

An Ounce of Prevention, A Lifetime of Health: Childhood Cancer Prevention Initiative



CAC2 All-Member Webinar
August 18, 2020



WEBINAR PRESENTERS:

Jonathan Agin, CAC2 Member, Executive Director for the Max Cure Foundation

Anne Robertson, CAC2 Member, Founder of Toxic Free Future for Our Children

Mary Beth Collins, CAC2 Member, Parent Advocate

Margaret Kripke, Professor of Immunology and Vivian Smith Chair Emerita, at The University of Texas M.D. Anderson Cancer Center and Professor Emerita at the Graduate School for Biomedical Sciences in Houston

Philip J. Landrigan, MD, MSc, DIH, FAAP, FACPM, FACOEM, pediatrician and epidemiologist who directs the Program for Global Public Health and the Common Good and the Global Observatory on Pollution and Health at Boston College.



Jonathan Agin

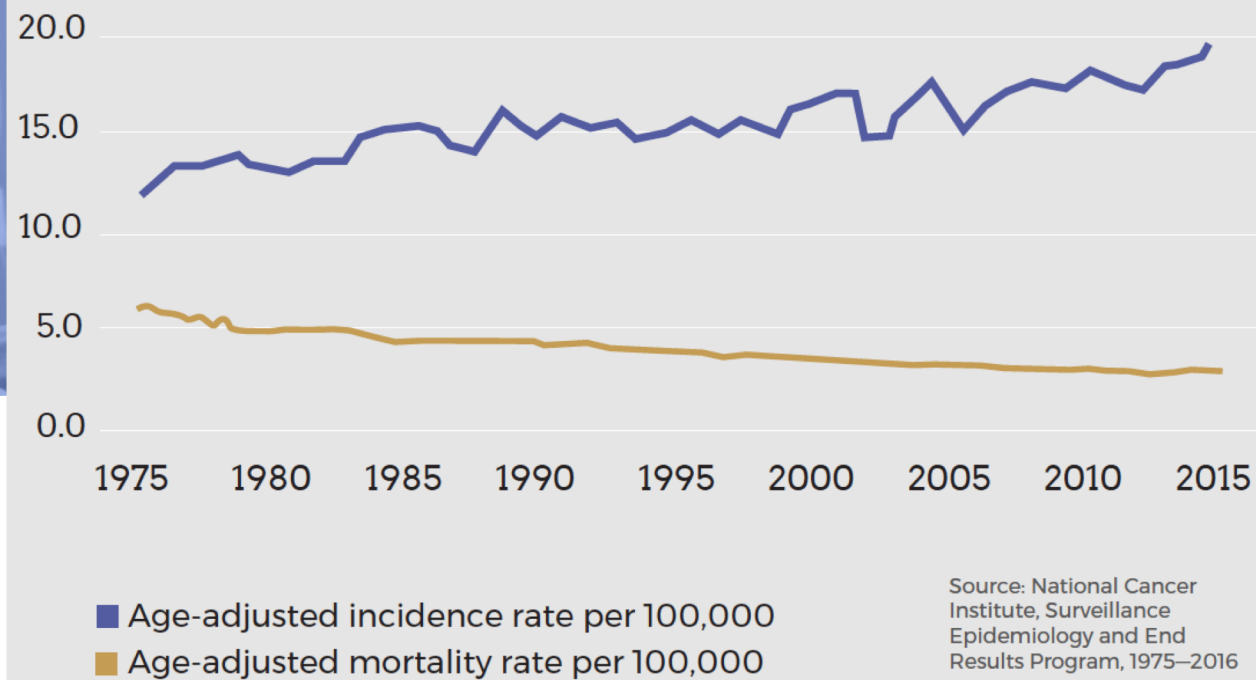
MAX CURE FOUNDATION





Trends in Childhood Cancer Incidence and Mortality

Declining childhood cancer deaths, but rising childhood cancer incidence



Source: National Cancer Institute, Surveillance Epidemiology and End Results Program, 1975–2016

