India Chiller Energy Efficiency Project (ICEEP)

Environmental Management Plan (EMP)

1. **Safety Requirement for Design, Construction, Installation, and Operation of Refrigeration Systems:**

   Chiller suppliers are required to abide to safety standards prescribed by ANSI/ ASHRAE 15 – 1994. This standard is directed towards safety of persons and property on or near the premises where refrigeration facilities are located. This includes specifications for fabrication of tight systems, restrictions on refrigerant use for different types of occupancy classification and prescribes system application requirements, including detectors (refrigerant, oxygen, and etc.) and ventilation systems for various applications. It also prescribes, among others, general requirements for refrigeration machinery rooms; signs and identification; charging, withdrawal, and disposition of refrigerants; refrigerant storage; periodic tests of detector(s), alarm(s), and mechanical ventilation systems, to ensure safety of persons and property.

2. **Disposal of Baseline Equipment:**

   With regard to the disposal of the baseline equipment, project proposals must include an equipment destruction plan to ensure that existing CFC chillers, particularly compressors, will be dismantled and rendered unusable. Any components to be retained as spare parts for servicing remaining CFC chillers within the same buildings, and those to be sold as scrap, must be listed in the plan. Destruction of key components (i.e. compressors) must be done not later than successful commissioning of new non-CFC chillers and should be certified by chartered engineers and/or representatives of FI or the Ozone Cell.

3. After commissioning of new non-CFC chillers is completed, a final report on the equipment destruction must be provided by beneficiaries or by suppliers on behalf of beneficiaries, to FI.

4. **Disposal Plan:**

   Disposal Plan for CFC Chillers should include the following information:

   a) Name of chiller supplier/contractor;
   b) Name of chiller owner;
   c) Location of chillers; and
   d) Description of retiring chillers

5. Installation, testing, operations and maintenance of new non-CFC chillers, and disposal of baseline CFC equipment and systems must strictly follow procedures and practices recommended by ASHRAE Guideline 3 – "Reducing Emission of Halogenated Refrigerants in Refrigeration and Air Conditioning Equipment and Systems".

6. Recovery of CFCs from the Retiring Units:

The proposal from beneficiaries should delineate the process for which CFCs from the retiring units will be recovered or reused. The quantity of CFCs recovered from retiring units must be recorded and submitted to IDBI Bank or its representative(s) as part of the baseline equipment disposal report. Recovery of CFC must be undertaken by a certified technician. Typically, CFCs recovered from old chillers would be contaminated and therefore, these would need to be reclaimed in case of re-use. The CEEP can seek the assistance of GOI's National CFC Consumption Phase-out program, being implemented by GTZ, in this regard.

7. Inventory of Recovered CFCs:

CFCs recovered from the retired units should be properly recorded. The purpose of the proposed inventory is to track future movements and utilization of these gases, and to ensure that they are not intentionally vented into the atmosphere. Not only do CFCs harm the ozone layer, they are also high in GWP gases. GWP of CFC-11 is higher than carbon dioxide by more than 4,000 times and GWP of CFC-12 is 8,500 times higher than carbon dioxide. Project participants will develop and maintain an inventory of recovered CFCs. This inventory should be maintained throughout the monitoring period of the sub-project and be available for inspection by IDBI Bank or the Ozone Cell. The chiller owner after recovery of CFC from retiring CFC chillers should promptly inform details of inventory of recovered CFCs to the Ozone Cell, MoEF, New Delhi and to IDBI Bank as PIE of ICEEP.

8. Destruction of CFCs:

At the end of their useful life-time, these CFCs will need to be destroyed in an environmentally sound manner. The latest decision of the Parties to the MP has agreed to provide financial and technical support to eligible countries for ODS destruction. The ultimate responsibility for the destruction of the CFC inventory maintained by this project will be the Ozone Cell, which is committed to the following options (i) Establishment of domestic incineration/destruction facility, if an when, appropriate funding from the Multilateral Fund is approved; (ii) If the previous option does not materialize, review environmentally sound (acceptable by international standards) alternative options, for the destruction of ODS, such as retrofitting of existing cement kilns; or (iii) as last option, export the contaminated CFCs for destruction (not re-use) to countries which own the appropriate technology, after obtaining all necessary international clearances. However since this technology is currently not available domestically, this issue will be revisited during the mid-term review of the CEEP.

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