



# Proposed PFAS NOL Listing: What you need to know

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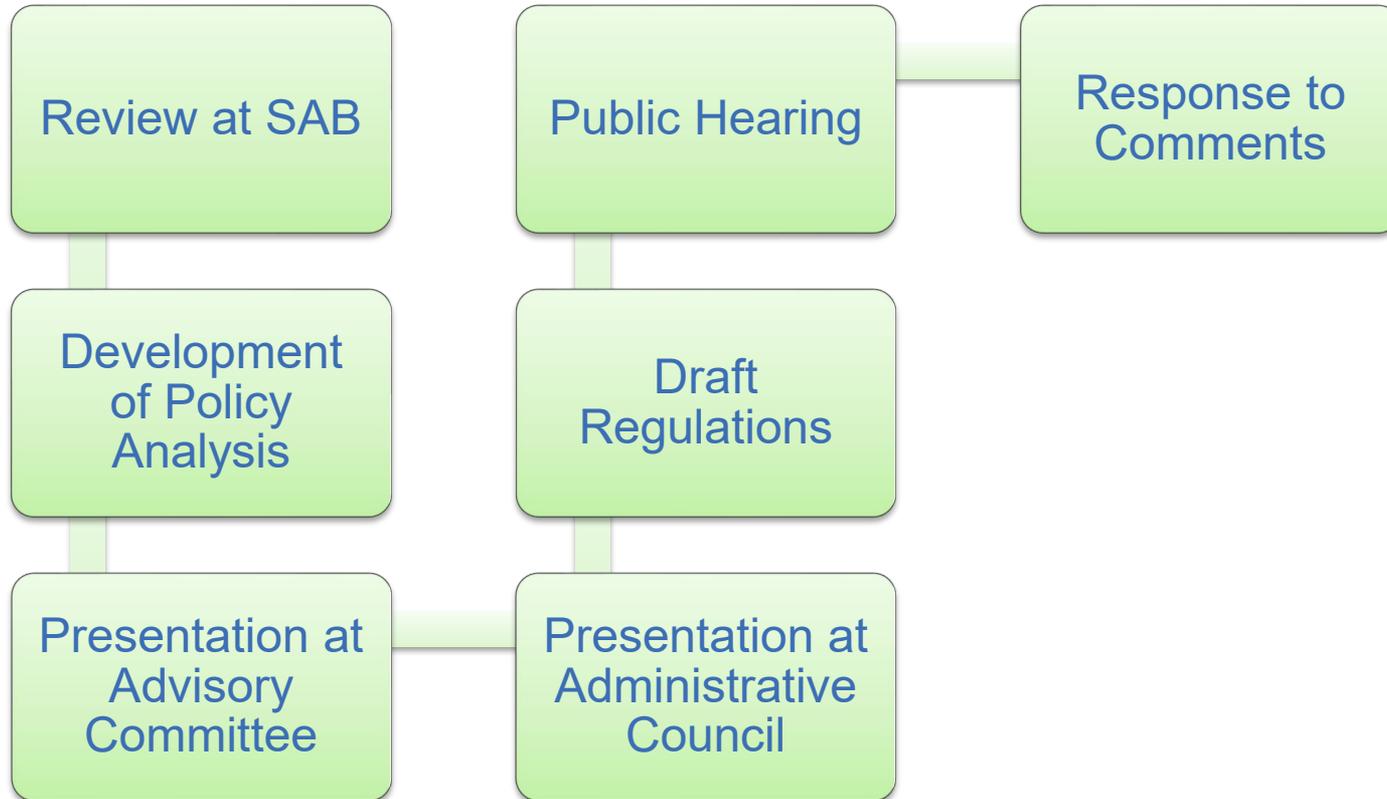
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# Session Overview

- Process to date on PFAS
- Quick overview of science
- Where do we expect to see PFAS?
- Proposed PFAS Category
- Program tools
- Examples

# Process to Date for Certain PFAS NOL



## TRI PFAS

- 172 PFAS were added to TRI for Reporting Year 2020
- Reportable individually at 100 lbs
- *Note: TRI is still listing additional PFAS*

## Proposed TURA PFAS NOL

- PFAS NOL is a category
- Proposed reporting thresholds are 25,000/10,000 lbs

# PROPOSED PFAS NOL



Response to comments end of November

If Regs are promulgated in December,  
reporting would begin in reporting year 2022

Look for definition clarifications

# Summary of Scientific Information (p. 7)

To understand the characteristics of a range of PFAAs, the SAB examined eight substances of varying chain lengths: PFNA (C9); PFOS and PFOA (C8); PFHpA (C7); PFHxA and PFHxS (C6); and PFBA and PFBS (C4).

The SAB then reviewed two ethers (GenX and ADONA), and phosphonic and phosphinic acids (PFPA and PFPIAs) of varying chain lengths.

The SAB reviewed various health impacts as well as a number of degradation/transformation pathways, through which a PFAS precursor breaks down into one of the end degradation products.

# Table 1: Chronic Health Effects (p. 10)

	PFNA	PFOA	PFOS	PFHpA	PFHxA	PFHxS	PFBA	PFBS	GenX	ADONA	PFPA/ PFPIA
Cancer		Kidney, testicular							X		
Immunotoxicity	X	Ulcerative colitis	X					X	X		
Thyroid		X			X	X	X	X		X	X
Endocrine (other than thyroid)					X	X	X	X			
Hematological		Cholesterol				X	X	X			
Liver/metabolic	X			X	X	X	X	X	X	X	X
Reproductive	X	PIH*							X	X	X
Developmental	X			X	X		X	X	X		
Neurodevelopmental						X					
Neurotoxicity	X				X	X		X			
Asthma						X		X			
Other	Mutagenicity				Kidney			Kidney	Kidney		Acute toxicity

**Note:** The SAB did not conduct a literature review for PFOS and PFOA due to the volume of information available through authoritative bodies and large scale epidemiological studies. Therefore, the endpoints shown for PFOA are not identical to those shown for the other chemicals, and are primarily the Board’s review of the C8 Health Study. For PFOS, the only endpoint noted is from the Board’s review of an NTP immunotoxicity study on PFOS and PFOA, although there is a significant body of evidence for many other chronic health effects.

\* Pregnancy Induced Hypertension

# Table 2: Persistence, presence in the environment and bioaccumulation (p. 10)

	PFNA	PFOA	PFOS	PFHpA	PFHxA	PFHxS	PFBA	PFBS	GenX	ADONA	PFPA/ PFPIA
Persistence	X	X	X	X	X	X	X	X	X	X	X
Bioaccumulation	X	X	X	X	X	X	X	X	X		X
Presence in the environment	X	X	X	X	X	X	X	X	X		
Presence in biota, including humans	X	X	X	X	X	X	X	X	X		X

- Notes:**
- Information on these chemical properties is drawn from peer reviewed studies and from US or EU and other government documents.
  - PFOS and its salts and perfluorooctanyl sulfonyl fluoride as well as PFOA, its salts, and PFOA-related compounds are designated as Persistent Organic Pollutants under the Stockholm Convention. For up to date information as of December 2019, see: <http://chm.pops.int/TheConvention/Overview/TextoftheConvention/tabid/2232/Default.aspx>.
  - PFHxS, its salts and PFxS-related compounds are under review for possible addition to the Stockholm Convention as well.
  - PFHxS and its salts are listed as vPvB, and PFNA and its salts, APFO, and PFOA are listed as PBT by the European Chemicals Agency (ECHA, Candidate List of Substances of Very High Concern for Authorization, <https://echa.europa.eu/candidate-list-table>).
  - For PFPAs and PFPIAs, evidence of bioaccumulation was primarily for longer chain substances and mixtures

# Precursors

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In addition to reviewing the hazard information presented here, the SAB reviewed a number of degradation/transformation pathways.

