Massachusetts Department of ENVIRONMENTAL PROTECTION

Toxics Use Reduction Reporting Instructions Appendices

V. February 2025

Developed in collaboration with:

Office of Technical Assistance for Toxics Use Reduction
Toxics Use Reduction Institute

Commonwealth of Massachusetts
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Appendix A: Standard Industrial Classification (SIC) Codes and 2022 North American Industry Classification System (NAICS) Codes Reportable Under the Massachusetts Toxics Use Reduction Act

SIC	SIC Title	2022 NAICS	2022 NAICS Title
1011	Iron Ores	212210	Iron Ore Mining
1021	Copper Ores	212230	Copper, Nickel, Lead, and Zinc Mining
1031	Lead and Zinc Ores	212230	Copper, Nickel, Lead, and Zinc Mining
1041	Gold Ores	212220	Gold Ore and Silver Ore Mining
1044	Silver Ores	212220	Gold Ore and Silver Ore Mining
1061	Ferroalloy Ores, Except Vanadium	212230	Copper, Nickel, Lead, and Zinc Mining
1061	Ferroalloy Ores, Except Vanadium	212290	Other Metal Ore Mining
1081	Metal Mining Services	213114	Support Activities for Metal Mining
1081	Metal Mining Services	238910	Site Preparation Contractors
1081	Metal Mining Services	541360	Geophysical Surveying and Mapping Services
1094	Uranium-radium-vanadium Ores	212290	Other Metal Ore Mining
1099	Metal Ores, Nec	212290	Other Metal Ore Mining
1221	Bituminous Coal and Lignite-surface Mining	212114	Surface Coal Mining
1222	Bituminous Coal-underground Mining	212115	Underground Coal Mining
1231	Anthracite Mining	212114	Surface Coal Mining
1231	Anthracite Mining	212115	Underground Coal Mining
1241	Coal Mining Services	213113	Support Activities for Coal Mining
1241	Coal Mining Services	238910	Site Preparation Contractors
1311	Crude Petroleum and Natural Gas	211120	Crude Petroleum Extraction
1321	Natural Gas Liquids	211130	Natural Gas Extraction
1381	Drilling Oil and Gas Wells	213111	Drilling Oil and Gas Wells
1382	Oil and Gas Exploration Services	213112	Support Activities for Oil and Gas Operations
1382	Oil and Gas Exploration Services	541360	Geophysical Surveying and Mapping Services
1389	Oil and Gas Field Services, Nec	213112	Support Activities for Oil and Gas Operations
1389	Oil and Gas Field Services, Nec	237120	Oil and Gas Pipeline and Related Structures Construction
1389	Oil and Gas Field Services, Nec	238910	Site Preparation Contractors
1411	Dimension Stone	212311	Dimension Stone Mining and Quarrying
1422	Crushed and Broken Limestone	212312	Crushed and Broken Limestone Mining and Quarrying
1423	Crushed and Broken Granite	212313	Crushed and Broken Granite Mining and Quarrying
1429	Crushed and Broken Stone, Nec	212319	Other Crushed and Broken Stone Mining and Quarrying
1442	Construction Sand and Gravel	212321	Construction Sand and Gravel Mining
1446	Industrial Sand	212322	Industrial Sand Mining
1455	Kaolin and Ball Clay	212323	Kaolin, Clay, and Ceramic and Refractory Minerals Mining
1459	Clay and Related Minerals, Nec	212323	Kaolin, Clay, and Ceramic and Refractory Minerals Mining
1474	Potash, Soda, and Borate Minerals	212390	Other Nonmetallic Mineral Mining and Quarrying
1475	Phosphate Rock	212390	Other Nonmetallic Mineral Mining and Quarrying
1479	Chemical and Fertilizer Mining	212390	Other Nonmetallic Mineral Mining and Quarrying
1481	Nonmetallic Minerals Services, Except Fuels	213115	Support Activities for Nonmetallic Minerals (except Fuels) Mining
1481	Nonmetallic Mineral Services	238910	Site Preparation Contractors
1481	Nonmetallic Mineral Services	541360	Geophysical Surveying and Mapping Services
1499	Miscellaneous Nonmetallic Mining	212319	Other Crushed and Broken Stone Mining and Quarrying
1499	Miscellaneous Nonmetallic Mining	212390	Other Nonmetallic Mineral Mining and Quarrying
2011	Meat Packing Plants	311611	Animal (except Poultry) Slaughtering
2013	Sausages and Other Prepared Meats	311612	Meat Processed from Carcasses
2013	Sausages and Other Prepared Meats	311613	Rendering and Meat Byproduct Processing
2015	Poultry Slaughtering and Processing	311615	Poultry Processing
2015	Poultry Slaughtering and Processing	311999	All Other Miscellaneous Food Manufacturing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
2021	Creamery Butter	311512	Creamery Butter Manufacturing
2022	Cheese; Natural and Processed	311513	Cheese Manufacturing
2023	Dry, Condensed, Evaporated Products	311511	Fluid Milk Manufacturing
2023	Dry, Condensed, Evaporated Products	311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing
2024	Ice Cream and Frozen Desserts	311520	Ice Cream and Frozen Dessert Manufacturing
2026	Fluid Milk	311511	Fluid Milk Manufacturing
2026	Fluid Milk	311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing
2032	Canned Specialties	311422	Specialty Canning
2032	Canned Specialties	311999	All Other Miscellaneous Food Manufacturing
2033	Canned Fruits and Specialties	311421	Fruit and Vegetable Canning
2034	Dehydrated Fruits, Vegetables, Soups	311211	Flour Milling
2034	Dehydrated Fruits, Vegetables, Soups	311423	Dried and Dehydrated Food Manufacturing
2034	Dehydrated Fruits, Vegetables, Soups	311999	All Other Miscellaneous Food Manufacturing
2035	Pickles, Sauces, and Salad Dressings	311421	Fruit and Vegetable Canning
2035	Pickles, Sauces, and Salad Dressings	311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing
2037	Frozen Fruits and Vegetables	311411	Frozen Fruit, Juice, and Vegetable Manufacturing
2038	Frozen Specialties, Nec	311412	Frozen Specialty Food Manufacturing
2041	Flour and Other Grain Mill Products	311211	Flour Milling
2043	Cereal Breakfast Foods	311230	Breakfast Cereal Manufacturing
2043	Cereal Breakfast Foods	311920	Coffee and Tea Manufacturing
2044	Rice Milling	311212	Rice Milling
2045	Prepared Flour Mixes and Doughs	311824	Dry Pasta, Dough, and Flour Mixes Manufacturing from Purchased Flour
2046	Wet Corn Milling	311221	Wet Corn Milling and Starch Manufacturing
2046	Wet Corn Milling	311225	Fats and Oils Refining and Blending
2047	Dog and Cat Food	311111	Dog and Cat Food Manufacturing
2048	Prepared Feeds, Nec	311119	Other Animal Food Manufacturing
2048	Prepared Feeds, Nec	311611	Animal (except Poultry) Slaughtering
2051	Bread, Cake, and Related Products	311812	Commercial Bakeries
2052	Cookies and Crackers	311812	Commercial Bakeries
2052	Cookies and Crackers	311821	Cookie and Cracker Manufacturing
2052	Cookies and Crackers	311919	Other Snack Food Manufacturing
2053	Frozen Bakery Products, Except Bread	311813	Frozen Cakes, Pies, and Other Pastries Manufacturing
2061	Raw Cane Sugar	311314	Cane Sugar Manufacturing
2062	Cane Sugar Refining	311314	Cane Sugar Manufacturing
2063	Beet Sugar	311313	Beet Sugar Manufacturing
2064	Candy and Other Confectionery Products	311340	Nonchocolate Confectionery Manufacturing
2064	Candy and Other Confectionery Products	311352	Confectionery Manufacturing from Purchased Chocolate
2066	Chocolate and Cocoa Products	311351	Chocolate and Confectionery Manufacturing from Cacao Beans
2066	Chocolate and Cocoa Products	311352	Confectionery Manufacturing from Purchased Chocolate
2067	Chewing Gum	311340	Nonchocolate Confectionery Manufacturing
2068	Salted and Roasted Nuts and Seeds	311911	Roasted Nuts and Peanut Butter Manufacturing
2074	Cottonseed Oil Mills	311224	Soybean and Other Oilseed Processing
2074	Cottonseed Oil Mills	311225	Fats and Oils Refining and Blending
2075	Soybean Oil Mills	311224	Soybean and Other Oilseed Processing
2075	Soybean Oil Mills	311225	Fats and Oils Refining and Blending
2076	Vegetable Oil Mills, Nec	311224	Soybean and Other Oilseed Processing
2076	Vegetable Oil Mills, Nec	311225	Fats and Oils Refining and Blending
2077	Animal and Marine Fats and Oils	311613	Rendering and Meat Byproduct Processing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
2077	Animal and Marine Fats and Oils	311710	Seafood Product Preparation and Packaging
2077	Animal and Marine Fats and Oils	311710	Seafood Product Preparation and Packaging
2079	Edible Fats and Oils	311224	Soybean and Other Oilseed Processing
2079	Edible Fats and Oils	311224	Soybean and Other Oilseed Processing
2079	Edible Fats and Oils	311225	Fats and Oils Refining and Blending
2082	Malt Beverages	311942	Spice and Extract Manufacturing
2082	Malt Beverages	312120	Breweries
2083	Malt	311213	Malt Manufacturing
2084	Wines, Brandy, and Brandy Spirits	312130	Wineries
2085	Distilled and Blended Liquors	312130	Wineries
2085	Distilled and Blended Liquors	312140	Distilleries
2086	Bottled and Canned Soft Drinks	312111	Soft Drink Manufacturing
2086	Bottled and Canned Soft Drinks	312112	Bottled Water Manufacturing
2087	Flavoring Extracts and Syrups, Nec	311920	Coffee and Tea Manufacturing
2087	Flavoring Extracts and Syrups, Nec	311930	Flavoring Syrup and Concentrate Manufacturing
2087	Flavoring Extracts and Syrups, Nec	311942	Spice and Extract Manufacturing
2087	Flavoring Extracts and Syrups, Nec	311999	All Other Miscellaneous Food Manufacturing
2091	Canned and Cured Fish and Seafoods	311710	Seafood Product Preparation and Packaging
2092	Fresh or Frozen Packaged Fish	311710	Seafood Product Preparation and Packaging
2095	Roasted Coffee	311920	Coffee and Tea Manufacturing
2096	Potato Chips and Similar Snacks	311919	Other Snack Food Manufacturing
2097	Manufactured Ice	312113	Ice Manufacturing
2098	Macaroni and Spaghetti	311824	Dry Pasta, Dough, and Flour Mixes Manufacturing from Purchased Flour
2099	Food Preparations, Nec	111998	All Other Miscellaneous Crop Farming
2099	Food Preparations, Nec	112519	Other Aquaculture
2099	Food Preparations, Nec	311212	Rice Milling
2099	Food Preparations, Nec	311340	Nonchocolate Confectionery Manufacturing
2099	Food Preparations, Nec	311423	Dried and Dehydrated Food Manufacturing
2099	Food Preparations, Nec	311824	Dry Pasta, Dough, and Flour Mixes Manufacturing from Purchased Flour
2099	Food Preparations, Nec	311830	Tortilla Manufacturing
2099	Food Preparations, Nec	311911	Roasted Nuts and Peanut Butter Manufacturing
2099	Food Preparations, Nec	311920	Coffee and Tea Manufacturing
2099	Food Preparations, Nec	311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing
2099	Food Preparations, Nec	311942	Spice and Extract Manufacturing
2099	Food Preparations, Nec	311991	Perishable Prepared Food Manufacturing
2099	Food Preparations, Nec	311999	All Other Miscellaneous Food Manufacturing
2111	Cigarettes	312230	Tobacco Manufacturing
2121	Cigars	312230	Tobacco Manufacturing
2131	Chewing and Smoking Tobacco	312230	Tobacco Manufacturing
2141	Tobacco Stemming and Redrying	312230	Tobacco Manufacturing
2141	Tobacco Stemming and Redrying	312230	Tobacco Manufacturing
2211	Broadwoven Fabric Mills, Cotton	313210	Broadwoven Fabric Mills
2221	Broadwoven Fabric Mills, Manmade	313210	Broadwoven Fabric Mills
2231	Broadwoven Fabric Mills, Wool	313210	Broadwoven Fabric Mills
2231	Broadwoven Fabric Mills, Wool	313310	Textile and Fabric Finishing Mills
2231	Broadwoven Fabric Mills, Wool	313310	Textile and Fabric Finishing Mills
2241	Narrow Fabric Mills	313220	Narrow Fabric Mills and Schiffli Machine Embroidery
2251	Women's Hosiery, Except Socks	313310	Textile and Fabric Finishing Mills
2251	Women's Hosiery, Except Socks	315120	Apparel Knitting Mills
2252	Hosiery, Nec	313310	Textile and Fabric Finishing Mills

SIC	SIC Title	2022 NAICS	2022 NAICS Title
2252	Hosiery, Nec	315120	Apparel Knitting Mills
2252	Hosiery, Nec	315120	Apparel Knitting Mills
2253	Knit Outerwear Mills	313310	Textile and Fabric Finishing Mills
2253	Knit Outerwear Mills	315120	Apparel Knitting Mills
2253	Knit Outerwear Mills	315120	Apparel Knitting Mills
2254	Knit Underwear Mills	313310	Textile and Fabric Finishing Mills
2254	Knit Underwear Mills	315120	Apparel Knitting Mills
2257	Weft Knit Fabric Mills	313240	Knit Fabric Mills
2257	Weft Knit Fabric Mills	313310	Textile and Fabric Finishing Mills
2258	Lace and Warp Knit Fabric Mills	313240	Knit Fabric Mills
2258	Lace and Warp Knit Fabric Mills	313310	Textile and Fabric Finishing Mills
2259	Knitting Mills, Nec	313240	Knit Fabric Mills
2259	Knitting Mills, Nec	313240	Knit Fabric Mills
2259	Knitting Mills, Nec	313310	Textile and Fabric Finishing Mills
2259	Knitting Mills, Nec	315120	Apparel Knitting Mills
2259	Knitting Mills, Nec	315120	Apparel Knitting Mills
2261	Finishing Plants, Cotton	313310	Textile and Fabric Finishing Mills
2262	Finishing Plants, Manmade	313310	Textile and Fabric Finishing Mills
2269	Finishing Plants, Nec	313310	Textile and Fabric Finishing Mills
2269	Finishing Plants, Nec	313310	Textile and Fabric Finishing Mills
2273	Carpets and Rugs	314110	Carpet and Rug Mills
2281	Yarn Spinning Mills	313110	Fiber, Yarn, and Thread Mills
2282	Throwing and Winding Mills	313110	Fiber, Yarn, and Thread Mills
2284	Thread Mills	313110	Fiber, Yarn, and Thread Mills
2284	Thread Mills	313310	Textile and Fabric Finishing Mills
2295	Coated Fabrics, Not Rubberized	313320	Fabric Coating Mills
2296	Tire Cord and Fabrics	314994	Rope, Cordage, Twine, Tire Cord, and Tire Fabric Mills
2297	Nonwoven Fabrics	313230	Nonwoven Fabric Mills
2298	Cordage and Twine	313110	Fiber, Yarn, and Thread Mills
2298	Cordage and Twine	314994	Rope, Cordage, Twine, Tire Cord, and Tire Fabric Mills
2299	Textile Goods, Nec	313110	Fiber, Yarn, and Thread Mills
2299	Textile Goods, Nec	313110	Fiber, Yarn, and Thread Mills
2299	Textile Goods, Nec	313110	Fiber, Yarn, and Thread Mills
2299	Textile Goods, Nec	313210	Broadwoven Fabric Mills
2299	Textile Goods, Nec	313220	Narrow Fabric Mills and Schiffli Machine Embroidery
2299	Textile Goods, Nec	313230	Nonwoven Fabric Mills
2299	Textile Goods, Nec	313310	Textile and Fabric Finishing Mills
2299	Textile Goods, Nec	314999	All Other Miscellaneous Textile Product Mills
2311	Men's and Boy's Suits and Coats	314999	All Other Miscellaneous Textile Product Mills
2311	Men's and Boy's Suits and Coats	315210	Cut and Sew Apparel Contractors
2311	Men's and Boy's Suits and Coats	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2321	Men's and Boy's Furnishings	314999	All Other Miscellaneous Textile Product Mills
2321	Men's and Boy's Furnishings	315210	Cut and Sew Apparel Contractors
2321	Men's and Boy's Furnishings	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2322	Men's and Boy's Underwear and Nightwear	314999	All Other Miscellaneous Textile Product Mills
2322	Men's and Boy's Underwear and Nightwear	315210	Cut and Sew Apparel Contractors
2322	Men's and Boy's Underwear and Nightwear	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2323	Men's and Boy's Neckwear	314999	All Other Miscellaneous Textile Product Mills
2323	Men's and Boy's Neckwear	315210	Cut and Sew Apparel Contractors
2323	Men's and Boy's Neckwear	315990	Apparel Accessories and Other Apparel Manufacturing
2325	Men's and Boy's Trousers and Slacks	314999	All Other Miscellaneous Textile Product Mills
2325	Men's and Boy's Trousers and Slacks	315210	Cut and Sew Apparel Contractors

SIC	SIC Title	2022 NAICS	2022 NAICS Title
2325	Men's and Boy's Trousers and Slacks	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2326	Men's and Boy's Work Clothing	314999	All Other Miscellaneous Textile Product Mills
2326	Men's and Boy's Work Clothing	315210	Cut and Sew Apparel Contractors
2326	Men's and Boy's Work Clothing	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2329	Men's and Boy's Clothing, Nec	314999	All Other Miscellaneous Textile Product Mills
2329	Men's and Boy's Clothing, Nec	315210	Cut and Sew Apparel Contractors
2329	Men's and Boy's Clothing, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2329	Men's and Boy's Clothing, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2331	Women's and Misses' Blouses and Shirts	314999	All Other Miscellaneous Textile Product Mills
2331	Women's and Misses' Blouses and Shirts	315210	Cut and Sew Apparel Contractors
2331	Women's and Misses' Blouses and Shirts	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2335	Women's, Junior's, and Misses' Dresses	314999	All Other Miscellaneous Textile Product Mills
2335	Women's, Junior's, and Misses' Dresses	315210	Cut and Sew Apparel Contractors
2335	Women's, Junior's, and Misses' Dresses	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2337	Women's and Misses' Suits and Coats	314999	All Other Miscellaneous Textile Product Mills
2337	Women's and Misses' Suits and Coats	315210	Cut and Sew Apparel Contractors
2337	Women's and Misses' Suits and Coats	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2339	Women's and Misses' Outerwear, Nec	314999	All Other Miscellaneous Textile Product Mills
2339	Women's and Misses' Outerwear, Nec	315210	Cut and Sew Apparel Contractors
2339	Women's and Misses' Outerwear, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2339	Women's and Misses' Outerwear, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2339	Women's and Misses' Outerwear, Nec	315990	Apparel Accessories and Other Apparel Manufacturing
2341	Women's and Children's Underwear	314999	All Other Miscellaneous Textile Product Mills
2341	Women's and Children's Underwear	314999	All Other Miscellaneous Textile Product Mills
2341	Women's and Children's Underwear	315210	Cut and Sew Apparel Contractors
2341	Women's and Children's Underwear	315210	Cut and Sew Apparel Contractors
2341	Women's and Children's Underwear	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2341	Women's and Children's Underwear	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2341	Women's and Children's Underwear	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2342	Bras, Girdles, and Allied Garments	314999	All Other Miscellaneous Textile Product Mills
2342	Bras, Girdles, and Allied Garments	315210	Cut and Sew Apparel Contractors
2342	Bras, Girdles, and Allied Garments	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2353	Hats, Caps, and Millinery	314999	All Other Miscellaneous Textile Product Mills
2353	Hats, Caps, and Millinery	314999	All Other Miscellaneous Textile Product Mills
2353	Hats, Caps, and Millinery	315210	Cut and Sew Apparel Contractors
2353	Hats, Caps, and Millinery	315210	Cut and Sew Apparel Contractors
2353	Hats, Caps, and Millinery	315990	Apparel Accessories and Other Apparel Manufacturing
2361	Girl's and Children's Dresses, Blouses	314999	All Other Miscellaneous Textile Product Mills
2361	Girl's and Children's Dresses, Blouses	314999	All Other Miscellaneous Textile Product Mills
2361	Girl's and Children's Dresses, Blouses	315210	Cut and Sew Apparel Contractors
2361	Girl's and Children's Dresses, Blouses	315210	Cut and Sew Apparel Contractors
2361	Girl's and Children's Dresses, Blouses	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2361	Girl's and Children's Dresses, Blouses	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2361	Girl's and Children's Dresses, Blouses	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2361	Girl's and Children's Dresses, Blouses	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2369	Girl's and Children's Outerwear, Nec	314999	All Other Miscellaneous Textile Product Mills
2369	Girl's and Children's Outerwear, Nec	314999	All Other Miscellaneous Textile Product Mills
2369	Girl's and Children's Outerwear, Nec	315210	Cut and Sew Apparel Contractors
2369	Girl's and Children's Outerwear, Nec	315210	Cut and Sew Apparel Contractors
2369	Girl's and Children's Outerwear, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2369	Girl's and Children's Outerwear, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2369	Girl's and Children's Outerwear, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)

SIC	SIC Title	2022 NAICS	2022 NAICS Title
2369	Girl's and Children's Outerwear, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2369	Girl's and Children's Outerwear, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2369	Girl's and Children's Outerwear, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2369	Girl's and Children's Outerwear, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2369	Girl's and Children's Outerwear, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2371	Fur Goods	314999	All Other Miscellaneous Textile Product Mills
2371	Fur Goods	314999	All Other Miscellaneous Textile Product Mills
2371	Fur Goods	315210	Cut and Sew Apparel Contractors
2371	Fur Goods	315210	Cut and Sew Apparel Contractors
2371	Fur Goods	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2381	Fabric Dress and Work Gloves	314999	All Other Miscellaneous Textile Product Mills
2381	Fabric Dress and Work Gloves	314999	All Other Miscellaneous Textile Product Mills
2381	Fabric Dress and Work Gloves	315210	Cut and Sew Apparel Contractors
2381	Fabric Dress and Work Gloves	315210	Cut and Sew Apparel Contractors
2381	Fabric Dress and Work Gloves	315990	Apparel Accessories and Other Apparel Manufacturing
2384	Robes and Dressing Gowns	314999	All Other Miscellaneous Textile Product Mills
2384	Robes and Dressing Gowns	314999	All Other Miscellaneous Textile Product Mills
2384	Robes and Dressing Gowns	315210	Cut and Sew Apparel Contractors
2384	Robes and Dressing Gowns	315210	Cut and Sew Apparel Contractors
2384	Robes and Dressing Gowns	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2384	Robes and Dressing Gowns	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2385	Waterproof Outerwear	314999	All Other Miscellaneous Textile Product Mills
2385	Waterproof Outerwear	314999	All Other Miscellaneous Textile Product Mills
2385	Waterproof Outerwear	315210	Cut and Sew Apparel Contractors
2385	Waterproof Outerwear	315210	Cut and Sew Apparel Contractors
2385	Waterproof Outerwear	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2385	Waterproof Outerwear	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2385	Waterproof Outerwear	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2385	Waterproof Outerwear	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2385	Waterproof Outerwear	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2385	Waterproof Outerwear	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2385	Waterproof Outerwear	315990	Apparel Accessories and Other Apparel Manufacturing
2386	Leather and Sheep-lined Clothing	314999	All Other Miscellaneous Textile Product Mills
2386	Leather and Sheep-lined Clothing	314999	All Other Miscellaneous Textile Product Mills
2386	Leather and Sheep-lined Clothing	315210	Cut and Sew Apparel Contractors
2386	Leather and Sheep-lined Clothing	315210	Cut and Sew Apparel Contractors
2386	Leather and Sheep-lined Clothing	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2387	Apparel Belts	314999	All Other Miscellaneous Textile Product Mills
2387	Apparel Belts	314999	All Other Miscellaneous Textile Product Mills
2387	Apparel Belts	315210	Cut and Sew Apparel Contractors
2387	Apparel Belts	315210	Cut and Sew Apparel Contractors
2387	Apparel Belts	315990	Apparel Accessories and Other Apparel Manufacturing
2389	Apparel and Accessories, Nec	314999	All Other Miscellaneous Textile Product Mills
2389	Apparel and Accessories, Nec	314999	All Other Miscellaneous Textile Product Mills
2389	Apparel and Accessories, Nec	315210	Cut and Sew Apparel Contractors
2389	Apparel and Accessories, Nec	315210	Cut and Sew Apparel Contractors
2389	Apparel and Accessories, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2389	Apparel and Accessories, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
2389	Apparel and Accessories, Nec	315990	Apparel Accessories and Other Apparel Manufacturing
2391	Curtains and Draperies	314120	Curtain and Linen Mills
2392	Household Furnishings, Nec	314120	Curtain and Linen Mills
2392	Household Furnishings, Nec	314910	Textile Bag and Canvas Mills

