



# HAZMAT Information for Lactating Parents

**BLUF:** *Military servicemembers will be exposed to hazardous materials throughout their careers. Servicemembers who are lactating need to work with their occupational health agencies, medical or pediatric providers, and supervisors to minimize risks of exposure to breastfeeding children. In cases where daily work environment involves HAZMAT exposure, servicemembers should inform themselves of all options, and may need to wean.*

## **Key Points:**

1. Different types of HAZMAT carry different risks of exposure (see below). Some contaminants pass into breastmilk and others do not. Some, like lead, accumulate over time in the body of the lactating parent, others, like radiation, pose a risk immediately after exposure that diminishes over time. Also, the method of exposure (inhalation, ingestion, or topical contact) may make a difference in whether or not the hazardous material passes into breastmilk.
2. HAZMAT risk through breastmilk is directly related to frequency of exposure. For example, a servicemember who works with high levels of lead during their daily duties is at a much higher risk than a servicemember who needs to handle ammunition during annual firearm qualifications.
3. Options to minimize HAZMAT exposure while lactating:
  - a. Protective gear
  - b. Keeping work clothes and street clothes completely separate (wash work clothes at work, if possible. If not, transport in a sealed plastic bag and wash separately from all other laundry.)
  - c. Showering and changing clothes before leaving work.
  - d. Washing hands thoroughly and changing clothes before eating, drinking, pumping, breastfeeding, or handling your expressed milk.
  - e. Using a lactation space in a different area of your worksite or installation, if possible, and storing milk in a refrigerator or cooler outside of any potential contamination range (separate building or POV).
  - f. Requesting reassignment to a different duty while lactating. Servicemember should discuss with PCM and Occupational Health ALL of the potential HAZMAT exposures and have a memo signed by their PCM to provide their supervisor/commander.

## **Resources:**

- g. [Infant Risk Center](#)
- h. [Army Public Health Center Breastfeeding Resources](#)
- i. Occupational Health
- j. Primary Care Manager for servicemember and pediatric PCM for baby
- k. Lactation professionals

**Additional Information: (this list is not all-inclusive!)**

**Permethrin:** Permethrin is an insecticide used to treat combat-class uniforms (ACUs, OCPs, NWUs, MCCUUs) to protect servicemembers from insect bites and insect-borne infections. The Army has a [specific policy](#) exempting pregnant and lactating soldiers from permethrin-treated ACUs. One study has shown that there is a higher accumulation of permethrin biomarkers in urine following 24-hour wear than 8-hour wear, but noted that the total biomarker accumulation in both scenarios is still well under EPA maximum allowable amounts. Permethrin is also used as a topical treatment for head lice and as an insect repellent, and according to Infant Risk, it is considered the first choice of treatment for pregnant and lactating patients. Permethrin is classified an L2 low-risk drug during pregnancy and lactation. [Infant Risk authors also note that](#) “Topical permethrin lotions can be used safely in neonates <1 month old. Since exposure from treated clothing and surfaces is so much less than direct topical application, it is probably quite safe for children of all ages.” Based on the information available, permethrin-treated uniforms appear to be considered safe for pregnant and lactating servicemembers.

**Lead:** Lead and other heavy metals collect in the bones and then are transferred into milk during lactation. Lead exposure is common in the military when handling military paints, welding, or ammunition. Infrequent exposures, such as firing range training or testing, is not likely to incur a high risk of contamination. The CDC has published [guidance for acceptable lead levels for lactation and testing recommendations](#). More information may be found [here](#). Servicemembers may use this information to coordinate with their occupational health and medical providers to determine breastfeeding safety for high-lead exposure assignments.

**JP-8:** JP-8 is a component of jet fuel and other fuels commonly used for military vehicles and equipment. Exposure to JP-8 is through inhalation, skin contact, or ingesting food or drink contaminated with JP-8. There is no published data on whether JP-8 concentrates in breastmilk or passes to a breastfed infant, however other fuels and hydrocarbons are known to be lipophilic, so it is possible that JP-8 may collect in milk. Lactating parents can take precautions to minimize exposure by wearing protective gear, standing upwind of vapors and exhaust, keeping work clothes separate from street clothes, showering before leaving work, and washing hands before eating or pumping.

**Radiation:** Radiation exposure in the workplace depends on your assigned duty. Radiation accumulates in breastmilk quickly after exposure, and dissipates over time. How long depends on the type of exposure, source of radiation, and frequency. Parents who work daily with radionuclides, cleaning of radioactive spills, cyclotrons, gamma radiography, or nuclear power or weapons will need to consult their occupational health office and may need to reduce hours spent in contact with radiation, request temporary reassignment, or wear.

**Medical/biohazard:** Healthcare and dental workers in the military risk exposure to a number of environmental hazards in the workplace, with the most common being medical gases, such as anesthesia, chemical exposures, such as cleaning agents or certain medications, and airborne and bloodborne pathogens through unintended contact with contaminated surfaces (needle sticks). Lactating parents who work regularly with halothane, anesthetic gases, antineoplastic drugs, or radionuclides may need to request reassignment or wean when they return to duty, as these gases may concentrate in breastmilk.

