

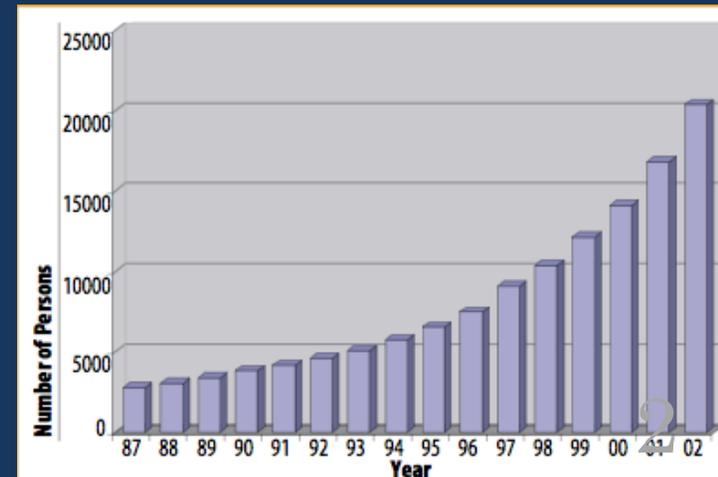
Targeting
Environmental
Neuro-
Development
Risks



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Project TENDR: Who we are:

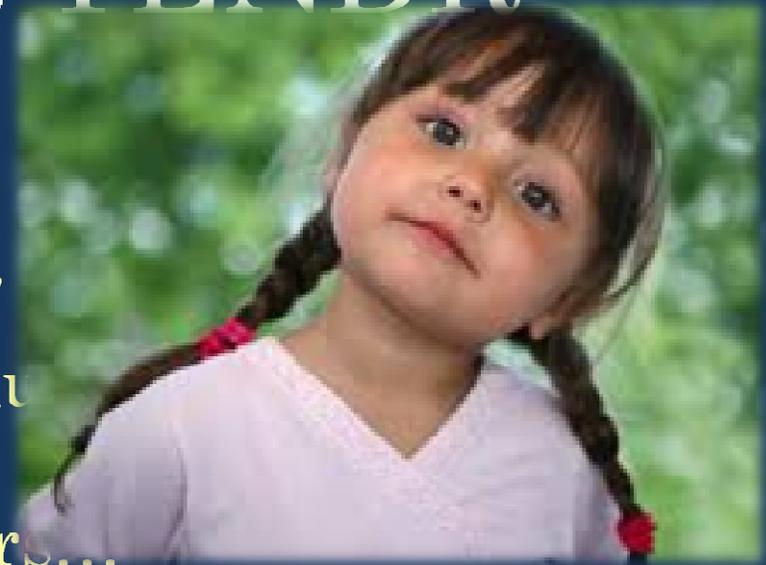
- Environmental Health Researchers
- Health Professionals
- Government Scientists
- Child Advocacy Organizations



Mission of Project TENDR

To reduce the exposure levels of environmental chemicals or pollutants that contribute to risks for neurodevelopmental disorders...

as a means to achieve the public health goal of lowering incidence of these conditions.



Neuro-Developmental Disorders

- Intellectual Disability
- Autism Spectrum Disorder
- Attention Deficits
- Hyperactivity
- Learning Disabilities
- Other Neuro-developmental conditions



Project TENDR:

How can we achieve the goal of exposure reduction?



How can we protect our most vulnerable?

Project TENDR:

The problem of environmental chemicals

- Over 80,000 chemicals in commerce
- Most untested for harm to health
- Very few for prenatal exposures & impacts on brain function: learning, behavior, social skills, or mental health

Project TENDR: Two pronged approach



- 1 Target a short list of environmental chemicals that highlight the larger problem of toxicants in the environment
 - 2 Address systemic problems in chemical regulatory policies and implementation
- Published a Consensus Statement July 1st, in *Environmental Health Perspectives*

Consensus Statement Authors:

Scientists

Deborah Bennett, UC Davis
David Bellinger, Harvard
Linda Birnbaum, NIEHS
Asa Bradman, UC Berkeley
Aimin Chen, U. Cincinnati
Deborah Cory-Slechta, U. Rochester
Stephanie Engel, U. North Carolina
M. Daniele Fallin, Johns Hopkins
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Bruce Lanphear, Simon Fraser U.
Emily Marquez, PAN
Melanie Marty, UC Davis
Jennifer McPartland, EDF
Craig Newschaffer, Drexel U.

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Heather Patisaul, NC State U.
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Thomas Webster, Boston U.
Robin Whyatt, Columbia
Tracey Woodruff, UCSF
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Children's Health Advocates

Annie Acosta, The Arc
Charlotte Brody, HBBF
Elise Miller, CHE
Pamela Miller, ACAT
Maureen Swanson, LDA
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Health Professionals

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Jeanne Conry, ACOG
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Deborah Hirtz, U. of Vermont
Katie Huffling, ANHE
Philip Landrigan, Mt. Sinai
Arthur Lavin, Case Western Reserve
Mark Miller, UCSF
Mark Mitchell, NMA
Leslie Rubin, Morehouse, Emory
Ted Schettler, SEHN
Ho Luong Tran, NCAPIP

Professional Organizations Endorsing or Supporting Consensus Statement

American College of Obstetricians and Gynecologists

Alliance of Nurses for Healthy Environments

American Nurses Association

Child Neurology Society

Developmental Neurotoxicology Society

Endocrine Society

International Neurotoxicology Association

International Society for Children's Health and the Environment

International Society for Environmental Epidemiology

National Association of Pediatric Nurse Practitioners

National Council of Asian Pacific Islander Physicians

National Hispanic Medical Association

National Medical Association

Physicians for Social Responsibility

Project TENDR:

A short list

- Lead
- Organophosphate pesticides
- Polybrominated diphenyl ether (flame retardants)
- Air pollution

Scientific evidence
Exposure widespread
Reduction of levels



Project TENDR: Lead



- Exposure by ingestion or inhalation:
 - Peeling paint in older houses
 - Lead water pipes
 - Lead battery recycling
 - Aviation gas, cosmetics, bullets, etc.
- There is no safe level of lead for children.
- Over 150 years documenting effects including loss of IQ, developmental delays, ADHD, learning disabilities.
- Opportunities for exposure reduction:
cleaning up or replacing soil, chipped paint, water pipes;
banning lead from products; ensuring no new uses of lead.

