

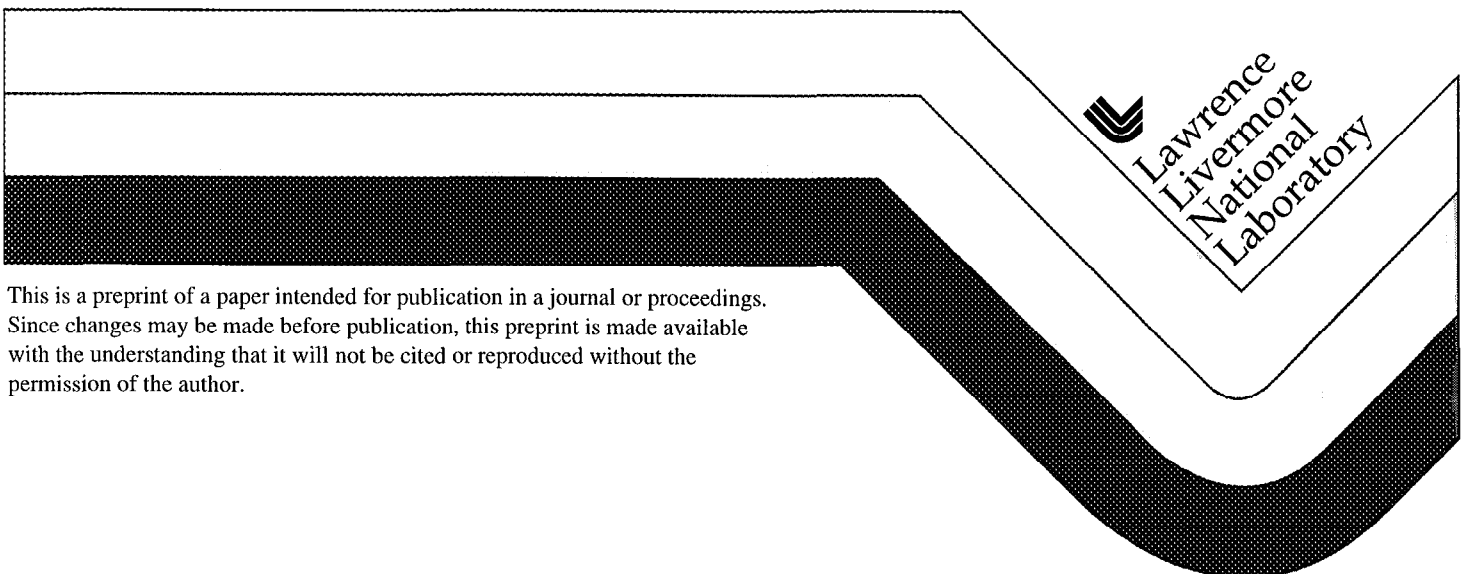
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# Heart to Heart-A Custodian Journal on Grassroots Ergonomics

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## **Heart to Heart - a Custodian Journal on Grassroots Ergonomics**

by

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When we first requested to speak at the American Society of Safety Engineer's Professional Development Conference in Seattle, Washington, the theme we had in mind for this program paper was quite different. It definitely was not anything like our title, "Heart to Heart" implies. It was more formal and traditional. Give you figures, diagrams and the like. But two years later, we have come to another conclusion, to tell you the story about how a group of custodians and health & safety professionals dreamed big dreams and they came true.

