

## Environmental Health Risk Management Plan (EHRMP)

### Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER)

**Proposal entitled:** NETWORK OF ONCOLOGY CLINICAL TRIALS INDIA (NOCI)

#### 1. Institutional Arrangements

<p>(i) <b>Brief description of the proposed activity</b> The project involves setting up a “registry” which is a cohort of common cancers to study their outcomes and clinical trial facility at JIPMER. Infrastructure in the form of manpower and equipment will be supported by BIRAC funding.</p> <p>(ii) <b>List of environments related regulatory clearances required for the activity.</b></p>					
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?	Yes		<p>There is a separate designated officer for various committees in JIPMER</p> <ol style="list-style-type: none"> <li>1. Biomedical waste management</li> <li>2. Sanitary department</li> <li>3. CPWD/HITES look after sewage</li> <li>4. Hospital infection control committee (HICC) look after staff training and safety including PPE, PEP etc</li> <li>5. Fire safety officer looks after maintenance of fire safety issues</li> </ol>	<p>The proposed project elements will also be covered by these committees/agencies within JIPMER and a dedicated quota of man-hours will be given for the Project and the CTN sites as required.</p> <p>The training to the staff is given every 6 months. E.g, in Jan to June 2019, 1000 staff (doctors, nurses, paramedical staff and sanitation staff were trained)</p>
2.	Does the EHS staff handle the following?			<p>EHS training for Biomedical waste management (BMWM) is done by the BMWM team. <a href="https://www.jipmer.edu.in/departments/biomedical-waste-management">https://www.jipmer.edu.in/departments/biomedical-waste-management</a>. The biomedical waste management policy</p> <p>The plan includes: Pre-treatment of the laboratory waste, microbiological waste, blood samples and blood bags through disinfection or sterilization on-site</p>	
	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			

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			<p>followed at JIPMER is as per the Biomedical Waste Management Rules 2016</p> <p>The occupational health and safety issues are covered by the HICC.</p> <p>The consents and clearances required will be obtained by respective departments. Similarly records are maintained by the respective departments.</p> <p>EHS training staff is carried out by the respective departments. Regular EHS training are carried out at regularly intervals as and when any new staff joins.</p>	<p>in the manner as prescribed by WHO or NACO;</p> <p>Provide training to all its health care workers and immunize all health workers regularly.</p> <p>Establish a Bar-Code System for bags or containers containing bio-medical waste for disposal;</p> <p>of two years.</p> <p>Report major accidents if any.</p>
	Environment Management Framework compliance for Innovate in India Project		No	
3.	Is there a reporting structure in place regarding EHS issues?	Yes	<p>Describe:</p> <p>Staff are trained to provide reporting to respective departments for issues pertaining to their areas of work. Example: reporting structure for needle stick injury, for sewage blocks, fire related issues, spills etc. exists. The reporting structure is on the website. <a href="https://www.jipmer.edu.in/departments/biom-edical-waste-management">https://www.jipmer.edu.in/departments/biom-edical-waste-management</a></p>	<p>This will be regularly followed and ensure adherence to the requirements.</p>
4.	Are regular EHS trainings provided to staff?	Yes	<p>Frequency: As mentioned above, safety trainings are offered throughout the year by the respective</p>	<p>Under this project, all the project staff and research team will undergo the</p>

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				department and new employees are recruited.	EHS training. Afterwards refresher training will be provided.
5.	Institutional Bio-Safety Committee (IBSC)	Yes		<a href="https://www.jipmer.edu.in/research/research-committees/institutional-bio-safety-committeeibsc">https://www.jipmer.edu.in/research/research-committees/institutional-bio-safety-committeeibsc</a>	The project does not involve the use of GMOs/LMOs and rDNA. Any such activities if undertaken at the institution are done with due approval from IBSC.
6.	Ethics Committee (EC)	Yes		<a href="https://www.jipmer.edu.in/research/research-committees/institute-ethics-committee">https://www.jipmer.edu.in/research/research-committees/institute-ethics-committee</a>	Project will be commenced only after getting approval from Ethics Committee (EC).
<b>General Occupational Health and Safety</b>					
	<b>Area of Risk</b>	<b>Yes</b>	<b>No</b>	<b>Details</b>	<b>Proposed Plan</b>
7.	Are there Standard Operating Procedures for accidents, hazards, and other emergencies (chemical spills, heat hazards, fire hazards, radioactive hazards etc.)?	Yes		As described above various departments are designated within JIPMER to look after safety issues. SOPs in place for fire hazard, spill management, heat hazard and radioactive hazard.	Display of Procedures at prominent places in the site will be ensured.
8.	Are the following in place?			# Every ward / lab areas involved in handling of chemicals and drugs has access to bathrooms. Fire extinguisher details available in annexure (JIPMER fire preparedness document)	Register will be maintained for accidents and injuries in work areas
	Chemical spill kits	Yes			
	Eye wash	Yes			
	Shower stations	Yes#			
	First Aid Kit	Yes			
	Fire Extinguishers	Yes			
	Register of accidents and injuries	Yes			

