



What will Emerge Next?

A data-based analysis to anticipate emerging contaminants

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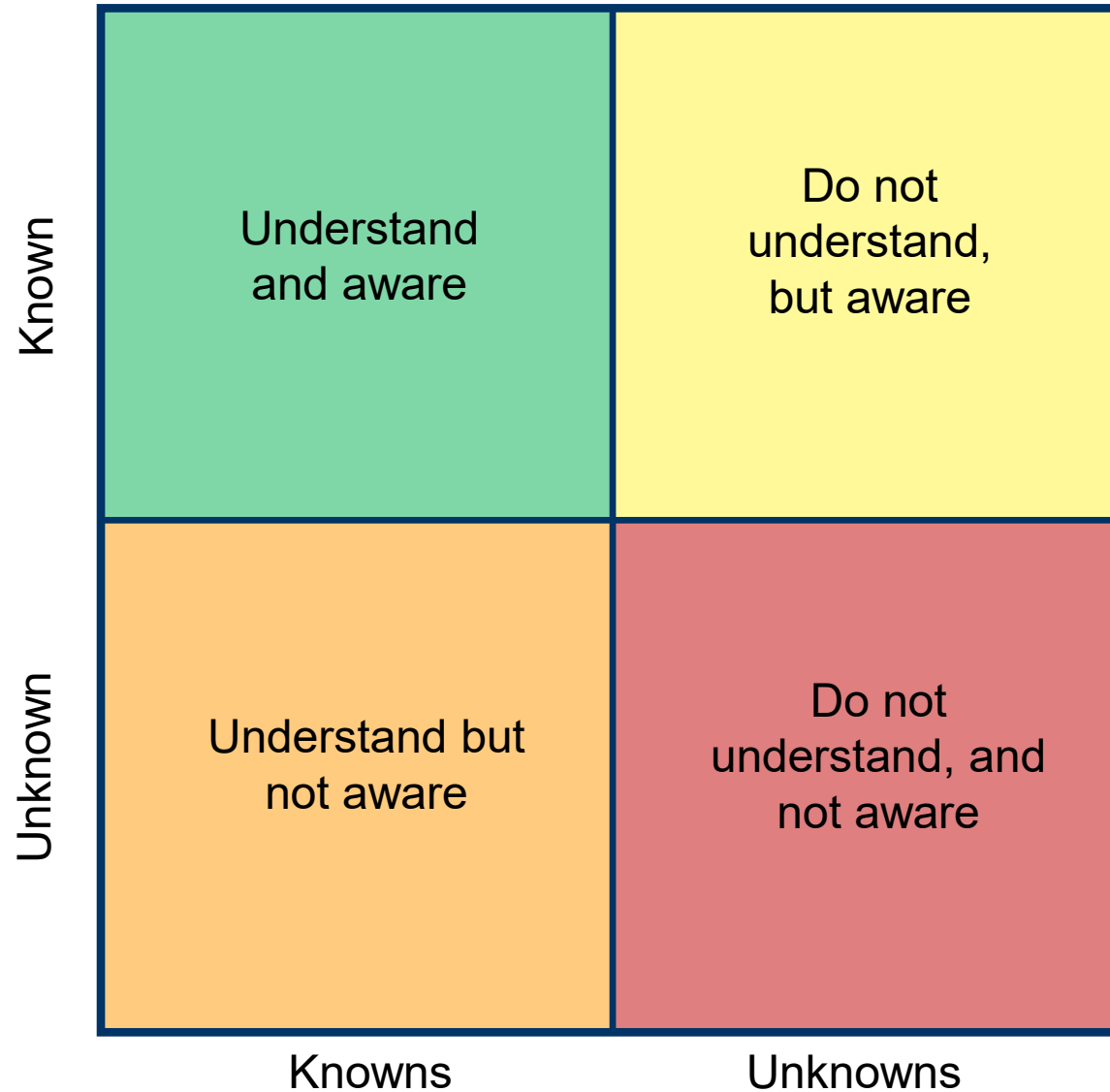
Date: April 17, 2019

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The business of sustainability



The Origin of this Presentation



TSCA Reform: The Basis

Putting 40 years into perspective:

1976 TSCA:

- Law allowed EPA to evaluate the risk from exposure to new chemicals, and regulate if necessary to limit risk
- Could not require testing unless substance presents an unreasonable risk, grandfathers in ~62,000 chemicals

2016 Lautenberg Chemical Safety for 21st Century Act (LCSEA):

- Requires risk assessment of prioritized existing chemicals
- Provides a consistent source of funding for EPA to carry out responsibilities



