

“Will my work affect my pregnancy?”

Resources for anticipating and answering patients’ questions

Barbara Grajewski, PhD; Carissa M. Rocheleau, PhD; Christina C. Lawson, PhD;
Candice Y. Johnson, PhD

The problem

Women’s health providers may find it challenging to effectively address workplace reproductive health issues with their working patients who are pregnant, breast-feeding, or considering pregnancy.

A solution

Information and resources are provided for counseling patients about their workplace and reproductive health.

Overview

Communicating reproductive risks to workers is complex for women’s health providers. Only about 4000 of the 84,000 chemicals in the workplace have been evaluated for reproductive toxicity, and >2000 new chemicals are introduced annually.¹ Besides chemicals and physical agents,²⁻⁴ reproductive hazards include physical demands (eg, heavy lifting, prolonged standing)⁵ and circadian disruption from night or rotating work schedules.^{6,7} The need for vigilance about hazardous occupational exposures continues after birth since some

BACKGROUND: Authoritative information on occupational reproductive hazards is scarce and complex because exposure levels vary, multiple exposures may be present, and the reproductive toxicity of many agents remains unknown. For these reasons, women’s health providers may find it challenging to effectively address workplace reproductive health issues with their patients who are pregnant, breast-feeding, or considering pregnancy. Reproductive epidemiologists at the Centers for Disease Control and Prevention National Institute for Occupational Safety and Health answered >200 public requests for occupational reproductive health information during 2009 through 2013. The most frequent occupations represented were health care (41%) and laboratory work (18%). The most common requests for exposure information concerned solvents (14%), anesthetic gases (10%), formaldehyde (7%), infectious agents in laboratories (7%) or health care settings (7%), and physical agents (14%), including ionizing radiation (6%). Information for developing workplace policies or guidelines was sought by 12% of the requestors. Occupational exposure effects on breast-feeding were an increasing concern among working women. Based on information developed in response to these requestors, information is provided for discussing workplace exposures with patients, assessing potential workplace reproductive hazards, and helping patients determine the best options for safe work in pregnancy. Appendices provide resources to address specific occupational exposures, employee groups, personal protective equipment, breast-feeding, and workplace regulations regarding work and pregnancy. These tools can help identify those most at risk of occupational reproductive hazards and improve workers’ reproductive health. The information can also be used to inform research priorities and assist the development of workplace reproductive health policies.

Key words: occupational safety and health, pregnancy, reproductive health

From the Industrywide Studies Branch, National Institute for Occupational Safety and Health, Cincinnati, OH (all authors), and Epidemic Intelligence Service, Centers for Disease Control and Prevention, Atlanta, GA (Dr Johnson).

Received Nov. 24, 2015; revised March 2, 2016; accepted March 7, 2016.

Dr Grajewski retired from the National Institute for Occupational Safety and Health as of Dec. 1, 2015.

This work was part of the Intramural Research Program of the National Institute for Occupational Safety and Health (NIOSH). The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of NIOSH. Mention of any company or product does not constitute endorsement by NIOSH. In addition, citations to World Wide Web sites external to NIOSH do not constitute NIOSH endorsement of the sponsoring organizations or their programs or products. Furthermore, NIOSH is not responsible for the content of these World Wide Web sites. The authors report no conflict of interest.

Selected findings presented at the 27th annual meeting of the Society for Pediatric and Perinatal Epidemiologic Research, Seattle, WA, June 23-24, 2014.

Corresponding author: Barbara Grajewski, PhD. bjgrajewski1@gmail.com

0002-9378/\$36.00 • Published by Elsevier Inc. • <http://dx.doi.org/10.1016/j.ajog.2016.03.005>

workplace chemicals can pass into breast milk or be carried home on a worker’s skin, hair, clothes, and shoes, where a child can be exposed.⁸ A purposeful response to these issues requires a framework for thinking about occupational exposures and reproductive health.

- *Timing, type, and dose of exposure will influence adverse reproductive outcomes.* In general, first-trimester exposures can result in miscarriage or structural anomalies. Second- and third-trimester pregnancy exposures may lead to functional impairments, small for gestational age, or preterm delivery.