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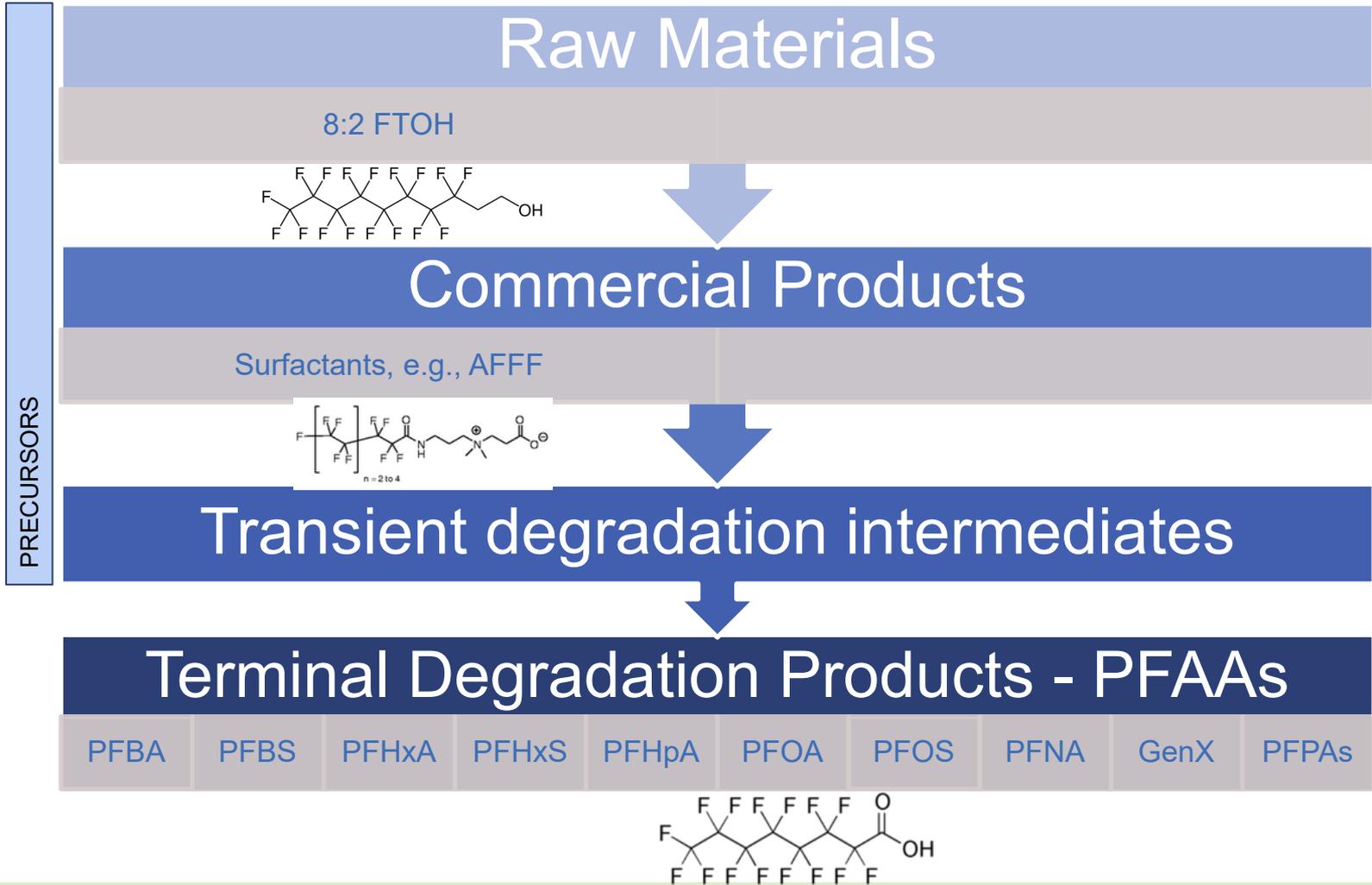
These are the pathways through which a PFAS **precursor** breaks down into one of the **end degradation** products.

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The SAB also reviewed the OECD spreadsheet and methodology for identifying PFAA precursors and looked at several representative precursors covering multiple breakdown pathways (See Appendix C for example pathways).

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**All the chemicals for which hazard information is presented here are end degradation products in addition to being used intentionally.**



# Recommendation (pp. 1 & 2)

those PFAS that contain a perfluoroalkyl moiety with three or more carbons  
(e.g.,  $-\text{C}_n\text{F}_{2n}-$ ,  $n \geq 3$ ; or  $\text{CF}_3-\text{C}_n\text{F}_{2n}-$ ,  $n \geq 2$ ) or a

perfluoroalkylether moiety with two or more carbons

(e.g.,  $-\text{C}_n\text{F}_{2n}\text{OC}_m\text{F}_{2m}-$  or  $-\text{C}_n\text{F}_{2n}\text{OC}_m\text{F}_m-$ ,  $n$  and  $m \geq 1$ )

that are not otherwise listed.

# Identifying Industries

SIC Code	Industry
2821	Plastics Materials & Synthetic Resins
3479	Metal Coating & Allied Services
3999	Manufacturing Industries
2295	Coated Fabrics, Not Rubberized
5172	Petroleum Products

NAICS Code	Industry
322220	Paper Bag & Coated & Treated Paper Manufacturing
334419	Other Electronic Component Manufacturing
33599	All Other Miscellaneous Electrical Equipment & Component Manufacturing
335929	Other Communication & Energy Wire Manufacturing

# Expected Uses in Massachusetts: Plastics and Resins



Fluoropolymer resins are used to manufacture products, where heat, low coefficient of friction or chemical resistance are needed

Uses in Massachusetts include insulation and jacketing of wire and cable

We expect several filers in this industry sector to trip thresholds

# Daikin Neoflon Flowable Resin

## \* SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

**Trade name:** NEOFLON PFA AP-201, 202, 210, 220, 230, 201SH, 211SH, 215SH, 221SH, 230SH, 231SH

**Article number:** AP2 STD

### 1.2 Relevant identified uses of the substance or mixture and uses advised against:

No further relevant information available.

### 1.3 Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

DAIKIN INDUSTRIES, LTD. CHEMICALS DIVISION:

Umeda Center Bldg., 4-12, Nakazaki-Nishi 2-chome, Kita-Ku, Osaka, JAPAN

Phone: (+81) 6-6373-4345 Fax: (+81) 6-6373-4281

**Further information obtainable from:** <http://www.daikin.com/>

### 1.4 Emergency telephone number:

Japan: +81-6-6349-7521

China: +86-512-5-232-0949, +86-21-34151689

South Korea: +82-2-568-1722

Americas: +1-256-306-5000

Europe: +49-211-179 225-0

## SECTION 2: Hazard identification

### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008**

The product is not classified according to the CLP regulation.