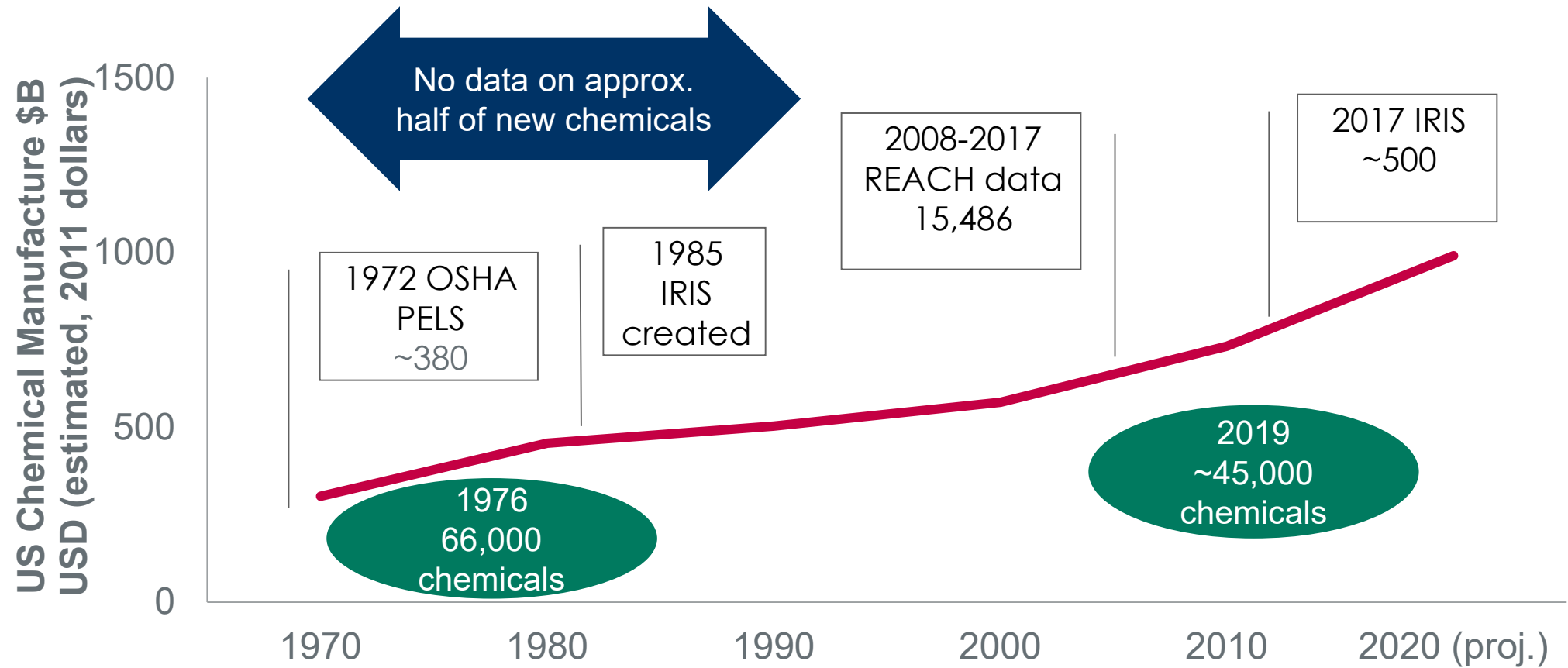
1976: Apple II computer



2016: iPhone 7

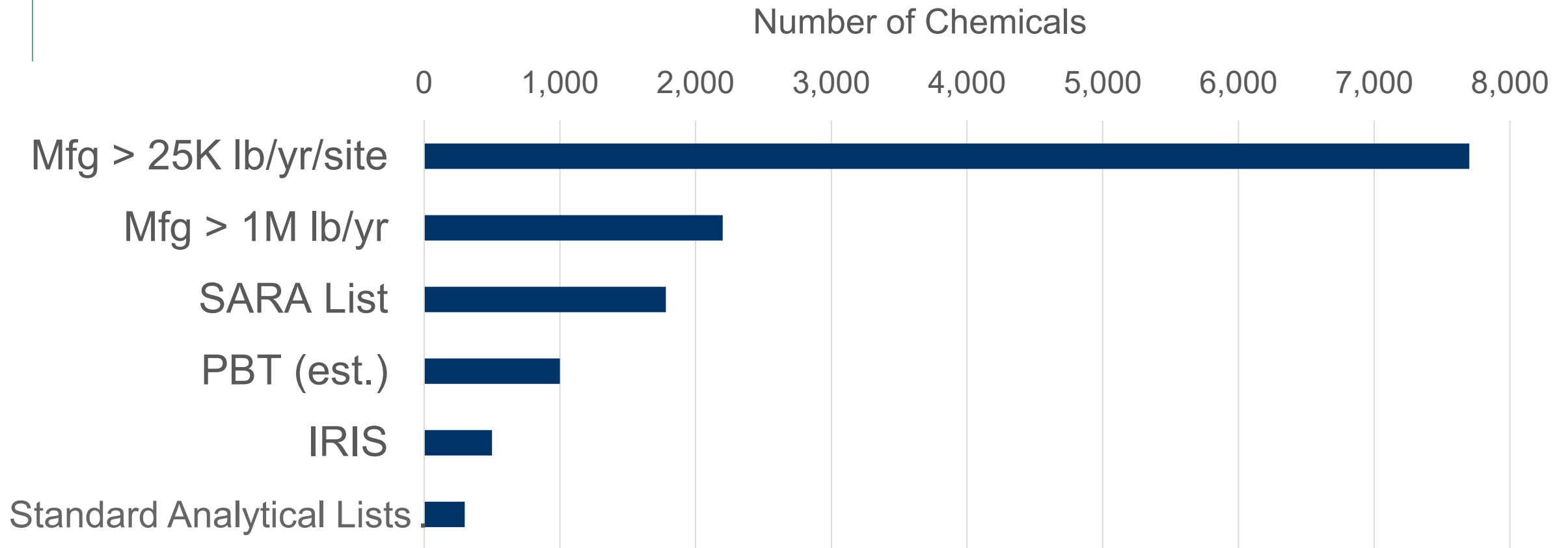


Chemical Characterization: 1976 TSCA to 2016 CSA



PELS = Permissible Exposure Limits
IRIS = EPA's Integrated Risk Information System

Implications for Site Investigation and Cleanup



- We only find what we look for
- Under 1976 TSCA, little to no data on fate and transport, toxicity or eco toxicity of most chemicals

TSCA Reform: Why should we care?

- Clean up goals for remediation sites could change or new chemicals may require cleanup activities which can affect environmental reserves
- Worker protection limits/training and associated personal protective equipment (PPE) requirements could change
- Chemicals could come under public scrutiny

Time for Action to End PFAS Threat

The Environmental Protection Agency (EPA) must act now to protect communities from a highly toxic class of chemicals known as PFAS (per- and polyfluoroalkyl substances) that contaminate drinking water and groundwater. PFAS are associated with many serious illnesses, including cancers and reproductive disorders.

According to documents obtained through a Freedom of Information Act request by the Center for Science and Democracy, the Trump administration tried earlier in 2018 to suppress a government assessment of PFAS health impacts, calling it a "public relations nightmare." The health assessment was released after nearly 18,000 UCS supporters demanded its publication. Now we must take the next step and regulate and clean up this toxic threat.

