

# Social Costs of PFAS Contamination

USDA-NRCS PFAS Summit

**Dr. Alissa Cordner**

Associate Professor, Whitman College  
Co-Director, PFAS Project Lab,  
Northeastern University and Whitman College

**Grace Poudrier**

Sociology PhD Candidate  
Northeastern University



**PFAS Project Lab**  
*Northeastern University*

**Northeastern University  
Social Science Environmental  
Health Research Institute**

# Economic and Policy Connections

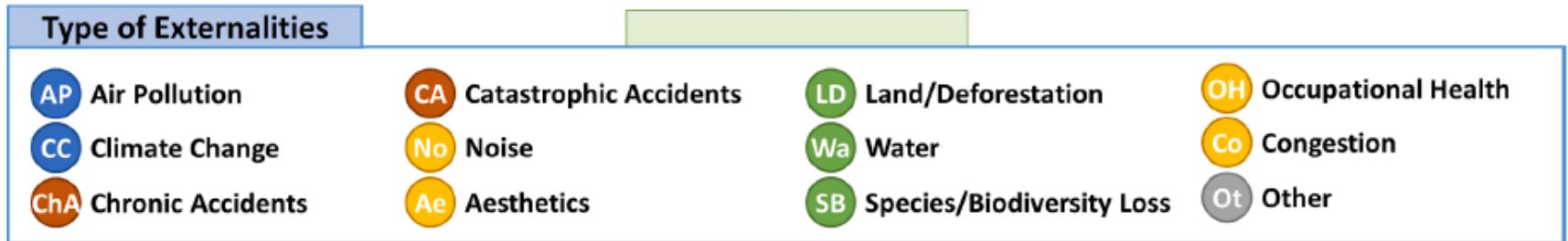
- “Social cost” approach
  - Specific economic framework
  - General approach to conceiving of impacts broadly, recognizing what can *easily be quantified*, what can *be quantified with significant uncertainty*, and what *is (nearly) impossible to quantify*



Image Aurich Lawson / Thinkstock

# Externalities

- Externalities – positive or negative effects (costs or benefits) that accrue to parties who did not choose to incur those costs/benefits.
  - Consequences of industrial activities that are not reflected in the cost/price of those activities



*Sovacool et al., "Hidden costs..." Energy Res & Soc Sci 2021*

## The True Cost of PFAS and the Benefits of Acting Now

Alissa Cordner,\* Gretta Goldenman, Linda S. Birnbaum, Phil Brown, Mark F. Miller, Rosie Mueller, Sharyle Patton, Derrick H. Salvatore, and Leonardo Trasande



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“The health, societal, and economic impacts of contamination from PFAS production and use are **multifaceted and broadly distributed**. The costs of these impacts are **incompletely understood**, and **externalized** onto individuals, communities, and governments at all levels, while profits accrue to corporations shielded from these costs by the protections built into our chemical regulatory laws and practices”

# Costs are multifaceted, externalized, and (often) hard to quantify

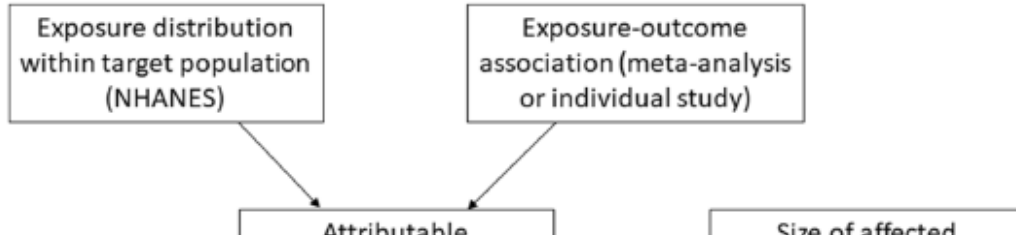
- Drinking water remediation
- Testing and monitoring
- Wastewater & sewage sludge treatment
- AFFF disposal & replacement
- Groundwater & soil remediation
- Technical expertise
- Legal expertise
- Reduced property values
- Agricultural impacts
- Expenses for households and businesses

**Health impacts** – lost years of life, direct health care expenditures, reduced quality of life, increased stress/anxiety/depression, lost wages, impacts on families and communities

