

ALCOHOL, CAFFEINE, AND IVF SUCCESS

[Alcohol and caffeine](#) have often been the focus of dietary research studies on fertility. Results of these studies have been inconsistent; some show benefits while others show no effect or possibly reduced fertility. In the EARTH Study, we found that low to moderate consumption of alcohol and caffeine in the year prior to infertility treatment was not associated with IVF outcomes. Our results suggest that women's alcohol intake of less than one alcoholic beverage per day and caffeine intake below 200mg/day (less than one 12oz cup of coffee per day) in the year prior to IVF did not affect their chances of successful fertility treatment. We also found that men's caffeine and alcohol consumption did not affect their semen quality (Abadia et al, Human Reproduction 2017; Karmon et al., Andrology 2017).

PESTICIDE RESIDUES IN SOME FRUITS AND VEGETABLES MAY INCREASE PREGNANCY LOSS

[Fruits and vegetables](#) are an essential part of a healthy diet. However, they are also a main source of exposure to some pesticides. In the EARTH Study, we found that women who ate more fruits and vegetables that typically have higher pesticide



residue had a greater risk of pregnancy loss compared to women who ate fewer high pesticide residue fruits and vegetables. We also showed that men who ate more fruits and vegetables that typically have high pesticide residue had lower semen quality. This is the first time an association between pesticide residue from food and IVF treatment outcomes has been reported; therefore it is important that our findings are replicated in other studies. Individuals wanting to decrease their exposure can select organic versions of fruits and vegetables known to have high levels of pesticide residues in the US food supply, such as strawberries, apples, pears, spinach, celery, and peppers. An extended list can be found in the graphic on the following page (Chiu et al., JAMA Internal Medicine; 2018; Chiu et al., Human Reproduction 2015).

GREETINGS,

We are excited to share our recent findings from the Environment and Reproductive Health (EARTH) Study in our 2018 newsletter!

It has been almost 15 years since the EARTH Study first began. Thanks to your participation, we continue to learn more about the impact of the environment and diet on fertility and pregnancy outcomes among couples recruited from the Massachusetts General Hospital (MGH) Fertility Center.

I want to take this opportunity to sincerely thank you all for making this research possible through your participation. I would also like to recognize the outstanding work performed by our research team at Harvard T.H. Chan School of Public Health and the continued support of the MGH faculty and Fertility Center staff.

Sincerely,

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FISH INTAKE, MERCURY, AND SEMEN QUALITY

[Although seafood consumption](#) has been related to a wide variety of health benefits, including improved semen quality measurements, it is also the main source of exposure to methylmercury in the general population. It is unclear if exposure to this heavy metal affects semen quality. Using data from the EARTH Study, we found that among men who ate nearly 2 servings of fish per week, higher levels of mercury measured in hair were associated with improved semen quality, including higher motility, concentration, and count. These findings suggest that hair mercury may serve as a proxy of fish intake and results likely reflect the known beneficial effect of fish intake on semen quality and not a beneficial effect of mercury (Minguez-Alarcón et al., International Journal of Hygiene and Environmental Health 2018).

How to Reduce Exposure

10 WAYS TO REDUCE EXPOSURE TO HARMFUL
SUBSTANCES IN YOUR HOME AND DIET

1.) CLEAN WITH NON-TOXIC AND UNSCENTED HOUSEHOLD CLEANERS

Some cleaners can contain harmful chemicals.



2.) DUST AND MOP OFTEN

Lead, pesticides, and flame retardants can be found in dust.

3.) REMOVE YOUR SHOES

The outdoors can bring toxic substances into your home.



4.) CHOOSE SAFER HOME IMPROVEMENT PRODUCTS

Paints, glues, and flooring materials can emit volatile organic compounds (VOC). Household products made with foam can contain flame retardants.



5.) CHOOSE NON-TOXIC AND UNSCENTED PERSONAL CARE PRODUCTS, COSMETICS

Some products can be a source of phthalates, parabens, and other chemicals.



6.) REDUCE USE OF PLASTIC PRODUCTS IN KITCHEN AND OTHER HOUSEHOLD GOODS

Plastic products can contain phthalates and BPA.

7.) AVOID STORING AND/OR HEATING FOOD/BEVERAGES IN PLASTICS OR GREASE/HEAT-RESISTANT PACKAGING

If possible, replace with stainless steel or glass containers.

8.) REDUCE USE OF CANNED FOODS AND BEVERAGES



Can liners may contain BPA or BPA substitutes.

9.) REDUCE INTAKE OF SWORDFISH, LARGE TUNA, AND TILEFISH

Fish is a healthy food, but some fish contain high mercury.



10.) WASH FRUITS AND VEGETABLES OR BUY ORGANIC WHEN POSSIBLE

Pesticide residues can be found in some fruits and vegetables.

BONUS! TOP 10 FRUITS AND VEGETABLES TO BUY ORGANIC*

- Strawberries
- Spinach
- Sweet peppers
- Peaches/plums
- Apples/pears
- Grapes
- String beans
- Potatoes
- Kale
- Celery



EXPOSURE TO FLAME RETARDANTS AND INFERTILITY OUTCOMES

Flame retardants are a large group of chemicals widely used in furniture and household products. The EARTH Study found that higher concentrations of some urinary flame retardant metabolites in women were associated with lower fertilization, implantation, clinical pregnancy, and live birth. In men, urinary concentrations of some flame retardants were associated with lower fertilization success, but not with other reproductive outcomes. Given widespread exposure to flame retardants in the general population, these results highlight the importance of understanding the impact of these chemicals on fertility and reproduction in men and women alike (Carignan et al., Environmental Health Perspectives 2017; Carignan et al., Environment International 2018).

EXPOSURE TO TRICLOSAN DECREASES OVARIAN RESERVE

Triclosan, which is used as an antibacterial in personal care products, may influence fertility, but there are limited studies in this area. Among women enrolled in the EARTH Study, we investigated whether triclosan concentration measured in urine had an effect on the number of follicles (or eggs) measured during ultrasound before women began fertility treatment. We found that women with higher triclosan in their urine had a slightly lower number of follicles, and results were most pronounced among leaner and younger women. More research is needed to confirm these findings since this was the first study to report a potential negative effect of triclosan exposure on ovarian reserve (Mínguez-Alarcón et al., Fertility & Sterility, 2017).

IF YOU HAVE ANY QUESTIONS,
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