## **CQIT**

In order to understand what occurred, we first need to start at the very beginning with the Custodian Quality Improvement Team (CQIT). This group had been formed by the Plant Engineering Department at the Lawrence Livermore National Laboratory (LLNL) located in Livermore, California. LLNL is operated by the University of California for The U.S. Department of Energy. It is the premier applied physics research laboratory in the world. Plant Engineering (PE) is much like a Public Works Department. PE has all of the crafts, such as plumbers and electricians, who do maintenance-type work, as well as the engineering and construction employees. PE maintain the utilities, constructs new buildings and takes care of old ones. They take of the roads and clean the buildings and landscape the campus. So the Custodian Shop and its some 150 employees is a member of the PE family so to speak. The CQIT had decided to investigate ways they could reduce the number of injuries they were having. They invited health and safety professionals, David Zalk ( an Industrial Hygienist ) and Jack Tolley ( Safety Engineer ) to consult with them about this. They are both Hazards Control Team 4 members at LLNL. They were both interested in ergonomics and suggested that an approach to reducing their injuries might lie in studying how the custodians actually do their work. David has extensive training in ergonomics, and Jack simply had a long-time interest in ergonomics for some 30 years, describing himself as a "learned layman."

## **About the Custodians**

At this point, we would like to tell you a bit about the wonderful Custodian group at LLNL. It is composed of some 150 employees. The sexes are about equal. That is, there are about as many men as women. Some are young and some are older, but it is somewhat of an aging workforce with most of them in their 30's and above. Their body types vary as well. Some are tall, some are not. Some are heavy, some are thin, etc. We have developmentally challenged adult custodians also. There are approximately 25 in this group. They are responsible for cleaning some 4.2 million square feet each day. Each custodian is personally responsible for cleaning 25,000 square feet during their shift. So they work very hard and use their bodies constantly in doing their work.

There are 13 members on the CQIT. The team was formed to look at ways they could improve the work they do and to upgrade the Custodial Cleaning Manual. As a part of this effort, they decided to look at custodian injuries and ways to reduce them. Even a cursory look revealed that quite a few custodians were being injured. The CQIT decided to bring in two health & safety professionals to assist them in this effort. The vision they had was developing easy to understand ergonomics training they could share with the entire world of custodians. To be sure, they wanted to reduce the pain and human suffering of their own work group. But in addition, they wanted to include ergonomics tips in their

training procedures manuals, conduct hands-on training programs, and create a videotape. The videotape topic would be on custodial ergonomics, but with a different twist. It was this group that came up with the idea for the study and indeed, through its discussions, put together the script for the Ergoman training video.

## **An Empowered Culture**

Plant Engineering and Hazards Control management prides itself on their Continuous Quality Improvement (CQI) process. A important element of this process is empowering employees to be fully involved with management in every aspect of their job - including safety and health. This included continuous support of Hazards Control and Plant Engineering management for health and safety professionals Jack Tolley and Dave Zalk of Hazards Control Team 4. The study itself and the production of the Ergoman videotape took time away from normal jobs for both the CQIT and Hazards Control people. It also involved the active support of many other LLNL groups, such as building coordinators for scene location shots, the Lab's television department for their video editing, Hazards Control who loaned us the video cameras. In short, we did not do it on our own. Many individuals and departments throughout LLNL helped make the study and training video a huge success. We are grateful for that support and thank them all for it. You helped make a dream into a reality. And in so doing, touched and changed the lives of many people, including the CQIT. Because of this people empowering environment, Plant Engineering has two safety committees that have become national leaders in establishing grassroots safety leadership cultures in PE and many business, government and other organizations in the United States. This culture, where management and employee cooperate in a true team effort, spawned an environment in which the Custodians felt they could do something about their injuries. But from the very beginning of the their grassroots ergonomics efforts, it was apparent that they had a vision.

## **The Study Method**

The Study method was developed by David Zalk. We think it is extremely easy to use and understand, and importantly, not expensive to implement. What is required is a good quality home video camera and some basic training in ergonomics and body mechanics. We found, much to our surprise, that ergonomics is really the study of how people work, and it does not at all need to be difficult to understand. However, we need to point out that David is an extremely effective teacher. And we did have to make some slight adjustments for our developmentally challenged adult custodians. For example, we purchased a small plastic skeleton to visually demonstrate high risk body positions for them. But, guess what, they really understood the training and have become some our best custodial ergonomists.