SIC	SIC Title	2022 NAICS	2022 NAICS Title
2392	Household Furnishings, Nec	314999	All Other Miscellaneous Textile Product Mills
2392	Household Furnishings, Nec	339994	Broom, Brush, and Mop Manufacturing
2393	Textile Bags	314910	Textile Bag and Canvas Mills
2394	Canvas and Related Products	314910	Textile Bag and Canvas Mills
2395	Pleating and Stitching	314999	All Other Miscellaneous Textile Product Mills
2395	Pleating and Stitching	314999	All Other Miscellaneous Textile Product Mills
2395	Pleating and Stitching	314999	All Other Miscellaneous Textile Product Mills
2395	Pleating and Stitching	315210	Cut and Sew Apparel Contractors
2395	Pleating and Stitching	315210	Cut and Sew Apparel Contractors
2396	Automotive and Apparel Trimmings	314999	All Other Miscellaneous Textile Product Mills
2396	Automotive and Apparel Trimmings	314999	All Other Miscellaneous Textile Product Mills
2396	Automotive and Apparel Trimmings	314999	All Other Miscellaneous Textile Product Mills
2396	Automotive and Apparel Trimmings	315210	Cut and Sew Apparel Contractors
2396	Automotive and Apparel Trimmings	315210	Cut and Sew Apparel Contractors
2396	Automotive and Apparel Trimmings	315990	Apparel Accessories and Other Apparel Manufacturing
2396	Automotive and Apparel Trimmings	323113	Commercial Screen Printing
2396	Automotive and Apparel Trimmings	336360	Motor Vehicle Seating and Interior Trim Manufacturing
2397	Schiffli Machine Embroideries	313220	Narrow Fabric Mills and Schiffli Machine Embroidery
2399	Fabricated Textile Products, Nec	314999	All Other Miscellaneous Textile Product Mills
2399	Fabricated Textile Products, Nec	314999	All Other Miscellaneous Textile Product Mills
2399	Fabricated Textile Products, Nec	314999	All Other Miscellaneous Textile Product Mills
2399	Fabricated Textile Products, Nec	315210	Cut and Sew Apparel Contractors
2399	Fabricated Textile Products, Nec	315210	Cut and Sew Apparel Contractors
2399	Fabricated Textile Products, Nec	315990	Apparel Accessories and Other Apparel Manufacturing
2399	Fabricated Textile Products, Nec	336360	Motor Vehicle Seating and Interior Trim Manufacturing
2411	Logging	113310	Logging
2421	Sawmills and Planing Mills, General	321113	Sawmills
2421	Sawmills and Planing Mills, General	321912	Cut Stock, Resawing Lumber, and Planing
2421	Sawmills and Planing Mills, General	321918	Other Millwork (including Flooring)
2421	Sawmills and Planing Mills, General	321920	Wood Container and Pallet Manufacturing
2421	Sawmills and Planing Mills, General	321999	All Other Miscellaneous Wood Product Manufacturing
2426	Hardwood Dimension and Flooring Mills	321113	Sawmills
2426	Hardwood Dimension and Flooring Mills	321912	Cut Stock, Resawing Lumber, and Planing
2426	Hardwood Dimension and Flooring Mills	321918	Other Millwork (including Flooring)
2426	Hardwood Dimension and Flooring Mills	337215	Showcase, Partition, Shelving, and Locker Manufacturing
2429	Special Product Sawmills, Nec	321113	Sawmills
2429	Special Product Sawmills, Nec	321920	Wood Container and Pallet Manufacturing
2429	Special Product Sawmills, Nec	321999	All Other Miscellaneous Wood Product Manufacturing
2431	Millwork	321911	Wood Window and Door Manufacturing
2431	Millwork	321918	Other Millwork (including Flooring)
2434	Wood Kitchen Cabinets	337110	Wood Kitchen Cabinet and Countertop Manufacturing
2435	Hardwood Veneer and Plywood	321211	Hardwood Veneer and Plywood Manufacturing
2436	Softwood Veneer and Plywood	321212	Softwood Veneer and Plywood Manufacturing
2439	Structural Wood Members, Nec	321215	Engineered Wood Member Manufacturing
2439	Structural Wood Members, Nec	321215	Engineered Wood Member Manufacturing
2441	Nailed Wood Boxes and Shook	321920	Wood Container and Pallet Manufacturing
2448	Wood Pallets and Skids	321920	Wood Container and Pallet Manufacturing
2449	Wood Containers, Nec	321920	Wood Container and Pallet Manufacturing
2451	Mobile Homes	321991	Manufactured Home (Mobile Home) Manufacturing
2452	Prefabricated Wood Buildings	321992	Prefabricated Wood Building Manufacturing
2491	Wood Preserving	321114	Wood Preservation
2493	Reconstituted Wood Products	321219	Reconstituted Wood Product Manufacturing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
2499	Wood Products, Nec	321920	Wood Container and Pallet Manufacturing
2499	Wood Products, Nec	321999	All Other Miscellaneous Wood Product Manufacturing
2499	Wood Products, Nec	333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing
2499	Wood Products, Nec	337126	Household Furniture (except Wood and Upholstered) Manufacturing
2499	Wood Products, Nec	339113	Surgical Appliance and Supplies Manufacturing
2499	Wood Products, Nec	339999	All Other Miscellaneous Manufacturing
2511	Wood Household Furniture	337122	Nonupholstered Wood Household Furniture Manufacturing
2511	Wood Household Furniture	337215	Showcase, Partition, Shelving, and Locker Manufacturing
2512	Upholstered Household Furniture	337121	Upholstered Household Furniture Manufacturing
2514	Metal Household Furniture	337121	Upholstered Household Furniture Manufacturing
2514	Metal Household Furniture	337126	Household Furniture (except Wood and Upholstered) Manufacturing
2514	Metal Household Furniture	337215	Showcase, Partition, Shelving, and Locker Manufacturing
2515	Mattresses and Bedsprings	337121	Upholstered Household Furniture Manufacturing
2515	Mattresses and Bedsprings	337910	Mattress Manufacturing
2517	Wood Television and Radio Cabinets	321999	All Other Miscellaneous Wood Product Manufacturing
2519	Household Furniture, Nec	337126	Household Furniture (except Wood and Upholstered) Manufacturing
2521	Wood Office Furniture	337211	Wood Office Furniture Manufacturing
2522	Office Furniture, Except Wood	337214	Office Furniture (except Wood) Manufacturing
2531	Public Building and Related Furniture	336360	Motor Vehicle Seating and Interior Trim Manufacturing
2531	Public Building and Related Furniture	337127	Institutional Furniture Manufacturing
2531	Public Building and Related Furniture	339940	Office Supplies (except Paper) Manufacturing
2541	Wood Partitions and Fixtures	337110	Wood Kitchen Cabinet and Countertop Manufacturing
2541	Wood Partitions and Fixtures	337127	Institutional Furniture Manufacturing
2541	Wood Partitions and Fixtures	337212	Custom Architectural Woodwork and Millwork Manufacturing
2541	Wood Partitions and Fixtures	337215	Showcase, Partition, Shelving, and Locker Manufacturing
2542	Partitions and Fixtures, Except Wood	337127	Institutional Furniture Manufacturing
2542	Partitions and Fixtures, Except Wood	337215	Showcase, Partition, Shelving, and Locker Manufacturing
2591	Drapery Hardware and Blinds and Shades	337920	Blind and Shade Manufacturing
2599	Furniture and Fixtures, Nec	333248	All Other Industrial Machinery Manufacturing
2599	Furniture and Fixtures, Nec	333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing
2599	Furniture and Fixtures, Nec	333994	Industrial Process Furnace and Oven Manufacturing
2599	Furniture and Fixtures, Nec	333998	All Other Miscellaneous General Purpose Machinery Manufacturing
2599	Furniture and Fixtures, Nec	333998	All Other Miscellaneous General Purpose Machinery Manufacturing
2599	Furniture and Fixtures, Nec	337127	Institutional Furniture Manufacturing
2599	Furniture and Fixtures, Nec	337127	Institutional Furniture Manufacturing
2599	Furniture and Fixtures, Nec	339113	Surgical Appliance and Supplies Manufacturing
2611	Pulp Mills	322110	Pulp Mills
2611	Pulp Mills	322120	Paper Mills
2611	Pulp Mills	322120	Paper Mills
2611	Pulp Mills	322130	Paperboard Mills
2621	Paper Mills	322120	Paper Mills
2621	Paper Mills	322120	Paper Mills
2631	Paperboard Mills	322130	Paperboard Mills
2652	Setup Paperboard Boxes	322219	Other Paperboard Container Manufacturing
2653	Corrugated and Solid Fiber Boxes	322211	Corrugated and Solid Fiber Box Manufacturing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
2655	Fiber Cans, Drums, and Similar Products	322219	Other Paperboard Container Manufacturing
2656	Sanitary Food Containers	322219	Other Paperboard Container Manufacturing
2657	Folding Paperboard Boxes	322212	Folding Paperboard Box Manufacturing
2671	Paper; Coated and Laminated Packaging	322220	Paper Bag and Coated and Treated Paper Manufacturing
2671	Paper; Coated and Laminated Packaging	326112	Plastics Packaging Film and Sheet (including Laminated) Manufacturing
2672	Paper; Coated and Laminated, Nec	322220	Paper Bag and Coated and Treated Paper Manufacturing
2673	Bags: Plastic, Laminated, and Coated	322220	Paper Bag and Coated and Treated Paper Manufacturing
2673	Bags: Plastic, Laminated, and Coated	326111	Plastics Bag and Pouch Manufacturing
2674	Bags: Uncoated Paper and Multiwall	322220	Paper Bag and Coated and Treated Paper Manufacturing
2675	Die-cut Paper and Board	322220	Paper Bag and Coated and Treated Paper Manufacturing
2675	Die-cut Paper and Board	322230	Stationery Product Manufacturing
2675	Die-cut Paper and Board	322299	All Other Converted Paper Product Manufacturing
2676	Sanitary Paper Products	322291	Sanitary Paper Product Manufacturing
2677	Envelopes	322230	Stationery Product Manufacturing
2678	Stationery Products	322230	Stationery Product Manufacturing
2679	Converted Paper Products, Nec	322211	Corrugated and Solid Fiber Box Manufacturing
2679	Converted Paper Products, Nec	322220	Paper Bag and Coated and Treated Paper Manufacturing
2679	Converted Paper Products, Nec	322230	Stationery Product Manufacturing
2679	Converted Paper Products, Nec	322299	All Other Converted Paper Product Manufacturing
2711	Newspapers	513110	Newspaper Publishers
2711	Newspapers	513110	Newspaper Publishers
2721	Periodicals	513120	Periodical Publishers
2721	Periodicals	513120	Periodical Publishers
2731	Book Publishing	512230	Music Publishers
2731	Book Publishing	513130	Book Publishers
2731	Book Publishing	513130	Book Publishers
2732	Book Printing	323117	Books Printing
2741	Miscellaneous Publishing	512230	Music Publishers
2741	Miscellaneous Publishing	513120	Periodical Publishers
2741	Miscellaneous Publishing	513130	Book Publishers
2741	Miscellaneous Publishing	513140	Directory and Mailing List Publishers
2741	Miscellaneous Publishing	513199	All Other Publishers
2741	Miscellaneous Publishing	513199	All Other Publishers
2752	Commercial Printing, Lithographic	323111	Commercial Printing (except Screen and Books)
2752	Commercial Printing, Lithographic	323111	Commercial Printing (except Screen and Books)
2754	Commercial Printing, Gravure	323111	Commercial Printing (except Screen and Books)
2759	Commercial Printing, Nec	323111	Commercial Printing (except Screen and Books)
2759	Commercial Printing, Nec	323111	Commercial Printing (except Screen and Books)
2759	Commercial Printing, Nec	323111	Commercial Printing (except Screen and Books)
2759	Commercial Printing, Nec	323111	Commercial Printing (except Screen and Books)
2759	Commercial Printing, Nec	323113	Commercial Screen Printing
2761	Manifold Business Forms	323111	Commercial Printing (except Screen and Books)
2771	Greeting Cards	323111	Commercial Printing (except Screen and Books)
2771	Greeting Cards	323111	Commercial Printing (except Screen and Books)
2771	Greeting Cards	323111	Commercial Printing (except Screen and Books)
2771	Greeting Cards	323111	Commercial Printing (except Screen and Books)
2771	Greeting Cards	323113	Commercial Screen Printing
2771	Greeting Cards	513191	Greeting Card Publishers
2782	Blankbooks and Looseleaf Binders	323111	Commercial Printing (except Screen and Books)
2782	Blankbooks and Looseleaf Binders	323111	Commercial Printing (except Screen and Books)
2789	Bookbinding and Related Work	323120	Support Activities for Printing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
2791	Typesetting	323120	Support Activities for Printing
2796	Platemaking Services	323120	Support Activities for Printing
2812	Alkalies and Chlorine	325180	Other Basic Inorganic Chemical Manufacturing
2813	Industrial Gases	325120	Industrial Gas Manufacturing
2816	Inorganic Pigments	325130	Synthetic Dye and Pigment Manufacturing
2816	Inorganic Pigments	325180	Other Basic Inorganic Chemical Manufacturing
2819	Industrial Inorganic Chemicals, Nec	211130	Natural Gas Extraction
2819	Industrial Inorganic Chemicals, Nec	325130	Synthetic Dye and Pigment Manufacturing
2819	Industrial Inorganic Chemicals, Nec	325180	Other Basic Inorganic Chemical Manufacturing
2819	Industrial Inorganic Chemicals, Nec	325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing
2819	Industrial Inorganic Chemicals, Nec	331313	Alumina Refining and Primary Aluminum Production
2821	Plastics Materials and Resins	325211	Plastics Material and Resin Manufacturing
2822	Synthetic Rubber	325212	Synthetic Rubber Manufacturing
2823	Cellulosic Manmade Fibers	325220	Artificial and Synthetic Fibers and Filaments Manufacturing
2824	Organic Fibers, Noncellulosic	325220	Artificial and Synthetic Fibers and Filaments Manufacturing
2833	Medicinals and Botanicals	325411	Medicinal and Botanical Manufacturing
2834	Pharmaceutical Preparations	325412	Pharmaceutical Preparation Manufacturing
2835	Diagnostic Substances	325412	Pharmaceutical Preparation Manufacturing
2835	Diagnostic Substances	325413	In-Vitro Diagnostic Substance Manufacturing
2836	Biological Products, Except Diagnostic	325414	Biological Product (except Diagnostic) Manufacturing
2841	Soap and Other Detergents	325611	Soap and Other Detergent Manufacturing
2842	Polishes and Sanitation Goods	325612	Polish and Other Sanitation Good Manufacturing
2843	Surface Active Agents	325613	Surface Active Agent Manufacturing
2844	Toilet Preparations	325611	Soap and Other Detergent Manufacturing
2844	Toilet Preparations	325620	Toilet Preparation Manufacturing
2851	Paints and Allied Products	325510	Paint and Coating Manufacturing
2861	Gum and Wood Chemicals	325194	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing
2865	Cyclic Crudes and Intermediates	325110	Petrochemical Manufacturing
2865	Cyclic Crudes and Intermediates	325130	Synthetic Dye and Pigment Manufacturing
2865	Cyclic Crudes and Intermediates	325194	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing
2869	Industrial Organic Chemicals, Nec	325110	Petrochemical Manufacturing
2869	Industrial Organic Chemicals, Nec	325120	Industrial Gas Manufacturing
2869	Industrial Organic Chemicals, Nec	325180	Other Basic Inorganic Chemical Manufacturing
2869	Industrial Organic Chemicals, Nec	325193	Ethyl Alcohol Manufacturing
2869	Industrial Organic Chemicals, Nec	325194	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing
2869	Industrial Organic Chemicals, Nec	325199	All Other Basic Organic Chemical Manufacturing
2869	Industrial Organic Chemicals, Nec	325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing
2873	Nitrogenous Fertilizers	325311	Nitrogenous Fertilizer Manufacturing
2874	Phosphatic Fertilizers	325312	Phosphatic Fertilizer Manufacturing
2875	Fertilizers, Mixing Only	325314	Fertilizer (Mixing Only) Manufacturing
2875	Fertilizers, Mixing Only	325315	Compost Manufacturing
2879	Agricultural Chemicals, Nec	325320	Pesticide and Other Agricultural Chemical Manufacturing
2891	Adhesives and Sealants	325520	Adhesive Manufacturing
2892	Explosives	325920	Explosives Manufacturing
2893	Printing Ink	325910	Printing Ink Manufacturing
2895	Carbon Black	325180	Other Basic Inorganic Chemical Manufacturing
2899	Chemical Preparations, Nec	311942	Spice and Extract Manufacturing
2899	Chemical Preparations, Nec	325199	All Other Basic Organic Chemical Manufacturing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
2899	Chemical Preparations, Nec	325510	Paint and Coating Manufacturing
2899	Chemical Preparations, Nec	325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing
2911	Petroleum Refining	324110	Petroleum Refineries
2951	Asphalt Paving Mixtures and Blocks	324121	Asphalt Paving Mixture and Block Manufacturing
2952	Asphalt Felts and Coatings	324122	Asphalt Shingle and Coating Materials Manufacturing
2992	Lubricating Oils and Greases	324191	Petroleum Lubricating Oil and Grease Manufacturing
2999	Petroleum and Coal Products, Nec	324199	All Other Petroleum and Coal Products Manufacturing
3011	Tires and Inner Tubes	326211	Tire Manufacturing (except Retreading)
3021	Rubber and Plastics Footwear	316210	Footwear Manufacturing
3052	Rubber and Plastics Hose and Beltings	326220	Rubber and Plastics Hoses and Belting Manufacturing
3053	Gaskets; Packing and Sealing Devices	339991	Gasket, Packing, and Sealing Device Manufacturing
3061	Mechanical Rubber Goods	326291	Rubber Product Manufacturing for Mechanical Use
3061	Mechanical Rubber Goods	326299	All Other Rubber Product Manufacturing
3069	Fabricated Rubber Products, Nec	313320	Fabric Coating Mills
3069	Fabricated Rubber Products, Nec	314910	Textile Bag and Canvas Mills
3069	Fabricated Rubber Products, Nec	315250	Cut and Sew Apparel Manufacturing (except Contractors)
3069	Fabricated Rubber Products, Nec	315990	Apparel Accessories and Other Apparel Manufacturing
3069	Fabricated Rubber Products, Nec	326199	All Other Plastics Product Manufacturing
3069	Fabricated Rubber Products, Nec	326299	All Other Rubber Product Manufacturing
3069	Fabricated Rubber Products, Nec	336612	Boat Building
3069	Fabricated Rubber Products, Nec	339113	Surgical Appliance and Supplies Manufacturing
3069	Fabricated Rubber Products, Nec	339920	Sporting and Athletic Goods Manufacturing
3069	Fabricated Rubber Products, Nec	339930	Doll, Toy, and Game Manufacturing
3081	Unsupported Plastics Film and Sheet	326113	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing
3082	Unsupported Plastics Profile Shapes	326121	Unlaminated Plastics Profile Shape Manufacturing
3083	Laminated Plastics Plate and Sheet	326130	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing
3084	Plastics Pipe	326122	Plastics Pipe and Pipe Fitting Manufacturing
3085	Plastics Bottles	326160	Plastics Bottle Manufacturing
3086	Plastics Foam Products	326140	Polystyrene Foam Product Manufacturing
3086	Plastics Foam Products	326150	Urethane and Other Foam Product (except Polystyrene) Manufacturing
3087	Custom Compound Purchased Resins	325991	Custom Compounding of Purchased Resins
3088	Plastics Plumbing Fixtures	326191	Plastics Plumbing Fixture Manufacturing
3089	Plastics Products, Nec	326121	Unlaminated Plastics Profile Shape Manufacturing
3089	Plastics Products, Nec	326122	Plastics Pipe and Pipe Fitting Manufacturing
3089	Plastics Products, Nec	326199	All Other Plastics Product Manufacturing
3089	Plastics Products, Nec	336612	Boat Building
3089	Plastics Products, Nec	337215	Showcase, Partition, Shelving, and Locker Manufacturing
3089	Plastics Products, Nec	339113	Surgical Appliance and Supplies Manufacturing
3111	Leather Tanning and Finishing	316110	Leather and Hide Tanning and Finishing
3131	Footwear Cut Stock	316990	Other Leather and Allied Product Manufacturing
3131	Footwear Cut Stock	321999	All Other Miscellaneous Wood Product Manufacturing
3131	Footwear Cut Stock	339993	Fastener, Button, Needle, and Pin Manufacturing
3142	House Slippers	316210	Footwear Manufacturing
3143	Men's Footwear, Except athletic	316210	Footwear Manufacturing
3144	Women's Footwear, Except athletic	316210	Footwear Manufacturing
3149	Footwear, Except Rubber, Nec	316210	Footwear Manufacturing
3151	Leather Gloves and Mittens	314999	All Other Miscellaneous Textile Product Mills
3151	Leather Gloves and Mittens	314999	All Other Miscellaneous Textile Product Mills
3151	Leather Gloves and Mittens	315210	Cut and Sew Apparel Contractors

SIC	SIC Title	2022 NAICS	2022 NAICS Title
3151	Leather Gloves and Mittens	315210	Cut and Sew Apparel Contractors
3151	Leather Gloves and Mittens	315990	Apparel Accessories and Other Apparel Manufacturing
3161	Luggage	316990	Other Leather and Allied Product Manufacturing
3171	Women's Handbags and Purses	316990	Other Leather and Allied Product Manufacturing
3172	Personal Leather Goods, Nec	316990	Other Leather and Allied Product Manufacturing
3172	Personal Leather Goods, Nec	339910	Jewelry and Silverware Manufacturing
3199	Leather Goods, Nec	316990	Other Leather and Allied Product Manufacturing
3211	Flat Glass	327211	Flat Glass Manufacturing
3221	Glass Containers	327213	Glass Container Manufacturing
3229	Pressed and Blown Glass, Nec	327212	Other Pressed and Blown Glass and Glassware Manufacturing
3231	Products of Purchased Glass	327215	Glass Product Manufacturing Made of Purchased Glass
3241	Cement, Hydraulic	327310	Cement Manufacturing
3251	Brick and Structural Clay Tile	327120	Clay Building Material and Refractories Manufacturing
3251	Brick and Structural Clay Tile	327331	Concrete Block and Brick Manufacturing
3253	Ceramic Wall and Floor Tile	327120	Clay Building Material and Refractories Manufacturing
3255	Clay Refractories	327120	Clay Building Material and Refractories Manufacturing
3259	Structural Clay Products, Nec	327120	Clay Building Material and Refractories Manufacturing
3261	Vitreous Plumbing Fixtures	327110	Pottery, Ceramics, and Plumbing Fixture Manufacturing
3262	Vitreous China Table and Kitchenware	327110	Pottery, Ceramics, and Plumbing Fixture Manufacturing
3263	Semivitreous Table and Kitchenware	327110	Pottery, Ceramics, and Plumbing Fixture Manufacturing
3264	Porcelain Electrical Supplies	327110	Pottery, Ceramics, and Plumbing Fixture Manufacturing
3269	Pottery Products, Nec	327110	Pottery, Ceramics, and Plumbing Fixture Manufacturing
3271	Concrete Block and Brick	327331	Concrete Block and Brick Manufacturing
3272	Concrete Products, Nec	327332	Concrete Pipe Manufacturing
3272	Concrete Products, Nec	327390	Other Concrete Product Manufacturing
3272	Concrete Products, Nec	327999	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing
3273	Ready-mixed Concrete	327320	Ready-Mix Concrete Manufacturing
3274	Lime	327410	Lime Manufacturing
3275	Gypsum Products	327420	Gypsum Product Manufacturing
3281	Cut Stone and Stone Products	327991	Cut Stone and Stone Product Manufacturing
3291	Abrasive Products	327910	Abrasive Product Manufacturing
3291	Abrasive Products	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3292	Asbestos Products	327999	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing
3292	Asbestos Products	336340	Motor Vehicle Brake System Manufacturing
3292	Asbestos Products	336350	Motor Vehicle Transmission and Power Train Parts Manufacturing
3295	Minerals, Ground or Treated	212323	Kaolin, Clay, and Ceramic and Refractory Minerals Mining
3295	Minerals, Ground or Treated	212323	Kaolin, Clay, and Ceramic and Refractory Minerals Mining
3295	Minerals, Ground or Treated	212390	Other Nonmetallic Mineral Mining and Quarrying
3295	Minerals, Ground or Treated	212390	Other Nonmetallic Mineral Mining and Quarrying
3295	Minerals, Ground or Treated	327992	Ground or Treated Mineral and Earth Manufacturing
3296	Mineral Wool	327993	Mineral Wool Manufacturing
3297	Nonclay Refractories	327120	Clay Building Material and Refractories Manufacturing
3299	Nonmetallic Mineral Products,	327110	Pottery, Ceramics, and Plumbing Fixture Manufacturing
3299	Nonmetallic Mineral Products,	327420	Gypsum Product Manufacturing
3299	Nonmetallic Mineral Products,	327999	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing
3312	Blast Furnaces and Steel Mills	324199	All Other Petroleum and Coal Products Manufacturing
3312	Blast Furnaces and Steel Mills	331110	Iron and Steel Mills and Ferroalloy Manufacturing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
3312	Blast Furnaces and Steel Mills	331221	Rolled Steel Shape Manufacturing
3313	Electrometallurgical Products	331110	Iron and Steel Mills and Ferroalloy Manufacturing
3315	Steel Wire and Related Products	331222	Steel Wire Drawing
3315	Steel Wire and Related Products	332618	Other Fabricated Wire Product Manufacturing
3316	Cold Finishing of Steel Shapes	331221	Rolled Steel Shape Manufacturing
3317	Steel Pipe and Tubes	331210	Iron and Steel Pipe and Tube Manufacturing from Purchased Steel
3321	Gray and Ductile Iron Foundries	331511	Iron Foundries
3322	Malleable Iron Foundries	331511	Iron Foundries
3324	Steel Investment Foundries	331512	Steel Investment Foundries
3325	Steel Foundries, Nec	331513	Steel Foundries (except Investment)
3331	Primary Copper	331410	Nonferrous Metal (except Aluminum) Smelting and Refining
3334	Primary Aluminum	331313	Alumina Refining and Primary Aluminum Production
3339	Primary Nonferrous Metals, Nec	331410	Nonferrous Metal (except Aluminum) Smelting and Refining
3341	Secondary Nonferrous Metals	331314	Secondary Smelting and Alloying of Aluminum
3341	Secondary Nonferrous Metals	331420	Copper Rolling, Drawing, Extruding, and Alloying
3341	Secondary Nonferrous Metals	331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)
3351	Copper Rolling and Drawing	331420	Copper Rolling, Drawing, Extruding, and Alloying
3353	Aluminum Sheet, Plate, and Foil	331315	Aluminum Sheet, Plate, and Foil Manufacturing
3354	Aluminum Extruded Products	331318	Other Aluminum Rolling, Drawing, and Extruding
3355	Aluminum Rolling and Drawing, Nec	331318	Other Aluminum Rolling, Drawing, and Extruding
3356	Nonferrous Rolling and Drawing, Nec	331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding
3357	Nonferrous Wiredrawing and Insulating	331318	Other Aluminum Rolling, Drawing, and Extruding
3357	Nonferrous Wiredrawing and Insulating	331420	Copper Rolling, Drawing, Extruding, and Alloying
3357	Nonferrous Wiredrawing and Insulating	331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding
3357	Nonferrous Wiredrawing and Insulating	335921	Fiber Optic Cable Manufacturing
3357	Nonferrous Wiredrawing and Insulating	335929	Other Communication and Energy Wire Manufacturing
3363	Aluminum Die-castings	331523	Nonferrous Metal Die-Casting Foundries
3364	Nonferrous Die-castings Except Aluminum	331523	Nonferrous Metal Die-Casting Foundries
3365	Aluminum Foundries	331524	Aluminum Foundries (except Die-Casting)
3366	Copper Foundries	331529	Other Nonferrous Metal Foundries (except Die-Casting)
3369	Nonferrous Foundries, Nec	331529	Other Nonferrous Metal Foundries (except Die-Casting)
3398	Metal Heat Treating	332811	Metal Heat Treating
3399	Primary Metal Products	331110	Iron and Steel Mills and Ferroalloy Manufacturing
3399	Primary Metal Products	331221	Rolled Steel Shape Manufacturing
3399	Primary Metal Products	331314	Secondary Smelting and Alloying of Aluminum
3399	Primary Metal Products	331420	Copper Rolling, Drawing, Extruding, and Alloying
3399	Primary Metal Products	331492	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)
3399	Primary Metal Products	332618	Other Fabricated Wire Product Manufacturing
3399	Primary Metal Products	332813	Electroplating, Plating, Polishing, Anodizing, and Coloring
3411	Metal Cans	332431	Metal Can Manufacturing
3412	Metal Barrels, Drums, and Pails	332439	Other Metal Container Manufacturing
3421	Cutlery	332215	Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing
3421	Cutlery	332216	Saw Blade and Handtool Manufacturing
3423	Hand and Edge Tools, Nec	332216	Saw Blade and Handtool Manufacturing
3425	Saw Blades and Handsaws	332216	Saw Blade and Handtool Manufacturing
3429	Hardware, Nec	332439	Other Metal Container Manufacturing
3429	Hardware, Nec	332510	Hardware Manufacturing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
3429	Hardware, Nec	332722	Bolt, Nut, Screw, Rivet, and Washer Manufacturing
3429	Hardware, Nec	332919	Other Metal Valve and Pipe Fitting Manufacturing
3429	Hardware, Nec	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3429	Hardware, Nec	333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing
3429	Hardware, Nec	334519	Other Measuring and Controlling Device Manufacturing
3429	Hardware, Nec	336390	Other Motor Vehicle Parts Manufacturing
3429	Hardware, Nec	337215	Showcase, Partition, Shelving, and Locker Manufacturing
3431	Metal Sanitary Ware	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3432	Plumbing Fixture Fittings and Trim	332913	Plumbing Fixture Fitting and Trim Manufacturing
3432	Plumbing Fixture Fittings and Trim	332919	Other Metal Valve and Pipe Fitting Manufacturing
3432	Plumbing Fixture Fittings and Trim	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3433	Heating Equipment, Except Electric	333414	Heating Equipment (except Warm Air Furnaces) Manufacturing
3441	Fabricated Structural Metal	332312	Fabricated Structural Metal Manufacturing
3442	Metal Doors, Sash, and Trim	332321	Metal Window and Door Manufacturing
3443	Fabricated Plate Work (boiler Shop)	332313	Plate Work Manufacturing
3443	Fabricated Plate Work (boiler Shop)	332410	Power Boiler and Heat Exchanger Manufacturing
3443	Fabricated Plate Work (boiler Shop)	332420	Metal Tank (Heavy Gauge) Manufacturing
3443	Fabricated Plate Work (boiler Shop)	333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing
3444	Sheet Metalwork	332321	Metal Window and Door Manufacturing
3444	Sheet Metalwork	332322	Sheet Metal Work Manufacturing
3444	Sheet Metalwork	332439	Other Metal Container Manufacturing
3444	Sheet Metalwork	333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing
3446	Architectural Metalwork	332323	Ornamental and Architectural Metal Work Manufacturing
3448	Prefabricated Metal Buildings	332311	Prefabricated Metal Building and Component Manufacturing
3449	Miscellaneous Metalwork	332114	Custom Roll Forming
3449	Miscellaneous Metalwork	332312	Fabricated Structural Metal Manufacturing
3449	Miscellaneous Metalwork	332323	Ornamental and Architectural Metal Work Manufacturing
3451	Screw Machine Products	332721	Precision Turned Product Manufacturing
3452	Bolts, Nuts, Rivets, and Washers	332722	Bolt, Nut, Screw, Rivet, and Washer Manufacturing
3462	Iron and Steel Forgings	332111	Iron and Steel Forging
3463	Nonferrous Forgings	332112	Nonferrous Forging
3465	Automotive Stampings	336370	Motor Vehicle Metal Stamping
3466	Crowns and Closures	332119	Metal Crown, Closure, and Other Metal Stamping (except Automotive)
3469	Metal Stampings, Nec	332119	Metal Crown, Closure, and Other Metal Stamping (except Automotive)
3469	Metal Stampings, Nec	332215	Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing
3469	Metal Stampings, Nec	332439	Other Metal Container Manufacturing
3471	Plating and Polishing	332813	Electroplating, Plating, Polishing, Anodizing, and Coloring
3479	Metal Coating and Allied Services	332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers
3479	Metal Coating and Allied Services	339910	Jewelry and Silverware Manufacturing
3479	Metal Coating and Allied Services	339910	Jewelry and Silverware Manufacturing
3479	Metal Coating and Allied Services	339910	Jewelry and Silverware Manufacturing
3482	Small Arms Ammunition	332992	Small Arms Ammunition Manufacturing

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3483	Ammunition, Except For Small Arms, Nec	332993	Ammunition (except Small Arms) Manufacturing
3484	Small Arms	332994	Small Arms, Ordnance, and Ordnance Accessories Manufacturing
3489	Ordnance and Accessories, Nec	332994	Small Arms, Ordnance, and Ordnance Accessories Manufacturing
3491	Industrial Valves	332911	Industrial Valve Manufacturing
3492	Fluid Power Valves and Hose Fittings	332912	Fluid Power Valve and Hose Fitting Manufacturing
3493	Steel Springs, Except Wire	332613	Spring Manufacturing
3494	Valves and Pipe Fittings, Nec	332919	Other Metal Valve and Pipe Fitting Manufacturing
3494	Valves and Pipe Fittings, Nec	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3495	Wire Springs	332613	Spring Manufacturing
3495	Wire Springs	334519	Other Measuring and Controlling Device Manufacturing
3496	Miscellaneous Fabricated Wire Products	332215	Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing
3496	Miscellaneous Fabricated Wire Products	332618	Other Fabricated Wire Product Manufacturing
3496	Miscellaneous Fabricated Wire Products	333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing
3497	Metal Foil and Leaf	322220	Paper Bag and Coated and Treated Paper Manufacturing
3497	Metal Foil and Leaf	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3498	Fabricated Pipe and Fittings	332996	Fabricated Pipe and Pipe Fitting Manufacturing
3499	Fabricated Metal Products, Nec	332117	Powder Metallurgy Part Manufacturing
3499	Fabricated Metal Products, Nec	332439	Other Metal Container Manufacturing
3499	Fabricated Metal Products, Nec	332510	Hardware Manufacturing
3499	Fabricated Metal Products, Nec	332919	Other Metal Valve and Pipe Fitting Manufacturing
3499	Fabricated Metal Products, Nec	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3499	Fabricated Metal Products, Nec	336360	Motor Vehicle Seating and Interior Trim Manufacturing
3499	Fabricated Metal Products, Nec	337215	Showcase, Partition, Shelving, and Locker Manufacturing
3511	Turbines and Turbine Generator Sets	333611	Turbine and Turbine Generator Set Units Manufacturing
3519	Internal Combustion Engines, Nec	333618	Other Engine Equipment Manufacturing
3519	Internal Combustion Engines, Nec	336390	Other Motor Vehicle Parts Manufacturing
3523	Farm Machinery and Equipment	332216	Saw Blade and Handtool Manufacturing
3523	Farm Machinery and Equipment	332323	Ornamental and Architectural Metal Work Manufacturing
3523	Farm Machinery and Equipment	333111	Farm Machinery and Equipment Manufacturing
3523	Farm Machinery and Equipment	333922	Conveyor and Conveying Equipment Manufacturing
3524	Lawn and Garden Equipment	332216	Saw Blade and Handtool Manufacturing
3524	Lawn and Garden Equipment	333112	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing
3531	Construction Machinery	333120	Construction Machinery Manufacturing
3531	Construction Machinery	333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing
3531	Construction Machinery	336510	Railroad Rolling Stock Manufacturing
3532	Mining Machinery	333131	Mining Machinery and Equipment Manufacturing
3533	Oil and Gas Field Machinery	333132	Oil and Gas Field Machinery and Equipment Manufacturing
3534	Elevators and Moving Stairways	333921	Elevator and Moving Stairway Manufacturing
3535	Conveyors and Conveying Equipment	333922	Conveyor and Conveying Equipment Manufacturing
3536	Hoists, Cranes, and Monorails	333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing
3537	Industrial Trucks and Tractors	332439	Other Metal Container Manufacturing
3537	Industrial Trucks and Tractors	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3537	Industrial Trucks and Tractors	333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing

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3541	Machine Tools, Metal Cutting Type	333517	Machine Tool Manufacturing
3542	Machine Tools, Metal Forming Type	333517	Machine Tool Manufacturing
3543	Industrial Patterns	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3544	Special Dies, Tools, Jigs, and Fixtures	333511	Industrial Mold Manufacturing
3544	Special Dies, Tools, Jigs, and Fixtures	333514	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing
3545	Machine Tool Accessories	332216	Saw Blade and Handtool Manufacturing
3545	Machine Tool Accessories	333515	Cutting Tool and Machine Tool Accessory Manufacturing
3546	Power-driven Handtools	333991	Power-Driven Handtool Manufacturing
3547	Rolling Mill Machinery	333519	Rolling Mill and Other Metalworking Machinery Manufacturing
3548	Welding Apparatus	333992	Welding and Soldering Equipment Manufacturing
3548	Welding Apparatus	335311	Power, Distribution, and Specialty Transformer Manufacturing
3549	Metalworking Machinery, Nec	333519	Rolling Mill and Other Metalworking Machinery Manufacturing
3552	Textile Machinery	333248	All Other Industrial Machinery Manufacturing
3553	Woodworking Machinery	333243	Sawmill, Woodworking, and Paper Machinery Manufacturing
3554	Paper Industries Machinery	333243	Sawmill, Woodworking, and Paper Machinery Manufacturing
3554	Paper Industries Machinery	333243	Sawmill, Woodworking, and Paper Machinery Manufacturing
3555	Printing Trades Machinery	333248	All Other Industrial Machinery Manufacturing
3556	Food Products Machinery	333241	Food Product Machinery Manufacturing
3559	Special Industry Machinery, Nec	332410	Power Boiler and Heat Exchanger Manufacturing
3559	Special Industry Machinery, Nec	333111	Farm Machinery and Equipment Manufacturing
3559	Special Industry Machinery, Nec	333242	Semiconductor Machinery Manufacturing
3559	Special Industry Machinery, Nec	333248	All Other Industrial Machinery Manufacturing
3559	Special Industry Machinery, Nec	333248	All Other Industrial Machinery Manufacturing
3559	Special Industry Machinery, Nec	333310	Commercial and Service Industry Machinery Manufacturing
3561	Pumps and Pumping Equipment	333914	Measuring, Dispensing, and Other Pumping Equipment Manufacturing
3562	Ball and Roller Bearings	332991	Ball and Roller Bearing Manufacturing
3563	Air and Gas Compressors	333912	Air and Gas Compressor Manufacturing
3564	Blowers and Fans	333413	Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing
3564	Blowers and Fans	333413	Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing
3565	Packaging Machinery	333993	Packaging Machinery Manufacturing
3566	Speed Changers, Drives, and Gears	333612	Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing
3567	Industrial Furnaces and Ovens	333994	Industrial Process Furnace and Oven Manufacturing
3568	Power Transmission Equipment, Nec	333613	Mechanical Power Transmission Equipment Manufacturing
3569	General Industrial Machinery,	314999	All Other Miscellaneous Textile Product Mills
3569	General Industrial Machinery,	333414	Heating Equipment (except Warm Air Furnaces) Manufacturing
3569	General Industrial Machinery,	333998	All Other Miscellaneous General Purpose Machinery Manufacturing
3571	Electronic Computers	334111	Electronic Computer Manufacturing
3572	Computer Storage Devices	334112	Computer Storage Device Manufacturing
3575	Computer Terminals	334118	Computer Terminal and Other Computer Peripheral Equipment Manufacturing
3577	Computer Peripheral Equipment, Nec	333310	Commercial and Service Industry Machinery Manufacturing
3577	Computer Peripheral Equipment, Nec	334118	Computer Terminal and Other Computer Peripheral Equipment Manufacturing
3577	Computer Peripheral Equipment, Nec	334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing
3577	Computer Peripheral Equipment, Nec	334610	Manufacturing and Reproducing Magnetic and Optical Media

