

WASHINGTON WORKS
C-8 INDUSTRIAL HYGIENE

- WORK RULES, PROTECTIVE CLOTHING,
RESPIRATORY PROTECTION, ETC.
- LIQUID C-8
- AIR MONITORING
- BLOOD MONITORING

RJZ007180

EID136957

**WASHINGTON WORKS
AIR SAMPLING RESULTS**

PERSONAL SAMPLES

	<u>1993</u>	<u>1994</u>	<u>1995</u>
0% - <10% AEL	34	40	18
10% - <50% AEL	8	14	14
50% - <100% AEL	0	3	1
100% AEL	1	0	0
TOTAL	43	57	32

AREA SAMPLES

<u>1993</u>	<u>1994</u>	<u>1995</u>
50	43	25

- PERS (DOHMS) system used to determine where personal samples are needed.
- S12T used to determine sampling frequencies, usually 90, 180, or 360 days.
- Area samples have support role, identifying locations where C-8 levels are high.

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BLOOD MONITORING

THIS IS THE ONLY MEASURE WE HAVE OF TOTAL EMPLOYEE EXPOSURE

PROBLEMS

- **BIOPERSISTENCE MAKES DATA INTERPRETATION DIFFICULT**
- **SAMPLING IS INVASIVE**
- **LENGTHY ANALYSIS IS RUN BY ONLY ONE LAB**
- **NO AEL**

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C-8 IN BLOOD - HISTORICAL

- 1978 Informed by 3M that C-8 is found in the blood of exposed workers and persists for a long time.
- 1979 C-8 found in blood of DuPont workers.
- 1980 Workers with blood C-8 found to have normal liver function.
- 1981 Birth defects scare - additional sampling.
- 1982 Blood program continues on voluntary basis - no trends noted.
- 1990 Formal review of blood data.
- 1993 Journal Of Occupational Medicine study of 3M workers.
- 1995 First 5-year "snapshot".

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1990 C-8 INDUSTRIAL HYGIENE DATA REVIEW**(HA Smith, JG Loschiavo, RD Lanyon, WE Crawley)****CONCLUSIONS (Recognizing the data limitations).**

There is a correlation between blood and air C-8 levels that is confused by dermal exposure.

Exposure at the AEL of 0.56 mpb would result in a blood level of about 3 ppm.

Background blood level for the Teflon* area is between 0.1 and 0.5 ppm.

-----Dermal exposure is the cause for higher blood levels.

Half life for C-8 in blood is about 4 to 5 years. - *maybe Conc. Dependent*

Annual blood testing is not useful and should be replaced by "snapshots" at longer intervals.

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1995 C-8 IN BLOOD "SNAPSHOT"**PURPOSES**

Monitor the overall effectiveness of our C-8 industrial hygiene programs.

Create and maintain a continuous data base for epidemiologic surveillance of our exposed population.

Provide closure for issues raised by the 1990 data review.

Honor employee requests for voluntary testing.

TEST POPULATIONS

Employees in C-8 jobs (82 of 140)

Employees not in C-8 jobs with a previous result >3 ppm (9 of 12)

Pensioners with a high previous result (9 of 19)

Volunteers (18)

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RESULTS SUMMARY - OPERATORS

<u>JOB</u>	<u>DESCRIPTION</u>	<u>1995 AVERAGE (n)</u>	<u>1989 AVERAGE (n)</u>
08PE	autoclave	2.3 (7)	3.0 (4), 7.0 (3)
08PF	polykettle	2.6 (6)	2.5 (3), 8.5 (1)
08PH	dispersion	0.5 (2)	1.0 (2), 7.5 (1)
08PI	FP finishing	2.0 (6)	2.0 (6)
08PJ	FP packout	0.7 (7)	
08PH	C-8 dryer recovery	1.7 (2)	
18PA	FEP polykettle	2.3 (4)	
18PB	FEP extruder/oven	1.5 (6)	0.5 (3)
18PC	FEP wet finishing	3.0 (1)	
18PD	FEP packout	0.1 (4)	
18PJ	PFA/FEP bead	0.7 (2)	
18PK	FEP safety/disp	2.1 (2)	

RESULTS SUMMARY - MECHANICS

58MC	FP/disp/gran/TA	1.4 (1)
58MD	general shift	1.1 (8)
58MG	process E&I	0.8 (7)
68MA	general shift	1.1 (5)
68MB	FEP E&I	0.9 (7)

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OTHER OBSERVATIONS

1. VOLUNTEERS

- a) One of 17 is above 1 PPM
- b) Average of other 16 is 0.4 PPM

2. ACTIVE EMPLOYEES WITH PREVIOUS HIGH RESULTS

	<u>Down</u>	<u>Same</u>	<u>Up</u>
in C-8 job	2	3	4
not in C-8 job	6	2	1

3. THREE EMPLOYEES OVER 3 PPM FOR THE FIRST TIME

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PATH FORWARD

Finish Data Analysis

Employee Communication

Site Industrial Hygiene Efforts

Toxicology Work (Do we need a BEI?)

Continue Annual Voluntary Testing

Take Another Snapshot In 2000

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