➤ Related editorial, page 555

- *The developing fetus may be vulnerable to health effects at lower chemical concentrations than its mother.* Susceptibility to workplace hazards varies throughout pregnancy due both to changes in maternal physiology and the fetus' developmental stage. Neither of these is reflected in most existing workplace regulations and occupational exposure limits.
 - *The true scope of occupational reproductive health is not limited to pregnancy.* Although this Call to Action is focused primarily on resources for counseling pregnant workers, preconceptional planning, breastfeeding, and male workers' reproductive health also depend on appropriate counseling, action, and policy. Reproductive toxicants' impact extends across the life course⁹ for both men and women—as was the case with men who sustained infertility from their occupational exposure to dibromochloropropane before it was banned.¹⁰
 - *Very few chemicals used in the workplace are adequately tested for safe use during pregnancy.* Exposure limits, respiratory guidelines, and personal protective equipment (PPE) guidelines issued by occupational health agencies were developed for healthy adult workers, not a developing fetus. Even when extensive reproductive and developmental toxicity testing data are available, they are rarely incorporated into workplace regulations. For example, California reviewed its Proposition 65 list of chemicals known to the state of California to cause reproductive or developmental toxicity. The 31 workplace chemicals in this category have been extensively evaluated, and are likely a significant underestimate of the actual number of reproductive/developmental toxicants in the workplace. Of the 31 known workplace reproductive/developmental toxicants, 5 (16%) had no permissible exposure limit in California, and 14 (45%) were regulated under occupational exposure limits not explicitly based on reproductive/developmental effects.¹¹
 - *The same agents may be occupational or environmental exposures.* Although environmental exposure to an agent may be more common, occupational exposures to the same agent are usually higher. Hobbies and the home environment may also be sources of exposure.
- Women's health providers may struggle to effectively address occupational issues with their patients. A recent survey of obstetricians reported barriers to counseling women about prenatal environmental and occupational exposures: uncertainty about risks, the number of potential exposures, and the ability of their patients to take action to reduce risk.¹² Further, there is no single resource for information on occupational reproductive health hazards. One potential source of counseling might be Teratology Information Services across the United States; but in a 2008 survey, occupational topics only accounted for 6% of their counseling time.¹³ Occupational counseling services¹⁴⁻¹⁶ have identified a demand for occupational reproductive counseling and the need to increase resource information for women's health providers. The American Congress of Obstetrics and Gynecology (ACOG) and the American Society for Reproductive Medicine (ASRM) recently issued a joint Committee Opinion on the role of reproductive health professionals in the prevention of exposure to environmental and occupational toxic chemicals.⁹ Last year, the International Federation of Gynecology and Obstetrics (FIGO) issued a global call to action on preventing exposure to toxic environmental and occupational chemicals.¹⁷ Twelve additional global health professional societies have endorsed the FIGO opinion. Recommendations included improving public policy to prevent toxic exposures and engaging reproductive health professionals in the process, ultimately improving patient health. As part of that process, it is clear that women's health providers should ask their patients about workplace exposures.

One resource available to women's health providers and workers is

CDC-INFO, the national contact center that launched in 2005.¹⁸ CDC-INFO delivers health information to consumers, health care professionals, and public health partners who call, mail, or e-mail their inquiries about disease prevention and health promotion (<http://www.cdc.gov/cdc-info/index.html>). Because occupational reproductive queries often describe unique or complex combinations of workplace exposures, they are routed to occupational reproductive epidemiologists at the National Institute for Occupational Safety and Health (NIOSH) who can provide individualized responses.

