



Property Risk Consulting Guidelines

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PRC.1.14.0

PROPER HOUSEKEEPING

INTRODUCTION

A portion of any Management Program for Loss Prevention and Control, like *OVERVIEW*, involves the development and implementation of good housekeeping practices. Maintaining proper housekeeping is easy in some occupancies, but difficult in others.

By the very nature of their construction, some buildings are more difficult to keep clean than others. Some processes produce more waste, leakage and vapors than others. Further, some buildings were designed with such limited floor space that housekeeping is made more difficult. Such features increase the likelihood of housekeeping problems.

Additionally, unsettled conditions that occur during building and process changes are usually more difficult to supervise. The difficulty of controlling housekeeping increases when new construction, remodeling, process additions or process modifications take place. See PRC.1.0.2 for a discussion of Management Of Change procedures.

Poor housekeeping increases the potential for loss. It is also an almost certain indication of inadequate maintenance. It is not unusual to find an untidy facility is also rife with packing and joint leaks, missing covers and handwheels, unpainted rusting metal, nonfunctional gauges and temporary repairs. PRC.1.3.0 contains guidance concerning the development and implementation of effective maintenance programs.

Whether an easy or a difficult task, proper housekeeping is a vital part of preventing and controlling property losses. Proper housekeeping does not just happen. It requires the leadership and wholehearted support of management, and the cooperation of all employees.

POSITION

Create a written program for proper housekeeping with the goal of keeping all areas and equipment clean. The following actions will help in the development of an effective program:

- Appoint a Housekeeping Committee to be responsible for proper housekeeping. This may be an individual or a group.
- Establish acceptable levels of cleanliness in conjunction with the Housekeeping Committee.
- Clearly inform all employees of the Housekeeping Committee's authority and responsibility.
- Actively demonstrate support of proper housekeeping practices through regular, positive reinforcement. In addition to verbal reinforcements, written commendations and awards for individuals, areas and departments have been found effective.

Make the Housekeeping Committee responsible for initiating proper housekeeping practices, continuing to implement them and reporting their results or needed changes to management. To accomplish these duties, counsel the Committee to:

- Inspect the facility to determine current levels of housekeeping.
- Recommend desired cleanliness levels for management's review.
- Review existing cleaning schedules and modify them as necessary.
- Establish cleaning methods and make certain the necessary equipment is available.
- Establish responsibility for the completion of each cleaning task.
- Determine that a sufficient number of people are assigned to each cleaning task.
- Establish the procedures and schedule of housekeeping inspections and audits.
- Establish a liaison with other departments, such as the Loss Prevention and Maintenance Departments.
- Report to management on the housekeeping status after each inspection and audit.

DISCUSSION

Effects Of Housekeeping

Proper housekeeping controls process waste, leakage and vapors to prevent accumulations that can lead to increased losses. Such accumulations are typically from one of several causes:

- Trash or debris left because of carelessness;
- Trash or debris resulting from an inadequate pickup schedule;
- Dust or other material released from normally closed containers or systems;
- Leakage of process or lubricating fluids, steam or condensate;
- Improper or inadequate removal of accumulated process wastes or residues.

Proper housekeeping also controls storage or placement of tools and materials. Although it might be tempting to use the "free space" in switchgear, boiler, compressor and other equipment rooms for the storage of brooms, paint, spare parts and various other utility and maintenance supplies, it is essential to resist such practices. Suitable broom closets, paint lockers, spare parts storerooms, and utility rooms should be constructed for such contents.

Poor housekeeping contributes to an increased frequency of loss and greater loss potential. The added distribution of fuel:

- Increases the probability of fire and explosion.
- Causes a greater continuity of combustibles, making it easier for a fire to spread.
- Increases combustible loading, providing more fuel to feed a fire.
- Creates the potential for dust explosions when dust accumulates.
- Increases the probability of spontaneous ignition.

Poor housekeeping also increases electrical and mechanical breakdown loss potential. Even without considering the possibility of a resulting fire or explosion, electrical and mechanical breakdowns can result in total destruction of major equipment. Poor housekeeping affects property and can lead to breakdowns in these ways:

- Accumulations of dust and other debris can create a thermal blanket which prevents adequate cooling of electrical equipment and causes the equipment to fail or run hotter at reduced efficiency and with a reduced life expectancy.
- Oil, grease and other contaminants can damage electrical insulation on cables and in motor windings.

- Dirt, soot, moisture and other contaminants can provide paths for flashover or short circuiting in switchgear and other electrical equipment.
- Accumulations of water, certain vapors and other materials can damage paint and promote corrosion. Undetected corrosion has led to building collapse, pressure vessel failure, mechanical linkage separation and electrical breakdown.
- In machinery, debris of any sort can lead to accelerated wear or direct breakdown.

Poor housekeeping also increases other loss potentials. Product contamination is one such example. Scrap, leakage or other waste that gets into a product can affect its quality and cause product rejection.

All of these housekeeping problems directly affect a property and reduce plant reliability and output. The loss of property and productivity can be significant.

