

# City of Yakima Public Works Department

June 2004



# **City of Yakima Public Works Department Ergonomics Demonstration Project**

## **Executive Summary**

The City of Yakima's Public Works Department began looking into how Washington State's ergonomics rule would affect them while it was still in the proposal stage. They found many employee concerns, a number of which turned out to be caution zone jobs. Through a combination of careful planning, involving employees, taking advantage of services offered by the Department of Labor and Industries (L&I), and phasing in changes, they were able to work through the steps required by the rule well in advance of the first compliance dates. Although the ergonomics rule has since been repealed, some examples of solutions they have in place are shared in this report, since they may be of benefit to other public entities as well as private employers who perform similar functions.

## **Introduction**

The City of Yakima's Public Works Department has seven sub-departments: Transit, Parks, Recreation, Equipment Rental (fleet and equipment maintenance), Traffic, Streets, Refuse and Administration. Each of these departments performs a variety of functions, which at first might seem overwhelming when determining how to apply Washington State's ergonomics rule. However, their Safety and Training Manager and Director were able to develop a process that allowed them to implement the rule's requirements without losing focus on other important safety and health issues. They agreed to share their efforts through an Ergonomics Demonstration Project with the Department of Labor and Industries (L&I).

## **Identifying Caution Zone Jobs**

The City of Yakima's Public Works Department began preparing for implementation of the ergonomics rule in November 1999 when the rule was still in the proposal stage. In order to see if the rule would affect them, they sent out a caution zone job checklist to all of their staff, and found that they had approximately 45 job classifications that fit the definition of "caution zone jobs." They then followed up once the rule was finalized to determine which employee concerns actually were caution zone jobs.

Caution zone jobs were found in the Street Department, Sign Shop, Traffic Engineering, Traffic Operations, Refuse, Cemetery and Parks Maintenance.

The following table summarizes the caution zone jobs by department:

<b>Department</b>	<b>Functions</b>	<b>Caution Zone Jobs</b>
Transit	Bus Drivers, Dispatch, Administration, Service Workers	None
Parks	Weeding, planting spraying, pruning, mowing, painting, facilities repair, refuse collection, cleaning, cemetery maintenance	Hands overhead, bent back, squatting, kneeling, high hand force, highly repetitive motion, repeated impact, heavy, awkward lifting, vibration
Recreation	Recreation workers, aquatics workers	None
Equipment Rental	Service and repair of vehicles and equipment	Hands overhead, bent back, bent neck, squatting, kneeling, high hand force, highly repetitive motion, repeated impact, heavy, awkward lifting, vibration
Traffic	Monitor traffic and signals Repair signals and street lights	Hands overhead, high hand force, highly repetitive motion
Streets	Concrete prep and finishing Tree pruning Leaf Removal	Hands overhead, squatting, kneeling, high hand force, highly repetitive motion, heavy, awkward lifting, vibration
Refuse	Trash collection	Heavy lifting, high hand force, elbows over shoulders
	Yard waste collection	None (automated trucks)
Administration	City Management (primarily office work)	None

More detailed information on the caution zone assessments can be found in the appendix.

### **Providing Awareness Education and Analyzing for Hazards**

Once they knew which jobs were affected, the city was able to take advantage of the rule's phase-in schedule and the services offered by Labor and Industries (L&I) in several ways. The following is a timeline of the steps that the city took to begin the compliance process:

**March 2000** - Using L&I materials, an introductory session of Ergonomics Awareness Education was conducted for all Public Works divisions during safety meetings. Later awareness sessions were able to use the videotape version of the educational materials.

**May 2000** - A therapist consultant from the Department of Labor and Industries (L&I) did a limited ergonomic analysis in Transit and Equipment Rental to evaluate some specific risk factors for these workgroups.

**November 2000** - At Public Works division safety meetings, a physical therapist demonstrated a stretching program designed to prevent muscular strain and tension that may result from working in awkward postures and other typical work situations.

**May 2001** - Ergonomics Awareness was offered again at all divisional safety meetings. This Red Cross sponsored training offered information on avoiding awkward postures both on and off the job, included risk factor checklists and emphasized the role of the employee in preventing musculoskeletal disorders.

**June 2001** - A therapist consultant from L&I conducted an Office Ergonomics Workshop at Public Works which was open to all city employees.

