Environmental Health Risk Management Plan (EHRMP)

Christian Medical College

Proposal entitled **"Epidemiology of Dengue and Chikungunya in the Vellore Demographic Health Surveillance System"**

1. Institutional Arrangements

(i) Brief description of the proposed activity
The study involves enrolling participants in a certain geographic location in Vellore town. The participants will be followed up for a period of two years with frequent home visits and phone calls. The participants will have blood samples collected at enrollment and at the end of one year. The participants will also be followed up every week either in person or over phone to check if they have fever. If any of the participants develop fever, blood samples would be drawn for testing for causes of fever including dengue and chikungunya. All patients with fever will be followed up for the duration of their illness and repeat blood samples taken after 2 weeks. If required, the participants will be referred to their local doctor or health care facility for further testing and management

(ii) List of environments related regulatory clearances required for the activity.
Biomedical waste management (lab sample management related clearances) NABL accreditation

Institutional Arrangement

		Yes	No	Details	Proposed Plan
1.	Is there a designated full-time staff for Environment Health and Safety (EHS) issues?	Yes		We have a separate department handling all occupational health and safety issues of the employees.	The institute will comply with the norms and requirements of the Pollution Control Committee
2.	Does the EHS staff handle the following?			Any other:	As per the Institute's guidelines for Environment Health and Safety (EHS).
	Occupational Health and Safety	Yes			
	Waste Management	Yes			
	List of consents and regulatory clearances	Yes			
	Record keeping of accidents and procedures	Yes			
	EHS trainings for staff	Yes			
	Environment Management Framework compliance for Innovate in India Project	Yes			
3.	Is there a reporting structure in place regarding EHS issues?	Yes		Describe: There is individualized online reporting for various types of incidents.	This will be regularly followed.
4.	Are regular EHS trainings provided to staff?	Yes		Frequency: On induction and thereafter once in 3 years.	This will be continued.

				Awareness audited every year.	
5.	Institutional Bio-Safety Committee (IBSC)	Yes			
6.	Ethics Committee (EC)	Yes		The Institutional Review Board and Ethics committee is comprised of scientists, lawyers, religious leaders, social workers and lay persons as stipulated by the ICMR guidelines. There are two ethics committees which meet once a month and a separate Animal Ethics committee.	Meetings and reviews will be scheduled as and when required as per ICMR/GoI guidelines.
General Occupational Health and Safety					
7.	Are there Standard Operating Procedures for accidents, hazards, and other emergencies (chemical spills, heat hazards, fire hazards, radioactive hazards etc.)?	Yes		Manual available for all types of hazards and emergencies	Display of Procedures at prominent places in the site will be ensured.
8.	Are the following in place?			All wards and labs are equipped with all the required equipment.	Appropriate SOPs in place will deal with such emergencies.
	Chemical spill kits	Yes			
	Eye wash	Yes			
	Shower stations	Yes			
	First Aid Kit	Yes			
	Fire Extinguishers	Yes			
	Register of accidents and injuries	Yes			
9.	Are proper signage and storage system in place?	Yes			These would be regularly updated/ replaced.
	Display of Material Safety Data Sheet (MSDS) where relevant	Yes			
	Display of emergency numbers and procedures (Person to Contact, Doctor, Ambulance, Fire Emergency, Police) displayed in all critical places	Yes			
	Signage across the facility (labs, storage, hazardous areas, etc.)	Yes			
	Are flammable materials appropriately stored to prevent fire hazards?	Yes			
10.	Are smoke detectors, fire alarms, automatic safety/shut off systems, overflow preventors,	Yes		List: Full list is available with the Quality	These would be regularly maintained.

