AR 226 _ 3459

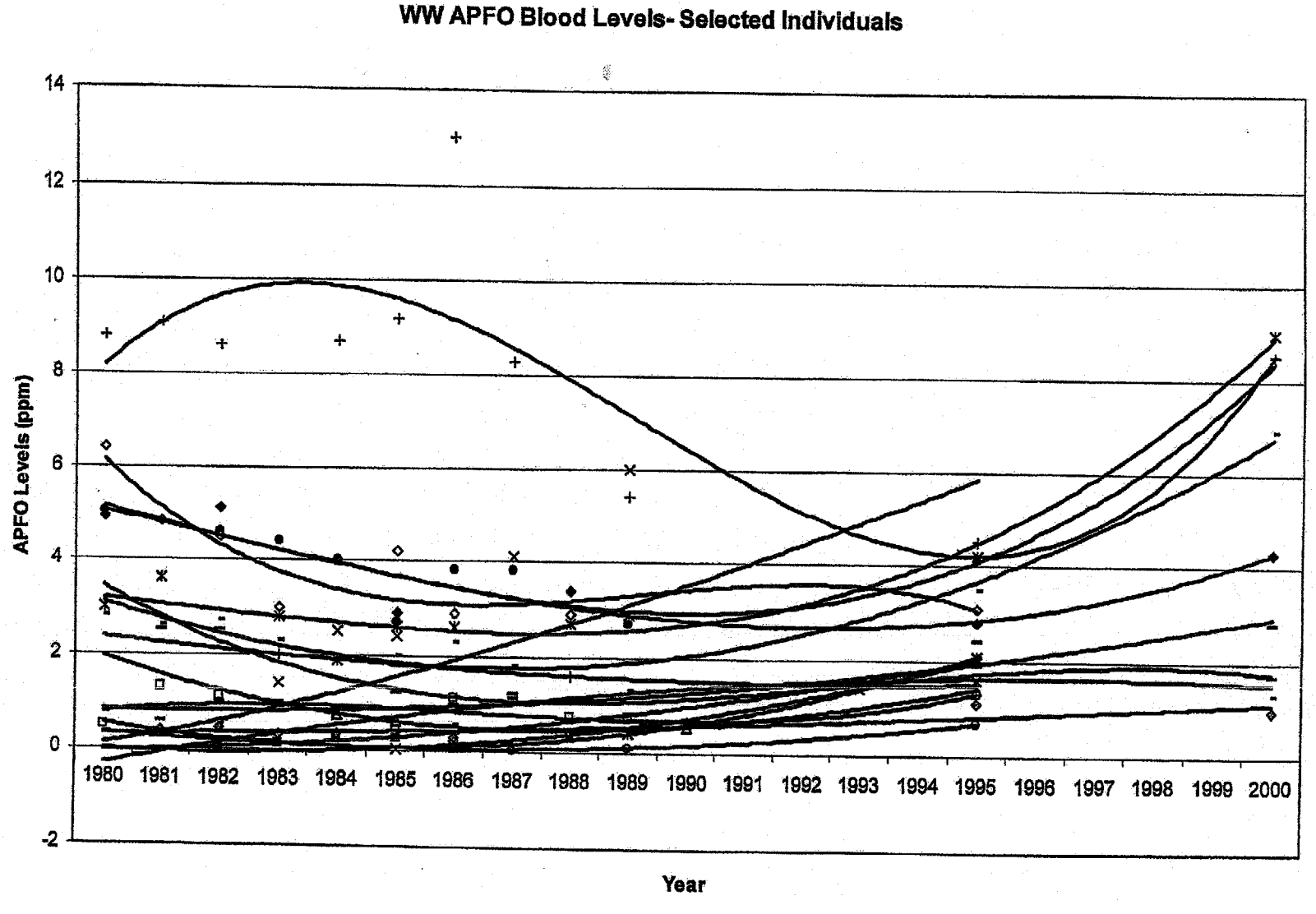
Washington Works