Project TENDR: Polybrominated diphenyl ethers

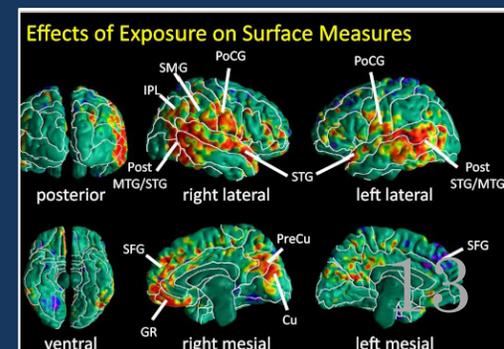


(Flame retardants)

- Exposure due to dust contaminated with PBDEs from:
 - Upholstered Furniture
 - Electronics
 - Kid's products, i.e. nap mats, nursing pillows, car seats
 - Fabrics
- Associations with cognitive impairment (loss of IQ), ADHD symptoms. PBDEs disrupt the endocrine system.
- Opportunities for exposure reduction through replacing old furniture, wet mopping, vacuuming, washing hands.

Project TENDR: Organophosphate Pesticides

- Exposure through:
 - Household pest control
 - Occupations in agriculture
 - Residues on foods
 - Drift from agricultural applications
- Associations with cognitive impairments (i.e., decreased IQ), autism, & symptoms of ADHD
- Changes in brain function found on MRI
- Opportunities for exposure reduction through non-toxic alternatives, organic farming, washing fruit with no peel



Project TENDR: Air Pollution



- Widespread exposure, largely due to motor vehicle traffic
- Literature shows deficits in cognitive skills
- Supported by animal experiments
- Opportunities for exposure reduction:
 - Public transportation
 - More bicycle and pedestrian-friendly city planning
 - Technologic advances – hybrids, all-electric vehicles

Project TENDR: Phthalates



- **Exposure through:**
 - Food contaminated during processing & packaging.
 - Personal care products, “Fragrance” “Parfum”
 - Vinyl flooring
 - Children’s toys and other products.
- **Emerging concerns: ADHD behaviors, IQ loss, autism.**
- **Opportunities for exposure reduction:**

phthalate-free products;
buy less processed and packaged food;
bans on use of phthalates in food processing.



Project TENDR: Systemic change



Overhaul systems for chemical regulation:

- Special vulnerabilities of children
- Act before children are harmed
- *Shift the burden of proof – safety (drugs) vs. harm*
- Speed the process, regulate groups of chemicals
- End the cycle of replacing one toxic chemical with another.

Project TENDR: Regrettable substitutions



- **Pesticides:**
 - 1940's-1970's: Organochlorines (DDT, Heptachlor,...): highly persistent, reproductive toxicity
 - Replaced with: Organophosphates (chlorpyrifos, ...)
short-lived, neurodevelopmental toxins
 - Replaced with: Pyrethroids, Neonicotinoids
- **Flame retardants:**
 - 1950's 40's-1970's: Brominated Tris;
 - 1970's: Chlorinated Tris
 - PBDE's

Project TENDR:

Engage at all levels

- Law-makers
- Regulators
- Manufacturers, Distributors, Retailers
- Health professionals
- Consumers, parents-to-be, broad public

Project TENDR: Dissemination



- New York Times feature story
- CNN online story
- Over 20 radio interviews with TENDR spokespeople
- 266 outlets reported on press release (being updated)
- 5 local NPR stations have hosted us, more are scheduled
- Congressional briefing attended by 60 House, Senate, and agency staffers, including Senator Murkowski

Project TENDR: Consensus Statement



- Magnitude of problem of neurotoxic chemicals
- Targeted chemicals: examples of regulatory failures
- Overhaul systems for chemical regulation
- Engage multiple sectors
- Need for action to achieve exposure reduction

Project TENDR: Recommendations on Lead



Step #1

- The U.S. government should adopt standards and action levels for lead that rely on the most up to date scientific knowledge to set the strongest protections for children from lead toxicity and neurodevelopmental impairment

Project TENDR: Recommendations on Lead



Step #2

- The U.S. government should prioritize efforts to identify, remediate and eliminate sources of lead in dust, air, soil, water and consumer products to protect children *before* exposure occurs.

Project TENDR: Recommendations on Lead



Step #3

- Congress should set up an independent expert advisory panel to develop a national strategy to eliminate lead exposure so that no child has a blood lead concentration $> 1 \mu\text{g} / \text{dL}$ (10 ppb) by 2030

Project TENDR: Coming up...

Chemical-specific recommendations
(beyond lead)

Publication of our chemical reviews

Implementation

→ *Visit our website:*

projectTENDR.com



projectTENDR.com

Project TENDR

Targeting Environmental NeuroDevelopmental Risks

Home / Who We Are ▼ / Consensus Statement / Resources / Chemicals & Pollutants ▼ / What You Can Do / In The Media



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IN THE MEDIA



TENDR on KQED Forum July 7, 2016 Listen to episode

JULY 7, 2016

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Project TENDR: Funding



- John Merck Fund
- Passport Foundation
- Ceres Trust
- NIEHS