

Healthy and Sustainable Environments for Children: Turning Research into Practice

Sally Perreault Darney, Editor in Chief

Sally.Darney@nih.gov

www.ehponline.org

Japan Environment and Children's Health Study (JECS)
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National Institute of
Environmental Health Sciences

Japanese Society of Public Health COI Declaration

- National Institute of Environmental Health Sciences, National Institutes of Health, U.S.A.
Sally P. Darney
- The presenter has no conflict of interest with any corporate organizations relating to this presentation

How I became interested in children's environmental health research

- 1970s, teaching biology at local college, and health education in a family planning clinic
- 1977-80, PhD biomedicine, thesis on sperm physiology and male infertility
- 1981-84, postdoctoral research at The Johns Hopkins University School of Public Health on sperm microinjection into hamster eggs



1984 - 2014, EPA's Office of Research and Development – toxicology research

RESEARCH ABOUT:

- Reproductive toxicology, chemicals
- Sperm measures
- Reproductive health in men (air and water quality)
- Early pregnancy loss
- Children's health research roadmap



Reproductive epidemiology: air pollution ~ male reproductive health



Research to practice

- Influenced Czech governmental actions to improve air quality by switching to gas for heating and closing some power plants
- Led to more research in Prague where air pollution from traffic and has become a concern (men and women)
- Demonstrated value of longitudinal semen studies and inclusion of sperm DNA and chromosome outcomes in other studies
- Contributed to design of EPA study of drinking water disinfection byproducts and male reproduction needed by US EPA

Since 2015, putting it all together!
Editor in Chief of EHP at National Institute
of Environmental Health Sciences (NIEHS)

Vision:

EHP is recognized as the leading environmental health journal, publishing the highest quality and most important research, news and commentary in the field; and,

EHP makes new knowledge accessible and understandable by many diverse stakeholders

Research motivated by concern about
real-world exposures



POCs in Breast
Milk: PCBs, DDT
Dioxins

Pesticides in Foods
Estrogens in Soy
Formula



Plasticizers in products:
BPA, phthalates

Research and action are needed to:

- Fill gaps in the evidence base for medical diagnosis and treatment
- Provide reliable advice to pregnant women, parents, and youth
- Support both public health practices and environmental regulations that protect and promote children's health
- Improve public trust of science
- Inform those who make the laws and public health policies



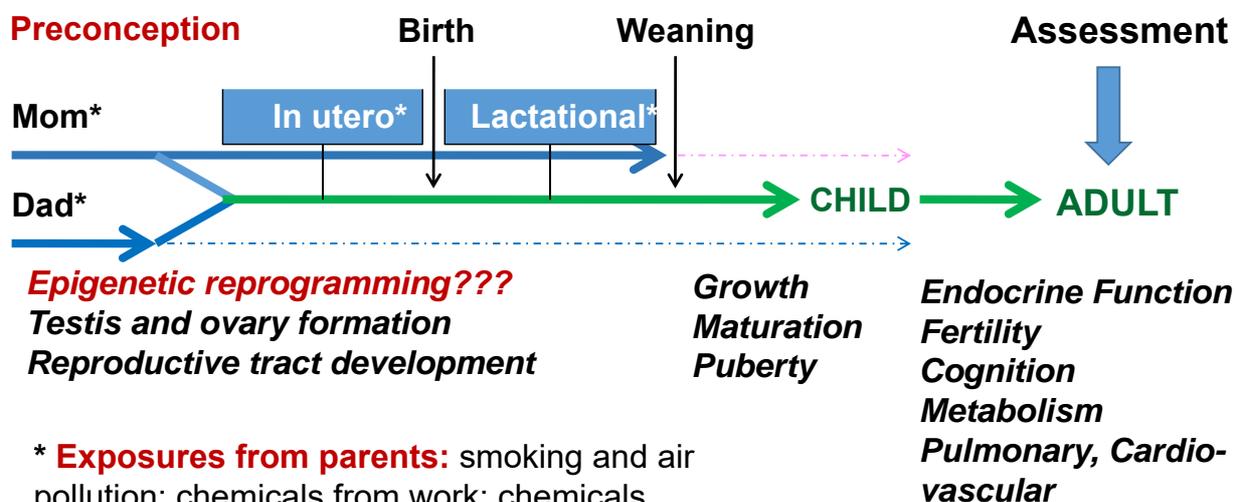
Importance of life-course exposures and lasting health impacts



Key challenges and trends in children's environmental health research

- Larger and longer cohort studies such as JECS
 - Large databases to sustain over time
 - Data sharing and access while ensuring protection of human subjects
 - Biobanks: large inventories, Q.A., sustainability, access control
 - Publication plans involving many investigators and students

Consideration of multiple exposures AND multiple health outcomes across all life stages



* **Exposures from parents:** smoking and air pollution; chemicals from work; chemicals used at home; food choices