SIC	SIC Title	2022 NAICS	2022 NAICS Title
3578	Calculating and Accounting Equipment	333310	Commercial and Service Industry Machinery Manufacturing
3578	Calculating and Accounting Equipment	333310	Commercial and Service Industry Machinery Manufacturing
3578	Calculating and Accounting Equipment	333310	Commercial and Service Industry Machinery Manufacturing
3578	Calculating and Accounting Equipment	334118	Computer Terminal and Other Computer Peripheral Equipment Manufacturing
3579	Office Machines, Nec	333310	Commercial and Service Industry Machinery Manufacturing
3579	Office Machines, Nec	334519	Other Measuring and Controlling Device Manufacturing
3579	Office Machines, Nec	339940	Office Supplies (except Paper) Manufacturing
3581	Automatic Vending Machines	333310	Commercial and Service Industry Machinery Manufacturing
3582	Commercial Laundry Equipment	333310	Commercial and Service Industry Machinery Manufacturing
3585	Refrigeration and Heating Equipment	333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing
3585	Refrigeration and Heating Equipment	336390	Other Motor Vehicle Parts Manufacturing
3586	Measuring and Dispensing Pumps	333914	Measuring, Dispensing, and Other Pumping Equipment Manufacturing
3589	Service Industry Machinery, Nec	333310	Commercial and Service Industry Machinery Manufacturing
3592	Carburetors, Pistons, Rings, Valves	336310	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing
3593	Fluid Power Cylinders and Actuators	333995	Fluid Power Cylinder and Actuator Manufacturing
3594	Fluid Power Pumps and Motors	333996	Fluid Power Pump and Motor Manufacturing
3596	Scales and Balances, Except Laboratory	333998	All Other Miscellaneous General Purpose Machinery Manufacturing
3599	Industrial Machinery, Nec	332710	Machine Shops
3599	Industrial Machinery, Nec	332813	Electroplating, Plating, Polishing, Anodizing, and Coloring
3599	Industrial Machinery, Nec	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3599	Industrial Machinery, Nec	333310	Commercial and Service Industry Machinery Manufacturing
3599	Industrial Machinery, Nec	333998	All Other Miscellaneous General Purpose Machinery Manufacturing
3599	Industrial Machinery, Nec	334519	Other Measuring and Controlling Device Manufacturing
3599	Industrial Machinery, Nec	336390	Other Motor Vehicle Parts Manufacturing
3612	Power, Distribution and Specialty Transformers	335311	Power, Distribution, and Specialty Transformer Manufacturing
3613	Switchgear and Switchboard Apparatus	335313	Switchgear and Switchboard Apparatus Manufacturing
3621	Motors and Generators	335312	Motor and Generator Manufacturing
3624	Carbon and Graphite Products	335991	Carbon and Graphite Product Manufacturing
3625	Relays and Industrial Controls	335314	Relay and Industrial Control Manufacturing
3629	Electrical Industrial Apparatus	335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing
3631	Household Cooking Equipment	335220	Major Household Appliance Manufacturing
3632	Household Refrigerators and Freezers	335220	Major Household Appliance Manufacturing
3633	Household Laundry Equipment	335220	Major Household Appliance Manufacturing
3634	Electric Housewares and Fans	333414	Heating Equipment (except Warm Air Furnaces) Manufacturing
3634	Electric Housewares and Fans	335210	Small Electrical Appliance Manufacturing
3634	Electric Housewares and Fans	339999	All Other Miscellaneous Manufacturing
3635	Household Vacuum Cleaners	335210	Small Electrical Appliance Manufacturing
3639	Household Appliances, Nec	333248	All Other Industrial Machinery Manufacturing
3639	Household Appliances, Nec	335210	Small Electrical Appliance Manufacturing
3639	Household Appliances, Nec	335220	Major Household Appliance Manufacturing
3641	Electric Lamps	335139	Electric Lamp Bulb and Other Lighting Equipment Manufacturing
3643	Current-carrying Wiring Devices	335931	Current-Carrying Wiring Device Manufacturing
3644	Noncurrent-carrying Wiring Devices	332216	Saw Blade and Handtool Manufacturing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
3644	Noncurrent-carrying Wiring Devices	335932	Noncurrent-Carrying Wiring Device Manufacturing
3645	Residential Lighting Fixtures	335131	Residential Electric Lighting Fixture Manufacturing
3646	Commercial, Industrial, and Institutional Electric Lighting Fixtures	335132	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing
3647	Vehicular Lighting Equipment	336320	Motor Vehicle Electrical and Electronic Equipment Manufacturing
3648	Lighting Equipment, Nec	335139	Electric Lamp Bulb and Other Lighting Equipment Manufacturing
3651	Household Audio and Video Equipment	334310	Audio and Video Equipment Manufacturing
3652	Prerecorded Records and Tapes	334610	Manufacturing and Reproducing Magnetic and Optical Media
3652	Prerecorded Records and Tapes	512250	Record Production and Distribution
3661	Telephone and Telegraph Apparatus	334210	Telephone Apparatus Manufacturing
3661	Telephone and Telegraph Apparatus	334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing
3663	Radio and T.v. Communications Equipment	334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing
3663	Radio and T.v. Communications Equipment	334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals
3669	Communications Equipment, Nec	334290	Other Communications Equipment Manufacturing
3671	Electron Tubes	334419	Other Electronic Component Manufacturing
3672	Printed Circuit Boards	334412	Bare Printed Circuit Board Manufacturing
3674	Semiconductors and Related Devices	334413	Semiconductor and Related Device Manufacturing
3675	Electronic Capacitors	334416	Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing
3676	Electronic Resistors	334416	Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing
3677	Electronic Coils and Transformers	334416	Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing
3678	Electronic Connectors	334417	Electronic Connector Manufacturing
3679	Electronic Components, Nec	334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing
3679	Electronic Components, Nec	334310	Audio and Video Equipment Manufacturing
3679	Electronic Components, Nec	334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing
3679	Electronic Components, Nec	334419	Other Electronic Component Manufacturing
3679	Electronic Components, Nec	334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals
3691	Storage Batteries	335910	Battery Manufacturing
3692	Primary Batteries, Dry and Wet	335910	Battery Manufacturing
3694	Engine Electrical Equipment	336320	Motor Vehicle Electrical and Electronic Equipment Manufacturing
3695	Magnetic and Optical Recording Media	334610	Manufacturing and Reproducing Magnetic and Optical Media
3699	Electrical Equipment and Supplies, Nec	333310	Commercial and Service Industry Machinery Manufacturing
3699	Electrical Equipment and Supplies, Nec	333618	Other Engine Equipment Manufacturing
3699	Electrical Equipment and Supplies, Nec	333992	Welding and Soldering Equipment Manufacturing
3699	Electrical Equipment and Supplies, Nec	335139	Electric Lamp Bulb and Other Lighting Equipment Manufacturing
3699	Electrical Equipment and Supplies, Nec	335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing
3711	Motor Vehicles and Car Bodies	336110	Automobile and Light Duty Motor Vehicle Manufacturing
3711	Motor Vehicles and Car Bodies	336110	Automobile and Light Duty Motor Vehicle Manufacturing
3711	Motor Vehicles and Car Bodies	336120	Heavy Duty Truck Manufacturing
3711	Motor Vehicles and Car Bodies	336211	Motor Vehicle Body Manufacturing
3711	Motor Vehicles and Car Bodies	336992	Military Armored Vehicle, Tank, and Tank Component Manufacturing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
3713	Truck and Bus Bodies	336211	Motor Vehicle Body Manufacturing
3714	Motor Vehicle Parts and Accessories	336211	Motor Vehicle Body Manufacturing
3714	Motor Vehicle Parts and Accessories	336310	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing
3714	Motor Vehicle Parts and Accessories	336320	Motor Vehicle Electrical and Electronic Equipment Manufacturing
3714	Motor Vehicle Parts and Accessories	336330	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing
3714	Motor Vehicle Parts and Accessories	336340	Motor Vehicle Brake System Manufacturing
3714	Motor Vehicle Parts and Accessories	336350	Motor Vehicle Transmission and Power Train Parts Manufacturing
3714	Motor Vehicle Parts and Accessories	336390	Other Motor Vehicle Parts Manufacturing
3715	Truck Trailers	336212	Truck Trailer Manufacturing
3716	Motor Homes	336213	Motor Home Manufacturing
3721	Aircraft	336411	Aircraft Manufacturing
3721	Aircraft (research and development not producing prototypes)	541713	Research and Development in Nanotechnology
3724	Aircraft Engines and Engine Parts	336412	Aircraft Engine and Engine Parts Manufacturing
3724	Aircraft Engines and Engine Parts (research and development not producing prototypes)	541713	Research and Development in Nanotechnology
3728	Aircraft Parts and Equipment, Nec	332912	Fluid Power Valve and Hose Fitting Manufacturing
3728	Aircraft Parts and Equipment, Nec	336411	Aircraft Manufacturing
3728	Aircraft Parts and Equipment, Nec	336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing
3728	Aircraft Parts and Auxiliary Equipment, NEC (research and development not producing prototypes)	541713	Research and Development in Nanotechnology
3731	Shipbuilding and Repairing	336611	Ship Building and Repairing
3731	Shipbuilding and Repairing	488390	Other Support Activities for Water Transportation
3732	Boatbuilding and Repairing	336612	Boat Building
3732	Boatbuilding and Repairing	811490	Other Personal and Household Goods Repair and Maintenance
3743	Railroad Equipment	333914	Measuring, Dispensing, and Other Pumping Equipment Manufacturing
3743	Railroad Equipment	336510	Railroad Rolling Stock Manufacturing
3751	Motorcycles, Bicycles, and Parts	336991	Motorcycle, Bicycle, and Parts Manufacturing
3761	Guided Missiles and Space Vehicles	336414	Guided Missile and Space Vehicle Manufacturing
3761	Guided Missiles and Space Vehicles (research and development not producing prototypes)	541713	Research and Development in Nanotechnology
3764	Space Propulsion Units and Parts	336415	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing
3764	Space Propulsion Units and Parts (research and development not producing prototypes)	541713	Research and Development in Nanotechnology
3769	Space Vehicle Equipment, Nec	336419	Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing
3769	Space Vehicle Equipment, Nec (research and development not producing prototypes)	541713	Research and Development in Nanotechnology
3792	Travel Trailers and Campers	336214	Travel Trailer and Camper Manufacturing
3795	Tanks and Tank Components	336992	Military Armored Vehicle, Tank, and Tank Component Manufacturing
3799	Transportation Equipment, Nec	333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing
3799	Transportation Equipment, Nec	336214	Travel Trailer and Camper Manufacturing
3799	Transportation Equipment, Nec	336390	Other Motor Vehicle Parts Manufacturing
3799	Transportation Equipment, Nec	336999	All Other Transportation Equipment Manufacturing
3812	Search and Navigation Equipment	334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
3821	Laboratory Apparatus and Furniture	333248	All Other Industrial Machinery Manufacturing
3821	Laboratory Apparatus and Furniture	333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing
3821	Laboratory Apparatus and Furniture	333994	Industrial Process Furnace and Oven Manufacturing
3821	Laboratory Apparatus and Furniture	333998	All Other Miscellaneous General Purpose Machinery Manufacturing
3821	Laboratory Apparatus and Furniture	333998	All Other Miscellaneous General Purpose Machinery Manufacturing
3821	Laboratory Apparatus and Furniture	337127	Institutional Furniture Manufacturing
3821	Laboratory Apparatus and Furniture	339113	Surgical Appliance and Supplies Manufacturing
3822	Environmental Controls	334512	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use
3823	Process Control Instruments	334513	Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables
3824	Fluid Meters and Counting Devices	334514	Totalizing Fluid Meter and Counting Device Manufacturing
3825	Instruments To Measure Electricity	334514	Totalizing Fluid Meter and Counting Device Manufacturing
3825	Instruments To Measure Electricity	334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals
3826	Analytical Instruments	334516	Analytical Laboratory Instrument Manufacturing
3827	Optical Instruments and Lenses	333310	Commercial and Service Industry Machinery Manufacturing
3829	Measuring and Controlling Devices, Nec	334514	Totalizing Fluid Meter and Counting Device Manufacturing
3829	Measuring and Controlling Devices, Nec	334519	Other Measuring and Controlling Device Manufacturing
3829	Measuring and Controlling Devices, Nec	334519	Other Measuring and Controlling Device Manufacturing
3829	Measuring and Controlling Devices, Nec	339112	Surgical and Medical Instrument Manufacturing
3841	Surgical and Medical Instruments	332994	Small Arms, Ordnance, and Ordnance Accessories Manufacturing
3841	Surgical and Medical Instruments	333248	All Other Industrial Machinery Manufacturing
3841	Surgical and Medical Instruments	333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing
3841	Surgical and Medical Instruments	333994	Industrial Process Furnace and Oven Manufacturing
3841	Surgical and Medical Instruments	333998	All Other Miscellaneous General Purpose Machinery Manufacturing
3841	Surgical and Medical Instruments	333998	All Other Miscellaneous General Purpose Machinery Manufacturing
3841	Surgical and Medical Instruments	337127	Institutional Furniture Manufacturing
3841	Surgical and Medical Instruments	339112	Surgical and Medical Instrument Manufacturing
3841	Surgical and Medical Instruments	339113	Surgical Appliance and Supplies Manufacturing
3842	Surgical Appliances and Supplies	322291	Sanitary Paper Product Manufacturing
3842	Surgical Appliances and Supplies	334510	Electromedical and Electrotherapeutic Apparatus Manufacturing
3842	Surgical Appliances and Supplies	339113	Surgical Appliance and Supplies Manufacturing
3842	Surgical Appliances and Supplies	339999	All Other Miscellaneous Manufacturing
3843	Dental Equipment and Supplies	339114	Dental Equipment and Supplies Manufacturing
3844	X-ray Apparatus and Tubes	334517	Irradiation Apparatus Manufacturing
3845	Electromedical Equipment	334510	Electromedical and Electrotherapeutic Apparatus Manufacturing
3845	Electromedical Equipment	334517	Irradiation Apparatus Manufacturing
3851	Ophthalmic Goods	339113	Surgical Appliance and Supplies Manufacturing
3851	Ophthalmic Goods	339115	Ophthalmic Goods Manufacturing
3861	Photographic Equipment and Supplies	325992	Photographic Film, Paper, Plate, Chemical, and Copy Toner Manufacturing
3861	Photographic Equipment and Supplies	333310	Commercial and Service Industry Machinery Manufacturing

SIC	SIC Title	2022 NAICS	2022 NAICS Title
3873	Watches, Clocks, Watchcases, and Parts	334519	Other Measuring and Controlling Device Manufacturing
3911	Jewelry, Precious Metal	339910	Jewelry and Silverware Manufacturing
3914	Silverware and Plated Ware	332215	Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing
3914	Silverware and Plated Ware	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3914	Silverware and Plated Ware	339910	Jewelry and Silverware Manufacturing
3915	Jewelers' Materials and Lapidary Work	334519	Other Measuring and Controlling Device Manufacturing
3915	Jewelers' Materials and Lapidary Work	339910	Jewelry and Silverware Manufacturing
3931	Musical Instruments	339992	Musical Instrument Manufacturing
3942	Dolls and Stuffed Toys	339930	Doll, Toy, and Game Manufacturing
3944	Games, Toys, and Children's Vehicles	336991	Motorcycle, Bicycle, and Parts Manufacturing
3944	Games, Toys, and Children's Vehicles	339930	Doll, Toy, and Game Manufacturing
3949	Sporting and athletic Goods, Nec	339920	Sporting and Athletic Goods Manufacturing
3951	Pens and Mechanical Pencils	339940	Office Supplies (except Paper) Manufacturing
3952	Lead Pencils and Art Goods	325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing
3952	Lead Pencils and Art Goods	337127	Institutional Furniture Manufacturing
3952	Lead Pencils and Art Goods	339940	Office Supplies (except Paper) Manufacturing
3953	Marking Devices	339940	Office Supplies (except Paper) Manufacturing
3955	Carbon Paper and Inked Ribbons	339940	Office Supplies (except Paper) Manufacturing
3961	Costume Jewelry	339910	Jewelry and Silverware Manufacturing
3961	Costume Jewelry	339993	Fastener, Button, Needle, and Pin Manufacturing
3965	Fasteners, Buttons, Needles, and Pins	339993	Fastener, Button, Needle, and Pin Manufacturing
3991	Brooms and Brushes	339994	Broom, Brush, and Mop Manufacturing
3993	Signs and Advertising Specialties	323113	Commercial Screen Printing
3993	Signs and Advertising Specialties	339950	Sign Manufacturing
3995	Burial Caskets	339995	Burial Casket Manufacturing
3996	Hard Surface Floor Coverings, Nec	326199	All Other Plastics Product Manufacturing
3999	Manufacturing Industries, Nec	316110	Leather and Hide Tanning and Finishing
3999	Manufacturing Industries, Nec	321999	All Other Miscellaneous Wood Product Manufacturing
3999	Manufacturing Industries, Nec	325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing
3999	Manufacturing Industries, Nec	326199	All Other Plastics Product Manufacturing
3999	Manufacturing Industries, Nec	332215	Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing
3999	Manufacturing Industries, Nec	332216	Saw Blade and Handtool Manufacturing
3999	Manufacturing Industries, Nec	332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers
3999	Manufacturing Industries, Nec	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing
3999	Manufacturing Industries, Nec	333310	Commercial and Service Industry Machinery Manufacturing
3999	Manufacturing Industries, Nec	335131	Residential Electric Lighting Fixture Manufacturing
3999	Manufacturing Industries, Nec	335210	Small Electrical Appliance Manufacturing
3999	Manufacturing Industries, Nec	336612	Boat Building
3999	Manufacturing Industries, Nec	337127	Institutional Furniture Manufacturing
3999	Manufacturing Industries, Nec	339930	Doll, Toy, and Game Manufacturing
3999	Manufacturing Industries, Nec	339999	All Other Miscellaneous Manufacturing
4011	Railroads, Line-haul Operating	482111	Line-Haul Railroads
4013	Switching and Terminal Services	482112	Short Line Railroads
4013	Switching and Terminal Services	488210	Support Activities for Rail Transportation
4412	Deep Sea Foreign Transportation of Freight	483111	Deep Sea Freight Transportation
4424	Deep Sea Domestic Transportation of Freight	483113	Coastal and Great Lakes Freight Transportation
4432	Freight Transportation On The Great Lakes	483113	Coastal and Great Lakes Freight Transportation

SIC	SIC Title	2022 NAICS	2022 NAICS Title
4449	Water Transportation of Freight	483211	Inland Water Freight Transportation
4481	Deep Sea Passenger Transportation, Except Ferry	483112	Deep Sea Passenger Transportation
4481	Deep Sea Passenger Transportation, Except Ferry	483114	Coastal and Great Lakes Passenger Transportation
4482	Ferries	483114	Coastal and Great Lakes Passenger Transportation
4482	Ferries	483212	Inland Water Passenger Transportation
4489	Water Passenger Transportation	483212	Inland Water Passenger Transportation
4489	Water Passenger Transportation	487210	Scenic and Sightseeing Transportation, Water
4491	Marine Cargo Handling	488310	Port and Harbor Operations
4491	Marine Cargo Handling	488320	Marine Cargo Handling
4492	Towing and Tugboat Service	488330	Navigational Services to Shipping
4493	Marinas	713930	Marinas
4499	Water Transportation Services, Nec	483211	Inland Water Freight Transportation
4499	Water Transportation Services, Nec	488310	Port and Harbor Operations
4499	Water Transportation Services, Nec	488330	Navigational Services to Shipping
4499	Water Transportation Services, Nec	488390	Other Support Activities for Water Transportation
4499	Water Transportation Services, Nec	532411	Commercial Air, Rail, and Water Transportation Equipment Rental and Leasing
4499	Water Transportation Services, Nec	541990	All Other Professional, Scientific, and Technical Services
4512	Air Transportation, Scheduled	481111	Scheduled Passenger Air Transportation
4512	Air Transportation, Scheduled	481112	Scheduled Freight Air Transportation
4513	Air Courier Services	492110	Couriers and Express Delivery Services
4522	Air Transportation, Nonscheduled	481211	Nonscheduled Chartered Passenger Air Transportation
4522	Air Transportation, Nonscheduled	481212	Nonscheduled Chartered Freight Air Transportation
4522	Air Transportation, Nonscheduled	481219	Other Nonscheduled Air Transportation
4522	Air Transportation, Nonscheduled	487990	Scenic and Sightseeing Transportation, Other
4522	Air Transportation, Nonscheduled	621910	Ambulance Services
4581	Airports, Flying Fields, and Services	488111	Air Traffic Control
4581	Airports, Flying Fields, and Services	488119	Other Airport Operations
4581	Airports, Flying Fields, and Services	488190	Other Support Activities for Air Transportation
4581	Airports, Flying Fields, and Services	561720	Janitorial Services
4581	Airports, Flying Fields, and Services	811420	Reupholstery and Furniture Repair
4612	Crude Petroleum Pipelines	486110	Pipeline Transportation of Crude Oil
4613	Refined Petroleum Pipelines	486910	Pipeline Transportation of Refined Petroleum Products
4619	Pipelines, Nec	486990	All Other Pipeline Transportation
4724	Travel Agencies	561510	Travel Agencies
4725	Tour Operators	561520	Tour Operators
4729	Passenger Transportation Arrangement	488999	All Other Support Activities for Transportation
4729	Passenger Transportation Arrangement	561599	All Other Travel Arrangement and Reservation Services
4731	Freight Transportation Arrangement	488510	Freight Transportation Arrangement
4731	Freight Transportation Arrangement	541614	Process, Physical Distribution, and Logistics Consulting Services
4741	Rental of Railroad Cars	488210	Support Activities for Rail Transportation
4741	Rental of Railroad Cars	532411	Commercial Air, Rail, and Water Transportation Equipment Rental and Leasing
4783	Packing and Crating	488991	Packing and Crating
4785	Inspection and Fixed Facilities	488390	Other Support Activities for Water Transportation
4785	Inspection and Fixed Facilities	488490	Other Support Activities for Road Transportation
4789	Transportation Services, Nec	487110	Scenic and Sightseeing Transportation, Land
4789	Transportation Services, Nec	488210	Support Activities for Rail Transportation
4789	Transportation Services, Nec	488999	All Other Support Activities for Transportation
4789	Transportation Services, Nec	722310	Food Service Contractors

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4812	Radiotelephone Communication	517112	Wireless Telecommunications Carriers (except Satellite)
4812	Radiotelephone Communication	517121	Telecommunications Resellers
4813	Telephone Communications, Except Radiotelephone	517111	Wired Telecommunications Carriers
4813	Telephone Communication, Except Radio	517121	Telecommunications Resellers
4813	Telephone Communication, Except Radio	517122	Agents for Wireless Telecommunications Services
4822	Telegraph and Other Message Communications	517111	Wired Telecommunications Carriers
4822	Telegraph and Other Communications	517122	Agents for Wireless Telecommunications Services
4832	Radio Broadcasting Stations	516110	Radio Broadcasting Stations
4832	Radio Broadcasting Stations	516210	Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers
4833	Television Broadcasting Stations	516120	Television Broadcasting Stations
4841	Cable and Other Pay Television Services	516210	Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers
4841	Cable and Other Pay Television Services	517111	Wired Telecommunications Carriers
4841	Cable and Other Pay Television Services	517122	Agents for Wireless Telecommunications Services
4899	Communication Services, Nec	485310	Taxi and Ridesharing Services
4899	Communication Services, Nec	517112	Wireless Telecommunications Carriers (except Satellite)
4899	Communication Services, Nec	517410	Satellite Telecommunications
4899	Communication Services, Nec	517810	All Other Telecommunications
4899	Communication Services, Nec	812990	All Other Personal Services
4911	Electric Services	221111	Hydroelectric Power Generation
4911	Electric Services	221112	Fossil Fuel Electric Power Generation
4911	Electric Services	221113	Nuclear Electric Power Generation
4911	Electric Services	221114	Solar Electric Power Generation
4911	Electric Services	221115	Wind Electric Power Generation
4911	Electric Services	221116	Geothermal Electric Power Generation
4911	Electric Services	221117	Biomass Electric Power Generation
4911	Electric Services	221118	Other Electric Power Generation
4911	Electric Services	221121	Electric Bulk Power Transmission and Control
4911	Electric Services	221122	Electric Power Distribution
4922	Natural Gas Transmission	486210	Pipeline Transportation of Natural Gas
4923	Gas Transmission and Distribution	221210	Natural Gas Distribution
4923	Gas Transmission and Distribution	486210	Pipeline Transportation of Natural Gas
4924	Natural Gas Distribution	221210	Natural Gas Distribution
4925	Gas Production and/or Distribution	221210	Natural Gas Distribution
4931	Electric and Other Services Combined	221111	Hydroelectric Power Generation
4931	Electric and Other Services Combined	221112	Fossil Fuel Electric Power Generation
4931	Electric and Other Services Combined	221113	Nuclear Electric Power Generation
4931	Electric and Other Services Combined	221114	Solar Electric Power Generation
4931	Electric and Other Services Combined	221115	Wind Electric Power Generation
4931	Electric and Other Services Combined	221116	Geothermal Electric Power Generation
4931	Electric and Other Services Combined	221117	Biomass Electric Power Generation
4931	Electric and Other Services Combined	221118	Other Electric Power Generation
4931	Electric and Other Services Combined	221121	Electric Bulk Power Transmission and Control
4931	Electric and Other Services Combined	221122	Electric Power Distribution
4931	Electric and Other Services Combined	221210	Natural Gas Distribution
4932	Gas and Other Services Combined	221210	Natural Gas Distribution
4939	Combination Utilities, Nec	221111	Hydroelectric Power Generation
4939	Combination Utilities, Nec	221112	Fossil Fuel Electric Power Generation
4939	Combination Utilities, Nec	221113	Nuclear Electric Power Generation
4939	Combination Utilities, Nec	221114	Solar Electric Power Generation
4939	Combination Utilities, Nec	221115	Wind Electric Power Generation

SIC	SIC Title	2022 NAICS	2022 NAICS Title
4939	Combination Utilities, Nec	221116	Geothermal Electric Power Generation
4939	Combination Utilities, Nec	221117	Biomass Electric Power Generation
4939	Combination Utilities, Nec	221118	Other Electric Power Generation
4939	Combination Utilities, Nec	221121	Electric Bulk Power Transmission and Control
4939	Combination Utilities, Nec	221122	Electric Power Distribution
4939	Combination Utilities, Nec	221210	Natural Gas Distribution
4941	Water Supply	221310	Water Supply and Irrigation Systems
4952	Sewerage Systems	221320	Sewage Treatment Facilities
4953	Refuse Systems	562211	Hazardous Waste Treatment and Disposal
4953	Refuse Systems	562212	Solid Waste Landfill
4953	Refuse Systems	562213	Solid Waste Combustors and Incinerators
4953	Refuse Systems	562219	Other Nonhazardous Waste Treatment and Disposal
4953	Refuse Systems	562920	Materials Recovery Facilities
4959	Sanitary Services, Nec	488119	Other Airport Operations
4959	Sanitary Services, Nec	488490	Other Support Activities for Road Transportation
4959	Sanitary Services, Nec	561710	Exterminating and Pest Control Services
4959	Sanitary Services, Nec	561790	Other Services to Buildings and Dwellings
4959	Sanitary Services, Nec	562910	Remediation Services
4959	Sanitary Services, Nec	562998	All Other Miscellaneous Waste Management Services
4961	Steam and Air-conditioning Supply	221330	Steam and Air-Conditioning Supply
4971	Irrigation Systems	221310	Water Supply and Irrigation Systems
5012	Automobiles and Other Motor Vehicles	423110	Automobile and Other Motor Vehicle Merchant Wholesalers
5012	Automobiles and Other Motor Vehicles	425120	Wholesale Trade Agents and Brokers
5012	Automobiles and Other Motor Vehicles	425120	Wholesale Trade Agents and Brokers
5013	Motor Vehicle Supplies and New Parts	423120	Motor Vehicle Supplies and New Parts Merchant Wholesalers
5013	Motor Vehicle Supplies and New Parts	425120	Wholesale Trade Agents and Brokers
5013	Motor Vehicle Supplies and New Parts	425120	Wholesale Trade Agents and Brokers
5013	Motor Vehicle Supplies and New Parts	441330	Automotive Parts and Accessories Retailers
5014	Tires and Tubes	423130	Tire and Tube Merchant Wholesalers
5014	Tires and Tubes	425120	Wholesale Trade Agents and Brokers
5014	Tires and Tubes	425120	Wholesale Trade Agents and Brokers
5014	Tires and Tubes	441340	Tire Dealers
5015	Motor Vehicle Parts, Used	423140	Motor Vehicle Parts (Used) Merchant Wholesalers
5015	Motor Vehicle Parts, Used	425120	Wholesale Trade Agents and Brokers
5015	Motor Vehicle Parts, Used	425120	Wholesale Trade Agents and Brokers
5015	Motor Vehicle Parts, Used	441330	Automotive Parts and Accessories Retailers
5021	Furniture	423210	Furniture Merchant Wholesalers
5021	Furniture	425120	Wholesale Trade Agents and Brokers
5021	Furniture	425120	Wholesale Trade Agents and Brokers
5021	Furniture	449110	Furniture Retailers
5023	Homefurnishings	423220	Home Furnishing Merchant Wholesalers
5023	Homefurnishings	425120	Wholesale Trade Agents and Brokers
5023	Homefurnishings	425120	Wholesale Trade Agents and Brokers
5023	Homefurnishings	449121	Floor Covering Retailers
5031	Lumber, Plywood, and Millwork	423310	Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers
5031	Lumber, Plywood, and Millwork	425120	Wholesale Trade Agents and Brokers
5031	Lumber, Plywood, and Millwork	425120	Wholesale Trade Agents and Brokers
5031	Lumber, Plywood, and Millwork	444110	Home Centers
5032	Brick, Stone, and Related Material	423320	Brick, Stone, and Related Construction Material Merchant Wholesalers
5032	Brick, Stone, and Related Material	425120	Wholesale Trade Agents and Brokers

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5032	Brick, Stone, and Related Material	425120	Wholesale Trade Agents and Brokers
5032	Brick, Stone, and Related Material	444180	Other Building Material Dealers
5033	Roofing, Siding, and Insulation	423330	Roofing, Siding, and Insulation Material Merchant Wholesalers
5033	Roofing, Siding, and Insulation	425120	Wholesale Trade Agents and Brokers
5033	Roofing, Siding, and Insulation	425120	Wholesale Trade Agents and Brokers
5033	Roofing, Siding, and Insulation	444180	Other Building Material Dealers
5039	Construction Materials, Nec	423310	Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers
5039	Construction Materials, Nec	423390	Other Construction Material Merchant Wholesalers
5039	Construction Materials, Nec	425120	Wholesale Trade Agents and Brokers
5039	Construction Materials, Nec	425120	Wholesale Trade Agents and Brokers
5039	Construction Materials, Nec	444180	Other Building Material Dealers
5043	Photographic Equipment and Supplies	423410	Photographic Equipment and Supplies Merchant Wholesalers
5043	Photographic Equipment and Supplies	425120	Wholesale Trade Agents and Brokers
5043	Photographic Equipment and Supplies	425120	Wholesale Trade Agents and Brokers
5044	Office Equipment	423420	Office Equipment Merchant Wholesalers
5044	Office Equipment	425120	Wholesale Trade Agents and Brokers
5044	Office Equipment	425120	Wholesale Trade Agents and Brokers
5044	Office Equipment	459410	Office Supplies and Stationery Retailers
5045	Computers, Peripherals, and Software	423430	Computer and Computer Peripheral Equipment and Software Merchant Wholesalers
5045	Computers, Peripherals, and Software	425120	Wholesale Trade Agents and Brokers
5045	Computers, Peripherals, and Software	425120	Wholesale Trade Agents and Brokers
5045	Computers, Peripherals, and Software	449210	Electronics and Appliance Retailers
5046	Commercial Equipment, Nec	423440	Other Commercial Equipment Merchant Wholesalers
5046	Commercial Equipment, Nec	425120	Wholesale Trade Agents and Brokers
5046	Commercial Equipment, Nec	425120	Wholesale Trade Agents and Brokers
5047	Medical and Hospital Equipment	423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers
5047	Medical and Hospital Equipment	425120	Wholesale Trade Agents and Brokers
5047	Medical and Hospital Equipment	425120	Wholesale Trade Agents and Brokers
5047	Medical and Hospital Equipment	456199	All Other Health and Personal Care Retailers
5048	Ophthalmic Goods	423460	Ophthalmic Goods Merchant Wholesalers
5048	Ophthalmic Goods	425120	Wholesale Trade Agents and Brokers
5048	Ophthalmic Goods	425120	Wholesale Trade Agents and Brokers
5049	Professional Equipment, Nec	423490	Other Professional Equipment and Supplies Merchant Wholesalers
5049	Professional Equipment, Nec	425120	Wholesale Trade Agents and Brokers
5049	Professional Equipment, Nec	425120	Wholesale Trade Agents and Brokers
5049	Professional Equipment, Nec	459410	Office Supplies and Stationery Retailers
5051	Metals Service Centers and Offices	423510	Metal Service Centers and Other Metal Merchant Wholesalers
5051	Metals Service Centers and Offices	425120	Wholesale Trade Agents and Brokers
5051	Metals Service Centers and Offices	425120	Wholesale Trade Agents and Brokers
5052	Coal and Other Minerals and Ores	423520	Coal and Other Mineral and Ore Merchant Wholesalers
5052	Coal and Other Minerals and Ores	425120	Wholesale Trade Agents and Brokers
5052	Coal and Other Minerals and Ores	425120	Wholesale Trade Agents and Brokers
5063	Electrical Apparatus and Equipment	423610	Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers
5063	Electrical Apparatus and Equipment	425120	Wholesale Trade Agents and Brokers
5063	Electrical Apparatus and Equipment	425120	Wholesale Trade Agents and Brokers
5063	Electrical Apparatus and Equipment	444180	Other Building Material Dealers