### 2.2 Label elements

**Labelling according to Regulation (EC) No 1272/2008:** Not applicable

**Signal word:** Not applicable

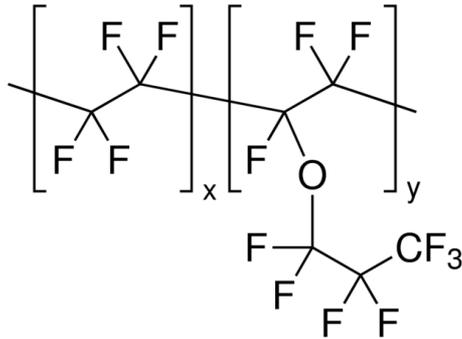
## SECTION 3: Composition/information on ingredients

### Information on ingredients:

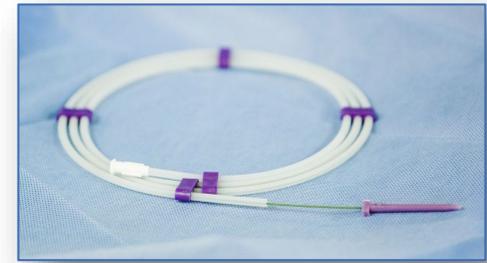
26655-00-5 Perfluoro(alkoxy alkane)

100%

**Additional information:** For the wording of the listed hazard phrases refer to section 16.



# Expected Uses in Massachusetts: Coatings

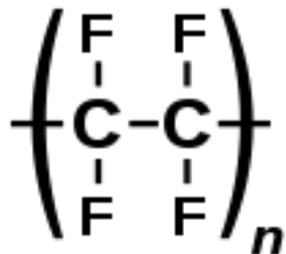


Fluoropolymer coatings reduce friction on the surface of medical devices such as catheters and guidewires and can provide color coding autoclave resistant finishes

Cookware would also be included in this use category

There may be some filers in this sector

# Caswell PTFE Dispersion



## MATERIAL SAFETY DATA SHEET

**CASWELL**  
ELECTROPLATING IN MINIATURE

Date Issued: 09/22/2010  
MSDS No: PTFE-DISP

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS	EINECS
2-propanol	< 1	67-63-0	200-661-0
Polytetrafluoroethylene	< 55	9002-84-0	

### 4. FIRST AID MEASURES

**EYES:** Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes.

**SKIN:** Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

**INGESTION:** Swallowing less than an ounce will not cause significant harm. For larger amounts, do not induce vomiting, but give one or two glasses of water to drink and get medical attention.

**INHALATION:** Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.

### 5. FIRE FIGHTING MEASURES

**FLAMMABLE LIMITS:** Not flammable

**FIRE FIGHTING PROCEDURES:** As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.

**HAZARDOUS DECOMPOSITION PRODUCTS:** May release toxic and corrosive hydrogen fluoride gas.

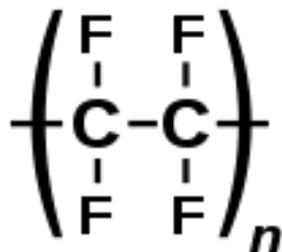
### 6. ACCIDENTAL RELEASE MEASURES

**SMALL SPILL:** Clean up spills immediately, observing precautions in Protective Equipment section.

### 7. HANDLING AND STORAGE

**GENERAL PROCEDURES:** Avoid contact with eyes, skin, and clothing.

# Chemours PTFE Fluoroplastic Dispersion DISP 30



## SAFETY DATA SHEET



### PTFE Fluoroplastic Dispersion DISP 30

Version 6.7      Revision Date: 09/11/2020      SDS Number: 1339068-00043      Date of last issue: 05/30/2020  
Date of first issue: 02/27/2017

P280 Wear eye protection and face protection.

#### Response:

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical attention.

#### Other hazards

The thermal decomposition vapors of fluorinated plastics may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Fluoropolymer dispersions

#### Components

Chemical name	CAS-No.	Concentration (% w/w)
2,6,8-Trimethyl-4-nonyloxypolyethyleneoxyethanol	60828-78-6	>= 1 - < 5

Actual concentration is withheld as a trade secret

# Expected Uses in Massachusetts: Metal Finishing

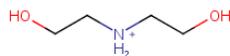


PFAS used as fume suppressant in chrome plating

PFAS can also be used in some electroless nickel or copper plating applications for lubricity

This is an important sector in terms of exposure and releases to the environment, but quantities may be below threshold

# Caswell chrome fume suppressant



P304+P312  
P332+P313  
P264  
P305+P351+P338

P337+P313  
P234  
P390

IF INHALED: Call a POISON CENTER/doctor...if you feel unwell.  
If skin irritation occurs: Get medical advice/attention.  
Wash ... thoroughly after handling.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.  
If eye irritation persists: Get medical advice/attention.  
Keep only in original container.  
Absorb spillage to prevent material damage.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

#### Hazardous components

#### 1. WATER OR OTHER NON-REPORTABLE INGREDIENTS

Concentration	79 - 84 %
CAS no.	7732-18-5

#### 2. 2-(2-BUTOXYETHOXY)ETHANOL

Concentration	8 - 8 % (weight)
EC no.	203-961-6
CAS no.	112-34-5
Index no.	603-096-00-8

- Serious eye damage/eye irritation (chapter 3.3), Cat. 2

H319	Causes serious eye irritation
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#### 3. 1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, compd with 2,2'-iminobis[ethanol] (1:1)

Concentration	8 - 8 % (weight)
CAS no.	70225-15-9

## SECTION 4: First-aid measures

### 4.1 Description of necessary first-aid measures

# 3M Acid Mist Suppressant

3M™ Acid Mist Suppressant FC-1100 07/09/19

## SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Fluoroalkyl Acrylate Adduct (NJTS No. 04499600-5965P)	Trade Secret*	48 - 52
Water	7732-18-5	45 - 50

NJTS or NJTSRN: New Jersey Trade Secret Registry Number.

\*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

#### Inhalation:

Remove person to fresh air. If you feel unwell, get medical attention.

#### Skin Contact:

Wash with soap and water. If signs/symptoms develop, get medical attention.

#### Eye Contact:

Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

#### If Swallowed:

Rinse mouth. If you feel unwell, get medical attention.

### 4.2. Most important symptoms and effects, both acute and delayed

See Section 11.1. Information on toxicological effects.

# Expected Uses in Massachusetts: Textiles



Typical applications would be stain or water repellency; military or firefighting gear

There are some facilities using PFAS in MA for this purpose

Grant: Nantucket PFAS Action Group

# Daikin Unidyne TG-5543 Textile DWR

## \* SECTION 3: Composition/information on ingredients

### Information on ingredients:

<i>Fluoroalkyl acrylate copolymer</i>	<i>20-30%</i>
<i>9002-92-0 Poly(oxyethylene)alkyl(C12-14)ether</i> <i>Xi R36/38</i> <i>Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2, H319</i>	<i>&lt;5%</i>
<i>24800-44-0 Tripropylene glycol</i>	<i>1-10%</i>
<i>3-Methoxy-3-methylbutan-1-ol</i>	<i>1-10%</i>
<i>7732-18-5 Water</i>	<i>60-70%</i>
<i>Others</i>	<i>&lt;5%</i>

*Additional information: For the wording of the listed hazard phrases refer to section 16.*

