SOP: Calibration Environment Preparation and Control

This SOP details the procedures for **calibration environment preparation and control**, focusing on creating and maintaining optimal conditions for accurate calibration processes. It includes guidelines for temperature, humidity, cleanliness, and equipment setup to ensure reliable and precise measurement results. Proper environment control minimizes measurement errors and enhances the consistency and traceability of calibration activities.

1. Purpose

To outline the procedures for preparing and controlling the calibration environment, ensuring stable and suitable conditions for accurate and repeatable calibration results.

2. Scope

Applicable to all calibration activities performed within the designated calibration laboratory or area.

3. Responsibilities

- **Calibration Personnel:** Ensure compliance with environmental requirements.
- **Laboratory Supervisor:** Monitor, document, and maintain environmental conditions.
- **Facility Maintenance:** Support climate control, cleanliness, and equipment maintenance.

4. Definitions

- **Calibration Environment:** Controlled space where calibration activities are carried out.
- **Environmental Monitoring:** Regular observation and documentation of temperature, humidity, and cleanliness levels.

5. Procedure

1. **Pre-Calibration Checks**
    - Verify the calibration area is free from unrelated materials and clutter.
    - Confirm equipment required for environmental monitoring (thermometers, hygrometers, etc.) is functional and calibrated.
2. **Environmental Conditions**
    - Maintain temperature and humidity within specified limits (refer to Table 1 below).
    - Operate air-conditioning and dehumidifiers as needed to stabilize conditions before and during calibration.
    - Record environmental conditions at the start and end of each calibration session, and at set intervals if required.
3. **Cleanliness and Organization**
    - Clean work surfaces and equipment before calibration. Use lint-free wipes and appropriate cleaning agents.
    - Avoid introduction of dust, smoke, or chemical vapors in the calibration area.
    - Ensure personnel wear clean laboratory coats and gloves as appropriate.
4. **Equipment Setup**
    - Allow all calibration and reference equipment to stabilize to room conditions (minimum 1 hour or as specified by procedure).
    - Arrange equipment to avoid thermal influence and airflow interference during calibration.
5. **Monitoring and Documentation**
    - Record readings of temperature and humidity prior to, during (if extended), and after calibration.
    - Log all deviations from controlled conditions and any corrective actions taken.
6. **Post-Calibration**
    - Recheck the area for cleanliness.
    - Store or dispose of any waste materials generated during calibration in accordance with lab policy.

6. Environmental Conditions Specifications

Parameter	Typical Range	Frequency of Monitoring
Temperature	20Â°C ± 2Â°C (or as per procedure requirements)	At least before and after each calibration session
Relative Humidity	40% – 60% RH (or as per procedure requirements)	At least before and after each calibration session
Particulate Cleanliness	No visible dust or debris	Daily and as required

7. Records and Documentation

- Environmental monitoring records (logs, charts)
- Calibration session reports including environmental data
- Deviation and corrective action reports

8. References

- ISO/IEC 17025 – General requirements for the competence of testing and calibration laboratories
- Internal Quality Manual
- Manufacturer's operating procedures for calibration and monitoring equipment

9. Revision History

Version	Date	Change Description	Approved By
1.0	2024-06-30	Initial Release	Lab Manager