Margaret Kripke

UNIVERSITY OF TEXAS M.D. ANDERSON CANCER CENTER



Philip J. Landrigan

BOSTON COLLEGE



CHILDHOOD CANCER IN THE UNITED STATES

Each year, more than 16,000 children in the United States are diagnosed with cancer

Cancer is the second leading cause of death in American children - surpassed only by injuries

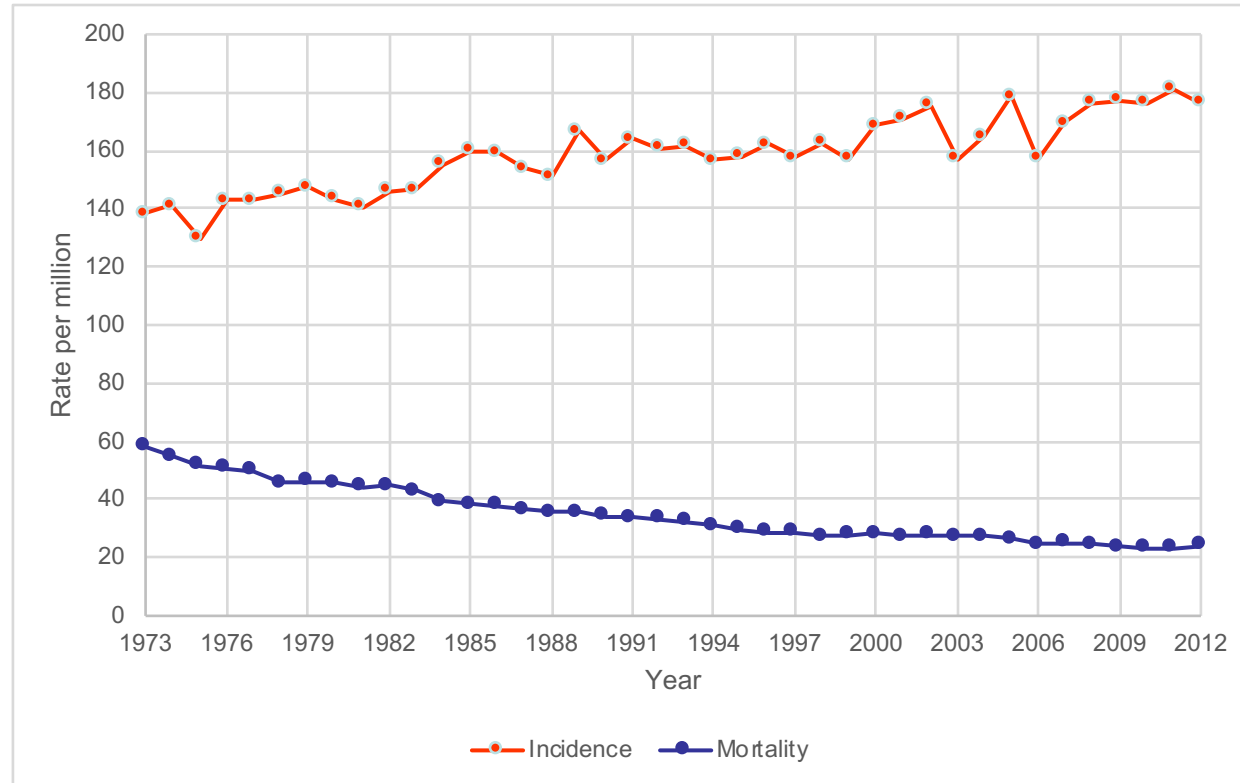
The Good News: Cancer deaths among American children are down because of greatly improved treatments

The Bad News: Cancer incidence is increasing for all forms of pediatric cancer and for testicular cancer in adolescents and young adults

Prevention is therefore critically important and must begin during and even before pregnancy



