



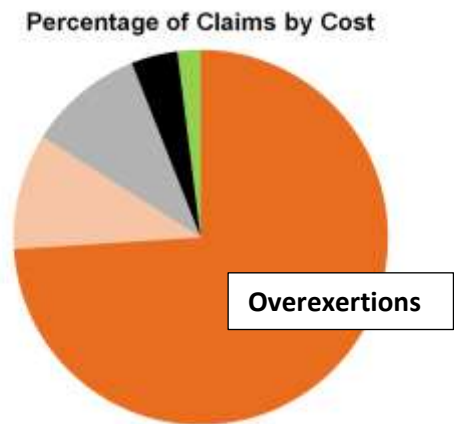
## Ergonomics Case Study Meat Processing

### Background

Hempler's Meats, a family owned meat processing and smoking company in Ferndale, Washington, asked L&I for some ergonomics help. They wanted their production areas evaluated for repetitive motion activities, and to get guidance on job rotation.

A startling 74% of all claims costs were due to overexertion injuries. A deeper look at the injury claims revealed that the greater problem was related to material handling (50%), rather than repetitive motion (4%).

The ergonomist helped Hempler's prioritize the risk factor exposures that were likely to lead to muscle and joint injuries. She gave suggestions for reducing the risks and related costs.



### Issues Found

Some of the lifting tasks were both heavy and awkward. Job demands for Sausage Maker and Ham Racker required workers to be very strong. Not many workers could do it. With few capable workers available, it wasn't possible to use a job rotation schedule that rotated workers between easier and more physically demanding tasks.

The ergonomist used a lifting analysis tool to see if these lifts were reasonable or risky for workers to perform. Factors that influence the decision include: load weights, position of the load relative to the worker's body, overall duration of lifting during the workday, and lifting frequency (see Appendix). The analysis tool showed that some of the lifting tasks created a risk for injury and should be changed.

The ergonomist proposed several solutions that would reduce the strength requirements and the awkwardness of the lifts. A primary goal was to eliminate the awkward lifting so that a job rotation schedule could be developed.

### Sausage Maker



#### **Before : Heavy Lift**

The sausage mixer lifted 60 lb. tubs of sausage from pallets to an overhead hopper several times an hour, up to 5 hours per day.



#### **After Implementation**

The employer installed a conveyor that takes the load of meat up to the hopper. Elimination of the overhead lift means more workers can manage the task. Job rotation gives the Sausage Mixer a break from heavy lifting.

### Ham Netter



#### **Before: Awkward Lift**

The ham bagger used a meat hook to repeatedly grab 15 to 17 lb. hams from a bin—several times from the bottom of the bin.



#### **After Implementation**

A tote dumper lifts and tilts bins of hams, eliminating the awkward bending and repetitive reaching.

**HAM RACKER**



**Before: Frequent, heavy, awkward lift**

The ham racker lifted sticks of 4 hams (60 to 72 lbs.). The rack height ranged from knee height to overhead.

**After Implementation**




Racks and sticks were modified to halve the weight. Workers now lift 28 to 32 lbs. at a time. They rotate to non-lifting tasks.

**Follow up**

The Sausage Mixer who did most of the heavy and awkward lifting reports that he can now go home and play with his children. He no longer needs to crash on the floor of his living room to recover from a day's work!

Hempler's continues to assess tasks for awkward postures, repetitive motion and high forces. They solicit employee ideas and encourage active participation in safety and ergonomics programs and committees. They use incentives and do frequent walk-arounds to reward safe practices. A daily stretch program warms everyone up before work begins. Morale has improved and employee turnover decreased. Time loss injuries have decreased, with a resulting reduction in experience factor from more than 1.5 to 1.0 in one year.

**Other ergonomics improvements**

<p>Purchased a load lifter to lift and transport heavy spools of film</p>	
<p>Built an attachment for the load lifter to eliminate manual lifts of heavy dies</p>	
<p>Redesigned the brake system on mobile saw tables so that workers no longer stabilize the tables with one arm.</p>	

Use a forklift attachment to dump heavy garbage into the dumpster.



**APPENDIX: ACGIH TLV Lifting Analysis Tool**

Lifting Threshold Limit Values (TLVs)

**Table 1**  
(Lower Intensity)

Vertical Zone	Horizontal Zone*		
	Close: <12 in.	Mid: 12-24 in.	Far: 24 - 31 in.
1 Top of head to 3 inches below shoulder	35 lbs	15 lbs	No known safe limit for repetitive lifting
2 3 inches below shoulder to knuckle height	70 lbs	35 lbs	20 lbs
3 Knuckle height to mid-shin height	40 lbs	30 lbs	15 lbs
4 Mid-shin height to floor	30 lbs	No known safe limit for repetitive lifting	No known safe limit for repetitive lifting

**Table 2**  
(Medium Intensity)

Vertical Zone	Horizontal Zone*		
	Close: <12 in.	Mid: 12-24 in.	Far: 24 - 31 in.
1 Top of head to 3 inches below shoulder	30 lbs	10 lbs	No known safe limit for repetitive lifting
2 3 inches below shoulder to knuckle height	60 lbs	30 lbs	15 lbs
3 Knuckle height to mid-shin height	35 lbs	25 lbs	10 lbs
4 Mid-shin height to floor	20 lbs	No known safe limit for repetitive lifting	No known safe limit for repetitive lifting

**Table 3**  
(Higher Intensity)

Vertical Zone	Horizontal Zone*		
	Close: <12 in.	Mid: 12-24 in.	Far: 24 - 31 in.
1 Top of head to 3 inches below shoulder	25 lbs	No known safe limit for repetitive lifting	No known safe limit for repetitive lifting
2 3 inches below shoulder to knuckle height	30 lbs	20 lbs	10 lbs
3 Knuckle height to mid-shin height	20 lbs	15 lbs	5 lbs
4 Mid-shin height to floor	No known safe limit for repetitive lifting	No known safe limit for repetitive lifting	No known safe limit for repetitive lifting

\*Measure horizontal distances from the mid-point between the ankles

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