# Expected Uses in Massachusetts: Paper



PFAS used in paper facilities typically for coating

Also used for grease resistance in food packaging

# Daikin paper grease

## **SECTION 1: Identification of the substance/mixture and of the company/undertaking**

### **1.1 Product identifier**

**Trade name:** UNIDYNE TG-8111

**Article number:** UNTG8111 STD

### **1.2 Relevant identified uses of the substance or mixture and uses advised against:**

*No further relevant information available.*

### **1.3 Details of the supplier of the safety data sheet**

#### **Manufacturer/Supplier:**

DAIKIN INDUSTRIES, LTD. CHEMICALS DIVISION:

Umeda Center Bldg., 4-12, Nakazaki-Nishi 2-chome, Kita-Ku, Osaka, JAPAN

Phone: (+81) 6-6373-4345 Fax: (+81) 6-6373-4281

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China: +86-512-5-232-0949, +86-21-34151689

South Korea: +82-2-568-1722

Americas: CHEMTREC +1-800-424-9300 (Outside US/Canada: +1-703-527-3887)

Europe: +49-211-179 225-0

## **SECTION 2: Hazard identification**

### **2.1 Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008**

*The product is not classified, according to the CLP regulation.*

### **2.2 Label elements**

**Labelling according to Regulation (EC) No 1272/2008:** *Not applicable*

**Signal word:** *Not applicable*

## **SECTION 3: Composition/information on ingredients**

### **Information on ingredients:**

Fluoroalkyl acrylate copolymer	15-25%
CAS: 7732-18-5 Water	75-85%
Others	< 1%

**Additional information:** *For the wording of the listed hazard phrases refer to section 16.*

# Expected Uses in Massachusetts: Electronic Components



Etching solution as surfactant

Likely many users in MA under threshold

Grant: Department of Plastics Engineering and Transene

# Expected Uses in Massachusetts: Surface Cleaning



Hydrofluoroethers (HFE's) are included in the PFAS NOL definition

Popular products are HFE 7100 and HFE 7500

# NuGenTec Fluosolv FX-AP Solvent

 Fire = 1  
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

 HEALTH 2 Health = 2  
 FIRE 1 Fire = 1  
 REACTIVITY 0 Reactivity = 0

· **Hazard(s) not otherwise classified (HNOC):** None known

## 3 Composition/Information on Ingredients

· **Chemical characterization:** Mixtures

· **Description:** Solvent mixture

· **Dangerous Components:**

CAS: 156-60-5 RTECS: KV 9400000	trans-dichloroethylene ⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H332; Aquatic Chronic 3, H412	Proprietary%
	Proprietary ⚠ Acute Tox. 4, H302; Flam. Liq. 4, H227	12%
CAS: 163702-07-6	Methyl nonafluorobutyl ether Aquatic Chronic 3, H412	Proprietary%
CAS: 163702-08-7	Methyl nonafluoroisobutyl ether Aquatic Chronic 3, H412	Proprietary%
CAS: 67-63-0 RTECS: NT 8050000	Isopropyl alcohol ⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2, H319; STOT SE 3, H336	Proprietary%

## 4 First-Aid Measures

· **Description of first aid measures:**

· **General information:** Take affected persons out into the fresh air.

· **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Consult doctor if symptoms persist.

· **After skin contact:** Generally the product does not irritate the skin.

· **After eye contact:** Rinse opened eye for several minutes under running water.

· **Information for doctor:**

· **Most important symptoms and effects, both acute and delayed:** Breathing difficulty

# Fluosolv CAS Solvent

P403+P233

Store in a well-ventilated place. Keep container tightly closed.

P405

Store locked up.

P501

Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 1

Fire = 0

Reactivity = 0

· **HMS-ratings (scale 0 - 4)**



Health = 1

Fire = 0

Reactivity = 0

· **Hazard(s) not otherwise classified (HNOC):** None known

## 3 Composition/Information on Ingredients

· **Chemical characterization:** Mixtures

· **Description:** Mixture of substances listed below with non-hazardous additions.

· **Dangerous Components:**

Proprietary Fluorinated Fluid Blend	>60%
⚠ Acute Tox. 4, H332; Aquatic Chronic 3, H412	
Proprietary Solvent	<40%
⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2A, H319; STOT SE 3, H335-H336	

· **Additional information:**

The exact percentages of the ingredients of this mixture are considered to be proprietary and are withheld in accordance with the provisions of paragraph (i) of §1910.1200 of 29 CFR 1910.1200 Trade Secrets.

## 4 First-Aid Measures

· **Description of first aid measures:**

· **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Consult doctor if symptoms persist.

· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

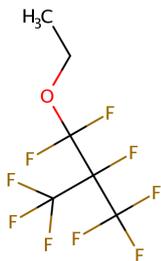
# 3M Novec 72DA

## SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
1,2-Trans-dichloroethylene	156-60-5	66 - 70 Trade Secret *

3M™ Novec™ 72DA Engineered Fluid 07/07/21

Ethyl nonafluoroisobutyl ether	163702-06-5	10 - 19
Ethyl nonafluorobutyl ether	163702-05-4	1 - 10
METHYL NONAFLUOROISOBUTYL ETHER	163702-08-7	5 - 10
METHYL NONAFLUOROBUTYL ETHER	163702-07-6	1 - 5
Isopropyl alcohol	67-63-0	1 - 3



Ethyl nonafluoroisobutyl ether 163702-06-5  
From [EPA Comptox dashboard](#)

## 3M™ Novec™ 72DA Engineered Fluid

### Introduction

3M™ Novec™ 72DA Engineered Fluid is a blend of hydrofluoroether methyl nonafluorobutyl ether (C<sub>4</sub>F<sub>9</sub>OCH<sub>3</sub>), ethyl nonafluorobutyl ether (C<sub>4</sub>F<sub>9</sub>OC<sub>2</sub>H<sub>5</sub>), trans-1,2-dichloroethylene (t-DCE) and isopropanol. This mixture of solvents is a blend of azeotropes. The blend has been analyzed during evaporation and extended use in a vapor degreaser and found to have a consistent composition that is effective for medium- to heavy-duty degreasing and defluxing applications.

Novec 72DA fluid is ideal for a wide range of electronics and other precision cleaning applications. It is intended to replace CFCs, HCFCs, HFCs, nPB and chlorinated solvents. This Novec product has zero ozone depletion potential and other favorable environmental, health and safety properties (see Table 2).

The high solvency, low surface tension, nonflammability and stability of Novec 72DA fluid make it ideal for immersion and vapor degreasing applications. The isopropanol in Novec 72DA fluid provides enhanced removal of ionic contaminants.

### Applications

- Cleaning, rinsing and drying agent
  - Cleaning of rosin solder flux residues, oils, greases and waxes

### Material Description

Ingredients	3M™ Novec™ 72DA Engineered Fluid
Methyl Nonafluorobutyl Ether (C <sub>4</sub> F <sub>9</sub> OCH <sub>3</sub> )	10% by weight
Ethyl Nonafluorobutyl Ether (C <sub>4</sub> F <sub>9</sub> OC <sub>2</sub> H <sub>5</sub> )	20% by weight
Trans-1,2-dichloroethylene (t-DCE)	68% by weight
Isopropanol	2% by weight

# 3M Novec 7100

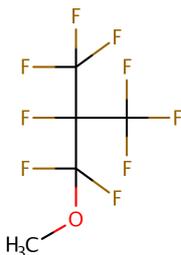
3M™ Novec™ 7100 Engineered Fluid 07/09/21



## Safety Data Sheet

### SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Methyl nonafluoroisobutyl ether	163702-08-7	55 - 90
Methyl nonafluorobutyl ether	163702-07-6	10 - 45



methyl nonafluoroisobutyl ether 163702-08-7

From [EPA Comptox dashboard](#)

# 3M™ Novec™ 7100 Engineered Fluid

## Introduction

3M™ Novec™ 7100 Engineered Fluid, methoxy-nonafluorobutane (C<sub>4</sub>F<sub>9</sub>OCH<sub>3</sub>), is a clear, colorless and low-odor fluid intended to replace ozone-depleting substances (ODSs) and compounds with high global warming potential (GWP) in many applications. Its physical properties are compared with several other ODS replacement fluid candidates in Table 1.

