Developing Safe Pedestrian / Forklift Traffic Patterns

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How forklifts are used is always a concern for many reasons...
How many of you have had incidents inside your facilities involving forklifts that resulted in:

- Property damage (raw materials, finished product, forklift, building, or equipment).
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- Near miss of an injury to a pedestrian.
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- Near miss of an injury to a pedestrian.
- Minor injury to a pedestrian.
- Serious injury to a pedestrian.
How many of you have had incidents involving forklifts that resulted in:

- Property damage (raw materials, finished product, forklift, building, or equipment).
- Near miss of an injury to a pedestrian.
- Minor injury to a pedestrian.
- Serious injury to a pedestrian.
- Fatality to an employee or contractor.
How many have you undertaken intensive programs to improve pedestrian safety in your plants?
How many have you aware of the visibility challenges that a forklift operator faces?
Ten step process that Alcan Packaging utilized in its North and South American food packaging operations to improve traffic patterns of forklifts and pedestrians.
Step 1. - Team Formation

Form a team with members from various areas of the facility.

- Safety Department / Safety Team
- Operations
- Material Handling
- Shipping / Receiving / Warehouse
- Forklift Operator
- Engineering
Step 2. - Set Goals

- Set goals for the project, for example:
  - 50% reduction of interaction points.
  - Elimination of all medium and high risk forklift / pedestrian areas in the facility.
  - Complete segregation of forklift and pedestrian traffic.

- Set goals that will result in a positive impact on plant safety.
Step 3. - Data Collection

- Walk around your plant to identify areas of concern.

- Obtain employee opinion on current forklift and pedestrian aisle issues or concerns.

- Discuss with employees ways to improve forklift and pedestrian aisles.
Step 3. - Data Collection

- Traffic patterns need to be understood.
  - Where do forklifts and pedestrians currently go?
  - Ask the question: Where do they need to go?

- A formal material handling study may be necessary to calculate the actual amount of forklift traffic per hour for certain aisles or departments.
Step 3. - Data Collection

In a material handling study, one must consider:

- Direction of traffic flow.
- Frequency (i.e. - how many times / hr.).
- Time of day for traffic / material flow.
- Materials being moved.
- Methods used to move material (i.e. – forklift, hand carts, etc.).
- Aisles used to move materials.
- What is really needed?
Step 3. - Data Collection

A visual representation of your traffic patterns and areas of concern is beneficial to the project.

- Obtain a large detailed diagram of your plant layout (equipment location, staging areas, aisles, offices, etc.).
- Outline existing traffic patterns on plant layout.
  - Forklifts
  - Pedestrians
Step 3. - Data Collection

Identify on the diagram forklift aisle and pedestrian aisle interaction points.
Step 3. - Data Collection

- Identify areas of concern:
  - Blind intersections.
  - Employee work areas next to aisles with high forklift traffic.
  - Areas with poor lighting.
  - Aisles with heavy pedestrian traffic.
Step 3. - Data Collection

- Identify other areas of concern:
  - Aisles with heavy forklift traffic.
  - Employees and forklifts sharing overhead doors.
  - Personnel doors opening into forklift aisles.
Step 3. – Data Collection

Utilize the pedestrian and forklift traffic pattern diagram as a reference and visual discussion point in future steps to identify ways to improve forklift and pedestrian traffic issues.
Step 3. - Data Collection

- Assess the risk of all interaction points and areas of concern to help:
  - Prioritize the areas of concern.
  - Determine the proper modifications to reduce the risk.
  - Obtain Management support.
  - Measure project success.
Step 4. – Reducing Interaction Points

- Identify ways to reduce forklift and pedestrian interaction points:
  - Decrease number of cross walks – designate only limited areas where pedestrian aisles cross forklift aisles.
  - Combine existing crosswalks – may have to walk further.
  - Move crosswalks to areas where there is better visibility.
Step 4. – Reducing Interaction Points

- Identify ways to reduce forklift and pedestrian interaction points:
  - Move Break Rooms, outdoor smoke areas, stand alone offices, etc.
  - Move pedestrian aisles to the other side of forklift aisles.
  - Use stairs and elevated walkways to go over high forklift traffic aisles.
Step 5. – Reducing Forklift Traffic

