Preventing Slips and Falls

Keeping Floors Clean and Dry

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What We Will Cover

- Key information to assist in developing plans to reduce the risk of falls
  - Overview of slip, trip and fall causes and contributing factors
  - Explain how the conditions of floor surfaces contribute to slips and falls.
  - Identify key elements in floor cleaning procedures
  - Describe ways to implement effective housekeeping programs
  - Summarize the role mats can play in keeping floors clean and dry

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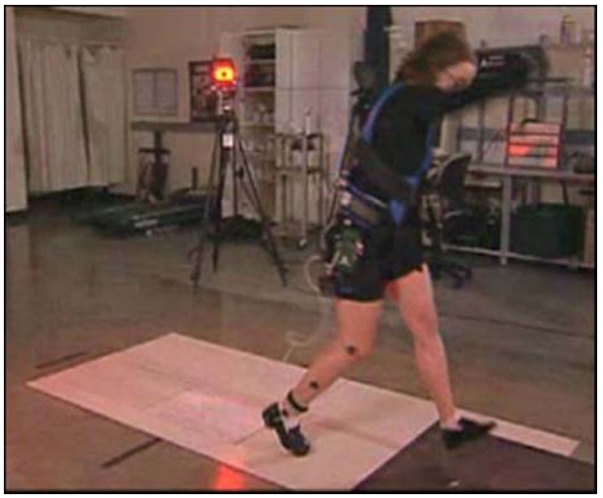
Other Considerations for Falls

- Also a leading loss driver for general liability incidents
- Some (many) slips and falls may not be reported when minor or embarrassing
- Prevention efforts often reactive, not proactive

Causes of Slips, Trips and Falls Liberty Mutual Research Center

- Tribology – the study of interaction of sliding surfaces
  - Friction, wear, lubrication
- Ergonomics issues
  - Aging population
    - Vision
    - Reaction time
    - Strength
- Biomechanics
- Psychology
  - Distractions
  - Transitions
  - Perceptions of slipperiness



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Slips, Trips and Falls are Multi-factorial