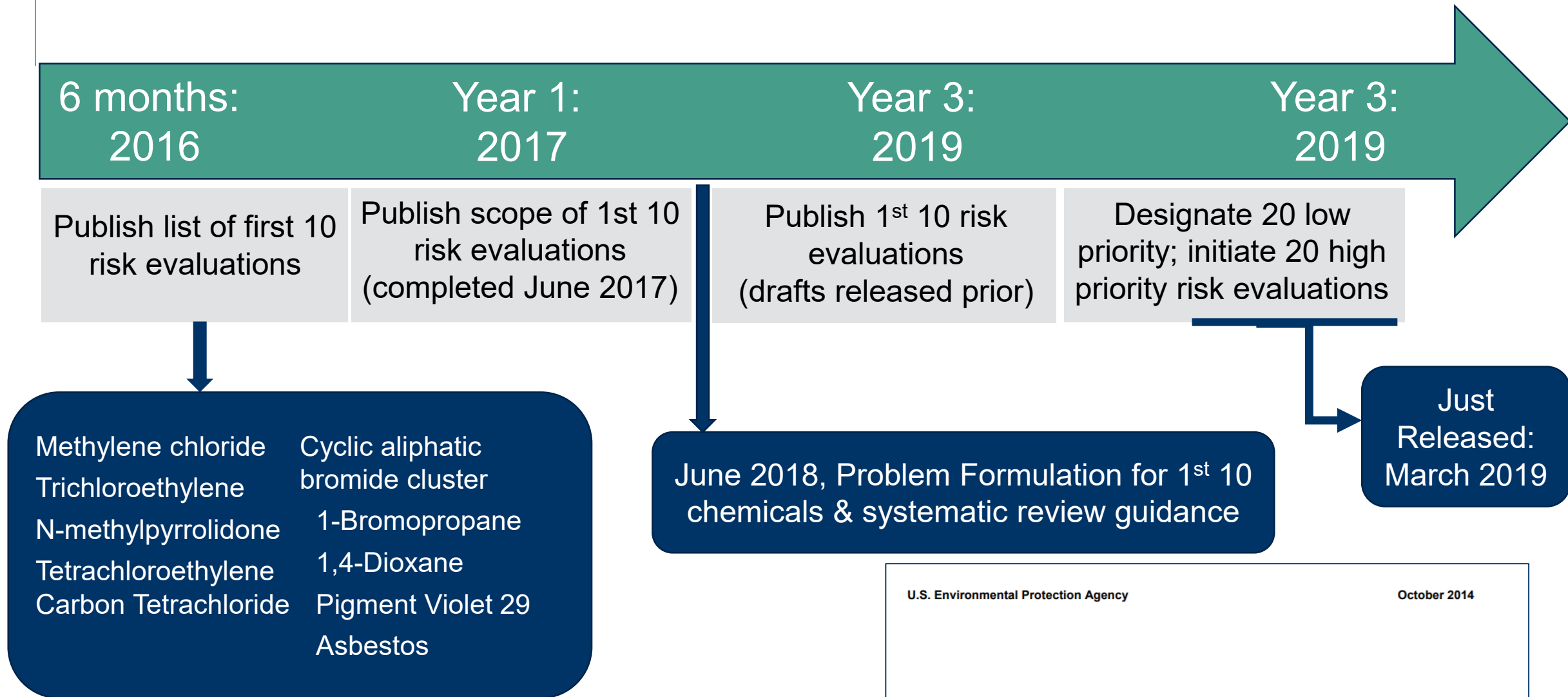
Cancer-Causing Chemical 1,4-Dioxane Contaminates Americans' Drinking Water