Blood Data Summary

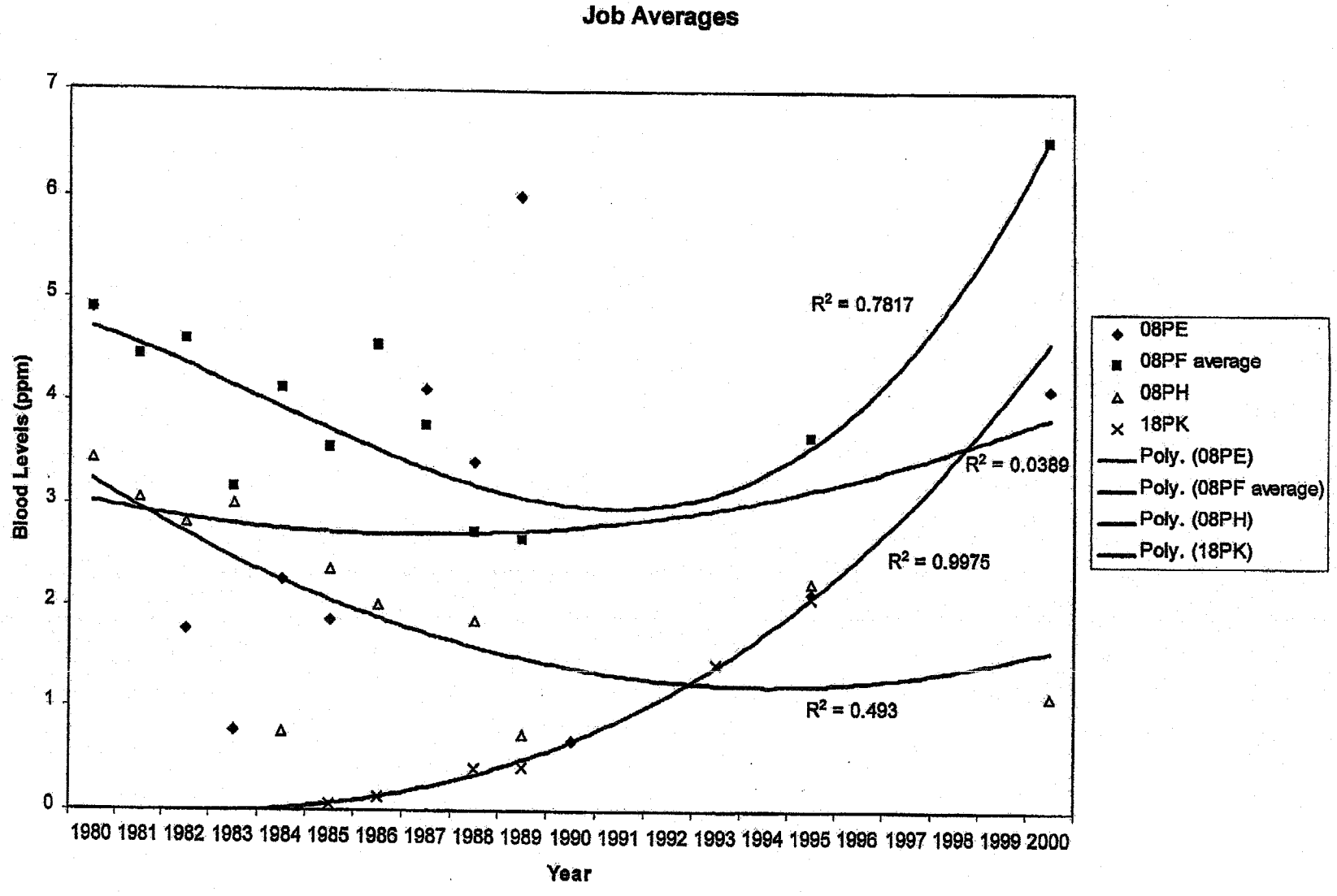
R.F.Pinchot

