**Appendix 8 to the Grant Agreement**

**from "  " \_\_\_\_\_\_\_\_\_\_\_\_ 20\_\_\_ No. \_\_\_\_\_\_\_**

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| **Environmental Protection Plan regarding the materials (EPP)** |

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| Subproject beneficiary | Utepbergenov Irbulat Turemuratovich,  No. 6747 |
| PROJECT NAME | «Development and implementation of a customer-oriented integrated automated system for calculating and manufacturing transformers» |
| Project scope - project description | The purpose of the subproject is to improve the quality of transformers, using advanced IT technology, reduce costs through the use of new automation technologies using modern equipment, it is possible to reduce energy losses during their operation in the network. Reduction of materials used and reducing losses are especially important in distribution power transformers, which consume a significant amount of materials and generate a significant part of the energy losses of the entire transformer fleet.  Results from the implementation of the Project:  1) a new customer-oriented and automated system for calculating the parameters of transformers;  2) a new pilot type of transformer with a lower cost and production time, as well as its commercialization by concluding an agreement with the customer;  3) obtaining a patent for an invention.    Technological process (stages of production):   1. Development and implementation into production of a customer-oriented automated system for calculating the parameters of transformers:   Collection and consolidation of data;  Analysis of the relationship of production processes;  Drawing up and writing the system algorithm;  Development, testing and implementation of a system for calculating parameters in the production of transformers.   1. Development of design and technological documentation 2. Development of technological documentation 3. Development of drawings of technological equipment and devices 4. Transformer manufacturing: Transformer parts manufacturing,   Manufacturing of technological equipment and devices,  Welding and assembly works for the manufacture of the metal structure of the transformer,  Surface preparation and painting of metal structures of the transformer,  Winding and pressing of transformer windings,  Assembly of the active part,  Assembling the transformer,  Manufacturing of electrical insulating parts.   1. Testing and delivery of products to the warehouse |
| Organizational support of the project / supervision of project implementation | Ministry of Digital Development, Innovations and Aerospace Industry of the Republic of Kazakhstan, Asia Trafo LLP |
| What is the potential environmental impact of the project? | The transformer oil used in the transformers planned for production is ecological and does not contain polychlorinated biphenyls (PCBs). Transformer oil is biodegradable, non-toxic and does not harm the ozone layer.  Transformer oil meets the requirements:  - Technical Regulations of the Customs Union TR CU 030/2012 "On requirements for lubricants, oils and special fluids"  - GOST R 54331-2011 (IEC 60296: 2003)  - TC 38.1011025-85 “Transformer oil for hydrocracking HC. Technical conditions ".  The chemical composition of transformer oil is below:  Component  Share in oil  1. Paraffins  10 -15%  2. Naphthenes or cycloparaffins  60 - 70%  3. Aromatic hydrocarbons  15-20%  4. Asphalt-resinous substance  1-2  5. Sulfur compounds <1%  6. Nitrogen compounds  <0.8%  7. Naphthenic acids  <0.02%  8. Antioxidant additive (ionol)  0.2 - 0.5% |
|  |  |
| TESTS / RESEARCH / INSTALLATION |  |
| Describe the test phase | According to the Implementation Plan |
| Is the generation of special waste foreseen during the research project (specify below)? | No |
| Yes\_\_\_\_\_ No\_\_ ۷\_\_\_\_ |
