Published in final edited form as:

J Occup Environ Med. 2018 October ; 60(10): e562. doi:10.1097/JOM.0000000000001411.

Health status of workers exposed to perfluorinated alkylate substances

Philippe Grandjean, MD, PhD

Department of Environmental Medicine, University of Southern Denmark, Odense, Denmark, and
Department of Environmental Health, Harvard T.H. Chan School of Public Health, Boston, MA

To the Editor:

Reports on occupational exposures can be valuable for risk assessment purposes and may inspire and inform studies of adverse effects in the general population. Recent studies of communities exposed to perfluorinated alkylate substances (PFASs) have shown elevated serum-lipid concentrations and other serum abnormalities (1–3). Regarding occupational PFAS exposure, one of the most frequently cited studies was published in this Journal (4) and concluded that “there were no substantial changes in hematological, lipid, hepatic, thyroid, or urinary parameters consistent with the known toxicological effects of PFOS or PFOA in cross-sectional or longitudinal analyses of the workers’ measured serum fluorochemical concentrations.” In support of this conclusion, the article included several descriptive tables that referred to quartile groups of workers, but the wording “data not shown” was used several times, and only the final Table 6 listed some regression results. The authors asserted that the statistically significant and positive associations found were likely spurious and not toxicologically meaningful.

New information on this study has surfaced in connection with a recent law suit, as internal company documents have been released and are now available from the office of the Minnesota Attorney General: <https://www.ag.state.mn.us/office/contactus.asp>. Among these documents is a draft, dated October 11, 2001, of the published article (Bates pages 3M-MN02482163-225, PTX1799). This draft lists the same authors and concludes that there was a positive association between PFOA and serum cholesterol and triglycerides over time, as based on 20 tables with regression results. Partial results without *p* values from four of the tables were included in the published article (4).

Because the article has been cited by more than 200 published papers and has also been relied upon by U.S. regulatory agencies, such as the Agency for Toxic Substances and Disease Control (5) and the U.S. Environmental Protection Agency (6), as well as foreign and international agencies, such as the European Food Safety Authority (7), availability of a more extensive analysis of these occupational health data will likely be of wide interest. I

Correspondence to: Philippe Grandjean, MD, Department of Environmental Health, HSPH, 401 Park Drive West 4th floor, Boston, MA 02215; fax (617) 384-8994; tel (617) 384-8907; pgrand@hsph.harvard.edu.

Conflicts of interest: The author declares that he has served as a health expert for the State of Minnesota in a law suit against the 3M Company (State of Minnesota District Court for the County of Hennepin, Fourth Judicial District, Civil Action No. 27-CV-10-28862). The author has also acted as an expert for the European Food Safety Authority on an opinion on perfluorinated alkylate substances.

therefore hope that the Editor will allow space for the authors of the article, or other colleagues, to complement the Journal article with results of in-depth analyses. In the meantime, the draft version may be consulted.

Acknowledgments

Funding: National Institute of Environmental Health Sciences (P32 ES027706).

Acknowledgments: None.

REFERENCES

1. Fitz-Simon N, Fletcher T, Luster MI, et al. Reductions in serum lipids with a 4-year decline in serum perfluorooctanoic acid and perfluorooctanesulfonic acid. *Epidemiology*. 2013;24:569–576. [PubMed: 23685825]
2. Nelson JW, Hatch EE, Webster TF. Exposure to polyfluoroalkyl chemicals and cholesterol, body weight, and insulin resistance in the general U.S. population. *Environ Health Perspect*. 2010;118:197–202. [PubMed: 20123614]
3. Steenland K, Tinker S, Frisbee S, Ducatman A, Vaccarino V. Association of perfluorooctanoic acid and perfluorooctane sulfonate with serum lipids among adults living near a chemical plant. *Am J Epidemiol*. 2009;170:1268–1278. [PubMed: 19846564]
4. Olsen GW, Burris JM, Burlew MM, Mandel JH. Epidemiologic assessment of worker serum perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) concentrations and medical surveillance examinations. *J Occup Environ Med*. 2003;45:260–270. [PubMed: 12661183]
5. Agency for Toxic Substances and Disease Registry. Draft toxicological profile for perfluoroalkyls. Atlanta, GA: Agency for Toxic Substances and Disease Registry; 2015.
6. U.S. Environmental Protection Agency. Health Effects Document for Perfluorooctanoic Acid (PFOA). Washington, D.C.: U.S. EPA; 2014.
7. European Food Safety Authority. Opinion of the Scientific Panel on Contaminants in the Food chain on Perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and their salts. *The EFSA Journal*. 2008;653:1–131.