Adapted from HSE (UK) www.hse.gov.uk/slips

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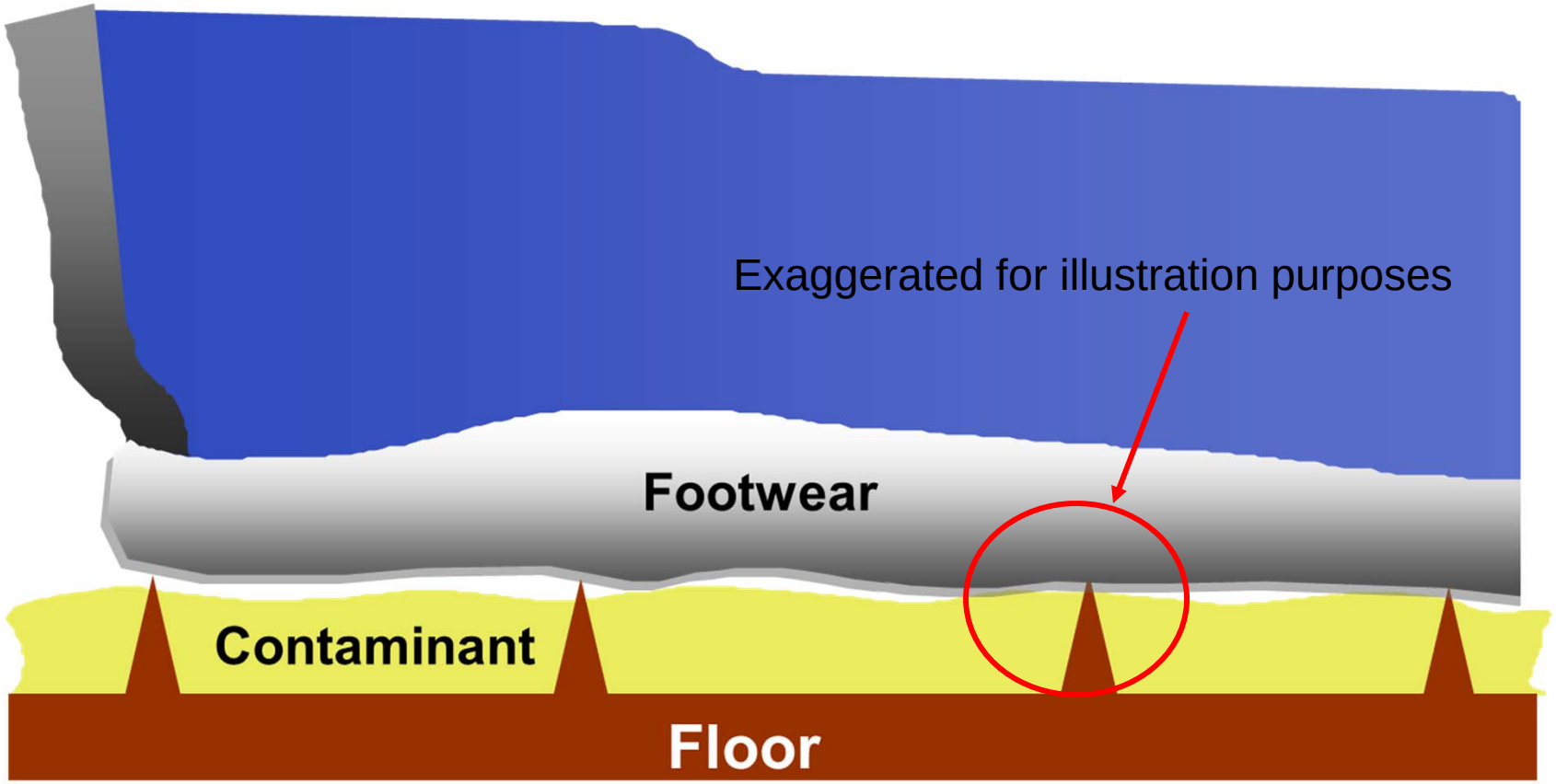
Fall Safety Management Process

Control of falls requires a comprehensive, systematic process

Slip Resistance of the Floor Surface



Spills and contaminants can reduce slip resistance

Floor Safety Considerations

- Most dry surfaces are slip-resistant (0.5 or higher)
- Slips/falls occur when floor is wet and/or contaminated (dust, grease, oil etc.)
- Transitions from “non-slippery” to “slippery” floors can be a problem (including spills)
- Slipperiness increases over time when floor is worn

Reducing Risk for Floor Surfaces

- Selection
- Treatment
- Cleaning and maintenance

Design Considerations: Floor Surfaces

- Include fall risk control in selection of floor surfaces for new installations or redesign
  - Consider slip resistance characteristics and surface roughness
  - Evaluate floor materials under different conditions including wet and with expected contaminated conditions
  - Consider floor treatments, dressings and cleaning as part of the selection process.

Flooring Selection

- What kinds of spills are likely?
- What are the sanitary requirements?
- Will the area have heavy traffic?
- Is it normally a wet and/or oily environment?
- How will the floor be cleaned?
- Are aesthetic effects a concern?
- Inside or outside?

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Unsealed Brushed Concrete

Quarry Tile with Embedded Grit

Textured Glazed Ceramic Tile with Raised Points

Carpeting

Textured Porcelain Pavers

Quarry Tile withOUT Embedded Grit

Textured Rubber Tiles or Sheets

Terrazzo

Diamond Plate

Hardwood Floors

Vinyl Composition Tile (also Glazed ceramic or porcelain)

Performance

- Excellent to Good slip-resistance, BOTH wet and dry.
- Good slip resistance dry, Fair wet.
- Good to Fair slip resistance dry, Poor wet.