This New Study Found More Drugs in Our Drinking Water Than Anybody Knew

And no one's doing anything about it

A Rising Tide of Contaminants

EPA in Process of Identifying Chemicals for Evaluation

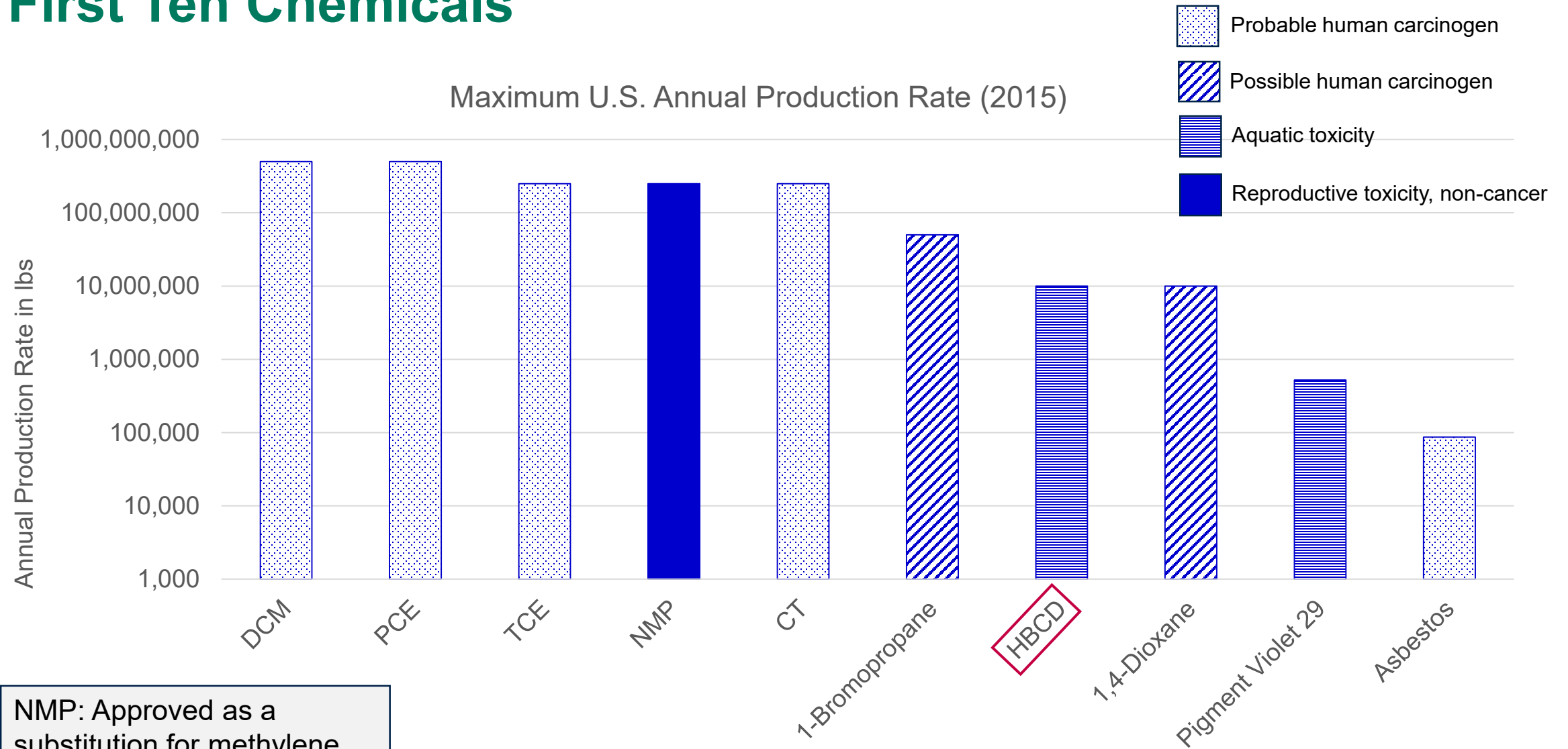


U.S. Environmental Protection Agency

October 2014

TSCA Work Plan for Chemical Assessments:
2014 Update

First Ten Chemicals



NMP: Approved as a substitution for methylene chloride (DCM) in the 1990's

Denotes compound also present on several other lists (SIN, SVHC and Reach Banned)

What changes are we seeing?

- TCE: EPA looking to completely ban or limit certain uses
 - Clean up goal not likely to change significantly (or at all)
- Methylene Chloride (DCM): EPA looking to completely ban or limit certain uses
- N-methylpyrrolidone (NMP): EPA looking to completely ban or limit certain uses
- 1-Bromopropane: Draft Risk Assessment released
 - Estimated drinking water screening level: 11 ug/L
 - Estimated risk VI numbers: residential indoor air ~ 4 ug/m³, commercial indoor air ~18 ug/m³, groundwater to indoor air screening levels of ~ 6 ug/L for a resident and ~24 ug/L for a commercial worker.
- Pigment Violet 29: EPA concluded low risk, low exposure
 - Challenged by several groups

91592 Federal Register / Vol. 81, No. 242 / Friday, December 16, 2016 / Proposed Rules

ENVIRONMENTAL PROTECTION AGENCY
40 CFR Part 751
[EPA-HQ-OPPT-2016-0163; RIN 2070-AK03]

Trichloroethylene; Regulation of Certain Uses Under TSCA Section 6(a)

AGENCY: Environmental Protection Agency (EPA).
ACTION: Proposed rule.
SUMMARY: Trichloroethylene is a volatile organic compound in industrial and commercial use and has some limited and commercial use. It is a volatile organic compound identified as significant associated with TCE degradation and for cleaning facilities. Preliminary data indicate that these unreasonable risks are unreasonable under TSCA.

public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <http://www2.epa.gov/dockets/commenting>.

All Other Basic Organic Chemical Manufacturing (NAICS code 325199).
Plastics Material and Resin Manufacturing (NAICS code 325211).
Synthetic Rubber Manufacturing (NAICS code 325212).
Paint and Coating Manufacturing (NAICS code 325510).
Adhesive Manufacturing (NAICS code 325510).

PEER REVIEW DRAFT — DO NOT QUOTE OR CITE

EPA
United States Environmental Protection Agency

EPA Document# 740-R1-5001
February 2016
Office of Chemical Safety and Pollution Prevention

TSCA Work Plan Chemical Risk Assessment
PEER REVIEW DRAFT

1-Bromopropane:
(n-Propyl Bromide)
Spray Adhesives, Dry Cleaning, and Degreasing Uses
CASRN: 106-94-5

CCCCBr

February 2016

7464
ENVIRONMENTAL PROTECTION AGENCY
40 CFR Part 751
[EPA-HQ-OPPT-2016-0163; RIN 2070-AK03]

Methylene Chloride and N-Methylpyrrolidone; Regulation of Certain Uses Under TSCA Section 6(a)

AGENCY: Environmental Protection Agency (EPA).
ACTION: Proposed rule.
SUMMARY: Methylene chloride, also called dichloromethane, is a volatile chemical that has a variety of uses, including paint and coating removal. N-methylpyrrolidone (NMP) is a chemical used in a variety of applications, including as a solvent for pharmaceuticals and in the production of polymers. This rule proposes to regulate the use of these chemicals under TSCA Section 6(a) to address unreasonable risks to human health and the environment.

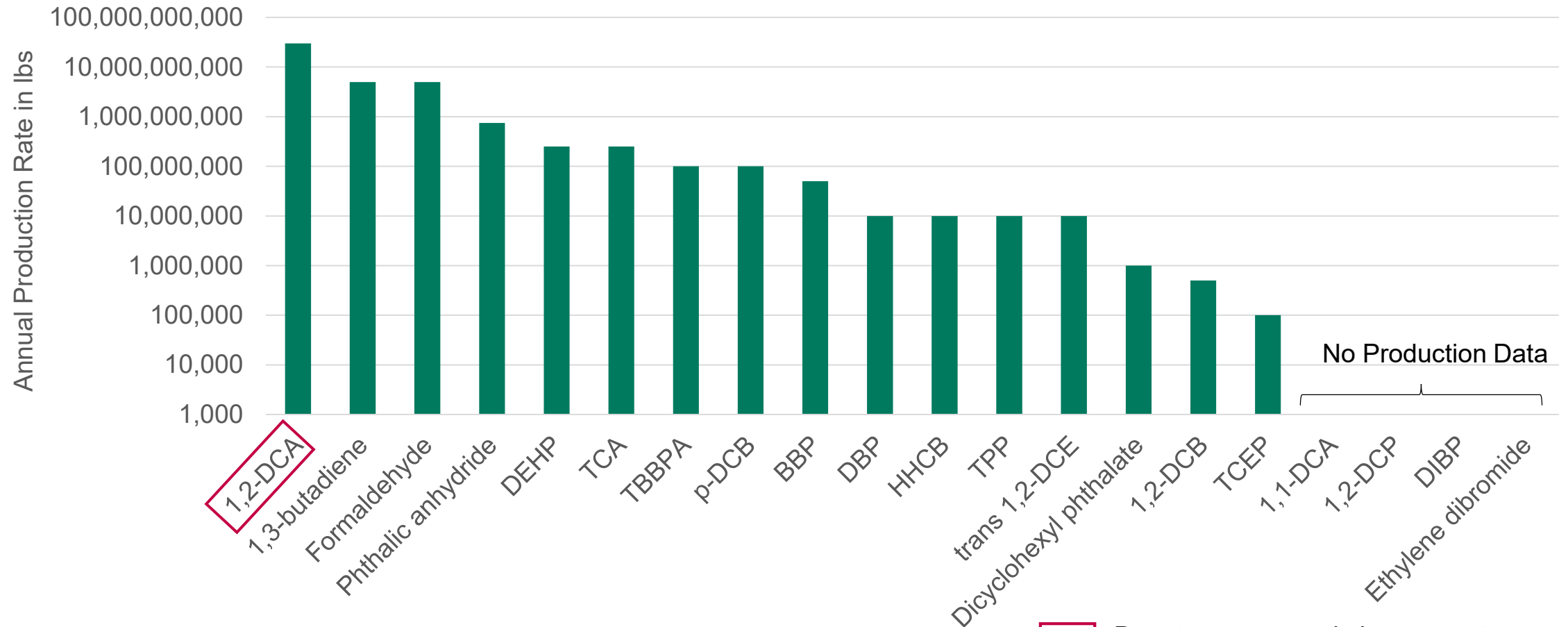
maximum of 30 days for the identification of risks that provide protection for the formulation, and provide warning and instruction labels on the products.

