

PWC SAN DIEGO'S CARPET PULLERS IMPROVE PRODUCTIVITY AND REDUCE RISK OF INJURIES AND CTDs

Maintenance workers at Public Works Center (PWC) San Diego used to reach and stretch while squatting or kneeling to remove carpeting that had been glued down to floors in offices, corridors, and other locations throughout the Navy's buildings. Carpet-removal required four employees, working as a team, to grasp a carpet with pinch-type gripping tools and forcefully yank on the glued-down carpet to pull it loose from the floor.

An ergonomically ideal work posture would have been standing upright, with the hands at, or slightly below, waist level. However, maintenance workers had to kneel, squat, and stretch



Maintenance workers used to kneel while removing carpet with a pinch-type gripping tool



Workers had to kneel, squat, and stretch over long periods, which added to strain on their backs and knees during carpet removal

over long periods of time to remove a carpet. Their work postures required a lot more strain on the shoulders and back than if the starting point had been nearer to waist height. The low starting position for carpet-removal required a worker to bend or squat, while pulling, straining the back and knees. PWC maintenance workers commonly experienced discomfort and fatigue after a day of removing glued-down carpeting.

The ergonomics of working at heights lower than 30 inches from the ground, combined with the force necessary to pull carpets free, put the maintenance workers at risk for

knee injuries as well as cumulative trauma disorders (CTDs) of the legs, shoulders, and back.

Ergonomics is the science of fitting the work task to the worker, instead of requiring the worker to adapt to existing working conditions. Work tasks that require frequently using a group of muscles and support tissue, such as tendons, over long periods during each work shift tend to fatigue those muscles and support tissue. Such overburdening may lead to CTDs, a group of disabilities that usually involve weakness and discomfort. Work-related CTDs commonly involve the wrists, arms, shoulders, neck, legs, or back. CTDs often improve after discontinuing the actions that trigger the pain or discomfort and getting medical treatment.

The goal of an ergonomics program is to reduce the frequency and severity of injuries and CTDs by redesigning work tasks or workstations using procedures, tools, and equipment that minimize the risk of injuries and CTDs. Work tasks, equipment, and tools that are ergonomically designed help to reduce the risk of work-related injuries and CTDs by making it easier for the worker to avoid repetitive motions, awkward positions, and unnatural postures.

PWC maintenance workers brought the ergonomic hazards associated with carpet removal to the attention of PWC's Employee Driven Cultural Safety Forum (EDCSF). The EDCSF is a committee made up of safety representatives from each workshop at PWC San Diego. It meets monthly to discuss PWC safety concerns and to come up with workable solutions. The EDCSF evaluated the ergonomic hazards associated with manual removal of glued down carpeting and recommended a mechanical option to incorporate ergonomics into the carpet removal task.



One worker, standing upright, removes a carpet, using a mechanical carpet puller

As a direct result of the EDCSF evaluation and recommendations, mechanical *carpet pullers* were introduced and are now used for most carpet removal by PWC San Diego. The mechanical *carpet pullers* have been successful in virtually eliminating the risk of knee injuries and shoulder, back, and leg CTDs

during carpet removal. Using the compact, lightweight, *carpet pullers*, one worker can now remove a carpet, standing upright, without squatting, kneeling, or stretching. Besides preventing injuries and CTDs, the mechanical *carpet puller* has greatly improved efficiency; one maintenance worker is now assigned to a carpet-removal task that used to require four employees to complete.

The Chief of Naval Operation's (CNO's) Hazard Abatement Program funded the initial purchase of one mechanical *carpet puller* for PWC San Diego. Since then, the PWC has utilized its own funding to purchase an additional *carpet puller*.

The *carpet pullers* are compact and easy to maneuver; they fit easily into PWC vehicles for transport to the job site and can be used by one employee, working alone, on a wide range of carpet sizes. PWC San Diego maintenance workers are happy to use a painless carpet removal method, and management is pleased with increased carpet-removal efficiency and the prevention of work-related injuries and CTDs.

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