquid waste is directly dumped in designated sinks. Most of the microbiology and biotechnology waste is autoclaved before disposal; all of the liquid waste is treated with hypochlorite before disposal into drain; certain liquid material is disposed into red/hot drains, which are connected to an industrial boiler, before disposal	Routine checks will be done if required.
23.	Are necessary waste pre-treatment equipment in place?	X		List of equipment (autoclaves, shredders, incinerators, etc.): Autoclaves, hot air ovens	Regular monitoring will be done.
	Do the equipment adhere to prescribed norms by State Pollution Control Board (SPCB)?	X		Details of waste pre-treatment: as described above	
24.	Are chlorinated plastic gloves and bags phased out in the	X		Plastic gloves have never been used, and chlorinated plastic	Will continue the same process

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	grantee?			bags have been phased out.	
25.	Are grantee's personnel involved in handling BMW provided with regular training?	X		Frequency: Once a year Trainer: Internal safety committee	This will be a regular process during the project.
26.	Are medical examination provided to personnel involved in BMW waste handling and are they provided with relevant immunization like Hepatitis B and Tetanus?		X	Frequency of medical examination: Annually	Mostly animal pathogens are handled; those handling zoonotic pathogens are subjected to medical examination, as per requirement. Annual medical check-up will be instituted for persons over the age of 40 years from 2021.
27.	Is a daily register for bio-medical waste maintained including accident reporting record?		X		Record will be maintained as and when they occur
28.	Are annual reports on BWM submitted to SPCB as per required form (see Bio-Medical Waste Rules 2016)?		X		Not currently followed, and will be submitted annually now onwards during the Project.

Hazardous Waste (HW)

	Area of Risk	Yes	No	Details	Proposed Plan
29.	Is there generation of hazardous waste (as per Hazardous Waste Rules, 2016) in the grantee?	X		list of hazardous waste produced in the facility: Organic solvents and chemicals required for biotechnology research	Hazardous waste generated will be handled and disposed as per HW rules 2016
30.	Is there trained staff in the facility to identify and handle hazardous waste?	X		A committee oversees the identification and handling of hazardous waste	New personnel will also be trained before getting part of the project implementation team.
31.	Does the grantee have authorization from SPCB for hazardous waste?	X			Authorizations will be renewed from time to time.
32.	Is there a secure location for storage of HW with proper signage?	X		Separate location used, and is away from laboratories or office, and not affecting	Will continue to follow the same process throughout the project.

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	Are hazardous waste stored for more than 90 days in the grantee's premises?		X	material or personnel movement	
33.	Is the hazardous being send to an authorized disposal facility or user?	X		Name and address of facility: GJ Multiclave, Hyderabad	The disposal facility is government authorized and NIAB will continue to monitor the process and quality standards offered by the outsourcing authority.
	Is the disposal facility in house?		X		
	Is the disposal facility external/outsourced?		X		
34.	Is a register maintained on production and treatment, and a manifest system followed for transport of hazardous waste from the grantee to treatment facility?		X		The authorized vendor picks up the material We will maintain the register when required.

E-Waste and Batteries:

	Area of Risk	Yes	No	Details	Proposed Plan
35.	Does the grantee generate e-waste, produce or manufacture electrical and electronic equipment?		X	In our activity we do not generate the E-Waste and Batteries	Essential measures will be taken as and when the need arises during the project.
36.	Has the grantee obtained SPCB authorization on e-waste?		X	In our activity we do not generate the E-Waste and Batteries	Necessary Authorizations will be taken if required.
37.	Does the grantee channelize the e-waste to authorized recycling or disposal facility? Not applicable		X	In our activity we do not generate the E-Waste and Batteries	As and when the need arises proper system will be put in place during the project.
38.	Does the manufacturing grantee have Extended Producer Responsibility system and EPR-authorization in place?		X	In our activity we do not generate the E-Waste and Batteries	We do not plan to enter into manufacturing in near future. But if the case, will ensure the EPR system in place.
39.	Does the grantee practice reduction in the usage of hazardous substances in the manufacture of electrical and electronic equipment and its parts?		X	In our activity we do not generate the E-Waste and Batteries	We do not use hazardous substances and are not involved in manufacturing of electrical and electronic equipment or its part.

