Toxic Free Kids Act

SB 478 A- Public hearing, 8:30 am, Hearing Room F 6/9/2015

I am Marjorie Kircher. As an Occupational Therapist who worked with children with neurodevelopmental disorders for over 25 years, I urge you to support SB 478, the Toxic Free Kids Act.

What brings me here today is my urgent concern for children. I have observed a transformation over two decades of working within special education in a large local school district, a profound increase in the number and severity of children, per capita, with disorders such as Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder, learning disorders, reduced intellectual ability, and often unspecified issues of language and social cognition; attention and mood dys-regulation. Many professionals are needed on intervention teams caring for children with special needs and the costs add up: health care, special education, a parent's lost wages, the child's own lifetime of reduced productivity—the financial cost is enormous, but the emotional costs are profound and incalculable. There is little doubt that prevention is a cost-effective alternative.

An article published in *Health Affairs*, May 2011 by Trasande and Liu, cites the cost of environmentally mediated disease, inclusive of lead poisoning, prenatal methylmercury exposure, childhood cancer, asthma, intellectual disability, autism, and attention deficit hyperactivity disorder, at $76.6 billion (data collected in 2008).

A lot of preventative strategies focus on individual child and maternal health: avoid smoking and alcohol, take folic acid, avoiding contamination in a child's foods. But neurotoxic chemicals in a child's pacifiers, toys, clothes and bedding could be undermining parents' preventative strategies.

A few examples of chemicals in this bill that are neurodevelopmentally harmful and a few of the products they are found in (from the Washington State Department of Health, for the Children's Safe Product's Act 4/18/2011):

Bisphenol A, found in pacifiers and children's toys, some baby bottles (see appendix A, for neurotoxicity of BPA)

Cadmium, in imported children's jewelry, pencil cases and school bags

Carbon disulfide, in balloons (4 out of 4 samples)

Mercury, in button batteries used in children's toys, imported children's jewelry

Phthalates, in pacifiers, toys, childrens' lotions (see Appendix B, for neurotoxicity of Phthalates)

Styrene, in toys, nursing and feeding pillows, children's bed linens

Toluene, in infant clothes, toys (14 of 14 slimy toys), school erasers

And the synergistic action of several chemicals acting together within the body increases neurotoxic effects.

Many of the chemicals are also carcinogenic; we all know cancers in children are also tragically on the rise.

We know through biomonitoring studies that neurotoxic chemicals are widely found in peoples' blood and urine. These are unhealthy conditions potentially exposing large numbers of children in highly vulnerable windows of development. This can have profound consequences for populations. And that's where public health comes in.

The very definition of public health, according to the World Health Organization, is to "provide conditions in which people can be healthy, focusing on entire populations, not on individual patients or diseases."

That's why I urge your support of SB478 as a reasonable public health measure to begin addressing exposure to hazardous chemicals at a population level. In order to do our public health duty, we need the cooperation of children's product manufacturers to disclose the use of these hazardous chemicals and to adopt safer alternatives. The science and the economics strongly suggest that an investment in reducing exposures will pay off in a healthier population across Oregon.

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Appendix A

Neurotoxicity of Prenatal BPA Exposure

Braun et al. (2009) BASC 2 at 2 yrs old:
Girls showed increased aggression (16 wk prenatal-BPA stronger assoc. than 26 week

Braun et al (2011) BASC-2 BRIEF P at 3 yrs old:
Girls showed hyperactivity, anxiety and depression, less emotional control and less inhibition

Perera et al (2012) CBCL 3-5 yrs old:
Boys showed an increase of emotional reactivity and aggression; girls, anxiety, depression and aggression

Harley et al (2013) BASC-2 & CADS at 7 yrs old:
Boys showed internalizing problems, anxiety and depression

BASC 2 = Behavior assessment system for children 2
BRIEF-P = Behavior rating inventory of Executive function
CBCL = Child behavior check list

This Table summarizes four recently published studies which studied the neurotoxic effects of prenatal BPA exposures.
All studies measured BPA in pregnant women urine samples. Only statistically significant results ($p<0.05$) are presented. Like all studies presented thus far on other chemicals, each of these studies adjusted for potential confounders (e.g., maternal age, race/ethnicity, time in US, maternal education, marital status, maternal smoking, household income, HOME score, maternal depression, number of siblings)

Agnes Lobscheid, PhD, from ND talk (Katz, Kircher, Lobscheid) at Northwest Environmental Health Conference, 4/17/2015

Appendix B

Neurotoxicity of Prenatal Phthalate Exposure

Source & No. metabolites	Standard Assessment	Assessment Age (N)	Outcome ($p<0.05$)
Kim et al. (2011) 3 metabolites	BSID-III for MDI and PDI	**6 Mnths** (460)	**Boys**: prenatal phthalate→ ↓ MDI and PDI $p>0.05$ for girls
Tellez-Rojo et al. (2013) 9 metabolites	BSID-III for MDI and PDI	**2-3 yrs** (135)	**Girls**: 5 phthalate metabolites → ↓ MDI
Whyatt et al. (2012) 4 metabolites	BSID-III for MDI and PDI	**3 yrs** (319)	**Boys & Girls**: MnBP & MiBP → ↓ PDI **Girls**: MnBP → ↓ MDI
Kobrosly et al. (2014)7 metabolites	CBCL	**6-10 yrs** (153)	**Boys**: inattentiveness, rule-breaking, aggression, conduct problems, or oppositional behavior Null association for girls
Lien et al. (2014) 7 metabolites	CBCL	**8-9 yrs** (122)	**Boys & girls**: all DEHP metabolites → delinquent & aggresssive behavior, internalizing &/or externalizing problems
Factor-Litvak et al. (2014) 6 metabolites	Weschler, 4th Ed (WISC IV)	**7 yrs** (328)	**Boys & girls**: MnBP & MiBP → ↓ full scale IQ (**Boys** associations stronger)

The 6 studies summarized here reveal the potential neurotoxic effects associated with prenatal phthalate exposure. "No. Metabolites" indicates how many metabolites were sampled in pregnant women urine samples, e.g., Kim et al. (2011), only 3 (MEHHP, MEDHP, MBP)
DEHP metabolites := MEDHP, MEHHP, MEHP)
All studies analyzed 3rd trimester urine samples. Only statistically significant results ($p<0.05$) are presented. All studies adjusted for potential confounders (i.e., children's IQ, gender, family income in Factor-Litvak- check Kobrosly; and others).
The PDI indicates motor skills; MDI measures cognitive skills.
It is evident that all studies show statistically significant evidence for decreases in cognitive skills, motor skills, or internalizing and/or externalizing problems.
Red highlights are intended to show that gender definitely acts as an effect-modifier in studies conducted so far (i.e., different results for boys and girls in most studies)

Agnes Lobscheid, PhD, from ND talk (Katz, Kircher, Lobscheid) at Northwest Environmental Health Conference, 4/17/2015