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POLYMER PRODUCTS DEPARTMENT
EXPERIMENTAL STATION

PERSONAL AND CONFIDENTIAL

May 14, 1981

TO: DR. Y. L. POWER - PPD, Washington Works

FROM: S. S. STAFFORD *S.S. Stafford*

ANALYSIS OF BLOOD SAMPLES FOR PERFLUOROOCTANOATE
(Job No. 810-190; PRAL Nos. 81-1420-81-1467; Notebook Nos. E22514, E26238)

As requested in your letter of 4/8/81 to L. J. Papa, the 48 blood samples submitted then have been analyzed for perfluorooctanoate (C_8). Results and sample identification are given in the attached table.

As noted there, the analysis was done using a gas chromatographic method specific for C_8 (Lab Method Number ES-567) but results have been reported as ppm F for comparison with total organic fluorine analyses. Precision is $\pm 10\%$ relative standard deviation over most of the concentration range, somewhat less at the lowest values. The lower limit for quantitation is 0.007 ppm F (0.01 ppm perfluorooctanoic acid), with a detection limit of ~ 0.004 ppm which can be distinguished from the reagent background but not well quantitated.

Please contact me (772-4440) or L. J. Papa (772-2745) if you have any questions regarding the analyses. General questions on blood sampling can be directed to J. W. Raines or L. F. Percival.

Attachment
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KeyWords:

Perfluorooctanoic Acid
Perfluorooctanoate
Blood Analysis
GC

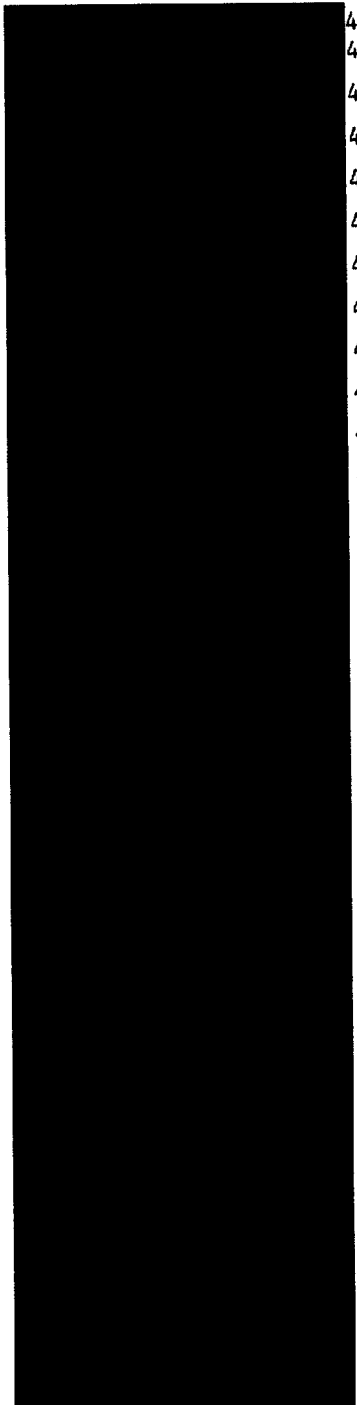
There's a world of things we're doing something about

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EID713817

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TABLE I

CONCENTRATION OF PERFLUOROOCTANOATE IN BLOOD (a)

