

**Reducing Musculoskeletal Injuries
Among School Board Custodial Workers
through Cooperative Summer Work Organization**

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and the
Workers' Compensation Board of British Columbia

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Summary

The objectives of this expert panel project are to identify the injury and other risks associated with the current practice of summer Custodial work and to investigate alternative methods for organizing summer work to minimize risk of musculoskeletal injuries. The expert panel obtained 5-year injury data from the Workers' Compensation Board of B.C. (1998 to 2002) for all Custodians in B.C. Data were analyzed by District, type of injury, part of body injured, days lost and cost. Injury rates were estimated to compare Custodial injuries with other occupations in the School Districts.

Analysis of the five-year WCB data revealed that:

- Custodians in B.C. suffer approximately 500 injuries per year at a cost of \$3.5 million annually.
- 70% of the injuries are musculoskeletal (sprains, strains, inflammations, etc.) and the cause of about half are “ergonomic-type” injuries (overexertion and repetitive motion)
- Injury rates for non-academic workers (including Custodians) are 3.6-times greater than for teachers (7.37% versus 2.04%)
- As an example, in Surrey School District where we have been able to obtain staffing numbers (FTEs), Custodians have two-times the injury rate (15.6%) of other non-academic workers (8.8%) and five-times the rate of teachers (3.2%).
- Injury rates for summer months cannot be accurately compared with non-summer months without gathering FTE data for each School District, however, both the injury costs and days lost per claim are higher for Custodians in summer compared with non-summer months

The physical demands of summer cleaning were evaluated. Intensive and thorough cleaning involves considerable moving of furniture, stripping and finishing of floors, scraping clean and disinfecting desks, chairs, surfaces and lockers, and cleaning ceiling and light fixtures. The expert panel surveyed School Districts as to their methods of organizing summer Custodial work and documented seven different methods in operation, including:

1. *Status Quo*, where a custodian is assigned to a single school or an area of a school and they are responsible for that same area during summer cleaning;
2. *Specialized work groups* formed with a temporary posting to rotate between schools and perform specialized tasks such as gym cleaning or carpet cleaning;
3. *Cooperative pairing* between custodians at two or more schools where they work together to clean one school then move on to do the other school;

4. *Cooperation between custodians within a school* that has two or more custodians (rather than in their assigned area) to organize and complete the summer cleaning tasks together;
5. *Large cooperative groups* formed of four to eight custodians who move from school to school to perform summer cleaning;
6. *Assistance provided, as needed*, for moving furniture and other heavy tasks by supplying maintenance workers or teachers' assistants on a short term basis; and
7. *Combinations* of one or more of the alternative work methods listed.

Case studies are illustrated of Saanich and Delta School Districts who have implemented large cooperative groups for summer cleaning. In both cases, there were reductions in WCB injury claims for summer custodial work following the change. Custodians reported that they enjoyed working with different custodians and supervisors, it improved morale, and it is more structured and goal-oriented, giving a high sense of accomplishment. Managers reported that it is more productive and efficient, and there is a higher level and more consistent supervision. There are also cost savings from reduced hydro with fewer schools open.

It is recommended that careful consideration be given to the choice of method for organizing summer custodial work as each of the seven methods identified have advantages and disadvantages. It appears, based on the experience of those Districts that have tried methods other than the status quo, that there are numerous benefits to collaborative approaches, however, these have not been studied with formal, scientific methods. When considering options, it is recommended that Districts:

- Be clear about why they are changing work organization in the summer and have a stated goal;
- Involve custodians in the design and implementation of the organizational change;
- Carefully consider the size of crew that would work best given the District;
- Choose good leaders who will encourage custodians to work together;
- Consider whether the change will be mandatory for all custodians or will provide the ability to “opt-out”;
- Consider whether the change can be implemented within the current collective agreement, or whether a change in the agreement is beneficial;
- Provide training for custodians in ergonomics so they understand the risk factors for such injuries, preferred methods for minimizing risk and the benefits of working cooperatively to reduce risk;
- Encourage custodians to develop positive relationships with principals and teaches encouraging teachers and students to take responsibility for some of the classroom clean-up in late June;

- Plan for additional administrative and organizational time to coordinate custodians at the beginning of the summer period and ensure that proper coverage is available during vacations and sick leave;
- Deal with potential obstacles to an organizational change up-front, such as supervision and mileage costs
- Collect critical data prior to and following the summer months so the change can be evaluated, for example, musculoskeletal injuries, cleaning efficiency, and custodian opinions; and
- De-brief at the end of summer to know what was working and what parts of the change require improvement and systematically document items for the following summer.

Based on findings of this expert panel, it can be concluded that musculoskeletal injuries are a concern for Custodial workers in School Districts, and summer cleaning may involve increased risk due to the heavier physical demands. Cooperative approaches that provide assistance to Custodians for heavier tasks appear to be beneficial at reducing injuries, and have additional benefits to both Custodians and Managers. Carefully conducted trials that measure the benefits are encouraged.

Reducing Musculoskeletal Injuries Among School Board Custodial Workers through Cooperative Summer Work Organization

1. Introduction and Objectives

The B.C. School Safety Association is a non-profit association designed to promote the development and implementation of uniform best practices in health and safety in B.C. School Districts. It has received funding through the Workers' Compensation Board of B.C. to coordinate the activities of Expert Panels to develop priorities requiring improvement and the development of "best practice" models. One such priority identified has been the ergonomics and work organization practices of Custodial workers, especially in the summer months.

Custodial workers have higher rates of musculoskeletal injury than other School Board workers, and these injuries are especially high in summer months when extensive and thorough cleaning of schools is required. A number of B.C. School Districts have implemented alternative ways for organizing Custodial workers in summer periods – partly to share the physical demands of the cleaning tasks, to provide much needed assistance for heavy tasks, and to provide assistance for tasks such as floor stripping. Few School Boards have evaluated the impact of these alternative work methods on injury rates.

This Expert Panel was initiated with the overall goal of reducing musculoskeletal injuries among Custodial Workers. The specific objectives of this expert panel project are to:

- identify the injury and other risks associated with the current practice of summer Custodial work;
- determine, based on previous successes and failures, the essential ingredients for a successful change in the way summer Custodial work is organized;
- recommend when, where and how to implement an ergonomic and work organization change in Custodial summer work; and
- document the projected benefits associated with implementing such a change.

To carry out these objectives, the expert panel consisted of:

- Judy Village, Certified Professional Ergonomist, Adjunct Professor, UBC School of Occupational and Environmental Hygiene, as chair;
- Dr. Aleck Ostry, Expert in Work Stress and Health, UBC Department of Health Care and Epidemiology as advisor to the project;
- Lesley Norris, CARE Institute who conducted the Saanich School District project;
- Mary Campbell, Occupational Health and Safety Director, SD 38 (Richmond) as Project Coordinator,
- Mr. Randy Ball, Manager, Properties and Transportation, SD 85 (Vancouver Island North) , representing the School Plant Officials Association (SPOA);
- Julie Brown, Assistant Manager Of Operations, SD 38 (Richmond);
- Jim Connolly, Manager of Service Operations, SD 36 (Surrey),
- John Bonnet, B.C. Public School Employers' Association; and
- Jane Player, Industry Liaison, Workers' Compensation Board of B.C.

