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**Author** Conway, William W.

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**AIRCRAFT SAMPLING**

**WESTOVER AFB MA**

**SEPTEMBER 1979**

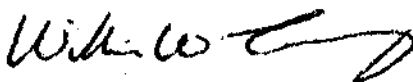
**USAF Occupational and Environmental Health Laboratory**  
**Aerospace Medical Division (AFSC)**  
**Brooks Air Force Base, Texas 78235**

AIRCRAFT SAMPLING

WESTOVER AFB MA

SEPTEMBER 1979

Prepared by:



WILLIAM W. CONWAY, SSgt, USAF  
Air Quality Technician

Reviewed by:




JOHN J. GOKELMAN, LtCol, USAF, BSC  
Chief, Air Quality Branch



JOHN P. MEADE, Colonel, USAF, BSC  
Chief, Consultant Services Division

Approved by:



WILLIAM E. MABSON, Colonel, USAF, BSC  
Commander

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## ABSTRACT

This report presents the results of sampling conducted inside a C-123-K aircraft to determine possible health hazards from Herbicide Orange and Malathion contamination. Sample results show contamination levels to be below amounts considered to be possible health hazards.

## Survey Team Personnel

Captain William E. Normington

USAF OEHL

SSgt William W. Conway

USAF OEHL



## SECTION I

### Introduction and Purpose

At the request of the 439th TAC Hospital/SGPM, air samples were taken inside C-123-K aircraft, S/N 564362 ("Patches"), on 9 March 1979. The purpose was to determine the source of chemical odor experienced by the crew while flying the aircraft.

## SECTION II

### Aircraft Historical Information

Information concerning the aircraft's usage prior to 1967 is based primarily on hearsay. The aircraft maintenance log has a gap from November 1965 to January 1967 during which time the aircraft logged in excess of 1100 hours. During this period, the aircraft may have sprayed Herbicide Orange while attached to the 12th Special Operations Squadron (SOS). Beginning in March 1967, the aircraft sprayed the insecticide Malathion in Southeast Asia. In November 1972, the aircraft was transferred to the 901st Tactical Air Group (TAG), L.G. Hanscomb Field MA, and moved with the unit to its present location at Westover AFB MA.

In April 1975, while at Hayes International, Dothan AL, for a depot level wing modification, a "black, viscous, odorous residue" was found in the wing. A sample was sent to the USAF Environmental Health Laboratory (EHL-K), Kelly AFB TX, for analysis. The sample contained a high concentration of the insecticide Malathion but no Herbicide Orange (H.O.).

## SECTION III

### Sampling Methods and Procedures

Based on the findings of the residue analysis, as well as the suspected Herbicide Orange spraying, the air inside the aircraft was sampled for both Herbicide Orange and Malathion. Air samples were taken at three (3) positions inside the aircraft, using MSA Model "S" personnel samplers and chromosorb (C-102) tubes. These samples were drawn over a five-hour period at a rate of 740 cc/min. Flow and temperature readings were taken every 15 minutes and barometric pressure readings every hour. The readings were used to determine sample volume at Standard Temperature and Pressure (25°C and 29.92 inches of Hg).

Personnel of the 901st Consolidated Aircraft Maintenance Squadron (CAMS), Westover AFB, also furnished two samples of a brown material which was removed from two cargo tiedown rings (D-10). The locations are shown on Figure 1.

## SECTION IV

### Conclusions and Recommendations

Table 1 shows the results of the airborne sampling. Levels of Herbicide Orange range from 0.243 mg/m<sup>3</sup> to 0.428 mg/m<sup>3</sup> (combined 2,4-D/2,4,5-T). The TLV for both compounds is 10 mg/m<sup>3</sup>. Levels of Malathion were somewhat higher, ranging from 1.7 mg/m<sup>3</sup> to 3.0 mg/m<sup>2</sup>. The TLV for Malathion is 10 mg/m<sup>3</sup>. The levels indicate no health hazard from either Herbicide Orange or Malathion.

One of the residue samples contained small amounts of 2,4-D/2,4,5-T and Malathion. The analyzed amount of 2,4-D was <60 µg/Kg, and 2,4,5-T was <60 µg/Kg. The analyzed amount of Malathion was ≈145 mg/Kg of the sample. Only one sample was analyzed because one was lost in handling (data are shown in Table 2).

If the problems persist, additional sampling should be conducted under actual inflight conditions to determine what effect changes in altitude and temperature have upon the levels of contaminant concentrations and to better define the source. It may ultimately be necessary to completely deodorize the aircraft. This would require depot level maintenance to remove the contaminant from the aircraft wing box and involve removal of the aircraft skin to gain access to the contaminated area.

