

Reproductive Health & Environmental Exposures



Physician Fact Sheet

Adverse Reproductive and Developmental Health Effects

- ★ **Infertility/Reduced fertility;**
- ★ **Spontaneous abortions/Miscarriages;**
- ★ **Structural or functional birth defects;**
- ★ **Chromosome damage;**
- ★ **Hormonal disruption;**
- ★ **Menstrual problems**

More than 70,000 synthetic or naturally occurring chemicals are in commercial use today, yet only a fraction have been adequately examined for toxicity and for synergistic effects due to multiple exposures. Even small exposures can be biologically significant (see table, reverse).

Substances of Concern

- ★ **Metals** (e.g., lead, mercury, and cadmium);
- ★ **Industrial chemicals, including solvents** (e.g., toluene, benzene, perchloroethylene, and trichloroethylene);
- ★ **Pesticides;**
- ★ **Endocrine disrupting substances** (e.g., dioxin, PCBs, some pesticides, alkylphenols, phthalates)

Taking an Environmental/Occupational History

Occupational and environmental exposures may cause episodic, acute, or chronic illness, and inquiry should be a routine part of every history and physical exam. Important information can be obtained quickly. Routine questions should include information on:

- ✓ Specific nature/duration of a patient's current or past work and/or hobbies (Daily or occasional exposures, including specific job classifications and substances present and/or handled at the workplace.)
- ✓ Exposures to fumes, dust, or chemicals at work, home or in hobbies (Brand or generic names of chemicals should be obtained; general chemical classes are often insufficient for understanding health risks.)
- ✓ Occupation and hobbies of spouse, partner, children
- ✓ Physical symptoms at work or during exposures
- ✓ Levels of ventilation in work/hobby area
- ✓ Results of any air monitoring at the workplace
- ✓ Use of personal protective equipment: gloves, respirator, protective clothing
- ✓ Hand-washing and/or shower facilities at work/how frequently used
- ✓ Accidents or exposure incidents at work, home or in the community
- ✓ Household chemical or pesticide use

Where Used/Where Found

Home

Paints and varnishes;
Cleaning products;
Hobby materials;
Pesticides;
Building materials;
Home office products;
Pet care products;
Food;
Contaminated water (ingestion, skin absorption, inhalation);
Indoor air

Work

Agriculture and food preparation (pesticides);
Electronics, health care, painting, dry cleaning, and auto repair industries (solvents);
Construction, painting, welding, jewelry making (metals)

Community

Schools;
Hazardous waste sites (including landfills/military bases);
Waste incinerators;
Industrial emissions;
Dry cleaners;
Gas stations;
Farms and greenhouses

Key Points

- ❶ More than 70,000 chemicals in commercial use today; only a fraction have been adequately examined for toxicity, additive or interactive effects.
- ❷ Exposure to metals, solvents, pesticides and other industrial chemicals may cause infertility, miscarriage, birth defects, hormonal disruption, and/or chromosome damage.
- ❸ Questions that screen for environmental and occupational exposures are essential to evaluation of many acute, chronic, and episodic medical conditions.

Resources

- ⌘ Greater Boston Physicians for Social Responsibility. *Generations at Risk: How Environmental Toxins May Affect Reproductive Health in Massachusetts*. Cambridge, MA. 1996: (617) 497-7440
- ⌘ MEDLINE: (800) 638-8480; Internet accessible at <http://www.nlm.nih.gov>
- ⌘ Pesticide Hotline: (800) 858-7378; <http://ace.orst.edu/info/nptn>
- ⌘ Pregnancy/Environmental Hotline—State Referrals: (716) 874-4747 x477
- ⌘ Reproductive Toxicology Center (REPROTOX): (202) 293-5137

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Reproductive Outcomes Associated with Chemical Exposures ♦