| Sharp, cutting objects [all sharp objects with which you can get a cut or puncture wound (infectious or not), including hypodermic needles, surgical needles, syringe tips, scalpels, knives, blades, razors, pipettes, broken glass, etc.] | No |
| Yes \_\_\_\_\_ No \_\_\_ ۷\_\_\_ |
| Hazardous biological waste [body fluids, blood, organs, tissues, culture dishes, microbiological slides, cover slips, etc. ] | No |
| Yes \_\_\_\_\_ No \_\_\_ ۷\_\_\_ |
| Radioactive waste [solid, liquid and gaseous waste contaminated with radionuclides and radioisotopes] | No |
| Yes\_\_\_\_\_ No\_\_ ۷\_\_\_\_ |
| Hazardous chemical waste [any substance, liquid or solid, that is characterized by at least one of the following properties: explosiveness, flammability, toxicity, corrosive effects, local abrasion, chemical activity, genotoxicity (carcinogenic, mutagenic, teratogenic properties), including cytotoxic agents ... And also all containers in which these substances were stored.] | No |
| Yes \_\_\_\_\_ No \_\_\_ ۷\_\_\_ | No |
| Animal testing | No |
| Yes \_\_\_\_\_ No \_\_\_ ۷\_\_\_ |
| Used water | No |
| Yes \_\_\_\_\_ No \_\_\_ ۷\_\_\_ |
| Toxic substances | No |
| Yes \_\_\_\_\_ No \_\_\_ ۷\_\_\_ |
| Air emissions | Taking into account the fact that the production will be organized at the operating enterprise of Asia Trafo LLP, Qualitative and quantitative parameters of emissions from the assembly of the pilot transformer are given below (in tons / year):  Aluminum oxide - 0.00006  Iron (II, III) oxides - 6.49541  Manganese and its compounds in terms of manganese (IV) oxide / (327) - 0.219505  Nitrogen (IV) dioxide (Nitrogen dioxide) (4) - 11.56076  Nitrogen (II) oxide (Nitrogen oxide) (6) - 1,87771  Sulfur dioxide (sulfur dioxide, sulfur dioxide, sulfur (IV) oxide) (516) - 0.26832  Carbon monoxide (Carbon monoxide, Carbon monoxide) (584) - 16.4556  Dimethylbenzene (mixture of o-, m-, p-isomers) (203) - 3.018  Methylbenzene (349) - 0.604  Butan-1-ol (Butyl alcohol) (102) - 0.5834  Ethanol (ethyl alcohol) (667) - 0.1  2-Ethoxyethanol (Ethylene glycol ethyl ether, Ethyl cellosolve) (1497 \*) - 0.693  Butyl acetate (Acetic acid butyl ester) (110) - 0.1  Ethenyl acetate (Vinyl acetate, Acetic acid vinyl ester) (670) - 0.015  Propane-2-one (Acetone) (470) - 1.481  Mineral petroleum oil (spindle, machine, cylinder, etc.) (716 \*) - 0.32828  Solvent naphtha (1149 \*) - 1.00222  Suspended particles (116) - 1.65497  Inorganic dust containing silicon dioxide in%: 70-20 cement, cement production dust - clay, shale, blast-furnace slag, sand, clinker, ash, silica, ash from Kazakh coal deposits) (494) - 0.00559  Abrasive dust (White corundum, Monokorundum) (1027 \*) - 0.0936  Paper dust (1034 \*) - 1.065666 |
| Yes\_\_ ۷\_\_\_ No\_\_\_\_\_\_ |
| Other (describe) | No |
| Yes \_\_\_\_\_ No \_\_\_ ۷\_\_\_ |
| APPROVALS |  |
| What approvals are required for project preparation and /or testing?[[1]](#footnote-1) | The project is being implemented on the basis of the facilities of Asia Trafo LLP in the Republic of Kazakhstan, Shymkent, Karatau district, Tassay residential area, building 1196. The power transformer production plant is located in the north-eastern part of Shymkent in the industrial zone "Tassay".  Asia Trafo LLP carries out emissions of pollutants into the environment in accordance with the Permit for emissions into the environment for objects of II and III categories No.KZ49VCZ00710810 dated 23.10.2020. The enterprise is allowed to produce emissions of pollutants in volumes not exceeding 47.622091 tons/ year. The Permit is valid until December 31, 2029. |

List all materials that will be used in the work process, hazardous materials must be identified in accordance with the legislation on chemicals (Appendix F). Material safety data sheets and all approvals must be attached to the final design documentation.