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9.	Are proper signage and storage system in place?	Yes		Standard signage systems in place at all areas. MSDS displayed wherever relevant Emergency numbers displayed Flammable materials stored appropriately.	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, etc. in place and regularly maintained?	yes		List: Fire alarms and sprinkler facility in all hospital buildings. This is maintained by the fire safety officer. JIPMER has Fire Safety Preparedness Committee (FSPC) in place which conducts monthly meetings.	Any incident or audit findings are handled by FSPC.
11.	Are there control measures for VOC, air emissions, high operating temperatures, pathogens/vectors etc. in place?	Yes		JIPMER follows quality control within various departments. <a href="https://jipmer.edu.in/about-us/quality-and-safety/jipmer-quality-council">https://jipmer.edu.in/about-us/quality-and-safety/jipmer-quality-council</a>	Monthly meetings are held every month to discuss related activities.
12.	Are regular mock drills conducted for emergency preparedness and safety?	Yes		Frequency (type wise): Fire drills once in 6 months Disaster response drills: once a year	This will be followed as per the schedule.
13.	Are staff provided with OHS training?	Yes		Describe: The following areas are covered for all staff- fire safety For staff working in specific areas the following are covered: - Chemical handling - Spill management - Needle stick prevention and response - Vaccinations required	We will provide for all staff recruited in the project and include in the annual plan.

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<b>Biomedical Waste (BMW)</b>				
<b>Area of Risk</b>	<b>Yes</b>	<b>No</b>	<b>Details</b>	<b>Proposed Plan</b>
14. Is there generation of biomedical waste (as described in Bio-Medical Waste Management Rules, 2016) in the grantee?	Yes		<p><b>Yellow:</b> Human tissue, Placenta, Dead Fetus, Umbilical Cord, Organs, Body parts from OT, Amputated limb. → Animal body parts, organs, tissues from animal house. → Soiled cotton, pad, dressing materials and plasters. → All used mask, plastic apron, head cap and leggings. → Used HIV kits. → Blood Bag. → Discarded, linen, mattresses, beddings, contaminated with blood. → Discarded medicine &amp; cytotoxic drugs. → Dry chemical wastes. → Lab cultures, stocks, residual toxins, dishes and devices used for culture.</p> <p><b>Red:</b> All plastics &amp; rubber items. → IV sets, plastic IV bottle, Syringes without needle, needle caps, gloves. → Blood sets, corrugated drains, Uro bag. → All Tubings - ET Tube, Ryle's Tube and drainage tubes. → All catheters - urinary, suction, cardiac sheath. → ICD bottles - romovac, all plastic bottles.</p> <p><b>White:</b> All Sharp items • Needles. • Scalpel • All types of Blades • Lancet. • LP needle • Venflon stilette • Destroy needle tip using needle destroyer</p> <p><b>Blue:</b> All Glass items → Penicillin bottles → All glass bottles [Solution bottle, syrup bottle, IV bottles] → Used vials. → Broken ampoules → Metallic</p>	These will be treated as per the Bio-Medical Waste Management Rules, 2016.