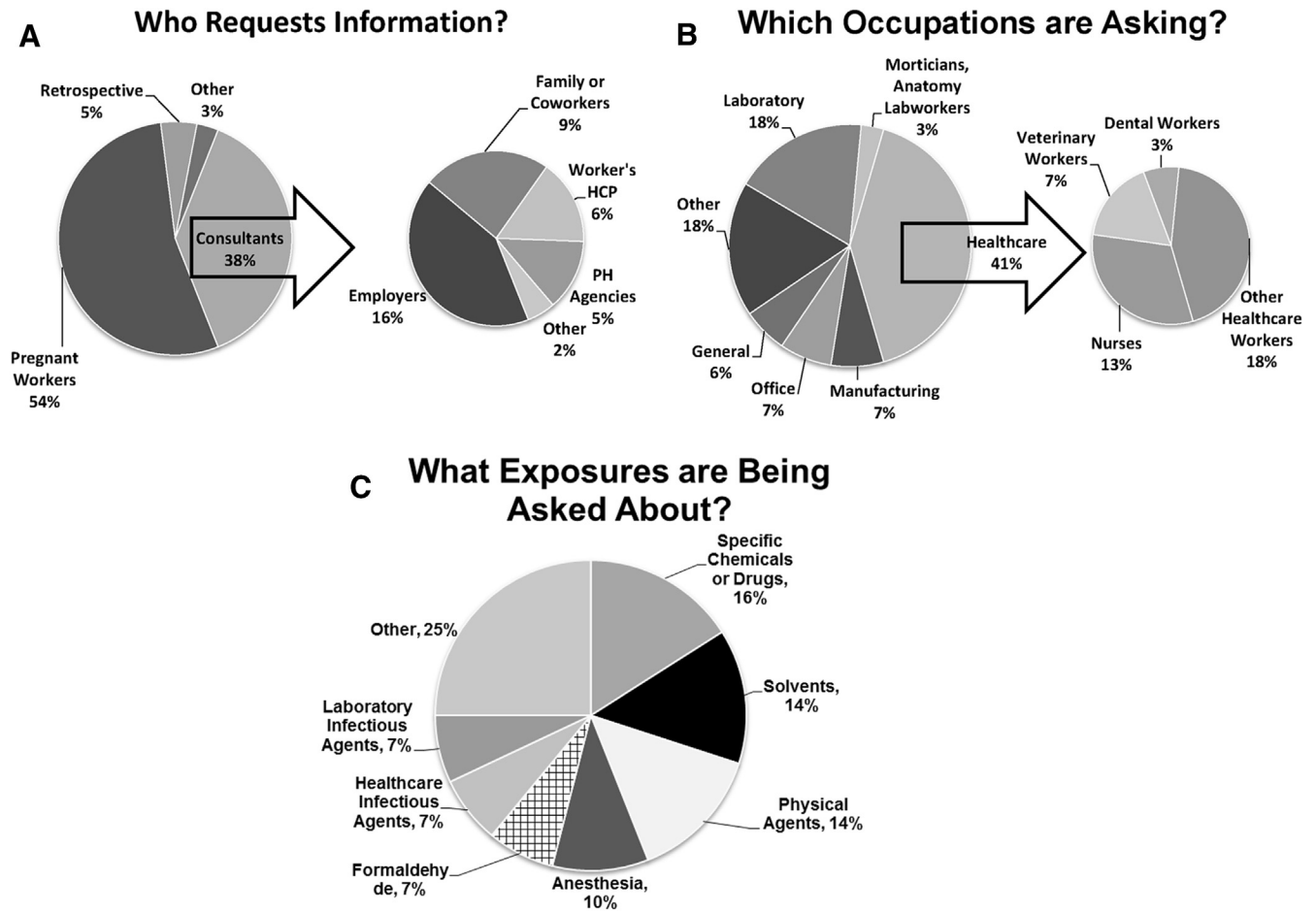
Our goal is to share the resources we developed for these CDC-INFO queries with women's health providers to help them engage effectively with their patients, identify those most at risk, and improve workers' reproductive health. This information may also inform research priorities and assist the development of workplace reproductive health policies.

CDC-INFO occupational reproductive queries

We collected information about CDC-INFO queries answered by the NIOSH Industrywide Studies Branch reproductive epidemiologists during calendar years 2009 through 2013. Responses were developed by subject matter experts in reproductive occupational health after consulting the scientific literature, reproductive databases, and other experts as required. Advice was provided based on the existing literature and incorporated uncertainties about reproductive hazards and actions employers could take to reduce potential risks.

As has been the case with similar services,¹⁴ women's reproductive health issues constitute the majority of queries received. Although occupational exposures of male partners may also contribute to adverse pregnancy outcomes or impaired fertility,¹⁹ and other working adults in a pregnant woman's household may be a source of workplace take-home exposures,²⁰ the importance of these exposures appears to be overlooked in most of the queries we have received. Consistent with assessment by

FIGURE
Occupational reproductive queries 2009 through 2013



(A) Requestors, (B) requestor occupations, and (C) question content are described for 217 Centers for Disease Control and Prevention-INFO queries answered by occupational reproductive epidemiologists in Industrywide Studies Branch, National Institute for Occupational Safety and Health.