Indirect effects of housekeeping problems can also be important to loss control. People tend to work faster and more accurately when their surroundings are clean. Proper housekeeping will not only help prevent loss at a facility, but could also improve production levels and employee morale. Even firefighting and other loss control efforts are aided or obstructed by the level of housekeeping.

Following the initial inspection of a facility to determine current levels of cleanliness, the Housekeeping Committee should compile a list of specific areas and equipment to be cleaned. If it is the responsibility of first-line supervisors to enforce proper housekeeping, the facility should be divided into housekeeping zones that correspond to these production units.

When making the inspection, the committee should not overlook yards, roofs, basements, utility rooms, closets or remote storage buildings. The survey is not limited to only occupied floor spaces. Beams, trusses, columns, walls, piping, electrical conduit, raceways, locked rooms and idle areas are also checked.

Detailed notes should be taken about waste accumulation, leaks and spills. Any leakage should be brought to the attention of the maintenance department. Comments about current cleaning schedules and methods of cleaning should be included.

Perhaps the most difficult part of the proper housekeeping program is the establishment of desired levels of cleanliness. The first barrier to overcome is the notion that the level of cleanliness cannot be improved.

A key point in establishing cleanliness levels is to determine whether it is possible to eliminate the source of waste or leakage. Often, leaking equipment can be repaired and given more frequent maintenance so that the problem is eliminated or materially reduced.

Replacing equipment with new equipment having a more efficient design can also reduce or eliminate housekeeping problems. For instance, today's highly efficient dust collection systems might permit reducing the cleaning frequency and result in capturing product that was previously lost. Liaison with production management might be helpful in accomplishing reduction or elimination of certain housekeeping problems.

Clutter results when there is inadequate management emphasis on maintaining good housekeeping. If clutter is the problem, the provision of adequate and proper storage space might eliminate the cause. If space is available but clutter is evident, the problem could be employee training. See PRC.1.4.0.

For some areas, it may be necessary to make a major cleaning effort and then to observe the results of subsequent routine housekeeping efforts before an acceptable cleanliness level can be determined. Often, these initial cleanings can be better done by a reliable cleaning service with specialized equipment.

The length of time devoted to each cleaning task may vary. Trash and waste containers should generally be emptied once a shift, but the frequency will depend on the amount of debris each process generates. As a rule of thumb, dust accumulations that exceed $\frac{1}{32}$ in. (1 mm) should be

avoided since this amount of combustible dust is generally capable of creating a secondary dust explosion if it is suspended in air.

Often, equipment cleaning schedules must be coordinated with maintenance schedules, process requirements, outside contractors or other service departments. Discussions with responsible parties from all involved groups may be necessary to set housekeeping schedules.

The responsibility for cleaning areas and equipment may be spread among several departments. Production workers may be responsible for cleaning their areas just before the end of the shift. Maintenance personnel may be assigned to custodial duties such as regularly emptying trash containers, sweeping floors and removing production scrap. Maintenance personnel may also be responsible for cleaning machinery as a part of normal preventive maintenance.

The proper equipment is necessary to accomplish any cleaning job. A sufficient number of brooms, mops, pails, dust cloths and trash receptacles should be conveniently located in or near work areas.

Ordinary plant machinery and equipment such as motors, work benches and shelves do not normally require unusual cleaning procedures. There are exceptions, such as electrical equipment with exposed windings or conductors. Items such as dust collectors, vapor removal systems, inside and outside ducts, and ovens can require special procedures. Unusual cleaning requirements should be identified in housekeeping program documentation.

Some cleaning jobs require special equipment, or are better handled by an outside contractor. These jobs can include cleaning the interior of ducts, window and wall washing, yard cleanup, and contract servicing of unusual equipment.

Materials used for cleaning and their methods of use may be important considerations in both hazardous materials evaluation and hazard identification and evaluation programs. Housekeeping activities should not be allowed to add unreasonable hazards to a facility. Refer to PRC.1.8.0 and PRC.1.13.0.

Areas housing dust-producing equipment and concealed spaces in which dust may accumulate should be cleaned with vacuum cleaners. Using compressed air to blow dust off surfaces is an unacceptable practice because dust suspended in the air during blow-down operations may achieve an explosive mixture. Vacuum cleaners may be either portable or attached to a central system. When portable units are used, they should be appropriately listed by a nationally recognized laboratory for use in any hazardous location at the facility.

Once cleanliness levels, cleaning schedules and responsibilities have been established and when proper cleaning equipment has been obtained, the Housekeeping Committee or other management representative must monitor the effectiveness of the program. This should be done by means of regularly scheduled audits. A written report of the results of each audit should be submitted to management and to those assigned responsibility for those specific cleaning tasks.

Finally, it is important to anticipate the unexpected. Liaison should be established with all departments so that construction, production and process changes can be discussed and needed housekeeping practices implemented before the situation gets out of hand. Emergency spills or leaks may require certain housekeeping actions be coordinated with the facility's emergency coordinator. Emergency response should be planned in advance. See PRC.1.7.0.

Proper housekeeping does not just happen. It requires the leadership and the wholehearted support of management and the cooperation of all employees. When this effort is made, an increase in employee productivity will likely more than cover the increased cost. In addition, a major factor contributing to the severity of fires, explosions, collapse and other perils will be minimized.