

Hazards and Controls in Garbage Collection

Concern Details

Background:

Garbage collecting requires a worker to retrieve garbage bags from the curb (vertical hand height ~60 cm) and put them into the rear hopper of the truck at a hand height of 125 cm). When retrieving the garbage bags, the worker normally collects one bag in each hand, however on occasion they may lift up to four bags at a time. If the load is very awkward or heavy, they normally lift the bags with two hands. The average weight of a garbage bag is 7.5 kg, with a maximum weight measured up to 39 kg, however, this varies considerably. The worker does approximately nine lifts per minute, with an average of two bags per lift. The worker often tosses the bags into the hopper instead of walking all the way to the truck. The worker is also responsible for collecting large, oversized trash bags.



Garbage collector lifting bags off curb



Garbage collector lifting bags into truck

Evaluation

This job is cause for concern for many reasons. These are discussed in further detail below. Overall, the concerns on this job expose workers to increased risk of injury.

1. Some of the population may not be able to perform the job because it exceeds strength capabilities.

- Based on the biomechanical assessment, less than 90% of the population is strong enough due to the awkward postures and heavy loads. When the forces exceed the strength capabilities, it hinders an individual's ability to

perform the task. The higher the portion of the population not capable of performing a task, the greater the risk of overexertion injury.

2. High back loads and frequency of lifting increase risk of fatigue and injury.

- The biomechanical analysis revealed concern with high spinal loading and strength limitations for workers to perform the job. These high spine loads increase the risk of injury for some of the population.

3. The weights exceed maximum acceptable weight limits.

- The weight of the garbage bags (7.5 kg up to 39 kg plus) contribute to increased risk of injury. Many lifts are done with one or more bags in each hand. The weight of a single garbage bag exceeds one handed lifting guidelines of 7 kg. Thus, lifting multiple bags at a time greatly exceeds this one-handed lifted guideline. Workers are more susceptible to injury if bags exceed 7 kg.

4. The bags are outside the accepted lifting zones.

- This job results in poor lifting conditions which are causes for concern as the location of the bags are outside the preferred lifting zone of 75 cm to 110 cm vertical height and horizontal reach of 40 cm (5th percentile female reach distance with elbow at side of body)³.
- The vertical hand heights to retrieve the bags from the curb are below the minimum vertical hand height and loading them into the hopper is above the recommended hand height.



Garbage sitting on snow back

5. Repetitive awkward postures increase risk of injury.

- Repetitive, awkward shoulder and back postures are caused by the repeated lifting of the garbage bags outside the recommended lifting zone⁵.
- Furthermore, workers often throw the garbage bags to avoid walking to the hopper. Throwing the bags also results in repetitive awkward shoulder and elbow postures which place the workers at increased risk of injury⁵.
- Awkward postures are much greater during winter conditions when customers put bags on snowbanks.

Summary:

Due to these concerns and risk factors, controls are recommended to reduce the risk of developing musculoskeletal disorders when collecting garbage. The following section provides countermeasure recommendations to mitigate the risk of injury.

Controls

Due to the high risk of injury from repetitive, heavy lifting, it is recommended to eliminate the manual lifting of the waste. The ideal solution would be to investigate automated load trucks, with a lifting mechanism to automatically empty large carts called “toters”. The challenge to this countermeasure is that it involves the community to change to a standard toter, which would be costly. If it is not possible to eliminate the manual lifting via the automatic load trucks, then it is recommended to reduce the load weight and lifting frequency and improving the awkward postures.

Reducing the load weight can be accomplished by ensuring workers lift only one garbage bag at a time. It is also recommended to set a policy which would be communicated to the community to limit the bag weight to 7 kg and notify customers that items will be tagged and NOT collected.

Decreasing the lifting frequency can be achieved by reducing the number of stops for each individual worker. It is also recommended to consider payment by the hour instead of by tonnage or using a “finish and go home” pay scheme that encourages work at excessively fast rates which increases the potential for injuries.

Awkward postures can be improved by communicating with the community on where garbage should be placed, especially in winter months. In addition, trucks with lower hoppers should be purchased.

Recommendations for Garbage Collectors:

- Move feet to pick garbage and place into truck instead of twisting the trunk and throwing the load.
- Reduce load weight by ensuring workers lift only one garbage bag at a time.
- Do not lift heavy, awkward loads by yourself.
- Wear appropriate footwear, gloves and clothing for the weather conditions.

The information contained in this document was developed in partnership with the Infrastructure Health and Safety Association (https://www.ihsa.ca/topics_hazards/msds.aspx) and CRE-MSD as part of the following project funded by the Workplace Safety and Insurance Board (Ontario):

Kramer, D., Bigelow, P., Vi, P., Garritano, E., Wells, R. Encouraging construction companies to adopt innovations to reduce MSDs using different knowledge transfer techniques. 2008-2011.