CHILDHOOD CANCER, UNITED STATES - AGE-ADJUSTED INCIDENCE AND MORTALITY



Fewer Deaths, but More Cancers



CUMULATIVE PERCENT INCREASE IN CHILDHOOD CANCER INCIDENCE 1976-77 vs. 2011-12

Type of cancer	Rate per million 1976-77	Rate per million 2011-12	Total Percent Increase
All cancer types combined	139.1	187.8	+35%
Leukemias	37.7	45.7	+21%
Lymphomas	24.2	29.6	+22%
Brain and other CNS	22.9	33.2	+45%

Source of data: New York State Cancer Registry.



POSSIBLE CAUSES OF INCREASING INCIDENCE OF CHILDHOOD CANCER

- Genetics – too rapid
- Improved diagnosis – could have explained a one-time “bump”, but not a consistent rise of several different cancers over several decades
- “Bad luck” – not very plausible
- Environmental exposures. Most likely.

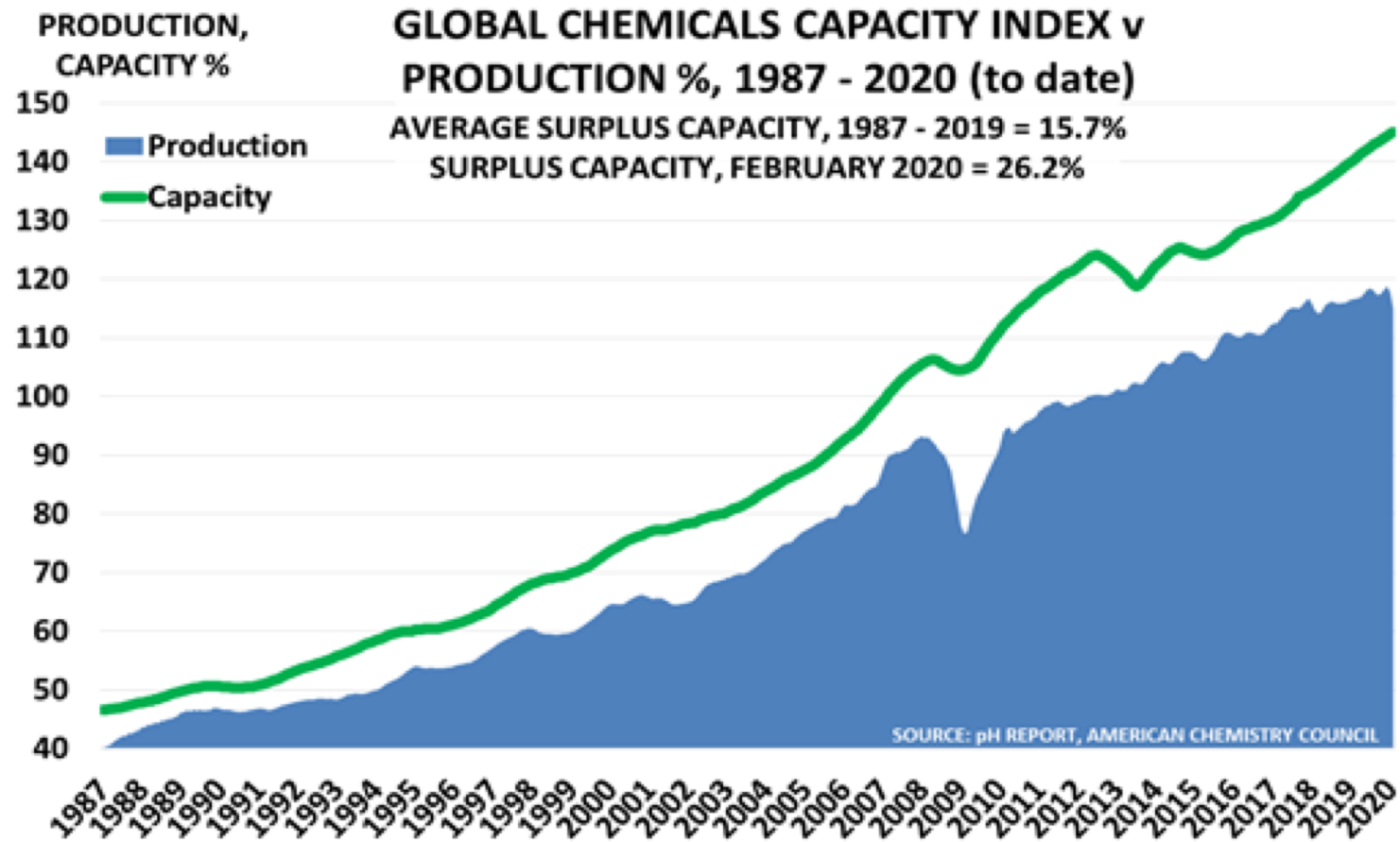


CHILDREN TODAY ARE EXPOSED TO THOUSANDS OF MANUFACTURED CHEMICALS

