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POLYMER PRODUCTS DEPARTMENT
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cc: A. J. Dahl - 353
L. J. Papa - 269
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I.C.

AR226-1586

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DR. B. W. KARRH
MEDICAL DIRECTOR
WILMINGTON

ANALYSIS OF BLOOD SAMPLES FOR PERFLUOROOCTANOATE
(Job No. 810-578; PRAL Nos. 81-1555-1557, 81-1614-1619, 81-1662-1671,
81-1713-1721, 81-1816-1818, 81-1848, 81-1862-1865; Notebook Nos. E22514, E26238)

As requested in your letters of 4/20 through 4/30/81 to L. J. Papa, the 36 blood samples submitted then have been analyzed for perfluorooctanoate (C₈). Results and sample identification are given in the attached table.

As noted there, the analyses were done using a gas chromatographic method specific for C₈ (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.

S. S. Stafford
S. S. Stafford

Attachment
jah

Key Words:
Perfluorooctanoic Acid
Perfluorooctanoate
Blood Analysis
GC

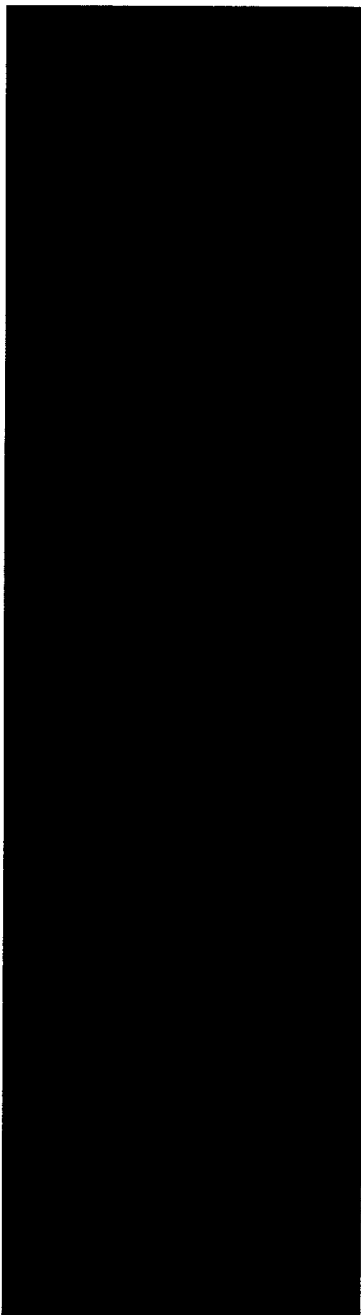
There's a world of things we're doing something about

EXP000030
EID713844

000098

TABLE I

CONCENTRATION OF PERFLUOROOCTANOATE IN BLOOD (a)

Sample				GC Analysis		(b)
PRAL No.	Date Sampled	P.R.No.	Name	Date Analyzed	[Cg]	ug F/g blood
81-1555	4/20/81	-		4/22/81		n.d.
81-1556	4/20/81	-		4/22/81		n.d.
81-1557	4/20/81	-		4/22/81		n.d.
81-1614	4/21/81	-		4/23/81		n.d.
81-1615	4/21/81	-		4/23/81		n.d.
81-1616	4/21/81	-		4/23/81		n.d.
81-1617	4/21/81	-		4/24/81		n.d.
81-1618	4/21/81	-		4/24/81		n.d.
81-1619	4/21/81	-		4/24/81		n.d.
81-1662	4/22/81	-		4/27/81		n.d.
81-1663	4/22/81	-		4/27/81		n.d.
81-1664	4/22/81	-		4/27/81		n.d.
81-1665	4/22/81	-		4/27/81		n.d.
81-1666	4/22/81	-		4/28/81		n.d.
81-1667	4/22/81	-		4/28/81		n.d.
81-1668	4/22/81	-		4/28/81		n.d.
81-1669	4/22/81	-		4/28/81		n.d.
81-1670	4/22/81	-		4/29/81		n.d.
81-1671	4/22/81	-		4/29/81		n.d.
81-1713	4/23/81	-		4/29/81		n.d.
81-1714	4/23/81	-		4/29/81		n.d.
81-1715	4/23/81	-		4/30/81		n.d.
81-1716	4/23/81	-		4/30/81		n.d.
81-1717	4/23/81	-		4/30/81		n.d.
81-1718	4/23/81	-		4/30/81		n.d.
81-1719	4/23/81	-		5/1 & 5/5/81		n.d.
81-1720	4/23/81	-		5/11/81		n.d.
81-1721	4/23/81	-		5/11/81		n.d.
81-1816	4/27/81	-		5/2/81		n.d.
81-1817	4/28/81	-		5/4/81		n.d.
81-1818	4/28/81	-		5/4/81		n.d.

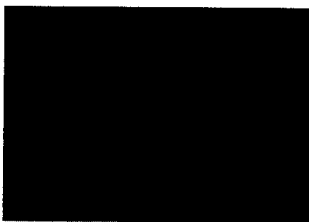
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EXP000031
EID713845

000099

TABLE I

CONCENTRATION OF PERFLUOROOCTANOATE IN BLOOD (a)

Sample				GC Analysis		(b)
PRAL No.	Date Sampled	P.R.No.	Name	Date Analyzed	[C ₈], μ g	F/g blood
81-1848	4/29/81	-		5/4/81		n.d.
81-1862	4/30/81	-		5/4-5/5/81		n.d.
81-1863	4/30/81	-		5/4/81		n.d.
81-1864	4/30/81	-		5/5/81		n.d.
81-1865	4/30/81	-		5/5/81		n.d.

- (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. ($\text{ppm F} = 0.688 \times \text{ppm perfluorooctanoic acid}$) Estimated uncertainty is $\pm 10\%$ relative standard deviation. The lower limit for quantitation is $0.007 \mu\text{gF/g}$. The detection limit is $\sim 0.004 \mu\text{gF/g}$, but concentrations in that range cannot be well quantitated and are reported as < 0.007 . None detected (n.d.) is reported for samples with $[\text{C}_8] \lesssim 0.004 \text{ ppm}$, which cannot be distinguished from reagent background.