INTRODUCTION

This document is designed to assist Hot Mix Asphalt (HMA) facility owners and operators with the development of lockout/tagout plans and programs for their facilities that are designed to meet the intent of federal regulation. As always, it is a good idea to compare federal regulations with state regulations and requirements to ensure compliance with both.

Every HMAfacility is different in machinery and equipment layout, the location and availability of appropriate energy control centers, and the availability of qualified personnel. In order to prevent the unexpected energizing or start-up of machinery or equipment during servicing or maintenance, a lockout/tagout plan must be custom tailored to each facility.
The Occupational Safety and Health Administration (OSHA) within the United States Department of Labor issued a final rule on the Control o Hazardous Energy (LockoutlTagout), 29 CFR Part 1910.147 (Appendix A). After January 2,1990, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machines or equipment shall be designed to accept a lockout device. On February 13, 1996, specific lockout/tagout provisions for electrical hazards were provided for in 29 CFR Part 1910.333 (Appendix B). These regulations require companies to develop, document, and utilize procedures to control potentially hazardous energy before servicing or maintaining machinery or equipment. OSHA has estimated that 122 fatalities, 28,400 lost workday injuries, and 31,900 non-lost workday injuries could be averted each year through effective lockout/tagout programs.

A step-by-step summary of some suggested plan components follows, along with an example plan, example forms, a glossary of terms, and appendices that include a copy of the federal OSHA regulations relating to lockout/tagout as well as regulations on selection and use of work practices.

LOCKOUT /TAGOUTLockout PLAN

OCKOUT/ TAGOUT REQUIRMENTS

The lockout/tagout regulations require employers to establish in writing a lockout/tagout (energy control) program that establishes safe energy control procedures to prevent the unexpected start-up, energization, or the unexpected release of stored energy while servicing or providing maintenance to machines and equipment. The most common types of potentially hazardous energy include:

- Electrical
- Mechanical
- Hydraulic
- Pneumatic
- Chemical
- Thermal
- Gravity

The lockout/tagout (energy control) program must also include a documented employee training program and periodic inspections of the energy control procedures.

The following sections provide a step-by-step process that is intended as a guide for developing and implementing a customized lockout/tagout program for your facility. This publication is not intended to be a prescriptive legal document, but rather to highlight obvious requirements in the federal regulations that apply to HMA facilities. People familiar with your company and your HMA operations have the best chance to develop a highly effective lockout/tagout plan. The ultimate test is whether or not the program is effective in preventing injury.

Step-by-Step Development and Implementation Process

(Refer to example plan on pages 8-13)

A. Purpose, Scope, and Responsibility

Develop and include provisions in your program that spell out the purpose, scope, and intent of the lockout/ tagout program and who will be responsible for ensuring implementation of the established procedures.

B. Survey of Machines, Equipment, and Processes

Survey machines, equipment, and processes and identify potentially hazardous energy sources for each machine, equipment, and process to be serviced. The results of the survey provide the authorized employees with an overview of all equipment and machinery and energy sources that must be locked out to be safe in servicing or performing maintenance. Authorized employees are the individuals who are charged with the responsibility for implementing the energy control procedures and performing the servicing or maintenance.

The results of a thorough survey (Form A on page 14) need to be documented. The documentation should include the machinery or equipment to be locked out, the energy source, the type of energy isolation device, and its location.

C. Lockout and Tagout Procedures

List the specific procedure and steps for shutting down, isolating, blocking, and securing machines and equipment to prevent unexpected energization, start-up, or release of stored energy. The procedure(s) must include the following elements:

1. a statement on how the procedure will be used;
2. the necessary procedural steps to shut down, isolate, block, and secure machines or equipment;
3. the steps designating the safe placement, removal, and transfer of the lockout/tagout devices and the authorized employees who have the responsibility for them
4. the specific requirements for testing machines or equipment to determine and verify the effectiveness of locks, tags, and other energy control measures;and
5. the employer or an authorized employee must notify the affected employees before lockout or tag out devices are applied abd after they are removed from the machine or equipment.