<u>Chemical</u>	<u>Health Effects</u> † *	<u>Where Used/Where Found</u>
Solvents		
I,1,1-TCA	SA, SBD	CW, IP, WP/S
Benzene	C, LBW, MA, SBD, O (childhood leukemia)	CP, CW, IP, WP/S, O (gasoline)
Chloroform	LBW, SBD	AP, CW, CF, IP
Epichlorohydrin	C, MI	H/S, IP, WP/S, O (wines stored in contaminated vats)
Formaldehyde	MA, SA	CP, IP, O (bldg materials)
Glycol Ethers	FI, LBW, MI, SA, SBD	CP, H/S, IP, WP/S
N-Methyl-Pyrrolidone (NMP)	SA, O (stillbirth)	CP, H/S, IP, WP/S
Perchloroethylene (PCE)	FI, MI, SA, O (infant jaundice)	CW, IP, WP/S
Phenol	C, LBW, O (infant jaundice)	AP, CP, CW, IP
Styrene	H, MA, MI	AP, CP, CW, IP, O (fire fighting)
Toluene	FD, H, LBW, MI, SA, SBD	CP, CW, IP, O (cigarette smoke, gasoline)
Trichloroethylene (TCE)	LBW, FD, H, SA, SBD, O (childhood leukemia)	CW, IP, WP/S
Xylene	LBW, SA, SBD	CW, H/S, IP, WP/S, O (gasoline)
Metals		
Arsenic	SA, SBD, FD, LBW, O (hearing loss)	CF, CW, IP, O (wood products)
Cadmium	FD, LBW, MI, SBD, O (lung damage, placental toxicity)	CF, CW, IP, O (cigarette smoke)
Lead	FD, FI, H, LBW, MI, SA, SBD	CF, CS, CW, O (paint)
Manganese	MI, FD, LBW	IP, P, O (gasoline)
Mercury (Inorganic)	MA, SA, O (acrodynia)	CP, IP, O (dental fillings)
Mercury (Organic)	FD, SBD	CF
Pesticides ‡/Insecticides		
2,4-D	C, MI, SBD	AG/P, AP, CW, HG/P
Atrazine	H, LBW, SA, SBD	AG/P, AP, CW, HG/P
Benomyl	MI, SA, SBD	AG/P, CF, HG/P
Bromoxynil	SBD	AG/P, CW
Chlorpyrifos	SBD	AG/P, AP, CF, CW, HG/P
Cyanazine	LBW, SA, SBD	AG/P, CW
Cypermethrin	FD, H, LBW	AG/P, CF
Diazinon	C, H, MI, SA, SBD	AG/P, AP, CF, HG/P, CW
Dicofol	FD, H, MI	AG/P, CF
Dimethoate	H, MI	AG/P, CF
Dithiocarbamate	FD, H, MI, SA, SBD	AG/P, CF, O (rubber, plastics)
Endosulfan	H, MI	AG/P, CF, HG/P
Ethylene Dibromide	MI	CW, WP/S, IP
Ethylene Oxide	C, MI, SA	IP, O (sterilizing medical equipment)
Lindane	H, MA, MI, SA	AG/P, AP, CF, HG/P O (body lice treatment)
Linuron	SA, LBW	AG/P, CW
Malathion	H	AG/P, AP, CF, CP, HG/P, O (flea/tick dip)
Metam Sodium	SBD	AG/P, AP
Methoxychlor	FD, FI, H, SA	AG/P, CF, HG/P
Methyl Bromide	MI	AG/P, IP
Parathion	C, FD, MI, SA	AG/P, CF
Propargite	O (bone developmental abnormalities)	AG/P, AP
Resmethrin	SA, LBW, H	AG/P, AP, HG/P
Vinclozolin	H, SBD	AG/P, CF
Other		
Alkylphenols	H	CP, CF, CW, IP
Bisphenol-A	H, O (enlarged prostate)	CP, CF, IP, O (dental sealants)
Dioxin	H, FD, MI, SA, SBD, O (altered sex ratio, endometriosis in primates)	AP, CF, CS, IP
PCBs	H, FD, FI, LBW, MA, SA,	CF, CS, IP (banned in U.S.)
Phthalates	H, MI, SA, SBD	CP, CF, CW, IP

Key

Health Effects

C = Chromosome damage
FD = Functional defects
FI = Female infertility
H = Hormonal
LBW = Low birth weight
MA = Menstrual abnormalities
MI = (Male infertility and/or spermatotoxicity)
O = Other (specified)
SA = Spontaneous abortion
SBD = Structural birth defects

Where Used/Where Found

AG/P = Agricultural Pesticide
AP = Air pollution (including incineration)
CF = Contaminated food
CP = Consumer products
CS = Contaminated soil
CW = Contaminated water
H/S = Household solvents
HG/P = Home/Garden Pesticide
IP = Industrial processes (incl. dry cleaning)
O = Other (specified)
WP/S = Workplace solvents

Notes

† Effects derived from at least two animal studies and/or human studies. Evidence is consistently found for some effects--inconsistently for others. See *Generations at Risk* (GBPSR/MASSPIRG, 1996), Table 1 (pp. 94-95).

* Absence of an effect may represent negative studies, single positive animal study, or absence of data.

♦ Table does not contain information about the level of human risk attributable to each exposure, dose-response data, or human exposure levels. Please see relevant sections of *Generations at Risk* for more detail.

‡ Pesticides listed are in common use commercially or in the home (e.g., lawn and garden products, pet applications) and are found in a variety of products, many of which are available over the counter.