DATES: Comments must be received on or before April 19, 2017.
ADDRESSES: Submit your comments, identified by docket identification (ID) number EPA-HQ-OPPT-2016-0163, to www2.epa.gov/dockets/commenting.

Protection
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South Clinton Ave., Rochester, NY
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1404; email address: TSCA-
Hotline@epa.gov.

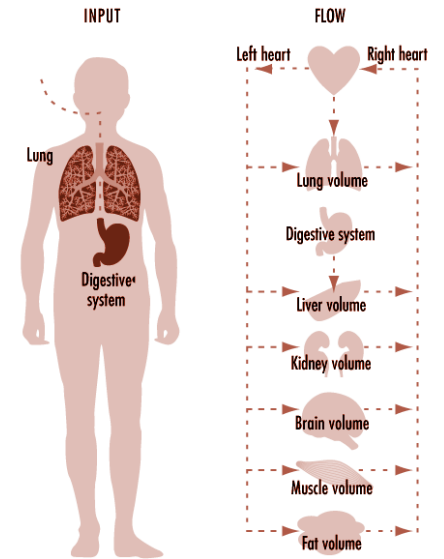
Next Twenty Chemicals

Maximum U.S. Annual Production Rate in 2015



Denotes compound also present on several other lists (SIN, SVHC and Reach Banned)

New Chemical Prioritization/Selection Approach



EPA docket open until Dec 1, 2019



01 Pre-prioritization

Gather information on 73 Work Plan chemicals and any others of concern to public or other agencies

Complete



02 Prioritization

20 high priority (potential risk concern?)
20 low priority (low or no risk?)

Start Dec 2019 and on-going



03 Risk Assessment Process

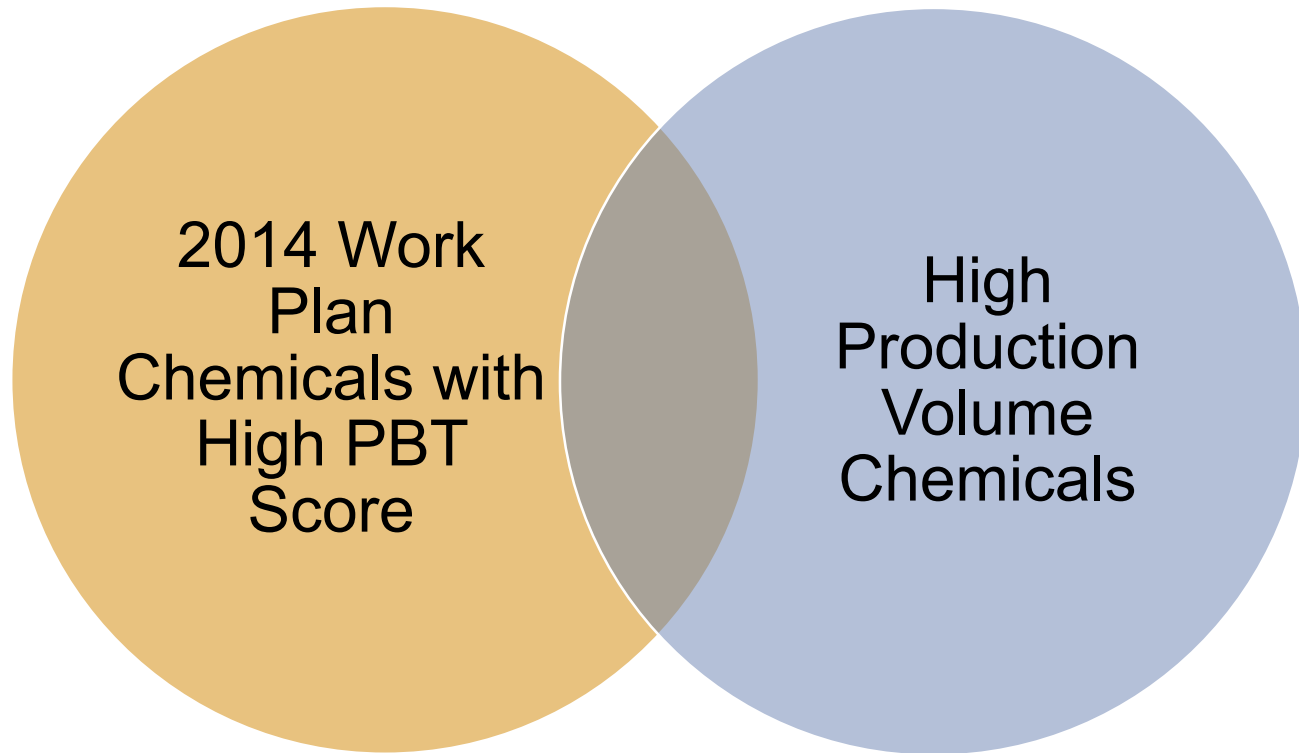
Complete risk assessment in 3-3.5 years; designate high priority chemical as each evaluation completed