HCP, health care practitioner; PH, public health; Retrospective, query concerning adverse reproductive outcome that occurred previously.

Grajewski. "Will my work affect my pregnancy?" *Am J Obstet Gynecol* 2016.

Frazier and Jones¹⁴ of occupational reproductive queries in 2000, 2 groups were still underrepresented: only 1 query was about male fertility, and 1 query was preconceptional.

Requestors, requestor occupations, and question content for the 217 CDC-INFO queries are described in the Figure. Requests were primarily (54%) from pregnant workers, but also from persons contacting us on behalf of pregnant workers: employers (16%), family or coworkers (9%), health care providers (6%), and public health agencies (5%). A small proportion of requests (5%) were for information about workplace exposures and a

previously experienced adverse reproductive outcome.

The most frequent occupations of interest to requestors (Figure) were health care occupations (41%) and laboratory work (18%). The most frequent occupations in the composite "other" category were teachers (3%), beauticians/nail technicians (3%), other service workers (2%), law enforcement/firefighters (2%), and air crew or other airline workers (1%). Requestors most commonly asked about specific occupational exposures, but information about workplace policies or assistance developing guidelines was sought by 12% of requestors. The most common requests

for information were for potential occupational exposure to solvents (14%), anesthetic gases (10%), formaldehyde (7%), infectious agents in laboratory environments (7%) or health care settings (7%), and physical agents (total 14%) including ionizing radiation (6%). Of the requests, 16% were about specific chemicals or drugs, including 6% about chemotherapy. Only 5 women contacted us regarding effects of occupational exposures on current breast-feeding as their primary concern. However, over the 5-year period examined, breast-feeding as a query topic (usually a secondary concern) increased from 2-13% of all queries.

Information and Resources for Women's Health Providers

Information and resource overview

The information and resources provided for counseling patients about their workplace and reproductive health consist of information for women's health providers (below) and 2 appendices. [Appendix A](#) summarizes strategies and resources for 19 specific workplace exposures developed from responses to CDC-INFO requestors. Information on PPE was included in most responses. [Appendix B](#) provides information resources for additional inquiries, specific employee groups and reproductive hazards, policy, PPE, and breast-feeding. Some of this material is also relevant to preconceptional planning and men's reproductive health.

Step 1: Talking about workplace exposures with patients

This set of initial questions can generate useful information about workplace exposures:

- “What do you do in your job? What does your department or group do or make?”
- “What are you concerned about in your workplace? Any information on product name, actual chemical name, or work condition would be helpful.”
 - A patient may self-evaluate a hazard on the basis of its smell. Smell is not a good guide to toxicity: harmful levels of chemicals cannot always be smelled, and much less hazardous chemicals can have an odor.
 - Workers have a legal right to know about hazardous exposures in their workplace—but will not necessarily know if they are exposed to reproductive toxicants. Under OSHA's Hazard Communication Standard, workers have a right to be informed of chemical hazards in their workplace through container labels, Safety Data Sheets (formerly called Material Safety Data Sheets), and training. However, Safety Data Sheets are not required to report reproductive hazards.

- [For chemicals] “What form are the chemicals in: dust, vapor, liquid, gas?”
- “How much time do you spend using each thing that you are concerned about in your workplace?”
- “Do you use any personal protective equipment (PPE) or other safety equipment when performing your job?”
- Ask about shiftwork and physical work factors (eg, prolonged standing, heavy lifting), common exposures associated with adverse reproductive outcomes in some studies.^{5-7,21,22}
- Toxicants can be brought home by the worker or other family member on work shoes, clothing, and other items. Anyone in the home or car can be exposed, including the worker, pregnant women, and children/infants. Ask about this source of possible exposure.

Step 2: Determining which exposures need to be addressed

As mentioned above, the employer's Safety Data Sheets may not indicate reproductive hazards. Alternate data sources, such as New Jersey's Right to Know Hazardous Substance Fact Sheets (<http://web.doh.state.nj.us/rtkhsfs/indexfs.aspx>) are a good resource that specifically lists reproductive hazards and ways to reduce exposure for many chemicals, including appropriate PPE. Reproductive hazards found in select occupations can be found on NIOSH work and pregnancy World Wide Web site (<http://www.cdc.gov/niosh/topics/repro/pregnancy.html>). If the patient's workplace is unusual and/or involves multiple potential exposures, CDC-INFO is available for consultation.