Floor Treatments to Reduce Risk

- Options for some existing ‘slippery” floors
- Abrasive floor treatments and coatings
- Chemical etching
  - Ceramic tile, quarry tile, natural stone, concrete
- Waxes / polishes
  - Type/method of application affects floor performance
  - Beware of limitations of data offered by manufacturers – may not predict performance under wet or contaminated conditions
  - Durability an issue so monitor performance over time

Abrasive Floor Coatings

Grit Type (and Hardness)

Silicone Carbide	Aluminum Oxide	Quartz
9.5	9.0	7.0

Bonding Material

Epoxy Resin	Adhesive Sheets	Paint

Cost/Durability

High----------Low

Floor Surfaces, Conditions and Cleaning Factors - Common Problem Areas

- Housekeeping issues related to detecting and controlling spills, wet conditions or debris
- Recognize risk while cleaning is in progress or recently completed
- Indications of ineffective cleaning:
  - Residual wet floors after cleaning
  - ‘Sticky’ floors
  - Slippery surfaces after cleaning/waxing

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Protect the Area During Cleaning

Maintaining Floors in Good Condition

- Are your floor cleaning procedures effective?

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- Recent study of floor cleaning procedures in limited service restaurants.
- More then 60% of the locations studied had indications of improper floor cleaning:
  - Cleaning methods used did not follow procedures and were not consistent with guidelines of the cleaning products manufacturer.

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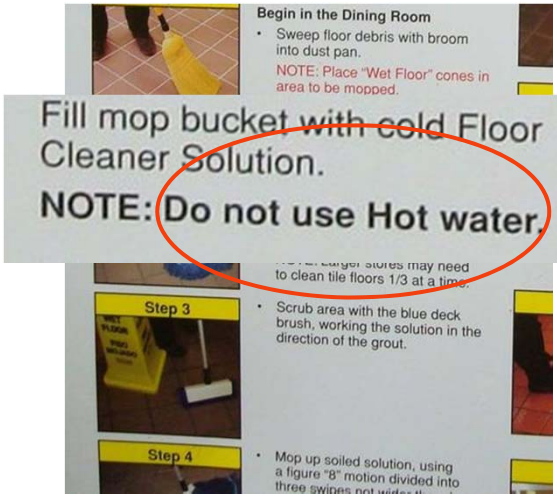
Water Temperature by Floor Cleaner

	Enzyme Based Floor Cleaner (25 Restaurants)		Non-Enzyme Based Floor Cleaner (11 Restaurants)	
Water Temp	**n**	**%**	**n**	**%**
Hot/Warm	89	61.8	57	98.3
Cold	52	36.1	1	1.7
Varies	1	0.7	0	0.0
Don't Know	2	1.4	0	0.0
Total	144	100.0	58	100.0



Common Floor Cleaning "Mistakes"

- Water not proper temperature for type of cleaner
  - Not hot enough
  - Too hot for type of cleaner
- No clean rinse used when recommended
- Rinse used when not recommended
- No mechanical agitation used (stiff brush)
- Not properly cordoned off

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Housekeeping - Comprehensive Approach for Effective Floor Cleaning

Comprehensive Floor Cleaning Process

- Written floor cleaning protocols.
  - Schedule defined and followed.
  - Chemicals consistent with floor surfaces and contaminants.
  - Tools specified, maintained and used properly.
  - Critical areas identified.

Floor Cleaning Protocols - Best Practices

- Involve multiple stakeholders for procedures
  - Cleaning suppliers, facilities, cleaning contractors, Ops, etc.
- Floor cleaning must be tailored to the environment, contaminants and floor material
  - Identify type/concentration of cleaner
    - Alkaline, acidic, neutral, biological
  - Ensure tools/methods remove contaminant – not spread it

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Floor Cleaning and Maintenance - Training and Performance

- Train housekeeping staff on cleaning methods and inspections
- Establish measurement of effectiveness
  - Define expectations and monitor performance for the frequency and effectiveness of floor cleaning and floor inspections:
    - Scheduled cleaning, housekeeping, and spill responses
- Perform testing to monitor slip-resistance performance and determine effectiveness

Housekeeping and Floor Hazard Controls - Best Practices

- Establish accountability for housekeeping in departments/areas
  - Include food vendors and cleaning contractors
- Collect measures of housekeeping performance and use data for setting and monitoring improvement goals
  - Floor hazards periodically sampled, recorded, and tracked (include unannounced inspections)
- Use behavioral observation processes to monitor and reinforce critical prevention activities
- Encourage individual responsibility for detecting and reporting spills and debris