SIC	SIC Title	2022 NAICS	2022 NAICS Title
5064	Electrical Appliances, Television and Radio	423620	Household Appliances, Electric Housewares, and Consumer Electronics Merchant Wholesalers
5064	Electrical Appliances, Television and Radio	423720	Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers
5064	Electrical Appliances, Television and Radio	425120	Wholesale Trade Agents and Brokers
5064	Electrical Appliances, Television and Radio	425120	Wholesale Trade Agents and Brokers
5064	Electrical Appliances, Television and Radio	444180	Other Building Material Dealers
5064	Electrical Appliances, Television and Radio	449210	Electronics and Appliance Retailers
5064	Electrical Appliances, Television and Radio	449210	Electronics and Appliance Retailers
5065	Electronic Parts and Equipment, Nec	423690	Other Electronic Parts and Equipment Merchant Wholesalers
5065	Electronic Parts and Equipment, Nec	425120	Wholesale Trade Agents and Brokers
5065	Electronic Parts and Equipment, Nec	425120	Wholesale Trade Agents and Brokers
5065	Electronic Parts and Equipment, Nec	449210	Electronics and Appliance Retailers
5065	Electronic Parts and Equipment, Nec	449210	Electronics and Appliance Retailers
5072	Hardware	423710	Hardware Merchant Wholesalers
5072	Hardware	425120	Wholesale Trade Agents and Brokers
5072	Hardware	425120	Wholesale Trade Agents and Brokers
5072	Hardware	444140	Hardware Retailers
5074	Plumbing and Hydronic Heating Supplies	423620	Household Appliances, Electric Housewares, and Consumer Electronics Merchant Wholesalers
5074	Plumbing and Hydronic Heating Supplies	423720	Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers
5074	Plumbing and Hydronic Heating Supplies	425120	Wholesale Trade Agents and Brokers
5074	Plumbing and Hydronic Heating Supplies	425120	Wholesale Trade Agents and Brokers
5074	Plumbing and Hydronic Heating Supplies	444180	Other Building Material Dealers
5075	Warm Air Heating and Air Conditioning	423730	Warm Air Heating and Air-Conditioning Equipment and Supplies Merchant Wholesalers
5075	Warm Air Heating and Air Conditioning	425120	Wholesale Trade Agents and Brokers
5075	Warm Air Heating and Air Conditioning	425120	Wholesale Trade Agents and Brokers
5078	Refrigeration Equipment and Supplies	423740	Refrigeration Equipment and Supplies Merchant Wholesalers
5078	Refrigeration Equipment and Supplies	425120	Wholesale Trade Agents and Brokers
5078	Refrigeration Equipment and Supplies	425120	Wholesale Trade Agents and Brokers
5082	Construction and Mining Machinery	423810	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers
5082	Construction and Mining Machinery	425120	Wholesale Trade Agents and Brokers
5082	Construction and Mining Machinery	425120	Wholesale Trade Agents and Brokers
5083	Farm and Garden Machinery	423820	Farm and Garden Machinery and Equipment Merchant Wholesalers
5083	Farm and Garden Machinery	425120	Wholesale Trade Agents and Brokers
5083	Farm and Garden Machinery	425120	Wholesale Trade Agents and Brokers
5083	Farm and Garden Machinery	444230	Outdoor Power Equipment Retailers
5084	Industrial Machinery and Equipment	423830	Industrial Machinery and Equipment Merchant Wholesalers
5084	Industrial Machinery and Equipment	425120	Wholesale Trade Agents and Brokers
5084	Industrial Machinery and Equipment	425120	Wholesale Trade Agents and Brokers
5085	Industrial Supplies	423830	Industrial Machinery and Equipment Merchant Wholesalers
5085	Industrial Supplies	423840	Industrial Supplies Merchant Wholesalers
5085	Industrial Supplies	425120	Wholesale Trade Agents and Brokers
5085	Industrial Supplies	425120	Wholesale Trade Agents and Brokers
5085	Industrial Supplies	459999	All Other Miscellaneous Retailers
5087	Service Establishment Equipment	423850	Service Establishment Equipment and Supplies Merchant Wholesalers
5087	Service Establishment Equipment	425120	Wholesale Trade Agents and Brokers
5087	Service Establishment Equipment	425120	Wholesale Trade Agents and Brokers
5087	Service Establishment Equipment	456120	Cosmetics, Beauty Supplies, and Perfume Retailers

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5088	Transportation Equipment and Supplies	423860	Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers
5088	Transportation Equipment and Supplies	425120	Wholesale Trade Agents and Brokers
5088	Transportation Equipment and Supplies	425120	Wholesale Trade Agents and Brokers
5091	Sporting and Recreation Goods	423910	Sporting and Recreational Goods and Supplies Merchant Wholesalers
5091	Sporting and Recreation Goods	425120	Wholesale Trade Agents and Brokers
5091	Sporting and Recreation Goods	425120	Wholesale Trade Agents and Brokers
5091	Sporting and Recreation Goods	459110	Sporting Goods Retailers
5092	Toys and Hobby Goods and Supplies	423920	Toy and Hobby Goods and Supplies Merchant Wholesalers
5092	Toys and Hobby Goods and Supplies	425120	Wholesale Trade Agents and Brokers
5092	Toys and Hobby Goods and Supplies	425120	Wholesale Trade Agents and Brokers
5092	Toys and Hobby Goods and Supplies	459120	Hobby, Toy, and Game Retailers
5093	Scrap and Waste Materials	423930	Recyclable Material Merchant Wholesalers
5093	Scrap and Waste Materials	425120	Wholesale Trade Agents and Brokers
5093	Scrap and Waste Materials	425120	Wholesale Trade Agents and Brokers
5094	Jewelry and Precious Stones	423940	Jewelry, Watch, Precious Stone, and Precious Metal Merchant Wholesalers
5094	Jewelry and Precious Stones	425120	Wholesale Trade Agents and Brokers
5094	Jewelry and Precious Stones	425120	Wholesale Trade Agents and Brokers
5094	Jewelry and Precious Stones	458310	Jewelry Retailers
5099	Durable Goods, Nec	423990	Other Miscellaneous Durable Goods Merchant Wholesalers
5099	Durable Goods, Nec	425120	Wholesale Trade Agents and Brokers
5099	Durable Goods, Nec	425120	Wholesale Trade Agents and Brokers
5099	Durable Goods, Nec	444180	Other Building Material Dealers
5099	Durable Goods, Nec	449210	Electronics and Appliance Retailers
5099	Durable Goods, Nec	459110	Sporting Goods Retailers
5099	Durable Goods, Nec	459120	Hobby, Toy, and Game Retailers
5111	Printing and Writing Paper	424110	Printing and Writing Paper Merchant Wholesalers
5111	Printing and Writing Paper	425120	Wholesale Trade Agents and Brokers
5111	Printing and Writing Paper	425120	Wholesale Trade Agents and Brokers
5111	Printing and Writing Paper	459410	Office Supplies and Stationery Retailers
5112	Stationery and Office Supplies	424120	Stationery and Office Supplies Merchant Wholesalers
5112	Stationery and Office Supplies	425120	Wholesale Trade Agents and Brokers
5112	Stationery and Office Supplies	425120	Wholesale Trade Agents and Brokers
5112	Stationery and Office Supplies	459410	Office Supplies and Stationery Retailers
5113	Industrial and Personal Service Paper	424130	Industrial and Personal Service Paper Merchant Wholesalers
5113	Industrial and Personal Service Paper	425120	Wholesale Trade Agents and Brokers
5113	Industrial and Personal Service Paper	425120	Wholesale Trade Agents and Brokers
5113	Industrial and Personal Service Paper	459999	All Other Miscellaneous Retailers
5122	Drugs, Proprietaries, and Sundries	424210	Drugs and Druggists' Sundries Merchant Wholesalers
5122	Drugs, Proprietaries, and Sundries	425120	Wholesale Trade Agents and Brokers
5122	Drugs, Proprietaries, and Sundries	425120	Wholesale Trade Agents and Brokers
5122	Drugs, Proprietaries, and Sundries	456110	Pharmacies and Drug Retailers
5122	Drugs, Proprietaries, and Sundries	456120	Cosmetics, Beauty Supplies, and Perfume Retailers
5122	Drugs, Proprietaries, and Sundries	456191	Food (Health) Supplement Retailers
5131	Piece Goods and Notions	313310	Textile and Fabric Finishing Mills
5131	Piece Goods and Notions	313310	Textile and Fabric Finishing Mills
5131	Piece Goods and Notions	424310	Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers
5131	Piece Goods and Notions	425120	Wholesale Trade Agents and Brokers
5131	Piece Goods and Notions	425120	Wholesale Trade Agents and Brokers
5131	Piece Goods and Notions	459130	Sewing, Needlework, and Piece Goods Retailers

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5136	Men's and Boy's Clothing	423910	Sporting and Recreational Goods and Supplies Merchant Wholesalers
5136	Men's and Boy's Clothing	424350	Clothing and Clothing Accessories Merchant Wholesalers
5136	Men's and Boy's Clothing	425120	Wholesale Trade Agents and Brokers
5136	Men's and Boy's Clothing	425120	Wholesale Trade Agents and Brokers
5136	Men's and Boy's Clothing	458110	Clothing and Clothing Accessories Retailers
5136	Men's and Boy's Clothing	458110	Clothing and Clothing Accessories Retailers
5137	Women's and Children's Clothing	423910	Sporting and Recreational Goods and Supplies Merchant Wholesalers
5137	Women's and Children's Clothing	424350	Clothing and Clothing Accessories Merchant Wholesalers
5137	Women's and Children's Clothing	425120	Wholesale Trade Agents and Brokers
5137	Women's and Children's Clothing	425120	Wholesale Trade Agents and Brokers
5137	Women's and Children's Clothing	458110	Clothing and Clothing Accessories Retailers
5137	Women's and Children's Clothing	458110	Clothing and Clothing Accessories Retailers
5137	Women's and Children's Clothing	458110	Clothing and Clothing Accessories Retailers
5139	Footwear	424340	Footwear Merchant Wholesalers
5139	Footwear	425120	Wholesale Trade Agents and Brokers
5139	Footwear	425120	Wholesale Trade Agents and Brokers
5139	Footwear	458210	Shoe Retailers
5141	Groceries, General Line	424410	General Line Grocery Merchant Wholesalers
5141	Groceries, General Line	425120	Wholesale Trade Agents and Brokers
5141	Groceries, General Line	425120	Wholesale Trade Agents and Brokers
5141	Groceries, General Line	445110	Supermarkets and Other Grocery Retailers (except Convenience Retailers)
5142	Packaged Frozen Goods	424420	Packaged Frozen Food Merchant Wholesalers
5142	Packaged Frozen Goods	425120	Wholesale Trade Agents and Brokers
5142	Packaged Frozen Goods	425120	Wholesale Trade Agents and Brokers
5143	Dairy Products, Except Dried or Canned	424430	Dairy Product (except Dried or Canned) Merchant Wholesalers
5143	Dairy Products, Except Dried or Canned	425120	Wholesale Trade Agents and Brokers
5143	Dairy Products, Except Dried or Canned	425120	Wholesale Trade Agents and Brokers
5143	Dairy Products, Except Dried or Canned	445298	All Other Specialty Food Retailers
5144	Poultry and Poultry Products	424440	Poultry and Poultry Product Merchant Wholesalers
5144	Poultry and Poultry Products	425120	Wholesale Trade Agents and Brokers
5144	Poultry and Poultry Products	425120	Wholesale Trade Agents and Brokers
5144	Poultry and Poultry Products	445240	Meat Retailers
5145	Confectionery	424450	Confectionery Merchant Wholesalers
5145	Confectionery	425120	Wholesale Trade Agents and Brokers
5145	Confectionery	425120	Wholesale Trade Agents and Brokers
5145	Confectionery	445292	Confectionery and Nut Retailers
5146	Fish and Seafoods	424460	Fish and Seafood Merchant Wholesalers
5146	Fish and Seafoods	425120	Wholesale Trade Agents and Brokers
5146	Fish and Seafoods	425120	Wholesale Trade Agents and Brokers
5146	Fish and Seafoods	445250	Fish and Seafood Retailers
5147	Meats and Meat Products	311612	Meat Processed from Carcasses
5147	Meats and Meat Products	424470	Meat and Meat Product Merchant Wholesalers
5147	Meats and Meat Products	425120	Wholesale Trade Agents and Brokers
5147	Meats and Meat Products	425120	Wholesale Trade Agents and Brokers
5147	Meats and Meat Products	445240	Meat Retailers
5148	Fresh Fruits and Vegetables	424480	Fresh Fruit and Vegetable Merchant Wholesalers
5148	Fresh Fruits and Vegetables	425120	Wholesale Trade Agents and Brokers
5148	Fresh Fruits and Vegetables	425120	Wholesale Trade Agents and Brokers
5148	Fresh Fruits and Vegetables	445230	Fruit and Vegetable Retailers

SIC	SIC Title	2022 NAICS	2022 NAICS Title
5149	Groceries and Related Products, Nec	312112	Bottled Water Manufacturing
5149	Groceries and Related Products, Nec	424490	Other Grocery and Related Products Merchant Wholesalers
5149	Groceries and Related Products, Nec	425120	Wholesale Trade Agents and Brokers
5149	Groceries and Related Products, Nec	425120	Wholesale Trade Agents and Brokers
5149	Groceries and Related Products, Nec	445298	All Other Specialty Food Retailers
5149	Groceries and Related Products, Nec	459910	Pet and Pet Supplies Retailers
5153	Grain and Field Beans	424510	Grain and Field Bean Merchant Wholesalers
5153	Grain and Field Beans	425120	Wholesale Trade Agents and Brokers
5153	Grain and Field Beans	425120	Wholesale Trade Agents and Brokers
5153	Grain and Field Beans	444240	Nursery, Garden Center, and Farm Supply Retailers
5154	Livestock	424520	Livestock Merchant Wholesalers
5154	Livestock	425120	Wholesale Trade Agents and Brokers
5154	Livestock	425120	Wholesale Trade Agents and Brokers
5159	Farm-product Raw Materials, Nec	424590	Other Farm Product Raw Material Merchant Wholesalers
5159	Farm-product Raw Materials, Nec	425120	Wholesale Trade Agents and Brokers
5159	Farm-product Raw Materials, Nec	425120	Wholesale Trade Agents and Brokers
5159	Farm-product Raw Materials, Nec	444240	Nursery, Garden Center, and Farm Supply Retailers
5162	Plastics Materials and Basic Shapes	424610	Plastics Materials and Basic Forms and Shapes Merchant Wholesalers
5162	Plastics Materials and Basic Shapes	425120	Wholesale Trade Agents and Brokers
5162	Plastics Materials and Basic Shapes	425120	Wholesale Trade Agents and Brokers
5162	Plastics Materials and Basic Shapes	459999	All Other Miscellaneous Retailers
5169	Chemicals and Allied Products, Nec	424690	Other Chemical and Allied Products Merchant Wholesalers
5169	Chemicals and Allied Products, Nec	425120	Wholesale Trade Agents and Brokers
5169	Chemicals and Allied Products, Nec	425120	Wholesale Trade Agents and Brokers
5171	Petroleum Bulk Stations and Terminals	424710	Petroleum Bulk Stations and Terminals
5171	Petroleum Bulk Stations and Terminals	457210	Fuel Dealers
5171	Petroleum Bulk Stations and Terminals	457210	Fuel Dealers
5172	Petroleum Products, Nec	424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)
5172	Petroleum Products, Nec	425120	Wholesale Trade Agents and Brokers
5172	Petroleum Products, Nec	425120	Wholesale Trade Agents and Brokers
5181	Beer and Ale	424810	Beer and Ale Merchant Wholesalers
5181	Beer and Ale	425120	Wholesale Trade Agents and Brokers
5181	Beer and Ale	425120	Wholesale Trade Agents and Brokers
5181	Beer and Ale	445320	Beer, Wine, and Liquor Retailers
5182	Wine and Distilled Beverages	424820	Wine and Distilled Alcoholic Beverage Merchant Wholesalers
5182	Wine and Distilled Beverages	425120	Wholesale Trade Agents and Brokers
5182	Wine and Distilled Beverages	425120	Wholesale Trade Agents and Brokers
5182	Wine and Distilled Beverages	445320	Beer, Wine, and Liquor Retailers
5191	Farm Supplies	424910	Farm Supplies Merchant Wholesalers
5191	Farm Supplies	425120	Wholesale Trade Agents and Brokers
5191	Farm Supplies	425120	Wholesale Trade Agents and Brokers
5191	Farm Supplies	444240	Nursery, Garden Center, and Farm Supply Retailers
5192	Books, Periodicals, and Newspapers	424920	Book, Periodical, and Newspaper Merchant Wholesalers
5192	Books, Periodicals, and Newspapers	425120	Wholesale Trade Agents and Brokers
5192	Books, Periodicals, and Newspapers	425120	Wholesale Trade Agents and Brokers
5192	Books, Periodicals, and Newspapers	459210	Book Retailers and News Dealers
5193	Flowers and Florists Supplies	424930	Flower, Nursery Stock, and Florists' Supplies Merchant Wholesalers
5193	Flowers and Florists Supplies	425120	Wholesale Trade Agents and Brokers
5193	Flowers and Florists Supplies	425120	Wholesale Trade Agents and Brokers
5193	Flowers and Florists Supplies	444240	Nursery, Garden Center, and Farm Supply Retailers

SIC	SIC Title	2022 NAICS	2022 NAICS Title
5194	Tobacco and Tobacco Products	424940	Tobacco Product and Electronic Cigarette Merchant Wholesalers
5194	Tobacco and Tobacco Products	425120	Wholesale Trade Agents and Brokers
5194	Tobacco and Tobacco Products	425120	Wholesale Trade Agents and Brokers
5194	Tobacco and Tobacco Products	459991	Tobacco, Electronic Cigarette, and Other Smoking Supplies Retailers
5198	Paints, Varnishes, and Supplies	424950	Paint, Varnish, and Supplies Merchant Wholesalers
5198	Paints, Varnishes, and Supplies	425120	Wholesale Trade Agents and Brokers
5198	Paints, Varnishes, and Supplies	425120	Wholesale Trade Agents and Brokers
5199	Nondurable Goods, Nec	424310	Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers
5199	Nondurable Goods, Nec	424340	Footwear Merchant Wholesalers
5199	Nondurable Goods, Nec	424610	Plastics Materials and Basic Forms and Shapes Merchant Wholesalers
5199	Nondurable Goods, Nec	424990	Other Miscellaneous Nondurable Goods Merchant Wholesalers
5199	Nondurable Goods, Nec	425120	Wholesale Trade Agents and Brokers
5199	Nondurable Goods, Nec	425120	Wholesale Trade Agents and Brokers
5199	Nondurable Goods, Nec	459420	Gift, Novelty, and Souvenir Retailers
5199	Nondurable Goods, Nec	459910	Pet and Pet Supplies Retailers
5199	Nondurable Goods, Nec	459991	Tobacco, Electronic Cigarette, and Other Smoking Supplies Retailers
5199	Nondurable Goods, Nec	541890	Other Services Related to Advertising
7211	Power Laundries, Family and Commercial	812320	Drycleaning and Laundry Services (except Coin-Operated)
7212	Garment Pressing and Cleaners' Agents	812320	Drycleaning and Laundry Services (except Coin-Operated)
7213	Linen Supply	812331	Linen Supply
7215	Coin-operated Laundries and Cleaning	812310	Coin-Operated Laundries and Drycleaners
7216	Drycleaning Plants, Except Rugs	812320	Drycleaning and Laundry Services (except Coin-Operated)
7217	Carpet and Upholstery Cleaning	561740	Carpet and Upholstery Cleaning Services
7218	Industrial Launderers	812332	Industrial Launderers
7219	Laundry and Garment Services, Nec	811490	Other Personal and Household Goods Repair and Maintenance
7219	Laundry and Garment Services, Nec	812320	Drycleaning and Laundry Services (except Coin-Operated)
7219	Laundry and Garment Services, Nec	812331	Linen Supply
7221	Photographic Studios, Portrait	541921	Photography Studios, Portrait
7231	Beauty Shops	611511	Cosmetology and Barber Schools
7231	Beauty Shops	812112	Beauty Salons
7231	Beauty Shops	812113	Nail Salons
7241	Barber Shops	611511	Cosmetology and Barber Schools
7241	Barber Shops	812111	Barber Shops
7251	Shoe Repair and Shoeshine Parlors	811430	Footwear and Leather Goods Repair
7251	Shoe Repair and Shoeshine Parlors	812320	Drycleaning and Laundry Services (except Coin-Operated)
7251	Shoe Repair and Shoeshine Parlors	812990	All Other Personal Services
7261	Funeral Service and Crematories	812210	Funeral Homes and Funeral Services
7261	Funeral Service and Crematories	812220	Cemeteries and Crematories
7291	Tax Return Preparation Services	541213	Tax Preparation Services
7299	Miscellaneous Personal Services	532281	Formal Wear and Costume Rental
7299	Miscellaneous Personal Services	541990	All Other Professional, Scientific, and Technical Services
7299	Miscellaneous Personal Services	561311	Employment Placement Agencies
7299	Miscellaneous Personal Services	561990	All Other Support Services
7299	Miscellaneous Personal Services	812191	Diet and Weight Reducing Centers
7299	Miscellaneous Personal Services	812199	Other Personal Care Services
7299	Miscellaneous Personal Services	812930	Parking Lots and Garages
7299	Miscellaneous Personal Services	812990	All Other Personal Services

SIC	SIC Title	2022 NAICS	2022 NAICS Title
7311	Advertising Agencies	541810	Advertising Agencies
7312	Outdoor Advertising Services	541850	Indoor and Outdoor Display Advertising
7313	Radio, Television, Publisher Representatives	541840	Media Representatives
7319	Advertising, Nec	481219	Other Nonscheduled Air Transportation
7319	Advertising, Nec	541830	Media Buying Agencies
7319	Advertising, Nec	541850	Indoor and Outdoor Display Advertising
7319	Advertising, Nec	541870	Advertising Material Distribution Services
7319	Advertising, Nec	541890	Other Services Related to Advertising
7322	Adjustment and Collection Services	561440	Collection Agencies
7323	Credit Reporting Services	561450	Credit Bureaus
7331	Direct Mail Advertising Services	513140	Directory and Mailing List Publishers
7331	Direct Mail Advertising Services	541860	Direct Mail Advertising
7334	Photocopying and Duplicating Services	323111	Commercial Printing (except Screen and Books)
7334	Photocopying and Duplicating Services	561439	Other Business Service Centers (including Copy Shops)
7335	Commercial Photography	481219	Other Nonscheduled Air Transportation
7335	Commercial Photography	541922	Commercial Photography
7336	Commercial Art and Graphic Design	541430	Graphic Design Services
7338	Secretarial and Court Reporting	561410	Document Preparation Services
7338	Secretarial and Court Reporting	561492	Court Reporting and Stenotype Services
7342	Disinfecting and Pest Control Services	561710	Exterminating and Pest Control Services
7342	Disinfecting and Pest Control Services	561720	Janitorial Services
7349	Building Maintenance Services, Nec	561720	Janitorial Services
7349	Building Maintenance Services, Nec	561790	Other Services to Buildings and Dwellings
7352	Medical Equipment Rental	532283	Home Health Equipment Rental
7352	Medical Equipment Rental	532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing
7353	Heavy Construction Equipment Rental	238910	Site Preparation Contractors
7353	Heavy Construction Equipment Rental	238990	All Other Specialty Trade Contractors
7353	Heavy Construction Equipment Rental	532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing
7359	Equipment Rental and Leasing, Nec	532210	Consumer Electronics and Appliances Rental
7359	Equipment Rental and Leasing, Nec	532289	All Other Consumer Goods Rental
7359	Equipment Rental and Leasing, Nec	532310	General Rental Centers
7359	Equipment Rental and Leasing, Nec	532411	Commercial Air, Rail, and Water Transportation Equipment Rental and Leasing
7359	Equipment Rental and Leasing, Nec	532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing
7359	Equipment Rental and Leasing, Nec	532420	Office Machinery and Equipment Rental and Leasing
7359	Equipment Rental and Leasing, Nec	532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing
7359	Equipment Rental and Leasing, Nec	562991	Septic Tank and Related Services
7361	Employment Agencies	541612	Human Resources Consulting Services
7361	Employment Agencies	561311	Employment Placement Agencies
7361	Employment Agencies	561312	Executive Search Services
7363	Help Supply Services	561320	Temporary Help Services
7363	Help Supply Services	561330	Professional Employer Organizations
7371	Custom Computer Programming Services	541511	Custom Computer Programming Services
7372	Prepackaged Software	334610	Manufacturing and Reproducing Magnetic and Optical Media
7372	Prepackaged Software	513210	Software Publishers
7373	Computer Integrated Systems Design	541512	Computer Systems Design Services
7374	Data Processing and Preparation	518210	Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services
7375	Information Retrieval Services	517111	Wired Telecommunications Carriers

SIC	SIC Title	2022 NAICS	2022 NAICS Title
7375	Information Retrieval Services	517122	Agents for Wireless Telecommunications Services
7375	Information Retrieval Services	517810	All Other Telecommunications
7376	Computer Facilities Management	541513	Computer Facilities Management Services
7377	Computer Rental and Leasing	532420	Office Machinery and Equipment Rental and Leasing
7378	Computer Maintenance and Repair	449210	Electronics and Appliance Retailers
7378	Computer Maintenance and Repair	811210	Electronic and Precision Equipment Repair and Maintenance
7379	Computer Related Services, Nec	518210	Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services
7379	Computer Related Services, Nec	541512	Computer Systems Design Services
7379	Computer Related Services, Nec	541519	Other Computer Related Services
7381	Detective and Armored Car Services	561611	Investigation and Personal Background Check Services
7381	Detective and Armored Car Services	561612	Security Guards and Patrol Services
7381	Detective and Armored Car Services	561613	Armored Car Services
7382	Security Systems Services	561621	Security Systems Services (except Locksmiths)
7383	News Syndicates	516210	Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers
7383	News Syndicates	711510	Independent Artists, Writers, and Performers
7384	Photofinish Laboratories	812921	Photofinishing Laboratories (except One-Hour)
7384	Photofinish Laboratories	812922	One-Hour Photofinishing
7389	Business Services, Nec	312230	Tobacco Manufacturing
7389	Business Services, Nec	313310	Textile and Fabric Finishing Mills
7389	Business Services, Nec	314999	All Other Miscellaneous Textile Product Mills
7389	Business Services, Nec	325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing
7389	Business Services, Nec	425120	Wholesale Trade Agents and Brokers
7389	Business Services, Nec	488490	Other Support Activities for Road Transportation
7389	Business Services, Nec	491110	Postal Service
7389	Business Services, Nec	512240	Sound Recording Studios
7389	Business Services, Nec	512290	Other Sound Recording Industries
7389	Business Services, Nec	518210	Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services
7389	Business Services, Nec	519290	Web Search Portals and All Other Information Services
7389	Business Services, Nec	522320	Financial Transactions Processing, Reserve, and Clearinghouse Activities
7389	Business Services, Nec	541199	All Other Legal Services
7389	Business Services, Nec	541340	Drafting Services
7389	Business Services, Nec	541350	Building Inspection Services
7389	Business Services, Nec	541370	Surveying and Mapping (except Geophysical) Services
7389	Business Services, Nec	541410	Interior Design Services
7389	Business Services, Nec	541420	Industrial Design Services
7389	Business Services, Nec	541490	Other Specialized Design Services
7389	Business Services, Nec	541870	Advertising Material Distribution Services
7389	Business Services, Nec	541890	Other Services Related to Advertising
7389	Business Services, Nec	541930	Translation and Interpretation Services
7389	Business Services, Nec	541990	All Other Professional, Scientific, and Technical Services
7389	Business Services, Nec	561410	Document Preparation Services
7389	Business Services, Nec	561421	Telephone Answering Services
7389	Business Services, Nec	561422	Telemarketing Bureaus and Other Contact Centers
7389	Business Services, Nec	561431	Private Mail Centers
7389	Business Services, Nec	561439	Other Business Service Centers (including Copy Shops)
7389	Business Services, Nec	561440	Collection Agencies
7389	Business Services, Nec	561491	Repossession Services
7389	Business Services, Nec	561499	All Other Business Support Services

SIC	SIC Title	2022 NAICS	2022 NAICS Title
7389	Business Services, Nec	561591	Convention and Visitors Bureaus
7389	Business Services, Nec	561599	All Other Travel Arrangement and Reservation Services
7389	Business Services, Nec	561790	Other Services to Buildings and Dwellings
7389	Business Services, Nec	561910	Packaging and Labeling Services
7389	Business Services, Nec	561920	Convention and Trade Show Organizers
7389	Business Services, Nec	561990	All Other Support Services
7389	Business Services, Nec	711310	Promoters of Performing Arts, Sports, and Similar Events with Facilities
7389	Business Services, Nec	711320	Promoters of Performing Arts, Sports, and Similar Events without Facilities
7389	Business Services, Nec	711410	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures
7389	Business Services, Nec	812320	Drycleaning and Laundry Services (except Coin-Operated)
7389	Business Services, Nec	812990	All Other Personal Services
7513	Truck Rental and Leasing, Without Drivers	532120	Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing
7514	Passenger Car Rental	532111	Passenger Car Rental
7515	Passenger Car Leasing	532112	Passenger Car Leasing
7519	Utility Trailer Rental	532120	Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing
7521	Automobile Parking	812930	Parking Lots and Garages
7532	Top and Body Repair and Paint Shops	811121	Automotive Body, Paint, and Interior Repair and Maintenance
7533	Auto Exhaust System Repair Shops	811114	Specialized Automotive Repair
7534	Tire Retreading and Repair Shops	326212	Tire Retreading
7534	Tire Retreading and Repair Shops	811198	All Other Automotive Repair and Maintenance
7536	Automotive Glass Replacement Shops	811122	Automotive Glass Replacement Shops
7537	Automotive Transmission Repair Shops	811114	Specialized Automotive Repair
7538	General Automotive Repair Shops	811111	General Automotive Repair
7539	Automotive Repair Shops, Nec	811114	Specialized Automotive Repair
7539	Automotive Repair Shops, Nec	811198	All Other Automotive Repair and Maintenance
7542	Carwashes	811192	Car Washes
7549	Automotive Services, Nec	488410	Motor Vehicle Towing
7549	Automotive Services, Nec	811122	Automotive Glass Replacement Shops
7549	Automotive Services, Nec	811191	Automotive Oil Change and Lubrication Shops
7549	Automotive Services, Nec	811198	All Other Automotive Repair and Maintenance
7622	Radio and Television Repair	238290	Other Building Equipment Contractors
7622	Radio and Television Repair	449210	Electronics and Appliance Retailers
7622	Radio and Television Repair	811210	Electronic and Precision Equipment Repair and Maintenance
7622	Radio and Television Repair	811210	Electronic and Precision Equipment Repair and Maintenance
7623	Refrigeration Service and Repair	449210	Electronics and Appliance Retailers
7623	Refrigeration Service and Repair	811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance
7623	Refrigeration Service and Repair	811412	Appliance Repair and Maintenance
7629	Electrical Repair Shops	449210	Electronics and Appliance Retailers
7629	Electrical Repair Shops	811210	Electronic and Precision Equipment Repair and Maintenance
7629	Electrical Repair Shops	811210	Electronic and Precision Equipment Repair and Maintenance
7629	Electrical Repair Shops	811210	Electronic and Precision Equipment Repair and Maintenance
7629	Electrical Repair Shops	811210	Electronic and Precision Equipment Repair and Maintenance
7629	Electrical Repair Shops	811412	Appliance Repair and Maintenance
7631	Watch, Clock, and Jewelry Repair	458310	Jewelry Retailers
7631	Watch, Clock, and Jewelry Repair	811490	Other Personal and Household Goods Repair and Maintenance
7641	Reupholstery and Furniture Repair	811420	Reupholstery and Furniture Repair

SIC	SIC Title	2022 NAICS	2022 NAICS Title
7692	Welding Repair	811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance
7694	Armature Rewinding Shops	335312	Motor and Generator Manufacturing
7694	Armature Rewinding Shops	811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance
7699	Repair Services, Nec	115210	Support Activities for Animal Production
7699	Repair Services, Nec	238220	Plumbing, Heating, and Air-Conditioning Contractors
7699	Repair Services, Nec	444140	Hardware Retailers
7699	Repair Services, Nec	444230	Outdoor Power Equipment Retailers
7699	Repair Services, Nec	449129	All Other Home Furnishings Retailers
7699	Repair Services, Nec	459110	Sporting Goods Retailers
7699	Repair Services, Nec	488390	Other Support Activities for Water Transportation
7699	Repair Services, Nec	561622	Locksmiths
7699	Repair Services, Nec	561790	Other Services to Buildings and Dwellings
7699	Repair Services, Nec	562991	Septic Tank and Related Services
7699	Repair Services, Nec	562998	All Other Miscellaneous Waste Management Services
7699	Repair Services, Nec	711510	Independent Artists, Writers, and Performers
7699	Repair Services, Nec	811210	Electronic and Precision Equipment Repair and Maintenance
7699	Repair Services, Nec	811210	Electronic and Precision Equipment Repair and Maintenance
7699	Repair Services, Nec	811210	Electronic and Precision Equipment Repair and Maintenance
7699	Repair Services, Nec	811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance
7699	Repair Services, Nec	811411	Home and Garden Equipment Repair and Maintenance
7699	Repair Services, Nec	811412	Appliance Repair and Maintenance
7699	Repair Services, Nec	811430	Footwear and Leather Goods Repair
7699	Repair Services, Nec	811490	Other Personal and Household Goods Repair and Maintenance

Appendix B: Guidance for TURA Reporting and Planning for Certain Categories and Chemicals

Rules for Reporting Water Dissociable Nitrate Compounds Category

The 2000 EPA TRI guidance document, "List of Toxic Chemicals within the Water Dissociable Nitrate Compounds Category and Guidance for Reporting" (EPA 745-R-00-006), provides a detailed description of how to report this chemical category on Form R. Additional information on reporting nitrate compounds for the neutralization of nitric acid can be found in the fact sheet "Reporting Water Dissociable Nitrates" produced by the Office of Technical Assistance (https://www.mass.gov/media/1314831). The following general overview is from the EPA guidance document:

> "Chemicals within the nitrate compounds category are only reportable when in aqueous solution. All water dissociable nitrate compounds are included in the nitrate compounds category, including ammonium nitrate. Specifically listed section 313 chemicals *are not* included in threshold determinations for chemical categories such as the water dissociable nitrate compounds category. Specifically listed toxic chemicals are subject to their own individual threshold determinations. As of December 1, 1994, ammonium nitrate (solution) is not an individually listed chemical on the EPCRA section 313 list. However, ammonium nitrate is still subject to reporting under the nitrate compounds category. In addition, the aqueous ammonia from the dissociation of ammonium nitrate when in aqueous solution is subject to reporting under the ammonia listing."

