

## PARTICIPATORY APPROACH TO ERGONOMIC RISK REDUCTION: A CASE STUDY OF BODY HARNESSSES FOR CONCRETE WORK

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### ABSTRACT:

Carpenters and laborers performing concrete form work use body harnesses and various accessories for fall protection and/or body positioning. Focus groups with workers in these trades identified poorly fitting and inappropriate body harnesses as contributing to musculo-skeletal discomfort and pain. Working with a large structural contractor, this intervention project used a participatory process to develop a system for carpenters and laborers to obtain body harness equipment satisfying both safety and ergonomic concerns. Focus groups and interviews with foremen, superintendents, and the safety director revealed that:

- There was no consistent ordering system available to foremen
- Workers were unaware of available body harness options and accessories
- "One size fits all" was the typical policy for obtaining harnesses
- Many employees were inadequately trained in proper techniques for inspecting and wearing harnesses
- Communication lapses at multiple levels of the company contributed to inappropriate equipment being supplied to workers.

An ordering system and accompanying selection guide were developed in cooperation with suppliers, the safety department, field crews and foremen. The system emphasized the availability of a variety of materials, sizes, and accessories for specific purposes. The procedure was pretested and revised based on user feedback. A key element of the procedure was that each worker would meet with the foreman to discuss equipment needs prior to beginning work. The finalized system was implemented on a large high-rise construction project. Interviews and written surveys were conducted with 27 carpenters within a few weeks of their having gone through the process. Both foremen and craft workers gave higher ratings on participation, training, and worker/foreman interaction regarding body harness fit, options, and safety after the new procedure was implemented. Respondents also perceived improvements in selection and comfort of equipment and were more satisfied overall with their equipment compared to their previous experience with this contractor at other sites. Selection and training were rated more favorably by workers who were present at the beginning of the project compared to those who arrived after the initial orders were placed. Workers who brought harness equipment from previous sites did so because they believed they would not get the same comfort and features on a new site.

The participatory research and development process identified numerous weak points

in the existing system for providing harness equipment and led to some improvements. The new ordering system proved effective for this site in the initial phase of the construction project when obtaining equipment for the job is the norm. Workers coming on to the site at later stages received less attention and fewer benefits from the procedure. Attention must be paid to maintaining the procedure throughout construction and to measuring longer-term effects of the selected equipment.