	etc. in place and regularly maintained?			management cell	
11.	Are there control measures for VOC, air emissions, high operating temperatures, pathogens/vectors etc. in place?	Yes		List: Available with quality management cell Water quality checking – sewage and drinking water, dialysis RO water All air emissions being checked including ETO, generator hoods, Environmental sampling for pathogens at various sites Thermometers in high operating areas including refrigerators, blood storage areas, pharmacy refrigerators, Relative humidity, positive pressure differential and temperature tested in all positive pressure and negative pressure areas.	This would be reviewed periodically.
12.	Are regular mock drills conducted for emergency preparedness and safety?	Yes		Frequency (type wise): every week	This will be followed as per the schedule prepared by the relevant authorized personnel of the Institute.
13.	Are staff provided with OHS training?	Yes		Describe: On induction and thereafter once in 3 years. Awareness audited every year. Occupational health week is	This will be regularly updated

				conducted once a year.	
	Biomedical Waste (BMW)				
14.	Is there generation of biomedical waste (as described in Bio-Medical Waste Management Rules, 2016) in the grantee?	Yes		If Yes, provide a list of biomedical waste produced in the facility	All types of biomedical wastes are generated in the facility. Anatomical waste, liquid waste, chemical waste, soiled waste, contaminated recyclable waste, needles and metal sharps, laboratory waste, cytotoxic waste, solid waste, e waste, radioactive waste
15.	Is there trained staff to handle biomedical waste in the grantee?	Yes		On induction and thereafter once in 3 years. Awareness and practice audited at least once a year.	This ongoing process will be monitored throughout the project duration.
16.	Has the grantee obtained authorization from State Pollution Control Board /Pollution Control Committee?	Yes		License number Town campus – 19BAC12091002 Schell campus – 17BAZ8739740 Rehab campus – 18BAZ27666623 MHC campus – 18BAZ9205366	Renewal will be done as per timelines.
17.	Is the biomedical waste segregated at point of generation in the facility and stored in suitable containers?	Yes		Yellow: Yes Red: Yes White: Yes Blue: Yes	Will be treated as per Bio-Medical Waste Management (Amendment) Rules, 2018
18.	Is the bar code system for the segregated waste in place?	Yes		Each bag has a bar coded sticker. The bags are weighed and the bar codes are uploaded on to the pollution control website	Bar coding will be regularly updated as per policy guidelines.

				every day with the weights.	
19.	Is the biomedical waste being sent to an **authorized** common BMW facility?	Yes		Name and address of CBMWF: Ken Biolinks, Kandipedu village, Vellore Distance from facility: 15 kms Frequency and Mode of transport: Covered trucks four times a day Ken Biolinks	
20.	Does the grantee have an in-house BMW treatment facility?	Yes		Reason: For temporary storage Authorization: Tamilnadu Pollution control board Distance of nearest CBWM from facility: 15 km Types of treatment: Autoclaving, incineration, shredding and deep burial as per pollution control norms	
	Is the treatment facility own (individual)?		No		
	Is the treatment facility a shared facility in an industrial park?		No		
21.	Are lab waste, microbiological waste and chemical liquid waste pre-treated before storing and sending to treatment facilities according to	Yes		Types of treatment: All lab based goes through Effluent treatment plant	Compliance calendar shall be maintained.

	guidelines prescribed in BWM, 2016 regulations?			and then to a Sewage treatment plant as per norms.	
22.	Is the liquid waste checked for active cells before sending to treatment plant?	yes		Checked every day	Routine checks will be done.
23.	Are necessary waste pre-treatment equipment in place?	Yes		List of equipment (autoclaves, shredders, incinerators, etc.): autoclaves Details of waste pre- treatment: All blood bags and laboratory waste are pretreated by autoclaving	Waste generated during this project will be treated as per good lab practices.
	Do the equipment adhere to prescribed norms by State Pollution Control Board (SPCB)?	Yes			
24.	Are chlorinated plastic gloves and bags phased out in the grantee?	Yes			
25.	Are grantee's personnel involved in handling BMW provided with regular training?	Yes		Frequency: Once in 6 months Trainer: Hospital infection control 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?	Yes		Frequency of medical examination: Yearly	Will ensure that it is routinely done.
27.	Is a daily register for biomedical waste maintained including accident reporting record?	Yes			
28.	Are annual reports on BWM submitted to SPCB as per required form (see Bio-Medical Waste Rules 2016)?	Yes		Submitted before June 30th as per the requirements of the SPCB.	This practice would be followed complying with the timelines.
Hazardous Waste (HW)					
29.	Is there generation of hazardous waste (as per Hazardous Waste Rules, 2016) in the grantee?	Yes		If Yes, provide a list of hazardous waste produced in the facility Radioactive waste from radiotherapy	The collection, treatment and disposal of these hazardous waste generated will comply with the Hazardous Waste Rules