This proprietary fluid has zero ozone depletion potential and other favorable environmental properties (see Table 2). It has one of the best toxicological profiles of CFC replacement materials, with a time-weighted average exposure guideline of 750 ppm (eight hour average).

The high boiling point and low surface tension of Novec 7100 fluid make it ideal for use in vapor degreasing applications as a neat (pure), azeotropic component or co-solvent parts cleaner. In addition, its chemical and thermal stability, non-flammability and low toxicity make it useful for many other industrial and specialty solvent applications (see below).

## Applications

- Cleaning and rinsing agent
  - Heavy-duty cleaning (co-solvent) – heavy oils, greases, fluxes
  - Medium-duty cleaning (azeotrope) – oils, greases, waxes
  - Light-duty cleaning (neat) – particulates, fluorolubes, light oils, fluoropolymers
- Lubricant carrier
  - Fluorocarbons
  - Hydrocarbons
  - Silicones
- Spray contact cleaner
- CFC, HCFC, HFC and PFC replacement
- Dielectric test media
- Heat transfer
  - See “3M™ Novec™ 7100 Engineered Fluid for Heat Transfer” Application Information
- Spot-free water drying agent (with surfactants added)
- Specialty solvents, dispersion media, reaction media

## Material Description

Ingredients	3M™ Novec™ 7100 Engineered Fluid
Methoxy-nonafluorobutane <sup>1</sup>	99.5% minimum
Non-volatile residue (NVR)	2.0 ppm maximum
Appearance	Clear, colorless

<sup>1</sup>Novec 7100 fluid (C<sub>4</sub>F<sub>9</sub>OCH<sub>3</sub>) consists of two inseparable isomers with essentially identical properties. These are (CF<sub>3</sub>)<sub>2</sub>CFCH<sub>2</sub>OCH<sub>3</sub> (CAS No. 163702-08-7) and CF<sub>3</sub>CF<sub>2</sub>CF<sub>2</sub>CF<sub>2</sub>OCH<sub>3</sub> (CAS No. 163702-07-6).

# Expected Uses in Massachusetts: Petroleum Products



Manufacture of lubricants

May be some filers

# PFPE Lubricant



Technical Data Sheet

## LOCTITE® LB 8209

Known as LOCTITE® Krytox® RFE Bearing Lubricant CP  
May 2019

### PRODUCT DESCRIPTION

LOCTITE® LB 8209 provides the following product characteristics:

<b>Technology</b>	Synthetic Grease
Base Oil Type	Perfluoropolyether (PFPE)
Thickener	Polytetrafluoroethylene (PTFE)
Appearance	White to off white buttery grease
<b>Cure</b>	Non-curing
<b>Application</b>	Lubrication
Specific Benefit	<ul style="list-style-type: none"> <li>• Thermally stable</li> <li>• Chemical resistant</li> <li>• Non-flammable</li> <li>• Non-toxic</li> <li>• Waterproof</li> <li>• Compatible with most plastics</li> <li>• Outperforms petroleum-based grease</li> <li>• Can be used with chlorinated systems</li> <li>• Insoluble in all but fluorinated solvents</li> </ul>

Revision Number: 003.1

Issue date: 10/03/2017

### 1. PRODUCT AND COMPANY IDENTIFICATION

<b>Product name:</b>	LOCTITE LB 8209 DUP OR LU PFPE HIGH PERF known as Dupont® Krytox® RFE PFPE Lubri	<b>IDH number:</b>	234339
<b>Product type:</b>	Lubricant	<b>Item number:</b>	29710
<b>Restriction of Use:</b>	None identified	<b>Region:</b>	United States
<b>Company address:</b>	Henkel Corporation One Henkel Way Rocky Hill, Connecticut 06067	<b>Contact information:</b>	Telephone: (860) 571-5100 MEDICAL EMERGENCY Phone: Poison Control Center 1-877-671-4608 (toll free) or 1-303-592-1711 TRANSPORT EMERGENCY Phone: CHEMTREC 1-800-424-9300 (toll free) or 1-703-527-3887 Internet: www.henkelna.com

### 2. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

NOT CLASSIFIED. READ ENTIRE SAFETY DATA SHEET.

HAZARD CLASS	HAZARD CATEGORY
None	None

#### PICTOGRAM(S)

None

#### Precautionary Statements

<b>Prevention:</b>	Not prescribed
<b>Response:</b>	Not prescribed
<b>Storage:</b>	Not prescribed
<b>Disposal:</b>	Not prescribed

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
None	None	None

\* Exact percentages may vary or are trade secret. Concentration range is provided to assist users in providing appropriate protections.

# Expected Uses in Massachusetts: AFFF



Municipal, government uses of AFFF not covered under TURA

Industrial uses covered only if you are processing or packaging  
e.g., putting it into product

AFFF Alternatives Assessment Project with the Department of  
Defense

# What to look for

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Check SDS (see examples)

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Keywords to look for 'fluoro', 'PFxx', 'fluorinated'

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De minimis 1% for all PFAS except PFOA (0.1%)

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Applications where PFAS are likely to be present less than 1% (surfactants, processing aids) *Below de minimis, (PFOA < 0.1%) but important to be aware*

---

Testing is not required, but is an option

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# Supplier Notification Letters

- OTA created a template [Supplier Notification Letter](#) to help companies comply with the 2020 TRI PFAS listing
- Will prepare a similar letter once the Certain PFAS NOL category is added
  - [Sign up for OTA's newsletter](#) for updates

November 4, 2021

Recipient Name  
Supplier Business Name  
Address Line 1  
Address Line 2  
City, State ZIP

Account #: 00000000

RE: PFAS Supplier Notification Requirements under the Toxics Release Inventory (TRI)

Dear Name,

Company Name (account #: 00000000) requests your cooperation and assistance to comply with new chemical listings under the US Environmental Protection Agency's Toxics Release Inventory (TRI).

In Section 7321 of the National Defense Authorization Act (NDAA) for Fiscal Year 2020, 172 additional per- and polyfluoroalkyl substances (PFAS) were added to the TRI Chemical List, under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act (SARA). Effective January 1, 2020, suppliers must notify customers of any TRI-listed chemical present above the *de minimis* level in a mixture or trade name product. The *de minimis* reporting level for perfluorooctanoic acid (PFOA) (CASRN: 335-67-1) is 0.1%. All other PFAS additions for FY2020 have a *de minimis* level of 1%.

In light of this revision to the list of chemicals covered by TRI, we request notification of the presence and quantity of any of the 172 newly-listed chemicals in any mixtures or products furnished to Company Name from January 1, 2020 to present, as described in 40 CFR §372.45(b)-(c).

We greatly appreciate your time and assistance. Please get back to us with this information by Date.