04 Long-Term Strategy

Bin chemicals considering 6 factors, data quality and quantity

PBT Work Plan Chemicals



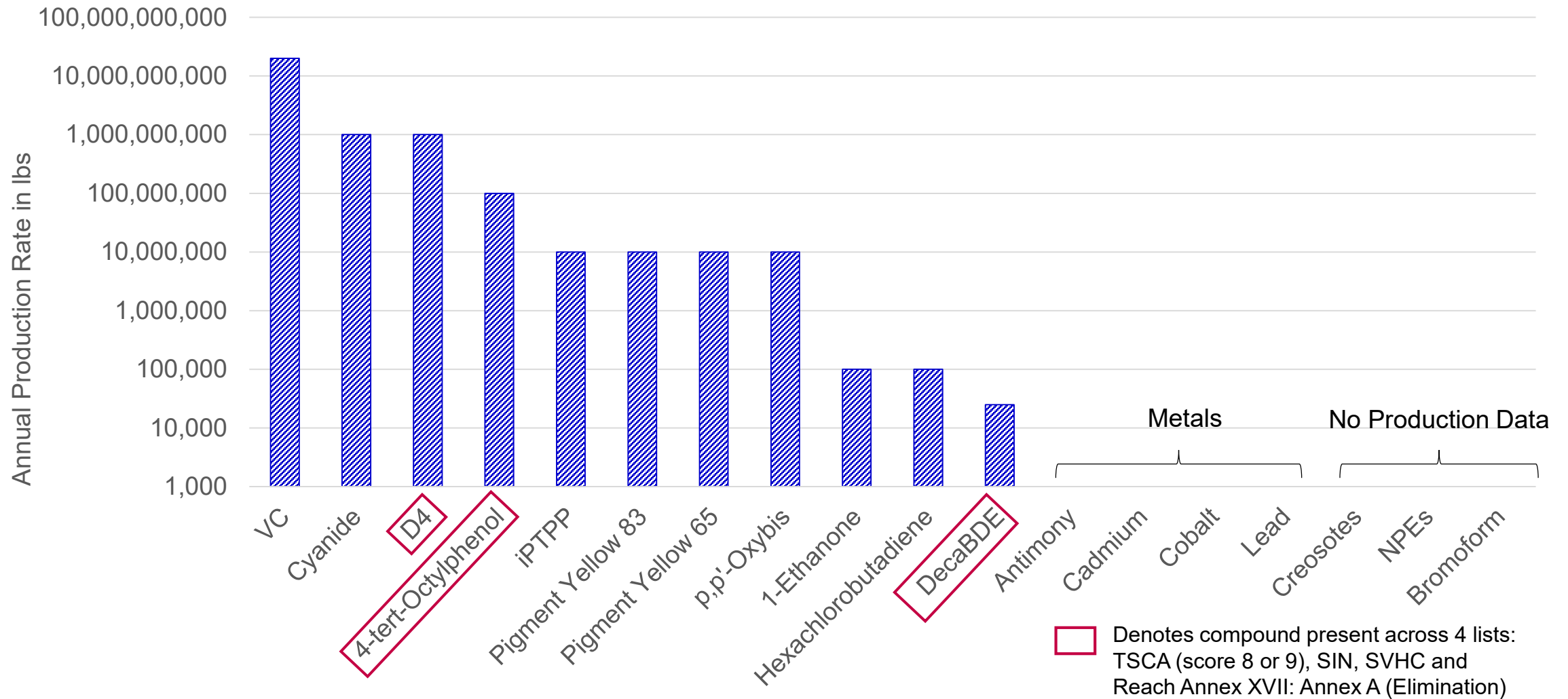
Categories for awareness

- Flame retardants (esp. brominated)
- Pigments (esp. yellow)
- Fragrances
- Personal Care Products