- Reduce or control forklift traffic by:
  - Changing forklift traffic flow patterns.
  - Ban forklift traffic from certain areas, departments, or aisles.
  - Replace forklift use with hand cart use.
  - Install in-floor trolley systems.
  - Utilize wire-guided material transfer equipment.
DESIGNATED PEDESTRIAN WALKWAY
NO MOBILE EQUIPMENT TRAFFIC PERMITTED
THRU THIS AREA
Step 5. – Reducing Forklift Traffic

- Reduce or control forklift traffic by:
  - One-way forklift traffic in narrow aisles.
Step 6. – Reducing Pedestrian Traffic

- Reduce or control pedestrian traffic by:
  - Install barriers (i.e. – guardrails, gates).
  - Change pedestrian traffic flow patterns.
    - Moving break and smoking areas.
    - Relocate stand alone offices.
    - Contain truck driver access to plant.
  - Ban pedestrian traffic from certain areas or aisles.
RESTRICTED AREA
FORK TRUCK
TRAFFIC ONLY

RESTRICTED AREA
NO
PEDESTRIANS
Step 7. – Segregation

- Segregate pedestrian and forklift aisles:
  - Where space does not allow for a totally separate forklift aisle and pedestrian aisle - mark a pedestrian aisle to one side of a forklift aisle.
  - This allows forklift drivers to know where to expect to find pedestrians in the forklift isles.
Step 7. - Segregation

Segregate pedestrian and forklift aisles:
- Where space does allow for totally separate forklift aisles and pedestrian aisles, use painted lines to differentiate separate forklift and pedestrian aisles.
Step 7. - Segregation

- Segregate pedestrian and forklift aisles:
  - Install railings or barriers to segregate forklift and pedestrian aisles.
  - When to use a railing?
  - When to use a barrier?
  - When to use a pull-out barrier tape?
Step 8. – Identification Equipment

- Consider other equipment to improve pedestrian safety:
  - Ceiling or wall mounted mirrors for pedestrians to look for forklifts at intersections and forklift operators to look for pedestrians at intersections.
  - STOP signs – pedestrians or forklifts.
  - Adhesive floor signs to provide caution to forklift operators or pedestrians.
Step 8. – Identification Equipment

- Consider applications where a motion sensor turns on a light or alarm when a pedestrian is inside a certain location or when a forklift is approaching an area of concern.
Step 8. - Identification Equipment

Consider use of proximity devices on:

- Forklifts to turn on a light or alarm to warn pedestrians that a forklift is approaching an area of concern.
- Employee vests that turn on a light or alarm when they are within a certain distance of a forklift.
Step 9. – Workplace Changes

- Change material handling work flow.
- Relocate work areas or small equipment.
- Change location of staging areas.
- Move aisle locations.
- Limit forklift speed to < 6 mph.
Step 9. – Workplace Changes

- Create new doorways for pedestrian traffic.

- Do not recommend allowing forklifts and pedestrian to share overhead fire door openings.
Step 9. – Workplace Changes

Think of “out of the box” ideas when designing forklift and pedestrian traffic aisles.
Step 10. – Measuring Success

- Review the pedestrian and forklift traffic diagram that was developed to see what was accomplished.
Step 10. – Measuring Success

- Review goals from Step 2 (Set Goals).
- Did you reach your goals?
- What could still be done to achieve your goals?
- What is preventing you from achieving your goals?
Step 10. – Measuring Success

Did you achieve:

- Reduced number of forklift aisle and pedestrian aisle interactions.
- Improved segregation of forklift and pedestrian aisles.
- Increased use of barriers to separate forklifts and pedestrians.
Step 10. – Measuring Success

Was there an increase in the number of:
- Mirrors.
- Signs.
- Electronic sensors.
- Warning lights or alarms.

Perform a risk assessment on any remaining interaction points and areas of concern – has the risk been lowered?
Step 10. – Measuring Success

- Check Tool.
  - Forklift / Pedestrian Aisle Segregation Rating Criteria.
References:

- *A Guidebook of Industrial Traffic Management & Forklift Safety*

Just a few more forklift and employee occurrences that you should try to avoid from occurring in your workplace.
Any questions?