Determining Threshold Quantities for Nitrate Compounds

The total nitrate compound, including **both** the nitrate ion portion and the counterion, is included in the nitrate compounds category. When determining threshold amounts, the **total** weight of the nitrate compound is to be included in all calculations.

If a facility treats wastewater on-site biologically, using the activated sludge process, for example, the facility may be generating nitrate compounds as a result of this biological process. The nitrate ion generated from this process will be associated with various counterions (e.g. sodium ion, potassium ion). In the absence of information on the identity of the counterion, a facility should assume for the purposes of TURA threshold determinations that the counterion is sodium ion.

Determining Byproduct Quantities for Nitrate Compounds

Only the nitrate ion (NO_3) portion of nitrate compounds is to be included when determining the amount of the chemicals within the nitrate compounds category that are generated as byproduct. Since some of the nitrate compounds generated by a process may also be destroyed in that process (e.g., biological wastewater treatment), the quantity of byproduct is equivalent to the sum of Part II, Sections 8.1 through 8.8 **minus** Section 8.6 (quantity treated onsite) of the EPA Form R.

Example

- Threshold determination -

  In a calendar year, a facility coincidentally manufactures 20,000 pounds of sodium nitrate and 10,000 pounds of calcium nitrate, both in aqueous solutions, and releases these solutions to wastewater streams. The total quantity of nitrate compounds manufactured by the facility is the sum of the two chemicals, or 30,000 pounds, which exceeds the manufacturing threshold quantity of 25,000 pounds. The facility, therefore, is required to report 30,000 pounds for the nitrate compounds category.

- Byproduct determination -

  By weight, the nitrate ion portion is 72.96 percent of sodium nitrate and is 75.57 percent of calcium nitrate. Of the 20,000 pounds of the sodium nitrate in solution, 72.96 percent or 14,**592** pounds is nitrate ion, and similarly, of the 10,000 pounds of the calcium nitrate in solution, 75.57 percent or 7,557 pounds is nitrate ion. The total nitrate ion in aqueous solution generated as byproduct by the facility is the sum of the nitrate ion in the two solutions, or 22,149 pounds.

PBT Chemical and Chemical Category Reporting Thresholds

Chemical Name or Chemical Category Name	CAS Number or Mass DEP Chemical Category Code	Threshold (pounds, unless otherwise noted)
Aldrin	309-00-2	100
Benzo(g,h,i)perylene	191-24-2	10
Chlordane	57-74-9	10
Dioxin and dioxin-like compounds (manufacturing; and the processing or otherwise use of dioxin and dioxin-like compounds if the dioxin and dioxin-like compounds are present as contaminants in a chemical and if they were created during the manufacturing of that chemical). Category includes 17 specific compounds (refer to the TURA chemical list found at:https://www.mass.gov/media/1124171).	1060	0.1 gram
Heptachlor	76-44-8	10
Hexabromocyclododecane (HBCD) category, includes 2 specific chemical compounds , CAS 3194-55-6 and CAS 25637-99-4. * Reportable under TURA effective reporting year 2018	1240	100
Hexachlorobenzene	118-74-1	10
Isodrin	465-73-6	10
Lead (this lower threshold does not apply to lead when contained in stainless steel, brass or bronze alloy)	7439-92-1	100
Lead compounds	1026	100
Mercury	7439-97-6	10
Mercury Compounds	1028	10
Methoxychlor	72-43-5	100
Octachlorostyrene	29082-74-4	10
Pendimethalin	40487-42-1	100
Pentachlorobenzene	608-93-5	10
Polychlorinated biphenyls (PCBs)	1336-36-3	10
Polycyclic aromatic compounds (PACs) category, includes 25 specific compounds (refer to the TURA chemical list that can be found on the website at https://www.mass.gov/media/1124171.	1040	100
Tetrabromobisphenol A	79-94-7	100
Toxaphene	8001-35-2	10
Trifluralin	1582-09-8	100

TURA Higher Hazard Chemicals (1,000 Lb Threshold)		
CAS	**Chemical Name**	**Higher Hazard Designation Effective Date**
7440439	Cadmium	as of reports covering CY2008
1004	Cadmium Compounds	as of reports covering CY2008
1216	Chromium Compounds – Hexavalent only	as of reports covering CY2012
1016	Cyanide Compounds	as of reports covering CY2016
68122	Dimethylformamide/DMF	as of reports covering CY2016
50000	Formaldehyde /methylene oxide	as of reports covering CY2012
7664393	Hydrogen Fluoride	as of reports covering CY2016
75092	Methylene Chloride/Dichloromethane	as of reports covering CY2014
106945	n-Propyl Bromide/ 1-Bromopropane	as of reports covering CY2016
127184	Perchlorethylene /Tetrachloroethylene	as of reports covering CY2009
584849	Toluene-2,4-diisocyanate	as of reports covering CY2017
91087	Toluene-2,6-diisocyanate	as of reports covering CY2017
26471625	Toluene diisocyanate (mixed isomers)	as of reports covering CY2017
79016	Trichloroethylene	as of reports covering CY2008

List Of Chemicals For Which A State Only Form R/A Will Be Automatically Generated		
CAS	**Chemical Name**	**Explanation**
7440439	Cadmium	TURA higher hazard, as of reports covering CY2008
1004	Cadmium Compounds	TURA higher hazard, as of reports covering CY2008
7440473	Chromium	TURA includes qualifiers EPA TRI 313 does not – TURA covers only pure form and aerosol alloys, as of reports covering CY1995
1216	Chromium Compounds – Hexavalent only	higher hazard as of reports covering CY2012
1217	Chromium Compounds – non-hexavalent	TURA includes qualifiers that EPA TRI 313 does not – TURA covers only non-hexavalent chromium compounds
7440484	Cobalt	TURA includes qualifiers EPA TRI 313 does not – TURA covers only pure form and aerosol alloys as of reports covering CY1995
7440508	Copper	TURA includes qualifiers TRI 313 lacks – TURA covers only if in aerosol, as of reports covering CY1999
1016	Cyanide Compounds	TURA higher hazard as of reports covering CY2016
68122	Dimethylformamide/DMF	TURA higher hazard as of reports covering CY2016
50000	Formaldehyde /methylene oxide	TURA higher hazard as of reports covering CY2012
7647010	Hydrochloric acid	EPA TRI 313 includes qualifiers as of 1996, that TURA does not –TURA covers all forms
7664393	Hydrogen Fluoride	TURA higher hazard as of reports covering CY2016
123319	Hydroquinone	TURA includes qualifiers EPA TRI 313 does not – TURA covers manufactured only, as of reports covering CY1996
7439965	Manganese	TURA includes qualifiers EPA TRI 313 does not – TURA covers only the pure metal and aerosol alloys as of reports covering CY1995
75092	Methylene Chloride/Dichloromethane	TURA higher hazard as of reports covering CY2014
106945	n-Propyl Bromide/ 1-Bromopropane	TURA higher hazard as of reports covering CY2016
7440020	Nickel	TURA includes qualifiers EPA TRI 313 does not – TURA covers only pure form and aerosol alloys as of reports covering CY1995
8014957	Oleum (fuming sulfuric acid, sulfuric acid mixture with sulfur trioxide)	EPA TRI 313 includes qualifiers that AT TURA does not –TURA covers all forms
127184	Perchlorethylene /Tetrachloroethylene	TURA higher hazard as of reports covering CY2009
7723140	Phosphorus	EPA TRI 313 includes qualifiers that AT TURA does not –TURA covers all forms
7440224	Silver	TURA includes qualifiers TRI 313 does not – TURA covers only if in aerosol, as of reports covering CY1999
7664939	Sulfuric acid	EPA TRI 313 includes qualifiers as of CY1995 that TURA does not –TURA covers all forms
584849	Toluene-2,4-diisocyanate	TURA higher hazard as of reports covering CY2017
91087	Toluene-2,6-diisocyanate	TURA higher hazard as of reports covering CY2017
26471625	Toluene diisocyanate (mixed isomers)	TURA higher hazard as of reports covering CY2017
79016	Trichloroethylene	TURA higher hazard as of reports covering CY2008

Guidance on Reporting Hexavalent Chromium (Cr(VI)) Compounds Use in Combustion and Welding Operations (Higher Hazard Substance, Effective Reporting Year 2012)

There are changes to the requirements for submitting Chromium compounds under Massachusetts Department of Environmental Protection (MassDEP) Toxics Use Reduction (TURA) Form S reports due on July 1, 2013 covering reporting year 2012. This document explains the new reporting requirements and mechanics and provides guidance on determining if combustion activities at your facility are likely to trip the reporting thresholds.

1) Higher Hazard Designation for Hexavalent Chromium (Cr(VI))

As of reporting year 2012: hexavalent chromium (Cr(VI)) compounds have been split off from all Chromium compounds, and designated as a higher hazard substance. This has the following implications.

REPORTING THRESHOLD REDUCED TO 1000 Cr(VI) Compounds:

Designation as a higher hazard substance lowers the reporting threshold from the current threshold of 25,000 pounds if the substance is manufactured or processed or 10,000 pounds if the substance is otherwise used to 1000 pounds. A Form S report is required for each higher hazard substance manufactured OR processed OR otherwise used at 1000 or more pounds in a calendar year. Note that these three types of use are NOT additive for the purposes of determining whether the threshold has been exceeded. For example, a facility that manufactured 700 pounds and otherwise used 350 pounds of formaldehyde would not be required to submit a Form S report on the substance, since neither type of use exceeded 1000 pounds.

Non-Cr(VI) chromium compounds are still reportable as the chromium compounds category under the original TURA reporting thresholds (25,000 pounds if manufactured , 25,000 pounds if processed, or 10,000 pounds if otherwise used).

NEW DEP CHEMICAL CATEGORY NUMBERS ASSIGNED FOR CHROMIUM COMPOUNDS

Every chemical category has to have a unique identifier in order to collect the chemical data. As a result new category numbers were created for the two new Chromium categories

1. Use DEP Category # 1216 for Cr (VI) compounds
- Use DEP Category # 1217 for Non Cr(VI) Chromium Compounds

STATE ONLY FORM Rs ARE REQUIRED FOR Cr(VI), and CHROMIUM COMPOUNDS EXCLUDING CR(VI)

Designation as a higher hazard substance changes the mechanics of reporting Form R information to the MassDEP Toxics Use Reduction Program and to Environmental Protection Agency (EPA) Toxics Release Inventory (TRI). The TURA system will automatically generate State Only Form Rs for all substances for which the TURA reporting threshold is lower than the EPA Toxics Release Inventory threshold, and for all substances which have different "qualifiers" under the TURA and TRI systems. Therefore facilities will need to:

- Complete the "State Only Form R" for, Cr(VI) Compounds and Chromium Compounds excluding Cr(VI).
- Submit a separate Form R to the EPA TRI program for Chromium compounds. Note that the Chromium Compounds Form R submitted to EPA will cover ALL Chromium Compounds.

2) What are some examples of hexavalent chromium compounds?

Hexavalent chromium compounds are any chromium compounds in the +6 valence state.
This includes, but is not limited to, the following compounds:

7789-98-9	Ammonium Chromate
7789-09-5	Ammonium Dichromate
10294-40-3	Barium Chromate
1189-85-1	tert-Butyl Chomate
13765-19-0	Calcium Chromate
14986-48-2	Chromium (VI) chloride
1333-82-0	Chromium (VI) Trioxide
18540-29-9	Hexavalent Chromium
7758-97-6	Lead Chromate
18454-12-1	Lead Chromate Oxide
1344-38-3	Basic Lead Chromate Orange
7789-00-6	Potassium Chromate
7778-50-9	Potassium Dichromate
7784-01-2	Silver Chromate
7775-11-3	Sodium Chromate
10588-01-9	Sodium Dichromate
7789-12-0	Sodium Dichromate Dehydrate
7789-06-2	Strontium Chromate
13530-65-9	Zinc Chromate
14018-95-2	Zinc Dichromate[1]
7738-94-5	Chromic Acid

3) How are Chromium Compounds Used?

Industrial uses of hexavalent chromium compounds include chromate pigments in dyes, paints, inks, and plastics; chromates added as anticorrosive agents to paints, primers, and other surface coatings; and chromic acid electroplated onto metal parts to provide a decorative or protective coating.[2]

Cr(VI) Compounds can also be coincidentally manufactured during the consumption of fuel or when performing hot work" such as welding on stainless steel or melting chromium metal. In these situations the chromium is not originally hexavalent, but the high temperatures involved in the process result in oxidation that converts the chromium to a hexavalent state.[3] Filers using chromium compounds of any kind should consider whether they are being used in an oxidizing environment and thus could be generating hexavalent chromium compounds.

Chromium may also be coincidentally manufactured during the combustion of fuel.
Note that the information that follows is provided for general guidance – facilities are required to use the best readily available data applicable to their operations for threshold determinations.

Cr(VI) USE IN COMBUSTION PROCESSES

[1] http://www.osha.gov/dts/chemicalsampling/data/CH_228697.html

[2] http://www.osha.gov/SLTC/hexavalentchromium/index.html

[3] http://www.osha.gov/SLTC/hexavalentchromium/index.html

Manufacturing: Facilities will likely coincidentally manufacture Cr(VI) Compounds through combustion and flue gas desulfurization in sufficient quantities to trip the 1,000 pound reporting threshold. In general, the quantities of Cr(VI) compounds and formaldehyde manufactured, processed, or otherwise used at a facility will be dependent on a number of factors, including the type of fuel combusted (coal, oil, gas), the type of combustor, and combustion conditions (e.g., temperature, air/fuel ratio). Information that can be used to estimate the coincidental manufacture of Cr(VI) Compounds during combustion can be found in the references cited at the end of this document.

Processing:"Processing" means preparing a TURA reportable chemical or a mixture or other trade name product containing a TURA reportable chemical for distribution in commerce. Chromium compounds in fly ash and ash from coal- and oil-fired facilities are likely to include Cr(VI) compounds. Any fly ash that is shipped off site for use or recycling by another facility is being "processed" and unless the *de minimis* exemption applies, the Cr(VI) compounds in the ash must be counted toward the 1000 pound "processing" threshold. (Note however that any ash recovered for use onsite the material has NOT been prepared for distribution in commerce and thus is not counted toward the processing threshold.)

The *de minimis* exemption applies to toxic substances that are contained in materials distributed in commerce offsite for direct use or reuse. A material is considered to be transferred offsite for direct reuse if the materials will be directly used in an operation or application without any recovery or other extraction of contaminants. Toxic substances that are present in a material below the *de minimis* concentration are not counted toward the 1000 pound "processing" threshold.

For example; ash sent off-site for concrete manufacturing is a 'direct reuse". The *de minimis* concentration for Cr(VI) compounds and formaldehyde is 0.1 percent. Therefore if the ash being sent off for direct reuse in concrete manufacture is less than 0.1 % Cr(VI) Compounds, the Cr(VI) Compounds in the ash does not need to be counted toward the 1000 pound "processing" threshold. If the concentration is >0.1%, then the entire amount of Cr(VI) Compounds in the ash must be counted toward the 1000 pound "processing" threshold.

Because transfers offsite for recycling must undergo a subsequent recovery step, the material to be recycled is considered a waste and is not eligible for the *de minimis* exemption. All Cr(VI) contained in such materials must be counted toward the processing threshold, regardless of its concentration.

Otherwise Use: A substance is "otherwise used" in a production process if it is neither manufactured nor incorporated into the final product. Therefore any contaminants contained in fuel are considered "otherwise used" in the combustion process. The *de minimis* concentration applies to materials that are otherwise used. Materials below the *de minimis* concentrations (0.1 % for Cr (VI) Compounds and for formaldehyde) do not need to be counted toward the 1000 pound "otherwise use" threshold. However the entire quantity of substances that are present in concentrations above the *de minimis* level must be counted toward the 1000 pound "otherwise use" threshold

- Cr(VI) Compounds in fuel : Unless a facility has information indicating otherwise, they may assume that Cr(VI) compounds in coal and distillate oil are below *de minimis* levels.

- **Cr(VI) compounds in ash or other wastes that are received from off-site and disposed, stabilized (without subsequent distribution in commerce), or treated for destruction on-site**. These materials are "wastes" and as such are not subject to the *de minimis* exemption. Facilities engaged in these operations must count the entire amount of Cr(VI) Compounds in the ash toward the 1000 pound "otherwise use" threshold.

REFERENCES FOR QUANITIFYING Cr(VI) CONCENTRATIONS IN FUEL, EMISSIONS, AND ASH.

It is the responsibility of each facility to determine the best readily available data applicable to their operations. The methods and sources of data for quantifying Cr(VI) compounds use include, but are not limited to, the following –

1. Fuel-specific data for the fuels combusted (e.g., obtained from supplier).

2. Facility-specific monitoring data and/or emission factors.

3. Facility-specific waste (e.g., ash) sampling data – the literature contains a number of studies and other information sources that show that the fly ash from coal- and oil-fired facilities is likely to contain Cr(VI) compounds. Among these references are –
   a. Cr(VI) speciation data for ash from coal- and oil-fired electric generation facilities discussed in EPA's *National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units – Panel Report*, pp. 70 – 76, 2/16/11. (https://www.epa.gov/reg-flex/sbar-panel-national-emission-standards-hazardous-air-pollutants-neshap-coal-and-oil-fired).
   b. *Nickel and Chromium Speciation of Residual Oil Combustion Ash*, K. C. Galbreath, C. J. Zygarlicke, D. L. Toman, F. E. Huggins, G. P. Huffman, **Combustion Science and Technology**, Vol. 134, Iss. 1-6, 1998.
   c. *Chromium Speciation in Coal and Biomass Co-Combustion Products*, Arthur F. Stam, Ruud Meij, Henk te Winkel, Ronald J. van Eijk, Frank E. Huggins, Gerrit Brem, **Environ. Sci. Technol.**, **2011**, *45* (6), 2450-2456.

4. For EPRI members – the PISCES database (provides emission factors and models to calculate air emissions), and Toxics Release Inventory for Power Plants (TRIPP) software.

5. EPA's *EPCRA Section 313 Industry Guidance – Electricity Generating Facilities*.

6. EPA emission factors from EPA's *Compilation of Air Pollutant Emission Factors (AP-42), 5thed. - Chapter 1, External Combustion Sources*. These factors are based on a limited number of samples and may not reflect more accurate information available to the facility for the particular type of fuel combusted and pollution control devices used.

Cr(VI) USE IN WELDING:

Emission Factors

The following emission factors were reported in the literature. For more information on electrode types, rod diameters, test conditions and analytical methods, please see the appropriate reference.

Welding process and electrode	Heung, et al Cr(VI) (g/kg)	EPA HAP Emission Factors (AP-42) Cr(VI)(g/kg)	
SMAW - E316L	0.179	0.332	
SMAW – E310L	n/a	1.88	
SMAW – E308	n/a	0.359	
GMAW – ER316	0.0194	0.01	
FCAW with shield gas – E309LT	0.0146	n/a	
FCAW without shield gas – E309LT	0.2557	n/a	
FCAW - E316	n/a	0.14	

SMAW - Shielded Metal Arc Welding
GMAW – Gas-Metal Arc Welding
FCAW – Flux-Cored Arc Welding

Calculating quantities of hexavalent chromium compounds manufactured during welding operations to determine if the 1000 lb reporting threshold is exceeded:

Threshold for TURA reporting and planning: 1000 lb hexavalent chromium compounds
Total lbs of electrode used x emission factor (lbsCr(VI)/ 1000 lbs electrode) = lbs Cr(VI)
If assume that all Cr(VI) compounds are CrO_3, (particulate Cr compounds are typically oxides and halides) then compounds would be approximately twice the weight of the Cr(VI) (Cr = 52, O_3 = 48). Estimate 520 lb threshold for Cr(VI) as HHS.

e.g.,for largest emission factor – SMAW- E310L, 1.88 lb/1000 lbs:
520 lbCr(VI) = (1.88 lbs/1000 lbs) x electrode used (lbs)
Electrode use to reach 500 lbCr(VI) manufactured during welding = 277,000 lbs

References:
U.S. Environmental Protection Agency "Air Pollutant Emission Factors," Volume I, 5th Edition (AP-42), Chapter 12: Metallurgical Industry, Section 19: Electric Arc Welding, 1995.
http://www.epa.gov/ttn/chief/ap42/ch12/final/c12s19.pdf

U.S. Environmental Protection Agency Office of Air Quality Planning and Standards, Emission Inventory Branch, "Development of Particulate and Hazardous - Emission Factors for Electric Arc Welding" (AP-42, Section 12.19), MRI Project No. 4601-02, May 20, 1994.
http://www.epa.gov/ttn/chief/ap42/ch12/bgdocs/b12s19.pdf

Heung, William, et al, "Emissions of Chromium (VI) from arc welding," Journal of the Air and Waste Management Association, Feb 1, 2007.

Guidance on Reporting Formaldehyde as Higher Hazard Substance (Effective Reporting Year 2012) and Quantifying its Use in Combustion Operations

There are changes to the requirements for submitting Formaldehyde under MassDEP Toxics Use Reduction (TURA) Form S reports due on July 1, 2013 covering reporting year 2012. This document explains the new reporting requirements and mechanics and provides guidance on determining if combustion activities at your facility are likely to trip the reporting thresholds.

1. Higher Hazard Designation

As of reporting year 2012 formaldehyde has been designated as a higher hazard substance with the following implications for reporting.

REPORTING THRESHOLD REDUCED TO 1000 POUNDS

Designation as a higher hazard substance lowers the reporting threshold from the current threshold of 25,000 pounds if the substance is manufactured or processed or 10,000 pounds if the substance is otherwise used to 1000 pounds. A Form S report is required for each higher hazard substance manufactured OR processed OR otherwise used at 1000 or more pounds in a calendar year. Note that these three types of use are NOT additivefor the purposes of determining whether the threshold has been exceeded. For example, a facility that manufactured 700 pounds and otherwise used 350 pounds of formaldehyde would not be required to submit a Form S report on the substance, since neither type of use exceeded 1000 pounds.

STATE ONLY FORM Rs ARE REQUIRED FOR FORMALDEYDE

Designation as a higher hazard substance changes the mechanics of reporting Form R information to the MassDEP Toxics Use Reduction Program and to EPA's TRI. The TURA system will automatically generate State Only Form Rs for all substances for which the TURA reporting threshold is lower than the EPA Toxics Release Inventory threshold, and for all substances that have different "qualifiers" under the TURA and TRI systems. Therefore facilities will need to:

- Complete the "State Only Form R" for formaldehyde
- Submit a separate Form R to the EPA TRI program

2. What are Common Synonyms for formaldehyde

Formaldehyde (CAS#50-00-0) has several synonyms, including:

Formalin
Formol
Methylene Glycol
Methyl Aldehyde
Methylene Oxide

3. How Is Formaldehyde Commonly Used?

Formaldehyde is primarily used in the manufacture of wood adhesives applied to plywood, particleboard and other manufactured wood products, and in formaldehyde-based resins.[4] Other significant uses of formaldehyde include the manufacture of other chemicals, plastics and coatings, embalming and fertilizers.

[4]Massachusetts Toxics Use Reduction Institute, Five Chemicals Alternatives Assessment Study: Chapter 4 – *Formaldehyde*. Available at: https://www.turi.org/TURI_Publications/TURI_Methods_Policy_Reports/Five_Chemicals_Alternatives_Assessment_Study._2006/Chapter_4_Formaldehyde.

Formaldehyde is generated in processes that use paraformaldehyde (CAS# 30525-89-4), formalin, or trioxane.

Formaldehyde may be coincidentally manufactured during the combustion of fuel.

4. Quantifying Formaldehyde Use in Combustion

Formaldehyde use occurs in combustion processes. In general, the quantities formaldehyde manufactured, processed, or otherwise used at a facility during combustion will be dependent on a number of factors, including the type of fuel combusted (coal, oil, gas), the type of combustor, and combustion conditions (e.g., temperature, air/fuel ratio).

Note that the information that follows is provided for general guidance – facilities are required to use the best readily available data applicable to their operations for threshold determinations.

MANUFACTURING:

Based on the EPA's AP-42 emission factors, 1000 or more pounds of formaldehyde arelikely to coincidentally be manufactured if annual fuel consumption is equal to or greater than the amounts listed below:

- Coal – 4.2 million tons
- No. 6 fuel oil – 30.3 million gallons
- No. 2 fuel oil – 16.4 million gallons
- Natural gas – 6,450 million ft^3

Additional data sources on the coincidental manufacture of formaldehyde during combustion can be found in the references cited at the end of this document.

OTHERWISE USE

A substance is "otherwise used" in a production process if it is neither manufactured nor incorporated into the final product. Therefore any contaminants contained in fuel are considered "otherwise used" in the combustion process. The *de minimis* concentration applies to materials that are otherwise used. Materials below the *de minimis* concentrations (0.1 % for formaldehyde) do not need to be counted toward the 1000 pound "otherwise use" threshold. However the entire quantity of substances that are present in concentrations above the *de minimis* level must be counted toward the 1000 pound "otherwise use" threshold

- **Formaldehyde** is not likely to be present in fuels or ash above the *de minimis* level

REFERENCES FOR QUANITIFYING FORMALDEHYDE EMISSIONS FROM THE COMBUSTION OF FUEL

It is the responsibility of each facility to determine the best readily available data applicable to their operations. The methods and sources of data for quantifying formaldehyde use include, but are not limited to, the following:

1. Fuel-specific data for the fuels combusted (e.g., obtained from supplier).

2. Facility-specific monitoring data and/or emission factors.

3. For EPRI members – the PISCES database (provides emission factors and models to calculate air emissions), and Toxics Release Inventory for Power Plants (TRIPP) software.

4. EPA's *EPCRA Section 313 Industry Guidance – Electricity Generating Facilities*.

5. EPA emission factors from EPA's *Compilation of Air Pollutant Emission Factors (AP-42), 5thed. - Chapter 1, External Combustion Sources*. These factors are based on a limited number of samples and may not reflect more accurate information available to the facility for the particular type of fuel combusted and pollution control devices used.

Guidance on Quantifying Use and Reporting Cyanide Compounds under the Toxics Use Reduction Act

As of reporting year 2016, Cyanide Compounds (TURA chemical category # 1016) has been designated as a Higher Hazard Substance (HHS), lowering the reporting threshold to 1,000 pounds. The new threshold will apply to cyanide compounds use in calendar year 2016, which will be reported on Form S reports due July 1, 2017. This document provides guidance on determining if activities at your facility are likely to trip the reporting thresholds and how cyanide use is reported in compliance with the Toxics Use Reduction Act, including how cyanide use is reported on Form S.

Definition of the Category
Cyanide compounds include any chemical substance with the chemical formula: $X^+ CN^-$ where $X = H^+$ or any other group where a formal dissociation can be made. Examples include potassium cyanide (KCN) and calcium cyanide ($Ca(CN)_2$). Consistent with the TRI cyanide category (#N106) definition, hydrogen cyanide and ethyl cyanide are reported as individual chemicals, and are not included in the category. They are reported under their individual CAS numbers.

Reporting Thresholds
For use during calendar year 2015, continue to observe the reporting thresholds of 25,000 pounds for cyanide compounds manufactured or processed and 10,000 pounds for cyanide compounds otherwise used. For use during calendar year 2016, the thresholds will be 1,000 pounds for each of these, for reporting on Form S under TURA, but will remain unchanged for federal TRI reporting on Form R. Note that these three types of use are NOT additive for the purposes of determining whether the threshold has been exceeded. For example, a facility that manufactured 700 pounds and otherwise used 350 pounds of cyanide compounds would not be required to submit a Form S report on the substance, since neither type of use exceeded 1,000 pounds. However, if more than one cyanide compound was used for the same type of use then those quantities would be additive (e.g. processing 700 pounds of zinc cyanide and processing 400 pounds of copper cyanide trips the 1,000 pound threshold).

Because the federal and state thresholds for cyanide compounds are different, a "State-Only Form R" is submitted to the state along with the Form S when use exceeds the lower state TURA reporting threshold. The TURA eDEP system will automatically generate State Only Form Rs for these situations. Submit a separate Form R to the EPA TRI program when federal thresholds are exceeded.

Report What Enters, Leaves and is Manufactured During Processing
For reporting on Form S, report not only on what enters and leaves the process, but also on what is manufactured within the process. Compounds leaving the production process/unit must be counted as byproduct before entering a wastewater treatment process.

Common Uses of Cyanide Compounds
Cyanide compounds are primarily used in Massachusetts for electroplating and stripping of metallic surfaces. Other possible uses of cyanide compounds include the extraction and refining of precious metals and the synthesis of nitrogen-containing organic chemicals.

Common Forms of Cyanide Compounds
Common cyanide compounds include cyanide salts of: sodium, potassium, calcium, iron, zinc, copper, silver, cadmium, and gold. The anhydrous salts may be used directly with water to make plating baths that can be augmented with pure metal anodes. Sometimes a concentrated gold cyanide solution is used directly in plating baths rather than handling the more expensive pure metal form.

Often when plating a metal onto another metal product surface, an aqueous solution of the metal cyanide, sodium or potassium cyanide, and non-cyanide additives are used. Sometimes metal cyanide solution is added to the bath as the metal is plated out, especially with precious metals such as gold. More often the desired metal concentration of the solution is maintained by continuously dissolving the pure metal from the anode. Over time contaminants accumulate in the solution and cause inferior plating results. In this case the plating bath may be dumped for disposal or reclamation.

[NOTE: Atomic Weight of Copper is 63.546 and Molecular Weight of Cuprous Cyanide is 89.563 Molecular weight of Sodium Cyanide is 49.007]

Cyanide Compound Example: Electroplating

A **300 gallon** copper plating tank operates with **1,000 Liters of solution**. A fresh solution is made up at the beginning of the calendar year with **60 kilograms of Copper Cyanide and 94 kilograms of Sodium Cyanide**.

Over the course of the year, **323 kilograms** of copper are consumed from the anode, creating **455 kg of copper cyanide** as **323 kilograms** of copper are plated from the solution onto steel parts. Also, **25 Kg of Cyanide salts** have been added to maintain tank concentrations due to drag out losses.

At the end of the year the plating bath has accumulated contaminants and needs replacement.

Data for Byproduct Cyanide Compounds = 179 kg x 2.20 = 394 lbs.

Data for Form S, Section 1: Facility-Wide Use of Listed Chemical (Cyanide Compounds

c. Manufactured	*1,001 pounds of Copper Cyanide* *(455 kg x (2.20 lb/kg)*
d. Processed	*132 pounds of Copper Cyanide* *(60 kg x (2.20 lb/kg)* *When a given listed substance is introduced into production anywhere at the facility, it is counted only once at the facility level, regardless of how many times that listed substance is used, recycled or reused onsite. It is reported under the category that first trips the reporting threshold. Therefore, the 1,001 pounds of copper cyanide that was manufactured is reported as "manufactured". It is not included in the "processed" total because it was already reported as manufactured.* *(However, the total amount (1,133 pounds) manufactured and processed IS included in the production unit level reporting, and in the reported use range code.)*
e. Otherwise used	*262 pounds of Sodium Cyanide* *(94 kg + 25 kg) = 119 kg x (2.20 lb/kg)*
f. Byproduct	*394 pounds CuCN and NaCN* *(179 kg x (2.20 lb/kg)*
g. Shipped as Product	*0 pounds*

Form S, Section 2: Materials Balance

b. Chemical was Consumed or Transformed = 1,001 pounds of Copper Cyanide

RELEVANT REFERENCES

Background Document, Designation of Cyanide Compounds
TURI Summary of Policy Analysis for Cyanide Compounds, Aug. 12, 2014
http://www.turi.org/content/download/9405/164669/file/Policy%20analysis%20cyanide%20compounds%20%20August%202014.pdf

Massachusetts Chemical Fact Sheet for Cyanide Compounds
http://www.turi.org/TURI_Publications/TURI_Chemical_Fact_Sheets/Cyanide_and_Cyanide_Compounds/Cyanide_and_Cyanide_Compounds_Fact_Sheet

1998 EPCRA Section 313 Questions and Answers
Question Numbers 137, 138, 111, 416
http://www.epa.gov/sites/production/files/2015-05/documents/qas_1998.pdf

Electroplating Engineering Handbook by Lawrence J. Durney, Van Nostrand Reinhold Company, 1984

Advanced Surface Technology, Volume 1 by Per Moller and Lars Pleth Nielsen
Published by NASF and AESF Foundation, Copyright 2013, ISBN 978-87-92765-23-9

Guidance on Reporting Hydrofluoric Acid as a Higher Hazard Substance

Under the Toxics Use Reduction Act

As of reporting Year 2016, Hydrofluoric Acid, also known as Hydrogen Fluoride (HF) – CAS # 7664-39-3 has been designated as a higher hazard substance (HHS) under TURA, lowering the reporting threshold to 1,000 pounds. This document explains the reporting requirements and provides general reporting guidance for HF.