Spill Clean-Up Program

- Employee training
- Keep main aisles clear and clean
- If you drop it, pick it up.
- If you spill it, wipe it up.
- If you SEE it, pick/wipe it up.
- Cordon off spill areas until clean

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Floor Inspection & Cleaning Log

SAMPLE FLOOR INSPECTION AND CLEANING LOG

INSERT DATE, TIMES AND INITIAL BOX TO CERTIFY FLOOR INSPECTION & CLEANING HAVE BEEN PROPERLY COMPLETELY.
(FILE COMPLETED LOG PER COMPANY GUIDELINES)

Company: _____ Location: _____ Area (Bathroom, Deli, Office, etc.): _____

Week of: _____

HOUR	Initial Monday / /	Initial Tuesday / /	Initial Wednesday / /	Initial Thursday / /	Initial Friday / /	Initial Saturday / /	Initial Sunday / /
7 AM	Start End	Start End	Start End	Start End	Start End	Start End	Start End
8 AM	Start End	Start End	Start End	Start End	Start End	Start End	Start End
9 AM	Start End	Start End	Start End	Start End	Start End	Start End	Start End
10 AM	Start End	Start End	Start End	Start End	Start End	Start End	Start End
11 AM	Start End	Start End	Start End	Start End	Start End	Start End	Start End
12 PM	Start End	Start End	Start End	Start End	Start End	Start End	Start End
1 PM	Start End	Start End	Start End	Start End	Start End	Start End	Start End
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9 PM	Start End	Start End	Start End	Start End	Start End	Start End	Start End
10 PM	Start End	Start End	Start End	Start End	Start End	Start End	Start End

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Control of Floor Contaminants

- Potential contaminants are controlled at the SOURCE (by design)
- Generous (adequately large, plentiful, and accessible) trash receptacles are emptied before they are full
- Effective spill reporting and clean-up program has been established, including a “clean-as-you-see” policy
- Consider providing plastic disposable umbrella bags at entrances
  - Use wall mounted paper towel holders around elevators and cafeteria exits
- Lids should be required for drinks

Additional Considerations

- Restrooms
  - Soap dispensers by sink
  - Paper towel dispensers by sink; not behind
- Cafeteria
  - Same as above
  - Housekeeping; spill control