The method is to videotape custodians at work and then analyze the video at one minute intervals to identify what position they are in. Both posture analysis and posture targeting techniques were used. The goal was to identify high risk body positions. Many awkward body positions were observed when the video was viewed for the first time. Back flexion and twisting were common. This is the same motion one might observe emptying and relining trash cans. Some of this was the result of the worker adapting to tools of the job. This was true of mops, for example, where the handles were of various lengths. This increased high risk positions when doing jobs like mopping, dusting, and broom sweeping. This effect was not seen when handles were of appropriate length for the person using it. Cleaning showers also caused custodians to assume awkward positions. The first viewing of the video revealed several areas that needed attention - lower back,

wrist and shoulder postures varied dramatically. Eleven custodial procedures were recorded, allowing the CQIT to identify high-risk positions encountered when cleaning bathrooms and showers, emptying trash cans, mopping, sweeping, vacuuming and dusting as examples.

The study's results indicated that LLNL custodians face increased risk of repetitive motion injuries in the right wrist and shoulder. They also had increased risk for back injuries. The study demonstrated that custodians should distribute work loads more evenly across both hands. For instance, they must learn to use both arms equally while working to reduce stress on their shoulders and wrists. Obviously, one cannot do custodian type work without being in high risk positions. However, by using the techniques suggested, it is possible to dramatically reduce the actual time spent in these high risk positions, and thus reduce the risk of injury.

## **The Mighty Ergoman**

The CQIT wanted a short videotape that would have two purposes. The first would be to train newly-hired custodians in the basics of ergonomics as it applied to their jobs. The second would be to use as an annual refresher for persons that had already had the basic ergonomics training. At first, we envisioned a sort of mom and pop style home video we would shoot ourselves. It was agreed that a lecture style tape on ergonomics would not be well-received and probably would put its target audience to sleep. The video had to be different, humorous yet illustrating important ergonomic messages about how to work in a way that would not place your body in high risk positions.

After considerable discussion, one of the members came up with the idea of a super hero - Ergoman. Our hero would bring the lessons home in a series of short vignettes. The title would be, "The Adventures of Ergoman." Everyone felt good about the title and its theme. However, we were soon to find out that shooting videotapes takes a lot more work than a simple home video.

There are groups at LLNL that produce videotapes. So we decided to talk to them. The first thing we discovered was that their services were expensive. So we decided to ask them for advice and shoot our own video. Of utmost importance, we were advised, was the need for a detailed script of what we wanted to do. It should include locations, equipment needed, and the dialogue the various actors were to say. That sounded easy. But it took a lot of work to do this. In the end, we could not have done it without it or as cheaply as we were able to do so - approximately \$ 6000.

It was decided that there would be a number of vignettes in the videotape that would first involve Ergoman responding to an emergency ergonomics situation with a custodian at work. This would be followed by a voice over section illustrating the key learning points from each vignette. One, for example, was on lifting safety. Another was on mopping correctly. The videotape would start out with Professor Jack giving a lecture on ergonomics to a custodian class. They, of course, did not know that the humble professor was, in reality, the Mighty Ergoman.

One of the great learning experiences for us was about gifts we didn't know we had. CQIT members just amazed us with the talents they had for script writing, arranging shooting locations, acquiring lights, operating video cameras, getting the numerous custodian actors ready, and on and on. In addition to the CQIT, there were numerous custodians involved in the video as actors, and in the final grand finale "Moparena." One of the custodians, Jack Hepworth, wrote the words and music for the Ergoman theme, and

sang it too. Tami Jensen turned out to be a superb co-director and even arranged to have a special truck designated to carry lights and other equipment in. Richard Burbine produced a life like Ergoman doll to use in flying scenes and the “Ergo Alert “ warning that let Ergoman know there was a problem someplace in the Lab. David Zalk turned out to have superb skills as a director and video camera operator. Evan Rittman stood in for Ergoman in the roller blading scene. And, of course, Jack Tolley had a wonderful knack for performing in front of a camera as Ergoman. There is not enough room here to list all of the custodians and supervisors who lent their gifts in making the project a huge success.

