



RISK BULLETIN

Ergonomic Exposures And Controls: Trash Collection And Recycling

DESCRIPTION OF WORK TASKS

This task involves the use of a truck with attached collection trailer. The truck and trailer

are equipped with several bins for sorted recyclables. One employee drives and performs the pickup of curbside materials. Materials might be in buckets, boxes, bins, or lying loose on the ground. The employee may need to sort materials and place them in the appropriate



bins. Employees work at their own pace but must complete the route by the end of the day.

EXPOSURES

- Frequent torso flexions with the arms extended in front of the body to lift recyclable items up to the collection truck. Employees routinely bend the torso forward 80 to 90 degrees when lifting items such as cardboard and newspapers from the curb.

- Buckets and bins do not require such deep torso flexions since their sides are generally elevated to about knee height and therefore can be accessed with less severe bending. Use of these devices reduces torso flexion to about 40 to 60 degrees.
- Lifting boxes, bins, and pails with one hand by grasping the lip of the container exerts significant finger force with the fingers in a straight, locked alignment.

CONTROLS

Controlling hazards with this type of operation is very difficult since the main problem associated with the task involves customers and their methods of placing materials for pick-up.

- Repeated information (such as flyers) presented to the customers about employee safety and health may encourage some customers to improve their practices, if the desired equipment is easily attainable and convenient to use. Each improved site will lessen the overall health impact to employees since these types of injuries are cumulative by nature.
- Offer customers containers designed for an ideal collection system for free or at a reduced price. Ideal containers should be stackable (to eliminate severe angle bending) and have a cutout hand hole or protruding lip, for better grasping that encourages power grips and

neutral wrist posture. One available mechanism is a standard stack of recycle containers mounted on a light duty hand truck. This allows most lifts to be performed from a standing posture, and provides a convenient storage system and easy means of transport to curbside for the customer.

- Another approach to minimizing bending and lifting is to promote bulk recyclable pickup. Many companies already require belt sorting; it may be possible to bulk collect recyclables and use the belt sorters to separate such items. A bigger can which can be mechanically lifted could be designed for this bulk pickup technique. The advantages are that each employee can collect more, reducing the number of route employees.
- Since control of this type of workplace is very difficult, it is extremely important that employees receive continual education in the fundamentals of ergonomics and the basics of body biomechanics. They should understand the importance of maintaining the back in an ergonomically neutral position and be able to recognize the early onset of ergonomic injuries so they can minimize further exposure. Generally, the torso should not be flexed more than 6 to 10 degrees from vertical. Additional training should emphasize the importance of rest periods throughout the day. Self-paced route employees are often tempted to work through breaks and lunch in an attempt to shorten their workday. This should be strongly discouraged by management's administrative policies.

RECYCLE SORT BELT TASKS

Bulk recyclables are often delivered to a recycling site. After employees remove cardboard from the stack, bulk material is then loaded, using a front loader, into a hopper that feeds the material onto a conveyor belt. Employees positioned along the belt remove and sort recyclables into bins. Bins may be across the belt, under, or behind the employees. There are two separate sections of the line, one an elevated section and another at ground level. Employees on the ground level section stand on boxes or other structures to gain enough height to work at the belt. Employees on the elevated section stand on a special platform created on the side of the belt mechanism. The work is performed outside and employees stand for the duration of the task.



EXPOSURES

- Reaching long distances to access the far side of the belt.
- Frequent reaches present a hazard as extending the arm creates a weak position in terms of arm strength. Fully extending the arm is consistent with fatigue rates that are approximately 2 to 3 times faster than when the arm is bent and kept in close to the body.
- Frequent torso flexions with the arms extended in front of the body to access materials.
- Repeated use of a jerky, throwing motion to try to place items in bins across the conveyor belt.

- Routinely twisting and reaching behind the plane of the body to place items into the receptacles located behind the employees.

CONTROLS

- Workstations should be elevated so gravity can work with the sorters. Each station should have the appropriate bins located under the employees so they can position and drop instead of throwing.
- Install cutouts and slide areas on each side of the employee to prevent lifting items over the edge of the conveyor. Cutouts allow items to be pulled and dropped without ever lifting them from the belt.
- Reduce the distance employees must reach by installing diverter bars that push the material closer to the employee, reducing the width of the belt, or positioning employees on both sides of the belt. A diverter bar could be installed for times when the flow is too low to justify employees on both sides.
- A sit/stand device should be placed in each work area so employees can regularly shift their position and rest their feet.

- All workstations should be designed to accommodate the tallest employees. Adding variable work platforms accommodates shorter

employees and allows taller employees to work in ergonomically neutral postures.

- Cardboard removal activity has all the problems associated with the route pickup — torso flexions and finger exertion. These problems are very difficult to correct because of the changing nature of work in this area. Employees should rotate through the jobs on the belt and those doing gross removal of cardboard from the pile to minimize the duration of exposure to these hazards.
- It is advisable to enclose the belt area to minimize exposure to cold and wind. These factors can fatigue the employee, increasing susceptibility to injuries from other ergonomic factors.

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