ISRP 1999 abstract

Presenter/author	Title	Abstract
Cardarelli, Ron *CN Associates Inc.* *249 Ayer Road, Suite 205* *Harvard, MA 01451* *USA*	**Effects of Respirators on Worker Efficiency**	The purpose of this study was to quantify the effect of full face piece air purifying respirator use on worker efficiency. With and without a respirator, twenty nuclear power plant workers performed a typical mechanical work task and two dexterity tests in an environmental chamber maintained at a temperature of 35^0C (95^0F) and a relative humidity of 65%. The subjects were trained for one day and tested on the following day. On test day, each subject performed each standardized task twice in full cotton protective clothing once with a respirator and once without. The order in which subjects performed the task with and without a respirator staggered. The standardized tasks consisted of a stud torquing procedure and two separate trials of a pegboard dexterity test (before and after the torquing procedure). All subject testing was videotaped and the videotapes were time coded for evaluation by an independent reviewer who determined the times for task completion. The 95% confidence intervals for the man percentage increase in time to complete the carious tasks for trials using the respirator were: 1^{st} Dexterity Test (Lower Limit-1.16%, Mean 3.055, Upper limit 7.27%); Stud Torquing (Lower Limit-0.99%, Mean 2.11%, Upper Limit 5.21%); 2^{nd} Dexterity Test (Lower Limit-2.06%, Mean 1.625, Upper Limit 5.20%). These small increases in completion times attributable to respirator use were not statistically significant. It was conducted that respirator use had no significant effect on the efficiency with which workers conducted the tasks in this study. This study was designed to be representative of a specific nuclear power plant work task heavy bolt to conducted in a typical plant environment. The dexterity test and torquing subtask results of this study may be applied to various other light and heavy plant work tasks, respectively. This study was not designed to be representative of work performed by teams where worker communication is essential for task completion.