The methods involved gathering accident and injury data from the Workers' Compensation Board of B.C. for all School Districts in the province and comparing injuries for different months and between different occupations. A survey was sent out by e-mail to solicit school boards who have implemented alternative types of summer Custodial work. Contact was made with those Districts who responded, and interviews were conducted either in-person or over the telephone to better understand the working methods and any benefits or concerns. Where possible, before and after statistics were collected to evaluate the effectiveness of alternative work methods. Observations were conducted of alternative summer cleaning methods and traditional summer cleaning methods and some of the physical demands were documented. A review of the scientific literature was conducted and relevant studies of custodial work were reviewed. As information was collected, it was shared with the Expert Panel at regular meetings.

Based on the experiences with alternative work methods gathered through the interview process in the various B.C. School Districts, the expert panel identified seven different models in operation for summer cleaning. These included:

1. *Status Quo*, where a custodian is assigned to a single school or an area of a school and they are responsible for that same area during summer cleaning.
2. *Specialized work groups* formed with a temporary posting to rotate between schools and perform specialized tasks such as gym cleaning or carpet cleaning.
3. *Cooperative pairing* between custodians at two or more schools where they work together to clean one school then move on to do the other school.
4. *Cooperation between custodians within a school* that has two or more custodians (rather than in their assigned area) to organize and complete the summer cleaning tasks together.
5. *Large cooperative groups* formed of four to eight custodians who move from school to school to perform summer cleaning.
6. *Assistance provided, as needed*, for moving furniture and other heavy tasks by supplying maintenance workers or teachers' assistants on a short term basis.
7. *Combinations* of one or more of the alternative work methods listed.

This report will describe the various alternative methods for organizing summer cleaning outlining advantages and disadvantages. Where possible, case studies will be provided of School Districts who successfully altered the work organization and showed reductions in musculoskeletal injuries. As there are several models for organizing summer cleaning, it is hoped that some of the recommendations for successful implementation of cooperative summer cleaning will apply regardless of whether your District is small or large and located in an urban center or rural environment. School Districts are also encouraged to monitor both the alternative work methods and their injury rates to ensure that changes made to work organization will have the beneficial effect of reducing musculoskeletal injuries to custodial workers.

2. Injuries Among Custodial Workers in B.C.'s Public School System

To evaluate the effect of implementing changes in Custodial work organization on musculoskeletal injuries, it is first necessary to know the numbers, cost and types of

injuries that occur to Custodians. Ideally, we would like to answer the following questions:

1. How many injuries occur to Custodians, and is this a problem?
2. Are injury rates for Custodians higher than for other workers in the School Districts?
3. Do more injuries occur to Custodians in summer months compared with school months?
4. Do School Districts that have implemented alternative work organizational methods have fewer injuries among Custodians in summer months?

Answering these questions is not straight-forward. We have available through the WCB a great deal of information about injuries, specific to Custodians. However, while we do know the number of Custodians who are injured in each School District we do not know the number of Custodians employed in each School District, or the number of hours worked. This means that we cannot calculate accurate injury rates for each School District. We will therefore summarize some of the available WCB data in this section concerning Custodian injuries. While the information is not detailed enough to calculate injury rates for Custodians it can be used to estimate injury rates for non-Teaching (which obviously includes Custodians) staff and compare these with injury rates among Teaching staff. In the Case Studies section of this report, we will use data from individual school boards to attempt to answer the question about whether alternative work methods result in fewer Custodian injuries. For definitions of WCB terms used in this section, please refer to Appendix B.

Description of Custodial Injuries

Claims data for the 5-year period from January 1st 1998 to December 31st 2002 for all B.C. School Districts were obtained from the WCB. During this 5-year period, Custodians experienced:

- 2,592 accepted injury claims;
- at a cost of \$17,328,424;
- with 101,815 days lost from work.

These are shown analyzed by Nature of Injury, Accident Type, and Bodily Part Injured for the 5-year period in Tables 1, 2, and 3 in Appendix A.

When analyzed by nature of injury, there were:

- 1,595 injuries from sprains, strains, and tears (61.5%);
- 121 injuries from inflammation and irritation (4.7%);
- 97 other injuries to the muscles, tendons, etc. (3.8%); and
- 7 musculoskeletal diseases (0.3%).

These 4 types of musculoskeletal injury were responsible for 70% of all injuries to custodians during this period. Sprains, strains, and tears accounted for \$9,422,341 or 54.4% of all claims costs and 58,328 (57.3%) of all days lost due to injury. Collectively, the four musculoskeletal injury types represented 66.9% of all claims costs and 71.4% of all days lost.

When characterized by accident type, “ergonomic-type” injuries arising out of overexertion, repetitive motion, bodily reaction, static postures or force included:

- 979 overexertion injuries (37.8%);
- 195 repetitive motion injuries (7.5%);
- 51 bodily reaction and exertion (1.7%); and
- 33 static posture and force injuries (1.3%).

Collectively, these “ergonomic-type” injuries represented 48.5% of all injuries. The average cost of a custodian’s claim during this five year period was \$6,685.35 and the average number of days lost was 39.3 per claim.

The most frequently injured parts of the body for custodians were:

- back and spine (31.0%);
- shoulders and arms (15.5%); and
- wrists and fingers (11.2%).

The number of injuries sustained by male custodians was 1,654 (63.8%) and the number sustained by females was 938 (36.2%). The average age of the workforce with accepted claims during this five year period was 44.9 years. Over 98 percent of injuries were sustained by janitors and caretakers, heavy-duty cleaners, building caretakers, factory cleaner sweepers, and floor sweepers.

Custodial Claims in Summer and Non-Summer months

The number of claims which occurred during the summer months (July and August) were separated from claims which occurred during the period from September first to June 30th across this same five year period. Table 4 in Appendix A shows summary claims data across these periods. Unfortunately, because we cannot calculate injury rates in summer vs. non-summer months a (since we do not have FTEs (or number of custodians, or custodial hours) for summer compared with winter months it is difficult to determine whether injury rates are higher or not in these summer periods.

Some comparative information from the summer and non-summer months shows:

- cost per claim during the summer months was \$8,609 compared to a cost per claim during the school year of \$6,685 (22.3% greater);
- days lost per claim during summer months were 42.2, or 8.1 percent, greater than days lost per claim during the school year.

It’s not clear what this means. It may be that injuries are more severe in summer, as work can be more intense.

Injury Rates for Custodians Compared with other School District Workers

To obtain an approximation of injury rates for Custodians compared with other School District workers, we utilized WCB injury claims data from the largest School Districts in BC for the period January 1st, 1998 to December 31st, 2002 broken down by type of worker injured. We then developed a method to estimate injury rates for teaching staff (teachers, principals, vice-principals, etc) and for all non-academic staff in each School District. While this method does not produce accurate injury rates for Custodians it at least begins the process by estimating rates for the broader class of workers the Custodians are grouped with. Non-academic staff includes custodial workers, construction workers, groundskeepers, clerical staff etc.