**March 2002** - The same L&I therapist conducted Ergonomics Awareness specifically related to lifting to the entire Parks & Recreation Department.

**April 2002** - Worked with L&I on a complete hazard analysis of Equipment Rental (vehicle and equipment maintenance crew).

**June 2002** - Two L&I vocational therapists and the therapist consultant offered ergonomic awareness and caution zone analysis training for the city division managers and supervisors. This class prepared the supervisors to begin hazard analysis on the employees in their departments.

**July 2002 to July 2003** – Hazard analysis of remaining departments.

**July 2003 to July 2004** – Reduction of hazards found.

**Note:** Washington State's ergonomics rule was repealed by a vote of the people in November 2003.

Due to the wide variety of tasks and the seasonal nature of the work performed by several departments, the complete hazard analysis took a year. This amount of time gave employees and supervisors the ability to perform the analysis in conjunction with their normal duties. It also eliminated the need to hire consultants. While the variety of tasks being performed made the analysis a little more challenging, it also meant that many of the jobs did not reach hazard levels. For example, they found that street crews would get called off on emergency repairs at least once per day, so that even on the days that they

were scheduled to work on the same project for eight hours, they wouldn't do any one thing long enough to make it a hazard.

In other cases, it was the nature of the task itself that kept it from reaching hazardous levels. For instance, traffic crews are responsible for changing out the bulbs in the traffic lights on a frequent basis, a task they call 'relamping.' This task requires a pinch grip to hold the bulbs, combined with repetitive motions to unscrew the old bulb and screw in the new one. If this task were done at ground level in one location it would easily exceed the hazard limit of three hours for this combination. However, with the time spent driving the bucket truck between intersections, setting up the cones to block traffic, and raising and lowering the bucket to and from each light, the total time per day making repetitive pinch and twist motions was well below the hazard level. Added to the variety inherent in the task is the practice of rotating workers between operating the controls at ground level and riding up in the bucket to change bulbs.

Another example where a task has some risk factors but didn't even reach caution zone levels is in servicing the buses in the transit department. In this job, service workers assumed a variety of awkward postures, used hand force and repetitive motions, and did some lifting to clean, repair, remove and replace vaults, the devices into which passengers deposit their fares. Some of these risk factors do occur for moderate durations. However, these service tasks are only done one day per week, which is not frequent enough to be considered a caution zone job.

Other factors have helped to reduce the number of hazards that they've found. For example, many of their suppliers have begun shipping product in smaller sizes, such as the reflective materials that are added to the paint used to put yellow and white stripes on roadways. These used to come in bags weighing as much as 80 pounds, but are now shipped in more manageable 50-pound bags. Another factor that limits hazards is the equipment that was brought in to help employees do their jobs, well before the ergonomics rule came into existence. Many examples of this can be found in their fleet maintenance garage, where they use many different pieces of lift equipment to handle heavy truck parts during service and repair tasks.

## **Involving Employees**

Employee involvement is a requirement of the ergonomic rule. One way the city chose to meet this requirement was to provide a higher level of training to the various city safety committees. The city enlisted L&I's help to do this training. The responsibility for implementing the rule could then be centralized within these committees, lending support and additional resources to the supervisors. This fits in well with the city's overall safety culture, which stresses employee awareness and a supportive environment from management.

In general, the employees have been very supportive of the city's efforts. Many of them came forward not just with reports of caution zone jobs, but also with ideas for simple solutions to reduce their exposure to the risk factors in the rule. An example of this is a sprayer used by a worker in the Parks department, which required a considerable amount

of hand force to repetitively squeeze the trigger. Given the amount of spraying done on a daily basis in the spring, this would have exceeded the hazard limits in the rule. The employee identified a new type of sprayer with a nozzle similar to a garden hose that just needs to be turned to start the spray, so hand force is reduced considerably and no repetitive squeezing motions are required. The new sprayer will be purchased to replace the old one during the normal equipment replacement cycle.

## **Reducing Hazards**

With initial hazard analysis and ergonomics awareness training complete, Parks and Recreation was in compliance with the ergonomics rule more than a year ahead of schedule. The other Public Works departments were not far behind. The next step was hazard reduction, which was scheduled to be completed by July 2004.

Listed below is the three-step process to be followed when determining hazard reduction:

- 1) Engineering controls- example: new or modified tools or workstations,
- 2) Administrative controls- example: rotating duties or schedules,
- 3) Personal protective equipment (PPE)- examples: impact gloves.