We discovered, in the process of producing the Ergoman video, a great universal truth. People are attracted to great goals that are larger than themselves. As we said, from the very beginning, the CQIT had a goal of sharing what they had learned with world’s custodians. They believed that custodians are pretty much a group that receive little attention from a safety standpoint. Yet, they are often so close to economic disaster if they lose their jobs. The CQIT believed if they could simply share the video and the training manual with any organization requesting it, they would be helping a lot of people.

It is important to point out that the goal of the CQIT was never to reduce accident statistics, or OSHA frequency and severity incident rates. It was simply to reduce human suffering. We were truly blessed to have the support, both emotional and financial, of Plant Engineering, LLNL and Hazards Control Department management. PE management even had a cameo role in the Ergoman video. Hazards Control provided the video cameras.

Since the completion of this project, requests for the Ergoman video and training manual continue to come in. We have sent out over 300 video/manual packages to organizations from every walk of life, nationally and internationally. Hospitals, Schools, private businesses like Harley-Davidson and Dow Chemical and many, many others. And we are proud to say that LLNL provides this at absolutely no cost as a public service. We do request that we have the ability to contact you and track how effective the information we have shared has been in reducing human suffering at your place of work. If you would like this package, please contact:

“Custodian Ergonomics”  
c/o The Custodian Quality Improvement Team  
Lawrence Livermore National Laboratory  
P.O.Box 808, L-508  
Livermore, CA 94550  
Attn: David Zalk

Phone: (510)422-8904  
Fax: (510) 423-1052  
Email: zalk1@llnl.gov

## **Training**

Following the completion of the study, a series of training sessions were conducted by Jack and David for all of the custodians. This included describing the study and what it meant for them in their day to day work. Practical ways of adapting the information were given and input from the custodians themselves was encouraged. In fact, many wonderful ideas came up that they felt could be used to help themselves. Some of these were included in the Ergoman video. One custodian, Jack Hepworth, said something really profound. The ergonomic lessons learned from the study were really an investment in their own health and well-being. This struck a responsive note with all of the custodians. In addition to the

posture targeting and posture analysis results and training, special attention was given to training on back care.

## **The Results**

It is important to understand the definition that we used of what was an ergonomic type injury. Ergonomic injuries are those caused by repetitive motion. These do not include sudden on-set injuries such as trips, slips or falls, for example, that result in strains, sprains, over-exertion and so on.

In 1995 and the first two months of 1996 (14 , prior to the completion of the study and the training based on the study results, the custodian family experienced 18 cases that resulted in 61 OSHA lost and restricted workdays. In the 21 months ( March 1, 1996 to December 1, 1997 ), the custodians experienced six lost workday cases and 43 lost workdays. This is a 54 percent reduction in the number of cases since the completion of the initial study and training.

Since the completion of the study, members of the CQIT have gone out into the community to share what they have learned with others. The list is impressive and includes many organizations. Here's a small sample. U.S.Department of Energy, University of California, U.S.Navy Public Works Department, OSHA, Kaiser Permanente, Stanford University, Southern California Edison, National Safety Congress. In addition, copies of the Ergoman video and the Custodian Training Manual, have been requested and sent to over 300 government and business organizations in and out of the United States.

## **CQIT Member Reflections**

We thought we would end this joint CQIT paper of ours with some reflections on what the study meant to team members as individuals. In the process of developing this study and the Ergoman video, we came to know each other - coworkers and supervisors as well as upper level managers - not just as coworkers but as friends that we really cared about. Thus came the sub-title of our paper, " Heart to Heart - A Custodian Journal on Grassroots Ergonomics." We joined not only our minds but our hearts and spirits with many, many people. And what came out it was truly wonderful.

Richard Burbine, Supervisor: " I never thought this would happen - a project we did that has touched the lives of people internationally. It was the most enjoyable experience of my life. I developed skills I did not know that I had."