PBT: Persistent and Bioaccumulative and Toxic

High Priority Candidates

Maximum U.S. Annual Production Rate in 2015

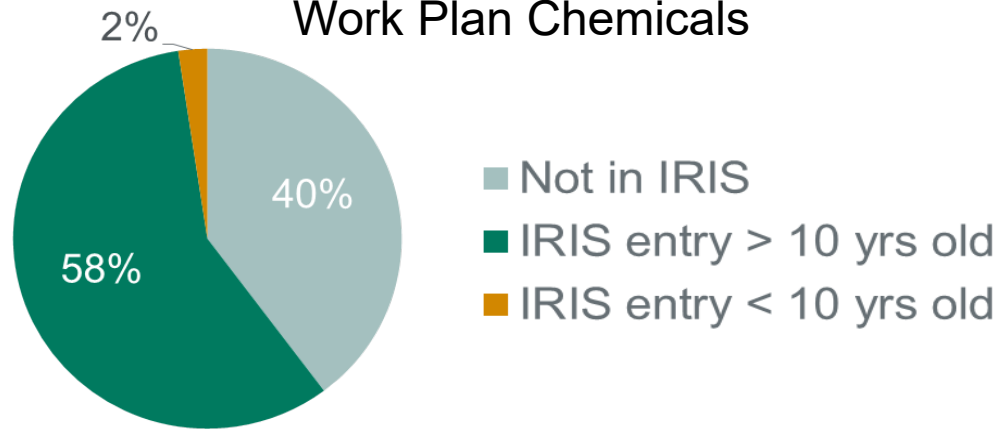


Top Five Chemicals for the “Watch” List

Chemical Name	CAS	Max 2015 Max US Production Rate (lbs)	Uses
Octamethylcyclotetrasiloxane Short name: D4	556-67-2	1,000,000,000 Increase from 2012	<ul style="list-style-type: none"> • Industrial: Adhesives and sealants, intermediates, lubricants and lubricant additives • Consumer: Adhesives and sealants, automotive care products, cleaning and furnishing care products, paints and coatings, personal care products, plastic and rubber products
4-tert-Octylphenol (4-(1,1,3,3-Tetramethyl-butyl)phenol) Short name: 4-tert-Octylphenol	140-66-9	100,000,000 Stable from 2012	<ul style="list-style-type: none"> • Industrial: Tackifier • Consumer: Rubber Tires
1,2-Dichloroethane Short name: 1,2-DCA	107-06-2	30,000,000 Stable from 2012	<ul style="list-style-type: none"> • Industrial: Fuels/fuel additives, functional fluids, intermediates, laboratory chemicals • Consumer: Fuels and related products, plastic and rubber products
Hexabromocyclododecane Short name: HBCD	3194-55-6	10,000,000 Decrease from 2012	<ul style="list-style-type: none"> • Industrial: Flame retardant • Consumer: Building materials
Decabromodiphenyl ethers Short name: DecaBDE	1163-19-5	25,000 Decrease from 2012	<ul style="list-style-type: none"> • Industrial: Flame retardant • Consumer: Fabric, textile and leather products, plastic and rubber products

Scale of Impacts

Limited information in IRIS for Work Plan Chemicals



- All chemicals evaluated under TSCA to have toxicity estimates revised or recalculated

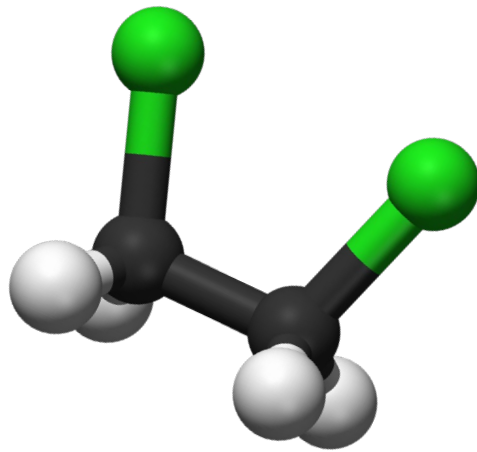
Use in Manufacturing

- New restrictions on use
- New occupational exposure limits and PPE requirements
- Increased public scrutiny

Contaminated Sites

- New clean up goals
- Changes to personnel protection, emission limits
- Increased public scrutiny

1,2-DCA: Potential for Regulatory Criteria Change?

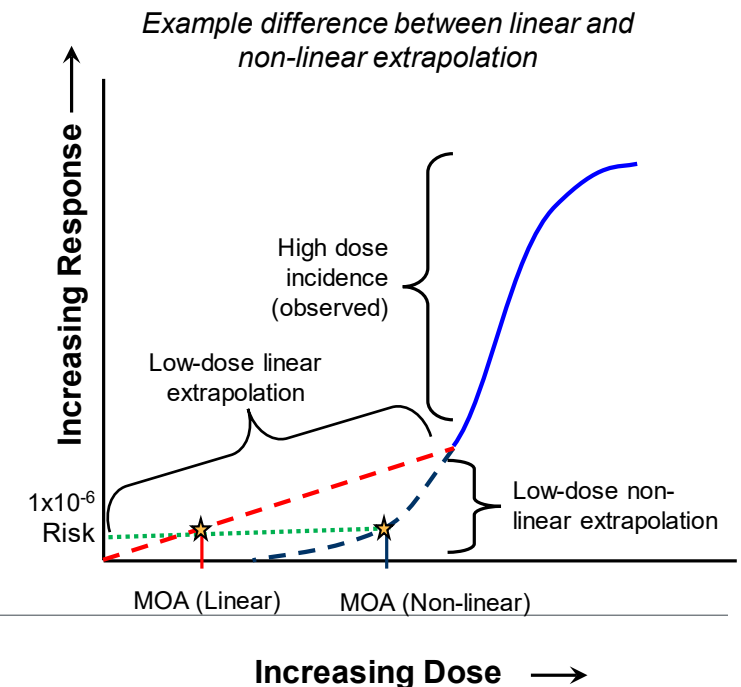


1,2-Dichloroethane

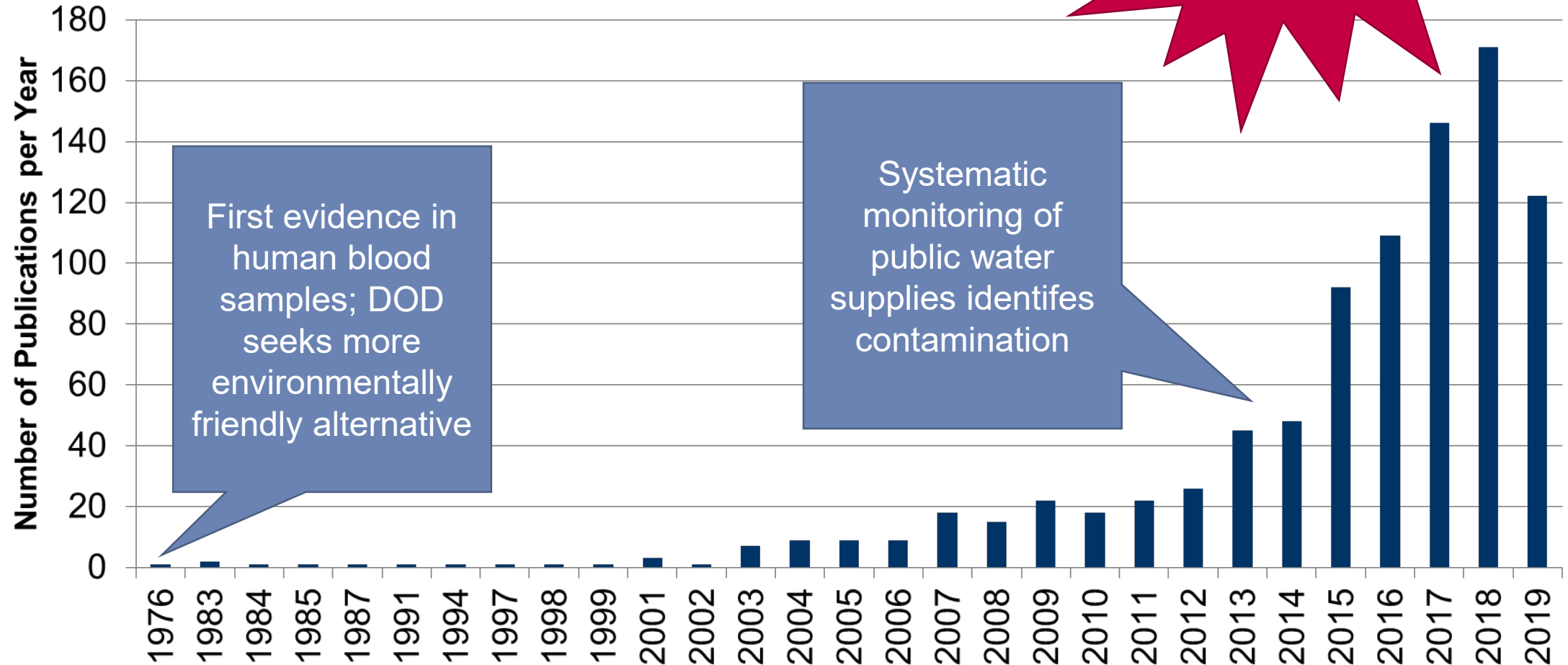
- MCL: 5 ppb
- IRIS Date: 1987
- Classified as probable human carcinogen