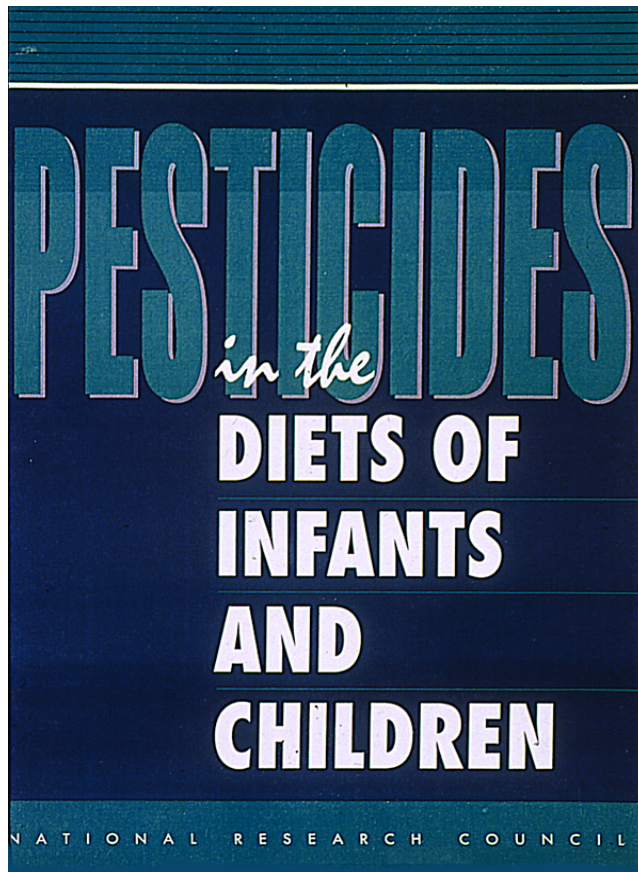
- 85,000 + manufactured chemicals in commerce
- Most invented in the past 40-50 years. Never before existed
- Manufactured chemicals now found in millions of products and widely distributed in the environment
- Several hundred manufactured chemicals are now routinely detected by CDC in the bodies of most Americans, including newborn infants
- **No basic toxicity information is publicly available for nearly half of manufactured chemicals in current use**



INCREASING CHEMICAL PRODUCTION



WHY CHILDREN ARE UNIQUELY VULNERABLE TO TOXIC CHEMICALS IN THE ENVIRONMENT



- Greater exposure proportionate to body mass – *7 times more water per Kg per day; hand-to-mouth activity*
- Diminished ability to detoxify many chemicals
- Heightened biological vulnerability – *thalidomide, fetal alcohol syndrome*
- More years of future life

