Chemicals, Environment and Fertility

"Of all the self-fulfilling prophecies in our culture, the assumption that aging means decline and poor health is probably the deadliest."

Marilyn Ferguson, The Aquarian Conspiracy, 1980

Chemicals in the Environment

It might be surprising to learn that one of today's major causes of infertility is the diverse range of chemicals to which we are regularly exposed in our environment, particularly those with oestrogenic properties.

Whilst our bodies are designed to excrete waste and toxins from our bodies, which is the function of the liver, lungs, kidneys and skin, we all know that some toxins do accumulate and damage our systems. Exposure to tobacco smoke and alcohol are examples of this, but there are a host of other environmental toxins that have an accumulative effect and create havoc with our health and fertility. This might explain why some older women have problems conceiving, because of the continuous contamination accumulated in body fat up to that point in her lifetime.

Car exhaust fumes are alleged to cause infertility because they excrete a compound known as benzo(a)pyrene (BaP). Studies show that exposure to BaP caused a significant reduction in fertility in animals, with fertility being further reduced when the animals were simultaneously exposed to lead. The results showed that there was approximately a 33% reduction in ovarian weight and a significant reduction in ovarian follicles.

In 2003, a study conducted by scientists from Queen's University, Ontario, Canada who examined the seminal fluid of infertile men discovered increased quantities of the chemical trichloroethylene (TCE), in the sperm of infertile men. TCE is a degreasing agent, which is not only used in the automotive and metal industries, but which can also be found in paints, paint strippers, varnishes, adhesives, lubricants, pesticides, stain removers and carpet cleaning fluids.

More frighteningly is the news that cosmetic and household products that we use every day can play havoc with our health and contribute to infertility.

Pesticides

Over 50 years ago, chemicals that mimic hormones were first introduced into our environment via substances such as the pesticide DDT, for example. DDT was banned from agricultural use in many countries in the 1970's as a result of its negative environmental impact.

Even so, pesticides are still being used in the farming industry. Studies show mothers living near crops that have been sprayed with certain pesticides suffer from higher rates of miscarriage, which is probably due to defects in the foetus.

Environmental toxins are not only harmful to human reproduction, but also have an adverse effect on the animal kingdom, which is causing an increasing number of species to be in grave danger of extinction. In addition, there has been a marked increase in the number of birth defects and genetic anomalies, many of which have been linked to environmental chemicals. Some of these chemicals have also infiltrated our water systems.

Research shows that the air within approximately 75% of US homes is being contaminated with the pesticide chlordane. Chlordane was the pesticide used to prevent and eliminate termites during the 1950's, 1960's, 1970's and 1980's, but was finally banned in March 1988 by the Environmental Protection Agency (EPA). Of most concern are the 5% of homes that were built before March 1988, which have been found to have air levels of chlordane above the “safe” level of 5 micrograms per cubic metre and in homes built prior to 1980, this level rises to above 20%.

Chlordane has been reputed to cause a wide range of health problems including infertility, allergies, respiratory problems, leukaemia, certain cancers, liver damage, immune system damage, increased body weight and neurological problems.

For more detailed information on chlordane and how fertility could be impacted by living in a chlordane treated home, please visit the chlordane web site at www.chem-tox.com/chlordane

Heavy Metals

Lead and Cadmium

Toxic metals, such as lead and cadmium, can adversely affect the developing foetus, in addition to having a detrimental effect on fertility and pregnancy, with an increased risk of miscarriage, premature birth, stillbirth, perinatal death, low birthweight, retarded growth, congenital defects and learning difficulties.

The elimination of toxic metals from the body can be aided by a diet rich in nutrients, in particular iron, zing, manganese and calcium.

Miscarriage and Birth Defects

Since chemical exposure can lower sperm count, the implications are potentially greater than just that of infertility. Studies show that the risk of having a miscarriage or conceiving a child with birth defects increases substantially dramatically when fathers have lower sperm counts.

Another study showed that microelectronics assembly workers showed suffered from a 4-fold increase in miscarriage, because of the women's exposure to chemical solvents used in cleaning the electronic components. These chemicals included acetone (also used for removing nail polish), trichloroethylene, xylene, petroleum distillates and solder vapours.

Chemicals in Personal Care Products and Cosmetics

Whilst we may not be exposed to some environmental chemicals on a regular basis, there are others to which we are exposed on a regular, daily basis. If you shower, shave, wash your hair, brush your teeth, use deodorant, perfume, body lotion, moisturiser and makeup each day, then you are probably exposing yourself to over 100 chemical ingredients. Some of these chemicals have the ability to penetrate the skin and infiltrate the blood stream and can cause a range of health problems, including infertility.

Some Widely Used Chemicals

Phthalates: Phthalates are used in the plastics' industry as softeners and are widely used in personal care products that moisturise and soften skin. Phthalates are added to dissolve and blend the ingredients and to create flexibility in nail polish after it dries. Strangely

enough, these chemicals that have been linked to infertility and birth defects are found in a wide range of leading brand products marketed to women, including deodorant, perfume, hairspray, nail polish and moisturisers. Phthalates are also found in many household items such as fridges, washing machines, telephones and televisions.

Research has shown that phthalates can leak into foods from the inks printed on the wrappers e.g. crisps, chocolate and fatty products such as cheese.

