

1498

AR 226-3427

31

000255

C-8 IN BLOOD MONITORING RESULTS IN FLPR DORDRECHT

In past month of May blood samples were taken of 38 employees in the [REDACTED] Homo Polymers, FEP [REDACTED] Monomers A-shift areas and some employees in the service areas. This as a part of a c-8 in blood monitoring program in co-operation with DuPont FLPR Parkersburg and Dyneon in Gendorf Germany. Dyneon is our partner in purifying the recovered c-8 and owner of the technology. Previous c-8 in blood monitoring programs were conducted in 1997, 1981, 1982 en 1984.

Introduction

- C-8 is dispergator, required for the manufacturing of [REDACTED]
- C-8 is a toxic substantive that can be inhaled and absorbed via skin contact. The c-8 will be stored in the liver.
- C-8 is a toxic that should be discussed and registered in a yearly program with all employees.
- In the list of the Haskell lab, rev. July 1999, c-8 probably is no human carcinogen and developmental toxic
- The exposure limit is 0,56 ppb.
- C-8 in the human body can be measured only by analyzing the blood.
- Up till now it was not possible to define a maximum exposure limit for c-8 in blood.

The c-8 in blood samples were analyzed in two laboratories. All 38 samples were analyzed in the NMS lab in de U.S. while 19 each of them were also analyzed in the Schiwara lab in Germany as cross checks.

The analyze results of the two labs were corresponding pretty much. This makes that we have confidence in the results.

Characteristics of the analyze results

- [REDACTED] Monomers employees have lower c-8 levels.
- [REDACTED] Homopolymers employees have higher c-8 levels.
- [REDACTED] FEP and [REDACTED] employees have c-8 levels intermediate of both previous areas.
- Compared with the 1997 c-8 in blood analyzing program, there was a relatively slight difference in the c-8 levels of employees that co-operated in both the 1997 and the 2000 program.
- In week 29 the Managers Operations had a personnel contact with the six employees with the highest c-8 in blood levels to discuss possible sources of exposure and use of PPE. These contacts helped to determine some unknown exposure sources.

On July 13 a team of experts, Site physician, Site hygienist, FLPR c-8 coordinator, FLPR S&OH coordinator and Managers Operations, evaluated the results of the analyzes. Appointments were made to present the results to the employees involved and to inform all other FLPR and DuPont Dow Elastomers J.V. employees by means of an E-mail message.

Conclusions

- ❑ There are considerable differences in c-8 levels between employees performing the same jobs. An explanation for this phenomenon might be that the one person will pick up more c-8 and demolishes it slower than another person.
- ❑ Give more attention to prevent skin exposure to c-8 and the use of proper PPE.
- ❑ Comparison of the DDT c-8 analyzes with that of PKB will be done later as the PKB results are not completed yet.

Path forward

- ❑ New samples to be taken from employees with high analyze results after $\pm$ two years from now.
- ❑ Further reduction of risk sources.
- ❑ Make up an inventory of the c-8 handling practices in use of PPE.
- ❑ Promotion of awareness to prevent exposure for all employees.
- ❑ Give special attention for prevention of exposure via the skin.

Sources for exposure

- ❑ High Pressure cleaning of Dispersion Poly kettles.
- ❑ All c-8 solved in water.
- ❑ All c-8 spills.
- ❑ PTFE Dispersions and non-dried Fine Powders.
- ❑ Coagulum and waste from the Wax trap.
- ❑ Supernate in [REDACTED] Homo Polymers and Thermal Converter areas.
- ❑ Fine Powder Dryers, especially during clean-outs.
- ❑ Granular production line.
- ❑ [REDACTED] FEP Wet Finishing system.
- ❑ Exhaust gasses and container changes in both c-8 recovery areas.
- ❑ Maintenance in c-8 containing equipment.

Actions taken to prevent exposure

- ❑ C-8 solved in water instead of c-8 powder in all areas.
- ❑ C-8 is injected automatically instead of weighing and handling of c-8 powder.
- ❑ Air exhausts on wax separators.
- ❑ Improve practices for cleaning of Fine Powder Dryers.
- ❑ Make up an inventory of emission sources and adequate actions.
- ❑ Proper procedures for use of PPE.
- ❑ Improvement of c-8 recovery systems.
- ❑ Communication with all employees.