CHILDREN ARE NOT LITTLE ADULTS



EVIDENCE IS INCREASING THAT TOXIC CHEMICALS IN THE ENVIRONMENT CAUSE DISEASE IN CHILDREN

Prenatal exposures
during windows of developmental vulnerability
are especially hazardous

The placenta does not protect the infant in the womb
against toxic chemicals



GROWING EVIDENCE FOR ENVIRONMENTAL CAUSATION OF CHILDHOOD CANCER

- Ionizing Radiation –Hiroshima and Nagasaki
- X-rays in pregnancy are especially dangerous
- Prenatal DES and adenocarcinoma of vagina in young adult women
- UV radiation and skin cancer
- Solvents, especially benzene. Leukemia and lymphoma
- 1,3-Butadiene. Leukemia and lymphoma
- Pesticide exposure, especially prenatal. Childhood leukemia
- Herbicides such as glyphosate. Lymphoma (probable)
- Nitrosamine and liver cancer
- Arsenic. multiple cancers, especially lung and skin. Prenatal exposures especially dangerous
- Aspartame. Leukemia and lymphoma. Prenatal exposures especially dangerous
- **Protective effects of folic acid and breast feeding**



CHILDHOOD EXPOSURES MAY INCREASE RISK FOR ADULT CANCER

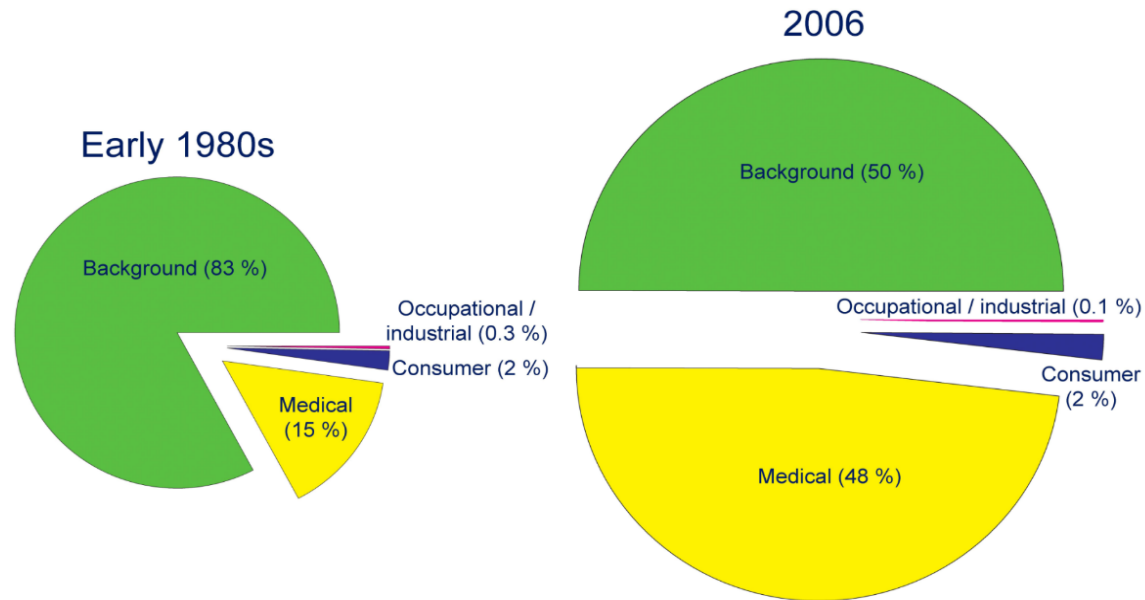
- Asbestos
- Solvents
- 1,3-Butadiene
- Formaldehyde
- Pesticides
- Herbicides
- Nitrosamine
- Arsenic
- Aspartame