Table 1

Analysis of Interior Air Samples  
C-123 Aircraft No 564362  
9 March 1979

Sample ID	Time	Time	Total Time in min	Total Volume m <sup>3</sup>	Ave Temp °F	Ave Press In Hg	STP Volume m <sup>3</sup>	2,4-D mg/m <sup>3</sup>	2,4,5-T mg/m <sup>3</sup>	Malathion mg/m <sup>3</sup>
09-1	0940	1440	300	0.222	61.0	29.81	0.224	0.108	0.135	1.701
09-2	0955	1455	300	0.209	61.6	29.81	0.211	N.D	N.D	N.D
09-3	0940	1440	300	0.222	61.0	29.81	0.224	0.234	0.194	3.051
09-4 (Blank)	--	--	--	--	61.0	29.81	--	N.D	N.D	N.D

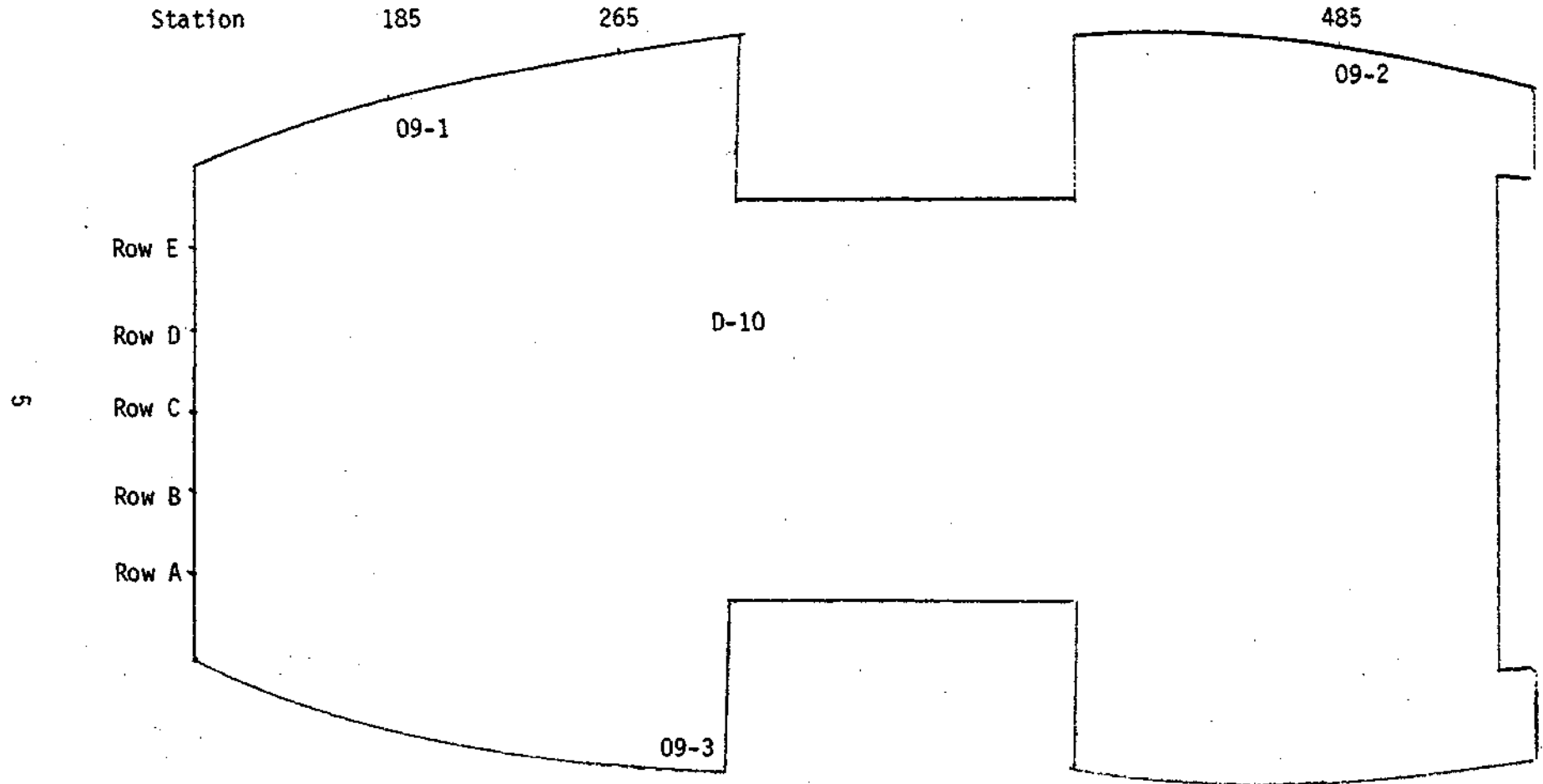
Table 2

Analysis of Scraping Samples  
 C-123 Aircraft No 564362  
 9 March 1979

Sample ID	2,4-D Butyl Ester μg/Kg*	2,4-D Isooctyl Ester μg/Kg	2,4,5-T Butyl Ester μg/Kg	2,4,5-T Isooctyl Ester μg/Kg*	Malathion μg/Kg
D-10	<60	~92	~149	<60	~145

\*Detection Limit 60 μg/Kg.

FIGURE 1  
SAMPLING LOCATIONS



NOTE: All samples were taken 3 ft above floor level.

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