

AIRCRAFT HANGAR VENTILATION SUCCESS STORY

The Naval Facilities Engineering Service Center (NFESC) worked with the Office of the Deputy Assistant Secretary of the Navy (Environment and Safety) and OSHA to obtain an interpretation on ventilation airflow rates in aircraft hangars. The interpretation is on the OSHA web page at http://www.osha-slc.gov/OshDoc/Interp_data/I19970408A.html. Subsequently, correspondence and discussions with OSHA clarified the type of maintenance work performed in the Navy's aircraft corrosion control hangars.

Federal regulations, 29 CFR 1910.94 and 1910.107, apply to most walk-in spray-painting operations. Both regulations require regular booths to provide 100 cubic feet per minute per square foot (cfm/sq ft) cross-flow ventilation. However, the size of the corrosion control/paint hangars makes providing 100 cfm/sq ft cross-flow ventilation very expensive to build and operate. Therefore, NFESC pursued this OSHA interpretation only for hangars. (NFESC recently submitted a similar interpretation for walk-in booths.)



SH-3C Sea King helicopter being prepared for corrosion inspection inside hangar

At a minimum, the designer must calculate the expected lower explosive limit (LEL) based on all the paints used, and demonstrate that the airborne concentrations will remain below 25% of the LEL, per 29 CFR 1910.107 and ANSI/AIHA Z9.3 1994 Standard for Spray Finishing Operations. However,

NFESC recommends that air supplied to and exhausted from the hangar be: distributed evenly in a cross-flow manner, based on production needs and provided at a velocity of no less than 50 cfm/sq.ft. While no specific examples of hangar ventilation are shown in *Industrial Ventilation, A Manual of Recommended Practice*, 23rd edition, published ACGIH drawings can be modified for hangar use. For instance, the manual shows the concept in the drawing titled, "Large Drive-Through Spray Paint Booth".



Aircraft spray painting operation inside hangar.

In addition to the engineering considerations, employees must also be fully trained in:

- The hazards to which they are exposed and in the emergency evacuation and fire protection plans required by 29 CFR 1910.38,
- Personal protective equipment as required in 29 CFR 1910, subpart I
- The health requirements listed in 29 CFR 1910 Subpart Z.

Using the interpretation for new hangar designs, NAVFAC estimates that the owner will achieve initial equipment cost savings of approximately \$250,000.00 per hangar and additional savings of \$250,000.00 in life cycle cost savings.

Activity: Navy Activities with aircraft hangars

Hazard Severity: 1

Hazard Probability: A

Number of people: 30-50 per activity

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