

New Workshop for Bowling Alley Mechanics Solves Noise Exposure Problems

At the MWR bowling alley, NAVAIRSTA, Rota Spain, an experienced bowling alley mechanic was diagnosed as having an occupational noise-induced hearing loss. Two mechanics-in-training were also at risk since none could routinely use hearing protection and still be able to hear overhead pages for service.

During routine annual Industrial Hygiene (IH) surveys, Naval Hospital, Rota IH staff quantified noise hazardous conditions. They found that bowling alley mechanics regularly worked within three feet of pin setting machines that generated noise levels measured at 88 to 94 decibels (dB (A)) for an 8-hour Time Weighted Average (TWA). Noise was measured at 98 to 105 dB (A) in the mechanics' hearing zones as



bowling balls hit the pins. Noise levels above 84dB(A) are considered hazardous by the DOD. The Rota Industrial Hygiene surveys used ambient sound level meter and personal noise dosimeter workplace monitoring that identified pinsetter mechanics for full entry into the Naval Station Rota Spain hearing conservation program.

Enrollment in this program meant that the pinsetter mechanics were given annual audiometric medical surveillance exams at the Naval Hospital, Rota Occupational Medicine Clinic. When one mechanic who had spent over 10 years maintaining pinsetters was found to have a “Significant Threshold Shift” in his hearing, a diagnosis of noise-induced hearing loss was confirmed by the NAVHOSP, Rota audiologist.

Installation of automated pin setting machines was expected to reduce ambient noise levels at the bowling alley, but the new machines actually produced more noise. Carpeting the rear floors of the alley and installing sound baffling panels around the pin setter machines did not reduce noise exposure levels.

Naval Hospital Rota Industrial Hygienists recommended relocating the bowling alley mechanics' break and workshop areas away from pinsetter noise. The NAVHOSP Rota IH, Audiology, and Occupational Medicine departments presented this solution to the cognizant NAVSTA Rota Safety Office and MWR management. Given the large initial construction costs (\$35K to \$50K) of building additions to the bowling alley to shelter mechanics from noise, a special NAVOSH Deficiency Abatement Project funding request was sent to the Naval Facilities Command (NAVFAC).



While this request was being considered, the local MWR manager and NAVSTA Rota Safety Office staff heard about the availability of excess trailer units.

Examination of the climate-controlled trailers found them to be entirely suitable for the mechanics' workshop needs, and one was immediately surveyed to the MWR Department.



In addition, an enclosed "duty room" was built onto the back of the bowling alley where mechanics could take their breaks away from the noise-hazardous pin setter units.

NAVSTA Rota bowling alley mechanics are now notified of service calls by handheld radios, and wear hearing protection when they enter the pin setter area.



POC: David W. Hiipakka, MPH, C1H Head,
Industrial Hygiene Services, Naval Hospital, Rota, Spain

Voice: COM (34) 956 82-2783 DSN 727-2783

Fax: COM (34) 956 82-2315 DSN 727-2315

Email: dwhiipakka@rota.med.navy.mil