

RENOVATED PAINT SPRAY BOOTH IMPROVES WORKER HEALTH AND SAFETY AT PWC PHILADELPHIA

Public Works Center (PWC), Norfolk Detachment, Philadelphia, PA, uses a paint spray booth at the Philadelphia Naval Business Center for painting signs. Painters use solvent-based paints on exterior signs to preserve them from the weather. They also use the spray booth to paint radiator covers, and cabinets and may spend up to six hours a day spray painting. Spray painting can be a potentially hazardous job. A hazard associated with spray painting is exposure to airborne mists, vapors, and fumes from paints, thinners, and solvents. These can be inhaled, absorbed through the skin or ingested and can be harmful to the body. Fire is another risk of spray painting when flammable exterior paints or solvents are used.

PWC follows the Navy Occupational Safety and Health (NAVOSH) program requirements for protecting its workers from spray painting hazards.

Painters may be required to wear full body protective clothing and

use supplied air respirators for maximum respiratory protection when working with paints or solvents. The protective clothing prevents skin absorption of hazardous substances, and supplied breathing air prevents inhalation of fumes, mists, or vapors from paints and solvents.



Painters in paint spray booth wear protective clothing and respirators to avoid contact with airborne contaminants.

Using supplied breathing air and wearing full-body protection is tiring and increases the time a painter needs to complete a spray painting task. PWC Safety Manager, John Devany, Safety Specialist, Frank Musero, and National Naval Medical Center (NNMC) Industrial Hygienist, Gil Clouser, decided to look into upgrading the PWC Philadelphia spray paint booth's ventilation system to minimize the risk of overexposing painters to skin contact with, or inhalation of, paint or solvent mists, vapors, or fumes. They measured airflow and performed other safety and health surveys in the PWC paint spray booth to determine its efficiency. Devany, Musero, and Clouser determined that some modifications to the spray paint

booth's local exhaust ventilation system were needed before it would meet NAVOSH requirements allowing painters to spray paint without full



Enhanced ventilation system removes airborne hazards.

protective clothing and respiratory protection. The enhanced ventilation system would allow supply air to more efficiently enter the booth from behind the painter, flow around and past him, then over and past the item being painted, removing airborne paint and solvent mists, fumes, and vapors from the paint booth.

Another improvement made by PWC Philadelphia to upgrade the paint booth and the room in which it is contained, was installation of lighting

fixtures, electrical outlets, and ventilation system fans that conformed with electrical requirements. Existing lighting was replaced with brighter fluorescent lighting, and both the spray booth and room were repainted in a lighter color so that workers can now see much better when spray painting.

A pressure gauge that indicates airflow was installed outside the booth to make it easy for painters to determine when to replace the booth's air filters. As the filters become loaded with paint deposit, the air velocity will decrease. The airflow pressure gauge is marked by a PWC industrial hygienist at the level when the filters should be replaced. The painter is instructed that whenever the gauge reading falls below this mark, it is time to



Air pressure gauge tells painter when air filters need changing.

replace the booth's air filters.

Replacing clogged air filters keeps the paint booth's ventilation system working efficiently to remove paint and solvent mists, protecting the painter and others from overexposure to potentially hazardous substances and decreasing the risk of fire due to flammable vapors.

Painters are still required to use protective clothing and respiratory protection when



New fluorescent lights, electric outlets, and ventilation fans improve paint room and booth working conditions.

using paints or solvents that contain any amount of a highly toxic substance.

After all improvements had been made, Mr. Clouser again measured airflow in the spray paint booth. His measurements showed the velocity and direction of airflow inside the booth were well above acceptable levels. Concentrations of airborne mists, vapors, and fumes from paints and solvents were also well within acceptable ranges to protect worker safety and health. Mr. Clouser will continue to do periodic ventilation surveys.

Lew Richards, a PWC Philadelphia spray booth painter who has been spray painting for nearly 30 years, said, "Spray painting in the PWC booth is so much better now. I wish I had another 30 years to work here." Mr. Richards stated that with the new improvements to the spray paint booth, he now completes his spray painting work in half the time. He added that the quality of the paint jobs are better, because the improved ventilation prevents paint particles from adhering to the surfaces of objects being sprayed.



Airflow measurements indicate new spray paint booth exhaust system removes harmful paint

Thanks to the collaboration between the PWC Safety Department and the NNMC Industrial Hygiene Department, PWC Philadelphia now has a spray painting operation that is safer, more comfortable for painters, and at the same time improves quality and productivity.

Point of Contact: Martin Dubin, National Naval Medical Center (NNMC), Industrial Hygiene Supervisor
Telephone: (215) 897-6115
Email: mjdubin@bethesda.med.navy.mil