Emerging areas of interest

- **Microbiome:** formation after birth and stability across the life course +/- chemical exposures
- **Environmental vs. inherent** contributions to children's health
- **Role of epigenetic reprogramming**
(Developmental Origins of Disease)

Early-life environments and risk of chronic diseases in later life

- **Neurodegenerative:** Alzheimer's disease; Parkinson's disease
- **Obesity:** complex interactions of genetics, diet, exercise, inflammation, diabetes, etc.
- **Cardiovascular disease:** contribution from air pollution
- **Role of the "built environment"** in maternal and child health: access to healthy food, walkable communities, safe play places, "green schools"

Journals can foster children's health knowledge transmission to all stakeholders:

- **Researchers:** By publishing original research articles to fill critical data and knowledge gaps (basic and applied)
- **Policy makers:** By publishing systematic reviews that weigh the evidence according to clear and objective criteria
- **Public:** By including articles on children's health written for lay audiences; podcasts; video interviews; commentaries; links to other resources
- **All:** by using social media to "push" out content

Accessibility helps ensure knowledge transmission

- Online open access at www.ehponline.org
- No publication fees or page charges (funded by NIEHS)
- Readers can sign up for notifications of new content
- Social media: Twitter and Facebook @EHPonline





FEATURED NEWS



Connecting PM_{2.5} Exposure to Insulin Resistance: Oxidative Stress May Be an



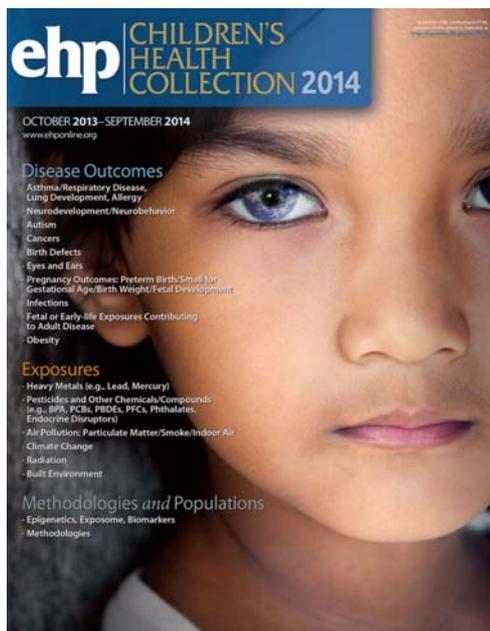
Institutes in the Lead: Identifying Environmental Factors in Breast Cancer

ANNOUNCEMENTS

Introducing the EHP News Page
 Since 1993 the News section of EHP has provided readers with objective, accurate information on timely environmental health topics. After years as one of the most popular features of EHP, and as our main tool for reaching a broader audience, we felt it was time the News had its own home on our website. We are now pleased to present our brand-new page devoted exclusively to EHP News! (more...)

EHP News Special CEEM November 2016

Children's Health Collections, 2010-2015



Abstracts of all relevant articles, grouped by:

- Disease outcomes
- Exposures
- Methodologies and populations

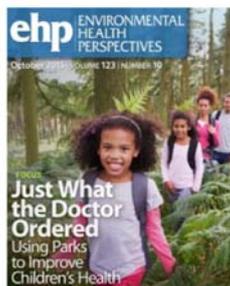
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Conference Abstracts
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THIS MONTH IN EHP

Environmental Influences on Child Health Outcomes
Charles W. Schmidt

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ON THE COVER

In recent years researchers have dramatically expanded their understanding of health benefits tied to visiting parks and some of the many pathways through which these benefits occur. Now park visits are being integrated into children's health care through "park prescriptions" and community health programs.

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ANNOUNCEMENTS

ISEE 2015 Abstracts Now Available

EHP is pleased to present [the abstracts](#) for the 2015 annual conference of the [International Society for Environmental Epidemiology \(ISEE\)](#), "Addressing Environmental Health Inequalities," held 30 August–3 September 2015 in São Paulo, Brazil.