Table 5 in the Appendix shows the number of claims for teachers and non-academic and from service staff (i.e., mainly custodians) from 1998 to 2002 by School District. Table 6 shows the costs of these claims. From these tables we can see that there were:

- 5,622 injury claims from 1998 to 2002 in the 14 BC School Districts;
- Teachers accounted for 39.8% of these claims;
- Non-academic staff accounted for 60.2% of claims; and
- Custodians (i.e., workers categorized as service staff) accounted for 32.0% of all claims and 53.2% of non-academic staff claims.

The total cost of injuries in these 14 BC School Districts over this five year period was \$38,018,000. This represents 4.67 percent of total assessed payroll in these 14 Districts.

With respect to claims costs:

- Claims costs for teachers accounted for 25.9%
- Claims costs for non-academic staff accounted for 74.1% of total claims costs.
- Costs for Custodians accounted for 33.3% of total claims costs for this period and 44.9% of non-academic claims costs.

To estimate injury rates, we used academic FTE's (obtained from the BCPSEA website) for each School District. By subtracting these from total FTE's we obtained the number

of non-academic FTE's in each school District and used this to estimate the injury rate for this broad category of school employees. We were not able to obtain an accurate number of FTE's for custodians and so could not calculate injury rates for this group. The comparison of academic with non-academic injury rates is a first step towards obtaining a better overall picture of injury rates and costs among BC school employees. The results of injury rates and costs per claim are shown below for the 14 largest School Districts in BC.

Estimated Injury Rates and Costs per Claim for Teachers and Non-academic Staff from 1998 to 2002 for 14 BC School Districts.

	5-yr academic rate*	5-yr non-academic rate	5-yr academic costs per claim	5-yr non-academic costs per claim
Abbotsford	1.40	10.95	3,148.65	5,148.72
Burnaby	2.08	8.39	4,700.68	7,214.81
Central Ok	1.41	5.51	4,506.02	5,666.67
Coquitlam	2.00	8.82	6,005.38	6,173.20
Delta	1.90	7.91	4,000.00	10,141.24
Greater Victoria	3.14	7.02	4,554.95	7,878.38
Langley	1.96	6.59	10,109.09	11,579.55
Maple Ridge	1.67	6.99	2,767.12	3,111.11
North Vancouver	2.07	6.67	2,826.92	5,707.87
Prince George	1.72	4.57	5,694.12	10,763.89
Richmond	1.94	7.62	7,069.23	8,358.33
Surrey	3.21	11.30	2,654.39	8,363.32
Vancouver	2.08	4.96	4,171.43	12,518.52
Vernon	1.98	5.89	4,673.08	6,560.98
AVERAGE	2.04	7.37	\$4,777.20	\$7,799.00

*The denominator used for these rates was the total number of FTE's over the 5-year period. This denominator is an estimate. The FTEs for 2002 were obtained and simply multiplied by 5 to obtain 5-year FTE's.

These data show that for teachers and managers rates ranged from a low of 1.40% in Abbotsford to a high of 3.21% in Surrey with a mean rate of 2.04%. In the case of non-academic staff, rates ranged from a low of 4.57% in Prince George to a high of 11.30% in Surrey. Rates for non-academic staff were 3.6 times (on average) greater than those for teachers and related staff.

The costs per claim ranged from a low of \$2,654.20 in Surrey to a high of \$10,109.09 in Langley with a mean cost per claim of \$4,777.20 dollars. In the case of non-academic staff, costs per claim ranged from a low of \$3,111.11 in Maple Ridge to a high of \$12,518.52 in Vancouver with a mean cost per claim of \$7,799.00. Costs per claim for

non-academic staff were 1.6 times greater (on average) than costs per claim for teachers and related staff.

Injury Rates and Costs for Custodians in Surrey School District

We have obtained, from the custodial supervisor, the approximate number of FTEs in the Surrey School District. For the 5-year period from 1998 to 2002 there were approximately 1,850 custodial FTEs in the District. Data from the WCB indicates that there were 288 injuries over this period to “service” workers. If we assume that all service workers were custodians, then the injury rate for custodians was 15.6% compared to an injury rate for other non-academic staff of 8.81% and an injury rate among teachers in the District of 3.21%. These estimates show that, at least in Surrey, the prevalence of injury among custodians in the District may be approximately twice as high as among other non-academic staff and approximately 5 times the rates observed among academic staff.

The average cost per claim for custodians over this 5-year period was \$9,639. However, cost per claim for the remaining non-academic staff (in Surrey the bulk of these were construction workers) was \$7,047 per claim. Therefore the cost per claim for custodians is 26.9% higher than for other non-academic staff. These rough estimates, at least for the Surrey School District, indicate that rates and costs per claim may be higher for custodians compared to other non-academic staff.

In Summary

To answer the questions outlined:

1. How many injuries occur to Custodians and is this a problem?
 - Custodians in B.C. suffer approximately 500 injuries per year at a cost of \$3.5 million annually
 - 70% are musculoskeletal and the cause of about half are “ergonomic-type” injuries (overexertion and repetitive motion)

2. Are injury rates for Custodians higher than for other workers in the School Districts?

- Injury rates for non-academic workers (including Custodians) are 3.6-times greater than for teachers (7.37% versus 2.04%)
 - As an example, in Surrey School District where we have been able to obtain FTEs, Custodians have two-times the injury rate (15.6%) of other non-academic workers (8.8%) and five-times the rate of teachers (3.2%).
3. Do more injuries occur to Custodians in summer months compared with school months?
- Injury rates for summer months cannot be accurately compared with non-summer months without gathering FTE data
 - Both the injury costs and days lost per claim are higher for Custodians in summer compared with non-summer months

3. Physical Demands, Organizational Demands, and Musculoskeletal Injury Risks in Summer Custodial Work

Summer cleaning for School Board Custodians differs from the school year in that an intensive and thorough cleaning regime is organized. To reflect the added demands, a considerably lower cleaning rate is expected of Custodians, such as 1000 square feet per day (approximately one classroom per day). In many schools approximately half the cleaning work is classroom, while the remainder is gym, floors, lockers, bathrooms, etc. The work differs in elementary schools compared with secondary schools. A typical list for elementary school summer cleaning may involve:

- Floors (scrubbed, rinsed and refinished)
- Floors (corners cleaned out and swept/vacuumed)
- Carpeted floors (edged, vacuumed and shampooed if necessary)
- Tables, desks – remove gum, glue, white-out, crayon, pencil and pen marks and replace glides if necessary
- Chairs – remove gum, white out, glue, pencil and pen marks, crayon etc, wash and replace glides if necessary
- Washrooms – floors and baseboards scrubbed

- Washrooms/change rooms/shower rooms – thoroughly wash ceiling, lights, walls, cubicles, urinals, toilets, sinks, counters, mirrors, windows, doors, etc.
- Clean sinks thoroughly including all chrome areas
- Blinds (dry dusted and washed)
- Windows inside – washed (remove tape residue with razor scrapper)
- Outside windows and roller shades cleaned
- Green chalkboards (dusted and washed with clear water only), whiteboards (clean with soft rag and glass cleaner)
- Garbage cans/marshall containers – wash inside and out
- Doors, frames, vents and glass (cleaned inside and out)
- Remove marks from walls and cupboards
- Washroom/change room – touch up before start of school

In addition to the above, secondary schools also have:

- Lockers - remove graffiti, stickers, gum etc and wash inside and out
- Shops – high dust all high areas, clean lights, scrub cement floor using heavy duty de-greaser, vacuum machinery

Increasingly, especially in larger communities, schools are rented for summer school programs and day camps. This creates the added challenge of coordinating a daily cleaning regime with intensive summer cleaning. At some schools, the summer cleaning is done on top of daily cleaning. At others, the school is closed for a brief intensive cleaning period.