According to the Public Works safety manager:

“There are several advantages to being ahead of schedule in this compliance process:

- It enables us to repeatedly take advantage of the free and expert services of L&I.
- Supervisors and employees can make good ergonomic choices when budgeting for and purchasing replacement equipment.
- Engineering and administrative controls with associated costs can be phased in over several accounting cycles.
- Allows time for supervisors and employees to reach a level of competency and eliminates the need for hired consultants.
- Allows time to plan for administrative changes such as rotating duties and schedules.
- Hazard analysis can be done as part of a normal supervisory routine while watching employees perform regularly scheduled tasks.
- Employees trained in ergonomics awareness and taking part in analysis and hazard reduction are less likely to suffer ergonomic related injuries.
- Begins to address serious worker’s compensation financial impacts.”

One example of how the city has benefited from the extended phase-in schedule in the rule and their early start on compliance has been in replacing tools. As tools have worn out, they’re making sure that the new tools coming in are designed to reduce risk factors such as bent wrists, high hand forces, and vibration. For instance, the old impact wrench that the mechanics used to change truck tires was replaced with a newer wrench that was about half the weight.



**Old impact wrench weighs close to 40 pounds**



**New impact wrench does the same job at less than half the weight**

The phase-in schedule has also allowed them the time to budget for larger equipment purchases over a number of years. One example is in their refuse collection department, where they've been in the process of converting to automated trucks for the past several years. These new trucks have a mechanical arm, controlled by the driver using a joystick, which lifts the standardized trash bins and dumps them automatically. This allows the drivers to complete their routes while seldom having to get out of the truck, and more importantly, without the heavy, awkward lifting and carrying that manual trash collection requires. Purchasing the trucks and standardized bins all at one time would not have been economically feasible, but the city has managed to budget for the purchases so that they'll have all of their routes automated by the end of 2004. One factor that helped to justify the cost of the new trucks was the relatively high rate of injuries among refuse workers. Even injuries not directly related to lifting trash cans were costing the city, since it was difficult to bring workers back to such a physically demanding job when they had knee or back injuries. With the automated trucks, workers are able to return to driving their routes much more quickly following an injury.

The city is seeing additional benefits from the purchase of these automated trucks. Formerly many of the routes required two employees, one to drive and one to pick up trash cans and dump them in the back. However, the new trucks only require one employee, and with the city's commitment not to lay anyone off because of a process improvement, they now have additional people to help with other tasks that were previously understaffed. For example, the Refuse Department is also responsible for moving large dumpsters into position to be emptied by a large, front-loading truck. Occasionally these dumpsters would need to be pushed and pulled over rough pavement or even gravel, which was a very difficult job for someone working alone. Although pushing and pulling activities aren't covered by the ergonomics rule, they can still be a source of injury. The city now sends an additional worker along on those routes where difficult moves are required.

The following are some examples of solutions to hazards that the city has implemented:

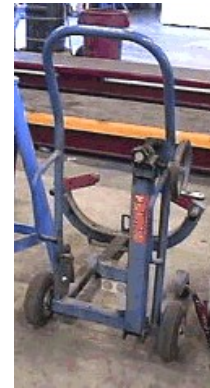
- Lightweight weed trimmers
- Low vibration tools
- Seats to reduce kneeling and squatting during vehicle maintenance
- A man-lift for accessing high areas on buildings and vehicles, replacing ladders
- Tools designed to keep the wrists straight during use
- Rearranging storage so that heavier items are between knee and shoulder height
- Buses with well-designed driver's compartments to reduce reaching and other awkward postures.



**The powered man-lift is used daily to work high on equipment, change light bulbs, clean and paint high walls, etc.**



**Work stools can be used instead of bending, kneeling or squatting**



**Wheeled equipment used to reduce heavy lifting in the shop - a bucket dolly, brake drum cart, and wheel dolly**



## **Next steps**

The city still has a few issues that they hope to resolve as they move forward with their ergonomics process. For example, the joystick controls for the automated refuse trucks require some repetitive motions and thumb force to operate. They are working with the manufacturer to find an alternative that places less stress on the hands and wrists. They're also looking for ways to reduce neck bending among the operators of street cleaning trucks, since they have to look down and to the side to watch the brushes as they work near the curb.