The main goal of hazardous materials management is to avoid or, if unavoidable, minimize uncontrolled releases of hazardous materials or accidents (including explosions and fires) during the production, handling, storage and use of such materials. This goal can be achieved as follows:

-         avoiding or minimizing the use of hazardous materials;

-         avoidance of uncontrolled release of hazardous materials into the environment or uncontrolled reactions that could lead to fire or explosion;

-         use of engineering controls in accordance with the nature of the hazard;

-         implementation of administrative controls (procedures, checks, communications, training and coaching) to manage residual risks that are not prevented or controlled by engineering measures.

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| List of materials / chemicals to be used | Please provide CAS number if possible [[2]](#footnote-2), , corresponding to the material / chemical[[3]](#footnote-3) | Is the material hazardous under the Chemicals Act? | Specify the material category according to the Chemicals Act (flammable, toxic, etc.) |
| Insulating cardboard |  | No |  |
| Transformer oil |  | No |  |
| Winding wire |  | No |  |
| Electrical steel |  | No |  |
| Insulating paper |  | No |  |

**Documentation Disclosure Information**

This EPP regarding the materials is available in the public domain at the following link - <https://alageum.com/en/novosti/environmental-management-plan-for-the-subproject-development-and-implementation-of-a-customer-oriented-integrated-automated-system-for-calculating-and-manufacturing-transformers>

| **WORK** | **PARAMETER** | **MITIGATION MEASURES CHECKLIST** |
| --- | --- | --- |
|  | Waste collection and disposal | (a)  For all main types of construction waste generated during construction and dismantling works, collection points and removal routes will be established.  (b)  The collection and removal of construction waste will be carried out by specialized licensed enterprises.  (c)  Waste collection will be counted to confirm proper collection and disposal in accordance with the project.  (d)  Whenever possible, the contractor will ensure the reuse and recycling of suitable and resistant materials (excluding asbestos). |
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| Collection and disposal of toxic / hazardous materials | (a)  When hazardous or toxic substances are temporarily stored at the work site, such substances will be placed in secure containers, which must indicate the composition and properties, as well as information on handling such substances in accordance with material safety data sheets.  (b)  Hazardous material containers should be placed in hermetically sealed containers to avoid leaks and leaching.  (c)  Waste transportation will be carried out by specialized licensed carriers with disposal at established facilities.  (d)  Paints with toxic ingredients or solvents or lead-based paints will not be used.  (e)  All materials used must be identified and the relevant material safety data sheets must be printed. |