Another challenge of summer cleaning is the need to coordinate it with maintenance and construction projects. Preferably, the construction and maintenance is performed prior to cleaning so it does not need to be performed twice. As well, vacations and part-time workers create scheduling challenges in the summer months. Some Custodians are required to work at schools they may be unfamiliar with. In some Districts up to one-third of the summer custodians are substitute workers (part-time workers trained and hired as needed, for example bus drivers or teachers aides). This creates challenges of training and supervision, as well as work efficiency. Different reporting structures exist for

Custodians throughout the province, with some Custodians reporting to school principals, while in other Districts the reporting is to a Custodial Manager. In the Vancouver School District, Custodians are also responsible for heating, ventilation, air conditioning systems and perform maintenance and ballast changing tasks. They operate as part Custodian, engineer, assistant engineer and maintenance engineer.

The following pictures illustrate some of the physical demands encountered in summer cleaning tasks.



All desks and chairs are moved, flipped, scraped, disinfected and stacked for thorough floor cleaning



Thorough cleaning of desks in each classroom involves repetitive motions with the hands, arms and shoulders, forceful gripping to clean and scrape and repetitive lifting



Washroom floors are cleaned. This involves prolonged gripping and extensive hand-arm and shoulder motions



Washroom walls and other surfaces are all cleaned



All areas of the classroom are dry mopped and wet mopped



Buckets of water are frequently carried and lifted



Ceiling fixtures are removed and cleaned involving overhead work on ladders



All items are removed from walls and windows and these are cleaned as well



Carpeted surfaces are vacuumed – in this case with a portable vacuum cleaner



Washing and wiping down all surfaces involves repetitive and forceful movements of arms and shoulders



Carrying ladders into position for cleaning high spots



Power washers are utilized for cleaning hallway floors

4. Cooperative Summer Work Organization

As mentioned in the introduction, a number of different models for summer work organization were identified in different School Districts. Some Districts have ten or more years of experience with different organizational models. During interviews, custodial managers shared the advantages and disadvantages of their particular method of summer work organization. Some custodial managers designed alternative work organization with the explicit goal of reducing musculoskeletal injuries. They believed that grouping two or more custodians together would provide help and assistance with heavy tasks such as lifting furniture. For others, the goal was improved work efficiency and cleanliness. These managers felt that the inherent competition and collaboration of small groups resulted in higher productivity, efficiency and cleanliness. They also believed that sharing work could build on the strengths of individual custodians. One manager described the efficiency one group experienced at a particular high school. He explained that the group would pull all the tables and chairs to a central location and pressure wash them. In another example a group of four custodians would move furniture from four classrooms then proceed to clean each classroom, each with a different task. For example, one custodian might do floors and another the walls. At the end of cleaning the fourth classroom, the floors in the first one are dry and ready for the furniture to be moved back in. Everyone feels a huge sense of accomplishment when the process moves smoothly and efficiently and so much is accomplished in a work day.

In several cases, custodial managers asked the custodians themselves to design an alternative work organization that they thought would work better in a particular District. Sometimes this meant that custodians chose who they wanted to work with and how they wanted to organize their work. Often this turned out to be a pairing up of custodians at two or more schools and they would reciprocate cleaning one school then the other. This approach was designed by the custodians themselves with encouragement from the manager. Custodians who did not want to work collaboratively were in most cases permitted to opt out and continue to clean their “home” school on their own.

At the other extreme, there are examples of Districts that carefully build and balance the number and talents of different custodians and assign them into groups and schools

without the ability to opt out. In some cases, a crew of up to 11 custodians is put together, especially at the end of the summer with very specific production quotas and goals. The belief of these managers is that talents and strengths between individuals can be balanced in this design to create the best working groups. Also, they believe that good quality leaders are a key ingredient and they carefully hand-pick a small number of leaders for these large groups. If one or two custodians lack enthusiasm for the large crews, they are soon outnumbered if the remainder of the crew is positive about the work arrangement. In these Districts the classrooms are cleaned by a pair of custodians that are hand-picked to work together balancing each others strengths and capabilities.

There are clearly differences in opinions between Districts about the optimal size of cooperative work groups. Some managers feel that two custodians working together is best as there is still inherent “ownership” of the home school and a sense of pride and accomplishment, yet there is help available. Others feel that larger groups of five, eight or even up to eleven work best since in smaller numbers the differences in quality of work and pace become more apparent. They also feel that larger groups are easier to supervise and therefore receive more assistance from supervisors.

In Districts that have implemented alternative summer work practices, there are large differences in the training associated with the changes. One District held four one-day workshops prior to the change to provide education about safe work methods and time to design the alternative work organization. Some Districts held one day sessions at the end of the summer to de-brief the advantages and disadvantages of the changes and discuss ways to improve their methods. In one District, the change to working groups was accompanied by a large increase in the availability of mechanized equipment. Custodians received considerable training on the new equipment, as well as with the new work methods. One District makes extensive use of specialized crews in the summer, for example for gym cleaning. The specialized crew has input in purchasing new equipment and they become extremely well trained and efficient at their new tasks.

Some Districts have changed collective agreements to facilitate work organization modifications. For example, postings for custodians in one high school did not include an

“area”, but only the high school. This meant that the expectation was that the five custodians in that high school all work together, rather than only in their area. In another example, one District negotiated the right to reassign their custodians during the summer period to any school within one of three geographical areas in the District. Quite often, the custodians in this District do not clean at their “home” school during the summer. The manager reported that they like the opportunity to work with different custodians, different leaders and at different schools. They feel almost like it is a break from their “home” school.

One District custodian manager extensively discussed the efforts the custodial managers and custodians make to work cooperatively with teachers and principals. The managers have monthly meetings with the principals to discuss custodian issues within the school. The custodians are encouraged to develop a positive relationship with their teachers and to discuss the cleaning of the classroom. In June, teachers are encouraged to remove items from the walls, box their supplies, have the children do some of the clean-up of their desks and the classroom and have the children assist with garbage and recycling. In the high schools, students are given the responsibility of doing some of the cleaning of their lockers and removal of garbage to outside receptacles. This District also encourages the principals to include the custodians in all staff functions, including baby showers, school celebrations, and having lunch in the staffroom.