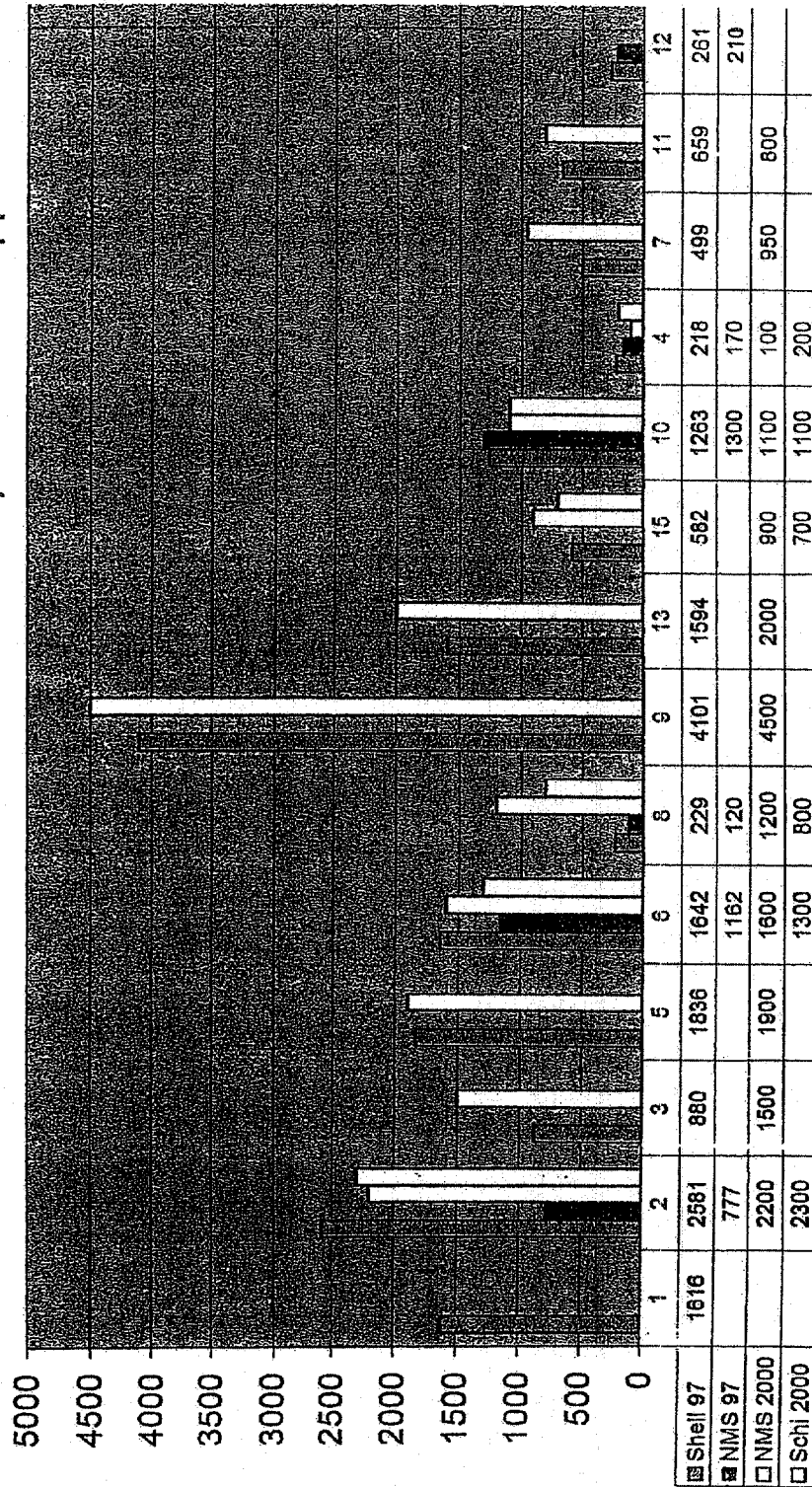
Everybody's responsibility

The exposure prevention by the proper use of proper PPE, reporting of risks for exposure and cooperation to accomplish improvements. This also being an Arbolaw responsibility for all employees.

Company Sanitized. Does not contain TSCA CBI

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FLPR DDT c-8 in blood 1997 vs 2000 sample results in ppb



Nrs 1 t/m 15 zijn van 1997 prog.