REPORTING THRESHOLD LOWERED TO 1,000 POUNDS

Designation as a higher hazard substance lowers the reporting threshold from the current thresholds of 25,000 pounds if the substance is manufactured or processed; and 10,000 pounds if the substance is otherwise used, to 1,000 pounds for each of the three uses. A Form S report is required for each higher hazard substance used at 1,000 or more pounds in a calendar year. Note that these three types of use are NOT additive for the purposes of determining whether the threshold has been exceeded. For example, a facility that manufactured 700 pounds and otherwise used 350 pounds of hydrogen fluoride would not be required to submit a Form S report on the substance, since neither type of use exceeded 1,000 pounds.

USE STATE-ONLY FORM Rs

The TURA e-DEP system will automatically generate State Only Form Rs for all substances for which the TURA reporting threshold is lower than the EPA Toxics Release Inventory threshold, and for all substances that have different "qualifiers" under the TURA and TRI systems. Of course, if federal thresholds are exceeded, submit a separate Form R to the EPA TRI program and generate a State Only Form R as well.

GENERAL REPORTING GUIDANCE

1. How Is Hydrofluoric Acid Commonly Used in Massachusetts?

Hydrofluoric acid is primarily used in Massachusetts for metal cleaning (pickling and desmutting) and etching applications, or is coincidentally manufactured by facilities.

5. Properties of Hydrofluoric Acid

Anhydrous hydrofluoric acidor hydrogen fluoride is a liquid that easily vaporizes at room temperature. Aqueous solutions of hydrofluoric acid are commonly sold in concentrations from 70% to 38% (by weight). Boiling temperatures range from 67 F for anhydrous to 235 F for 35% hydrofluoric acid.

6. How do I determine if I trip the reporting threshold?

Processing HF: Facilities producing specialty blends of fluoride chemicals will primarily report hydrogen fluoride as processed and occasionally as manufactured.

> **Example 1**: The dilution of 1,430 pounds of 70% hydrofluoric acid to 49% hydrofluoric acid for resale would be considered *processing* 1,001 pounds of HF.
> **Example 2**: If 1,430 pounds of 70% hydrofluoric acid is used to manufacture fluoroboric acid, report 1,001 pounds of HF as *processed*.
> **Example 3**: If 2043 pounds of 49% hydrofluoric acid is used in solutions to remove oxides from stainless steel, report 1001 pounds HF as otherwise used.

Processing or Manufacturing HF from Ammonium Bifluoride or Other Fluoride Salts: When dry ammonium bifluoride (ABF) contacts water, it generates hydrofluoric acid. The hydrogen fluoride derived from fluoride salts (such as ABF) is considered *manufactured*. (EPA guidance 745-R-00-005)

Ammonium bifluoride used (*processed*) in dry blends for resale are not likely to have reportable quantities of HF. However, ammonium bifluoride added to water will *manufacture* HF. For example, if ABF is added to water with other proprietary constituents for resale, ABF could *manufacture* reportable quantities of HF depending upon the pH of the solution and other constituents that could affect the dissociation of ammonium bifluoride.

For example, HF for buffered etching solutions may be produced from ammonium bifluoride (CAS 1341-49-7) or ammonium fluoride (CAS 12125-01-8). In crystalline form these two chemicals may sublimate to produce ammonia and HF gases. Some companies, however, prefer to handle and store this solid form rather than a concentrated solution of HF. In solution, ammonium bifluoride can typically produce up to **35%** of its weight as hydrogen fluoride. That is, 2,857 pounds of NH_5F_2 can produce 1,000 pounds of HF (and 1,857 pounds of NH_4F). Ammonium fluoride (NH_4F) is considered a neutral salt, but in the presence of a stronger acid is capable of producing up to **54%** of its weight in HF. That is, 1,852 pounds of NH_4F could produce up to 1,000 pounds of HF if driven by the presence of another acid in the solution or an energy source. Thus, if ammonium bifluoride is put into solution with a stronger acid, up to 70% of its weight can be produced as hydrogen fluoride (e.g., 2,000 lbs. HF from 2,857 lbs. of NH_5F_2).

Example: In the calendar year 3,000 pounds of ammonium bifluoride is consumed in an etching bath. **35%** of 3,000 pounds *manufactures* 1,050 pounds of HF that exceeds the 1,000-pound threshold. These 1050 pounds of HF are also *otherwise used*. However, under TURA, when a given listed substance is introduced into production anywhere at the facility, it is counted *only once at the facility level*, regardless of how many times that listed substance is used, recycled or reused onsite. Report the first use category that trips the threshold. For example, if 1,050 pounds of HF is manufactured at the facility, it is reported as "manufactured". This amount is not also reported as "otherwise used" because it was already reported as manufactured. However, at *the production unit level*, the reportable substanceiscounted every time it is used (and if non integrally recycled, reused)in the process. In this case, the use range code reported for the production unit would reflect 2,100 pounds -- the sum of the amount manufactured and otherwise used.

Otherwise Use of HF: A substance is *otherwise used* in a production process if it is neither manufactured nor incorporated into the final product. The *de minimis* concentration applies to materials that are otherwise used. Materials below the *de minimis* concentrations (1.0 % for hydrofluoric acid) do not need to be counted toward the 1,000 pound*otherwise used* threshold. However the entire quantity of substances that are present in concentrations above the *de minimis* level must be counted toward the 1,000 pound *otherwise use* threshold.

4. Quantifying Hydrofluoric Acid Use in Combustion

Hydrofluoric acid is often *manufactured* in combustion processes, because. Fluoride compounds in fuels such as oil or municipal waste can be converted to hydrogen fluoride during combustion. The quantity of hydrogen fluoride manufactured at a facility during combustion will depend on a number of factors, including the type of fuel combusted (e.g., oil or municipal waste), the type of combustor, and combustion conditions (e.g., temperature and air/fuel ratio). Note that the information that follows is provided for general guidance – facilities are required to use the best readily available data applicable to their operations for threshold determinations.

Based on the EPA's AP-42 emission factors, 1,000 or more pounds of hydrofluoric acid are likely to be coincidentally *manufactured* if annual fuel consumption is greater than 26,800,000 gallons (No. 6 oil).

Hydrofluoric acid is also coincidentally generated during municipal waste combustion. EPA has not published emission factors for HF from municipal waste combustion. AP-42 has a general statement about the variability of acid gas emissions including HF. Given the variability in HF amounts, it is incumbent on municipal waste combustors to make their own best engineering judgment on how much HF is coincidentally manufactured in the combustion process. According to one Emission Calculation, prepared by Malcolm Pirnie, for the Palm Beach Renewable Energy Facility permit application, that MWC facility will exceed the 1000-lb. HF threshold when it processes 36,630 ton/year (100 ton/day). [Ref.-13 Appendix B Emission Calculations for Palm Beach Renewable Energy Facility No. 2]

Additional data sources on the coincidental manufacture of Hydrofluoric Acid during combustion can be found in the references cited at the end of this document. *De minimis* exemptions do not apply to manufactured chemicals.

REFERENCES

It is the responsibility of each facility to determine the best readily available data applicable to their operations. The methods and sources of data for quantifying hydrochloric acid use include, but are not limited to, the following –

1. TURI Chemical Fact Sheet for Hydrofluoric Acid (August 2019)
   https://www.turi.org/TURI_Publications/TURI_Chemical_Fact_Sheets/Hydrogen_Fluoride_Fact_Sheet/Hydrogen_Fluoride_Fact_Sheet

2. "Etch Rates for Micromachining Processing" by Kirt R. Williams and Richard S. Muller
   Journal of Microelectromechanical Systems, Vol 5, No 4, December 1996

3. Safety of Hydrofluoric Acid vs. AmmoniumBifluoride
   http://www.finishing.com/94/62.shtml

4. Fuel-specific data for the fuels combusted (e.g., obtained from supplier).

5. Facility-specific monitoring data and/or emission factors.

6. AP-42: Table 1.1-15 Emission Factors for Coal Combustion
   http://www.epa.gov/ttn/chief/ap42/ch01/final/c01s01.pdf

7. AP-42: Refuse Combustion -2.1.3.3 and subsequent tables
   http://www.epa.gov/ttn/chief/ap42/ch02/final/c02s01.pdf

8. Waste Treatment and Disposal / Paul T. Williams, John Wiley & Sons, copyright 2005 –
chlorine and fluorine in municipal waste

9. For EPRI members – the PISCES database (provides emission factors and models to calculate air emissions), and Toxics Release Inventory for Power Plants (TRIPP) software.

10. EPA's *EPCRA Section 313 Industry Guidance – Electricity Generating Facilities*.

11. EPA emission factors from EPA's *Compilation of Air Pollutant Emission Factors (AP-42), 5th ed. - Chapter 1, External Combustion Sources*. These factors are based on a limited number of samples and may not reflect more accurate information available to the facility for the particular type of fuel combusted and pollution control devices used.

12. Health Effects of Municipal Waste Incineration, Editors Holly A. Hattemer-Frey and Curtis Travis, ISBN 0-8493-4933-8, CRC Press, 1991 copyright, Table 17; MSW Incineration Emission Factors.

Guidance for Reporting Toluene Diisocyanate (TDI) as a Higher Hazard Substance under TURA

The following three individually listed diisocyanates have been designated as higher hazard substances, effective reporting year 2017, with a reporting threshold of 1,000 pounds:

- 2,4-Toluene Diisocyanate (2,4-TDI) – CAS 584-84-9
- 2,6- Toluene Diisocyanate (2,6-TDI) – CAS 91-08-7
- Toluene Diisocyanate (TDI-mixed isomers) – CAS 26471-62-5
  For purposes of reporting under EPCRA Section 313 and TURA, "toluene diisocyanate (mixed isomers)" includes any possible mixture of any toluene diisocyanates in which the isocyanate groups are separated by one carbon in the ring (i.e., are one/three to each other). This listing includes the 2,4-, 2,6-, and 3,5- isomers of toluene diisocyanate (TDI).

1. A separate report and fee is required for each TDI isomer for which the 1000-lb threshold is exceeded.
2. Calculate the threshold for each CAS number separately.

    a. The total quantity of TDI mixed isomers is calculated as the sum of ALL TDI isomers (not just 2,4 TDI and 2,6 TDI) present in the mixture at concentrations above the *de minimus* level.

    b. If using both TDI mixed isomers and one or both of the pure forms, do NOT add the amount of the pure form present in the mixed isomers to the total amount of the pure form used. Include only the amount of the pure form that was introduced into production.

    c. If using both TDI mixed isomers and one or both of the pure forms, do NOT add the amount of the pure form used to the total amount of the mixed isomers used. Include only the amount of the mixed isomers introduced into production.

3. State only Form Rs are required for these substances. Submit a separate federal Form R to EPA if the federal threshold for any of these substances is also exceeded.

Rules for Reporting the Use of Ammonia and Ammonium Hydroxide under TURA

To further clarify the reporting of ammonia and ammonium hydroxide under TURA, MassDEP recommends that reporting be consistent with EPCRA. Thus, there will not be a State-only Form R/A required for ammonium hydroxide, and TURA filers should not file a Form S for ammonium hydroxide (CAS# 1336-21-6). Only one fee will be required to the state for the reporting of ammonia as ammonium hydroxide. MassDEP interprets ammonium hydroxide to be equivalent to aqueous ammonia (as does EPCRA), and 10% of aqueous ammonia (CAS# 7664-41-7) is reportable under TURA, effective reporting year 2000. Please refer to the EPCRA Section 313 Guidance for Reporting Aqueous Ammonia, Revised April 2018, EPA 745-R-00-005, at: https://ofmpub.epa.gov/apex/guideme_ext/f?p=guideme:gd-title:::::title:ammonia.

The following is quoted from #451, EPCRA Section 313 Questions and Answers, December 1998, EPA 745-B-98-004:

" . . . The chemical ammonium hydroxide (NH_4OH) is a misnomer. It is a common name used to describe a solution of ammonia in water (i.e., aqueous ammonia), typically a concentrated solution of 28 to 30 percent ammonia. EPA has consistently responded to questions regarding the reportability of these purported ammonium hydroxide solutions under the EPCRA Section 313 ammonia listing by stating that these are 28 to 30 percent solutions of ammonia in water and that the solutions are reportable under EPCRA Section 313 ammonia listing. For a more detailed discussion, see page 34175 of the Federal Register final rule of June 30, 1995 (60 FR 34172).

Facilities should use the percent total ammonia specified on the label of ammonium hydroxide solutions they purchase to determine the total ammonia content in these solutions. Ammonium hydroxide has the chemical formula NH_4OH; however, as mentioned above, strong evidence indicates that the species NH_4OH does not exist. Bottles of concentrated aqueous ammonia purchased from chemical supply companies are almost always labeled ammonium hydroxide. These solutions primarily consist of molecules of NH_3 dissolved in water (along with small amounts of ionized ammonia) . . . "

Please note that different chemical suppliers will reference the % of ammonia in different ways. Therefore, it is recommended that facilities contact their chemical suppliers to specify the amount of ammonia per gallon. This question could be specified in "percent by weight per gallon" or in "number of pounds per gallon" of solution, for example.

✓Example 1

Facility otherwise uses 1,000,000 pounds of 30% solution by weight of ammonium hydroxide (30% ammonia by weight).

1,000,000 pounds x 0.30 = 300,000 pounds of ammonia

Only 10% of ammonia is reportable on Form R per EPA Guidance for Reporting Aqueous Ammonia

300,000 x 0.10 = 30,000 pounds of ammonia

This facility would complete one Form S and one Form R for 30,000 pounds of reportable ammonia (see EPCRA Guidance for Reporting Aqueous Ammonia).

✓Example 2

54,231 gallons of aqueous ammonia (19.0%)

54,231 gallons x 8.34 pounds/gallon x 0.935 specific gravity

= 422,888 pounds aqueous ammonia x 19.0%

80,349 pounds ammonia x 10% reportable ammonia = 8,035 pounds ammonia

This facility does not meet TURA or TRI reporting thresholds.

Guidance for Reporting C1-C4 Halogenated Hydrocarbons/Halocarbons Not Otherwise Listed (C1-C4 NOL)

For the 2019 Reporting Year, C1-C4 Halogenated Hydrocarbons/Halocarbons, NOL category will be reportable under TURA. This category is defined as chemicals with 4 or fewer carbons, at least one halogen, and only hydrogen as the other constituent, that are not already individually listed on the TURA chemical list. This includes fully halogenated chemicals that contain no hydrogen. Halogens are further defined as fluorine, chlorine, bromine, and iodine substances that meet the definition of this category, but are already individually listed on the TURA list, will have **no change** in reporting. Continue reporting them individually. The second list of substances should be reported as part of the category. This list is not exhaustive. Further, this list is organized so that substances that have been reported to be in commerce (through the TSCA CDR) are ordered first (and shaded).

Substances to Continue Reporting Individually:		
CAS #	**Name**	**Synonym**
56-23-5	Carbon tetrachloride	Tetrachloromethane
67-66-3	Chloroform	Methane, trichloro-
67-72-1	Hexachloroethane	Perchloroethane
71-55-6	1,1,1-Trichloroethane	Methyl chloroform
74-83-9	Bromomethane	Methyl bromide
74-87-3	Chloromethane	Methane, chloro-, Methyl chloride
74-88-4	Methyl iodide	Monoiodomethane
74-95-3	Methylene bromide	Dibromomethane
75-00-3	Chloroethane	Ethane, chloro-, Ethyl chloride
75-01-4	Vinyl chloride	Ethene, chloro-
75-02-5	Ethene, fluoro-	Vinyl fluoride
75-09-2	Dichloromethane	Methylene chloride
75-25-2	Bromoform	Tribromomethane
75-27-4	Dichlorobromomethane	
75-34-3	Ethylidene Dichloride	1,1-Dichloroethane
75-35-4	Vinylidene chloride	1,1-Dichloroethylene, Ethene, 1,1-dichloro-
75-43-4	Dichlorofluoromethane	
75-45-6	Chlorodifluoromethane	HCFC-22; R-22
75-63-8	Bromotrifluoromethane	Halon 1301
75-68-3	1-Chloro-1,1-difluoroethane	HCFC-142b
75-69-4	Trichlorofluoromethane	
75-71-8	Dichlorodifluoromethane	CFC-12; R-12; Halon 122, Carbon dichloride difluoride; Freon 12; P-12
75-72-9	Chlorotrifluoromethane	CFC-13
75-88-7	1-Chloro-2,2,2-Trifluoroethane	HCFC-133a
76-01-7	Pentachloroethane	Ethane pentachloride
76-13-1	Freon 113	1,1,2-Trichloro-1,2,2-trifluoroethane; Ethane, 1,1,2-trichloro-1,2,2,-trifluoro
76-14-2	Dichlorotetrafluoroethane	CFC-114
76-15-3	Monochloropentafluoroethane	CFC-115
78-87-5	1,2-Dichloropropane	Propane 1,2-dichloro-
78-88-6	2,3-Dichloropropene	2-Chloroallyl chloride
78-99-9	1,1-Dichloropropane	Propylidene chloride
79-00-5	1,1,2-Trichloroethane	Vinyl trichloride
79-01-6	Trichloroethylene	1,2,2-Trichloroethylene
79-34-5	1,1,2,2-Tetrachloroethane	Acetylene tetrachloride
87-68-3	Hexachloro-1,3-butadiene	Hexachlorobutadiene
96-12-8	1,2-Dibromo-3-chloropropane	DBCP
96-18-4	1,2,3-Trichloropropane	Trichlorohydrin
Substances to Continue Reporting Individually:		
CAS #	**Name**	**Synonym**

106-93-4	1,2-Dibromoethane	Ethylene dibromide
106-94-5	n-propyl bromide	1-bromopropane
107-05-1	Allyl chloride	1-Chloroprop-2-ene
107-06-2	1,2-Dichloroethane	Ethylene dichloride
110-57-6	trans-1,4-Dichloro-2-butene	trans-1,4-Dichlorobutene
116-14-3	Ethene, tetrafluoro-	Tetrafluoroethylene
124-48-1	Chlorodibromomethane	Monochlorodibromomethane
124-73-2	Dibromotetrafluoroethane	Halon 2402
126-99-8	Chloroprene	2-CHLOR-1,3-BUTADIENE
127-18-4	Tetrachloroethylene	Perchloroethylene
142-28-9	1,3-Dichloropropane	Trimethylene dichloride
156-60-5	trans-1,2-Dichloroethylene	trans-Acetylene dichloride
306-83-2	2,2-Dichloro-1,1,1-trifluoroethane	HCFC-123
353-59-3	Bromochlorodifluoromethane	Halon 1211
354-11-0	1,1,1,2-Tetrachloro-2-fluoroethane	HCFC-121a
354-14-3	1,1,2,2-Tetrachloro-1-fluoroethane	HCFC-121
354-23-4	1,2-Dichloro-1,1,2-trifluoroethane	HCFC-123a
354-25-6	1-Chloro-1,1,2,2-tetrafluoroethane	HCFC-124a
422-44-6	1,2-Dichloro-1,1,2,3,3-pentafluoropropane	HCFC-225bb
422-48-0	2,3-Dichloro-1,1,1,2,3-pentafluoropropane	HCFC-225ba
422-56-0	3,3-Dichloro-1,1,1,2,2-pentafluoropropane	HCFC-225ca
431-86-7	1,2-Dichloro-1,1,3,3,3-pentafluoropropane	HCFC-225da
460-35-5	3-Chloro-1,1,1-trifluoropropane	HCFC-253fb
507-55-1	1,3-Dichloro-1,1,2,2,3-pentafluoropropane	HCFC-225cb
540-59-0	1,2-Dichloroethylene	mixed cis- and trans- isomers of 1,2-dichloroethylene
542-75-6	1,3-Dichloropropylene	1,3-Dichloropropene
563-47-3	3-Chloro-2-methyl-1-propene	Isobutenyl chloride
593-60-2	Ethene, bromo-	Vinyl bromide
630-20-6	1,1,1,2-Tetrachloroethane	Ethane, 1,1,1,2-tetrachloro-
764-41-0	1,4-Dichloro-2-butene	2-Butene, 1,4-dichloro-
812-04-4	1,1-Dichloro-1,2,2-trifluoroethane	HCFC-123b
1649-08-7	1,2-Dichloro-1,1-difluoroethane	HCFC-132b
1717-00-6	1,1-Dichloro-1-fluoroethane	HCFC-141b
1888-71-7	Hexachloropropene	Perchloropropene
2837-89-0	2-Chloro-1,1,1,2-tetrafluoroethane	HCFC-124
2837-89-0	2-Chloro-1,1,1,2-tetrafluoroethane	
8003-19-8	Dichloropropane - Dichloropropene (mixture)	Nemafene
10061-02-6	trans-1,3-Dichloropropene	trans-3-Chloroallyl chloride
13474-88-9	1,1-Dichloro-1,2,2,3,3-pentafluoropropane	HCFC-225cc
26638-19-7	Dichloropropane	Propane dichloride
26952-23-8	Dichloropropene	Dichloropropylene
34077-87-7	Dichlorotrifluoroethane	HCFC 123; R-123 2,2-Dichloro-1,1,1-Trifluoroethane
63938-10-3	Chlorotetrafluoroethane, mixed isomers	
90454-18-5	Dichloro-1,1,2-trifluoroethane mixed isomers	HCFC-123
111512-56-2	1,1-Dichloro-1,2,3,3,3-pentafluoropropane	HCFC-225eb
127564-92-5	Dichloropentafluoropropane	n/f
128903-21-9	HCFC-225aa	2,2-Dichloro-1,1,1,3,3-Pentafluoropropane
136013-79-1	1,3-Dichloro-1,1,2,3,3-pentafluoropropane	HCFC-225ea

Substances in the C1-C4 Halogenated Compounds NOL Category, that have been reported to be in commerce (through the TSCA CDR):		
CAS	**Chemical Name**	**Synonym**

74-96-4	Bromoethane	Ethyl bromide
74-97-5	Methane, bromochloro-	Chlorobromomethane
75-03-6	Iodoethane	Ethyl iodide
75-10-5	Methane, difluoro-	Difluoromethane; HFC-32
75-26-3	2-bromopropane	Isopropyl bromide
75-37-6	1,1-Difluoroethane	HFC-152a; Difluoroethane Ethylidene difluoride Ethylidene fluoride R-152a; DFE
75-38-7	1,1-Difluoroethene	Vinylidene difluoride
75-46-7	Methane, trifluoro-	Trifluoromethanefluoroform; Freon 23; Genetron 23 HFC-23; R 23
75-73-0	Carbon tetrafluoride	Perfluoromethane
76-16-4	Ethane, hexafluoro-	Perfluoroethane
76-19-7	Octafluoropropane	perfluoropropane, R 218, Flutec PP30, genetron 218, Freon 218, PFC 218
79-38-9	Chlorotrifluoroethylene	CTFE
106-95-6	Allyl bromide	2-Propenyl bromide 1-Propene, 3-bromo-
107-04-0	Ethane, 1-bromo-2-chloro-	1-Bromo-2-chloroethane
109-65-9	Butane, 1-bromo-	1-bromobutanen butyl bromide
109-70-6	Propane, 1-bromo-3-chloro-	1-Bromo-3-chloropropane
115-25-3	Octafluorocyclobutane (Perfluorocyclobutane)	Freon C 318
116-15-4	1,1,2,3,3,3-Hexafluoro-1-propene	Perfluoropropene;Hexafluoropropylene
354-33-6	Pentafluoroethane	HFC-125 1,1,1,2,2-Pentafluoroethane;R-125
354-58-5	1,1,1-Trichlorotrifluoroethane	CFC 113a
354-64-3	Pentafluoroethyl iodide	PentafluoroiodoethaneEthane, 1,1,1,2,2-pentafluoro-2-iodo-
359-07-9	Ethane, 2-bromo-1,1-difluoro-	
359-35-3	1,1,2,2-tetrafluoroethane	HFC-134
374-07-2	1,1-Dichlorotetrafluoroethane	R-114, cryofluorane
382-10-5	1-Propene, 3,3,3-trifluoro-2-(trifluoromethyl)-	Hexafluoroisobutene;3,3,3,4,4,4Hexafluoroisobutylene
406-58-6	1,1,1,3,3-Pentafluorobutane	
420-46-2	1,1,1-Trifluoroethane	HFC-143a; R-143a; HFA-143a; Ethane, trifluoro-; Methylfluoroform
420-46-2	1,1,1-Trifluoroethane	MethylfluoroformR-143a
423-39-2	Perfluorobutyl iodide	Nonafluoro-1-iodobutane1,1,1,2,2,3,3,4,4-Nonafluoro-4-iodobutane
431-31-2	1,1,1,2,3-Pentafluoropropane	
431-89-0	1,1,1,2,3,3,3-Heptafluoropropane	HFC-227ea
460-73-1	1,1,1,3,3-Pentafluoropropane	HFC-245fa
507-20-0	2-chloro-2-methylpropane	tert-butyl chloride
557-91-5	1,1-Dibromoethane	Ethylidene dibromide
677-21-4	1-Propene, 3,3,3-trifluoro-	3,3,3-Trifluoropropene
690-39-1	1,1,1,3,3,3-Hexafluoropropane	HFC-236fa
754-12-1	2,3,3,3-Tetrafluoropropene	HFO-1234yf
811-97-2	1,1,1,2-Tetrafluoroethane	HFC-134a; HFA-134a R-134a Norflurane
5408-86-6	Butane, 2,3-dibromo-	2,3-Dibromobutane, mixture of (±) and meso
29118-24-9	1,3,3,3-Tetrafluoropropene	HFO-1234ze(E)
102687-65-0	1-Chloro-3,3,3-trifluoropropene	HFO-1233zd (E)Hydro-fluoro-olefin (HFO)R-1233zd
Other C1-C4 Halogenated Compounds. These are not known to be in commerce. This list is not exhaustive.		
CAS	**Chemical Name**	**Synonym**
75-11-6	Methane, diiodo-	Methylene iodide
75-47-8	Methane, triiodo-	Iodoform

75-61-6	Dibromodifluoromethane	Difluorodibromomethane
75-82-1	1,2-Dibromo-1,1-difluoroethane	
76-11-9	1,1,1,2-Tetrachloro-2,2-difluoroethane	
76-12-0	1,1,2,2-Tetrachloro-1,2-difluoroethane	
76-18-6	2-Chloro-1,1,1,2,3,3,3-heptafluoropropane	
78-74-0	Ethane, 1,1,2-tribromo-	
78-75-1	1,2-Dibromopropane	Propylene dibromide
79-27-6	1,1,2,2-Tetrabromoethane	Acetylene tetrabromide
79-28-7	Ethene, tetrabromo-	Ethene, 1,1,2,2-tetrabromo-; Tetrabromoethene; tetrabromoethylene;
79-35-6	1,1-Dichloro-2,2-difluoroethylene	
96-11-7	1,2,3-Tribromopropane	Glycerol tribromohydrin
109-64-8	1,3-Dibromopropane	Trimethylene dibromide
124-72-1	Teflurane	
156-59-2	cis-1,2-Dichloroethylene	
338-75-0	2,3-Dichloro-1,1,1-trifluoropropane	
353-36-6	Ethane, fluoro-	Monofluoroethane
353-54-8	Methane, tribromofluoro-	
353-83-3	1,1,1-Trifluoro-2-iodoethane	
354-04-1	Ethane, 1,2-dibromo-1,1,2-trifluoro-	
354-12-1	1,1,1-Trichloro-2,2-difluoroethane	
354-15-4	1,1,2-Trichloro-1,2-difluoroethane	
354-21-2	1,1,2-Trichloro-2,2-difluoroethane	
354-48-3	1,1,1-Tribromo-2,2,2-trifluoroethane	
354-55-2	Bromopentafluoroethane	
354-56-3	Pentachlorofluoroethane	
354-92-7	Propane, 1,1,1,2,3,3,3-heptafluoro-2-(trifluoromethyl)-	
355-20-4	Butane, 2,3-dichloro-1,1,1,2,3,4,4,4-octafluoro-	
355-24-8	Butane, 1,4-dichloro-1,1,2,2,3,3,4,4-octafluoro-	
355-25-9	Decafluorobutane (Perfluorobutane)	
356-18-3	Dichlorohexafluorocyclo Butane	
358-97-4	1,2-Dibromo-1-fluoroethane	
359-11-5	Ethene, trifluoro-	Trifluoroethylene
359-28-4	1,1,2-Trichloro-2-fluoroethane	
359-58-0	1-Chloro-1,1,2,3,3,3-hexafluoropropane	
360-86-1	2-Butene, 1,3-dichloro-1,1,2,4,4,4-hexafluoro-	
360-88-3	2-Butene, 1,4-dichloro-1,1,2,3,4,4-hexafluoro-	
360-89-4	2-Butene, 1,1,1,2,3,4,4,4-octafluoro-	
375-17-7	1,1,1,2,2,3,3,4,4-Nonafluorobutane	
375-50-8	Butane, 1,1,2,2,3,3,4,4-octafluoro-1,4-diiodo-	
377-36-6	Butane, 1,1,2,2,3,3,4,4-octafluoro-	
Other C1-C4 Halogenated Compounds. These are not known to be in commerce. This list is not exhaustive.		
CAS	**Chemical Name**	**Synonym**
377-41-3	Chloroheptafluorocyclobutane	
382-21-8	Perfluoroisobutylene	1-Propene, 1,1,3,3,3-pentafluoro-2-(trifluoromethyl)-
407-81-8	*2-Butene, 1,4-difluoro-*	1,4-Difluoro-2-butene

420-44-0	2-Chloro-2-fluoropropane	
420-45-1	Propane, 2,2-difluoro-	Dimethyldifluoromethane
420-99-5	1-Chloro-2,2-difluoropropane	
421-04-5	1-Chloro-1,1,2-Trifluoroethane	
421-07-8	Propane, 1,1,1-trifluoro-	
421-73-8	2-Chloro-1,1,1,2-tetrafluoropropane	
421-75-0	1-Chloro-1,1,2,2-tetrafluoropropane	
421-99-8	1,1,3-Trichloro-1,2,2-trifluoropropane	
422-00-5	1,3-Dichloro-1,1,2,2-tetrafluoropropane	
422-02-6	3-Chloro-1,1,1,2,3-pentafluoropropane	
422-26-4	1,1,1,2,2,3-Hexachloro-3-fluoropropane	
422-49-1	1,1,1,3,3-Pentachloro-2,2-difluoropropane	
422-50-4	1,1,1,3-Tetrachloro-2,2,3-trifluoropropane	
422-51-5	1,1,1-Trichloro-2,2,3,3-tetrafluoropropane	
422-52-6	1,1,3,3-Tetrachloro-1,2,2-trifluoropropane	
422-53-7	1,1,3-Trichloro-1,2,2,3-tetrafluoropropane	
422-54-8	1,3,3-Trichloro-1,1,2,2-tetrafluoropropane	
422-55-9	1-Chloro-1,1,2,2,3,3-hexafluoropropane	
422-57-1	3-Chloro-1,1,1,2,2,3-hexafluoropropane	
422-78-6	1,1,1,2,2,3,3-Heptachloro-3-fluoropropane	
422-86-6	1-Chloro-1,1,2,2,3,3,3-heptafluoropropane	
425-94-5	1,2-Dichloro-1,2,3,3-tetrafluoropropane	
430-53-5	1,1-Dichloro-2-fluoroethane	
430-57-9	1,2-Dichloro-1-fluoroethane	
430-66-0	Ethane, 1,1,2-trifluoro-	FC 143
431-07-2	1-Chloro-1,2,2-Trifluoroethane	
431-63-0	1,1,1,2,3,3-Hexafluoropropane	
431-87-8	2-Chloro-1,1,1,3,3,3-hexafluoropropane	
462-39-5	Propane, 1,3-difluoro-	1,3-Difluoropropane
471-43-2	1,1-Dichloro-2,2-difluoroethane	
507-25-5	Methane, tetraiodo-	Carbon tetraiodide
513-31-5	2,3-Dibromopropene	2-Bromoallyl bromide
513-92-8	Ethene, tetraiodo-	Tetraiodoethylene
540-49-8	1,2-Dibromoethylene	2-Bromovinyl bromide
540-54-5	1-Chloropropane	
556-56-9	Allyl iodide	3-Iodopropylene
558-13-4	Tetrabromomethane	Carbon tetrabromide
590-11-4	cis-Dibromoethylene	
590-12-5	trans-1,2-Dibromoethylene	
593-53-3	Methyl fluoride	Fluoromethane
593-66-8	Ethene, iodo-	Iodoethylene
593-70-4	Chlorofluoromethane	
593-92-0	1,1-Dibromoethylene	Vinylidene bromide
594-02-5	1,1-Diiodoethane	
594-16-1	Propane, 2,2-dibromo-	
594-37-6	1,2-dichloro-2-methylpropane	
Other C1-C4 Halogenated Compounds. These are not known to be in commerce. This list is not exhaustive.		
CAS	**Chemical Name**	**Synonym**
594-73-0	Hexabromoethane	
598-16-3	Ethylene tribromide	Tribromoethene
598-29-8	1,2-Diiodopropane	
624-72-6	*1,2-Difluoroethane (HFC-152)*	Ethylene difluoride