Categorizing the different types of summer work organization was difficult since there are a variety of types operating in British Columbia. Also, some Districts use more than one of the types. The expert panel agreed that the following seven types fairly represent the different methods we found in use in B.C.

1. *Status Quo*, where a custodian is assigned to a single school or an area of a school and they are responsible for that same area during summer cleaning.
2. *Specialized work groups* formed with a temporary posting to rotate between schools and perform specialized tasks such as gym cleaning or carpet cleaning.
3. *Cooperative pairing* between custodians at two or more schools where they work together to clean one school then move on to do the other school.

4. *Cooperation between custodians within a school* that has two or more custodians (rather than in their assigned area) to organize and complete the summer cleaning tasks together.
5. *Large cooperative groups* are formed of four to eight custodians who move from school to school to perform summer cleaning.
6. *Assistance is provided*, as needed, for moving furniture and other heavy tasks by supplying maintenance workers or teachers' assistants on a short term basis.
7. *Combinations* of one or more of the alternative work methods listed.

The advantages and disadvantages of each type of work organization will be discussed and examples of School Districts who use each approach will be provided.

1. *Status Quo:*

The status quo is likely the way most of the School Districts in British Columbia organize their summer cleaning. In the status quo, the custodian(s) are responsible for a single school, in the case of many elementary schools, or an area of a larger school. During the summer months, the thorough cleaning is performed in their designated area. In the case of a single custodian in a school, this means there may be no help available for moving heavy items or sharing tasks. In schools with more than one custodian, it would depend on the individual custodians whether they ask for assistance from one another. In many cases, they work an entire day in the summer without seeing the other custodians if they are located in different parts of the school.

The advantages of the status quo are that custodians get to know their school or area very well and become experienced at being able to perform the cleaning tasks. They also get to know the teachers well and can develop beneficial relationships with them. With this model, the custodians have a strong sense of ownership and pride in the job they do and sometimes feel like no one else could clean to their high standards. If the custodian enjoys working alone and is highly motivated, this type of work organization may suit them. In many Districts, custodians are required to take their vacation during the summer period. This may mean that they holiday for up to half the summer, and spend the remainder getting the school ready for the new school year.

The main disadvantage of this approach is the lack of assistance for physically demanding and heavy tasks, such as moving furniture and carrying cleaning equipment and supplies up and down stairs. Working alone is also a concern should a serious illness, accident or injury occur, such as falling from a ladder. It is also more difficult to supervise in this approach, since one manager may have 40 schools and therefore would rarely get to each school to monitor progress.

Surrey School District tried eight-person cooperative work groups between 1986 and 1988 but returned to the status quo model after a couple years. They reported that organizing groups involved challenges of scheduling around vacations and absenteeism and that there was an added cost for each group to have a supervisor. They also reported the challenge of some custodians not wanting to work with other custodians due to personality conflicts.

2. *Specialized Work Groups*

Specialized work crews are organized to perform a specific summer cleaning task, such as a floor crew, a gym ceiling crew (who does all the gym cleaning above eight feet such as cleaning and dusting lights), and a carpet crew. By organizing crews according to tasks, the workers can apply to such a crew, have the ability to research equipment and techniques, and receive specialized training. The crew then rotates to each school performing the specialized cleaning functions. The Kootenay School District operates a number of specialized crews and they report that this works very well. Lead hands tend to be focused and motivated and the tasks are performed efficiently.

The advantages include an opportunity to post for a specialized crew and receive special training. The “home” school benefits since some of the heavier tasks are performed by the specialized crew, often with their assistance. There is a reduced cost for equipment, since each school does not need the specialized equipment. It would also appear that while tasks may be more repetitive for those on specialized crews, since they are well trained and experienced, this could reduce their risk of injury.

3. *Cooperative Pairing*

In the cooperative pairing model, custodians working alone at two or more schools would join up and agree to help clean each others school. This may be organized by the custodians themselves, or mandated by the custodial manager. Agreements are reached about how much time in person-hours each school should take to clean and the custodians are scheduled accordingly. In the Vancouver Island North District over ten years ago, at a professional day meeting custodians were encouraged to offer ideas about how they could work more safely in the summer months. The custodians suggested pairing up between single-custodian schools and it has worked well for ten years. The manager reports that custodians enjoy the company of working with another custodian, and that help and assistance with heavy tasks has reduced injuries. Prior to changing the work methods, some custodians who worked alone were asking their children or partners to come and help them at the school with moving heavy items. The custodial manager lets the custodians decide how they share the cleaning tasks amongst themselves.

The Cowichan Valley School District has more recently encouraged a cooperative pairing of custodians in summer months. The manager reports that some custodians did not want to participate and they were given an option. Those that opted not to pair up reported a sense of ownership and pride in their “home” school and they didn’t want to work at another school. The manager reports that pairing two schools works well since there is very little additional administrative logistics, compared with considering larger groups. Custodians were free to choose their partner and the custodian at the “home” school would be in charge of the work. Cowichan initiated the change during a two day training session where they talked about the benefits with custodians. They report the benefits include an increased morale, that work is more fun, lifting is easier and there is more variety in the day since they would switch tasks.

4. *Cooperation between Custodians within a School*

In this model, where there are two or more custodians within a school, they work cooperatively, rather than exclusively in their assigned area. In some cases, such as in the Abbotsford School District, custodial jobs for a new school were posted without specific areas. This means that custodians work together to sort out who is performing the various

tasks. In other examples, such as Cowichan Valley, the larger schools were encouraged to abandon the concept of areas and work together to see how they could do the best job. The manager reported that while some schools did not cooperate due to personality clashes, in other cases the change was very successful. Some schools found the work moved much more efficiently with added help and they finished the cleaning ahead of schedule leaving an extra day to take on other tasks or move on to another job.

Those Districts that have encouraged this approach where there are two or more custodians in a school usually report that if the custodians work well together there are benefits to the Custodians socially, in sharing workload and repetitive tasks, and in providing assistance for heavy tasks and in efficiency. There are few reported disadvantages to this option unless there are personality clashes between some custodians within the same school.

5. *Large Cooperative Groups*

A number of Districts have implemented large cooperative groups where four or more custodians are assigned to clean a school and are then moved to a different school. Richmond School District has been gradually encouraging this approach. In Richmond there is a high utilization of the schools in the summer months for day camps and summer school. This limits the time available within any single school for intensive cleaning. Cooperative groups that rotate between schools have worked well because they can move through a school very quickly during a short closure to do the thorough cleaning. Different foremen and custodians organize the work in different ways. At a high school in the Richmond District, six custodians were observed to help each other. Three were working in one classroom on different tasks and three were doing floors, one following the other with a different task. They reported that it is more fun, the day goes faster since there is cooperation and competition and the supervisors say there is more supervision. Workers report more job satisfaction and they believe injuries have been reduced. The managers reported that it takes coaching and encouragement and at times assistance to reinforce the teamwork. Considerable effort has gone into recruiting and training foremen who believe in working and encouraging cooperative work.