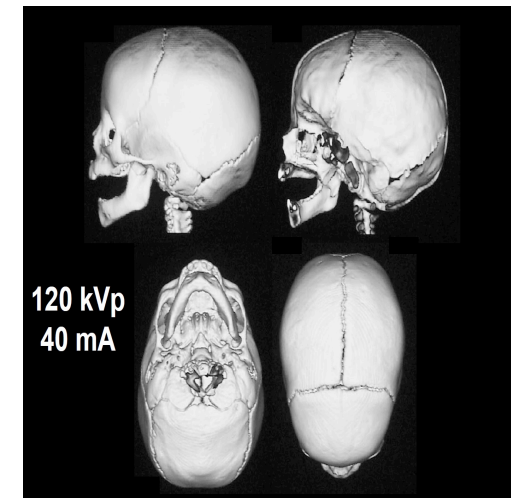
GROWING USE OF DIAGNOSTIC RADIATION

THE HAZARDS OF CAT SCANS

NCRP Report No. 160, *Ionizing Radiation Exposure of the Population of the United States*

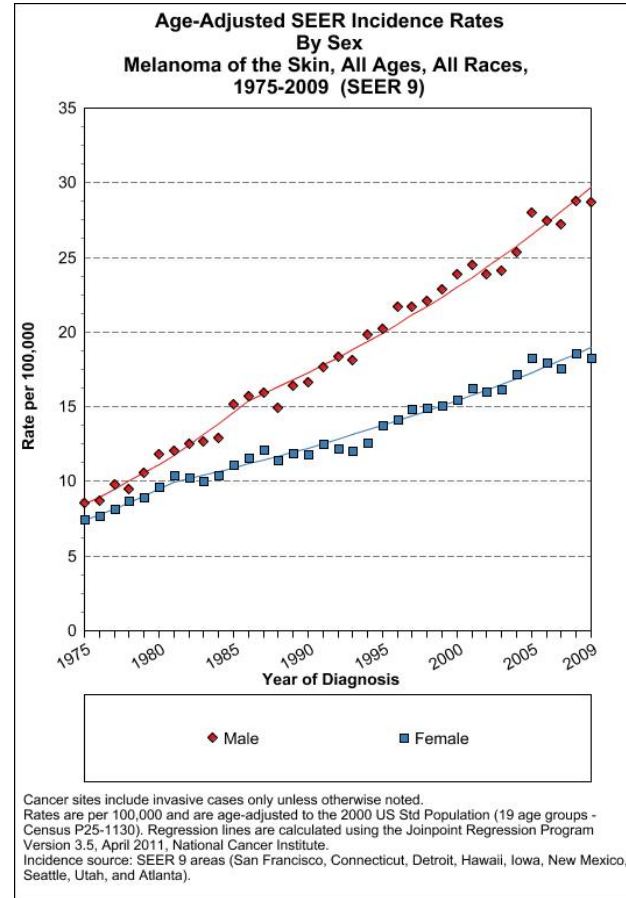


	Early 1980s	2006
Collective effective dose (person-Sv)	835,000	1,870,000
Effective dose per individual in the U.S. population (mSv)	3.6	6.2



UV RADIATION AND SKIN CANCER

A GROWING EPIDEMIC



NEED FOR A NATIONAL CANCER PREVENTION PLAN

- Require testing of all consumer chemicals for carcinogenicity before they come to market
- Conduct research to discover the environmental causes of cancer in children. Research is essential for evidence-based prevention
- Deploy a risk assessment paradigm for cancer prevention that explicitly recognizes the unique vulnerability of fetuses, infants and children.
- Act on what we know - Reduce exposures immediately to known chemical carcinogens, including X-rays and UV radiation

