Reusable Bags and Ergonomic Issues

An Issue Often Overlooked By Communities Implementing Bag Bans

By Anthony van Leeuwen, 23 June 2013

With more and more communities in California and the nation adopting plastic carryout bag bans ergonomic safety issues related to using reusable bags have been largely ignored. The chief selling point often touted by proponents is that "Reusable bags hold more than plastic bags". What is often overlooked is that "If reusable bags hold more, they weigh more." This means that handling of heavier reusable bags by both store employees and customers alike, present ergonomic safety hazards that should be taken into consideration.

In a study titled "*Skeletal Study and Work Practice Involving Plastic Bags and Retail Workers*" it was noted that grocery store workers move approximately 1000 plastic bags a day each weighing up to 13.2 lbs. each or up to 6.5 tons per day. The study further noted that injury rates for such movements was low because workplaces were ergonomically designed for the plastic bag.[1]

In a study titled "*Reusable Bag Guidelines*" it was noted that scanning and bagging groceries is a key work effort in grocery stores where cashiers experienced the greatest proportion of work-related injuries (35% in 2009). The study further noted that reusable bags have added new concerns of injury to workers since workstations were not designed for reusable bags with different sizes and shapes.[2]

The study further noted that the weight of individual bags increased from an average of 10 lbs. for the plastic bag and the small reusable bag to 28 lbs. and 38 lbs. for the medium and larger versions of the reusable bag.[3] The study also noted that customers predominantly brought in medium and large reusable bags. The higher average weight for these bags pose an increased risk of injury to workers.[4]

Hence, ergonomic issues related to reusable bags should be evaluated and considered.

Reusable Bag Sizes

Reusable bags generally come in different sizes: small, medium, and large. The average weight when filled is 10, 28, and 38 lbs. respectively, as shown in Table 1[5]. Designer bags and custom bags vary in size, shape, and load capacity. The most common bag is the medium size bag with an average load

[1] Mills, Colin and Tomlinson, Marcus. February 2008, "Skeletal Study and Work Practice Involving Plastic Bags and Retail Workers". Shop Distributive and Allied Employees Association, South Australian Branch. Located at: http://www.zerowaste.sa.gov.au/upload/resources/publications/plastic-bag-phase-out/sda_skeletal_study_work_report_3.pdf . Page 9.
[2] Reusable Bag Guidelines, Health and Safety Ontario Canada. Available at: http://www.healthandsafetyontario.ca/HSO/media/WSPS/Resources/Downloads/Resuable_Bag_Guidelines.pdf?ext=.pdf . Page 14.
[3] Ibid. Page 6.
[4] Ibid. Page 8.
[5] Ibid . Page 14.

capacity of 28 lbs. which is more than double the average weight of a filled plastic bag. The increase in weight and volume per load can lead to an increased risk of injury. Longer straps on most reusable bags increase the height that arms must be raised and the awkward shoulder position when lifting reusable bags contribute to the higher risk of injury.[6]

Reusable Bag	Size	Average Filled Weight
Small	13.58 x 10.24 x 7.1 in 34.5 x 26 x 18 cm (16.1 liters)	10 lbs.
Medium	14.2 x 11.8 x 7.1 in 36 x 30 x 18 cm (19.4 liters)	28 lbs.
Large	17.99 x 15.98 x 7.1 in 45.7 x 40.6 x 18 cm (33.4 liters)	38 lbs.

Table 1. Reusable Shopping Bag Sizes and Average Weights When Filled

Workplace Injuries

The potential for workplace injuries is significantly increased because existing checkstands are ergonomically designed for use of plastic carryout bags which have a uniform size and load capacity.[7] A shift to using reusable bags of different sizes and larger load capacities will result in new lifting and load shifting patterns that if not controlled by safe practices will lead to a significant Increase in workplace injuries.[8]

Some of the work practice observations noted in the report titled "Reusable Bag Guidelines" and published by the department of Health and Safety, Ontario in Ontario, Canada are as follows:[9]

- *"Most cashiers lifted the bag by the handles raising the lifting height from a fixed conveyor belt height of 86cm (34 inches) to 142 cm (56 inches) resulting in an extended reach and awkward shoulder positions."*
- *"With a limited number of bags brought in by customers, cashiers tend to overfill the bags creating increased weights."*
- *"Cashiers rarely placed the bags in the bag wells. Bags were often filled on the counter."*
- *"Bags with rigid bottoms were not leaned on their sides to reduce the height for filling."*
- *"Rather than sliding the bags to the customer, the cashier lifted the bags to the customers using the looped handles which increases shoulder strain and effort as the cashier was lifting the bag further away from themselves."*

[6] Ibid. Page 8.
[7] Ibid. Page 5.
[8] Mills, Colin and Tomlinson, Marcus. February 2008, "Skeletal Study and Work Practice Involving Plastic Bags and Retail Workers". Shop Distributive and Allied Employees Association, South Australian Branch. Located at: http://www.zerowaste.sa.gov.au/upload/resources/publications/plastic-bag-phase-out/sda_skeletal_study_work_report_3.pdf . Page 9.
[9] Reusable Bag Guidelines, Health and Safety Ontario Canada. Available at: http://www.healthandsafetyontario.ca/HSO/media/WSPS/Resources/Downloads/Resuable_Bag_Guidelines.pdf?ext=.pdf . Page 8.