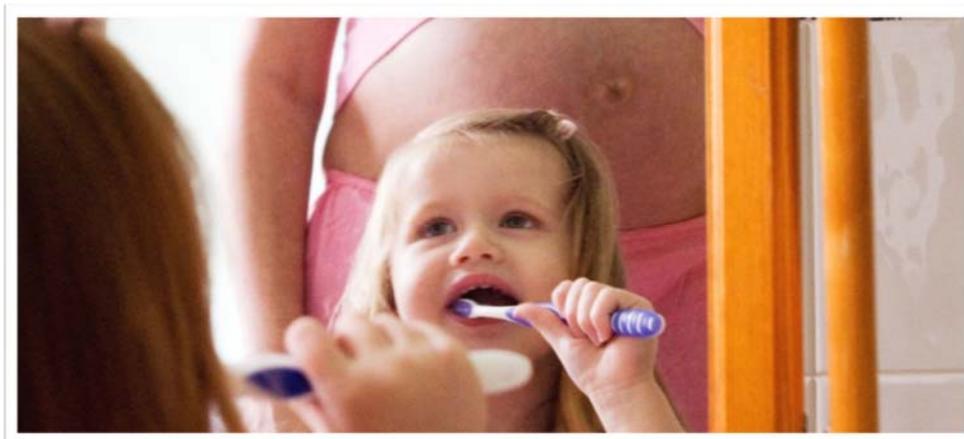
Authors: What YOU can do

- Follow widely accepted reporting guidelines to ensure transparency, reproducibility and rigor
 - ARRIVE for animal and experimental studies
 - STROBE for observational (human) studies
 - PRISMA for systematic reviews
- Make your data accessible and re-usable in online data access sites designed for data sharing (e.g. NIH genomics, Dryad)
- Volunteer to be on peer review boards and governmental or community advisory boards

Authors can also:

- Work with journal editors to
 - Write short summaries in “reader friendly” language
 - Develop graphical abstracts
 - Participate in webinars and podcasts
- Work with university public affairs staff
 - Press releases
 - Newsletters
 - Learn to talk with press

Press releases are powerful tools



“Prenatal Fluoride Exposure and Cognitive Outcomes in Children at 4 and 6–12 Years of Age in Mexico” (Bashash et al. EHP, 2017)

- First week after publication:
 - 10,026 web hits
 - 675 PDF downloads

Pittsburgh Post-Gazette*

http://markets.post-gazette.com/postgazette/news/read/34975088/new_study_confirms_fluoride_harms_fetal_brain Sept. 22, 2017

New Study Confirms Fluoride Harms Fetal Brain; Lowers IQ

“The results of the first ever US government funded study of fluoride and IQ have just been published. A team of researchers found a statistically significant association between fluoride exposure in women during pregnancy and a lowering of IQ in their children, reports the Fluoride Action Network.”



“Urinary Concentrations of Organophosphate Flame Retardant Metabolites and Pregnancy Outcomes among Women Undergoing *in Vitro* Fertilization” (Carignan et al. EHP, 2017)

– First week after publication:

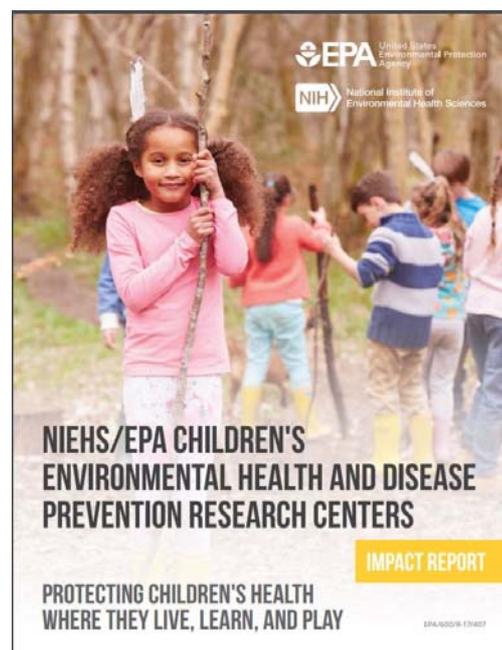
- 1,430 web hits
- 266 PDF downloads

Supporting “research to practice”

- Identify and engage “knowledge users” at the start
 - Community groups
 - Regulatory agencies (national and local)
 - Medical care providers (physicians, nurses, health care workers)
- Create an “outreach plan” from the start

NIEHS/EPA Children’s Environmental Health and Disease Prevention Research Centers Program

- 1998 – 2018 Report
- Summarizes research from 24 Centers
- Includes: Outcomes, Exposures, Community Outreach Efforts
- https://www.epa.gov/sites/production/files/2017-10/documents/niehs_epa_childrens_centers_impact_report_2017_0.pdf?pdf=chidrens-center-report



Examples from NIOSH/EPA Children's Health Research Centers

RESEARCH ON:

- Farm workers bring pesticides home (U. Washington)
- “Integrated Pest Management” (IPM) approach (Columbia U.)
- Exposures common in schools (several)

PRACTICE:

- Workers taught to remove clothes and wash before contact with children
- IPM adopted by public housing authorities in NYC
- EPA developed “Tools for Schools”

Scientists, health care providers, and advocates can also:

- Speak at public meetings, webinars, and podcasts
- Write about your research (and that of others) for newspapers and your personal social networking avenues (blog about children's health)
- Create or share existing online resources

Online resource

<https://CEHN.org> Children's Environmental Health Network



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Online resource

<https://www.epa.gov/iaq-schools> US EPA materials about indoor air quality (IAQ) and “Tools for Schools” kit



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School IAQ

Thank you!

Sally.Darney@NIH.gov

<https://www.EHPonline.org>