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				implants → Glass test tube, slides, cover slips. <b>Black:</b> → All non-infectious general waste. → Kitchen waste, tea cups and food waste. → All covers, wrapper, paper, empty boxes and office waste. → Covers of blade and suture materials.	
15.	Is there trained staff to handle biomedical waste in the grantee?	Yes		There is a department with an officer who is trained to look after BMW. There are doctors and nurses in the team.	It will be a continual ongoing process.
16.	Has the grantee obtained authorization from State Pollution Control Board /Pollution Control Committee?	Yes		Authorization from State pollution control board: Authorization number: No:1/PPCC/BMWM/AUTHO/JSA (PPCC/ 2018/831 dated 04/10/2018 valid upto October 2021)	Renewal and approvals will be done and taken as per timelines.
17.	Is the biomedical waste segregated at point of generation in the facility and stored in suitable containers?	Yes		Yellow Red White Blue	These will be treated as per the Bio-Medical Waste Management Rules, 2016.
18.	Is the bar code system for the segregated waste in place?	Yes		Bar-Code System is present for bags or containers containing bio-medical waste for disposal.	Bar coding will be regularly updated as per policy guidelines.
19.	Is the biomedical waste being sent to an <b>authorized</b> common BMW facility?	Yes		Name and address -M/S Solid Waste Management, Thuthipet	The vendor's contract shall be renewed on time to ensure this practice is being followed.
20.	Does the grantee have an in-house BMW treatment facility?	No		It is outsourced.	The facility being outsourced will treat the BMW as per the BMW Rules 2016. This
	Is the treatment facility own (individual)?	No		Name and address of facility: M/S Solid Waste	

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	Is the treatment facility a shared facility in an industrial park?	No	Management, Thuthipet The facility is stand alone and not part of an Industrial park	practice will be continued throughout the project.
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?	Yes	Lab waste is collected in yellow containers and handed over to treatment agency as per the BWM rules 2016.	Compliance calendar shall be maintained.
22.	Is the liquid waste checked for active cells before sending to treatment plant?	Yes	Details available in the document: The material and waste is checked by the Hospital Infection control committee for active pathogens Then it goes to treatment plant under the CPWD within JIPMER	Routine checks will be done.
23.	Are necessary waste pre-treatment equipment in place?	Yes	List of equipment (autoclaves, shredders, incinerators, etc.):	Regular monitoring shall be undertaken.
	Do the equipment adhere to prescribed norms by State Pollution Control Board (SPCB)?	Yes	Autoclaving and microwaves are available for pre-treatment Incineration is not done in JIPMER. It is outsourced Details of waste pre-treatment: Yellow waste: Segregated and handed over to outsourced facility for disposal No Pre treatment with autoclaving and microwaving as per the BMW rules 2016 Red: No pretreatment is done. Handed over to outsourced agency Sharps (White) puncture proof box. No pretreatment prior to disposal Blue: Handed over to	

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				outsourced facility, NO pre-treatment in JIPMER All equipment used in JIPMER conforms to pollution control norms. Appropriate certification obtained from Board.	
24.	Are chlorinated plastic gloves and bags phased out by the grantee?	Yes		It has been phased out from all purchases being followed by JIPMER	
25.	Are grantee's personnel involved in handling BMW provided with regular training?	Yes		Frequency: Continuously done and whenever new staff is recruited  Trainer: Corresponding department personnel	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		Regular check-up done in 6 months and also whenever a new employee joins or is replaced. Immunization is provided for all new employees.	This practice shall be continued ensuring immunization to all the personnel involved in the BMW.
27.	Is a daily register for biomedical waste maintained including accident reporting record?	Yes		Records are in place to document and report any accidents.	Systems already in place will be maintained.
28.	Are annual reports on BWM submitted to SPCB as per required form (see Bio-Medical Waste Rules 2016)?	Yes		Attached copy of the annual report: <a href="https://www.jipmer.edu.in/departments/biomedical-waste-management">https://www.jipmer.edu.in/departments/biomedical-waste-management</a>	This practice would be followed ensuring submission within timelines.
<b>Hazardous Waste (HW)</b>					
	<b>Area of Risk</b>	<b>Yes</b>	<b>No</b>	<b>Details</b>	<b>Proposed Plan</b>
29.	Is there generation of hazardous waste (as per Hazardous Waste Rules, 2016) in the grantee?	Yes		list of hazardous waste produced in the facility  Patient material Unused medicines Radioactive material Chemicals used in laboratories	Disposal as per BWM rules <a href="https://www.jipmer.edu.in/departments/biomedical-waste-management">https://www.jipmer.edu.in/departments/biomedical-waste-management</a>
30.	Is there trained staff in the facility to identify and handle hazardous waste?	Yes		There is trained staff and training is periodically given.	Training is a continuous process to all employees.