## **Appendix: Examples of Caution Zone Job Analyses**

The analyses on the following pages were performed by the City of Yakima's Public Works Department with employee participation.

# Ergonomic Evaluation Signal Technicians May 2003

Caution Zone jobs as noted by workers:

## Awkward postures motion

Re-lamping  
Signal repair  
Working in cabinets and trenches  
Intersection checks  
Locates

## High hand force/highly repetitive

Re-lamping  
Tree trimming

## Comments/Observations

**None of the caution zone jobs qualify as a hazard due to the wide variety of tasks performed by the signal techs. For example, re-lamping would qualify as a hazard if it could be accomplished rapidly at ground level instead of utilizing the bucket truck.**

In an effort to make the jobs as safe as possible for all workers for an extended period of time, the following cautions are worthy of review:

## Awkward postures

The hazard threshold for **working with the hands above the head or repeatedly raising the hands above the head** is four hours per day. Only time actually spent working with the hands above the head is to be considered. All set up, vehicle and equipment operation and working at or below shoulder level is discounted.

Workers are allowed to squat or kneel up to four hours each for a total of up to eight hours per day. Sitting will relieve pressure on the knees when workers are in a fixed position.

## High hand force/highly repetitive motion

The highly repetitive pinching motion required with **re-lamping** becomes a hazard after three hours per day. A high force grip that would be required with **tree trimming** is allowed for four hours per day as long as a neutral wrist position is maintained.

## Repeated impact

Workers must avoid the use of the **hand or knee as a hammer** and use the correct tool for the job instead.

## Heavy, frequent or awkward lifting

According to the Department of Labor and Industries calculator for analyzing **lifting** operations, workers are allowed to lift up to ninety pounds depending on the position of both the worker and of the materials handled. Any lift over ninety pounds requires mechanical assistance. **Material storage and handling** needs must be managed to be sure products are stored, loaded, unloaded and transported between knee and shoulder height and in a way that allows the worker to be very close to the object being moved – no more than a 7” extension. Lifting operations conducted above the waist, below the knee and at a seven-inch or longer extension greatly reduce the lift amount and frequency allowed. Workers should continue to test the load before lifting and get either mechanical assistance or help from a co-worker if the load is too heavy.

## Ergonomics Evaluation Equipment Rental May 2003

### Caution Zone jobs as noted by workers:

#### Awkward postures

Vehicle on racks  
Creeper  
Wrenching  
Hammering  
Pulling  
Lifting  
Changing parts  
Standing at workbench  
Welding

#### Highly repetitive motion

Repair

#### Repeated impact

Breaking things loose  
Hubcaps  
Covers

#### High hand force

Carrying parts  
Holding parts in place  
Jumper cables  
Pliers  
Tools

#### Vibration

Mounting tires  
Impact wrench

#### Heavy, frequent or awkward lifting

Tires  
Wheels  
Heavy parts  
Tools

## Comments/Observations

None of the caution zone jobs qualify as a hazard. However, in an effort to make the jobs as safe as possible for all workers for an extended period of time, the following cautions are worthy of review:

### Awkward postures

The hazard threshold for working with the **hands over the head and/or with the neck or back bent is four hours**. Due to a wide variety of daily tasks the mechanics do not reach this limit. However the mechanic must be aware of the need to rest and vary posture if the work is creating muscle fatigue.

**Squatting and kneeling** are allowed up to four hours each for a total of eight hours per day. If workers are going to be in a fixed position for a length of time, sitting will relieve knee stress.

### High hand force/highly repetitive motion

**Tasks requiring pinch and grip** are allowed two to four hours per day depending on repetition and wrist position. Ergonomically correct tools are the best defense against finger, hand and wrist injuries related to high hand force. Although the mechanics do not reach the hazard threshold, monitoring tool selection and good work habits will help alleviate hand and wrist complaints.

### Repeated impact

The hazard threshold for using the **hand as a hammer** is more than ten times per hour and more than two hours per day total. The mechanics must use the correct tool for the job whether the need is once or several times per day.

### Heavy, frequent or awkward lifting

The actual weight of the cautionary items is less than the weight limit according to the Department of Labor and Industries calculator for analyzing lifting operations. Care should be taken to store heavy materials such as tires and wheels so that most of the **lifting** is done at the knee to waist level and near the body.