Best regards,

Name  
Title  
Company  
Phone  
Email

# Obstacles for Companies

## Lack of company awareness

PFAS not listed on SDS  
Confidential Business Information (CBI)  
Tainted incoming feedstock

## Regrettable substitution

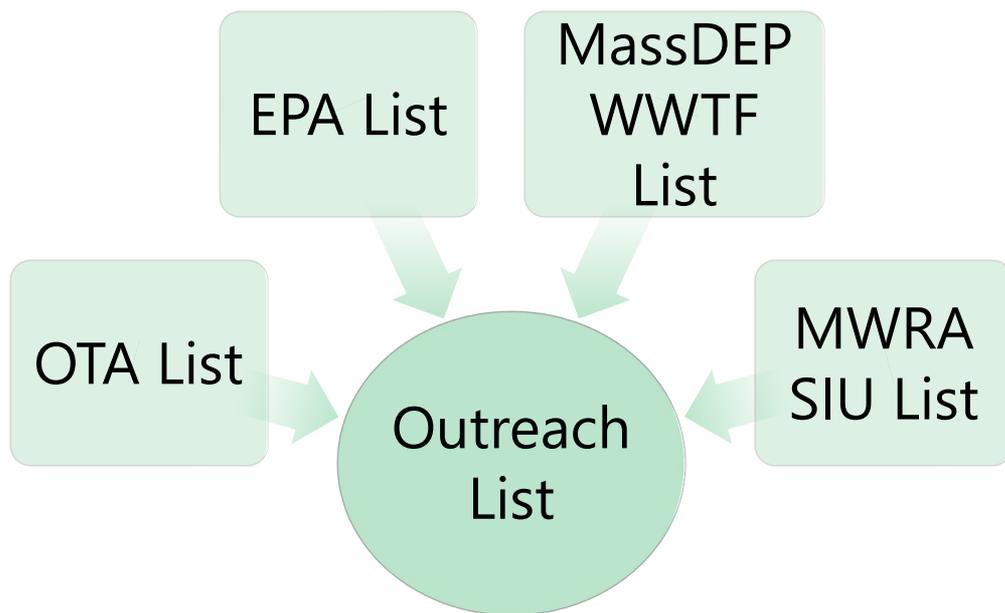
'Shorter-chain' is still a 'forever chemical'

## Fear of liability

Other PFAS sources = misplaced liability

## Lack of regulation

# Partnerships



DEP, EPA identified WWTF upstream from high-priority Drinking Water Protection Areas

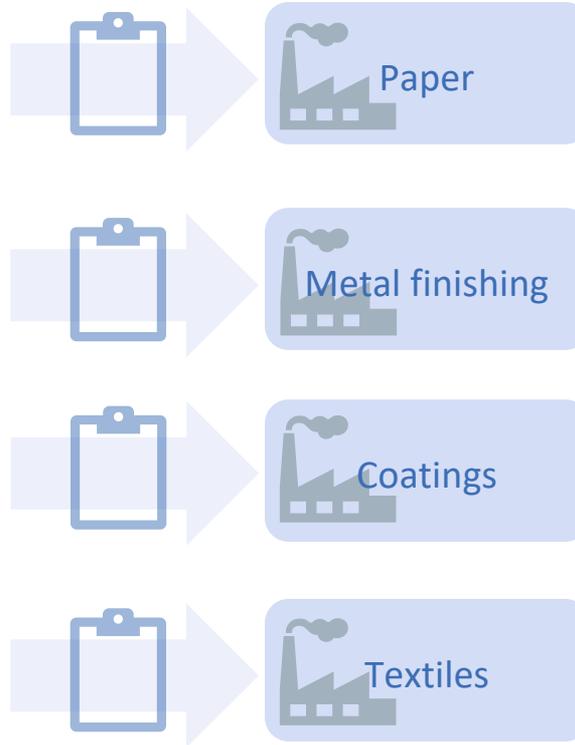
Agencies combined SIC/NAICS codes lists for upstream Significant Industrial Users

OTA is providing **free, confidential** technical assistance to industries upstream:

- Assistance identifying PFAS in products
- Helping companies communicate with suppliers
- Pollution prevention and toxics use reduction
- Climate change
- Resource conservation

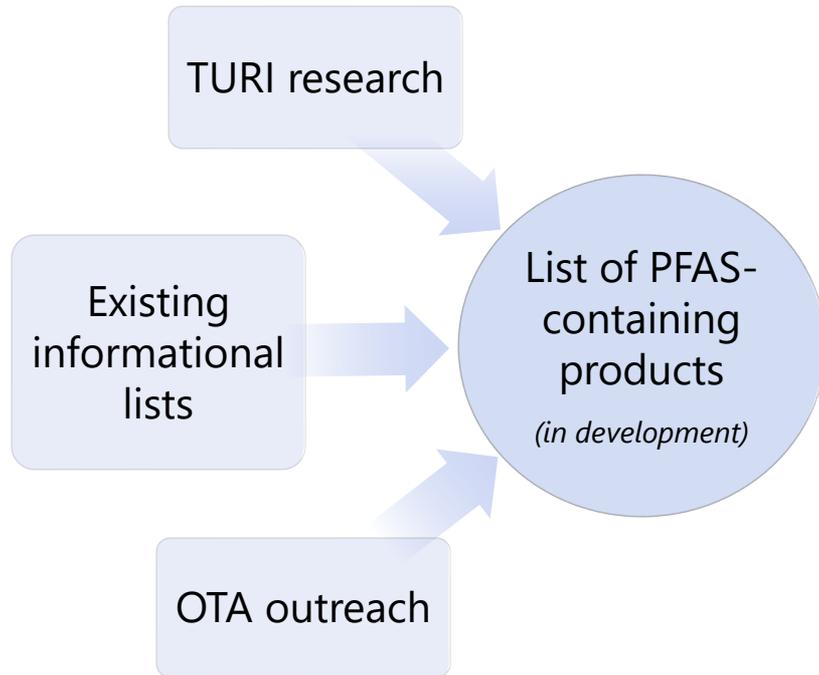
# PFAS Identification Survey Assessments

Assessments to  
identify PFAS  
sources  
*(in development)*



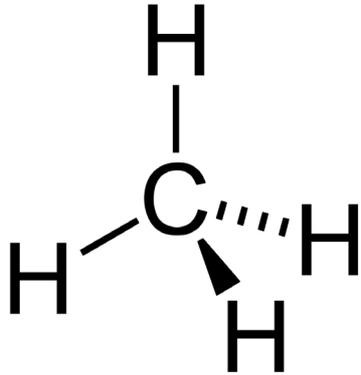
- OTA technical staff flag likely sources of PFAS
  - Companies may share list of CAS numbers with OTA
- OTA and TURI pursue research on products of concern
- Companies may opt to share product information with OTA to populate a list of PFAS-containing products

# PFAS Product List

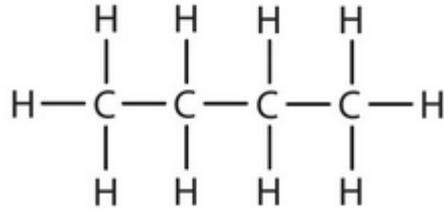


- Once developed, product list made available to help companies avoid PFAS-containing products
- May highlight applications where safer alternatives still need to be identified