All workers have the right to a safe and healthy workplace,²³ and to know what their workplace exposures are. Speaking with the patient's employer and asking about safer alternatives may also be useful.

Step 3: Determining actions to be recommended for specific workplace reproductive hazards

Providing a safe work environment should follow a hierarchy: workplace hazards should be eliminated or reduced

with engineering controls (eg, ventilation) to provide a safe working environment for workers. Where this is not feasible, use of PPE, including respirators, may be an option. If neither hazard elimination nor PPE are feasible, a worker may wish to consider avoiding hazardous duties preconceptionally or during pregnancy or breast-feeding. In this section, we provide general information to consider about PPE and temporary reassignment.

Appropriate PPE may include gloves, eye protection, protective clothing, and respiratory protection. Gloves can prevent dermal absorption, but only if the right material and thickness of glove is used. If splashing is likely, eye goggles and gowns should be worn (see [Appendix B](#) “Additional Resources on Occupational Reproductive Health”). Respirators may be the most challenging PPE question for pregnant workers, and should be recommended only after careful evaluation of the patient and exposure, summarized below.

Respirators may increase breathing resistance. The OSHA respirator medical questionnaire does not ask about pregnancy, and pregnancy is not an exclusion for respiratory protection. But under 29 Code of Federal Regulations 1910.134 of the Occupational Safety and Health Act, fitness for respirator use must be determined by a physician any time a worker's health condition changes. Health condition (including increased oxygen demand and decreased lung capacity) may change frequently throughout pregnancy. While some women are able to safely wear their usual respirator throughout pregnancy, some might find it more difficult to breathe while wearing a respirator and need to switch to a respirator with less breathing resistance. Recent NIOSH research suggests that the effects of wearing an N95 respirator for an hour are the same for healthy pregnant and nonpregnant women; that fetal heart rate is not affected under these conditions; and that pregnant women whose pregnancy weight gains are within the Institute of Medicine guidelines should not need additional respirator fit

testing.²⁴⁻²⁶ Another possible option is a loose-fitting powered air-purifying respirator, which does not make it harder to breathe. A safety officer or vendor can identify the correct powered air-purifying respirator cartridges and advise on proper storage and service life.

Charcoal masks, paper masks, and surgical masks do not protect against many chemicals or infectious agents. Workers should contact their health care provider, employer, or safety officer to choose the correct respiratory protection.

Prevent take-home exposures. Prevention may include leaving work clothing at work, showering before leaving work, washing work clothes separately from the rest of the family's clothes, and not wearing work clothes or shoes inside the home or car.

If the patient cannot be adequately protected from a reproductive toxicant by engineering controls or PPE, consider temporary reassignment. The US Equal Employment Opportunity Commission (EEOC) issued Updated Enforcement Guidance on Pregnancy Discrimination and Related Issues in July 2014.²⁷ Notably, if an employer provides light-duty assignments to employees with injuries, they also have to extend the light-duty policy to pregnant workers (Appendix B).

Because of the legal implications of requests for special accommodations during pregnancy, several states have adopted laws that require employers to provide at least some accommodations if requested; refer to the laws for your state. The Americans with Disabilities Act and the US EEOC address some of the issues that may be encountered with alternative duty or job reassignment.²⁸

Understanding pregnancy-related employment laws is especially important when writing work accommodation or restriction notes for pregnant patients. Overly restrictive notes can have unintended consequences for workers (including cases where an employee has been fired because the physician-

recommended accommodation was not reasonable). Jackson et al²⁹ provide a current commentary on this issue.

Next steps

The information we have compiled addresses some of the most common workplace exposures women's health providers might encounter when counseling their patients. A long list of gaps exists, headed by the need for reliable toxicity data so that exposure standards (and related engineering controls) can be developed in the context of reproductive and developmental toxicity, and employers, workers, and women's health providers can make informed decisions. Breast-feeding mothers need authoritative information on the probable effects of their infant's exposure to occupational chemical exposures via breast milk. For many medications and some other exposures, pharmacokinetic and maternal/child factors needed to assess impact on breast-feeding have been summarized³⁰ and guidance has been compiled.^{31,32}

Organizations that counsel women and their health care providers (eg, Mother-To-Baby³³) have assessed some occupational exposures, but evaluation of specific workplace chemicals remains infrequent³⁴ and requires estimates of occupational exposure levels, the concentrations of chemicals in breast milk, and assessment of possible toxicity to an infant. Additional research is needed to investigate the physiologic impact of respirator use during pregnancy to ensure that pregnant women will be afforded the same respiratory protection as nonpregnant women without compromising their own health or their pregnancy. Finally, both the ACOG/ASRM and FIGO statements^{9,17} propose the development of policy to reduce toxic environmental/occupational chemicals, and call on clinicians to support related initiatives. Policy decisions to support nondiscrimination against pregnant women workers are also warranted.