**Electromagnetic Field (EMF) high-level exposure:** Per Jan Heindel, EMF Engineering Manager, continuous (daily) exposure to high-level EMF can cause cellular mutagenic changes within the lactating body, including changes to components of human milk. Therefore, it is recommended that lactating parents be temporarily reassigned outside of the EMF or wean when they return to duty.

**Tear Gas:** Tear gas is absorbed through inhalation and ingestion and is transient and disperses quickly once exposed to fresh air. Tear gas is too large a molecular weight to pass into breastmilk. Recommended to take general precautions such as changing clothes/showering and waiting 1-2 hours before breastfeeding your child.

## References:

[ALARACT 170/2013 UPDATE OF ALARACT 289/2012 FACTORY TREATED ARMY COMBAT UNIFORMS WITH PERMETHRIN](#)

Bell, M., & Ritchie, E. (2003b). Breastfeeding in the military: Part II. Resource and policy considerations. *Military Medicine*, 168(10), 813-816.

Centers for Disease Control and Prevention. *Guidelines for Identification and Management of Lead Exposure in Pregnant and Lactating Women*. CreateSpace, 2014.

Centers for Disease Control. Breastfeeding in Special Circumstances: Environmental Exposures and Toxicants, [www.cdc.gov/breastfeeding/breastfeeding-special-circumstances/environmental-exposures/index.html](http://www.cdc.gov/breastfeeding/breastfeeding-special-circumstances/environmental-exposures/index.html). Accessed 15 Jan. 2019.

Condon, M. (2005). Breast is best, but it could be better: What is in breastmilk that should not be? *Pediatric Nursing*, 31(4), 333.

Fisher, J., Mahle, D., Bankston, L., Greene, R., & Gearhart, J. (1997). Lactational transfer of volatile chemicals in breast milk. *American Industrial Hygiene Association Journal*, 58(6), 425.

Giroux, D., Lapointe, G., & Baril, M. (1992). Toxicological index and the presence in the workplace of chemical hazards for workers who breast-feed infants. *American Industrial Hygiene Association Journal*, 53(7), 471-474.

"Head Lice." InfantRisk Center, [www.infantrisk.com/content/head-lice](http://www.infantrisk.com/content/head-lice).

Health and Safety Executive. *Working Safely With Ionising Radiation: Guidelines for Expectant and Breastfeeding Mothers*. 2015. [www.hse.gov.uk/pubns/indg334.pdf](http://www.hse.gov.uk/pubns/indg334.pdf). Accessed 15 Jan. 2019.

"Insect Bites and Repellant Sprays for Pregnant Women." InfantRisk Center, [www.infantrisk.com/content/insect-bites-and-repellant-sprays-pregnant-women](http://www.infantrisk.com/content/insect-bites-and-repellant-sprays-pregnant-women).

Kim, Sung R., et al. "Volatile Organic Compounds in Human Milk: Methods and Measurements." *Environmental Science & Technology*, vol. 41, no. 5, 2007, pp. 1662-1667.

National Research Council, et al. *Potential Health Risks to DOD Firing-Range Personnel from Recurrent Lead Exposure*. Washington, DC: National Academies P, 2013.

Navy Environmental Health Center. (2008). *Reproductive and developmental hazards: A guide for occupational health professionals*. Norfolk, VA: Navy Environmental Health Center.

"Permethrin Exposure from Fabric-treated Military Uniforms Under Different Wear-time Scenarios." *Journal of Exposure Science & Environmental Epidemiology*, [www.nature.com/articles/jes201365](http://www.nature.com/articles/jes201365).

"Personal Protective Measures Against Insects and Other Arthropods of Military Significance." DTIC Online, Armed Forces Pest Management Board Information Services Division, Oct. 2009, [apps.dtic.mil/dtic/tr/fulltext/u2/a508412.pdf](http://apps.dtic.mil/dtic/tr/fulltext/u2/a508412.pdf).

Roche-Paull, Robyn. *Breastfeeding in Combat Boots: A Survival Guide to Successful Breastfeeding While Serving in the Military*. Hale Publishing, L.P.. Kindle Edition.

Schaefer, C. (2007). *Drugs during pregnancy and lactation: Treatment options and risk assessment* (2nd Ed.). Amsterdam: Elsevier.

Schreck, Paula K., and Julie Lothamer. *Breastfeeding & Lead Exposure: Issue Statement and Recommendations*. Michigan Breastfeeding Network, 2016. [www.mibreastfedbaby.com/wp-content/uploads/2016/02/Breastfeeding-and-Lead-Exposure-1.pdf](http://www.mibreastfedbaby.com/wp-content/uploads/2016/02/Breastfeeding-and-Lead-Exposure-1.pdf).

U.S. Army Center for Health Promotion and Preventative Medicine, C. (2001c). *Just the Facts: Guidelines for Controlling Occupational Exposure to Hazardous Drugs*.