At the Delta School District, the cleaning needs are reviewed prior to summer and staff are assigned to work crews within three geographical areas. The right to be assigned within a geographical area for summer cleaning was negotiated with the union. They build the cooperative groups by integrating and balancing the various skills of individual custodians. Voluntary lead hands are assigned to be crew leader and crew size is usually four to six custodians. At the end of summer, there may be eight to eleven custodians in a crew. The work is structured and organized on a production basis with quotas based on space. Two custodians would work together in a classroom and they carefully consider the pairing that will work well together. The Delta School District has been operating with cooperative groups for eight years and the manager reports that custodians like it as it is a change from normal and they get to work with different leaders and workers. There is much more interpersonal interaction. Workers also like that it is highly structured, productive and goal oriented. They report a higher sense of accomplishment. Some crew leaders provide end-of-week rewards. The manager also reports that they are able to provide a higher level and more consistent supervision since daily visits to the schools by supervisors is easier with six sites operating compared with forty previously. Having fewer sites open also reduces operating costs. They report very little sick leave or absenteeism and a reduction in injuries. Another advantage is that if someone is absent, the crew continues on.

Disadvantages of large cooperative groups include additional administration and coordination for planning the cleaning and additional supervisory costs. At Saanich School District, rather than hiring crew leaders, the custodian of the school being cleaned acted as “advisor” of the group. This reduces the additional cost of a supervisor. The District also paid the mileage costs for custodians to travel to other schools. There may be concerns over seniority and who should be supervising. There can also be a problem with custodians who do not work well in a group, but this can be minimized with encouragement, training and careful grouping of members. At Saanich School District, while this cooperative group approach was generally considered successful, custodians reported in a de-briefing session that they experienced burn-out in September and that absenteeism among custodians had increased during this month. They reported that this was partly because there was no replacement of custodians who were sick during the

summer cleaning. They suggested that it needs to be well coordinated and organized at the beginning of summer and prompt replacement of absent workers is essential

6. *Assistance is provided, as needed*

In this model, the custodian is encouraged to ask for help when they feel they need assistance. Help can be provided by temporarily hiring someone to assist from within the District. This is working well in some of the remote schools in the Northern Island School District. A teachers assistant or bus driver may be hired temporarily for a short period to assist the Custodian. The manager of this District feels that the additional costs of hiring a temporary person could be offset by preventing the compensation and replacement costs that would arise with a work-related injury. In Cowichan Valley, there are two floaters with a vehicle who can provide help and assistance as needed. A slightly different application of assistance was used in Saanich School District when they brought in professional movers and maintenance staff at the end of summer to assist with moving the furniture. Providing assistance as needed can help with heavy tasks, but if it is voluntary it relies on the custodian recognizing the need for assistance and feeling comfortable asking for it.

7. *Combinations of the above*

In many of the Districts cited in the previous sections, more than one model is used for summer work. For example, they may have specialized crews for certain tasks such as floor cleaning, in addition to having cooperative pairing for schools with single custodians, in addition to encouraging cooperative group work among the schools with two or more custodians. The advantage of using a combination of approaches is that a no one approach may suit all schools and applications. While potentially involving more coordination and administration, a combination approach affords more flexibility and potentially more opportunity for reducing injury.

5. Case Study of Cooperative Summer Custodial Work

Saanich School District

In the Saanich School District during the 2001 school year, one out of every four custodial workers had a lost time injury (14 injuries among 55 custodians). Almost one-third of the short-term disability claims to custodians in the District occurred during the two summer months (4 claims in July/August, and 10 in the remaining 10 months). Current practice at that time was that each of the District's 16 elementary and alternative schools had one custodian who was expected to clean their school over the course of the summer. The heavier job demands of summer cleaning put the custodians at increased risk of costly musculoskeletal injuries (MSI) from overexertion. Recovery from soft tissue injury averaged six to eight weeks of lost time.

In 2001, a pilot project was conducted in the elementary schools involving reorganization of summer custodial work with the goal of reducing injuries. The custodians were organized into large groups to work on one school at a time, thus minimizing the effort required to do the heavy work. The guiding principle was to have the groups large enough that they have no choice but to work together, as opposed to working in the same location at the same time. Custodians were encouraged to lift together and to rotate repetitive tasks.

During four professional development days, custodians were brought together for training in ergonomics, and to discuss the pilot project. There were obstacles to overcome, such as

who would supervise, how large the group should be, and who would pay mileage costs for travel to different locations. The custodians were given the opportunity to discuss and work through the obstacles and decide best how they would organize their work. They were encouraged to have a single goal among the group, rather than an ownership of their assigned school.

Collectively, custodians decided that the presiding custodian at each school would act as advisor to the group. There would be only one person in charge: the department supervisor. Mileage would be paid to avoid any potential out-of-pocket expenses being incurred by the workers. By June, four teams of eight people were organized and assigned work.

The managerial aspect of the plan was also attractive. Concentrating work activity at four venues at a time, rather than the usual sixteen, was far more efficient. The department supervisor was able to increase his contact with the group by decreasing travel time between facilities. Supply delivery, too, was better organized with deliveries required at only four schools a day. Productivity increased with the help of extra hands on the job. Groups met at the start of the day to discuss and plan the allocation of work tasks using the rotation principles from their training.

The summer of implementation of the organizational change was claim-free. Although injury rates among custodians in the District were still high (approximately 20%), none of these occurred during summer time. Overall days lost and injury costs were reduced dramatically in 2002 compared with 2001. As well as cost benefit on reduced injury, savings occurred on hydro because as the teams cycled through the schools and completed the cleaning, the facilities would be shut down and required no further energy.

Other less tangible but very important benefits included an increased morale among custodians. The enduring benefit is the change in the work culture itself. Custodians think more carefully about the way work is done, recognize when a task might increase the risk of MSI, and avoid injury by working safely.

The custodians provided feedback following the second summer of implementing the change. They suggested that working in groups of 5-8 custodians is optimal. Custodians stated that there were sometimes problems getting replacements when someone was ill and away from work, causing an increased workload for the rest of the group. Many experienced burn-out which led to increased sick leave in September. Most custodians enjoyed the change and increased socializing and interaction with fellow custodians, but warned it needs to be well coordinated and organized at the beginning of the summer. They also mentioned the benefit for custodians of picking up new skills and techniques through working with others and in other locations.

5.1 Delta School District

For approximately eight years the Delta School District has been altering the summer cleaning routines for custodial staff by creating crews of 4-6 custodians to rotate between schools. This was made more formal in 2001 when the District negotiated, with CUPE, the right to reassign custodians within one of three geographical areas during school breaks. All summer cleaning is done by crews that are balanced according to different skills and abilities. In schools with summer programs, regular custodians were needed for day-to-day cleaning, in addition to the summer cleaning crew. Crews are supervised by voluntary lead hands. The work is quite structured and based on productivity quotas taking into consideration the size of the school and the condition. At the end of the summer, crew size may increase to between 8 and 11 custodians to finish off remaining jobs. The crew leader organizes the group, ensuring custodians pair up in classrooms.