**IMPACT MITIGATION AND MONITORING PLAN**

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| **Activity** | **Expected environmental impact** | **Proposed mitigation measure** | **Responsibility for implementing mitigation measures** | **Period of implementation of mitigation measures** |
| Working on a paper milling machine | Emissions to the atmosphere of paper dust | Equipped with a 99% dry scrubbing bag filter. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Before putting production into operation |
| Work on the machine for semi-automatic welding of steels in carbon dioxide | Organization of emission in order to improve the dispersion of pollutants | Equipment of the apparatus with exhaust units of the SovPlym brand. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Before putting production into operation |
| Work on metalworking machines | Organization of emission in order to improve the dispersion of pollutants | Equipment of the apparatus with exhaust units of the SovPlym brand. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Before putting production into operation |
| Painting line | Emissions to the atmosphere of paint vapors | Equipped with hydro filters and filters | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Before putting production into operation |
| Production and consumption waste management | Reducing the volume of landfills | Separate waste collection and sorting them according to their components in order to utilize individual waste components.    Waste generation and disposal records will be maintained and the laboratory will conduct regular checks on the records.  Waste storage will be carried out in a specially designated place with garbage disposal in accordance with sanitary standards. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Constantly |
| Filling oil into the transformer tank | Prevention of environmental pollution by persistent organic pollutants | Use in the manufacture of transformers of oil that does not contain polychlorinated biphenyls (PCBs). | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Constantly |
| Equipping the premises with equipment and operation | Occupational health and safety risks | In the course of work, all employees wear overalls and personal protective equipment: a cotton suit, goggles, leather boots with a metal toe, combined gloves.  Keeping training logs (introductory, primary, electrical safety, fire safety).  Use of rational work and rest regimes for workers. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Daily |
| Equipping the premises with equipment and operation | Danger of electric shock | - Overload protection in equipment design  - Complete blockage of power supply when the case is open.  - In the event of a power outage, the starting devices are moved to the "Stop" position until the malfunctions are eliminated by employees who have an electrical safety permit.  - control of electrical circuits of automation in accordance with the Equipment Passport by a specialized organization. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Constantly |
| Fire safety | Check for the presence of a fire extinguisher, which is used to extinguish burning materials of all types - solid flammable materials, highly flammable liquids and electrical installations up to 1000 volts.  All members of the performer group of the subproject undergo regular fire safety briefing.  Keeping a log of safety briefing.  Periodic checking of the condition of fire-fighting equipment.  The emergency plan will be periodically reviewed and updated.  Periodic verification of control systems.  Regular checks and maintenance of the ventilation system. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Constantly |
| Installation supervision and assembly work | Noise / vibration  - Compliance with the scheduled working time;  - Noise levels (in case of complaints). | - At the workplace, an inspection will be carried out for compliance with the noise level (permissible noise level 75-80dB)   - Upon receipt of complaints, measures will be taken to eliminate the causes of increased noise. Also, measuring noise levels with a multifunctional environmental meter. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | During assembly operations |
| Short-term exposure to dust (suspended particulate matter Single time Maximal Permissible Pollutant Concentration = 0.5 mg/ m3). | Providing workers with respirators.  - Use of measuring instruments (when checked by a government agency / licensed laboratory). | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | During assembly operations |
| Installation supervision and assembly work | Quality control | When purchasing equipment and installing it, quality control will be carried out: equipment must have certificates of origin and compliance with all technical standards, have safety and operating passports and instructions. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | During assembly operations |
| Delivery of finished products to the warehouse and shipment | Safety engineering | Quality control will be carried out in the quality control area with regular checks of records.  Separate, selective quality control will be carried out in the laboratories of specialized organizations on a contractual basis. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Upon dispatch |
| Fire safety | Check for the presence of a fire extinguisher, which is used to extinguish burning materials of all types - solid flammable materials, highly flammable liquids and electrical installations up to 1000 volts.  All members of the performer group of the subproject undergo regular fire safety briefing.  Keeping a log of safety briefing.  Periodic checking of the condition of fire-fighting equipment.  The emergency plan will be periodically reviewed and updated.  Periodic verification of control systems.  Regular checks and maintenance of the ventilation system. | Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | Upon dispatch |
| Delivery of finished products to the warehouse and shipment | Product quality control | Quality control will be carried out in the quality control area with regular checks of records.  Separate, selective quality control will be carried out in the laboratories of specialized organizations on a contractual basis. | Subproject Manager, Head of Occupational Safety and Health, Responsible for the Environment of Asia Trafo LLP | During the production and delivery of products |