- REACH dossier: classified as a suspected human carcinogen
- REACH values consistent with current USEPA values
- REACH dossier also indicated values may be highly conservative

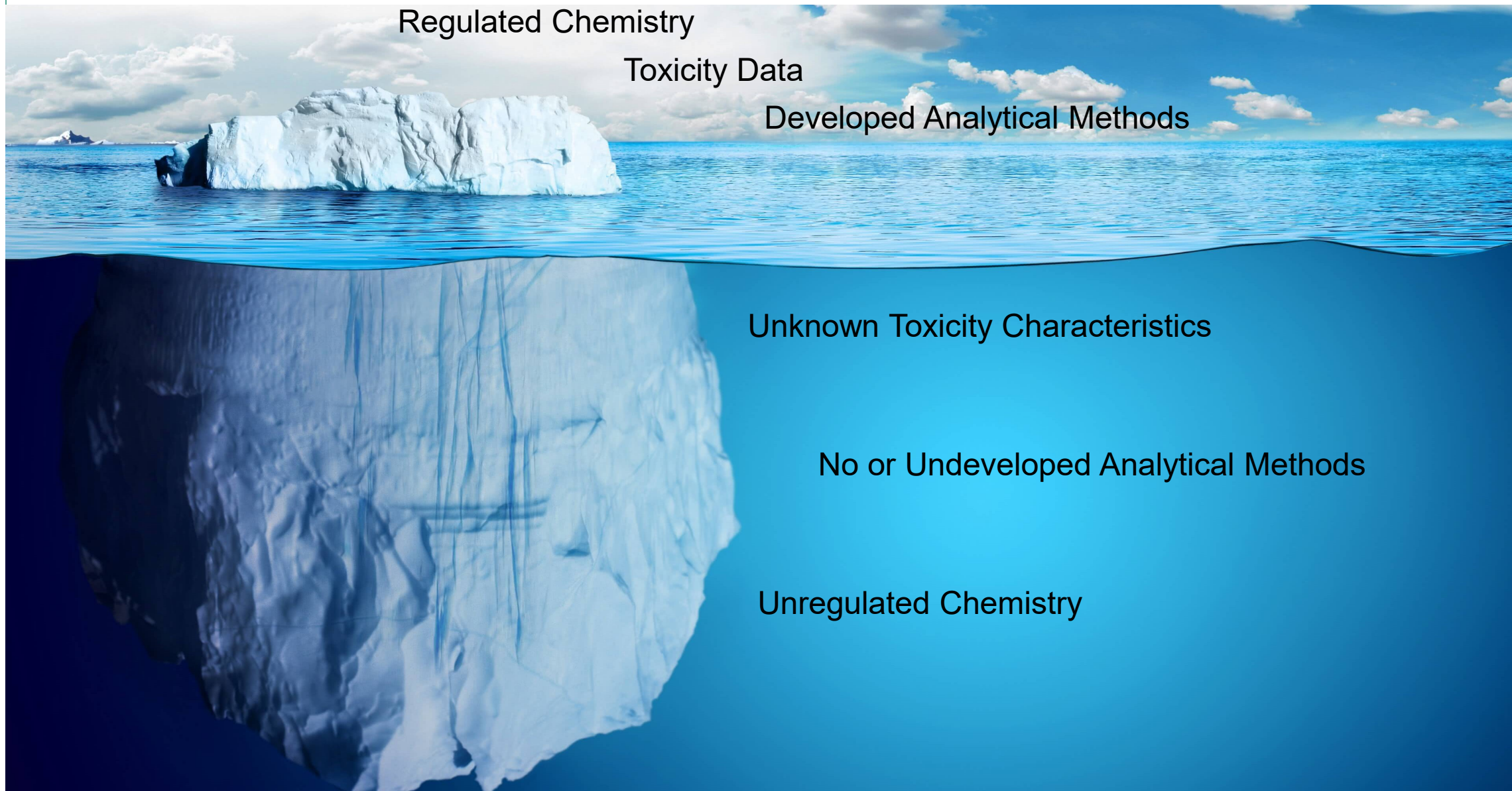
*1,2-Dichloroethane:
Data suggest a threshold
mode of action
(non-linear extrapolation) may
be appropriate*



PFAS: A cautionary tale



Known vs Unknown



Regulated Chemistry

Toxicity Data

Developed Analytical Methods

Unknown Toxicity Characteristics

No or Undeveloped Analytical Methods

Unregulated Chemistry

Emerging Contaminants

- Potential that hazards may now be quantified for some chemicals previously not assessed
- Comparison of lists shows that numerous persistent, bioaccumulative, or toxic compounds manufactured in high volumes in the US are not routinely assessed at sites
- Cause for awareness, not panic: not all of these compounds will be released ... or regulated
- Watch developments; seek opportunities to comment and contribute sound scientific perspective





Thank you

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