624-73-7	*Ethane, 1,2-diiodo-*	
627-31-6	Propane, 1,3-diiodo-	Trimethylene diiodide
630-16-0	Ethane, 1,1,1,2-tetrabromo-	
661-95-0	Propane, 1,2-dibromo-1,1,2,3,3,3-hexafluoro-	
661-97-2	1,2-Dichloro-1,1,2,3,3,3-hexafluoropropane	
662-00-0	1,1,1,2,2,3,3-Heptafluorobutane	
662-01-1	1,3-Dichloro-1,1,2,2,3,3-hexafluoropropane	
677-54-3	1,1,1,3-Tetrachloro-2,2-difluoropropane	
677-55-4	1-Chloro-1,1,3,3,3-pentafluoropropane	
677-56-5	1,1,1,2,2,3-Hexafluoropropane	
679-85-6	3-Chloro-1,1,2,2-tetrafluoropropane	
679-86-7	1,1,2,2,3-Pentafluoropropane	
679-99-2	1-Chloro-1,1,2,2,3-pentafluoropropane	
685-63-2	*1,3-Butadiene, 1,1,2,3,4,4-hexafluoro-*	Hexafluoro-1,3-butadiene
697-11-0	Cyclobutene, hexafluoro-	
811-95-0	1,1,2-Trichloro-1-fluoroethane	
821-06-7	2-Butene, 1,4-dibromo-, (2E)-	trans-1,4-Dibromobut-2-ene
1112-01-2	1,1-Dichloro-2,2-difluoropropane	
1112-14-7	1,1,3,3-Tetrachloro-2,2-difluoropropane	
1112-36-3	1,3-Dichloro-2,2-difluoropropane	
1511-62-2	Bromodifluoromethane	
1516-64-9	2-Butene, 1,1,1,2,3,4,4,4-octafluoro-, (E)-	
1542-18-3	Propane, 2-(difluoroiodomethyl)-1,1,1,2,3,3,3-heptafluoro-	
1615-75-4	1-Chloro-1-fluoroethane	
1645-83-6	1,3,3,3-Tetrafluoropropene	
1691-13-0	1,2-Fluoroethene	
1814-88-6	Pentafluoropropane	
1842-05-3	1,1-Dichloro-1,2-difluoroethane	
1868-53-7	Methane, dibromofluoro-	Dibromofluoromethane
2252-84-8	1,1,2,2,3,3,3-Heptafluoropropane	
2268-46-4	1,2,2,3-Tetrachloro-1,1,3,3-tetrafluoropropane	
2311-14-0	1,1,1-Tribromoethane	
2354-06-5	1,1,1,3,3-Pentachloro-2,2,3-trifluoropropane	
2366-36-1	1,1,1-Trichloro-2-fluoroethane	
2730-43-0	1-Chloro-3,3,3-trifluoropropene	
2730-64-5	1-Chloro-1,1,3,3-tetrafluoropropane	
3017-69-4	1-Propene, 1-bromo-2-methyl- (9CI)	
3470-67-5	Ethane, 1,1,1,2-tetrabromo-2,2-difluoro-	1,1,1,2-Tetrabromo-2,2-difluoroethane
4071-01-6	1,1-Dichloro-2,2,3,3-tetrafluoropropane	
4259-43-2	1,1,1-Trichloro-2,2,3,3,3-pentafluoropropane	
4399-47-7	Bromocyclobutane	
4459-18-1	Propane, 1,1,1,3,3,3-hexafluoro-2-iodo-2-(trifluoromethyl)-	
Other C1-C4 Halogenated Compounds. These are not known to be in commerce. This list is not exhaustive.		
CAS	**Chemical Name**	**Synonym**
4784-77-4	2-Butene, 1-bromo-	
5162-44-7	1-Butene, 4-bromo-	
6974-12-5	2-Butene, 1,4-dibromo-	1,4-Dibromo-2-butene
7051-34-5	Bromomethylcyclopropane	
7125-99-7	1,1-Dichloro-1,2,2-trifluoropropane	

11070-66-9	Butene, octafluoro-	
13195-80-7	1-Propene, 1,1-dibromo-	
17705-30-5	2,2-Dichloro-1,1,3,3-tetrafluoropropane	
18599-22-9	1-Butene, 4-bromo-3,3,4-tetrafluoro-	
19041-02-2	2-Chloro-1,1,3,3-tetrafluoropropane	
19398-48-2	2-Butene, 2,3-dibromo-	
20972-44-5	2-Butene, 1,4-dichloro-1,1,2,3,4,4-hexafluoro-, (2E)-	
24270-66-4	1,1,2,3,3-Pentafluoropropane	
25167-20-8	Tetrabromoethane	
25429-23-6	Ethene, dibromo-	
25497-29-4	Chlorodifluoroethane	
25497-29-4	1-Chloro-1,2-difluoroethane	
25915-78-0	Dichlorodifluoroethane	
26391-16-2	1-Propene, 1,2-dibromo-	
27072-47-5	Dibromopropane	
27336-23-8	1,1-Dibromo-1,2,2,2-tetrafluoroethane	
28103-66-4	1-Chloro-1,2,2,3,3-pentafluoropropane	
28984-80-7	Butane, trichloroheptafluoro-	
30283-90-0	Ethane, bromotetrafluoro-	
31392-96-8	Ethane, dibromodifluoro-	
40723-63-5	1,1,2,2-Tetrafluoropropane	
40723-80-6	Butane, 1,1,1,2,2-pentafluoro-4-iodo-	
51346-64-6	2-Chloro-1,1,1,2,3,3-hexafluoropropane	
56758-54-4	1-Chloro-2,2,3-trifluoropropane	
64712-27-2	1,1-Dichloro-1,3,3,3-tetrafluoropropane	
67406-66-0	1-Chloro-1,2,2,3-tetrafluoropropane	
67406-68-2	1,3-Dichloro-1,2,2-trifluoropropane	
70192-63-1	1,1-Dichloro-1,2,2,3-tetrafluoropropane	
70192-70-0	1,1-Dichloro-2,2,3-trifluoropropane	
70192-76-6	1-Chloro-1,2,2-trifluoropropane	
70341-81-0	1,3-Dichloro-1,2,2,3-tetrafluoropropane	
72101-30-5	Propane, bromotrifluoro-	B059590000
75995-72-1	1,1,1,2,3,4,4,4-Octafluorobutane	
76140-39-1	1,3-Dichloro-1,1,3,3-tetrafluoropropane	
76546-99-3	Hexachlorodifluoropropane	
110587-14-9	Chlorofluoroethane	
117970-90-8	2-Chloro-1,1,1,3-tetrafluoropropane	
127564-83-4	Dichlorotetrafluoropropane	
131211-71-7	1,1,1-Trichloro-2,2,3-trifluoropropane	
131221-36-8	1,1,3-Trichloro-2,2,3-trifluoropropane	
134190-48-0	Pentachlorofluoropropane	
134190-49-1	Tetrachlorofluoropropane	
134190-50-4	Chlorotetrafluoropropane	
134190-51-5	Trichlorofluoropropane	
134190-52-6	Dichlorodifluoropropane	
Other C1-C4 Halogenated Compounds. These are not known to be in commerce. This list is not exhaustive.		
CAS	**Chemical Name**	**Synonym**
134190-53-7	Chlorodifluoropropane	
134190-54-8	Chlorofluoropropane	
134237-36-8	Pentachlorodifluoro Propane	
134237-37-9	Tetrachlorotrifluoro	

	Propane	
134237-38-0	Trichlorotetrafluoro Propane	
134237-39-1	Tetrachlorodifluoropropane	
134237-40-4	Trichlorotrifluoropropane	
134237-41-5	Chloropentafluoropropane	
134237-42-6	Trichlorodifluoropropane	
134237-43-7	Dichlorotrifluoropropane	
134237-44-8	Chlorotrifluoropropane	
134237-45-9	Dichlorofluoropropane	
134251-06-2	2-Chloro-1,1,1,3,3-pentafluoropropane	
134308-72-8	Chlorohexafluoropropane	
146916-90-7	2,3-Dichloro-1,1,1,3-tetrafluoropropane	
149329-24-8	2,2-Dichloro-1,1,1,3-tetrafluoropropane	
149329-25-9	2,3-Dichloro-1,1,1,2-tetrafluoropropane	
149329-26-0	1,2-Dichloro-1,1,2,3-tetrafluoropropane	
149329-27-1	1,3-Dichloro-1,1,2-trifluoropropane	
151771-08-3	1,3-Dichloro-1,2,3-trifluoropropane	
n/f	Propane, dibromopentafluoro-	D01820000
n/f	Fluorotetrabromoethane	F034300000

Guidance for Reporting Per- and Poly-Fluoroalkyl Substances (PFAS) under the Toxics Use Reduction Act (TURA), including Individually Listed PFAS and the Certain PFAS Not Otherwise Listed (NOL) Category

Per- and Poly-Fluoroalkyl Substances (PFAS) are a very large group of chemicals, currently totaling over 10,000, with continually evolving regulatory requirements. Continuing updates to the Toxics Release Inventory (TRI) under the 2020 National Defense Authorization Act (NDAA) affect TURA reporting requirements. Some PFAS are reportable individually, and some are reportable under either the TURA C1 - C4 Halogenated Hydrocarbons NOL category, or the TURA Certain PFAS NOL category, or both:

- PFAS are reportable individually under TURA when (a) they are individually listed under TRI (Table 1) and (b) if they were already reportable under TURA (Table 2).
- PFAS are reportable as part of a category as part of (a) the C1-C4 NOL category (Table 3), and (b) the new Certain PFAS NOL category (Table 4).

For the 2021 Reporting Year, 172 Individual PFAS were added to the TURA list, after being added to TRI. These individually added PFAS have a reporting threshold of 100 lb each and are listed in Table 1 below. **Note that EPA is CONTINUALLY ADDING to this list, including four already identified PFAS, listed toward the end of Table 4, in gray**. The four PFAS in gray at the end of Table 4 have been added to TURA individually for reporting year **2025**. They **should be reported as part of the TURA Certain PFAS NOL category for reporting year 2024.**

For the 2022 Reporting Year, the Certain PFAS NOL category was added under TURA. The Certain PFAS NOL category is defined as those PFAS that contain:

- a perfluoroalkyl moiety[5] with three or more carbons (e.g., $–C_nF_{2n}–$, $n \geq 3$; or $CF_3–C_nF_{2n}–$, $n \geq 2$)
- a perfluoroalkylether moiety with two or more carbons (e.g., $–C_nF_{2n}OC_mF_{2m}–$ or $–C_nF_{2n}OC_mF_m–$, n and $m \geq 1$)

wherein for the example structures shown, the dash (–) is not a bond to a hydrogen and may represent a straight or branched structure, and that are not otherwise listed.

Reporting of this Certain PFAS NOL category is at typical TURA thresholds of 25,000 pounds manufactured or processed and 10,000 pounds otherwise used annually. There is a large group of PFAS that meet this definition.

All chemicals meeting the above Certain PFAS NOL definition are reportable as part of the category unless they are individually listed under TURA. The lists of PFAS with CAS registry numbers in this guidance are provided to assist filers but are not exhaustive.

Table 1 below lists PFAS that are individually reportable under TURA at the 100 lb threshold, after TURA adopted the TRI NDAA listings. Note the de minimis exemption was removed for these in reporting year 2024.

Table 2 below lists PFAS that were already individually reportable under TURA. Continue to report them at typical reporting thresholds.

Table 3 lists PFAS that are reportable under the TURA C1-C4 Halogenated Hydrocarbons category. The substances shaded in gray at the bottom are **ALSO** reportable under the new Certain PFAS NOL TURA category. Report **BOTH** C1-C4 Halogenated Hydrocarbons **AND** Certain PFAS NOL for the substances in gray. Only one fee will be due.

[5] "In organic chemistry, a **moiety** is a part of a molecule that is given a name because it is identified as a part of other molecules as well. "Source: Moiety (chemistry) - Wikipedia

Table 4 lists PFAS that are reportable under the Certain PFAS NOL category only. Substances in gray have recently been added by TRI at a 100 lb/year threshold. Report under TURA as part of Certain PFAS NOL at the 25,000/10,000lb threshold for reporting year 2024.

The lists in Tables 2-4 were generated from PFAS that are known to be in commerce, primarily from the Toxic Substances Control Act (TSCA). Thus, these lists are **NOT** exhaustive. Approximately 1/3 of the PFAS in commerce, as noted by the TSCA Chemical Data Reporting (CDR), are claimed as Confidential Business Information (CBI) and thus will require the supplier to disclose whether the substance meets the definition.

PFAS are often on SDSs without CAS numbers or a full chemical name (i.e., they may be identified as 'fluoropolymer' or some more general language). For that reason, it is important to contact suppliers to find out whether PFAS are in the products used. OTA has developed a supplier notification letter template for this purpose.

Note that some PFAS are in products at concentrations below the de minimis[6] exemption amount (1% for most PFAS, 0.1% for PFOA as a carcinogen). EPA removed the de minimis exemption in reporting year 2024 for PFAS that are individually listed on TRI (Table 1). Quantities below the de minimis do not need to be counted for the remaining PFAS (Tables 2,3 and 4) when determining if the reporting threshold has been met.

For fluorinated substances where a chemical structure is not available it should be assumed to be part of the Certain PFAS NOL category until more specific information is available.

Normal article exemptions[7] apply for PFAS. For example, 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.

[6] In determining the amount or quantity of a toxic substance manufactured, processed, or otherwise used at a facility, the toxics user shall not consider the amount of the toxic substance if it is present in a mixture in concentrations equal to or below the de minimis concentration for that toxic substance set forth in 40 CFR Part 372.38(a); provided, however, that this de minimis exemption shall not apply for any toxic or hazardous substance specified as a chemical of special concern in 40 CFR Part 372.28.

[7] Article means a manufactured item, other than an item which is manufactured at the facility: (a) which is formed to a specific shape or design during manufacture; (b) which has end use functions dependent in whole or in part upon its shape or design during end use; and (c) which does not release a toxic substance under normal conditions of processing or use of that item at the facility or establishments. See 40 CFR Part 372.38(b) for detailed information.

Table 1 TURA/TRI PFAS Substances to Continue Reporting Individually, if more than 100 lbs/year used	
307-35-7	Perfluorooctylsulfonyl fluoride
307-55-1	Perfluorododecanoic acid
335-66-0	Octanoyl fluoride, pentadecafluoro-
335-67-1	Perfluorooctanoic acid
335-71-7	1-Heptanesulfonyl fluoride, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-
335-76-2	Perfluorodecanoic acid
335-93-3	Silver(I) perfluorooctanoate (reportable under TRI as of 1/1/21)
335-95-5	Sodium perfluorooctanoate
355-46-4	Perfluorohexanesulfonic acid
375-22-4	PFBA (reportable under TRI as of 1/1/23)
375-73-5	Perfluorobutane sulfonic acid (PFBS) (reportable under TRI as of 1/1/22)
375-95-1	Perfluorononanoic acid
376-06-7	Perfluorotetradecanoic acid
376-14-7	2-[Ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl methacrylate
376-27-2	Methyl perfluorooctanoate
383-07-3	2-[Butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl acrylate
423-82-5	2-[Ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl acrylate
507-63-1	Perfluorooctyl iodide (reportable under TRI as of 1/1/21)
678-39-7	1-Decanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro-
865-86-1	1-Dodecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafluoro-
1652-63-7	3-[[(Heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-1-propanaminium iodide
1691-99-2	N-Ethyl-N-(2-hydroxyethyl)perfluorooctanesulfonamide
1763-23-1	Perfluorooctane sulfonic acid
1996-88-9	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl ester
2043-53-0	Decane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8-heptadecafluoro-10-iodo-
2043-54-1	Dodecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-heneicosafluoro-12-iodo-
2144-54-9	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafluorododecyl ester
2218-54-4	Sodium perfluorobutanoate (reportable under TRI as of 1/1/23)
2263-09-4	1-Octanesulfonamide, N-butyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-
2795-39-3	Potassium perfluorooctanesulfonate
2395-00-8	Potassium perfluorooctanoate (reportable under TRI as of 1/1/21)
2966-54-3	Potassium perfluorobutanoate (reportable under TRI as of 1/1/23)
2991-51-7	Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]-, potassium salt
3107-18-4	Cyclohexanesulfonic acid, undecafluoro-, potassium salt
3825-26-1	Ammonium perfluorooctanoate
3871-99-6	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, potassium salt
3872-25-1	1-Pentanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-, potassium salt
4151-50-2	Sulfluramid

Table 1 TURA/TRI PFAS Substances to Continue Reporting Individually, if more than 100 lbs/year used	
4980-53-4	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-nonacosafluorohexadecyl ester
6014-75-1	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafluorotetradecyl ester
10495-86-0	Ammonium perfluorobutanoate (reportable under TRI as of 1/1/23)
13252-13-6	Hexafluoropropylene oxide dimer acid
16517-11-6	Octadecanoic acid, pentatriacontafluoro-
17202-41-4	1-Nonanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-nonadecafluoro-, ammonium salt
17741-60-5	1,1,2,2-Tetrahydroperfluorododecyl acrylate
21652-58-4	Perfluorooctyl Ethylene
24448-09-7	1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-N-methyl-
25268-77-3	2-[[(Heptadecafluorooctyl)sulfonyl]methylamino]ethyl acrylate
27619-90-5	1-Decanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro-
27619-91-6	1-Dodecanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafluoro-
27905-45-9	1,1,2,2-Tetrahydroperfluorodecyl acrylate
29081-56-9	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, ammonium salt
29117-08-6	Poly(oxy-1,2-ethanediyl), α-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-ω-hydroxy-
29420-49-3	Potassium perfluorobutane sulfonate (reportable under TRI as of 1/1/22)
29457-72-5	Lithium (perfluorooctane)sulfonate
30046-31-2	Tetradecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12-pentacosafluoro-14-iodo-
31506-32-8	1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-
34362-49-7	1,1,2,2-Tetrahydroperfluorohexadecyl acrylate
34395-24-9	1,1,2,2-Tetrahydroperfluorotetradecyl acrylate
37338-48-0	Poly[oxy(methyl-1,2-ethanediyl)], α-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-ω-hydroxy-
38006-74-5	1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-, chloride
39239-77-5	1-Tetradecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafluoro-
45048-62-2	Perfluorobutanoate (reportable under TRI as of 1/1/23)
52166-82-2	1-Propanaminium, N,N,N-trimethyl-3-[[(tridecafluorohexyl)sulfonyl]amino]-, chloride
55910-10-6	Glycine, N-[(heptadecafluorooctyl)sulfonyl]-N-propyl-, potassium salt
56372-23-7	Poly(oxy-1,2-ethanediyl), α-[2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl]-ω-hydroxy-
56773-42-3	Ethanaminium, N,N,N-triethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1)
59071-10-2	2-Propenoic acid, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl ester
60270-55-5	1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, potassium salt
60699-51-6	1-Hexadecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-nonacosafluoro-
61660-12-6	1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[3-(trimethoxysilyl)propyl]-
61798-68-3	Pyridinium, 1-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)-, salt with 4-methylbenzenesulfonic acid (1:1)

Table 1 TURA/TRI PFAS Substances to Continue Reporting Individually, if more than 100 lbs/year used	
62037-80-3	Hexafluoropropylene oxide dimer acid ammonium salt
65104-45-2	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafluorododecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl 2-methyl-2-propenoate, methyl 2-methyl-2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafluorotetradecyl 2-methyl-2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl 2-methyl-2-propenoate (reportable under TRI as of 1/1/21)
65104-65-6	1-Eicosanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,19,19,20,20,20-heptatriacontafluoro-
65104-67-8	1-Octadecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,18-tritriacontafluoro-
65510-55-6	Hexadecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14-nonacosafluoro-16-iodo-
65530-59-8	Poly(difluoromethylene), α-fluoro-ω-(2-hydroxyethyl)-, 2-hydroxy-1,2,3-propanetricarboxylate (3:1)
65530-61-2	Poly(difluoromethylene), α-fluoro-ω-[2-(phosphonooxy)ethyl]-
65530-62-3	Poly(difluoromethylene), α,α'-[phosphinicobis(oxy-2,1-ethanediyl)]bis[ω-fluoro-
65530-63-4	Ethanol, 2,2'-iminobis-, compd. with α-fluoro-ω-[2-(phosphonooxy)ethyl]poly(difluoromethylene) (2:1)
65530-64-5	Ethanol, 2,2'-iminobis-, compd. with α,α'-[phosphinicobis(oxy-2,1-ethanediyl)]bis[ω-fluoropoly(difluoromethylene)] (1:1)
65530-65-6	Poly(difluoromethylene), α-fluoro-ω-[2-[(1-oxooctadecyl)oxy]ethyl]-
65530-66-7	Poly(difluoromethylene), α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]-
65530-69-0	Poly(difluoromethylene), α-[2-[(2-carboxyethyl)thio]ethyl]-ω-fluoro-, lithium salt
65530-70-3	Poly(difluoromethylene), α,α'-[phosphinicobis(oxy-2,1-ethanediyl)]bis[ω-fluoro-, ammonium salt
65530-71-4	Poly(difluoromethylene), α-fluoro-ω-[2-(phosphonooxy)ethyl]-, monoammonium salt
65530-72-5	Poly(difluoromethylene), α-fluoro-ω-[2-(phosphonooxy)ethyl]-, diammonium salt
65530-74-7	Ethanol, 2,2'-iminobis-, compd. with α-fluoro-ω-[2-(phosphonooxy)ethyl]poly(difluoromethylene) (1:1)
65530-83-8	Poly(difluoromethylene), α-[2-[(2-carboxyethyl)thio]ethyl]-ω-fluoro-
65545-80-4	Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, ether with α-fluoro-ω-(2-hydroxyethyl)poly(difluoromethylene) (1:1)
65605-56-3	Poly(difluoromethylene), α-fluoro-ω-(2-hydroxyethyl)-, dihydrogen 2-hydroxy-1,2,3-propanetricarboxylate
65605-57-4	Poly(difluoromethylene), α-fluoro-ω-(2-hydroxyethyl)-, hydrogen 2-hydroxy-1,2,3-propanetricarboxylate
65605-58-5	2-Propenoic acid, esters, 2-methyl-, dodecyl ester, polymer with α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene)
65605-59-6	2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene) and N-(hydroxymethyl)-2-propenamide
65605-73-4	Poly(difluoromethylene), α-fluoro-ω-[2-[(1-oxo-2-propenyl)oxy]ethyl]-, homopolymer
65636-35-3	Ethanaminium, N,N-diethyl-N-methyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]-, methyl sulfate, polymer with 2-ethylhexyl 2-methyl-2-propenoate, α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and N-(hydroxymethyl)-2-propenamide
67584-42-3	Cyclohexanesulfonic acid, decafluoro(pentafluoroethyl)-, potassium salt
67584-52-5	Glycine, N-ethyl-N-[(undecafluoropentyl)sulfonyl]-, potassium salt
67584-53-6	Glycine, N-ethyl-N-[(tridecafluorohexyl)sulfonyl]-, potassium salt
67584-56-9	2-Propenoic acid, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl ester

Table 1 TURA/TRI PFAS Substances to Continue Reporting Individually, if more than 100 lbs/year used	
67584-57-0	2-Propenoic acid, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl ester
67584-58-1	1-Propanaminium, N,N,N-trimethyl-3-[[(pentadecafluoroheptyl)sulfonyl]amino]-, iodide
67584-62-7	Glycine, N-ethyl-N-[(pentadecafluoroheptyl)sulfonyl]-, potassium salt
67905-19-5	Perfluoropalmitic acid
67906-42-7	1-Decanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heneicosafluoro-, ammonium salt
67969-69-1	1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonooxy)ethyl]-, diammonium salt
68084-62-8	2-Propenoic acid, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl ester
68140-18-1	Thiols, C4-10, γ-ω-perfluoro
68140-20-5	Thiols, C6-12, γ-ω-perfluoro
68140-21-6	Thiols, C10-20, γ-ω-perfluoro
68141-02-6	Chromium(III) perfluorooctanoate
68156-01-4	Cyclohexanesulfonic acid, nonafluorobis(trifluoromethyl)-, potassium salt
68156-07-0	Cyclohexanesulfonic acid, decafluoro(trifluoromethyl)-, potassium salt
68187-25-7	Butanoic acid, 4-[[3-(dimethylamino)propyl]amino]-4-oxo-, 2(or 3)-[(γ-ω-perfluoro-C6-20-alkyl)thio] derivs.
68187-47-3	1-Propanesulfonic acid, 2-methyl-, 2-[[1-oxo-3-[(γ-ω-perfluoro-C4-16-alkyl)thio]propyl]amino] derivs., sodium salts
68188-12-5	Alkyl iodides, C4-20, γ-ω-perfluoro
68227-96-3	2-Propenoic acid, butyl ester, telomer with 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, α-(2-methyl-1-oxo-2-propenyl)-ω-hydroxypoly(oxy-1,4-butanediyl), α-(2-methyl-1-oxo-2-propenyl)-ω-[(2-methyl-1-oxo-2-propenyl)oxy]poly(oxy-1,4-butanediyl), 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and 1-octanethiol
68239-43-0	2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester, polymer with α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and N-(hydroxymethyl)-2-propenamide
68259-07-4	1-Heptanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-, ammonium salt
68259-08-5	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, ammonium salt
68259-09-6	1-Pentanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-, ammonium salt
68259-38-1	Poly[oxy(methyl-1,2-ethanediyl)], α-[2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl]-ω-hydroxy-
68259-39-2	Poly[oxy(methyl-1,2-ethanediyl)], α-[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]-ω-hydroxy-
68298-62-4	2-Propenoic acid, 2-[butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, telomer with 2-[butyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, methyloxirane polymer with oxirane di-2-propenoate, methyloxirane polymer with oxirane mono-2-propenoate and 1-octanethiol
68298-80-6	Poly(oxy-1,2-ethanediyl), α-[2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl]-ω-hydroxy-
68298-81-7	Poly(oxy-1,2-ethanediyl), α-[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]-ω-hydroxy-
68310-17-8	Poly[oxy(methyl-1,2-ethanediyl)], α-[2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl]-ω-hydroxy-
68391-08-2	Alcohols, C8-14, γ-ω-perfluoro
68412-68-0	Phosphonic acid, perfluoro-C6-12-alkyl derivs.
68412-69-1	Phosphinic acid, bis(perfluoro-C6-12-alkyl) derivs.

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68515-62-8	1,4-Benzenedicarboxylic acid, dimethyl ester, reaction products with bis(2-hydroxyethyl)terephthalate, ethylene glycol, α-fluoro-ω-(2-hydroxyethyl)poly(difluoromethylene), hexakis(methoxymethyl)melamine and polyethylene glycol
68555-74-8	1-Pentanesulfonamide, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-N-(2-hydroxyethyl)-N-methyl-
68555-75-9	1-Hexanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-N-(2-hydroxyethyl)-N-methyl-
68555-76-0	1-Heptanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N-(2-hydroxyethyl)-N-methyl-
68555-81-7	1-Propanaminium, N,N,N-trimethyl-3-[[(pentadecafluoroheptyl)sulfonyl]amino]-, chloride
68555-91-9	2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, polymer with 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-methyl-2-propenoate
68758-57-6	1-Tetradecanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafluoro-
68867-60-7	2-Propenoic acid, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl ester, polymer with 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate and α-(1-oxo-2-propenyl)-ω-methoxypoly(oxy-1,2-ethanediyl)
68957-55-1	1-Propanaminium, N,N,N-trimethyl-3-[[(undecafluoropentyl)sulfonyl]amino]-, chloride
68957-57-3	1-Propanaminium, N,N,N-trimethyl-3-[[(undecafluoropentyl)sulfonyl]amino]-, iodide
68957-58-4	1-Propanaminium, N,N,N-trimethyl-3-[[(tridecafluorohexyl)sulfonyl]amino]-, iodide
68957-62-0	1-Heptanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-
68958-60-1	Poly(oxy-1,2-ethanediyl), α-[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]-ω-methoxy-
68958-61-2	Poly(oxy-1,2-ethanediyl), α-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-ω-methoxy-
70225-14-8	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)
70225-15-9	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)
70225-16-0	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)
70225-17-1	1-Pentanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,5-undecafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)
70969-47-0	Thiols, C8-20, γ-ω-perfluoro, telomers with acrylamide
70983-59-4	Poly(oxy-1,2-ethanediyl), α-methyl-ω-hydroxy-, 2-hydroxy-3-[(γ-ω-perfluoro-C6-20-alkyl)thio]propyl ethers
70983-60-7	1-Propanaminium, 2-hydroxy-N,N,N-trimethyl-, 3-[(γ-ω-perfluoro-C6-20-alkyl)thio] derivs., chlorides
71608-60-1	Pentanoic acid, 4,4-bis[(γ-ω-perfluoro-C8-20-alkyl)thio] derivs.
72623-77-9	Fatty acids, C6-18, perfluoro, ammonium salts
72968-38-8	Fatty acids, C7-13, perfluoro, ammonium salts
74499-44-8	Phosphoric acid, γ-ω-perfluoro-C8-16-alkyl esters, compds. with diethanolamine
78560-44-8	Silane, trichloro(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)-
80010-37-3	Poly(difluoromethylene), α-fluoro-ω-[2-sulphoethyl)-
83048-65-1	Silane, (3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)trimethoxy-

Table 1 TURA/TRI PFAS Substances to Continue Reporting Individually, if more than 100 lbs/year used	
95144-12-0	Poly(difluoromethylene), α-fluoro-ω-[2-(phosphonooxy)ethyl]-, ammonium salt
97553-95-2	Thiocyanic acid, γ-ω-perfluoro-C4-20-alkyl esters
97659-47-7	Alkenes, C8-14 α-, δ-ω-perfluoro
118400-71-8	Disulfides, bis(γ-ω-perfluoro-C6-20-alkyl)
123171-68-6	Poly(difluoromethylene), α-[2-(acetyloxy)-3-[(carboxymethyl)dimethylammonio]propyl]-ω-fluoro-, inner salt
125476-71-3	Silicic acid (H_4SiO_4), disodium salt, reaction products with chlorotrimethylsilane and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro-1-decanol
135228-60-3	Hexane, 1,6-diisocyanato-, homopolymer, γ-ω-perfluoro-C6-20-alc.-blocked
142636-88-2	2-Propenoic acid, 2-methyl-, octadecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafluorododecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl 2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafluorotetradecyl 2-propenoate
143372-54-7	Siloxanes and Silicones, (3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl)oxy Me, hydroxy Me, Me octyl, ethers with polyethylene glycol mono-Me ether
148240-85-1	1,3-Propanediol, 2,2-bis[[(γ-ω-perfluoro-C4-10-alkyl)thio]methyl] derivs., phosphates, ammonium salts
148240-87-3	1,3-Propanediol, 2,2-bis[[(γ-ω-perfluoro-C6-12-alkyl)thio]methyl] derivs., phosphates, ammonium salts
148240-89-5	1,3-Propanediol, 2,2-bis[[(γ-ω-perfluoro-C10-20-alkyl)thio]methyl] derivs., phosphates, ammonium salts
150135-57-2	2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with Bu acrylate, γ-ω-perfluoro-C8-14-alkyl acrylate and polyethylene glycol monomethacrylate, 2,2'-azobis[2,4-dimethylpentanenitrile]-initiated
178094-69-4	1-Octanesulfonamide, N-[3-(dimethyloxidoamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, potassium salt
178535-23-4	Fatty acids, linseed-oil, γ-ω-perfluoro-C8-14-alkyl esters
180582-79-0	Sulfonic acids, C6-12-alkane, γ-ω-perfluoro, ammonium salts
182176-52-9	Ethaneperoxoic acid, reaction products with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl thiocyanate and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl thiocyanate
196316-34-4	2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with γ-ω-perfluoro-C10-16-alkyl acrylate and vinyl acetate, acetates
200513-42-4	2-Propenoic acid, 2-methyl-, polymer with butyl 2-methyl-2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate
203743-03-7	2-Propenoic acid, 2-methyl-, hexadecyl ester, polymers with 2-hydroxyethyl methacrylate, .gamma.-.omega.-perfluoro-C10-16-alkyl acrylate and stearyl methacrylate (reportable under TRI as of 1/1/22)
238420-68-3	Propanedioic acid, mono(γ-ω-perfluoro-C8-12-alkyl) derivs., di-me esters
238420-80-9	Propanedioic acid, mono(γ-ω-perfluoro-C8-12-alkyl) derivs., bis[4-(ethenyloxy)butyl] esters
45187-15-3	Perfluorobutanesolfonate (reportable under TRI as of 1/1/22)
1078142-10-5	1,3-Propanediol, 2,2-bis[[(γ-ω-perfluoro-C6-12-alkyl)thio]methyl] derivs., polymers with 2,2-bis[[(γ-ω-perfluoro-C10-20-alkyl)thio]methyl]-1,3-propanediol, 1,6-diisocyanato-2,2,4(or 2,4,4)-trimethylhexane, 2-heptyl-3,4-bis(9-isocyanatononyl)-1-pentylcyclohexane and 2,2'-(methylimino)bis[ethanol]

Table 1 TURA/TRI PFAS Substances to Continue Reporting Individually, if more than 100 lbs/year used	
1078712-88-5	Thiols, C4-20, γ-ω-perfluoro, telomers with acrylamide and acrylic acid, sodium salts
1078715-61-3	1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-[2-[(γ-ω-perfluoro-C4-20-alkyl)thio]acetyl] derivs., inner salts
2728655-42-1	Alcohols, C8-16, γ-ω-perfluoro, reaction products with 1,6-diisocyanatohexane, glycidol and stearyl alc. (reportable under TRI as of 1/1/23)
2738952-61-7	Acetamide, N-[3-(dimethylamino)propyl]-, 2-[(γ-ω-perfluoro-C4-20-alkyl)thio] derivs. (reportable under TRI as of 1/1/23)
2744262-09-5	Acetic acid, 2-[(γ-ω-perfluoro-C4-20-alkyl)thio] derivs., 2-hydroxypropyl esters (reportable under TRI as of 1/1/23)
2742694-36-4	Acetamide, N-(2-aminoethyl)-, 2-[(γ-ω-perfluoro-C4-20-alkyl)thio] derivs., polymers with N1,N1-dimethyl-1,3-propanediamine, epichlorohydrin and ethylenediamine, oxidized (reportable under TRI as of 1/1/23)

The following PFAS in Table 2 were already individually reportable under TURA. Continue to report them at typical TURA reporting thresholds.

