

# Preventing Neonatal Pollution: Protecting the Health of the Next Generation

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#### **Pollution in Newborns**

In our modern industrial society, the public is continually exposed to a wise range of chemicals in food, air, water, and consumer products. There is a common improprior that the piscent abserts is protectly, eftering our thany substances that the mother is exposed to before they reach the febs. However, recent studies have found more that 200 industrial chemicals present in the unmitical cord blood samples of necessities 45°°8. In 2011, the President's Content Fennie report a clinical societies are born pre-politiced. "\*\*P ractioners working with preparat women need to three horse foot screen dents for exposures to environmental containments in premark women, one screening tools, and provide resources for patient education on risk induction.

#### **Examples of Chemicals Found in Infant Cord Blood**

- PFCs Perfluorinated chemicals (aka "Teflon chemicals")
  - ▶ PFOA Perfluorooctanoate
  - ▶ PFOS Perfluorooctane Sulfonate
- · Brominated flame retardants
  - ▶ PBDE Polybrominated diphenyl ethers
  - ▶ PBDD/F Polybrominated dibenzodioxins.
- furans

   Additives to plastics, medical devices, cosmetics, personal care products
  - ▶ BPA Bisphenol A
  - ▶ Phthalate
    - Pritrialates
      - \* DEHP di-2-ethylhexyl phthalate \* DBP - di-n-butyl phthalate
      - \* DFP diethyl phthalate



#### Pesticides

- , and all the
- Chlordane
- ▶ Chlorpyrifos
- ▶ DDT Dichlorodiphenytrichloroethane
- ▶ DDE Dichlorodiphenylethane (metabolite of DDT)
- Fungicide HCB hexachlorobenzene
- Air Pollution Components
  - ▶ PAH Polvaromatic hydrocarbons
- ▶ Dioxin
- PCNs Polychlorinated naphthalenes (Wood preservatives, varnishes, waste incineration)
- PCBs Polychlorinated biphenyls (Industrial insulators and lubricants)



# **Effects in the Neonate**

Prenate exposure to chemicals in the environment has been associated with a wide variety of negative health outcomes. While the biological mechanisms that lead to hisse outcomes continue to be studied, researchers are finding strong correlations between exposures to environmental contaminants and adverse treatm outcomes. Effects may be seen in the short term, furning the primatal contaminant of the properties of the pro

#### **Negative Birth Outcomes**



Low Birth Weight	PFOS, PFOA, PBDE, DBP, Pesticides, Air Pollution		
Preterm Birth	PFOS, PFOA, PBDE, DDT, DDE, Phthalates, Pesticides, Air Pollution, PCBs (25-46)		
Birth Defects	Air Pollution, Pesticides, BPA (47-85)		

## **Prenatal Exposures and Later Disease**

The developing fetal brain is especially vulnerable to negative neurodevelopine in effects from toxic ant exposure. Research models finds an array of chemicals with neurotoxic properties, and epidemiological studies support the correlations in human models finds an array of chemicals with neurotoxic properties, and epidemiological studies support the correlations in human Studies examining the effect of environmentations on maternal hyrindisfunction may be of particular significance, since thyroid homomos of maternal origin plays an essential role in fetal neurodevelopment. PSSI.

#### Impaired Neurodevelopment & Behavior

Neurobehavioral/ Neuromotor function	Pesticides, PBDE, PCBs, Phthalates, DDT, DDE (67-87)
Lowered IQ	Pesticides, PBDE (98-70)



#### **Developmental Origins of Health and Disease**

Researchers in the field of the Developmental Origins of Health and Disease (DOHaD) expore how early life exposures affect adult health. DOHaD researchers seek to find the mechanisms by which body systems are programmed during the fest pariod. DOHaD builds upon the work of David Barker, M.D., Ph.D., Ph.S., who found that severe maluration in pregnancy is associated with a greater kelemood of cradinal decease in adulthood. The Populaties is that prevail a factors cause a orbit in field exhebyment that are the programming of the work in the programming o

# Screening for Exposures

Environmental health screening tools designed for the preconceptual and prenatal period are available to assist healthcare providers who provide maternity care to assess for exposures to environmental contaminants. The Green Choices Project and the Alliance of Nurses for Health Servision entities provide examples or certain environmental health assessment tools, and are available on-line.



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### **Counseling Clients**

Short term effects of toxicands, such as low both weight, generaturly and both defects, contribute significantly to infant montality retails programing resulting from permait factors, including environmental exposures, is not permeinted that predispose the influence of the process of the







# **Training Clinicians**

Environmental exposures in pregnancy can alter development during a crucial period. Health care professionable need continuing educational populanties, in order to be better understand the hearded posed by environmental buschess, and to provide arthripatory guidance to families on avoiding hazardous substances. Although risk induction is an important prevention measure, many exposures are not avoidable on an individual basis. The UCS Program on Perpoductive Health and the Environment of production or criticians on the coming involved in health policy. The Association of Reproductive Health Professionals, Physicians professional small productive the least in Professionals and the Environment are almong the comparations providing resources for professional small part education.







References

Available on the APHA 2011 Annual Conference website or by email request