Control #	Sample ID	Rec'd Date	Test Name	Result (ppb)	Specimen	Acct. #
551474	1011.1	6/9/00	PERFLUOROOCTANOIC ACID	Failed re-analysis	Blood	95240
551475	1011.2	6/9/00	PERFLUOROOCTANOIC ACID	Failed re-analysis	Blood	95240
551476	1011.3	6/9/00	PERFLUOROOCTANOIC ACID	Failed re-analysis	Blood	95240
551477	1013.1	6/9/00	PERFLUOROOCTANOIC ACID	Failed re-analysis	Blood	95240
551478	1013.2	6/9/00	PERFLUOROOCTANOIC ACID	Failed re-analysis	Blood	95240
551479	1013.3	6/9/00	PERFLUOROOCTANOIC ACID	Failed re-analysis	Blood	95240
551480	1014.1	6/9/00	PERFLUOROOCTANOIC ACID	Failed re-analysis	Blood	95240
551481	1014.2	6/9/00	PERFLUOROOCTANOIC ACID	7,200	Blood	95240
551482	1014.3	6/9/00	PERFLUOROOCTANOIC ACID	10,000	Blood	95240
551483	1016.1	6/9/00	PERFLUOROOCTANOIC ACID	150	Blood	95240
551484	1016.2	6/9/00	PERFLUOROOCTANOIC ACID	7,600	Blood	95240
551485	1016.3	6/9/00	PERFLUOROOCTANOIC ACID	13,000	Blood	95240
551486	1012	6/9/00	PERFLUOROOCTANOIC ACID	42	Blood	95240
551487	1017	6/9/00	PERFLUOROOCTANOIC ACID	115	Blood	95240
561677	39-1980	6/9/00	PERFLUOROOCTANOIC ACID	98	Blood	95240
561678	30-5155	6/9/00	PERFLUOROOCTANOIC ACID	230	Blood	95240
561679	10-2935	6/9/00	PERFLUOROOCTANOIC ACID	1,100	Blood	95240
561680	7-12493	6/9/00	PERFLUOROOCTANOIC ACID	950	Blood	95240
561681	9-3789	6/9/00	PERFLUOROOCTANOIC ACID	4,500	Blood	95240
561682	11-3240	6/9/00	PERFLUOROOCTANOIC ACID	2,000	Blood	95240
561683	28-5566	6/9/00	PERFLUOROOCTANOIC ACID	270	Blood	95240
561684	36-5166	6/9/00	PERFLUOROOCTANOIC ACID	330	Blood	95240
561685	17-6063	6/9/00	PERFLUOROOCTANOIC ACID	1,400	Blood	95240
561686	20-5669	6/9/00	PERFLUOROOCTANOIC ACID	1,000	Blood	95240
561687	12-2180	6/9/00	PERFLUOROOCTANOIC ACID	900	Blood	95240
561688	27-5868	6/9/00	PERFLUOROOCTANOIC ACID	100	Blood	95240
561689	40-11825	6/9/00	PERFLUOROOCTANOIC ACID	38	Blood	95240
561690	41-3952	6/9/00	PERFLUOROOCTANOIC ACID	1,900	Blood	95240
561691	22-8215	6/9/00	PERFLUOROOCTANOIC ACID	4,900	Blood	95240
561692	3-5251	6/9/00	PERFLUOROOCTANOIC ACID	1,500	Blood	95240
561693	37-3145	6/9/00	PERFLUOROOCTANOIC ACID	68	Blood	95240
561694	42-5883	6/9/00	PERFLUOROOCTANOIC ACID	1,000	Blood	95240
561695	34-5523	6/9/00	PERFLUOROOCTANOIC ACID	820	Blood	95240
561696	6-5978	6/9/00	PERFLUOROOCTANOIC ACID	1,600	Blood	95240
561697	21-5421	6/9/00	PERFLUOROOCTANOIC ACID	1,500	Blood	95240
561698	4-12933	6/9/00	PERFLUOROOCTANOIC ACID	140	Blood	95240
561699	5-4588	6/9/00	PERFLUOROOCTANOIC ACID	1,900	Blood	95240
561700	2-1530	6/9/00	PERFLUOROOCTANOIC ACID	2,200	Blood	95240
561701	31-5652	6/9/00	PERFLUOROOCTANOIC ACID	45	Blood	95240
561702	38-2978	6/9/00	PERFLUOROOCTANOIC ACID	3,900	Blood	95240
561703	35-3405	6/9/00	PERFLUOROOCTANOIC ACID	800	Blood	95240
561704	13-4791	6/9/00	PERFLUOROOCTANOIC ACID	800	Blood	95240
561705	33-5474	6/9/00	PERFLUOROOCTANOIC ACID	1,800	Blood	95240
561706	8-5742	6/9/00	PERFLUOROOCTANOIC ACID	1,200	Blood	95240
561707	32-4507	6/9/00	PERFLUOROOCTANOIC ACID	1,500	Blood	95240
561708	29-5504	6/9/00	PERFLUOROOCTANOIC ACID	180	Blood	95240
561709	25-5996	6/9/00	PERFLUOROOCTANOIC ACID	1,300	Blood	95240
561710	15-4708	6/9/00	PERFLUOROOCTANOIC ACID	4,500	Blood	95240
561711	16-3823	6/9/00	PERFLUOROOCTANOIC ACID	10,000	Blood	95240
561712	23-6225	6/9/00	PERFLUOROOCTANOIC ACID	1,500	Blood	95240
561713	26-5542	6/9/00	PERFLUOROOCTANOIC ACID	670	Blood	95240
561714	19-4793	6/9/00	PERFLUOROOCTANOIC ACID	8,900	Blood	95240