In addition to the above work practice observations, the guidelines[10] also contain instructions for safely lifting and moving filled bags, demonstrating that ergonomic risk factors are a genuine concern.

The Occupational Safety and Health Administration (OSHA) in a document titled "Guidelines for Retail Grocery Stores - Ergonomics for the Prevention of Musculoskeletal Disorders" also identifies several ergonomic risk factors for grocery store workers. These risk factors include force, repetition, awkward posture, and static postures. The presence of these risk factors increase the potential for injuries and illnesses. OSHA identified these injuries and illnesses, uses the term musculoskeletal disorders (MSDs), to include:[11]

- Muscle strains and back injuries;
- Tendinitis;
- Carpal tunnel syndrome;
- Rotator cuff injuries (a shoulder problem);
- Epicondylitis (an elbow problem); and
- Trigger finger that occurs from repeated use of a single finger.

In addition, OSHA makes the following statement: [12]

> *"Grocery stores that have implemented injury prevention efforts have said they have successfully reduced work-related injuries and workers' compensation costs. Many times, these efforts have reduced injuries and led to increased worker efficiency and lowered operating costs. For example, designing check stands to reduce ergonomic risk factors such as twisting or extended reaching can improve cashier effectiveness and productivity."*

Because checkstands are currently ergonomically designed for filling plastic carryout bags having a uniform size and load capacity, a shift to using reusable bags of different sizes and capacities require workers to use safe lifting and handling procedures. Checkstand modifications or replacement in order to reduce ergonomic risk factors may also be required. Workplace changes based on ergonomic principles may also lead to increased productivity by eliminating unneeded motions, reducing fatigue, and increasing worker efficiency.[13]

Consumers Also At Risk Of Injury

In addition, the risk of injury to retail workers by lifting heavier reusable bags also extends to the customer. Customers, particularly senior citizens may not be able to lift the heavier reusable bags. In addition, many people have back injuries or have had back surgery, may also be restricted from lifting more than 10 lbs. Obviously, for these customers, the smaller reusable bag would be the preferred size.

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[10] Reusable Bag Guidelines, Health and Safety Ontario Canada. Available at: http://www.healthandsafetyontario.ca/HSO/media/WSPS/Resources/Downloads/Resuable_Bag_Guidelines.pdf?ext=.pdf . Page 14.

[11] Occupational Safety and Health Administration, 2004. "Guidelines for Retail Grocery Stores - Ergonomics for the Prevention of Musculoskeletal Disorders". U.S. Department of Labor. Document OSHA 3192-06N.

[12] Ibid.

[13] Ibid. Page 6.

Since cashiers and baggers can identify senior citizens more easily they are able to ensure that the bags when filled are not too heavy. However, identifying those who have back problems is not that easy and if the customer does not bring enough bags, cashiers will tend to overfill the bags. Lifting heavy bags creates a risk of injury for the customer and creates a potential liability issue for the store. [14]

Single Use Bag Ordinance Reusable Bag Sizes

The proposed model Single Use Bag Ordinance[15] specifies that the reusable bag have a minimum volume of 15 liters and be capable of "carrying a minimum of 22 pounds 125 times over a distance of at least 175 feet." Hence, the proposed model ordinance merely suggests that the minimum size of the reusable bag offered by retailers is the **small reusable bag** identified in Table 1. Since retailers could offer small, medium, or large reusable bags for sale that often depend upon product availability, consumers should take care to purchase bags they would be comfortable lifting when filled.

Conclusion

Ergonomic safety hazards created by a plastic bag ban increases the risk of injury for retail worker and customers alike who have to lift reusable bags that are heavier than the plastic bags they replace. Safe bag lifting and handling practices will help avoid injury. Shoppers should only purchase reusable bags of a size that when filled they are comfortable in carrying. In additions, shoppers should bring more than enough reusable bags when shopping to prevent overfilling of bags. Checkstand modification or replacement in order to reduce ergonomic risk factors with reusable bags is always an option for retail stores. Shifting from plastic carryout bags to reusable bags is not without cost and risk to retail workers and customers alike.

[14] Reusable Bag Guidelines, Health and Safety Ontario Canada. Available at: http://www.healthandsafetyontario.ca/HSO/media/WSPS/Resources/Downloads/Resuable_Bag_Guidelines.pdf?ext=.pdf

[15] BEACON, April 2013, "Single Use Carryout Bag Ordinance, Final Environmental Impact Report", Document SCH #2012111093, Appendix B Draft Ordinance. Page 552. Located at: http://www.beacon.ca.gov/assets/PDFs/Bag-Ordinance/BEACON%20Single%20Use%20Carryout%20Bag%20Ordinance%20Final%20EIR_updated%20May1.pdf