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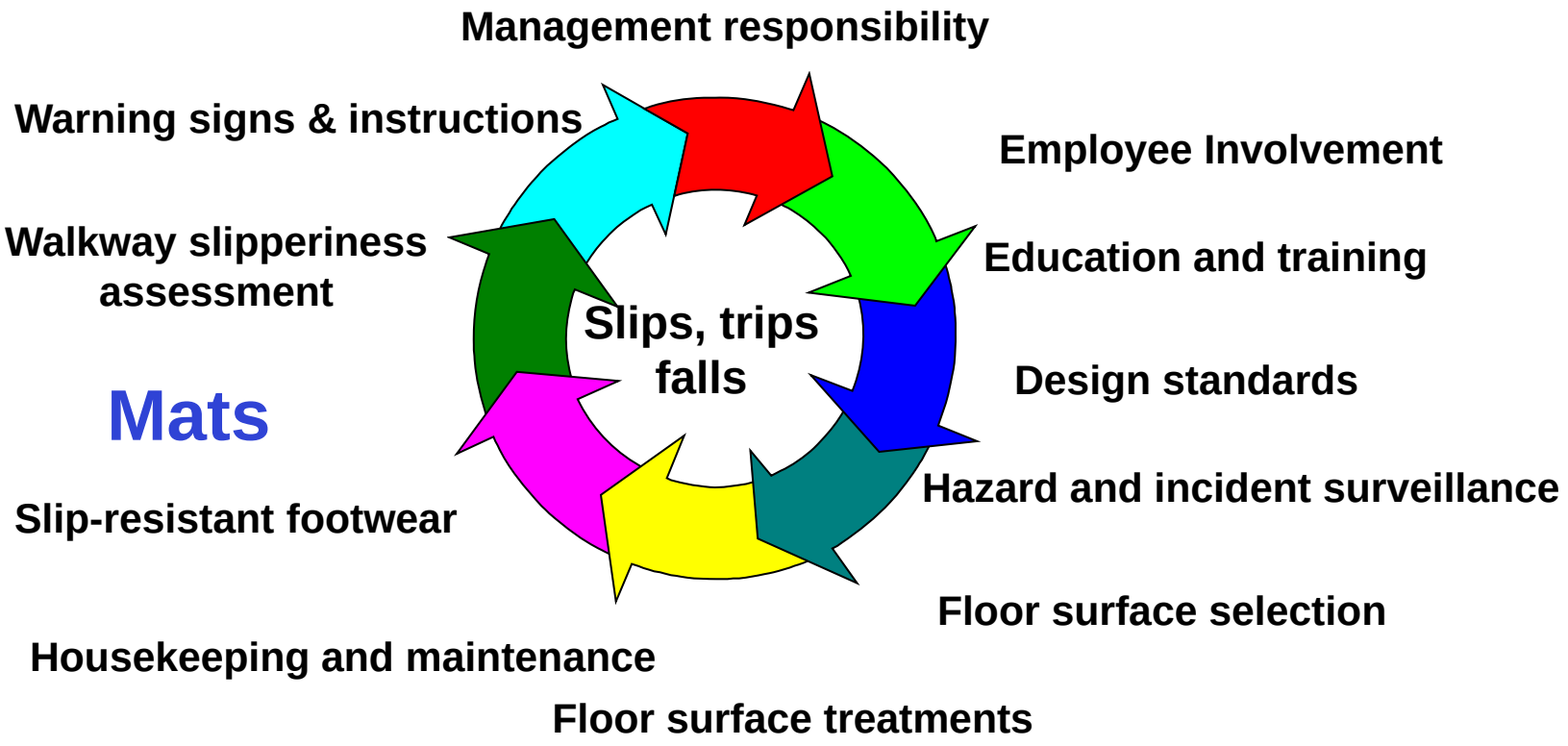
Comprehensive and Systematic Process



Benefits of Entrance Mats

- Prevent slips and falls
  - Absorb water/contaminants, remove soils
  - Provide slip-resistant surface
  - Elevate above standing water
- Reduce floor maintenance
  - Keep floors clean
  - Reduce wear, protect finishes

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Entrance Risk Assessment

- Walkway surface material can be slippery when wet e.g. VCT, terrazzo, polished granite/marble, glazed smooth ceramic tiles etc. ***and***,
- There are no interior mats ***or***,
- There are mats, but by design and installation, they do not,
  - Adequately absorb moisture from footwear
  - Adequately remove soils from footwear
  - Perform well because they are dirty

Entrance Mat Criteria

- Sufficient running length and width (unpublished manufacturer's study)
  - Snow: 10 - 12 walking steps
  - Rain: 8 - 10 walking steps
  - Dry: 6 - 8 walking steps
- 80% of soil entering a building can be trapped within the first 15' on a carpeted surface (ANSI A1264.2)
- Designed and placed so as not to create additional fall hazard
- Rule of thumb: should not be able to see footprints after stepping off mat (wet)

Entrance Mat Types

- Well and grate system
  - Funnels and drains moisture down and away from floors
  - Permanent fixture at entrances
- Recessed
  - Permanent mat installed in a well or recessed surface flush with floor
- Loose-Lay
  - Stays in place without adhesives

