Targeting Environmental Neuro-Developmental 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:

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<thead>
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### Professional Organizations Endorsing or Supporting Consensus Statement

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<tr>
<th>American College of Obstetricians and Gynecologists</th>
<th>International Society for Environmental Epidemiology</th>
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<td>Alliance of Nurses for Healthy Environments</td>
<td>National Association of Pediatric Nurse Practitioners</td>
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<td>Child Neurology Society</td>
<td>National Hispanic Medical Association</td>
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<td>Endocrine Society</td>
<td>Physicians for Social Responsibility</td>
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Project TENDR:
A short list

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

Scientific evidence of harm. Exposure widespread. Reduction of levels is feasible.
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 µg /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
Project TENDR

Targeting Environmental Neuro-Developmental Risks
Project TENDR: Funding

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