**MONITORING PLAN**

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| Which parameter should be monitored? | Where should the monitoring parameter be monitored? | How should the monitoring parameter be monitored (what should be measured and how)? | When should the monitoring parameter be monitored (time and frequency)? | Who should track this parameter (responsibility)? |
| Emissions of pollutants into the atmosphere | Stationary emission sources | -Single time maximal emission (g / s) by the instrumental method or by calculation (for fugitive emission sources).  - Use of measuring instruments (when checked by a government agency / licensed laboratory).  - Carrying out instrumental measurements at organized sources in accordance with the control schedule at the enterprise for compliance with the MPE standards.  - Collecting actual data necessary for calculating emissions, carrying out calculations with a frequency of at least once a month.  - Conclusion of contracts with an accredited laboratory to control the established emission standards in accordance with the approved environmental control program.  - Submission of environmental reports to the authorized body for environmental protection, statistics.  - Control of local exhaust ventilation at the points of possible emissions and leaks of harmful substances at least once a month.  - Continuous monitoring of the storage of hazardous substances in closed containers /packages. | Quarterly at maximum equipment load | Head of Occupational Safety and Health, responsible for the environment of Asia Trafo LLP with the involvement of a certified laboratory |
| Volumes of waste generation, temporary storage and transfer to third parties | At sources of waste generation, in places of their temporary storage | -Accounting the volume of waste generation  - Frequency of transfer to third parties.  -Separate waste collection and sorting them according to their components in order to utilize individual waste components.  -Records of waste generation and disposal will be maintained and regular checks of records will be carried out.  -Submission of environmental reports to the authorized body for environmental protection, statistics. | Constantly | Head of Occupational Safety and Health, responsible for the environment of Asia Trafo LLP with the involvement of a certified laboratory |
| The composition of the used transformer oil | Before the stage of pouring it into transformers | An accredited laboratory. Check for the presence or absence of PCBs. | Constantly | Head of Occupational Safety and Health, responsible for the environment of Asia Trafo LLP with the involvement of a certified laboratory |
| Occupational safety and health | During production work | - Determination and provision of the required PPE, which provide the necessary protection for workers at intervals of at least once a month.  - Continuous monitoring of the use of PPE.  - Monitoring the maintenance of PPE, including cleaning when contaminated and replacing it when damaged or worn out, at least once a month.  - Training of employees in the rules of proper use of PPE at intervals of at least 1 time per quarter.  - Maintaining documentation on the availability of personal protective equipment and the need for training in actions in the event of emergencies.  - Control over the frequency of certification of workplaces, which is carried out by specialized organizations with a frequency of at least once every five years.  - Mandatory instruction for all new employees on occupational health and safety issues in order to inform them about the most important rules of work in certain work areas, as well as about the available personal protective equipment and prevention of injuries.  - Basic briefing on health and safety issues and special classes in areas of work in accordance with production needs in order to inform all workers about the hazards associated with the implementation of specific types of production tasks.  - Visually by verifying the practical use of the equipment and checking the existing equipment conformity to the regulations.  Training records will be reviewed and improvements made as necessary. | Constantly | Head of Occupational Safety and Health, responsible for the environment of Asia Trafo LLP with the involvement of a certified laboratory |
| Fire safety | During production work | Periodic inspections of the condition of the firefighting equipment will be carried out.  The emergency plan will be periodically reviewed and updated.    Training and testing of knowledge on occupational safety and health issues for managers and employees responsible for ensuring safety and security. Keeping an appropriate journal about instruction and training. | Constantly | Head of Occupational Safety and Health, responsible for the environment of Asia Trafo LLP with the involvement of a certified laboratory |
| Inspection of technological equipment | Before starting and during operation of the equipment | Inspection, revision for the serviceability of technological equipment.    - Training of personnel in the operation of equipment. Access to the equipment only after testing knowledge and skills. Equipment knowledge test records will be maintained, reviewed and improvements made as necessary.    Availability of certificates of conformity for the raw materials and equipment used. | Constantly | Head of Occupational Safety and Health, responsible for the environment of Asia Trafo LLP with the involvement of a certified laboratory |

**Appendix G: Mitigation Measures for Laboratory Remediation and International Best Practice for Laboratory Work**

**Mitigation measures**

Short term exposure to noise, dust and vibration during construction work is inevitable. The noise level will increase significantly due to the movement of construction equipment. This project impact will be minimized by (i) specifying in the project contract(s) the responsibility of the contractor to implement appropriate mitigation measures as part of site management, and (ii) oversight of the contractor's compliance by a technical supervision engineer/ project management team. Mitigation measures may include the following: use of sprinklers to wet roads and prevent dust emissions during transportation of soil; covering vehicles to prevent leaks and transporting soil from the quarry only during the day; to reduce the noise level, the use of noise-absorbing building materials and materials that protect against noise; distribution of earplugs and anti-noise helmets to employees and, in general, prevention of long-term work in conditions of increased noise, etc.