Emergy-Isolating Devices

The two types of energy-isolating devices include lockout devices and tagout devices. If an energy-isolating device is physically capable of being locked out, it should be locked out and specified as part of the procedure. If a lockout is not a physical possibility, then the employer is required to use a tagout system. It is suggested that both lockout and tagout be employed where possible.

When an energy-isolating device can be locked out, it should be locked out unless the employer can demonstrate that the use of tags will provide protection at least as effective as locks and will assure "full employee protection." It is incumbent upon the employer to take extra measures in these situations to provide a safe work situation.

The lockout and tagout devices must be identified singularly as the only devices used for controlling hazardous energy and must meet the following requirements:

Durable-Lockout and tagout devices must withstand the environment to which they are exposed for the maximum duration of the expected exposure. Tagout devices must be constructed and printed so that they do not deteriorate or become illegible, especially when used in corrosive (acid or alkali chemicals) or wet environments.

Standardized-Both lockout and tagout devices must be standardized according to either color, shape, or size. For tagout devices, the print and format must be standardized.

Substantial-Lockout and tagout devices must be substantial enough to minimize early or accidental removal. Locks must be substantial to prevent removal except by excessive force or special tools such as bolt cutters or other metal cuffing tools. For a tag, the means of attachment must have the general design and basic characteristics equivalent to a onepiece nylon cable tie that will withstand all environments and conditions. The device for attachment must also be nonreusable, attachable by hand, self-locking, and non-releasable, with a minimum unlocking strength of no less than 50 pounds.

Identifiable-Locks and tags must clearly identify the employee who applies the device. Tags also must warn against hazardous conditions if the machine or equipment is energized. The tag must also include a legend such as the following: DO NOT START, DO NOT OPEN; DO NOT CLOSE; DO NOT ENERGIZE; DO NOT OPERATE.

Materials and hardware, such as locks, hasps, tags, chains, wedges, safety pins, etc., that are specified for effective lockout are to be made available by the employer. The location of such materials and hardware should be specified in the procedure.

Develop the appropriate procedure(s) for your HMA facility.

D. Procedure for Restoring Machines and Equipment

List the specific procedure and steps for restoring machines or equipment to service safely. As a minimum, before lockout or tagout devices are removed and energy is restored to the machines or equipment, the energy control procedures need to ensure the following steps are taken:

1. the machines or equipment components are operationally intact;

2. all employees are safely positioned or removed from the equipment; and

3. the lockout or tagout devices are removed from each energy-isolating device by the employee who applied the device.

E. Training and Retraining of Employees

Training is an essential part of an effective lockout/ tagout program. The goal of training should be to provide the skills and knowledge that are required for safe application and removal of energy controls. Federal regulations are specific as to the training that must be done.

The specific training requires that:

• each authorized employee must receive training to be able to recognize the hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control;

• each affected employee must be instructed in the purpose and use of the energy control procedures);

• all other employees who may be working in the vicinity of an area where energy control procedures are utilized must be instructed about the energy control procedures and the prohibition regarding any attempt to restart machines or equipment that are locked out or tagged out; and

• if tagout procedures are utilized where no physical lockout capability exists, employees must be trained in the limitations of the tags. The sample and related forms list these limitations.

Retraining is an important tool for maintaining an effective lockout/tagout program. Federal regulations require retraining for employees when:

- a change in job assignment occurs;
- a change in machines, equipment, or process occurs that presents new hazards or energy control procedures;
- the employer has reason to believe that procedures are not being followed, or that employees need additional skills and knowledge in the use of energy control procedures; or
- the periodic employer review of procedures (required at least once annually) reveals a need for additional training.

Company documentation of training/retraining is an essential and required part of a lockout/tagout plan. As a minimum, it should include the employee's name and dates when training was done.

F. Annual Periodic Inspections

Federal regulations require employers to conduct periodic inspection/review of the lockout/tagout procedures for energy control at least once a year. This inspection must be performed by an authorized employee other than the individual who utilizes the