Xena Ferrario, Custodian: " A wonderful experience for me. A growth experience. It has drawn coworkers and supervisors closer together in a common goal of reducing human suffering here at LLNL and throughout the world. We must relate to people in human, caring ways to achieve our goals of reducing needless pain."

George Robles, Supervisor: " I thought this effort would dry up like past ones. But it definitely has not. I have never had an experience like this before of sharing ideas and working on a project together. It has made me more aware of ergonomics both on and away from the job. I feel so much closer to my coworkers and supervisors now."



Lee Beato, Custodian Shop Supervisor: “ I have seen the Ergoman video many times, and each time it never fails to bring tears to my eyes. It was a great learning and growth experience for me being a part of all of it. I am so proud of our custodians. It was wonderful to see them come to trust me that I would take care of them. The experience has drawn us all closer together. It has been great for LLNL too, and brings the Lab international recognition as an organization that cares about people.”

Joe Garcia, Custodian: The CQIT was like a fraternity where we came to know and care about each other and our coworkers. We were taking control of our own destiny. The whole process really empowers people in the truest sense of the word. We are our brother ( and sister’s ) keeper. No one was trying to grab glory for themselves. It was all about helping people to not get injured.”

Jack Hepworth, Custodian & CQIT Chair person: “ It was one of the most satisfying experiences of my life at the LLNL. We went from wondering whether we could do it to a grand success. The intellectual challenge made a huge difference in CQIT members lives. It brought out the best in people. It was great for supervisors too. It took a lot for them to have faith in us, to trust us to handle the responsibilities.”

Joni Mosier, Custodian: “ The effort gave our health concerns a voice. We can go home without bodies aching. Everyone is paying more attention now to the messages our bodies are sending to us. I have applied what I have learned both on and off the job. I felt I was contributing to the well being of my coworkers and many other who will benefit from our team effort.”

Tami Jansen, Supervisor ( Developmentally Challenged Custodians ):

“ I never thought I could do something like this - write scripts, videotape scenes, coach actors. The CQIT members became friends as well as supervisors and managers I had little contact with before. My fear of them really diminished as I came to work with and see them as people just like me. When it was all over, I felt, if I could do this, I can become a Nurse too. I resigned from my position and enrolled in college to pursue this goal. My first semester results - all A’s ! PS: my kids love to watch the Ergoman video.”

Marilyn Remington, Custodian: “ We have done this before, but not in this new way. The training that came out of the study has resulted in me changing the way I do things. The video is funny but it gets the points across, and that’s what is important. There are better ways of working. You do not have to injure your body.”

Rhea Castello, Custodian: “ I was on the CQIT at the very beginning of it and being there gave me an opportunity to express my ideas. I am impressed at how the custodians have learned the ergonomic techniques and applied them both on and off the job. “

Jack Tolley, Safety Engineer: “ For me it was one of those life transforming experiences. All of my stereotypes of custodians as people were destroyed. I came to admire and love them for all of them many extraordinary gifts they have. It was an exercise in the power of minds joined together in a goal larger than all of us. It is truly a privilege for me to be associated with them, Hazards Control and Plant Engineering management. I am grateful that they supported us not only financially but in the tough times when we often stumbled. They were always there to pick us up and find that resource we needed to get the job done. For me, they represent the truest meaning of empowering people.”

David Zalk, Industrial Hygienist: “ There’s a sign in the Custodian Shop trailer. It says, ‘Tell me, I’ll forget. Show me, I may remember. *Involve* me, and I will understand.’ I learned that you can never underestimate the abilities of people. I am really proud of the

CQIT and all that we accomplished. They gave a great gift to fellow custodians, LLNL employees, and custodians and others throughout the world. I recall one CQIT custodian being asked about the study by a person. He immediately reached for his wallet and proudly pulled out an article that had been written about the study to show the person. That really impressed me as to how significant his participation in the CQIT had been as a person.”

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