### Vibration

The **vibration value of the impact wrench** is not a hazard due to the overall infrequent use. Maintaining the wrench in good condition is important as is a quality, low-vibration replacement when the time comes.

# Ergonomics Evaluation Parks, Recreation, Aquatics May 2003

Caution Zone jobs as noted by Parks workers:

## Awkward postures

Pruning  
Painting  
Loading and unloading supplies  
Bathroom repair  
Sprinkler repair  
Irrigation repair  
Weeding, planting, pruning  
Expansion joint sealing  
Plumbing

## High hand force

Sprayer  
Pruning  
Pole saw  
Pressure washer  
Restroom repair  
Replacing tennis nets  
Cutting pipe  
Garbage picker  
Weed eating

## Highly repetitive motion

Pressure washer  
Weed eating

## Repeated impact

Repair

## Heavy, frequent or awkward lifting

Headstones  
Concrete sacks  
Collecting refuse  
Receiving supplies

## Vibration

Weed eater  
Tools  
Blower

## Comments/Observations

Due to staff reduction and the seasonal nature of parks operations, it is possible that workers could reach hazard levels on some days in some categories. Care must be taken when scheduling workers for the following tasks:

### Awkward posture

The hazard threshold for working with the hands above the head or elbows above the shoulders is four hours per day. If a worker is engaged in **painting or pruning**, the actual amount of time the hands are in the air is the issue. Time spent loading supplies (at waist height), driving, setting up, working at or below shoulder height, cleaning up and so on are not to be considered. The four-hour limit may be exceeded one day per week or one week per year. In the case of extreme need, the four-hour limit could be exceeded for an entire week, as long as the worker went back to four-hours or less per day the following week. Currently workers rarely if ever reach the hazard zone.

**Squatting and kneeling** are allowed up to four hours each for a total of eight hours per day. If workers are going to be in a fixed position for a length of time, sitting will relieve stress on the knees.

## High hand force/highly repetitive motion

Tasks requiring pinch, grip and repetition are allowed from two to four hours per day depending on the amount of repetition and wrist position. The highly repetitive trigger motion of the **hand sprayer** would be limited to three hours per day, which could be exceeded more than one day per week and more than one week per year. Again, this is actual spray time, excluding all the tasks that are necessary to set up and so on. Switching to a nozzle style hand sprayer would drastically reduce both the grip force and repetitive motion, lessening the task to the caution zone level. A nozzle type sprayer will be purchased when the existing unit needs to be replaced. **Pruning, using the pressure washer and miscellaneous repair projects** requiring high hand force and repetitive motion are allowed up to three hours per day *as long as the wrists are kept in a neutral posture*. Flexion, extension and ulnar deviation of the wrist reduces the length of time to two hours per day and greatly increases the chance of injury. Tools should be evaluated and replaced with ergonomically improved models if the wrists cannot be kept in the neutral position. Only in emergency situations would workers exceed the three-hour limit. **Weed eating** with repetitive motions and no other wrist hazards is limited to six hours per day, which could be exceeded one day per week or one week per year. Review of current work practice shows that workers do not exceed the weed-eating limit.

## Repeated impact

Workers must avoid the use of the **hand or knee as a hammer** and use the correct tool for the job instead.

## Heavy, frequent or awkward lifting

According to the Department of Labor and Industries calculator for analyzing **lifting** operations, workers are allowed to lift up to ninety pounds depending on the position of both the worker and of the materials handled. Any lift over ninety pounds requires mechanical assistance. **Material storage and handling** needs must be managed to be sure products are stored, loaded, unloaded and transported between knee and shoulder height and in a way that allows the worker to be very close to the object being moved – no more than a 7” extension. Lifting operations conducted above the shoulder, below the knee and at a seven-inch or longer extension greatly reduce the lift amount and frequency allowed. Workers should continue to test the load before lifting and get either mechanical assistance or help from a co-worker if the load is too heavy.

## Vibration

The vibration value of the tools used is within safe guidelines as long as time limits are observed. Tools must be maintained in good working condition and be replaced with low-vibration tools when necessary.