General construction waste. According to the technical conditions, the collection and storage of all construction waste containing bitumen should be organized in separate landfills. The contractor is required to comply with local environmental and waste management regulations. The documentation on the restoration of the building should include information about where the waste will be buried, about the amount of waste from each site. All valuable materials (doors, windows, plumbing, etc.) must be disassembled and transported to the designated storage location. Valuable materials are to be recycled as part of a project or sold. Wood waste is stored separately and transferred to recycling, not disposal. Open-pit burning or illegal burial is not permitted. The relevant authorities will identify sites for the disposal of waste in the form of soil, clay and sand and issue preliminary permits for waste disposal. The accumulation of debris on the site should be avoided and the waste will be regularly disposed of at an approved landfill site.

Groundwater pollution. It is also required to create the necessary conditions for the safe disposal of wastewater during restoration and reconstruction works and comply with environmental protection and sanitation regulations during the restoration of sanitary and technical equipment, sewer pipes and treatment facilities.

Cultural values. During restoration work, archaeological or cultural values ​​may be discovered. Contracts for the performance of work provide for the relevant provisions, according to which the contractor must be careful when performing work, take into account the likelihood of accidental finds, and in the event of any such find, immediately stop construction work on the relevant site and notify a specialist from the Ministry of Science and Education and the competent state organ.

Applying proper building materials. All materials must have appropriate quality and safety permits (certificate of conformity and sanitary and epidemiological conclusion). Priority should be given to products that comply with recognized international or national standards. For interior drywall or plastering work, non-toxic, non-allergenic water-based paints should be preferred over latex or oil paints due to the impact on health of inhalation fumes from such paints.

Safety at the construction site. In order to prevent the presence of random people on the work site, the construction site must be fenced. Safety measures must also be established. Temporary inconvenience in connection with construction works should be minimized through planning and coordination of works with contractors, local communities and authorities.