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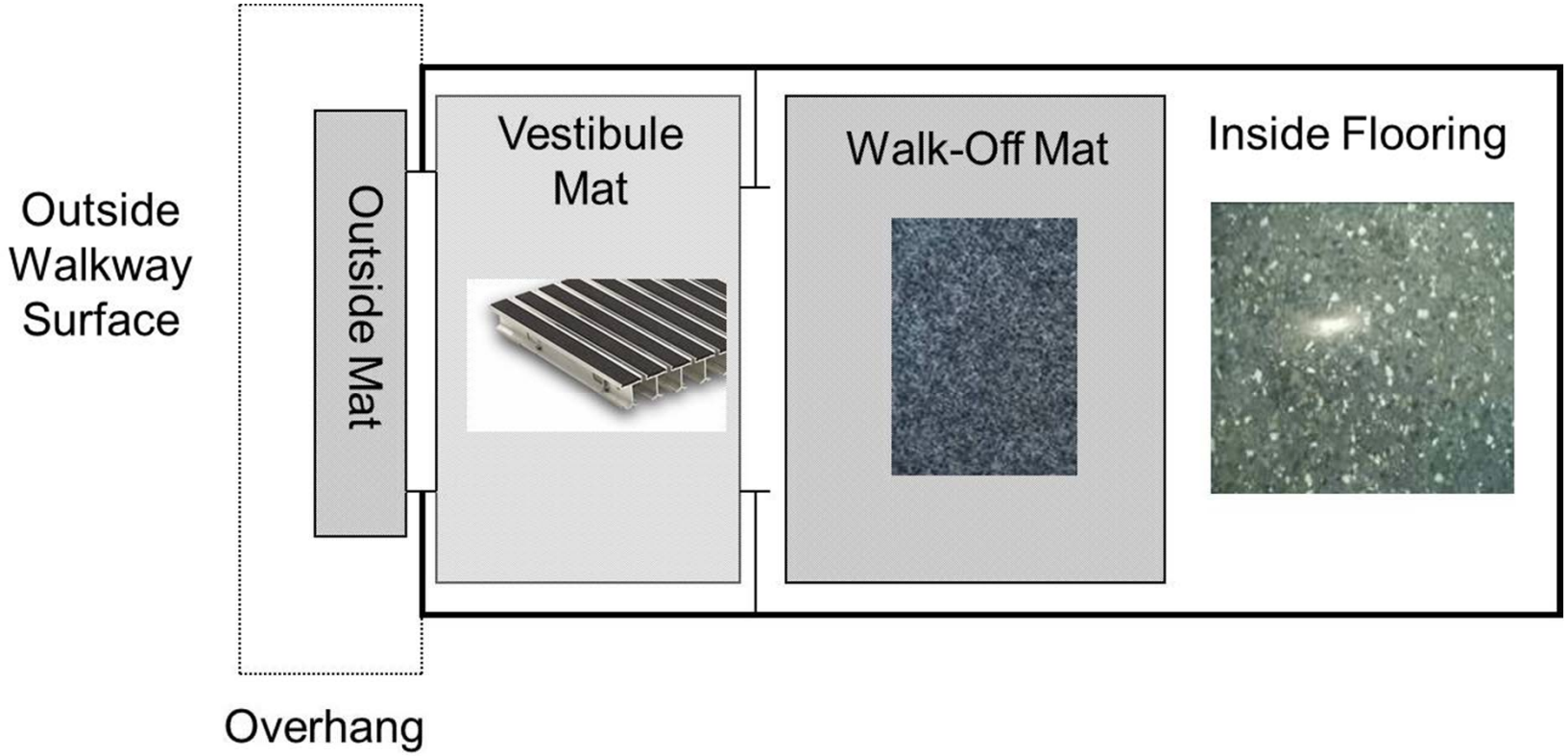
Entrance Mat Strategy
Slip/Fall Prevention



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General Guidelines - Layout

- ANSI A1264.2 – 2006, Standard for the Slip Provision of Walking Working Surfaces
- 6. Floor Mats and Runners
  - "6.4.1 Layout. Mats and runners shall be laid out to avoid overlap or gaps between them to provide a continuous walkway path."

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Area Mats and Runners

- Sinks
- Coolers
- Kitchens
- Cafeterias
- Ice machines
- Manufacturing areas

Mats and runners may be needed at multiple points in food service areas.