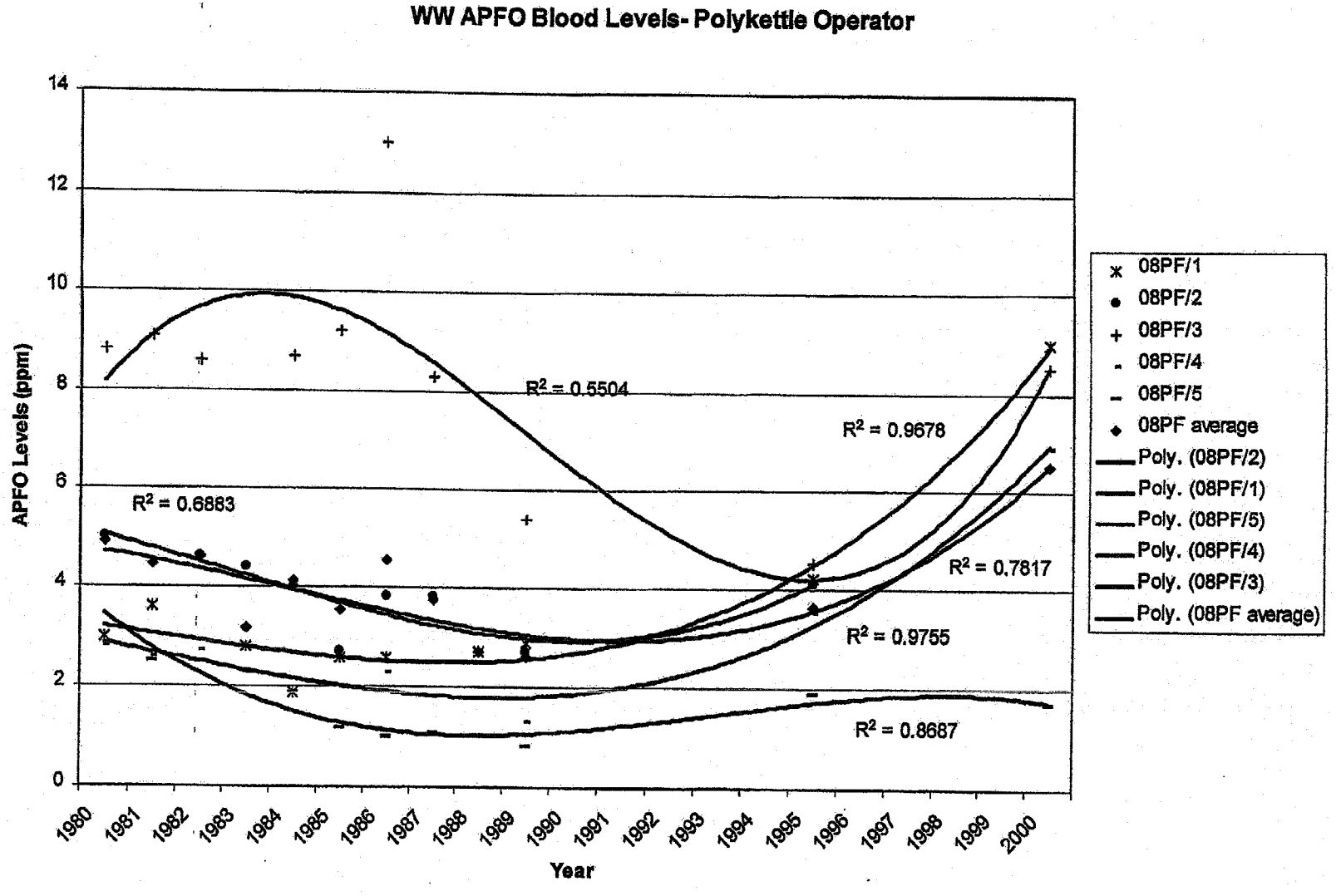
11/17/00

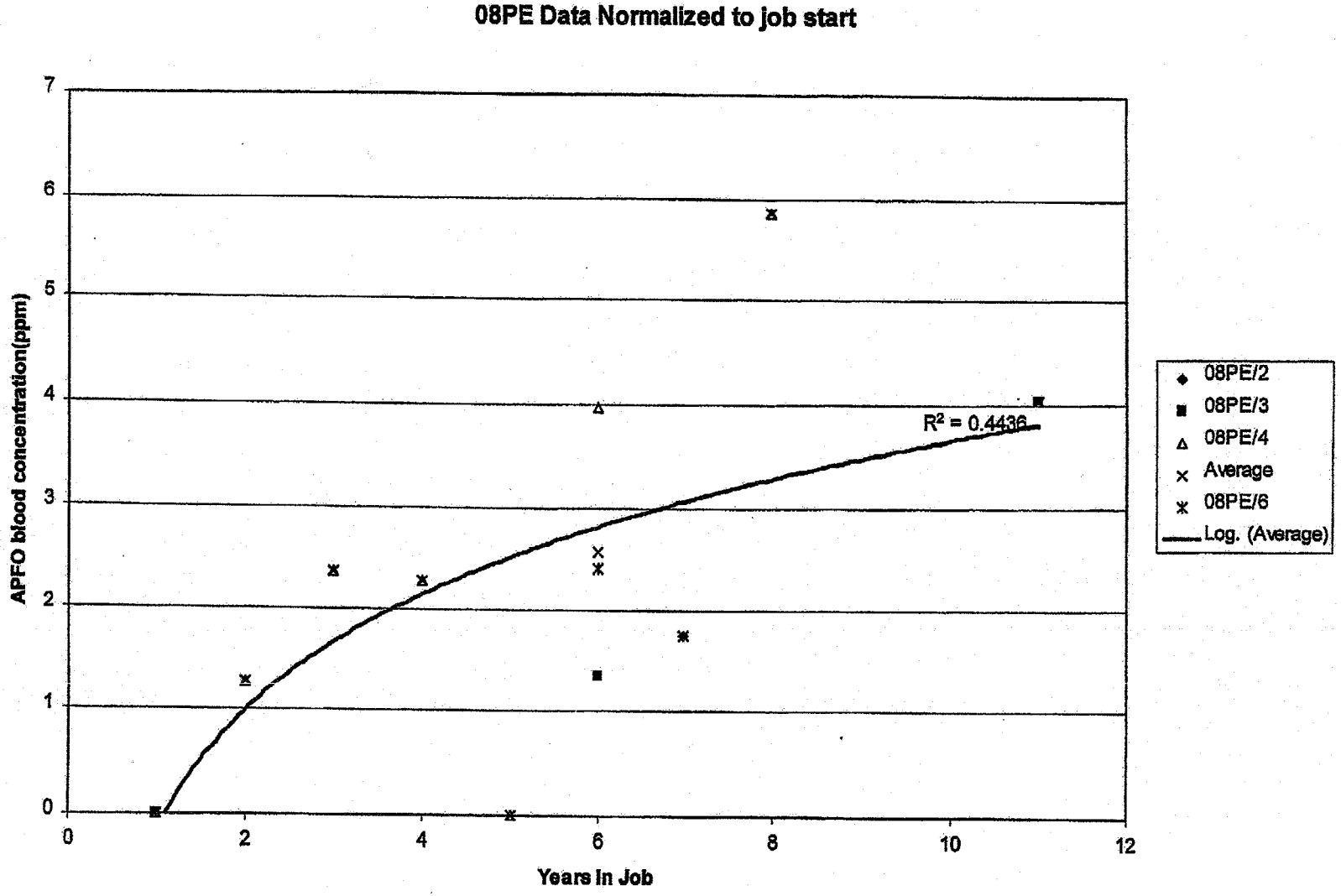
Comparison of 1989 to 2000 by Job Classification (ppm)