A SECOND FRONT IN THE WAR ON CANCER



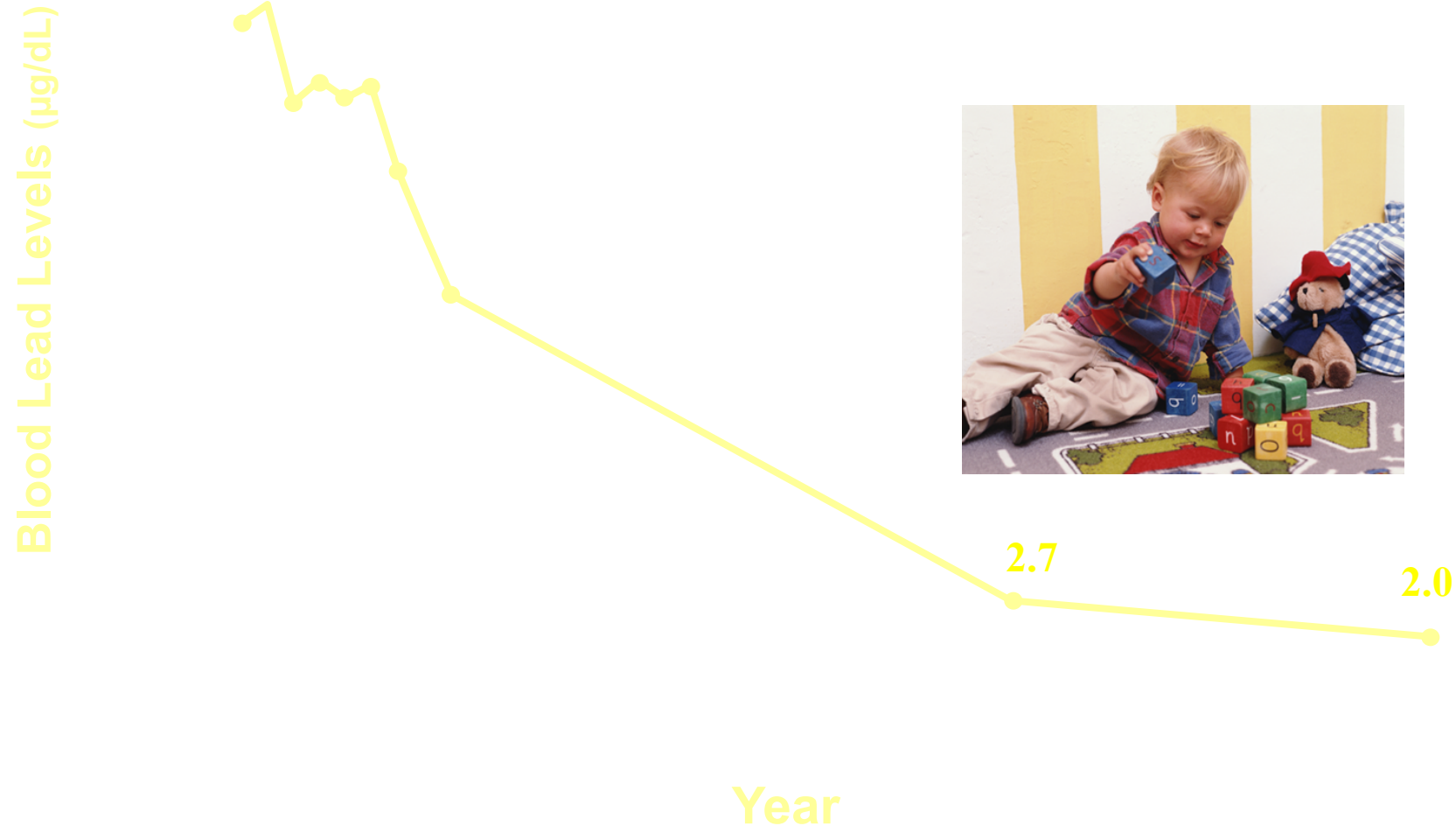
THE GOOD NEWS: PREVENTION IS POSSIBLE

Studies showing environmental harm to children are powerful drivers of progress

REMOVAL OF LEAD FROM GASOLINE AS A CASE STUDY



DECLINE IN BLOOD LEAD LEVELS FOLLOWING REMOVAL OF LEAD FROM GASOLINE



CONSEQUENCES OF REMOVAL OF LEAD FROM GASOLINE

- 95% reduction in blood lead levels in US children
- 95% reduction in incidence of lead poisoning
- 2-5-point gain in population mean IQ
- \$200 billion annual economic benefit to US each year since 1980 through increased economic productivity of more intelligent children
- Sharp reduction 20 years later in rates of murder and other violent crime



