This reference note describes the effects of contaminants on floor slipperiness; types of cleaners for breaking up and removing contaminants; and the importance of written and managed floor-cleaning protocols as part of an overall housekeeping program.

Effective floor cleaning is important for maintaining the slip resistance of the floor surface. Selecting the best cleaner for the contaminant, working with the cleaner manufacturer in developing a written floor cleaning protocol, and adhering to that protocol are important components of a comprehensive floor-cleaning protocol.

**Effects of Contaminants**
Contaminants may accumulate on floor surfaces due to inadequate cleaning. This reduces floor surface roughness as soil, grease, or other contaminants fill in the pores or valleys. It is therefore very important to keep floors clean in order to maintain the floor’s original roughness.

Keeping floors clean improves slip resistance. Floor-cleaning guidelines should consider the floor type, the contaminants involved, and a cleaning solvent most suitable for both.

**Types of Cleaners**
Most chemicals used to clean floors are intended to act upon contaminants chemically and emulsify or break down the contaminant so it can be removed easily by rinsing or, in the case of enzymatic cleaners, continue to work without rinsing.

**Alkaline Cleaners**
Alkaline cleaners react with fats and oils and convert them to soap (saponification), and must be thoroughly rinsed with clean, hot water to prevent polymerization. Alkaline cleaners are used to remove grease and can remove sealers, finishes, and waxes.

Alkaline cleaners are often used on restaurant kitchen- and dining-area tile floors. In restaurant kitchens, animal and vegetable fats used in cooking oils fall to the floor as a grease contamination. Grease, in the presence of water, can produce a very slippery floor. Over time this forms a hard grease film on floors that is resistant to most detergents.

Cleaning a restaurant kitchen floor with a mop and pail with hot water and detergent only partially cleans the floor. A restaurant kitchen floor is only clean when the polymerized grease film is also removed. To properly clean a restaurant kitchen floor:

- Use the proper amount of cleaning product with hot, softened tap water.
- Apply cleaning product evenly on floor surface with a clean mop.
- Temporarily block any floor drains to permit chemical sufficient time to penetrate built-up contaminants.
- Allow sufficient time for the cleaning product to loosen contaminants on the floor, usually 5 to 10 minutes.
- Scrub the floor briskly using a deck brush.
- Open floor drains, wet vacuum, or squeegee before rinsing.
- Rinse floor with clear, hot, softened tap water to avoid leaving a residue on floors after drying.

**Acidic Cleaners**
Acidic cleaners use a process known as oxide reduction to remove rust, scale, and oxides from floors. Commonly used for cleaning porcelain, ceramic tiles, and grout, these cleaners can etch the floor surface if they are too strong.

**Neutral Cleaners**
Neutral cleaners are typically used on floors with glossy finishes, surfaces damaged by acid or base cleaners, or those that can be dulled by the abrasive qualities of acidic or alkaline cleaners. Examples include resilient flooring and rubber flooring.
Enzymatic Cleaners

Microbial and enzymatic cleaners are no-rinse cleaners that use enzymes created from scientifically formulated strains of non-pathogenic forms of bacteria. Enzymes from these bacteria consume and digest oil, fat, grease, and petroleum hydrocarbons.

Three types of enzymes include:
- Proteases, that break down protein-based soils;
- Lipases, that work on lipids or fats; and
- Amylases, that work on carbohydrates.

Microbial cleaners have been used to clear drains and clean concrete floors, tiles, and grout areas and are now popular in the restaurant industry.

A recent study in the limited-service restaurant industry concluded enzyme-based floor cleaner is now widespread, and 62 percent of the participants who were responsible for cleaning floors reported using hot/warm water, thus violating the manufacturer’s cold-water floor-cleaning protocol. Hot water deactivates the grease-eating enzymes and renders the cleaner ineffective. Providing proper training and reinforcement of best-practice floor-cleaning practices is critical.

Housekeeping Programs

A good housekeeping program should include written floor-maintenance instructions.

Basic elements of an effective program should:
- Identify specific contaminants and select a cleaner/chemical that effectively breaks each down.
- Establish a floor-cleaning protocol in collaboration with the cleaner manufacturer for removing contaminants.
- Provide appropriate tools to clean the floor (e.g., mops, buckets, deck brushes, and squeegees). Designate specific dedicated tools for specific areas to avoid cross-contamination (e.g., mops used in areas with grease should not be used in non-greasy areas).
- Implement a floor-cleaning schedule that is consistently followed; identify responsible employees and the time of day during which cleaning should take place.
- Establish a training program for persons responsible for inspecting, maintaining, and cleaning. Your program should include:
  - Cleaning requirements,
  - Cleaning procedures,
  - Safe handling and disposing of chemicals and solutions,
  - Emergency conditions and operations, and
  - Record keeping or reporting related to housekeeping and maintenance.
- Routinely inspect all floor surfaces for wear, damage, debris, and contaminants. Clear communication of any needed repairs to the facilities or maintenance department is critical.
- Occasionally test floor surfaces to monitor slip resistance levels and determine effectiveness of the floor-cleaning protocol.

Other Considerations

- How are potential hazards identified and reported to appropriate supervision?
- Are “sweep logs” maintained?
- Are routine inspections performed, including unannounced inspections? Are results recorded?
- Are first-line supervisors held accountable for hazards in their departments?
- Are warnings or signage provided whenever a slip and fall hazard has been identified and is it left in place until appropriate action taken? (Warning signs should use symbols that follow ANSI Z535.3 2007 Criteria for Safety Symbols.)
- Are enough trash containers provided and are they located where waste is produced?

Summary

Properly maintaining your floors helps reduce the risk of slips and falls. Formal floor-cleaning guidelines and housekeeping programs are both important elements in removing contaminants and improving your floor’s slip resistance.

References: