

Document Authority:	EH&S Coordinator	Document Custodian:	EH&S Coordinator
Effective Date:	1/1/24	Issuing Dept:	College of Agriculture EH&S
Next Review Date:		Control Tier:	
Document Number:			

Standards of Practice Preventative and Corrective Maintenance

I. PURPOSE

Preventive and corrective maintenance procedures will be developed for industrial equipment and commercial vehicles to ensure that the equipment and vehicles function at the optimum level that provides for operator safe operations. The maintenance procedure and frequency will follow the equipment and vehicle manufacturer specified recommendations. Benefits include: hazard identification, risk mitigation, repair cost reduction, accountability recognition, maintenance activity documentation.

II. SCOPE

Each unit has its own components and individual maintenance needs. This Standardized Operating Procedures can be used as a guide; however,

III. CONSEQUENCES OF DEVIATION

Failure to perform the suggested preventative maintenance and corrective maintenance activities could result in serious injuries, illnesses, fatalities, or property damage.

IV. DEFINITIONS

- **Preventive maintenance:** Is defined as a proactive or preventive maintenance includes inspections, lubrication, and changing filters.
- **Corrective maintenance:** Is defined as a reactive maintenance involving corrective maintenance for repairing equipment that's experienced a breakdown or is operating outside of acceptable parameters.

V. RESPONSIBILITIES

Each team member has unique duties related to executing their part of a standard operating procedure. Depending on the department structure, employees may assume the duties in one or all of three of these key maintenance SOP roles:

- **Maintenance team:** An employee assigned to the maintenance team has the role and responsibility that includes changing parts, scheduled lubrication, scheduled inspections,

troubleshooting steps, and advanced repair instructions in accordance to the manufacturer's operations manual.

- **Equipment operators:** An employee assigned as a qualified operator provides basic measures while equipment is in use and steps to take when a breakdown occurs. Procedures may give the steps for tasks, such as equipment monitoring, troubleshooting, and basic repair instructions in accordance to the manufacturer operator's instructions.
- **Management/supervisory roles:** The supervisor assigned tasks involve delegation of duties, but some may also serve as next-tier repair or maintenance technicians. Duties could range from contacting the proper third parties, if necessary, to advanced troubleshooting and repair. In addition, the department supervisor must include in their preventative maintenance program:
 1. A list of equipment and vehicles and inspection dates (See sample on page 5). Supervisors may use their own recordkeeping forms.
 2. Making available manufacturer operations manual for each piece of equipment or vehicles listed.
 3. Procedures for conducting preventive maintenance tasks using the manufacturer recommendations in the Operation/Owner's Manual.
 4. Procedures for conducting corrective maintenance tasks using the manufacturer recommendations in the Operation/Owner's Manual.
 5. Procedures for reporting equipment problems to ensure that equipment and vehicles are rendered in operable until repairs can be completed.
 6. Provide the appropriate training based on the employee assigned tasks. In addition, all supervisory and maintenance personnel should complete the HIS/VIVID Risk Management Basics: Preventative Maintenance. Contact the Departmental EHS Coordinator for enrollment assistance.
 7. Maintaining the Safety Data Sheets for any chemicals used.
 8. Keep a maintenance log.

If inspection forms are not provided use the College of Agriculture EHS Resource Guide for generic forms that can be modified to meet your specific department needs: <https://www.ksre.k-state.edu/agsafe/>.

VI. Pre-Maintenance Preparations

Supervisors need to provide training to ensure an employee's safety before performing maintenance tasks follow the manufacturer checklist steps for repair and upkeep preparations. Specific action items usually fall into these broader ranges of steps:

- **Safety precautions:** Use of personal protective equipment (PPE), clearing the area of unnecessary personnel, and proper tools to use are some common health and safety specifics covered in a pre-maintenance SOP document.
- **Equipment shutdown:** It's imperative to shut down a piece of equipment before doing any work on it. Very often, complex pieces of equipment have a precise shutdown process that standard operating procedures will cover.

- **Isolation of utilities:** It's crucial to include lockout/tagout processes in any equipment repair and upkeep standard operating procedure documentation. This removes any chance of inadvertently powering up during maintenance tasks.

VII. Safety Procedures

Standardized safety procedures outline by the manufacturer focuses on taking all necessary measures to ensure personnel safety when performing maintenance activities. Manufacturer safety standard operating procedures dramatically reduce accidents and workplace injuries.

- **Emergency procedures:** These processes focus on the proper steps to take in the event of an accident, including basic first aid and who to call when specific mishaps occur.
- **Handling hazardous materials and waste:** Follow the KSU Hazardous Waste PPM which offers detailed instructions regarding specific materials, appropriate PPE, and best practices for transport.
- **Reporting incidents:** Follow the KSU Incident Report PPM to determine the proper steps in notifying and documenting a workplace incident. Incidents will be investigated by the supervisor with the assistance of the College of Agriculture EHS Director.

VIII. Equipment Replacement

When equipment and vehicles reaches a certain level of inefficiency or ineffectiveness, the supervisor can seek approval to retire the piece of equipment or vehicle. Follow KSU Property Inventory PPM 6510 that includes specification for disposing of equipment. In addition, the manufacturer operations manual can assist with replacement planning to include disposal and decommissioning which can be a hazardous undertaking. The manufacturer can provide safe work practices when disposing and decommissioning equipment or vehicles.

VIII. Special Note: The Grain Industry has additional requirements 1910.272(m)

Grain Facility Preventive maintenance.

1910.272(m)(1)

The employer shall implement preventive maintenance procedures consisting of:

1910.272(m)(1)(i)

Regularly scheduled inspections of at least the mechanical and safety control equipment associated with dryers, grain stream processing equipment, dust collection equipment including filter collectors, and bucket elevators;

1910.272(m)(1)(ii)

Lubrication and other appropriate maintenance in accordance with manufacturers' recommendations, or as determined necessary by prior operating records.

1910.272(m)(2)

The employer shall promptly correct dust collection systems which are malfunctioning or which are operating below designed efficiency. Additionally, the employer shall promptly correct, or remove from service, overheated bearings and slipping or misaligned belts associated with inside bucket elevators.

Additional: The primary source for OSHA regulations is Title 29 of the Code of Federal Regulations, sections 1910 through 1910.1450. Preventive-maintenance standards are found throughout the regulations, some of which generally apply to workplaces and others that are industry specific. For example, section 1910.22(a)(2) requires "every workroom" to be maintained in a "clean and, so far as possible, dry condition."

X. RELATED DOCUMENTS & TOOLS

- OSHA Standard 29CFR 1910.272-OSHA 1910-1910.1450
- Bartlett Grain "Preventative Maintenance SOP"
- Service Maintenance Channel "Standard Operating Procedure for Maintenance of Equipment"

Revision Log			
REVISION DATE	REVISION NO.	REVISION AUTHORITY	NATURE OF REVISION
	0	EH&S Coordinator	Date of Original Document Issuance

Controlled documents are maintained electronically.
Printed documents are UNCONTROLLED.
Prior to relying on a printed document, verify that it is current.

Equipment and Vehicle Maintenance Log

Supervisor Name: _____ **Contact Information:** _____

Equipment and Vehicle Description

	Date Due	Initial and Provide Date Completed
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		

Maintenance Employee Signature: _____ **Date:** _____

Supervisor Signature: _____ **Date:** _____