**Caution Zone jobs as noted by Recreation workers:** None

**Caution Zone jobs as noted by Aquatics workers:** None

# Ergonomics Evaluation

## Refuse

### June 2003

#### Caution zone jobs as noted by workers

##### Awkward postures

Lifting, carrying and dumping cans

##### High hand force

Lifting, carrying and dumping cans

##### Heavy, frequent and awkward lifting

Lifting, carrying and dumping cans

#### Comments/observations

The heavy, frequent and awkward lifting hazards occurring in refuse are intrinsic aspects of a manual collection service. The City of Yakima Solid Waste and Recycling Division has worked for several years to make the switch from manual to automated refuse pick-up. There are many practical economic considerations that have prohibited the city from simply converting to an automated system.

Yard waste collection is a completely automated service and the end of 2003 will automate sixteen out of thirty-five residential routes. The city plans to have the service completely automated in 2004, which will alleviate these hazardous conditions. Ergonomic evaluations will be done periodically as additional automation continues.

Current hazard zones include:

##### Awkward postures

Workers must empty cans into trucks of various heights. Depending on the truck and the height of the worker, **elbows may be above the shoulders**. Often workers lift and carry containers overhead, using the shoulder for support. The hazard level of four hours per day could be exceeded depending on the worker, the route, the truck and the conditions.

##### High hand force

Lifting containers without handles requires a **pinching** action. Often these are the cans that end up being carried overhead, gripping the lip of the can with the weight supported by the shoulder. Cans without handles that are too heavy to hoist overhead are pinched, dragged, rolled and wrestled into place. Frequency would depend on route. Even with awkward wrist position, it is unlikely that this activity would exceed the three-hour hazard limit. (Note: Chapter 4.16.170(c) of the municipal code requires adequate handles.)



## **Heavy, frequent or awkward lifting**

The L&I calculator for analyzing lifting operations maximum weights:

Start lift between knee and waist, no twist = 47 lb maximum

Start lift between knee and waist, with twist = 40 lb maximum

Start lift between waist and shoulder, no twist = 43 pounds

Start lift between waist and shoulder, with twist = 36 pounds

The “start lift” height depends on the height of the can and the worker. Lifting the can with or without twisting depends on worker habit. Holding the can close to the body would increase the maximum weight slightly but is impractical due to the nature of the refuse materials. Lifting is considered hazardous when the weight is above the maximum pounds listed in the previous examples. Since the ordinance allows a sixty-five pound weight limit, it is reasonable to expect that workers often spend more than the allowed one-hour per day lifting in excess of the thirty-six to forty-seven pound limit. The workers estimate that fifty to sixty percent of the cans exceed L&I’s limit. Average weights cannot be considered since it is the weight of the individual lift that is measured for this standard.

## **Automated service comments/observations:**

### **Bins**

This automated route provides service for large bins at apartment and office buildings and for temporary residential bins. The truck performs the lift but the bin must be moved into place manually in most instances. This involves pushing and pulling the wheeled container into place over various types of terrain. Although push/pull is not covered by the ergonomic standard it is appropriate to evaluate this activity due to the potential for injury. Currently both a driver and a helper are assigned to this route so that the force of moving the bin into place can be shared. However during vacations and other times when manpower is short the driver will be alone. In addition to adding a helper, placing the permanent bins on concrete pads would reduce risk.

### **Automated Service and Yard Service**

The automated vehicles are equipped with good mirrors and cameras to assist with refuse cart retrieval and driving. The carts are light, in good condition and wheeled so they are easy to move in the event that the driver has to move them into place for pick up. The only concern raised by the drivers is the joystick in the newest vehicles. The joystick control requires the driver to depress a button with his thumb in order to move the vehicle arm. The drivers have noticed additional stress on the forearm/wrist area while performing this maneuver. Currently we have notified the manufacturer that we may be requesting modifications and we are investigating our own possible solutions such as adjustable supports.

## **Ergonomics Evaluation Transit June 2003**

### **Caution zone jobs as noted by workers:**

#### **Service worker awkward postures**

Cleaning windows  
Replacing lights  
Changing vaults  
Cleaning floor

#### **Service worker high hand force/ highly repetitive motion**

Working on vaults

#### **Service worker repeated impact**

Replacing vaults

#### **Service worker heavy, frequent or awkward lifting**

Vaults

#### **Comments/observations**

No caution zones were noted or observed for transit operators, administration or dispatch.

#### **All caution zone service worker jobs**

The caution zone cleaning processes each take 5-15 minutes per shift, safely under the hazard level.

The vaults are pulled and serviced only one day per week, which is under the hazard level.

## **Ergonomics Evaluation Department Administration June 2003**

No caution zone jobs were noted or observed.