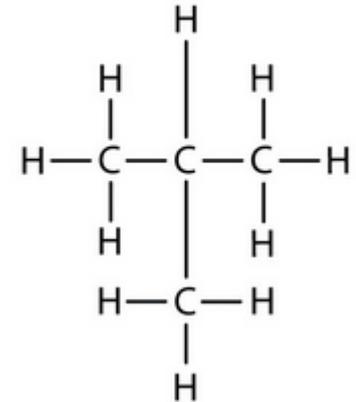
# Chemistry basics



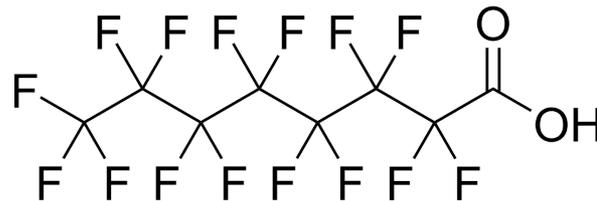
Carbons have 4 bonding sites



Simple hydrocarbon Alkyl chain

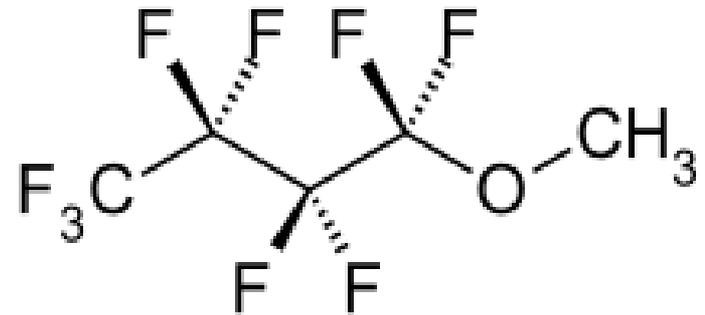
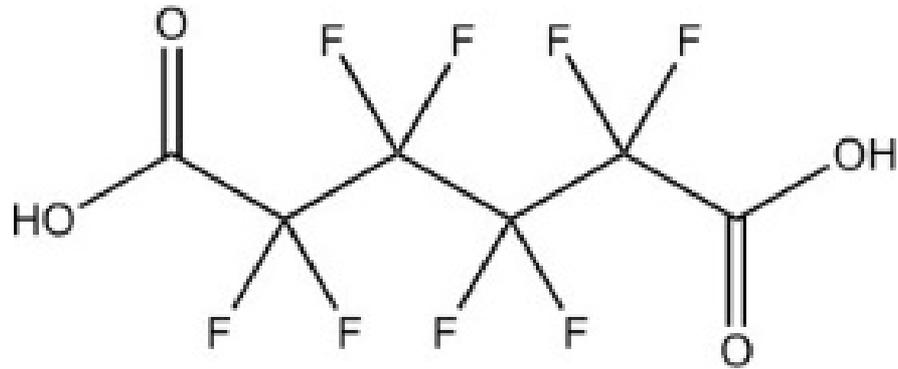


Branched Alkyl chain



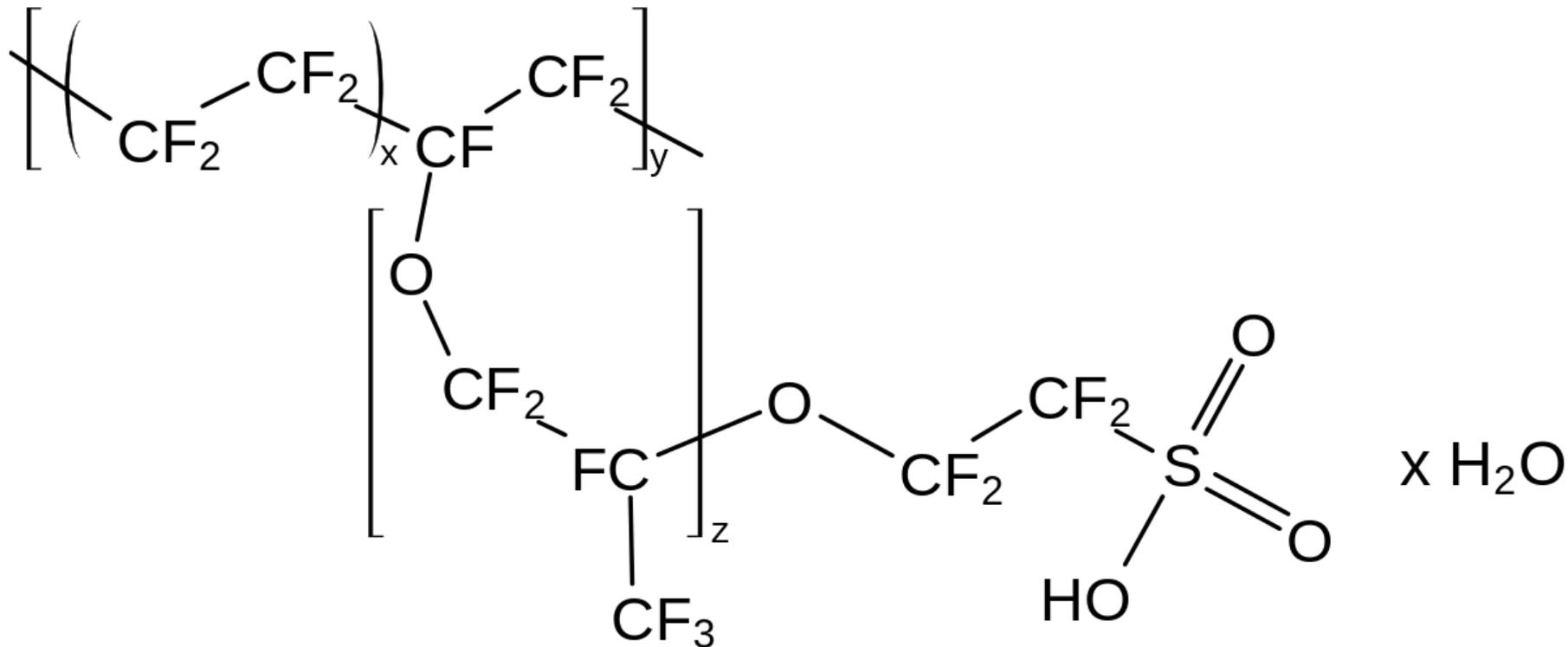
Perfluorinated alkyl chain with all H's substituted with F