				units, chemical waste from laboratories, CSSD and laundry, cytotoxic waste from oncology units, used oil from DG sets and transformers, e waste from printers, tubelights, batteries etc.	2016.
30.	Is there trained staff in the facility to identify and handle hazardous waste?	Yes		All hazardous material in the institution is identified. The safety data sheet of all chemicals is uploaded in the intranet for all staff to view. Each area has the list of chemicals stored by them and the SDS for those areas are available as printed copies. Staff in each area are trained to handle hazardous material handled by them and the appropriate PPE that is required for them. Spill management team is also available with appropriate PPE for managing larger spills. In case of splash, occupational health	

				team is reported to and appropriate protocols followed.	
31.	Does the grantee have authorization from SPCB for hazardous waste?	Yes		The following are the licensing numbers. Town campus – 19BAC12091002 Schell campus – 17BAZ8739740 Rehab campus – 18BAZ27666623 MHC campus – 18BAZ9205366	
32.	Is there a secure location for storage of HW with proper signage?	Yes		Describe how each item is stored – platforms, distances from critical installations/movement areas, spill collectors, gas escape facility, etc.	
	Are hazardous waste stored for more than 90 days in the grantee's premises?	No			
33.	Is the hazardous being send to an **authorized** disposal facility or user?	Yes		Name and address of facility: Nuclear waste to Nuclear power plant, kalpakkam as per AERB norms Other wastes are handed to pollution control board approved agent Ken Biolinks and destruction certificate obtained.	
	Is the disposal facility in house?	No			
	Is the disposal facility external/outsourced?	Yes			

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?	Yes			
E-Waste and Batteries					
35.	Does the grantee generate e-waste, produce or manufacture electrical and electronic equipment?	Yes		E waste is generated from computers, laptops, tube-lights, inverters, batteries, printers etc	All the e-waste will be collected in designated areas and sent to M/S Tritech systems, No 26, Arcot Road, Porur, Chennai 600116 for disposal/recycling
36.	Has the grantee obtained SPCB authorization on e-waste?	Yes		The SPCB has authorized the approved vendor M/S Tritech systems, No 26, Arcot Road, Porur, Chennai 600116 for disposal/recycling	
37.	Does the grantee channelize the e-waste to **authorized** recycling or disposal facility?	Yes		Name and address of disposal facility/ recycler: M/S Tritech systems, No 26, Arcot Road, Porur, Chennai 600116 Inhouse or outsourced Facility:Outsourced	
38.	Does the manufacturing grantee have Extended Producer Responsibility system and EPR-authorization in place?	Yes		Describe: We don't use any mercury based instruments, lighting has been converted to LED/CFL to reduce the use of hazardous	