For a number of reasons, the information in our database is unlikely to be closely representative of US workplace exposures for pregnant workers. Pregnant workers who decide to contact

CDC-INFO may be likely to have above-average health-seeking behaviors, higher education, and the basic knowledge that certain exposures can harm their developing baby. During pregnancy and after delivery, women actively seek credible health information.³⁵ Pregnant women of lower socioeconomic status turn to health care professionals as their most frequently consulted source of health information.³⁶ Women's health providers who have been unaware of the need to assess workplace reproductive hazards for pregnant patients are also not likely to have been aware of available resources (including CDC-INFO) to get relevant information for their patients. We hope that these resources for women's health providers will help to reach a much broader range of working pregnant women, and ultimately impact working women's and men's reproductive health across their life courses. ■

ACKNOWLEDGMENT

We are grateful to the requestors who provided the basis of this report; Kathy Connick for literature searches; Sharon Lavigne (Mother-To-Baby, Connecticut) for breast-feeding information; Jeri Anderson for ionizing radiation information; and Kaori Fujishiro for helpful comments on the manuscript.

REFERENCES

1. US Environmental Protection Agency (EPA). Endocrine disruptor screening and testing advisory committee (EDSTAC) final report. Washington (DC): US EPA; 1998.
2. Lawson CC, Schnorr TM, Daston GP, et al. An occupational reproductive research agenda for the third millennium. *Environ Health Perspect* 2003;111:584-92.
3. De Santis M, Cesari E, Nobili E, Straface G, Cavaliere AF, Caruso A. Radiation effects on development. *Birth Defects Res C Embryo Today* 2007;81:177-82.
4. Ziskin MC, Morrissey J. Thermal thresholds for teratogenicity, reproduction, and development. *Int J Hyperthermia* 2011;27:374-87.
5. MacDonald LA, Waters TR, Napolitano PG, et al. Clinical guidelines for occupational lifting in pregnancy: evidence summary and provisional recommendations. *Am J Obstet Gynecol* 2013;209:80-8.
6. Whelan EA, Lawson CC, Grajewski B, Hibert EN, Spiegelman D, Rich-Edwards JW. Work schedule during pregnancy and spontaneous abortion. *Epidemiology* 2007;18:350-5.