The crew approach has been shown to be more productive and custodial staff like it. They report it is a change from normal, they get to work with different leaders and workers and it is more structured and goal-oriented, giving a high sense of accomplishment. The custodians like the higher inter-personal interaction. While there have been a few custodians that have been opposed to the change, most see it as beneficial.

Management feel there is a higher level and more consistent supervision. The crew leader in each location understands the goals and timeframes and any management intervention can be done with daily visits as there are only six sites to visit, rather than 40. There is

very little sick leave or absenteeism over the summer and injuries have been reduced. In 2001, prior to the contract changes, there were six lost time injuries during July and August with 98 days lost (among 95 Custodial FTEs). In the year following the contract change when crews were formally implemented, there were two lost time injuries with 24 days lost (i.e. a 66% reduction in injuries and 75% reduction in days lost compared with the previous year). In 2003, there was only one summer custodial injury with 11 days lost (83% reduction in injuries and 89% reduction in days lost compared with 2001).

6. Recommendations for Successful Implementation of Cooperative Summer Custodial Work

It appears there is no single “correct” way to organize summer cleaning in school Districts. Choice of method for organizing summer custodial work will depend upon District size, proximity of schools, current practices, and worker preferences. Each of the seven methods identified have advantages and disadvantages that should be weighed by an individual District when considering the options. It appears, based on the experience of those Districts which have tried methods other than the status quo, that there are numerous benefits to collaborative approaches¹. These include reduced injuries, increased morale and interpersonal interaction, increased efficiency, improved supervision and reduced costs. When considering the various methods, the following is recommended:

1. Be clear about why you are changing the work organization in summer months and have a stated goal. For example, you may decide to pair up single-school custodians to ensure they have help available for heavy tasks and to provide some interaction, with the goal of reducing musculoskeletal injuries.
2. Involve the custodians in design and implementation of the organizational change. There is considerable evidence from participatory ergonomics studies that when workers are involved in designing how their work is organized and carried out, they have higher satisfaction and work efficiency and fewer

¹ Note that this notion has not been rigorously studied and tested, but is anecdotal.

injuries and absenteeism. This can be accomplished using professional development days for workshops and meetings and involving the union.

3. Carefully consider the size of crew that would work best in your District. If schools are a large distance apart, it may not be feasible to have groups of four to six custodians.
4. Choose good leaders for the crews who will encourage custodians to work together and who can deal with interpersonal conflict as it arises.
5. Consider whether the change will be mandatory for all custodians, or you will provide the ability to “opt-out” for those custodians who do not want to change from the status quo.
6. Consider whether the organizational change can be implemented within your current collective agreement, or whether a change in the agreement is beneficial.
7. Provide training for custodians in ergonomics to reinforce the change in work organization. Training can include information about typical musculoskeletal injuries that occur to custodians, risk factors for such injuries and types of tasks performed by custodians that have risk, preferred methods for performing tasks to minimize risk, and the benefits of working cooperatively to minimize risk.
8. Encourage custodians to develop positive relationships with principals and teachers at their school. Encourage teachers and students to take responsibility for some of the clean-up tasks in late June, such as cleaning lockers, boxing up materials, removing items from walls, putting trash into outside bins, etc.
9. Plan for some additional administrative and organizational time to coordinate custodians at the beginning of the summer period. Ensure that proper coverage is available during vacations and sick leave. The additional up-front time should be compensated by the reduction in supervisory time during the summer months.
10. Deal with potential obstacles to an organizational change up-front. Have discussions about who supervises, mileage costs, etc. and involve custodians in decisions.

11. Collect critical data prior to and following the summer months so the change can be evaluated. For example, musculoskeletal injuries, cleaning efficiency, and custodian opinions can all be compared prior to and following the change to evaluate whether the change has been effective. Monitor and fine-tune on an ongoing basis throughout the summer as needed.
12. De-brief at the end of summer to know what was working and what parts of the change require improvement. Systematically document the items such that they can be applied the following summer.

Appendix A

Table 1. Nature of Injury broken down by Number and Cost of Claims and Days Lost.

Nature of Injury Level	Count	Claim Costs Total	Cost per Claim	Days Lost	Days Lost per Claim
Sprains, strains, tears	1,595	\$9,422,341	\$5,907.42	58,328	36.6
Bruises, contusions	243	\$480,415	\$1,977.02	3,875	15.9
Inflammation and irritation of joints etc.	121	\$1,499,571	\$12,393.15	9,340	77.2
Cuts, lacerations	106	\$603,758	\$5,695.83	2,273	21.4
Other injuries to muscles, tendons, etc.	97	\$629,861	\$6,493.41	4,875	50.3
Nonspecific injuries and disorders	96	\$586,466	\$6,109.02	2,719	28.3
Fractures	76	\$1,606,995	\$21,144.67	6,615	87.0
Dislocations	30	\$452,049	\$15,068.30	2,566	85.5
Dorsopathies	27	\$1,107,360	\$41,013.33	4,555	168.7
Disorders of the peripheral nerve system	27	\$432,561	\$16,020.78	3,009	111.4
Hernia	23	\$192,412	\$8,365.74	1,360	59.1
Abrasions, scratches	23	\$17,743	\$771.43	146	6.3
Other poisonings and toxic effects	19	\$18,010	\$947.89	126	6.6
Dermatitis	15	\$16,270	\$1,084.67	129	8.6
Intracranial injuries	14	\$83,943	\$5,995.93	618	44.1
Foreign bodies (superficial splinters)	10	\$4,364	\$436.40	29	2.9
Punctures, except bites	13	\$11,018	\$847.54	74	5.7
Chemical burns	11	\$18,475	\$1,679.55	134	12.2
Musculoskeletal diseases and disorders	7	\$33,559	\$4,794.14	141	20.1
Traumatic Injuries to nerves	4	\$34,641	\$8,660.25	314	78.5
Heat burns, scalds	5	\$5,113	\$1,022.60	32	6.4
Traumatic complications	2	\$1,797	\$898.50	11	5.5
Electrocutions, electric shock	5	\$21,186	\$4,237.20	182	36.4
Avulsions	2	\$1,226	\$613.00	9	4.5
Chronic obstruction pulmonary disease	2	\$2,623	\$1,311.50	20	10.0
Animal or insect bites	2	\$1,315	\$657.50	8	4.0
Anxiety, stress, neurotic disorders	2	\$4,617	\$2,308.50	30	15.0
Symptoms involving respiratory system	3	\$2,795	\$931.67	29	9.7
Other	12	\$35,942	\$2,995.17	268	22.3
Grand Total	2,592	\$17,328,424	\$6,685.35	101,815	39.3

Table 2. Accident type broken down by Number and Cost of Claims and Days Lost.

