



***A NESHAP COMPLIANT PAINT  
GUN CLEANING  
EQUIPMENT TRANSITIONED TO  
WR-ALC UNDER  
THE TRIAD PROJECT***



In concert with the C-130 Directorate (WR-ALC/LB), the pollution prevention Branch at Robins AFB (WR-LC/EMPP) has prototyped, and is using a paint gun cleaning system that complies with the Aerospace National Emissions standard for Hazardous Air Pollutant (NESHAP). Based on the successful demonstration/validation of this technology, WR-ALC is installing an additional five units to support daily operations for F-15, C-5, C-141, and JSTARS aircraft and the Technology and Industrial Support Directorate. Other installations and facilities can potentially benefit from this technology.

The transition of this technology from initial assessment to final implantation and use was completed in approximately 18 months. According to Dave Bury, WR-ALC/EMPP, the Toxic Release inventory Alternative Development (TRIAD) process provided the framework and resources to ensure that customer needs were identified and addressed in a cost-effective, timely manner. The TRIAD Project, developed by WR-ALC/EMPP. Identifies and evaluates industrial process areas that (1) are regulated under NESHAP; and/or (2) use Toxic Release Inventory (TRI) listed chemicals: and/or (3) use ozone-depleting substances.

The key factors contributing to the successful implementation of this technology are summarized below.

### **Background**

Historically, WR-ALC paint facility personnel have used methyl ketone (MEK), toluene and polyurethane thinner MIL-T-81772, as solvents for spray gun cleaning. These solvents and their constituents are classified as hazardous air pollutants (HAPs) and are listed on the TRI. Requirements under NESHAP for aerospace manufacturing and rework facilities regulate cleaning operations.

Under TRIAD, WR-ALC/EMPP initially completed the Spray Gun Cleaning Process and Evaluations (PAE) Report (see Figure 11). The report recommended implementing integrated gun washer/solvent reclaimer systems. This type of system is most effective when large volumes of solvents are used for gun washing. Based on available technology, the PAE Report recommended the Becca USA Spray Gun Washer/Solvent Reclaimer System for WR-ALC.

The Becca USA units are NESHAP- compliant, reduce solvent use and have design preferences identified by WR-ALC weapon system directorate personnel (see Figure 12). The system provides a paint gun cleaning work area with reduced solvent exposure eliminates handling of solvent and reduces the overall volume of solvent used via recycling. The unit also provides flexibility by allowing workers to simultaneously wash two guns automatically, manually disassemble and clean guns and recycle solvent.

### **Technology Demonstration/Validation**

According to Dave Bury, the successful demonstration/validation of the Becca USA Spray Gun Washer/Recycler System resulted from the synergies between the TRIAD Process, the MEEP program and the equipment manufacturer.

- The base line section of the report describes the current aircraft directorates paint shop practices, provides information on the spray gun cleaning equipment and discusses solvents currently used by the WR-ALC aircraft directorates. The baseline section also includes chemical regulatory, fire, safety, and exposure and current chemical cost data.
- The process requirements section of the report discusses the Aerospace NESHAP regulations as they pertain to spray gun cleaning. This section details the specific regulations and the alternative techniques that can be used to meet compliance requirements. A listing of the WR-ALC Corrosion Control Facility personnel's general performance requirements and preferred features is also provided
- The alternative process evaluation section discusses the methods and equipment identified as compliant with the Aerospace NESHAP regulation and the WE-ALC requirements. These types of equipment are presented in this section: 1) Integrated gun washer/solvent reclaimer systems, 2) gun washer units, and 3) solvent reclaimers. Vendor models, cost and specific product features and specification are also provides the basis for recommendations and conclusions for the selection of compliant spray gun cleaning equipment
- The final section of the report provides recommendations for spray gun cleaning systems according to the type of paint facility and work volume. The units recommended would most effectively fit the directorate's needs, meet Aerospace NESHAP compliance regulations and most closely match features preferred by facility personnel.

***Figure 11. Contents of the TRIAD PAE Report***

The TRIAD Process was critical in ensuring early buy-in from all potential stakeholders. As part of the PAE Report, WR-ALC paint shop personnel were interviewed regarding preferred equipment design features and general performance requirements. These specifications (see Figure 12) were a critical factor in the selection of the

Becca USA unit. The MEEP program gave WR-ALC the flexibility to acquire, but not purchase, the desired equipment prior to full-scale demonstration/validation. Becca USA worked closely with WR-ALC personnel and modified equipment as needed, in a timely manner to satisfy all functional and regulatory concerns identified during equipment demonstration.

In July 1999, representative of Becca USA completed the final installation of the unit and provided the necessary training for operating the system to facility supervisors and designated painters. During training, paint guns and cups used to spray epoxy primer MIL-P-23377, polyurethane topcoat MIL-C-85258, and PR-1432 coatings were successfully cleaned in the Becca washer using the MIL-T-81722 thinner.

For further information regarding this success story on the TRIAD Process, please contact Mr. Dave Bury at DSN 468-1197 ext. 140. Development information can be found on the WR-ALC/EM web page, <http://www.em.robins.af.mil>. Refer to the site map for the path to TRIAD. You will need Adobe Acrobat Reader software, which can be downloaded for free.

- Ease of operation
- Ability to simultaneously clean siphon fed/pressure fed HVLP spray guns
- Ability to manually clean paint guns and cups – provide workspace for gun disassembly
- Automatic paint gun washing
- Capability for solvent recovery
- Low maintenance requirement
- Vacuum venting of emissions

***Figure 12. Preferred Features Requested by Paint Shop Personnel***