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40.	Does the grantee provide detailed information on the constituents of the equipment and their components/spares and declaration of conformation to Reduction in Hazardous Substances in the product user documentation?		X	In our activity we do not generate the E-Waste and Batteries	We do not use hazardous substances and are not involved in manufacturing of electrical and electronic equipment or its part
41.	Does the grantee maintain a record of collection, storage, sale and transport of e-waste?		X	In our activity we do not generate the E-Waste and Batteries	We do not deal with the manufacturing, sale or collection of electronic or electrical items and do not foresee any e-waste in near future. But if the case, will do the needful.
42.	Does the grantee submit annual reports on e-waste to SPCB?		X	In our activity we do not generate the E-Waste and Batteries	We do not foresee any e-waste in near future. But if the case, will do the needful.
43.	Is there accident reporting and records in place?		X	In our activity we do not generate the E-Waste and Batteries	The system is in place, however no incident has happened and hence recorded yet
44.	Are PPEs available to staff?		X	In our activity we do not generate the E-Waste and Batteries	The stock status of PPE will be regularly monitored and if required adequate procurement will be done in time.
45.	Is the grantee involved in manufacture of batteries?		X	In our activity we do not generate the E-Waste and Batteries	We do not deal with manufacturing, sale or collection of batteries.
46.	Does the grantee generate battery waste?		X	In our activity we do not generate the E-Waste and Batteries	We do not deal with manufacturing, sale or collection of batteries.
47.	Does the grantee deposit the battery waste to registered recycler/dealer/manufacturer/rec conditioner/collection center?		X	In our activity we do not generate the E-Waste and Batteries	We do not foresee any battery-waste in near future. But if the case arises in future, will do the needful.
48.	In case of manufacturing, does the grantee comply to Battery Management Rules 2000 and ensure collection of old batteries?		X	In our activity we do not generate the E-Waste and Batteries	We do not deal with manufacturing, sale or collection of batteries
Community Health and Safety and risk mitigation					
		Yes	No	Details	Proposed Plan

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49.	Safety Transportation Management System (for transport of hazardous material)	X		All hazardous waste picked up by designated waste collector approved by SPCB	Will continue the same process
50.	Emergency preparedness and participation of local authorities and potentially affected communities	X		Liaison with and through local and state authorities	Emergency Plan will be maintained.
Other					
	Area of Risk	Yes	No	Details	Proposed Plan
51.	Does the grantee use any radioactive materials (isotopes tracers, radiation equipment, etc)?		X		Setting up a separate radiation room with equipment, detectors, storage & disposal mechanisms as per AERB is in process.
	Does the grantee have appropriate radioactive material and waste storage and disposal system in place?		X		
	Are radioactive warning signs in place?		X		
52.	Is the lab/room air regularly checked for microbial contamination?		X		Will be implemented if required Periodic checks will be done if required
53.	Are there any odor control measures in place?	X		Exhaust systems	Periodic checks will be done preventive measures will be taken.
54.	Are fume hoods and exhausts regularly checked and maintained?	X		Under AMC or regular maintenance	Periodic checks and maintenance will be done.
55.	Does the grantee use DG set > 15 KVA?	X			DG sets emissions will be regularly monitored as per CPCB norms.
	Does the grantee have consent for DG > 15 KVA?	X			
	Are emissions from boilers and DG sets regularly monitored to be within the prescribed norms?	X			
56.	Does the grantee have proper disposal process for solid and plastic waste in compliance to Solid Waste Management Rules, 2016 and Plastic Waste Management Rules, 2016?	X			It will be ensured that segregation rules are followed. This will be maintained and monitored.
57.	Is wastewater treated separately by the	X		Types of wastewater: Liquid waste from laboratory, non-	NIAB plans to continue to treat the waste separately

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	grantee? (Liquid waste from laboratory, chemicals, fluids, solvents, medium and cultures, coolants, etc.)			hazardous chemicals, fluids, solvents, medium and cultures, sewerage Treatment of wastewater: Bioling, STP Chemical management in wastewater treatment plants: Not carried out as non-hazardous chemicals are not released	as per the current procedures followed.
	Are there sludge management and cut off drains in place for wastewater?	X			Defined ETP plant procedures will be continued to be followed for best sludge management practices.
58.	Are necessary provisions for noise cancellation in place?		X		Preventive measures will be taken for reducing noise levels if generated
59.	Are there any settlements, water bodies, cultivated land, or any other eco-sensitive areas near the grantee's premises?		X		Nothing closeby
60.	Are there any buffers, fire vehicle routes in the grantee's premises?	X		Fire tender movement road is available around the building.	The available routes will ensure free flow of vehicles in any kind of emergency.
COVID Precautions & Guidelines Implementation					
61	Guidelines of CPCB/SPCB/GoI for Handling, Treatment, and Disposal of COVID Waste Generated is whether being followed?		X		No COVID waste being generated. However, in case of any such waste generated we will follow the guidelines issued by CPCB/SPCB/GoI for COVID waste generation.
62	Whether SOP on preventive measures to contain spread of COVID-19 issued by ICMR/GoI from time to time is being followed?	X		All procedures are being followed, including isolation/quarantine, sanitization, physical distancing, face mask etc.	Guidelines issued by ICMR/GoI will be followed. Preventive measures to contain the spread of COVID-19 will be followed time to time in the future also.

Notwithstanding the above other risk (relevant to the project activities) that will be identified in the course shall be addressed as per standard mitigation monitoring parameters and manner of records keeping shall be in accordance to the recommendations of the project monitoring committee on subject experts engaged by BIRAC.