

# Toxic Exposures in the Green Mountain State

## Summary of Findings

*Toxic Exposures in the Green Mountain State* is the first-ever chemical body burden study of Vermont residents. As a project of River Network and the Alliance for a Clean and Healthy Vermont, *Toxic Exposures* tested the bodies of six Vermonters for a variety of common chemicals found in the environment and consumer products.

### THE CHEMICALS

All of the chemicals included in the study have been linked to harmful health impacts. The chemicals along with some of their potential health impacts are as follows:

**Bisphenol A (BPA)** is a synthetic estrogen used to make polycarbonate plastics and epoxy resins. BPA has been linked to impaired learning, recurrent miscarriages, reduced sperm count, cancer, heart disease, diabetes, and altered gene behavior.

**Mercury** is a potent neurotoxin that can be released from coal-fired power plants and can be found in many consumer products. Mercury can result in damage to the brain and central nervous system, kidney damage, deafness, and lack of muscle coordination.

**Organochlorine Pesticides** are mostly used as insecticides. They have been linked to cancer, neurological damage, birth defects, hormone disruption, and changes to the nervous and digestive systems.

**Polybrominated diphenyl ethers (PBDEs)** are toxic flame retardants used in furniture, electronics and other products. They have been linked to reproductive disorders, cancer, liver damage, impaired learning, and thyroid dysfunction.

Chemical	Participants						Pct. of Participants
	Aaron	Jim	Rich	John	David	Katy	
<b>Bisphenol A</b>							100%
Br2-DPE-7							0%
Br2-DPE-8/11							0%
Br2-DPE-10							0%
Br2-DPE-12/13							0%
Br2-DPE-15							100%
Br3-DPE-17/25							100%
Br3-DPE-28/33							100%
Br3-DPE-30							100%
Br3-DPE-32							100%
Br3-DPE-35							0%
Br3-DPE-37							17%
Br4-DPE-47							100%
Br4-DPE-49							100%
Br4-DPE-51							33%
Br4-DPE-66							100%
Br4-DPE-71							17%
Br4-DPE-75							17%
Br4-DPE-77							0%
Br4-DPE-79							100%
Br5-DPE-85							100%
Br5-DPE-99							100%
Br5-DPE-100							100%
Br5-DPE-105							0%
Br5-DPE-116							17%
Br5-DPE-119/120							50%
Br5-DPE-126							17%
Br6-DPE-128							0%
Br6-DPE-138/166							100%
Br6-DPE-140							100%
Br6-DPE-153							100%
Br6-DPE-154							100%
Br6-DPE-155							83%
Br7-DPE-181							17%
Br7-DPE-183							100%
Br7-DPE-190							50%
Br8-DPE-203							100%
Br9-DPE-206							100%
Br9-DPE-207							100%
Br9-DPE-208							100%
Br10-DPE-209							83%
<b>Pesticides Group 1</b>							
HCB							100%
alpha-HCH							50%
beta-HCH							100%
gamma-HCH							67%
HEPTACHLOR							33%
ALDRIN							33%
OXYCHLORDANE							100%
t-CHLORDANE							50%
c-CHLORDANE							100%
t-NONACHLOR							100%
c-NONACHLOR							83%
p,p-DDE							100%
p,p-DDT							83%
MIREX							100%
delta-HCH							67%
Heptachlor-Epoxyde							100%
alpha-Endosulphan							17%
Dieldrin							100%
Endrin							0%
beta-Endosulphan							67%
Endosulphan							0%
Endrin-Aldehyde							17%
Endrin-Ketone							0%
Methoxychlor							0%
<b>Mercury</b>							67%
<b>% of Chemicals Present</b>	<b>61%</b>	<b>61%</b>	<b>56%</b>	<b>68%</b>	<b>68%</b>	<b>53%</b>	

Chemical present  
 Chemical not detected

### OVERALL FINDINGS

The results of the study confirm that Vermonters are no more protected from toxic exposures than any other population in the country. Almost all of the chemicals we tested for did show up in the bodies of the six participants and were present at levels suspected of causing health problems. Overall, we found:

- 3 of the 4 categories of toxic chemicals tested in the bodies of every participant in the study.
- All 6 participants had a minimum of 35 of the chemicals for which we tested in their bodies
- Participants had an average of 40 of the chemicals tested in their bodies
- Thirty of the chemicals tested for were found in *all* of the participants.

## CHEMICAL-SPECIFIC FINDINGS

The amount of each chemical found in the bodies of participants varied widely. Chemical levels were sometimes lower or higher – in some cases many times higher – than national norms.

### **BPA:**

- BPA was found in the urine of every participant
- 33% percent of the participants had BPA levels above the median level reported by the Centers for Disease Control and Prevention (CDC)

### **Mercury:**

- Mercury was found in 4 of the 6 Vermonters
- Levels of mercury found in 4 participants equaled or exceeded the national norm

### **Organochlorine Pesticides:**

- Seven types of organochlorine pesticides were found in the blood of *all* participants
- DDT – banned in 1972 – was found in the bodies of 5 of the 6 Vermonters
- Forms of the banned pesticide chlordane were found in the blood of all participants

### **PBDEs:**

- Thirty-one of the forty flame retardants tested showed up in our participants.
- Twenty different types of flame retardants showed up in *all* of the participants
- Deca was found in all but one of the participants

## CONCLUSIONS & RECOMMENDATIONS

Despite our reputation as a pristine state, Vermonters are not immune from exposure to harmful chemicals. Although this study provides only a glimpse, it is clear that chemicals are making their way out of products and into our bodies.

The system intended to protect consumers from harmful chemicals has failed. The majority of chemicals used in products are approved without testing and are only removed once they have been found to cause harm. As a result, toxic chemicals are taking a tremendous toll on public health and are contributing to alarming trends including increased rates of birth defects, learning disabilities, cancer, and fertility issues.

Unfortunately, because our exposure to chemicals is so ubiquitous, no one can diet or shop their way out of this problem. Instead, Vermont's government must take action to adopt a comprehensive approach to chemical regulation that:

- Phases out the most harmful chemicals and requires the use of safer alternatives;
- Requires that all chemicals be screened for safety;
- Honors the public's right-to-know which hazardous chemicals are in what products; and
- Promotes the development of safer alternatives and sustainable design.