**Best international practice**

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| **Potential environmental problems** | **Mitigation measures** | **Monitoring strategy and emergency response** |
| **1.Emissions to the atmosphere** | * For laboratory personnel, trainings and briefings will be provided on methods to minimize emissions into the atmosphere. * Procurement of equipment that does not contain ozone depleting substances (refrigerators, air conditioners, fire extinguishers, etc.), and proper maintenance of equipment containing ozone depleting substances. * A list of sources of emissions of hazardous substances that pollute the atmosphere, indicating the corresponding category, will be sent to the laboratory. * A list of actual and potential sources of emissions in the laboratory will be prepared (chimneys and ventilation pipes, etc.) | * An assessment of the impact of air pollutants will be carried out twice a year. * Periodic testing of control systems will be carried out. * Emissions accounting will be carried out with periodic verification of accounting records by the Bank's supervisory group and any authorized government body. Annual certification is the responsibility of the responsible person (Emission Management System). * Regular checks and maintenance of the ventilation system. |
| **2.Wastewater disposal** | * A detailed list of wastewater sources and disposal sites will be prepared. * A proper wastewater minimization procedure will be developed (e.g. pre-treatment with neutralizing materials, etc.) * The site is encouraged to use septic tank systems or appropriate wastewater treatment systems based on the characteristics of the wastewater. After proper treatment, the wastewater will be discharged into the city's sewerage network. * Laboratory staff will be trained in minimizing and managing wastewater disposal. | * Periodic maintenance of the sewerage system will be carried out. * Laboratory procedures will be reviewed periodically to ensure they meet regulatory requirements. * Regular trainings on wastewater minimization will be held. |
| **3.Hazardous and radioactive waste** | * Various types of waste such as unused chemicals, waste solvents, etc. will be identified for a proper collection, transport and disposal system. * A special method will be adopted for the separation and disposal of used lead and alkaline batteries. * Training programs for the safe handling of hazardous waste will be prepared for laboratory personnel. * Waste minimization procedure will be prepared and implemented. | * An assessment of the impact of hazardous and radioactive waste will be carried out twice a year. * All laboratory workers will undergo a medical examination 4 times a year. * Waste generation and disposal records will be maintained and the laboratory will conduct regular checks on the records. |
| **4.Handling hazardous chemicals** | * When working with hazardous chemicals, in order to minimize potential exposure, observe the necessary precautions (use of gloves, masks and aprons) in accordance with the requirements / recommendations of the manufacturer for handling various types of chemicals. * Proper labeling of all hazardous chemicals such as flammable and combustible materials, oxidants, poisonous substances, to clearly identify risks and take precautions. * A matrix for the selection, use and maintenance of personal protective equipment will be prepared to prevent direct contact with corrosive, carcinogenic and irritating substances. * During the renovation work, an adequate ventilation / exhaust system will be designed to prevent exposure to vapors and vapors of hazardous chemicals. * Appropriate devices for protection against radioactive radiation will be purchased and will be used in the future when working with radioactive substances. * Proper containment procedures will be developed for different types of hazardous materials. * First aid training will be organized for all workers. * Laboratory personnel will receive training on handling hazardous chemicals. A training of trainers program will be organized. | * Periodic chemical exposure assessments will be carried out. All employees will undergo periodic medical examinations. * A procedure for the periodic visual inspection of markings, symbols and signs will be developed. Appropriate accounts will be kept. * Authorized persons will carry out regulatory compliance checks. * A schedule for periodic maintenance and inspection of the technical control equipment and the effectiveness of mitigation measures will be prepared. * A record of all incidents / events when working with hazardous chemicals will be organized, the records will be periodically checked by the responsible laboratory worker. |
| **5.Storage of hazardous chemicals** | * A procedure for the separation of chemicals in accordance with their classification and compatibility criteria will be developed and implemented. * A minimum stock storage procedure will be prepared for each type of hazardous chemical. * Appropriate storage criteria for flammable, combustible and volatile chemicals will be determined. Separate storage of empty containers and containers with chemicals will be provided. * During the renovation work, an adequate ventilation / exhaust system will be designed to prevent exposure to vapors and vapors of hazardous chemicals. * A training program will be organized for workers on the proper storage of hazardous chemicals and their health effects. | * Criteria for periodic inspection and a schedule for regular visual inspection will be developed. * Periodic revisions of procedures will be undertaken to ensure a safer environment for handling highly toxic, carcinogenic, reactive or mutagenic materials, as applicable. * An authorized laboratory worker will perform periodic checks on the ventilation system. |
| **6.Disposal of hazardous chemicals** | * Hazardous chemicals / waste will be segregated at the point of receipt, handled appropriately and stored in a separate container. * An appropriate waste collection and disposal system will be determined. * Training on waste collection and disposal procedures will be provided to laboratory personnel. | * Local environmental authorities will periodically monitor waste treatment and disposal procedures (subject to agreement). |
| **7.Fires and explosions** | * It is required to select and install the appropriate fire-fighting equipment in the right places. New technologies will be used (smoke detectors, thermoelectric elements and fire alarms, as required). | * Periodic inspections of the condition of the fire fighting equipment will be carried out. * The emergency plan will be periodically reviewed and updated. |
| **8.Application of the principles of sustainable development** | * Measures will be taken for the rational use of water to reduce its consumption. * Measures will be taken to save energy. * For laboratory workers, classes and motivating activities will be held on the rational use of water and electricity. | * An authorized laboratory worker will work with local government officials to carry out checks on electricity and water consumption to determine current equipment usage and associated costs. |

1. All permits must be attached to the final documentation [↑](#footnote-ref-1)
2. Chemical abstract service number [↑](#footnote-ref-2)
3. Material Safety Data Sheets should be attached to the final documentation [↑](#footnote-ref-3)