A FINAL THOUGHT FOR THOSE WHO PROVIDE CLINICAL CARE TO CHILDREN

- Cancers of environmental origin in children have no distinctive clinical features
- Therefore a careful history of environmental exposure is the only way to diagnose environmental causation
- A careful history is also the only way to discover new environmental causes of cancer
- Pioneering pediatrician and NCI cancer epidemiologist Robert W. Miller, MD spoke of “*The Critical Importance of the Alert Clinician*”



Mary Beth Collins

PARENT ADVOCATE

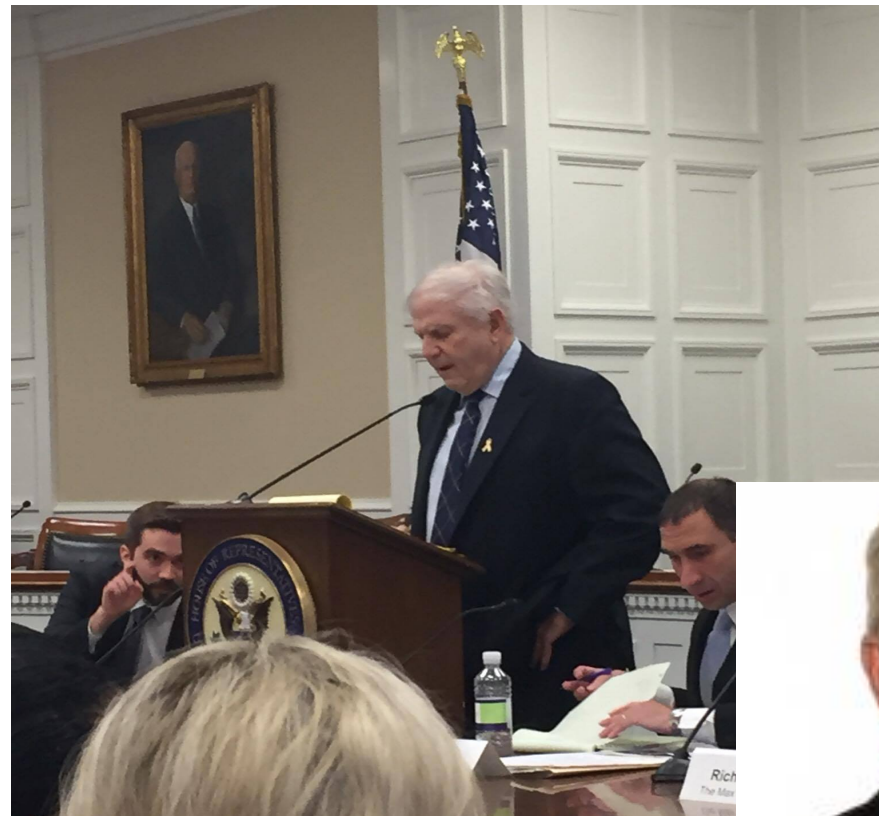


Anne Robertson

TOXIC FREE FUTURE FOR OUR CHILDREN



Richard Plotkin



Childhood Cancer: Cross-Sector Strategies for Prevention

2020



AMERICAN
SUSTAINABLE
BUSINESS
COUNCIL



CANCER FREE ECONOMY
NETWORK



CHILDREN'S
ENVIRONMENTAL
HEALTH
NETWORK

CLEAN &
HEALTHY
NEW YORK



CLEAN
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ACTION



United Center for
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