JOB	DESCRIPTION	2000 Average (n)	1995 AVERAGE (n)	1989 AVERAGE (n)
08/18A1	Office/Admin	0.48 (8)		
08AA	FP/D FLS	1.88 (3)		
08PC	Monoomer Operator	0.76 (4)		
08PE	autoclave	**4.1 (4)**	2.5 (6)	4.7 (7)
08PF	polykettle	**6.5 (5)**	2.9 (7)	4.0 (4)
08PH	dispersion	1.1 (2)	2.2 (2)	3.2 (3)
08PI	FP finishing	**3.8 (3)**	2.2 (5)	2.0 (6)
08PJ	FP packout		0.6 (5)	
08PM	C-8 dryer recovery	1.3 (2)	1.7 (2)	
18PA	FEP polykettle	1.6 (4)	2.3 (4)	
18PB	FEP extruder/oven	1.1 (5)	1.6 (5)	0.5 (3)
18PC	FEP wet finishing		3.3 (2)	
18PD	FEP packout		0.1 (3)	
18PF	Tefzel/PFA/3P	0.4 (3)		
18PJ	PFA/FEP bead	1.5 (2)	0.7 (2)	
18PK	FEP safety/disp		2.1 (2)	
RESULTS SUMMARY - MECHANICS				
58MC	FP/disp/gran/TA	1.3 (4)	1.4 (1)	
58MD	general shift		1.1 (8)	
58MG	process ElI		0.8 (7)	
68MA	general shift	0.3 (1)	1.1 (5)	
68MB	FEP E&I		0.9 (7)	


WW APFO Blood Levels- Selected Individuals
APFO Levels (ppm)
14
12
10
8
6
4
2
0
-2
1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000
Year


Job Averages
Blood Levels (ppm)
Year
0
1
2
3
4
5
6
7
1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000
R² = 0.7817
R² = 0.0389
R² = 0.9975
R² = 0.493
08PE
08PF average
08PH
18PK
Poly. (08PE)
Poly. (08PF average)
Poly. (08PH)
Poly. (18PK)


WW APFO Blood Levels- Polykettle Operator
APFO Levels (ppm)
Year
0
2
4
6
8
10
12
14
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
R² = 0.5504
R² = 0.9678
R² = 0.6883
R² = 0.7817
R² = 0.9755
R² = 0.8687
08PF/1
08PF/2
08PF/3
08PF/4
08PF/5
08PF average
Poly. (08PF/2)
Poly. (08PF/1)
Poly. (08PF/5)
Poly. (08PF/4)
Poly. (08PF/3)
Poly. (08PF average)


08PE Data Normalized to job start
APFO blood concentration(ppm)
Years In Job
0
1
2
3
4
5
6
7
0
2
4
6
8
10
12
R² = 0.4436
08PE/2
08PE/3
08PE/4
Average
08PE/6
Log. (Average)

Disclaimer on Observations

"It is very important to recognize the serious limitations on the usefulness of this(sic) data. These include the small size of most of the data sets, the frequent transfer of site employees from one job to another, and the slow rate at which C- 8 blood levels decrease after exposure stops."

In the analysis completed, statistical rigor was not used in all cases due to the small size of the data set.

Observations

- *"Different employees with long tenure in the same job sometimes show marked differences in their blood level... This can be due to either different work habits or differences in individual metabolism."* ***Not so sure that this is the case based on 2000 data.***
- **"Comparison of average job blood levels from the 1995 and 1989 studies is badly confused by the fact that much of the data is not from the same people.** Levels in 1995 seem somewhat lower on the average than in 1989, and this is probably due to reduced skin contact following the use of C- 8 liquid solutions instead of the dry powder."
- The individual data points tend to be trending down from 1980-1990. From 1990-1995, no conclusions can be drawn from the data to determine if the concentrations are going up or staying flat. **In 2000, the general average has dropped (1.16ppm from 1.57ppm) but three job classifications have shown a significant increase.**
- For most individuals and jobs, blood concentrations seem to be stabilizing at 2-4 ppm.
- **Job 08PE, autoclave operator data allows an analysis to be completed normalized for low levels when they started in the job. Though confounded by the different time frames (spanning the time when dry and solution APFO were used), the data seem to point to suggest a steady increase in concentrations up to about 4 ppm.**

Note: items in quotes are taken from AJ Playtis summary, May 7, 1996.

Bold items are observations that are from the 2000 sampling round.

Italics item is an observation from 1995 that may not be valid based on 2000 data.