				substances, conventional coolants being replaced by non CFC coolants.	
39.	Does the grantee practice reduction in the usage of hazardous substances in the manufacture of electrical and electronic equipment and its parts?	Yes		Not related to this point	Lighting will be converted to LED/CFL to reduce the use of hazardous substances; conventional coolants being replaced by non-CFC coolants.
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?	Yes		Not related to this point	When we procure any equipment, the specifications will clearly specify environmentally friendly norms to conform to reduction of hazardous substances.
41.	Does the grantee maintain a record of collection, storage, sale and transport of e-waste?	Yes		Record of collection, storage of e waste is available.	
42.	Does the grantee submit annual reports on e-waste to SPCB?	Yes			
43.	Is there accident reporting and records in place?	Yes		Registers are maintained to record any such accidents	Activities under the project will also be recorded
44.	Are PPEs available to staff?	Yes		Available in project site	Ensure regular provision under the Project.
45.	Is the grantee involved in manufacture of batteries?	No			
46.	Does the grantee generate battery waste?	Yes		E waste is generated from computers, laptops, tubelights, inverters, batteries, printers etc from offices, inpatient and outpatient areas and laboratories.	All the e-waste is collected in designated areas and is sent to M/S Tritech systems, No 26, Arcot Road, Porur, Chennai 600116 for disposal/recycling
47.	Does the grantee deposit the battery waste to **registered** recycler/dealer/manufacturer/reconditioner/	Yes		Name and address of battery waste receiving	

	collection center?			entity: M/S Tritech systems, No 26, Arcot Road, Porur, Chennai 600116	
Community Health and Safety and risk mitigation					
48.	Safety Transportation Management System (for transport Of hazardous material)	Yes		Closed containers and record keeping as per norms	
49.	Emergency preparedness and participation of local authorities and potentially affected communities	Yes		Regular dills and testing of protocols at regular intervals	

Other					
50.	Does the grantee use any radioactive materials (isotopes tracers, radiation equipment, etc)?	Yes		We use isotope tracers such as technicium 99m, I 131, Gallium 68, Flourine 18, radiation equipment such as gamma camera, SPECT-CT, PET CT, thyroid uptake probes etc.	
	Does the grantee have appropriate radioactive material and waste storage and disposal system in place?	Yes		Describe: Both closed and open source are used.	Storage, disposal, half- life retention will be done as per AERB norms that is audited by external agencies.
	Are radioactive warning signs in place?	Yes		Displayed and periodically reviewed.	These would be regularly updated/ replaced.
51.	Is the lab/room air regularly checked for microbial contamination?	Yes		It is been regularly checked by the Institute's Committee.	Surveillance will continue on regular basis.
52.	Are there any odor control measures in place?	Yes		Regularly checked and maintained by the housekeeping department.	Periodic cleaning will be done.
53.	Are fume hoods and exhausts regularly checked and maintained?	Yes		Regularly checked and maintained.	Preventive maintenance plan will be put in place.
54.	Does the grantee use DG set > 15 KVA?	Yes		The electrical and mechanical engineering departments in CMC maintains and monitors the DG sets and boilers.	
	Does the grantee have consent for DG > 15 KVA?	Yes			
	Are emissions from boilers and DG sets regularly monitored to be within the prescribed norms?	Yes			
55.	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?	Yes		Describe: recyclable plastic waste is given to approved agents. Non-recyclable plastic waste is sent to cement factory for	

				high temperature incineration with the approval of pollution control board	
56.	Is wastewater treated separately by the grantee? (Liquid waste from laboratory, chemicals, fluids, solvents, medium and cultures, coolants, etc.)	Yes		Types of wastewater: laboratory, sewage, laundry, household waste water Treatment of wastewater: ETP and STP Chemical management in wastewater treatment plants: ETP before the waste water is sent to STP	
	Are there sludge management and cut off drains in place for wastewater?	Yes			
57.	Are necessary provisions for noise cancellation in place?	Yes		Describe: Noise reduction measures in place in areas > 85dB	
58.	Are there any settlements, water bodies, cultivated land, or any other eco-sensitive areas near the grantee's premises?	No		Describe: Distance from premises:	
59.	Are there any buffers, fire vehicle routes in the grantee's premises?	Yes		Adequate space is available for fire vehicle to enter. There are 2630 fire extinguishers, 380 fire hydrants, fire alarm panels 46, smoke detectors, heat detectors, multi-detectors manual call points and hooters totaling to 1910 and sprinkler heads 740 with additional pumps and buckets that is required to maintain the fire-	

				fighting equipment.	

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.