TABLE 1
Continued

PFOA (ppm)	1993 Data				1995 Data			
	Mean	Median	SD	Range	Mean	Median	SD	Range
Free testosterone (ng/dL)								
0–<1	15.0	14.8	4.0	6.1–28.1	14.2	14.0	2.7	9.3–20.5
1–<10	16.6	16.5	4.4	6.8–28.4	14.2	14.4	3.1	5.6–19.4
10–<30	14.2	13.5	2.5	10.0–17.4	13.2	14.1	3.5	7.0–18.0
≥30	17.4	18.5	4.7	11.1–21.8	14.4	16.0	4.3	7.3–18.0
	$F = 1.81, P = 0.15$				$F = 0.31, P = 0.82$			
TSH (mU/L)								
0–<1	1.4	1.3	0.8	0.2–4.3	1.7	1.5	0.8	0.6–4.0
1–<10	1.4	1.2	0.7	0.5–3.1	1.7	1.5	0.9	0.5–3.7
10–<30	2.1	2.2	0.8	1.2–2.9	2.9[b]	2.5	1.1	1.9–5.8
≥30	1.2	1.1	0.4	0.8–1.8	1.7	1.3	0.8	1.1–2.5
	$F = 2.21, P = 0.09$				$F = 5.47, P = 0.002$			

* BMI, body mass index; 17-HP, 17-alpha hydroxyprogesterone; TSH, thyroid-stimulating hormone.

[†] Samples sizes: 0–<1 ppm: 1993, n 53; 1995, n = 39.
1–<10 ppm: 1993, n = 46; 1995, n = 26.
10–<30 ppm: 1993, n = 8; 1995, n = 10.
≥30 ppm: 1993, n = 4; 1995; n = 5.

[‡] Mean significantly different (Bonferroni t-test, p < .05) than the three other PFOA ppm levels.

[§] Mean level significantly different (Bonferroni t-test, p < .05) than the 0–<1 ppm and 1–<10 ppm PFOA categories.

TABLE 2
Mean, Median, Standard Error (SE) of Mean and Range of Estradiol by Body Mass Index and Free Testosterone by Age, Stratified by Serum PFOA Level and Year of Data Collection

BMI (kg/m²) by PFOA (ppm)	1993 Data					1995 Data				
	n	Mean	Median	SE	Range	n	Mean	Median	SE	Range
Estradiol (pg/mL)										
BMI <28										
0–<1 ppm	30	48.4	47.0	1.7	32.0–68.0	23	66.0	66.0	2.2	48.0–87.0
1–<10	30	55.0	55.0	2.2	34.0–81.0	13	62.0	62.0	3.7	48.0–91.0
10–<30	3	54.3	56.0	5.5	44.0–63.0	5	64.6	64.0	4.1	54.0–79.0
≥30	2	62.5	62.5	7.5	55.0–70.0	0	—	—	—	—
BMI ≥28										
0–1 ppm	23	63.0	66.0	2.9	32.0–83.0	16	71.1	72.0	3.2	45.0–94.0
1–<10	16	57.8	55.5	3.1	34.0–79.0	13	68.3	65.0	4.5	45.0–96.0
10–<30	5	55.0	60.0	6.1	39.0–70.0	5	69.6	72.0	4.1	55.0–78.0
≥30	2	63.0	63.0	7.0	56.0–70.0	6	73.2	75.0	3.0	64.0–81.0
Free testosterone (ng/dL)										
Age <40										
0–<1 ppm	20	17.3	16.8	0.9	10.5–28.1	18	15.3	15.2	0.6	11.3–20.5
1–<10	28	16.8	17.4	0.7	10.1–24.4	13	14.7	14.6	0.6	10.8–17.8
10–<30	4	15.2	14.9	1.0	13.4–17.4	2	15.7	15.7	2.4	13.3–18.0
≥30	3	19.5	20.1	1.4	16.9–21.8	3	15.9	16.0	1.2	13.8–18.0
Age ≥40										
0–<1 ppm	33	13.6	13.4	0.6	6.1–21.2	21	13.2	13.4	0.6	9.3–18.3
1–<10	18	16.2	15.8	1.3	6.8–28.4	13	13.7	14.3	1.0	5.6–19.4
10–<30	4	13.2	13.1	1.4	10.0–16.6	8	12.6	14.1	1.2	7.0–16.2
≥30	1	11.1	11.1	—	—	2	12.2	12.2	4.9	7.3–17.0

moderate drinkers, as was previously reported.[28]

Discussion

We conducted two cross-sectional studies of PFOA production workers to investigate the relation between serum PFOA levels and several reproductive hormones: in particular, estradiol and testosterone. Although we did not observe a significantly positive association between PFOA exposure and estradiol, mean estradiol levels were 10% greater among employees with the highest serum PFOA levels (≥30 ppm); however, this was confounded by BMI, and any interpretation is limited by the