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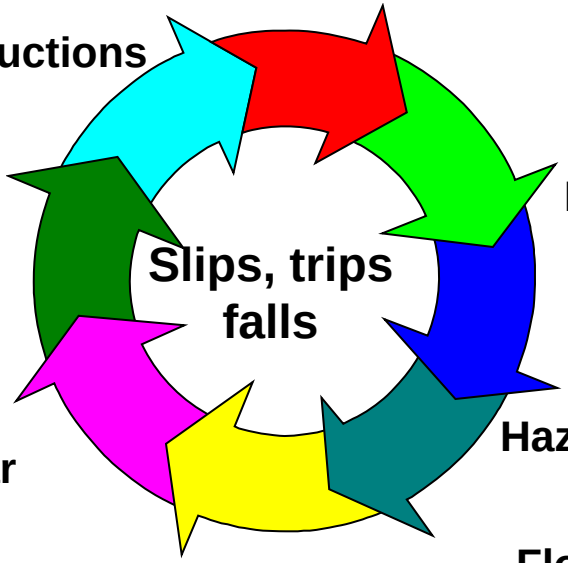
General Guidelines – Mats Cleaning & Trade-Out

- ANSI A1264.2 – 2006, Standard for the Slip Provision of Walking Working Surfaces
- 6. Floor Mats and Runners
  - "6.7 Cleaning and Trade-Out. To maintain effective soil pick-up and track-control, and slip resistance, mats shall receive scheduled cleanings or trade-out of appropriate frequency based on the conditions to which they are subject."
  - E6.7 Once filled with soil, it transfers to the shoe soles and spreads throughout the facility.

Comprehensive and Systematic Process

Management responsibility



Warning signs & instructions

Employee Involvement

Walkway slipperiness assessment

Education and training

Mats

Design standards

Slip-resistant footwear

Hazard and incident surveillance

Floor surface selection

Housekeeping and maintenance

Floor surface treatments

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Management Responsibility

- Strategic plan
- Resources
- Structure
- Documentation
- Periodic evaluation
- Provision for Contractors and Vendors

Final Thoughts

- Establish written floor cleaning procedures
  - Cleaning Chemicals
  - Tools
  - Methods
  - Schedules
- Program for reporting and cleaning spills
- Monitor performance of cleaners
- Plan for use of mats to reduce tracking moisture
  - Entrances
  - Maintenance

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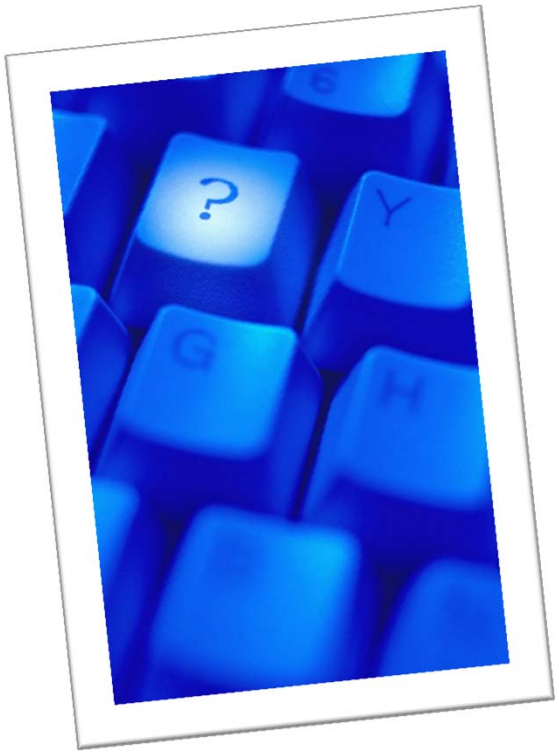
References / Resources

- LC 5413, Preventing Slips and Falls - Floor Surfaces and Treatments
- LC 5408, Preventing Slips and Falls - Selecting the Right Matting System
- LC 5410, Preventing Slips and Falls, Floor Cleaning and Maintenance

