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• *Letter to the Editor*

Dear Editor:

In 1986, NIOSH was informed of a cluster of oligospermia among four men occupationally exposed to methylene chloride (MeCl) (1). NIOSH conducted a pilot study among furniture strippers near Cincinnati, Ohio, to investigate the extent of exposure to MeCl and the feasibility of doing a semen study in this industry. We chose furniture strippers because we believed that their exposures to MeCl were high based on a previous survey (2).

We planned to study approximately 20 exposed workers and 20 nonexposed referent subjects. Exposed subjects were required to have worked with MeCl for at least three consecutive months immediately prior to the time of recruitment. Vasectomized men were excluded. Eleven of fourteen (79%) eligible exposed men (aged 26–61) from a total of six shops participated. We attempted to find concurrent referent subjects by soliciting names of friends or relatives from exposed workers. Because only one subject gave us the name of a potential referent, we terminated the study prematurely and present only data on exposed men. We wish to report our findings in response to the recent publication regarding the original series (1).

Table 1 summarizes the results of the major exposure and outcome variables. The full report is available from the authors (3). The mean time-weighted-average exposure (TWA), 122 ppm, was above the current NIOSH recommendation of "lowest feasible limit" (4) and the mean TWA (68 ppm) of the process implicated in the original case series reported by Kelly (1). It was below the current OSHA standard of 500 ppm. All of the carboxyhemoglobin (COHb) levels were above 2% which is considered the upper limit in normal nonsmokers. The mean COHb level (5.8%) was above the mean level in the original case series (4.6%) (1). The mean sperm concentration was 54 million/cc, which is similar to that found in nonexposed workers from the same geographic area and tested in the same laboratory (47 million/cc) (5). The lowest sperm concentration of 23 million/cc exceeds the usual definition of oligospermia as 20 million/cc (6).

The absence of concurrent referent subjects precluded our plan to test whether the distribution of sperm concentration was different between exposed and unexposed workers. Instead, we investigated the exposure–response relationship between 11 measures of exposure — 1) hours of exposure during the previous three months; 2) breath MeCl; 3) blood MeCl; 4) TWA MeCl; 5) breath CO; 6) COHb — and the five products of hours of exposure with the biologic measures, and 10 outcomes (4 blood hormone levels and 6 measures of semen quality). No relationship was statistically significant after consideration of major confounding variables (subject's age, sample age, length of abstinence, and smoking).

The results of this study are limited because of the lack of statistical power (80% power to detect a 30% prevalence of oligospermia) and the absence of concurrent control subjects. However, in contrast to the original case series reported by Kelly (1), none of the men in our study, who had considerable MeCl exposure, had oligospermia.

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Table 1. Results

Variable	Mean	*n*	Range	Population Values (ref)
MeCl (TWA)	122 ppm	11	15–366	0 ppm*
Carboxyhemoglobin	5.8%	11	2.2–13.5	
Nonsmokers	3.9%	7	2.2–5.9	< 2% (7)
Smokers	10.2%	4	8.1–13.5	3–10% (8)
Sperm Concentration	54 million/cc	11	23–128	47 million/cc (5)

*Current NIOSH-Recommended Exposure Limit: lowest feasible limit (8 hour TWA). Current OSHA Permissible Exposure Limit: 500 ppm (8 hour TWA).

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