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Analytical Results of PFOA blood samples

Company	Sampling date	Labor ID	Schiwara results mg/l	NMS results mg/l
Dyneon	5/24/00	1019	0.40	
Dyneon	19.05.2000	1018	0.20	
Dyneon	19.05.2000	1015	0.10	
Dyneon	19.05.2000	1017	0.30	
Dyneon	19.05.2000	1016	0.40	
Dyneon	control + 5 mg/l	10162	4.8	
Dyneon	control + 10 mg/l	10163	9.2	
Dyneon	18.05.2000	1014	0.40	
Dyneon	control + 5 mg/l	10142	4.20	
Dyneon	control + 10 mg/l	10143	8.60	
Dyneon	18.05.2000	1011	0.30	
Dyneon	18.05.2000	1012	0.10	
Dyneon	control + 5 mg/l	10122	4.3	
Dyneon	control + 10 mg/l	10123	8.5	
Dyneon	18.05.2000	1013	0.20	
Dyneon	control + 5 mg/l	10132	4.4	
Dyneon	control + 10 mg/l	10133	8.8	
Dyneon	17.05.2000	1009	1.00	
Dyneon	17.05.2000	1010	0.10	
Dyneon	17.05.2000	1008	0.20	
Dyneon	17.05.2000	1007	0.20	
Dyneon	16.05.2000	1005	0.20	
Dyneon	16.05.2000	1004	0.60	
Dyneon	16.05.2000	1006	0.30	
Dyneon	15.05.2000	1003	0.10	
Dyneon	15.05.2000	1000	0.30	
Dyneon	15.05.2000	1001	0.10	
Dyneon	15.05.2000	1002	0.50	
DuPont		122180	0.70	
DuPont		163023	8.30	
DuPont		102935	1.10	
DuPont		85472	0.80	
DuPont		65970	1.30	
DuPont		412933	0.20	
DuPont		205669	1.00	
DuPont		229213	6.00	
DuPont		265542	0.70	
DuPont		285566	0.30	
DuPont		305155	0.30	
DuPont		324507	1.20	
DuPont		345523	1.00	
DuPont		365165	0.50	
DuPont		373145	0.10	
DuPont		382970	2.40	
DuPont		4011025	<0.1	
DuPont		21530	2.30	
DuPont		425803	0.80	

000260

HIGH RESULTS

2000

1600

1400

2800

2800

3100

9000

2500

1100

1000

6200

2100

1000

2300

1100

3900

4700

1300

1500

2500

2600

4500

1200

4900

1000

1300

1000

1700

8500

3000

2800

4300

1600

2400

1300

1100

6900

2000

GR164

GR164

FEP163

FP 162

FP 162

FP162

FP 162

FEP163 ?

FEP163

GR164

GR 164

FP162

FP 162

GR164

Revised - Privacy

000261

**2000 C-8 BLOOD TESTING
DISTRIBUTION OF RESULTS**

<u>PPB</u>	<u>NUMBER</u>
0 - 999	87
1000 - 1999	16
2000 - 2999	18 11
3000 - 3999	3
4000 - 4999	4
5000 - 5999	0
6000 - 6999	2
7000 - 7999	0
8000 - 8999	1
9000 - 9999	1

000262

< 1000
1000 - 1999
2000 - 2999
3000 - 3999
4000 - 4999
5000 - 5999
6000 - 6999
7000 - 7999
8000 - 8999
9000 - 9999

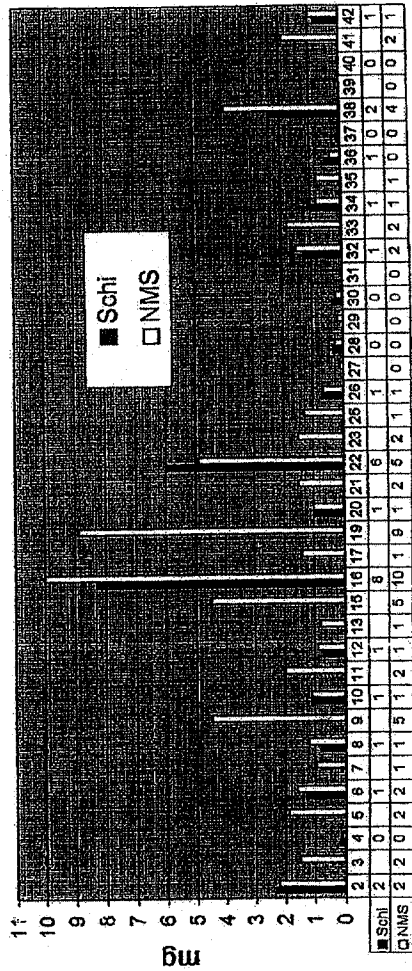
87
16
10
3
4
0
2
0
1
1

[REDACTED] [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Redacted - Privacy