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31.	Does the grantee have authorization from SPCB for hazardous waste?	Yes	Authorization from State pollution control board: Authorization number: No:1/PPCC/BMWM/AUTHO/JSA (PPCC/ 2018/831 dated 04/10/2018 valid upto October 2021)	Timely renewals will be done and approvals will be taken.
32.	Is there a secure location for storage of HW with proper signage?	Yes	Currently all HW are treated according to guidelines and handed over to outsourced facility for disposal. Nuclear medicine department handles the waste generated from radioactive materials and these are disposed in proper manner after ensuring safe fall off of radioactivity. They have delay tanks for these items Patient material infectious material are segregated at source and disposed through external agency for proper disposal. PPE is available for personnel handling these kind of waste materials. Same precautions are followed by microbiology lab which also deals with this kind of materials. Unused medicines especially chemotherapy etc. are put in covers labelled biohazard and again sent to the external agency for destruction. Chemicals used in labs are disposed in a timely manner. No material is stored for more than 90 days. Appropriate labeling and demarcation of these items is done to ensure proper precautions when handling these items	The location will be maintained with proper signage system as per the HW Rules, 2016.
	Are hazardous waste stored for more than 90 days in the grantee's premises?	No		

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33.	Is the hazardous being send to an <b>authorized</b> disposal facility or user?	Yes		Name and address of facility: M/S Solid Waste Management, Thuthipet	Will ensure that this facility is in place with timely renewals of existing vendor's contract.
	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		Register maintained only for production.	Will continue to maintain the register with frequent review and updates.

**E-Waste and Batteries**

	<b>Area of Risk</b>	<b>Yes</b>	<b>No</b>	<b>Details</b>	<b>Proposed Plan</b>
35.	Does the grantee generate e-waste, produce or manufacture electrical and electronic equipment?	Yes		E waste is generated but there is no manufacture of electronic and electrical equipment in the premises	The e-waste generated will be collected centrally including batteries etc. and then an annual tender will be floated to identify a proper disposal agent who collects these materials and takes them for disposal.
36.	Has the grantee obtained SPCB authorization on e-waste?		No	E-waste is channelized to authorized disposal as described below	Will continue this activity throughout the project with the recycler/disposal facility stated below.
37.	Does the grantee channelize the e-waste to <b>authorized</b> recycling or disposal facility?	Yes		Name and address of disposal facility/ recycler:  Outsourced Facility: The e-waste generated is collected centrally including batteries etc. and then an annual tender is done to identify a proper disposal agent who collects these materials and takes them for disposal. Tender document for 2020 is available at :	This will be followed and updated regularly as and when the vendor changes, through the project.

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				<a href="https://jipmer.edu.in/sites/default/files/Tender%20Doc%202020.pdf">https://jipmer.edu.in/sites/default/files/Tender%20Doc%202020.pdf</a>	
38.	Does the manufacturing grantee have Extended Producer Responsibility system and EPR-authorization in place?		No	Describe: Since the e waste is currently handed over to a proper disposal agent.	
39.	Does the grantee practice reduction in the usage of hazardous substances in the manufacture of electrical and electronic equipment and its parts?		No	JIPMER is not involved in the manufacture of these items	
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?		No	JIPMER is not involved in the manufacture of these items	
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.	This record will be updated and maintained regularly.
42.	Does the grantee submit annual reports on e-waste to SPCB?		No		Will follow this process in future, if needed.
43.	Is there accident reporting and records in place?	Yes		Records are in place to document and report any accidents within the laboratory.	Activities under the project will also be recorded in this.
44.	Are PPEs available to staff?	Yes		This is taken care by the Hospital infection control committee and the Biomedical waste management department	The stock status of PPE will be regularly monitored and procurement will be done in time to avoid any situation of stock out.
45.	Is the grantee involved in manufacture of batteries?		No		
46.	Does the grantee generate battery waste?	Yes		The e-waste disposal is outsourced.	The e-wastes will be collected and isolated within the premises of center. An appropriate agency will be outsourced for disposal