# Health Costs from PFAS Exposure

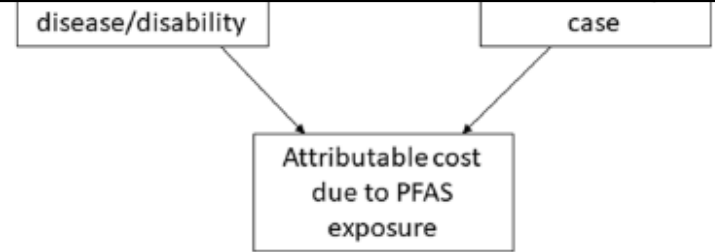
Exposure  
https://  
ORI

**Fig. 1** Schematic of method for calculating cost of disease/disability attributable to PFAS exposure



PFOA- and PFOS-attributable increases in 15 conditions. These increments were then applied to census data to determine total annual PFOA- and PFOS-attributable cases of disease, from which we calculated economic costs due to medical care and lost productivity using previously published cost-of-illness data. We identified PFAS-attributable disease costs in the US of \$5.52 billion across five primary disease endpoints shown to be associated with PFAS exposure in meta-analyses. This estimate represented the lower bound, with sensitivity analyses revealing as much as \$62.6 billion in overall costs. While further work is needed to assess probability of causation and establish with greater certainty effects of the broader category

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# USEPA Cost Estimates for PFAS MCLs

- 374 page document
- Many limitations/uncertainties
- Discussion of environmental justice implications

Economic Analysis for the Proposed Per- and Polyfluoroalkyl Substances  
National Primary Drinking Water Regulation

Prepared by:

**Table 7-1: Annualized Quantified National Costs and Benefits, Proposed Option (PFOA and PFOS MCLs of 4.0 ppt and HI of 1.0; Million \$2021)**

	3% Discount Rate			7% Discount Rate		
	5 <sup>th</sup> Percentile <sup>a</sup>	Expected Value	95 <sup>th</sup> Percentile <sup>a</sup>	5 <sup>th</sup> Percentile <sup>a</sup>	Expected Value	95 <sup>th</sup> Percentile <sup>a</sup>
Total Annualized Rule Costs	\$704.53	\$771.77	\$850.40	\$1,106.01	\$1,204.61	\$1,321.01
Total Annualized Rule Benefits	\$659.91	\$1,232.98	\$1,991.51	\$477.69	\$908.11	\$1,462.43
<b>Total Net Benefits<sup>b,c,d</sup></b>	<b>-\$44.62</b>	<b>\$461.21</b>	<b>\$1,141.11</b>	<b>-\$628.31</b>	<b>-\$296.50</b>	<b>\$141.42</b>




# Report from ChemSec

- Social costs ~ \$17 trillion globally
  - Profit to companies ~ \$4 billion globally

chemsec Agenda Knowledge

Home / Reports / The top 12 PFAS producers in the world and the staggering societal costs of PFAS pollution



	A	B	C	D	E
5	<b>Costs to society per year</b>				
6					
7	All numbers based on EU - global comparison further down in the sheet				
8					
9					
10	<b>Area</b>	<b>Million Euros</b>	<b>Source</b>	<b>Description</b>	
11	Health	68,000	Nordic council of Ministers	Range 52-84 billion, m	
12	Soil	2,100,000	Nordic council of Ministers	Annual cost with 75 00	
13	Water	238,000	Hans-Peter Arp	Removal of PFAS from	
14	Biomonitoring	300	Nordic council of Ministers	Costs for monitoring PI	
15	<b>Total</b>	<b>2,406,300</b>		<b>Total annual cost for E</b>	
16					
17	<b>Not included in costs</b>	<b>Description</b>			
18	Remediation of historical pollution	Remove existing PFAS from water and soil			
19	Property damage	Reduced worth of property due to PFAS contamination, for example housing, b			
20	Other health-related costs	and many more...			
21					

<https://chemsec.org/reports/the-top-12-pfas-producers-in-the-world-and-the-staggering-societal-costs-of-pfas-pollution/#the-real-costs-of-pfas>

# Conclusions

- Clean-up costs are significant and immediate, but the future costs of *not reducing PFAS exposure* are much greater
- Transparency on production, testing, and remediation from industry and government stakeholders
- Manufacturers of PFAS should be held financially responsible
- Class-based regulation of PFAS is needed



**PFAS Project Lab**  
*Northeastern University*

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Dr. Alissa Cordner

[cordneaa@whitman.edu](mailto:cordneaa@whitman.edu)

Grace Poudrier

[poudrier.g@northeastern.edu](mailto:poudrier.g@northeastern.edu)