000263

FLPR DDT C-8 In blood results May 2000



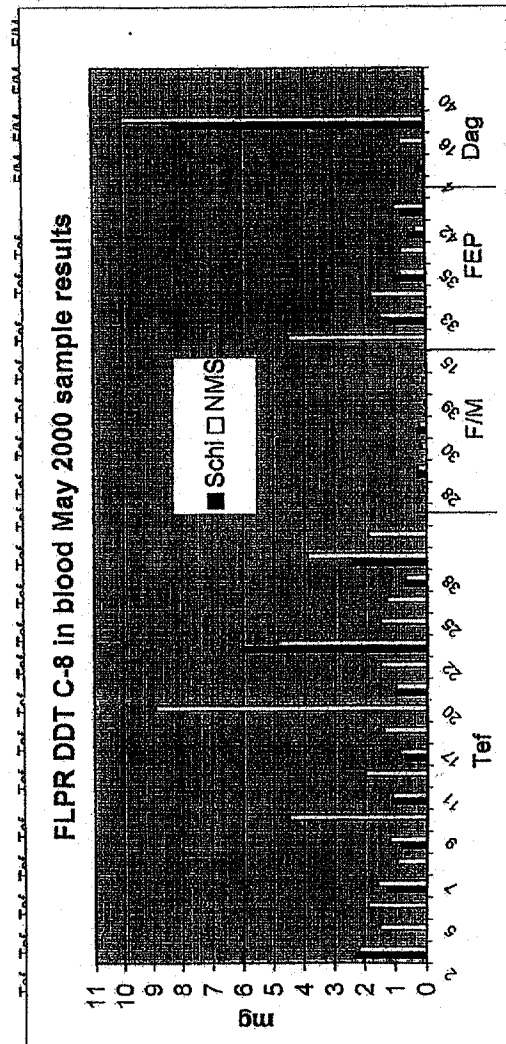
30 31 32 33 34 35 36
0.3 1.2 1 0.5
0.23 0.045 1.5 1.8 0.82 0.8 0.33

000264

37 38 39 40 41 42
0.1 2.4 0 0.8
0.068 3.9 0.1 0.038 1.9 1

000265

F/M	F/M	Fep	Fep	Fep	Fep	Fep
31	39	15	32	33	34	35
0.045	0.1	4.5	1.5	1.8	0.82	0.8



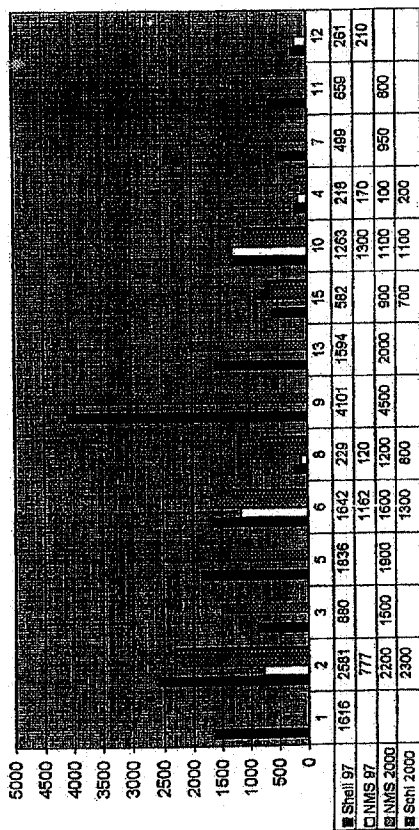
000266

Fep	Fep	Dag	Dag	Dag	Dag	Dag	Dag
36	42	4	13	16	37	40	
0.5	0.8	0.2	8.3	0.1	0.1	0	
0.33	1	0.14	0.8	10	0.038	0.038	

000267

Mulder Heer Boers
 7 11 12
 499 659 261
 950 800 210

FLPR DDT c-8 in blood 1997 vs 2000 sample results in ppb



Nre 1 Vm 15 zijn van 1997 prog.