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					of e-wastes.
47	Does the grantee deposit the battery waste to <b>registered</b> recycler/dealer/manufacturer/reconditioner/collection center?		No	Name and address of battery waste receiving entity:	These details are being worked out.
48.	In case of manufacturing, does the grantee comply to Battery Management Rules 2000 and ensure collection of old batteries?		No	Not involved in manufacturing	

**Community Health and Safety and risk mitigation**

		Yes	No	Details	Proposed Plan
49	Safety Transportation Management System (for transport Of hazardous material)	Yes		This is being handed over to authorized disposal agent who is in charge of the transport of these materials who follows standard norms	Will follow the same for the project activities along with ensuring the contract with the outsourced agency is renewed on time.
50.	Emergency preparedness and participation of local authorities and potentially affected communities	Yes		This is being handed over to authorized disposal agent who is in charge of the transport of these materials who follows standard norms	Standard policies will be followed by JIPMER.

**Other**

	Area of Risk	Yes	No	Details	Proposed Plan
51	Does the grantee use any radioactive materials (isotopes tracers, radiation equipment, etc)?		No	There are departments of Radiation oncology and Nuclear medicine within JIPMER who handle radioactive substances. They follow norms laid down by government. There is a designated radiation safety officer within JIPMER/.	
	Does the grantee have appropriate radioactive material and waste storage and disposal system in place?	Yes		Describe: The radioactive material in the department of radiotherapy (cesium source, cobalt source) are handed over back to the BARC following appropriate norms laid down by the Atomic Energy Agency. There is a designated	Periodic checks will be undertaken.

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			Radiation safety officer in JIPMER who looks after these issues.	
	Are radioactive warning signs in place?	Yes	In the department of radiotherapy and in the department of nuclear medicine	These would be regularly updated/ replaced.
52.	Is the lab/room air regularly checked for microbial contamination?	Yes	Monitored by Hospital Infection control committee (HICC)	Surveillance will continue on regular basis.
53.	Are there any odor control measures in place?	Yes	Biosafety cabinets are used wherever potentially toxic fumes are used	Periodic cleaning will be done.
54.	Are fume hoods and exhausts regularly checked and maintained?	Yes	Biosafety cabinets are used wherever potential toxic fumes are used- all equipments covered by AMC's in JIPMER	Preventive maintenance plan will be put in place.
55.	Does the grantee use DG set > 15 KVA?	Yes	DG sets are used within JIPMER and are maintained by the Electrical Department of the Central Public Works Department which has an office campus within JIPMER campus. No DG set use is planned for this project	Will ensure maintenance of the DG sets used in JIPMER.
	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		
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?	Yes	There is proper process. These are also segregated as per rules.	It will be ensured that segregation rules are followed.
57.	Is wastewater treated separately by the grantee? (Liquid waste from laboratory, chemicals, fluids, solvents, medium and cultures, coolants, etc.)	Yes	There is a separate treatment plant. Lab wastes are also disposed in appropriate manner.	Periodic checks will be done and the treatment plant shall be maintained.
	Are there sludge management and cut off drains in place for wastewater?	Yes	The CPWD housed within in JIPMER campus manages waste water treatment processes within JIPMER.	These will be periodically checked and maintained to ensure their proper functioning.
58.	Are necessary provisions for noise cancellation in place?	Yes	Describe: Very few high noise producing equipment is used	Will keep reviewing the noise generated and cap

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				in the hospital premises. Wherever needed, noise cancellation headphones are provided to the employees. The DG sets etc used within JIPMER are of low noise producing variety.	them according to the existing cancellation provisions.
59.	Are there any settlements, water bodies, cultivated land, or any other eco-sensitive areas near the grantee's premises?		No		
60.	Are there any buffers, fire vehicle routes in the grantee's premises?	Yes		There is a fire preparedness committee with a designated Fire safety Officer (Dr. Guanseeelan, HOD, Radiation Oncology). He ensures that the fire safety norms are followed	Any new buildings constructed within the campus are also cleared for fire safety including vehicle routes.

**Notwithstanding the above, other risks that will be relevant to the project activities, identified in due course, shall be addressed as per standard mitigation measures. Monitoring parameters and manner of record keeping shall be in accordance to the recommendations of the project monitoring committee or subject expert engaged by BIRAC**