Sample PRAL No.	Date Sampled	P.R.No.	Name	GC Analysis	
				Date Analyzed	[C8], $\mu\text{g F/g blood}^{(b)}$
81-1420	4/1/81	4443		4/11/81	0.078
				4/15/81	0.074
81-1421	4/1/81	4101		4/11/81	1.5
81-1422	4/2/81	4226		4/11/81	0.013
81-1423	4/2/81	4449		4/11/81	0.048
81-1424	4/3/81	4530		4/11/81	0.62
81-1425	4/3/81	4621		4/13/81	0.13
81-1426	4/6/81	4490		4/13/81	0.072
81-1427	4/6/81	4283		4/13/81	0.051
81-1428	4/6/81	WS		4/13/81	0.11
81-1429	4/6/81	WS		4/13/81	0.061
81-1430	4/6/81	4109		4/13/81	0.19
81-1431	4/6/81	4316		4/13/81	1.0
81-1432	4/6/81	4282		4/14/81	5.1
81-1433	4/6/81	4243		4/15/81	0.44
81-1434	4/6/81	4520		4/13/81	0.052
81-2435	4/6/81	4177		4/14/81	0.23
81-1436	4/6/81	WS		4/14/81	0.11
81-1437	4/6/81	4293		4/14/81	0.17
81-1438	4/6/81	WS		4/13/81	0.31
81-1439	4/6/81	4225		4/14/81	0.054
81-1440	4/6/81	4182		4/14/81	0.077
81-1441	4/6/81	4250		4/15/81	0.31
81-1442	4/6/81	4547		4/24/81	4.3
81-1443	4/6/81	4181		4/14/81	0.64
81-1444	4/6/81	4551		4/15/81	1.3
81-1445	4/6/81	4514		4/15/81	0.14
81-1446	4/6/81	4624		4/16/81	0.57
81-1447	4/6/81	4444		4/16/81	0.18
81-1448	4/6/81	4251		4/16/81	0.15
81-1449	4/6/81	WS		4/16/81	0.83
81-1450	4/6/81	4111		4/18/81	3.8
81-1451	4/6/81	WS		4/16/81	0.22 (c)

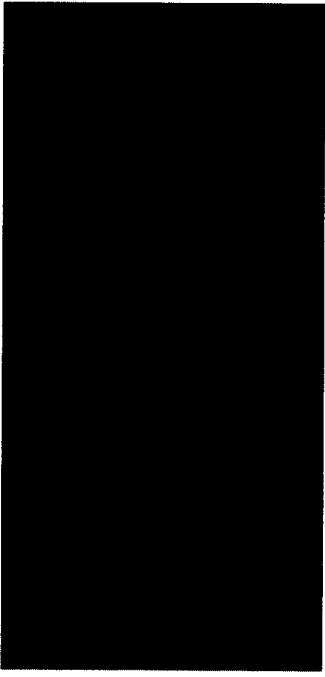
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TABLE I (CONT'D)

CONCENTRATION OF PERFLUOROOCCTANOATE IN BLOOD (a)

Sample				GC Analysis		(b)
PRAL NO.	Date Sampled	P.R.No.	Name	Date Analyzed	[C ₈], µg F/g blood	
81-1452	4/6/81	4650		4/16/81	0.019	
81-1453	4/6/81	4448		4/18/81	0.11	
81-1454	4/6/81	4409		4/18/81	0.14	
81-1455	4/6/81	4400		4/18/81	2.1	
81-1456	4/6/81	4631		4/18/81	0.19	
81-1457	4/6/81	4234		4/18/81	4.3	
81-1458	4/7/81	4172		4/20/81	4.5	
81-1459	4/7/81	4382		4/20/81	0.81	
81-1460	4/7/81	4518		4/23/81	1.7	
81-1461	4/7/81	4299		4/20 & 4/24/81	4.5	
81-1462	4/7/81	4249		4/20/81	1.9	
81-1463	4/7/81	4300		4/23/81	2.4	
81-1464	4/7/81	4290		4/20/81	0.10	
81-1465	4/7/81	WS		4/20/81	0.47	
81-1466	4/7/81	4364		4/24/81	3.6	
81-1467	4/7/81	WS		4/20/81	0.092	

(a) Analysis as described in Lab Method ES-567 ("Determination of Perfluorooctanoic Acid in Blood, Gas Chromatographic Method", S. Stafford, 4/3/81), using the packed column GC analysis with perfluoro-n-octanoic acid as calibration standard.

(b) Although the analysis is specifically for perfluorooctanoate (acid or salts), concentrations are given in ppm fluorine for comparison with the results of total organic fluorine analyses. (ppm F = 0.688 x ppm perfluorooctanoic acid) Estimated uncertainty is $\pm 10\%$ relative standard deviation. The lower limit for quantitation is 0.007 µgF/g. The detection limit is ~ 0.004 µgF/g, but concentrations in that range cannot be well quantitated and are reported as < 0.007 . "None detected" is reported for samples with [C₈] $\lesssim 0.004$ ppm, which cannot be distinguished from reagent background.

(c) In GC analysis of this sample one unusual large peak was observed in the region of interest, but no interference with the C₈ peak was apparent.

EXP000005
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