7. Lawson CC, Whelan EA, Lividoti Hibert EN, Spiegelman D, Schernhammer ES, Rich-Edwards JW. Rotating shift work and menstrual cycle characteristics. *Epidemiology* 2011;22:305-12.
8. National Institute for Occupational Safety and Health (NIOSH). Protecting workers' families: a research agenda report of the workers' family protection task force (NIOSH publication 2002-113). Cincinnati (OH): Department of Health and Human Services; 2002.
9. American College of Obstetricians and Gynecologists. Exposure to toxic environmental agents. Committee opinion no. 575. *Obstet Gynecol* 2013;122:931-5.
10. Whorton D, Folliart D. DBCP: eleven years later. *Reprod Toxicol* 1988;2:155-61.
11. California Environmental Protection Agency. Occupational health hazard risk assessment for California. Oakland (CA): California Environmental Protection Agency; 2007.
12. Stotland NE, Sutton P, Trowbridge J, et al. Counseling patients on preventing prenatal environmental exposures—a mixed-methods study of obstetricians. *PLoS One* 2014;9:e98771.
13. Hancock RL, Koren G, Einarson A, Ungar WJ. The effectiveness of Teratology Information Services (TIS). *Reprod Toxicol* 2007;23:125-32.
14. Frazier LM, Jones TL. Managing patients with concerns about workplace reproductive hazards. *J Am Med Women's Assoc* 2000;55:80-3, 105.
15. Hewitt JB, Tellier L. A description of an occupational reproductive health nurse consultant practice and women's occupational exposures during pregnancy. *Public Health Nurs* 1996;13:365-73.
16. Quint J, Handley M, Cummings K. Workplace health hazards: analysis of hotline calls over a six-year period. *Am J Public Health* 1990;80:202-4.
17. Di Renzo GC, Conry JA, Blake J, et al. International Federation of Gynecology and Obstetrics opinion on reproductive health impacts of exposure to toxic environmental chemicals. *Int J Gynecol Obstet* 2015;131:219-25.
18. Hash S. CDC-INFO. Contact Center Pipeline 2010; March:10-12. Available at: <http://contactcenterpipeline.com/CcpDownloadPub.aspx?pubid=157>. Accessed March 28, 2016.
19. Moline JM, Golden AL, Bar-Chama N, et al. Exposure to hazardous substances and male reproductive health: a research framework. *Environ Health Perspect* 2000;108:803-13.
20. National Institute for Occupational Safety and Health (NIOSH). Report to Congress on workers' home contamination study conducted under the Workers' Family Protection Act (29 U.S.C. 671A), NIOSH publication 95-123. Cincinnati (OH): US Department of Health and Human Services; 1995.
21. Juhl M, Strandberg-Larsen K, Larsen PS, et al. Occupational lifting during pregnancy and risk of fetal death in a large national cohort study. *Scand J Work Environ Health* 2013;39:335-42.
22. Grajewski B, Whelan EA, Lawson CC, et al. Miscarriage among flight attendants. *Epidemiology* 2015;26:192-203.
23. Occupational Safety and Health Administration (OSHA). OSHA worker rights and protections. Washington (DC): US Department of Labor; 2016. Available at: <https://www.osha.gov/workers/index.html>. Accessed Feb. 24, 2016.
24. Kim JH, Roberge RJ, Powell JB. Effect of external airflow resistive load on postural and exercise-associated cardiovascular and pulmonary responses in pregnancy: a case control study. *BMC Pregnancy Childbirth* 2015;15:45.
25. Roberge RJ, Kim JH, Powell JB. N95 respirator use during advanced pregnancy. *Am J Infect Control* 2014;42:1097-100.
26. Roberge RJ, Kim JH, Palmiero A, Powell JB. Effect of pregnancy upon facial anthropometrics and respirator fit testing. *J Occup Environ Hyg* 2015;12:761-6.
27. US Equal Employment Opportunity Commission (EEOC). Fact Sheet for Small Businesses: Pregnancy Discrimination. Washington (DC): EEOC; 2014. Available at: http://www.eeoc.gov/eeoc/publications/pregnancy_factsheet.cfm. Accessed March 28, 2016.
28. US Equal Employment Opportunity Commission (EEOC). Pregnancy Discrimination. Washington (DC): EEOC; 2016. Available at: <http://www.eeoc.gov/laws/types/pregnancy.cfm>. Accessed March 28, 2016.
29. Jackson RA, Gardner S, Torres LN, Huchko MJ, Zlatnik MG, Williams JC. My obstetrician got me fired: how work notes can harm pregnant patients and what to do about it. *Obstet Gynecol* 2015;126:250-4.
30. Nice FJ, Luo AC. Medications and breastfeeding: current concepts. *J Am Pharm Assoc* 2012;52:86-94.
31. Hale TW, Rowe HE. Medication and mothers' milk. Plano (TX): Hale Publishing LP; 2014.
32. National Library of Medicine. Drugs and lactation database (LactMed). Bethesda (MD): US National Library of Medicine, National Institutes of Health; 2014.
33. Organization of Teratology Information Specialists. MotherToBaby. Available from: <http://www.mothers-to-baby.org/>. Accessed Feb. 24, 2016.
34. Fisher J, Mahle D, Bankston L, Greene R, Gearhart J. Lactational transfer of volatile chemicals in breast milk. *Am Ind Hyg Assoc J* 1997;58:425-31.
35. Bernhardt JM, Felter EM. Online pediatric information-seeking among mothers of young children: results from a qualitative study using focus groups. *J Med Internet Res* 2004;6:e7.
36. Shieh C, McDaniel A, Ke I. Information-seeking and its predictors in low-income pregnant women. *J Midwifery Womens Health* 2009;54:364-72.