DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 72 MEDICAL GROUP (AFMC)
TINKER AIR FORCE BASE OKLAHOMA

MEMORANDUM FOR: OC-ALC/LAPC
/LAPCE
/LAPCEA

6 Mar 00

FROM: 72 AMDS/SGPB
8941 Entrance Road A, Suite 266
Tinker AFB, OK 73145-3339

SUBJECT: Air Sampling Results (CF 201A)

1. On 7 and 8 Feb 00, personnel from the Bioenvironmental Engineering Flight conducted personal breathing zone air sampling during a 600K corrosion rework operation on the E-3 aircraft (#1605) located in the center dock of bldg 2136. This sampling was conducted to evaluate the effectiveness of the DCM brand shrouded vacuum grinder for controlling airborne strontium chromate and lead dusts generated from sanding on primed surfaces.

2. During the sampling period each employee used a 2" right angle grinder (equipped with a medium grit surface-conditioning disk) that was attached to a vacuum equipped with a high efficiency (HEPA) filter. Employees sanded on overhead and vertical surfaces between stringer locations 580-1020 on the aircraft. During the sanding operations, employees wore full body tyvek coveralls with hood and booties, cotton gloves, ear plugs and a 3M fullface air-purifying respirator equipped with high efficiency P100 (HEPA) filters. Plastic sheeting was used to enclose the operation.

3. The day shift air sampling began at approximately 0800. Four employees conducted sanding operations for approximately 260 minutes (representative of an 8 hour shift). Five employees conducted sanding operations on the swing shift for a maximum of 425 minutes (representative of a 12 hour shift). Area air samples were located within the enclosure to determine ambient air conditions.

4. The Institute for Environmental Safety and Occupational Health Risk Analysis (IERA), Brooks AFB, TX, analyzed the air samples. Results reported in milligrams per cubic meter (mg/m^3) are provided in the attachment.

5. Findings: The air sample results document that the vacuum sander reduced the employees' exposure to airborne levels of strontium chromate and lead well below the occupational exposure limit (OEL) and action level (1/2 the OEL). All of the area samples were none detected for strontium chromate and lead. It was also noted that the vacuum system captured the dust at the source and prevented it from migrating onto the employee's clothing and surrounding work surfaces. Note: Due to the physical design of the grinder shroud, the primed surfaces next to the stringers were not accessible with the vacuum sander. The DCM Company is working to design or adapt a shroud that can be used in these areas.

6. Conclusions:

a. Personnel shall use the DCM brand shroud and vacuum with the 2 " right angle grinder to remove primer from all accessible areas during the 600K corrosion rework operation. **While using this equipment**

- personnel are no longer required to wear respiratory protection, coveralls, head and foot coverings, or gloves.
- Enclosure of the operation with plastic sheeting and the roping off of a 10-foot perimeter is no longer required.
- Other skills are allowed to work in the area.
- Personnel shall use the vacuum to remove any fugitive sanding dust from clothing, equipment, and work surfaces prior to leaving the work area.
- **NOTE:** If at any time an employee **is not** using the vacuum sander to remove primer (inaccessible areas next to stringers,etc.), then previous controls and personal protective equipment (PPE) outlined in our letter dated 23 Aug 99 shall be implemented for all personnel.

b. To ensure that the HEPA vacuum is maintaining the same efficiency as it was during the air-sampling period, employees shall use a vacuum gauge to check the vacuum at the beginning of each shift. The vacuum shall pull at least 80 inches of water lift. If the vacuum can not maintain this water lift, then the vacuum bag shall be changed following the procedures outlined during the on site employee training session with the DCM representative. Mr. George Baxter (LAPEP) will make arrangements for the DCM representative to conduct additional on site training on the use and maintenance of the vacuum system.

7. Supervisors shall inform employees of the results of this survey. For further information, please contact me at 734-7844.

TERESA WHEELER
Industrial Hygienist

Attachment
Air sample results

cc: 72 AMDS/SGPM
72 AMDS/SGPO
OC-ALC/LAQ (David Hutchison)
OC-ALC/LAPEP (George Baxter)
OC-ALC/LAPCEA (C. Ledford, M. Smith, C. Satterfield, R. Jones, M. Mital, E. Johnson, P. Duller, R. Rippetoe, and M. Rouse)