SAFETY AND HEALTH STANDARDS FOR SMALL ARMS FIRING RANGES

The Naval Facilities Engineering Command (NAVFACENGCOM) has a program that provides technical support to field activities via Technical Centers of Expertise. The centers assist certain high-risk or technically complex facilities such as small arms firing ranges, used by Navy personnel for target practice, rating, and firearms testing. There are a number of safety and health factors to consider in the design, operation, and maintenance of these ranges.

Shooting partitions – indoor small arms firing range.

Ammunitions contain explosives and other hazardous components, such as lead. Adequate volume and direction of air movement are necessary to avoid inhalation of health hazardous lead fumes and dust and carbon monoxide released during firing. In addition, metal fragments from spent bullets must be controlled to avoid ricochets in the direction of shooters. Acoustical controls must be installed to protect firing range employees and users from hearing loss due to hazardous noise levels created by discharging weapons.

Smoke test is conducted at indoor firing range to ensure adequate exhaust ventilation.

The Navy and Marine Corps Public Health Center (NMCPHC), has partnered with a NAVFACENGCOM Technical Center of Expertise to develop standards for small arms firing ranges as they are upgraded or repaired. The partners also conduct studies to identify suitable alternatives to hazardous components contained in small arms ammunition. As a result of the NMCPHC/NAVFAC partnership, industrial hygiene issues that concern small arms firing ranges have been addressed. The partners identified the need for

Plate and sandpit bullet stops are undesirable because they require high-level maintenance.

consistency in evaluating small arms firing ranges and for workable solutions to firing range problems. In addition, the team recognized the need to develop a technical manual that assists field Industrial Hygienists (IHs) to recognize pertinent firing range issues and provides a uniform approach for evaluating indoor firing ranges used for arms handling and marksmanship training.

NMCPHC and NAVFAC developed a manual to provide guidance to field industrial hygienists, safety professionals, and firing range operators. This manual, "*The Indoor Firing Ranges Industrial Hygiene Technical Guide*," TM 6290.99-10, contains:

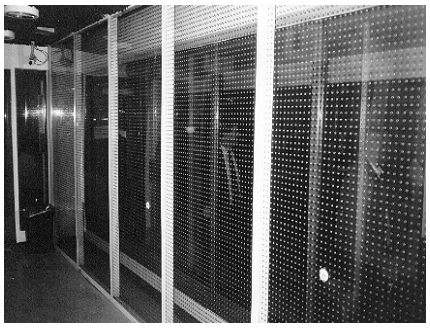
- A generic standard operating procedure for firing range use and cleanup;

- Range Classifications - The evaluating IH "classifies" the range based on evaluation definitions in the Navy Occupational Safety and Health Manual, OPNAVINST 5100.23 Series. Suggested classifications include "Unlimited," "Limited," and "Restricted."

HEPA filter vacuum used to clean firing range floors.

- Potential or anticipated safety and health hazards to be evaluated (byproducts of shooting, projectile impact dynamics, noise, etc.).
- Beneficial design factors to use as a benchmark for range evaluation.
- Ventilation designs that have been demonstrated to be effective in providing acceptable airflow in adequate volumes directed away from range employees and users.

The Indoor Firing Ranges Industrial Hygiene Technical Guide is available on the NMCPHC Industrial Hygiene Directorate's web site at http://www-nehc.med.navy.mil/downloads/IH/indoor_firing_range.pdf.



Perforated rear wall provides uniform air distribution.

NAVFAC also assisted NMCPHC in assessing the capability of candidate contractors to meet the Navy's requirements for indoor firing ranges. Qualifications were based on design and mechanical capabilities as well as ability to meet safety and health requirements. Assessments were made following interviews and site visits to the contractor's facilities and to firing ranges they had designed and/or built. Qualifying contractors, once selected, took on the full responsibility for delivering indoor firing ranges that meet the Navy's safety and occupational health requirements as well as Navy engineering standards.