Accident Type	Count	Claim Costs Total	Costs per Claim	Days Lost	Days Lost per Claim
Overexertion	979	7,208,490	7363.12	41,935	42.8
Bodily reaction	292	1,410,966	4832.08	8,983	30.8
Fall on Same Level	288	2,172,316	7542.76	12,909	44.8
Struck by object	230	684,311	2975.27	5,095	22.2
Fall to Lower Level	192	1,970,143	10261.16	9,309	48.5
Repetitive motion	195	2,198,579	11274.76	13,930	71.4
Struck against object	147	372,884	2536.63	2,678	18.2
Exposure to caustic, and allergenics	53	57,952	1093.43	431	8.1
Bodily reaction and exertion, NEC	51	274,508	5382.51	2,049	40.2
Caught in or compressed by equipment	45	476,364	10585.87	1,385	30.8
Static posture with force	33	191,855	5813.79	989	30.0
Rubbed or Abraded by Friction/pressure	20	22,859	1142.95	175	8.8
Jump to Lower Level	21	85,866	4088.86	611	29.1
Assaults and violent acts by person(s)	11	35,450	3222.73	337	30.6
Contact with objects and equipment	12	17,587	1465.58	133	11.1
Contact with temperature extremes	6	21,344	3557.33	181	30.2
Fire-unintended or uncontrolled	4	6,311	1577.75	44	11.0
Highway accident	3	90,063	30021.00	415	138.3
Contact with electric current	2	1,409	704.50	10	5.0
Assaults by animals	2	1,315	657.50	8	4.0
Static posture without force	2	1,474	737.00	10	5.0
Rubbed, Abraded, jarred, vibrated	1	386	386.00	3	3.0
Pedestrian struck by vehicle	1	587	587.00	3	3.0
Fall, NEC	1	9,906	9906.00	69	69.0
Other	1	15,498	15498.00	123	123.0
Grand Total	2,592	17,328,424	6685.349	101,815	39.3

Table 3. Body part broken down by Number and Cost of Claims and Days Lost.

Body Part	Count	Claim Costs Total	Costs per Claim	Days Lost	Days Lost per Claim
Back, including spine, spinal	804	\$5,580,629	\$6,941.08	31,435	39.1
Leg(s)	226	\$1,353,436	\$5,988.65	9,011	39.9
Shoulder, including clavicle, etc	221	\$2,662,940	\$12,049.50	15,526	70.3
Arm(s)	182	\$1,570,096	\$8,626.90	9,829	54.0
Multiple Body Parts	186	\$1,269,260	\$6,823.98	7,419	39.9
Finger(s), fingernail(s)	152	\$377,261	\$2,481.98	2,863	18.8
Wrist(s)	139	\$1,361,098	\$9,792.07	7,551	54.3
Ankle(s)	106	\$305,618	\$2,883.19	2,367	22.3
Pelvic region	79	\$776,744	\$9,832.20	3,458	43.8
Hand(s), except finger(s)	69	\$583,347	\$8,454.30	2,214	32.1
Multiple trunk locations	62	\$239,981	\$3,870.66	1,852	29.9
Face	58	\$137,684	\$2,373.86	974	16.8
Neck, except internal location o	61	\$221,178	\$3,625.87	1,644	27.0
Foot (feet), except toe(s)	61	\$233,639	\$3,830.15	1,865	30.6
Chest, including ribs, etc.	50	\$70,134	\$1,402.68	604	12.1
Cranial region, including skull	28	\$97,519	\$3,482.82	791	28.3
Body Systems	28	\$47,464	\$1,695.14	371	13.3
Toe(s), toenail(s)	25	\$30,851	\$1,234.04	252	10.1
Multiple upper extremities	23	\$178,769	\$7,772.57	1,049	45.6
Abdomen	17	\$50,679	\$2,981.12	426	25.1
Multiple lower extremity	13	\$162,913	\$12,531.77	182	14.0
Other	2	\$17,183	\$8,591.50	132	66.0
Grand Total	2,592	\$17,328,424	\$6,685.35	101,815	39.3

Table 4. Characteristics of Claims in the Summer and non-Summer months during the 5-year period 1998 to 2002.

Claims Characteristics	July and August	September to June	January to December
# Claims	375	2217	2,592
Total Cost of Claims	\$3,228,516	\$14,099,908	\$17,328,400
Cost per Claim	\$8,609	\$6,360	\$6,685
Day's Lost	15,840	85,975	101,815
Day's Lost per Claim	42.2	38.8	39.3

Table 5: Number of Claims for Teachers, Non-academic Staff, and Service Staff from 1998 to 2002 for 14 BC School Districts.

School District	#Claims Teachers/related	# Non-academic claims	#Claims Service
Abbotsford	74	195	82
Burnaby	147	270	141
Central Ok	83	159	64
Coquitlam	186	306	221
Delta	92	177	99
Greater Victoria	182	296	150
Langley	110	176	92
Maple Ridge	73	108	42
North Vancouver	104	178	113
Prince George	85	144	93
Richmond	130	240	151
Surrey	570	567	288
Vancouver	350	486	226
Vernon	52	82	39
TOTAL	2238	3384	1801

Table 6: Cost of Claims for Teachers, Non-academic Staff, and Service Staff from 1998 to 2002 for 14 BC School Districts.

School District	Cost Teachers/related	Costs non-academic	Cost Service
Abbotsford	233000	1004000	240000
Burnaby	691000	1948000	1116000
Central Ok	374000	901000	326000
Coquitlam	1117000	1889000	895000
Delta	368000	1795000	796000
Greater Victoria	829000	2332000	1234000
Langley	1112000	2038000	380000
Maple Ridge	202000	336000	136000
North Vancouver	294000	1016000	546000
Prince George	484000	1550000	1047000
Richmond	919000	2006000	1185000
Surrey	1513000	4742000	2776000
Vancouver	1460000	6084000	1750000
Vernon	243000	538000	238000
Total	\$9,839,000	\$28,179,000	\$12,665,000

APPENDIX B: WCB Definitions

Accepted Claims

This is the number of short term disability (STD), long term disability (LTD) and fatal claims accepted in the year (for all years of injury). It excludes health-care only claims.

Active Employers

This is the current number of active employers registered with the WCB. Employer identification numbers are aggregated by claims unit, subsector and sector.

Assessable Payroll

This is the payroll upon which the assessment is calculated.

Average Costs Per Claim

This is the claim costs divided by accepted claims.

Claim Costs

These are the costs charged in the year for all years of injury and exclude health care and rehabilitation costs.

Claim Costs Total

This includes claim costs to date for claims with a STD first paid date within the five year reporting period. Costs included are health care, STD, rehabilitation, LTD reserves and/or lump sum payments, and fatal reserves and/or lump sum payments. If the claim is ongoing, this amount will increase each month with the Data Warehouse refresh.

Classification Unit (CU)

This is the industry classification unit code. Its description can be found in the WCB 2003 Classification and Rate List.

Days Lost

These are days paid in the year for all years of injury.

Days Lost Total (also referred to as “Total Work Days Lost”)

This includes days lost for claims with a STD first paid date within the five year reporting period. This is the days lost to date. If the claim is ongoing, this amount will increase each month with the Data Warehouse refresh.

Injury Rate

This is the number of claims per 100 estimated person-years of employment. In other words, the number of claims per 100 workers per year.

Musculoskeletal Injury

This refers to a combination of overexertion and repetitive motion accident types.