# Examples of PFAS included in the Definition

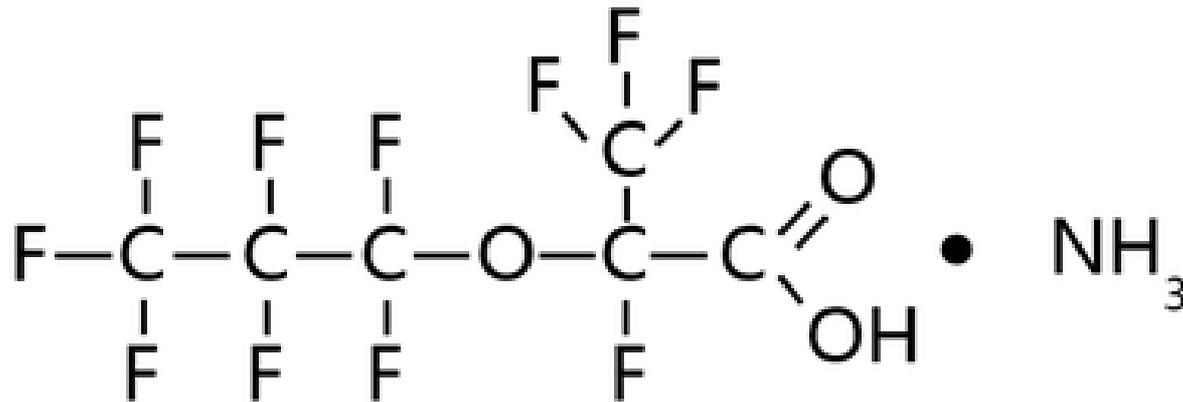




# Examples of PFAS included in the Definition

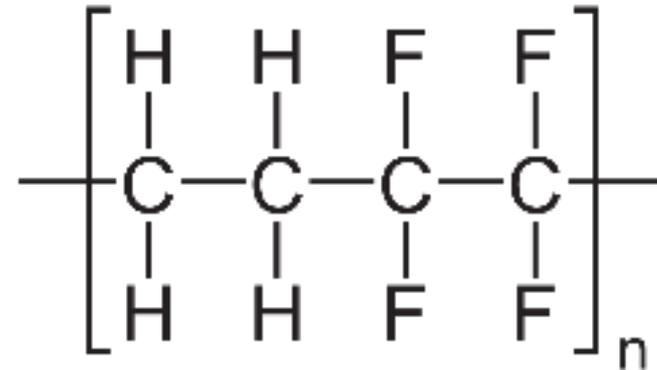
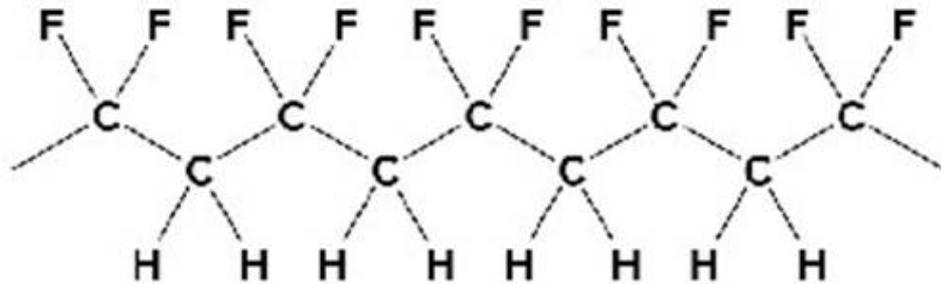


# Examples of PFAS included in the Definition



*GenX Chemical Structure*

# Examples of PFAS NOT Included in the Definition



## Example: Teflon

- PTFE (e.g. Teflon) is included in the proposed PFAS NOL Category.
- PTFE pellets being processed, such as in extrusion processes would be reportable, as would PTFE coating emulsions.
- Teflon articles, such as Teflon tape or spacers, would likely meet the article exemption.
- TFE, the monomer used in the manufacture of PTFE, is not included in the proposed PFAS NOL category. But is individually listed on TURA

# What will be helpful to see in the Guidance/Program resources?

- Definition and explanation
- List of chemicals (TRI)
- List of chemicals (in commerce, non CBI)
- Longer list of 5000 chemicals?
- Example structures?
- FAQs?
- Other?

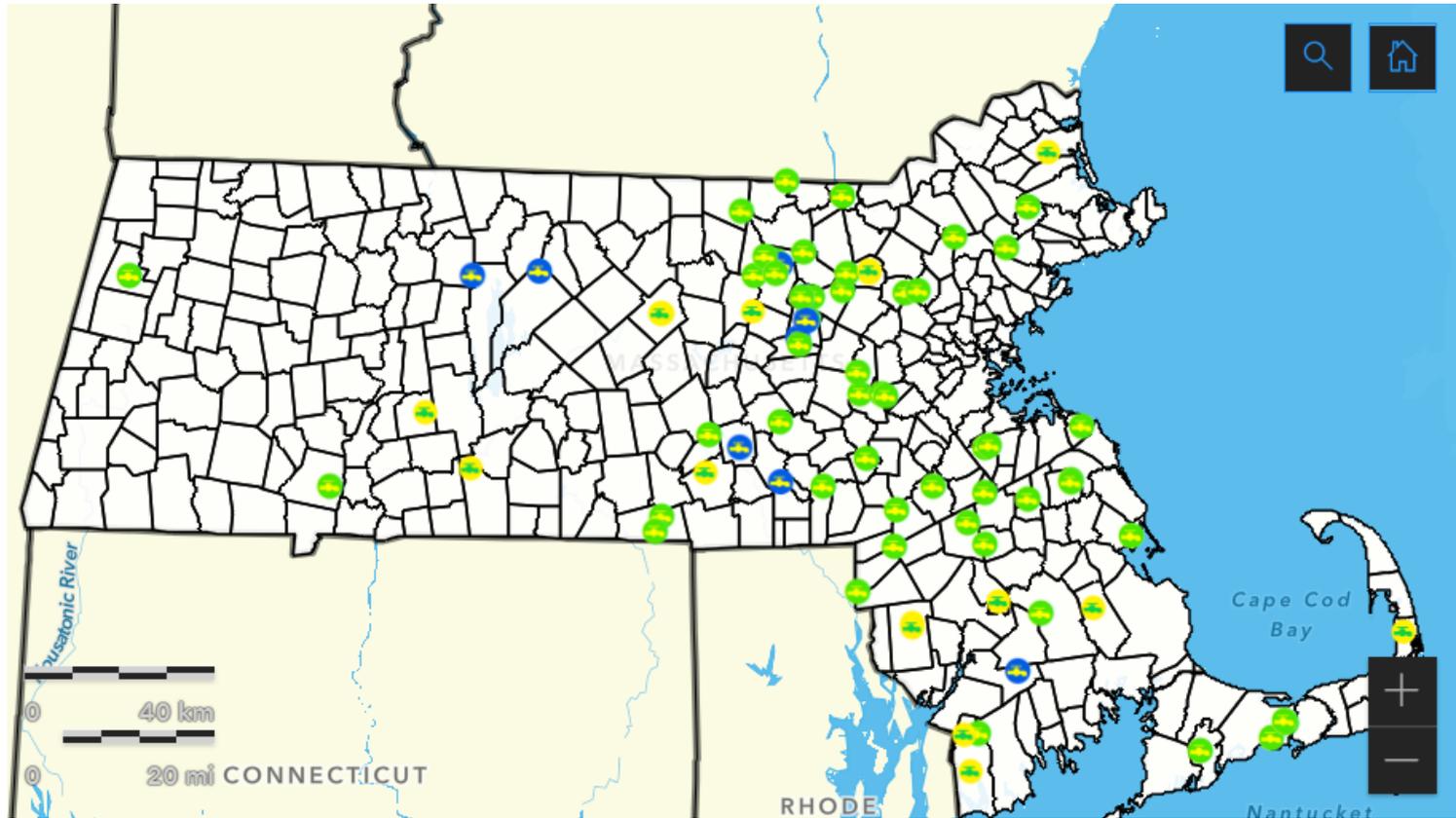
# Other program activities related to PFAS

OTA work with POTWs

Grant: Community Action Works and Clean Water Fund

Artificial turf

# Why a preventative approach?



[Per- and Polyfluoroalkyl Substances \(PFAS\) | Mass.gov](https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas)



# The Massachusetts Toxics Use Reduction Institute

[www.turi.org](http://www.turi.org)

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