Questions and Comments



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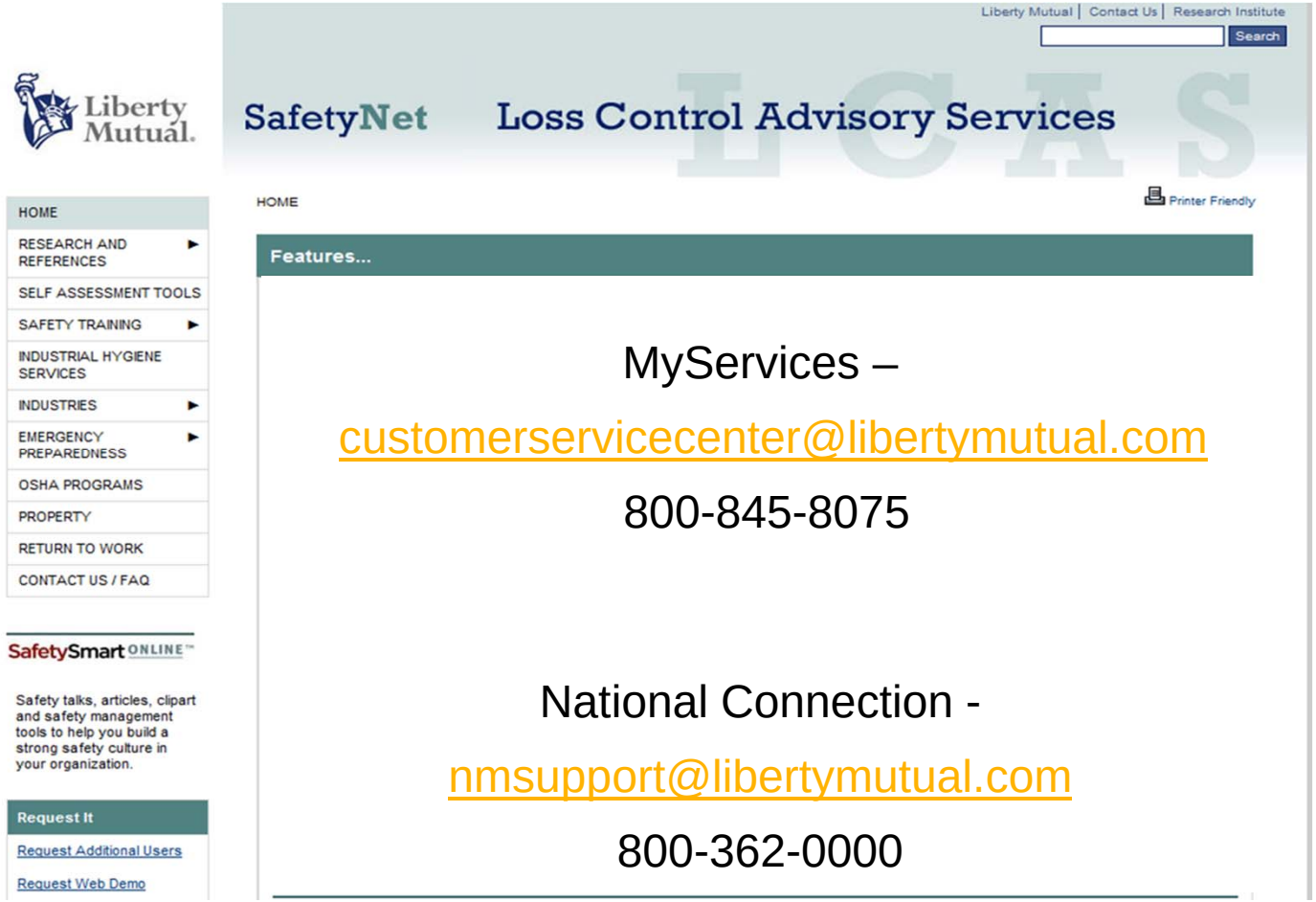

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Have a Question?

Help is only a phone call or email away!

LOSS CONTROL ADVISORY SERVICES

Loss Control Consulting Center

Our consultants are available Monday through Friday, 8:00 a.m. to 6:00 p.m. ET. Call us toll-free at 866-757-7324 or contact us by email anytime at CSUConsulting@LibertyMutual.com.

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