Standard Operating Procedure (SOP)

Sample Preparation and Processing Guidelines

This SOP defines the standardized **sample preparation and processing guidelines**, covering steps such as sample collection, labeling, storage, and handling procedures. It includes protocols for proper equipment usage, contamination prevention, processing timelines, and quality control measures to ensure accurate and reliable analytical results. The objective is to maintain sample integrity throughout the preparation and processing stages, facilitating consistent and reproducible outcomes in laboratory testing.

SOP Title	Sample Preparation and Processing Guidelines
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Version	1.0
Prepared by	Lab Supervisor/Manager

1. Purpose

To define standardized procedures for the preparation and processing of laboratory samples to ensure accuracy, reliability, and reproducibility of analytical results.

2. Scope

This SOP applies to all personnel involved in the collection, labeling, storage, handling, and processing of samples within the laboratory.

3. Responsibilities

- Laboratory staff: Follow procedures as outlined below.
- Supervisors: Ensure compliance and provide necessary training.
- Quality assurance: Perform periodic audits for adherence to procedures.

4. Materials and Equipment

- Sample collection containers (sterile, as appropriate for sample type)
- Labels (waterproof, permanent marker or printed)
- Personal protective equipment (PPE)
- Refrigerators or freezers for storage
- Processing instruments (as needed per protocol)
- Disinfectants and cleaning supplies

5. Procedure

1. **Sample Collection:**
    - Use clean, sterile containers appropriate for the sample type.
    - Adhere to safety and contamination prevention measures (use PPE, work in appropriate biosafety areas).
    - Collect samples per specific test requirements.

2. **Labeling:**
    - Label each sample immediately using waterproof labels and permanent markers.
    - Include sample ID, date, time, and collector's initials.

3. **Storage:**
    - Store samples at required temperature conditions (room temperature, refrigerated, or frozen) as specified per sample type.
    - Document location and storage start time in laboratory records.

4. **Handling and Transport:**
    - Minimize handling time and avoid repeated freeze-thaw cycles.

- Transport samples in leak-proof, properly labeled containers.

5. **Sample Processing:**
   - Follow designated protocol for sample preparation (e.g., homogenization, aliquoting, dilution).
   - Process samples within the recommended timeframe to prevent degradation.
   - Record all processing steps in the laboratory notebook/LIMS.

6. Equipment Usage and Contamination Prevention

- Clean and calibrate equipment before use.
- Change gloves between samples to prevent cross-contamination.
- Use sterile tools/disposables for each sample.
- Clean work surfaces before and after processing.

7. Quality Control

- Include quality control (QC) samples and blanks where required.
- Record all deviations from standard protocol.
- Review results for consistency; investigate anomalies immediately.

8. Documentation

- Maintain accurate records of sample receipt, processing, and storage.
- Document all QC results and corrective actions taken.
- Archive documentation as per laboratory policy.

9. References

- Lab-specific manuals and protocols
- Regulatory agency guidelines
- Relevant published methodologies

10. Revision History

Version	Date	Changes	Approved by
1.0	YYYY-MM-DD	Initial version	