Women who work in the hair care, health care and cosmetics' industries are at greater risk for phthalate exposure.

The good news is that for practically every beauty product that contains phthalates there are equally effective phthalate-free alternatives.

Alkylphenols and Nonylphenols: Alkylphenols and Nonylphenols are found in some industrial and domestic detergents, UK tap water, shampoos, shaving foam, spermicidal lubricants, cosmetics, paints and adhesives.

Alkylphenols are the breakdown products of alkylphenol ethoxylates (APEs) and are approximately ten times more toxic than the original compounds.

Nonylphenols are a type of alkylphenol that studies have found to be toxic to fish, aquatic invertebrates and algae and are believed to disrupt the human endocrine system.

In addition to exposure from detergents, paints and cosmetics, research conducted by the UK Government's Drinking Water Inspectorate showed that various products for drinking water pipes leach alkylphenols and phthalates into the drinking water.

Artificial musks: Artificial musks are often used in perfumes, body sprays and other fragrances. They are bio-accumulative chemicals, which build up in the fatty tissues over a period of time and have been linked to toxicity of the reproductive and endocrine system, disrupting the hormones and causing infertility.

Chemicals in Food

Please refer to Chapter Three, Diet and Nutrition, which lists the chemicals added to food and their effects on fertility.

List of Chemicals and Their Potential Effects

Chemical	Origin & Products	Alleged Risks
Acetone	Nail Polish and remover, cigarette smoke, paints, varnishes and lacquers, household polish and cleaning agents, sun tan lotions	Shown to cause irreversible infertility in rats. Exposure linked to miscarriage
Alkylphenols and Nonylphenols	Industrial and domestic detergents, the spermicidal lubricant nonoxynol-9, UK tap water, shampoos and cosmetics	Oestrogen-mimicking, hormone and endocrine disrupter
Artificial Musks	Perfumes, cosmetics and household goods	Hormone disrupter, may cause cancer
Bisphenol A	Protective liners in canned foods, electrical and electronic equipment, reusable food and drink containers, certain dental sealants	Oestrogen-mimicking, increase in breast cancer cell growth, damage to

		developing brain cells. Classified by the European Chemicals Bureau as a "reproductive toxicant"
Chlorinated Hydrocarbons	Wood preservatives and some pesticides	Infertility, miscarriage
Dioxins	Paper production, transformer disposal	Hormone disrupter
Ethylene oxide	Sterilant used in medical and dentistry fields	Miscarriage
Formaldehyde	Resins, insulation, cosmetics, dyes, rubber production	Hormone disrupter, infertility, miscarriage
Glycol Ethers	Electronics, varnish, paint, inks, dyes, de-icing fluids, cosmetics, photography and some pesticides	Infertility, miscarriage, decreased sperm count
Organochlorine pesticides (Lindane, DDT, etc,)	Lindane used on cereals, soft fruits, cabbage	Hormone disrupter
Organotins	Heat stabilisers used in some PVC products. Has been detected in some brands of disposable nappies	Hormone disrupter
Parabens (Four main parabens: methyl, ethyl, propyl and butylparabens)	Preservatives in cosmetics and antibacterial products	Oestrogen-mimicking
Phthalates	Plastics' industry. Found in PVC products, children's toys and cosmetics	Hormone disrupter, testicular toxin, may cause birth

		defects and liver damage
Perchloroethylene	Dry cleaning	Longer time to conception, miscarriage
Phyto-oestrogens (found in certain types of plant products)	Some soya products	Hormone disrupter
Styrene	Resins, plastics, rubber	Hormone disrupter, infertility, decreased sperm count
Toluene	Inks, glues, cosmetics, petrol (gasoline), coatings	Infertility, miscarriage, decreased sperm count
Vinclozolin	Fungicide used on foods	Hormone disrupter

General Tips

- Buy fragrance-free soaps, shampoos and cosmetics, or products that don't contain synthetic fragrances
- Find natural alternatives to artificial air fresheners
- When embarking on DIY or decorating tasks, use paints, glues and varnishes with a low VOC content (volatile organic compound)
- Avoid using pesticides in the garden
- If you use PVC food wrap, avoid the food coming into direct contact with the food wrap
- Avoid canned foods, opting for fresh or frozen foods
- Buy organic produce

- Wash fruit and vegetables thoroughly before eating

Recommended Resources

Greenpeace: The Greenpeace site provides a list of chemicals in cosmetics and everyday household products:
http://www.greenpeace.org.uk/Products/Toxics/chemicalhouse.cfm

Not Too Pretty: Facts about the phthalates:
http://www.nottoopretty.org/index.htm

Chemical Body Burden: Information on the chemicals in our bodies and the effects they cause:
http://www.chemicalbodyburden.org/

Safer Products Project: The Safer Products Project was launched to generate public support for safe chemicals. Their household dust study in US homes demonstrates that hazardous chemicals used widely in common household products are found in common household dust. The site reviews carpets and flooring, computers, cosmetics, furniture, mattresses, retailers and televisions.
http://www.safer-products.org/

Environmental Working Group: Report on Tap water in 42 states that is contaminated with more than 260 contaminants, 140 of them unregulated:
http://www.ewg.org/tapwater/findings.php