Table 2. PFAS Substances to continue reporting individually when exceeding normal reporting thresholds	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane
76-15-3	Chloropentafluoroethane
116-14-3	Tetrafluoroethylene
124-73-2	1,2-Dibromotetrafluoroethane
354-25-6	1-chloro-1,1,2,2-tetrafluoroethane
422-56-0	3,3-Dichloro-1,1,1,2,2-pentafluoropropane
507-55-1	1,3-Dichloro-1,1,2,2,3-pentafluoropropane
2837-89-0	2-Chloro-1,1,1,2-tetrafluoroethane

The following PFAS are reportable under the TURA C1-C4 Halogenated Hydrocarbons category. The substances shaded in gray at the bottom are **ALSO** reportable under the new Certain PFAS NOL TURA category. Report the chemicals in gray as **BOTH** C1-C4 Halogenated Hydrocarbons **AND** as Certain PFAS NOL for the substances in gray. Only one fee will be due.

Table 3. **PFAS Substances reportable under the TURA C1-C4 Halogenated Hydrocarbons category**	
76-16-4	*Pentafluoroethane*
76-17-5	*1,2,3-Trichloropentafluoropropane*
116-15-4	*Hexafluoropropene*
335-44-4	*2,2,3-Trichloroheptafluorobutane*
354-33-6	*Pentafluoroethane*
354-64-3	*pentafluoroiodoethane*
359-35-3	*1,1,2,2-Tetrafluoroethane*
360-89-4	*Perfluorobut-2-ene*
374-07-2	*1,1-Dichlorotetrafluoroethane*
382-10-5	*1,1-Bis(trifluoromethyl)ethene*
421-73-8	*1,1,1,2-Tetrafluoro-2-chloropropane*
431-31-2	*1,1,1,2,3-Pentafluoropropane*
431-63-0	*1,1,1,2,3,3-Hexafluoropropane*
431-89-0	*2H-Perfluoropropane*
677-69-0	*Heptafluoro-2-iodopropane*
690-39-1	*1,1,1,3,3,3-Hexafluoropropane*
754-12-1	*2,3,3,3-Tetrafluoropropene*
811-97-2	*1,1,1,2-Tetrafluoroethane*
1320-37-2	*Dichlorotetrafluoroethane*
2252-83-7	*1,2,3,3,3-Pentafluoropropene*
18599-20-7	*1,4-Dibromo-1,1,2,2-tetrafluorobutane*
18599-22-9	*2-Vinyl(1-bromoperfluoroethane)*
25398-32-7	*Ethene, 1,1,2,2-tetrafluoro-, telomer with 1,1,1,2,2-pentafluoro-2-iodoethane*
76-19-7	*Propane, 1,1,1,2,2,3,3,3-octafluoro-*
115-25-3	*Cyclobutane, 1,1,2,2,3,3,4,4-octafluoro-*
355-25-9	*Butane, 1,1,1,2,2,3,3,4,4,4-decafluoro-*
423-39-2	*Butane, 1,1,1,2,2,3,3,4,4-nonafluoro-4-iodo-*
754-34-7	*Propane, 1,1,1,2,2,3,3-heptafluoro-3-iodo-*

Table 4 is a list of PFAS that **are reported as part of the Certain PFAS NOL category**. Again, this list was generated from PFAS that are known to be in commerce, primarily from the Toxic Substances Control Act (TSCA). This list is **NOT** exhaustive.

Substances in gray TRI has listed for reporting years 2024 at 100 lb/year threshold.
Seven new PFAS were added to the Toxics Release Inventory (TRI) list, with a 100-pound reporting threshold, for TRI reporting year 2024 (for TRI reports due July 1, 2025). The TURA Administrative Council added these seven new PFAS to the TURA chemical list for reporting year **2025 (for reports due July 1, 2026)**. Until then, four of these PFAS should be reported under the TURA Certain PFAS NOL Category for reporting year 2024. (Only four of these seven meet the TURA Certain PFAS NOL definition and these four are shaded in gray at the end of Table 4.)

Table 4 ***PFAS Substances Known to be in Commerce that are Reported as part of the Certain PFAS NOL Category***	
306-91-2	*Phenanthrene, 1,1,2,2,3,3,4,4,4a,4b,5,5,6,6,7,7,8,8,8a,9,9,10,10,10a-tetracosafluorotetradecahydro-*
306-94-5	Naphthalene, 1,1,2,2,3,3,4,4,4a,5,5,6,6,7,7,8,8,8a-octadecafluorodecahydro-
307-24-4	Hexanoic acid, 2,2,3,3,4,4,5,5,6,6,6-undecafluoro-
307-30-2	1-Octanol, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-
307-34-6	Octane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-octadecafluoro-
307-60-8	Dodecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12-pentacosafluoro-12-iodo-
307-63-1	Tetradecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14-nonacosafluoro-14-iodo-
307-70-0	1-Undecanol, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11-eicosafluoro-
307-98-2	2-Propenoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl ester
311-89-7	1-Butanamine, 1,1,2,2,3,3,4,4,4-nonafluoro-N,N-bis(1,1,2,2,3,3,4,4,4-nonafluorobutyl)-
335-27-3	Cyclohexane, 1,1,2,2,3,3,4,5,5,6-decafluoro-4,6-bis(trifluoromethyl)-
335-36-4	Cyclohexane, 1,1,2,2,3,3,4,5,5,6-decafluoro-4,6-bis(trifluoromethyl)-
335-42-2	Furan, 2,2,3,3,4,4,5-heptafluorotetrahydro-5-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)-
335-57-9	Butanoyl fluoride, 2,2,3,3,4,4,4-heptafluoro-
336-08-3	Heptane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-hexadecafluoro-
336-59-4	Hexanedioic acid, 2,2,3,3,4,4,5,5-octafluoro-
338-83-0	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-, 1,1'-anhydride
338-84-1	1-Propanamine, 1,1,2,2,3,3,3-heptafluoro-N,N-bis(1,1,2,2,3,3,3-heptafluoropropyl)-
355-02-2	Cyclohexane, 1,1,2,2,3,3,4,4,5,5,6-undecafluoro-6-(trifluoromethyl)-
355-38-4	Hexanoyl fluoride, 2,2,3,3,4,4,5,5,6,6,6-undecafluoro-
355-42-0	Hexane, 1,1,1,2,2,3,3,4,4,5,5,6,6,6-tetradecafluoro-
355-43-1	Hexane, 1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluoro-6-iodo-
355-50-0	Hexadecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16-tritriacontafluoro-16-iodo-
355-80-6	1-Pentanol, 2,2,3,3,4,4,5,5-octafluoro-
356-24-1	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-, methyl ester
356-27-4	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-, ethyl ester
375-00-8	Butanenitrile, 2,2,3,3,4,4,4-heptafluoro-
375-01-9	1-Butanol, 2,2,3,3,4,4,4-heptafluoro-
375-03-1	Propane, 1,1,1,2,2,3,3-heptafluoro-3-methoxy-
375-16-6	Butanoyl chloride, 2,2,3,3,4,4,4-heptafluoro-
375-22-4	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-
375-62-2	Pentanoyl fluoride, 2,2,3,3,4,4,5,5,5-nonafluoro-
375-72-4	1-Butanesulfonyl fluoride, 1,1,2,2,3,3,4,4,4-nonafluoro-
375-84-8	Heptanoyl fluoride, 2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoro-

Table 4 *PFAS Substances Known to be in Commerce that are Reported as part of the Certain PFAS NOL Category*	
375-85-9	Heptanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoro-
375-88-2	Heptane, 1-bromo-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-
376-73-8	Pentanedioic acid, 2,2,3,3,4,4-hexafluoro-
376-90-9	1,5-Pentanediol, 2,2,3,3,4,4-hexafluoro-
377-73-1	Perfluoro-3-methoxypropanoic acid
382-28-5	Morpholine, 2,2,3,3,5,5,6,6-octafluoro-4-(trifluoromethyl)-
423-62-1	Decane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-heneicosafluoro-10-iodo-
425-38-7	Propanoyl fluoride, 2,2,3,3-tetrafluoro-3-(trifluoromethoxy)-
428-59-1	Trifluoro(trifluoromethyl)oxirane
559-40-0	Cyclopentene, 1,2,3,3,4,4,5,5-octafluoro-
647-42-7	1-Octanol, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-
678-26-2	Pentane, 1,1,1,2,2,3,3,4,4,5,5,5-dodecafluoro-
756-12-7	2-Butanone, 1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)-
756-13-8	3-Pentanone, 1,1,1,2,2,4,5,5,5-nonafluoro-4-(trifluoromethyl)-
773-14-8	Furan, 2,2,3,3,4,4,5,5-octafluorotetrahydro-
813-44-5	Bis(perfluoroisopropyl)ketone
813-45-6	3-Hexanone, 1,1,1,2,4,4,5,5,6,6,6-undecafluoro-2-(trifluoromethyl)-
1547-26-8	1-Pentene, 2,3,3,4,4,5,5-heptafluoro-
1623-05-8	Propane, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]-
1682-78-6	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-(1,1,2,2,2-pentafluoroethoxy)-
1805-22-7	Perfluoromethylcyclopentane
1187-93-5	Trifluoromethyl trifluorovinyl ether
1892-03-1	Cyclopentene, 1,3,3,4,4,5,5-heptafluoro-
2043-47-2	1-Hexanol, 3,3,4,4,5,5,6,6,6-nonafluoro-
2043-55-2	Hexane, 1,1,1,2,2,3,3,4,4-nonafluoro-6-iodo-
2043-57-4	Octane, 1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluoro-8-iodo-
2062-98-8	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-
2144-53-8	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl ester
2218-54-4	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-, sodium salt (1:1)
2641-34-1	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-[1,1,2,3,3,3-hexafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propoxy]-
2706-90-3	Pentanoic acid, 2,2,3,3,4,4,5,5,5-nonafluoro-
2927-83-5	2,3,3,3-Tetrafluoro-2-(trifluoromethoxy)propionyl fluoride
2994-71-0	Cyclobutane, 1,1,2,2,3,4-hexafluoro-3,4-bis(trifluoromethyl)-
3108-42-7	Ammonium perfluorodecanoate
3330-14-1	Propane, 1-[1-[difluoro(1,2,2,2-tetrafluoroethoxy)methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2,3,3,3-heptafluoro-
3330-15-2	Perfluoro-3-(1H-perfluoroethoxy)propane
3330-16-3	2H-Perfluoro(5,8-dimethyl-3,6,9-trioxadodecane)
3794-64-7	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-, silver(1+) salt (1:1)
3830-45-3	Sodium perfluorodecanoate
3934-23-4	2-Propenoic acid, 2-methyl-, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl ester
4089-58-1	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-[1,1,2,3,3,3-hexafluoro-2-[1,1,2,2-tetrafluoro-2-(fluorosulfonyl)ethoxy]propoxy]-
6130-43-4	Heptanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoro-, ammonium salt (1:1)
6588-63-2	Cyclohexanecarbonyl fluoride, 1,2,2,3,3,4,4,5,5,6,6-undecafluoro-
9002-84-0	Polytetrafluoroethylene
9011-17-0	Poly(vinylidene fluoride-co-hexafluoropropylene)
10493-43-3	Ethene, 1,1,2-trifluoro-2-(1,1,2,2,2-pentafluoroethoxy)-
13221-71-1	Hexafluoro-1,3-bis(trifluoromethyl)cyclobutane

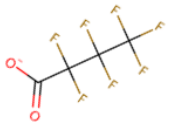
Table 4 *PFAS Substances Known to be in Commerce that are Reported as part of the Certain PFAS NOL Category*	
13429-24-8	1-Propene, 1,1,2,3,3,3-hexafluoro-, dimer
13695-31-3	2-Propenoic acid, 2-methyl-, 2,2,3,3,4,4,4-heptafluorobutyl ester
15290-77-4	Cyclopentane, 1,1,2,2,3,3,4-heptafluoro-
16090-14-5	Ethanesulfonyl fluoride, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-
17527-29-6	2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl ester
17631-68-4	Europium, tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionato-βO3,βO5)-
17978-77-7	Praseodymium, tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionato-βO3,βO5)-
19430-93-4	1-Hexene, 3,3,4,4,5,5,6,6,6-nonafluoro-
20006-68-2	Dichloro-3-(perfluoro-2-propoxy)propylmethylsilane
21615-47-4	Hexanoic acid, 2,2,3,3,4,4,5,5,6,6,6-undecafluoro-, ammonium salt (1:1)
24520-19-2	Pentafluoro(1,2,2-trifluoro-2-((trifluorovinyl)oxy)-1-(trifluoromethyl)ethoxy)benzene
25038-02-2	Fomblin Y 04
25038-71-5	poly(1,1,2,2-tetrafluorobutane-1,4-diyl)
25067-11-2	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1,2,2-tetrafluoroethene
25190-89-0	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene and 1,1,2,2-tetrafluoroethene
25291-17-2	1-Octene, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-
25684-76-8	Ethene, 1,1,2,2-tetrafluoro-, polymer with 1,1-difluoroethene
26425-79-6	Ethene, 1,1,2,2-tetrafluoro-, polymer with 1,2,2-trifluoro-2-(trifluoromethoxy)ethene
26650-09-9	Thiocyanic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl ester
26654-97-7	Ethanesulfonyl fluoride, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene
26655-00-5	Propane, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]-, polymer with 1,1,2,2-tetrafluoroethene
26655-00-5	Perfluoroalkoxy alkanes (PFA)
26658-70-8	Benzene, pentafluoro[1,2,2-trifluoro-2-[(trifluoroethenyl)oxy]-1-(trifluoromethyl)ethoxy]-, polymer with tetrafluoroethene and trifluoro(trifluoromethoxy)ethene
26738-51-2	3,6,9,12-Tetraoxapentadecane, 1,1,1,2,4,4,5,7,7,8,10,10,11,13,13,14,14,15,15,15-eicosafluoro-5,8,11-tris(trifluoromethyl)-
26779-98-6	Propanoic acid, ethenyl ester, polymer with 1,1-difluoroethene and 1,1,2,2-tetrafluoroethene
27029-05-6	1-Propene, polymer with 1,1,2,2-tetrafluoroethene
27619-88-1	1-Hexanesulfonyl chloride, 3,3,4,4,5,5,6,6,6-nonafluoro-
27619-89-2	1-Octanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-
27619-94-9	6:2 Fluorotelomer sulfonate sodium salt
27619-97-2	1-Octanesulfonic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-
29809-34-5	Eicosane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,19,19,20,20-hentetracontafluoro-20-iodo-
29809-35-6	Octadecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18-heptatriacontafluoro-18-iodo-
31175-20-9	Ethanesulfonic acid, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene
34454-97-2	1-Butanesulfonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-N-methyl-
34455-29-3	1-Propanaminium, N-(carboxymethyl)-N,N-dimethyl-3-[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulfonyl]amino]-, inner salt
34788-82-4	Europium, tris[3-[2,2,3,3,4,4,4-heptafluoro-1-(oxo-βO)butyl]-1,7,7-trimethylbicyclo[2.2.1]heptan-2-onato-βO]-
35397-13-8	Propane, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]-, polymer with 1-chloro-1,2,2-trifluoroethene and ethene

Table 4 *PFAS Substances Known to be in Commerce that are Reported as part of the Certain PFAS NOL Category*	
35560-16-8	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with ethene and 1,1,2,2-tetrafluoroethene
37486-69-4	3,6,9,12,15-Pentaoxaoctadecane, 1,1,1,2,4,4,5,7,7,8,10,10,11,13,13,14,16,16,17,17,18,18,18-tricosafluoro-5,8,11,14-tetrakis(trifluoromethyl)-
37626-13-4	Poly[4,5-difluoro-2,2-bis(trifluoromethyl)-1,3-dioxole-co-tetrafluoroethylene]
38565-52-5	Oxirane, 2-(2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoroheptyl)-
42532-60-5	2,3,3,3-Tetrafluoro-2-(trifluoromethyl)propanenitrile
51798-33-5	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], α-(1-carboxy-1,2,2,2-tetrafluoroethyl)-ω-[tetrafluoro(trifluoromethyl)ethoxy]-
51851-37-7	Silane, triethoxy(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-
52591-27-2	2-Propenoic acid, 3,3,4,4,5,5,6,6,6-nonafluorohexyl ester
53518-00-6	1-Propanaminium, N,N,N-trimethyl-3-[[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]-, chloride (1:1)
54302-04-4	Chlorotrifluoro ethylene, ethylene, hexafluoroisobutylene terpolymer
54950-05-9	Butanedioic acid, 2-sulfo-, 1,4-bis(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) ester, sodium salt (1:1)
55716-11-5	Morpholine, 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,2,2,2-pentafluoroethyl)-
56357-87-0	Ethene, 1,1,2,2-tetrafluoro-, polymer with 1,1-difluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
56467-05-1	Poly(oxy-1,2-ethanediyl), α-(tridecafluorohexyl)-ω-hydroxy-
57570-64-6	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene, 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
58194-00-6	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-
59587-38-1	6:2 Fluorotelomer sulfonate potassium salt
59587-39-2	6:2 Fluorotelomer sulfonate ammonium salt
60164-51-4	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], α-(1,1,2,2,2-pentafluoroethyl)-ω-[tetrafluoro(trifluoromethyl)ethoxy]-
63654-41-1	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propane and 1,1,2,2-tetrafluoroethene
63863-43-4	Propanoic acid, 3-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, methyl ester
63863-44-5	Propanoic acid, 3-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, methyl ester, polymer with 1,1,2,2-tetrafluoroethene
65059-79-2	1-Butene, 4-bromo-3,3,4,4-tetrafluoro-, polymer with 1,1-difluoroethene, 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
65208-35-7	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-[1,2,2,2-tetrafluoro-1-(fluorocarbonyl)ethyl]-.omega.-[tetrafluoro(trifluoromethyl)ethoxy]-
65530-82-7	Poly(difluoromethylene), alpha,omega-difluoro-
65530-85-0	Poly(difluoromethylene), .alpha.-(cyclohexylmethyl)-.omega.-hydro-
67584-51-4	Glycine, N-ethyl-N-[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]-, potassium salt (1:1)
67584-55-8	2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester
67584-59-2	2-Propenoic acid, 2-methyl-, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester
67939-95-1	1-Propanaminium, N,N,N-trimethyl-3-[[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]-, iodide (1:1)
68182-34-3	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propane and 1,1,2,2-tetrafluoroethene
68258-85-5	1-Hexene, 3,3,4,4,5,5,6,6,6-nonafluoro-, polymer with ethene and 1,1,2,2-tetrafluoroethene
68259-10-9	1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, ammonium salt (1:1)
68259-11-0	Pentanoic acid, 2,2,3,3,4,4,5,5,5-nonafluoro-, ammonium salt (1:1)
68298-12-4	1-Butanesulfonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-
68298-79-3	Poly(oxy-1,2-ethanediyl), α-[2-[ethyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl]-ω-hydroxy-

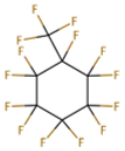
Table 4 *PFAS Substances Known to be in Commerce that are Reported as part of the Certain PFAS NOL Category*	
68310-18-9	Poly[oxy(methyl-1,2-ethanediyl)], α-[2-[ethyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl]-ω-hydroxy-
68555-77-1	1-Butanesulfonamide, N-[3-(dimethylamino)propyl]-1,1,2,2,3,3,4,4,4-nonafluoro-
68891-05-4	Ethene, tetrafluoro-, homopolymer, α-fluoro-ω-(2-hydroxyethyl)-, citrate, reaction products with 1,6-diisocyanatohexane
69087-47-4	Propanoic acid, 3-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene
69116-73-0	Propanoic acid, 3-[1-[difluoro[1,2,2,2-tetrafluoro-1-(fluorocarbonyl)ethoxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, methyl ester
69804-19-9	Perfluoro(3-(1-(ethenyloxy)propan-2-yloxy)propanenitrile)
69991-61-3	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd.
69991-62-4	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced
69991-67-9	1-Propene, 1,1,2,3,3,3-hexafluoro-, oxidized, polymd.
70225-18-2	1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)
71832-66-1	Propanenitrile, 3-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
74398-72-4	1-Butene, 4-bromo-3,3,4,4-tetrafluoro-, polymer with 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene and 1,1,2,2-tetrafluoroethene
74499-71-1	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with ethene, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propane and 1,1,2,2-tetrafluoroethene
79070-11-4	Poly(difluoromethylene), α-chloro-ω-(2,2-dichloro-1,1,2-trifluoroethyl)-
86508-42-1	Perfluoro compounds, C5-18
88645-29-8	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced, Me esters, reduced
101316-90-9	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced, Me esters, reduced, acrylates
125061-94-1	Naphthalene, [difluoro(1,2,2,3,3,4,4,5,5,6,6-undecafluorocyclohexyl)methyl]heptadecafluorodecahydro-
126066-30-6	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], α-[1,2,2,2-tetrafluoro-1-(hydroxymethyl)ethyl]-ω-[tetrafluoro(trifluoromethyl)ethoxy]-
132182-92-4	Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-
134035-61-3	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], α-[1,2,2,2-tetrafluoro-1-(methoxycarbonyl)ethyl]-ω-[tetrafluoro(trifluoromethyl)ethoxy]-
147545-41-3	1-Butanesulfonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-N-methyl-, phosphate (ester)
149935-01-3	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene, ethene, 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
156559-18-1	2-Oxiranemethanol, polymers with reduced Me esters of reduced polymd. oxidized tetrafluoroethylene
161075-12-3	Ethene, tetrafluoro-, oxidized, polymd., reduced, Me esters
162492-15-1	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced, Me esters, reduced, ethoxylated
163702-05-4	Butane, 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-
163702-06-5	Propane, 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoro-
163702-07-6	Butane, 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-
163702-08-7	Propane, 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoro-
165178-32-5	Propane, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]-, polymer with 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
177484-43-4	Propanenitrile, 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3-hexafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propoxy]-, polymer with 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
185701-88-6	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-[1,1,2,3,3,3-hexafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propoxy]-, polymer with 2,2,3-trifluoro-3-(trifluoromethyl)oxirane, reaction products with 3-(ethenyldimethylsilyl)-N-methylbenzenamine
200013-65-6	Diphosphoric acid, polymers with ethoxylated reduced Me esters of reduced polymd. oxidized tetrafluoroethylene

Table 4 *PFAS Substances Known to be in Commerce that are Reported as part of the Certain PFAS NOL Category*	
212335-64-3	2-Propenoic acid, reaction products with N-[3-(dimethylamino)propyl]-1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonamide
220075-01-4	Propanedioic acid, 2-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-, 1,3-dimethyl ester
220182-27-4	1-Propene, 1,1,2,3,3,3-hexafluoro-, telomer with chlorotrifluoroethene, oxidized, reduced, Et ester, hydrolyzed
220459-70-1	Glycine, N,N-bis[2-hydroxy-3-(2-propen-1-yloxy)propyl]-, sodium salt (1:1), reaction products with ammonium hydroxide and 1,1,1,2,2-pentafluoro-2-iodoethane-tetrafluoroethylene telomer
220689-12-3	Phosphonium, tetrabutyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)
226409-30-9	Propanedioic acid, 2-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-, 1,3-bis[4-(ethenyloxy)butyl] ester
274917-93-0	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C3 fraction
274917-94-1	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C4 fraction
274917-95-2	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C5 fraction
274917-96-3	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C6 fraction
274917-97-4	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C7 fraction
274918-01-3	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C8 fraction
274918-02-4	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C9 fraction
274918-03-5	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C10 fraction
274918-09-1	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C11 fraction
274918-10-4	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C12 fraction
274918-12-6	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C13 fraction
297730-93-9	Hexane, 3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-
328389-90-8	1,2-Propanediol, 3-(diethylamino)-, polymers with 5-isocyanato-1
332350-90-0	Phosphonium, tributyl(2-methoxypropyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-1-butanesulfonamide (1:1)
332350-93-3	Phosphonium, triphenyl(phenylmethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-1-butanesulfonamide (1:1)
421595-49-5	2-Propenoic acid, 2-hydroxyethyl ester, adduct with 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane (1:1), reaction products with ethoxylated reduced Me esters of reduced polymd. oxidized tetrafluoroethylene
425670-75-3	6:2 Fluorotelomer sulfonate anion
452080-67-0	Boron, trifluoro(tetrahydrofuran)-, (T-4)-, polymer with 3-methyl
475678-78-5	Oxetane, 3-methyl-3-[[(3,3,4,4,5,5,6,6,6-nonafluorohexyl)oxy]methyl]-
484024-67-1	1-Butanesulfonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-, ammonium salt (1:1)
502164-17-2	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced, Et esters
753501-40-5	Boron, trifluoro(tetrahydrofuran)-, (T-4)-, polymer with 3-methyl-3-[(
753501-43-8	Boron, trifluoro(tetrahydrofuran)-, (T-4)-, polymer with .alpha.-hy
864910-70-3	Boron, trifluoro(tetrahydrofuran)-, (T-4)-, polymer with 2-methy
878545-84-7	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1,2,2-tetrafluoroethene, 1,1,2-trifluoro-2-(1,1,2,2,2-pentafluoroethoxy)ethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
957209-18-6	Furan, 2,3,3,4,4-pentafluorotetrahydro-5-methoxy-2,5-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-
1224429-82-6	Phosphoric acid, mixed esters with polyethylene glycol and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-1-octanol, ammonium salts
1370442-66-2	Iodonium, diphenyl-, 4,4'-di-C10-13-alkyl derivs., (OC-6-11)-hexafluoroantimonates(1-)
1092822-31-5	2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with 2-hyd
1269217-82-4	Thieno[3,4-b]thiophene, homopolymer, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoroethanesulfonic acid-tetrafluoroethylene polymer-doped
1279108-20-1	Hexane, 1,6-diisocyanato-, homopolymer, α-[1-[[[3-[[3-(dimethylamino)propyl]amino]propyl]amino]carbonyl]-1,2,2,2-tetrafluoroethyl]-ω-(1,1,2,2,3,3,3-heptafluoropropoxy)poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]]-blocked

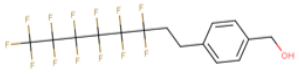
Table 4 *PFAS Substances Known to be in Commerce that are Reported as part of the Certain PFAS NOL Category*	
1029089-63-1	Boron, trifluoro(tetrahydrofuran)-, (T-4)-, polymer with 3-methyl-3-((2,2,3,3,3-pentafluoropropoxy)methyl)oxetane, ether with 2,2-dimethyl-1,3-propanediol (2:1), polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl) and 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane
1033385-42-0	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], α-[1,2,2,2-tetrafluoro-1-[[(2-hydroxyethyl)amino]carbonyl]ethyl]-ω-[tetrafluoro(trifluoromethyl)ethoxy]-, ether with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (2:1)
1214752-87-0	Borate(1-), tetrahydro-, sodium (1:1), reaction products with reduced polymd. oxidized tetrafluoroethylene, hydrolyzed, diallyl ethers, polymers with 2,4,6,8-tetramethylcyclotetrasiloxane, Si-(8,13-dioxo-4,7,12-trioxa-9-azapentadec-14-en-1-yl) derivs.
1378928-76-7	Ethanesulfonyl fluoride, 2-[1-[difluoro][(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene, hydrolyzed, potassium salts
1378930-04-1	Ethanesulfonyl fluoride, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene, hydrolyzed
1378930-30-3	Propanoic acid, 3-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, methyl ester, polymer with 1,1,2,2-tetrafluoroethene, hydrolyzed, potassium salts
1564254-27-8	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced, Me esters, reduced, N-(3-isocyanatomethylphenyl)carbamates
1627515-87-0	Hexanedioic acid, polymers with 1,3-butanediol, 1,4-butanediol, di-Et malonate, 1,6-diisocyanatohexane, ethoxylated reduced Me esters of reduced polymd. oxidized tetrafluoroethylene, 1,6-hexanediol, 1,1'-methylenebis[isocyanatobenzene], propylene glycol a
1687740-67-5	Ethanesulfonyl fluoride, 1,1,2,2-tetrafluoro-2-[(1,2,2-trifluoroethenyl)oxy]-, polymer with 1,1,2,2-tetrafluoroethene, hydrolyzed, lithium salts
1708962-18-8	Methanol, reaction products with 1,1,1,2,2,3,4,5,5,6,6,7,7,7-tetradecafluoro-3-heptene
1708962-19-9	Methanol, reaction products with 1,1,1,2,3,4,4,5,5,6,6,7,7,7-tetradecafluoro-2-heptene
1807944-82-6	1-Octanesulfonic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-, barium salt (2:1)
3030471-22-5	Acetic acid, [(γ-ω-perfluoro-C8-10-alkyl)thio] derivs., Bu esters
NA	EFEP ethylene-tetrafluoroethylene-hexafluoropropylene terpolymer
307-24-4	Perfluorohexanoic acid (PFHxA) (reportable under TRI as of 1/1/24)
2923-26-4	Sodium perfluorohexanoate (reportable under TRI as of 1/1/24)
21615-47-4	Ammonium perfluorohexanoate (reportable under TRI as of 1/1/24)
2816091-53-7	Betaines, dimethyl(.gamma.-.omega.-perfluoro-.gamma.-hydro-C8-18-alkyl) (reportable under TRI as of 1/1/24)



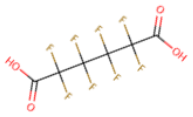
PFBA [375-22-4] *three contiguous perfluorinated carbons*



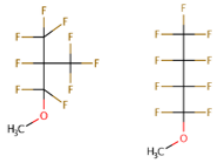
Perfluoromethylcyclohexane [355-02-2] *cyclic perfluorinated ring*



4-((Perfluorohexyl)ethyl)phenylmethanol [356055-76-0] *six perfluorinated carbon alkyl chain with benzene ring as functional group*

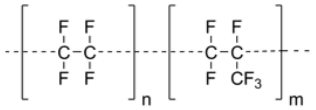


Perfluorohexanedioic acid [336-08-3] *four perfluorinated carbon alkyl chain*

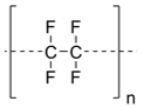


HFE (hydrofluoroether) 7100 [mixture of 163702-08-7 & 163702-07-6] *each component has ≥ 3 perfluorinated carbon alkyl chain*

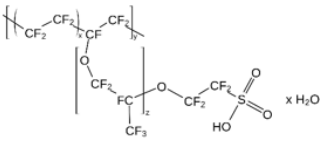
Examples of PFAS included in TURA Certain PFAS NOL Category



FEP Fluorinated ethylene propylene polymer [25067-11-2] *polymer with repeating units that include 3 contiguous perfluorinated carbons*

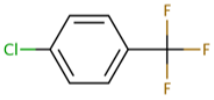


PTFE [9002-84-0] polymer - *perfluorinated carbon repeating chain*



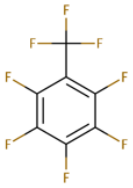
Nafion [31175-20-9] tetrafluoroethylene copolymer with sulfonic acid side chains - *≥ 3 contiguous perfluorinated carbons*

PVDF [24937-79-9] poyvinylidene fluoride - *alternating perfluorinated and non-fluorinated carbons, <3 contiguous perfluorinated carbons in polymer chain*



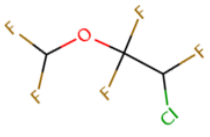
PCBTF [98-56-6] Parachlorobenzotrifluoride - *only one perfluorinated carbon*

Examples of PFAS NOT included in TURA Certain PFAS NOL Category



Octafluorotoluene [434-64-0] *only one perfluorinated carbon in alkyl chain. Fluorinated phenyl rings are not alkyl*

HFC 4310mee [138495-42-8] 2H,3H-Decafluoropentane *has 3 perfluorinated carbons but not contiguous*



Enflurane [13838-16-9] 2-chloro-1,1,2-trifluoroethyl difluoromethyl ether – is a *fluorinated ether, but carbon on left of O is not perfluorinated (H bonded to C)*

Guidance for TURA Reporting and Planning for Certain Metals and Metal Alloys

An alloy is a mixture of two or more metals or one or more metals and a nonmetal, as in carbon steel.

Effective reporting year 1995, the TURA Administrative Council delisted certain metals when present in a solid or molten alloy, but not including aerosols. The metals are:

Copper
Nickel
Chromium
Cobalt
Manganese

Effective beginning in reporting year 1998, the TURA Administrative Council delisted silver-copper mixture when present in an alloy form, but not in aerosols.

The established definition of an "alloy" requires that metals mixed with the primary metal must be intentionally added to improve its properties. A metallic substance that is pure or contains other metals as impurities is not considered an alloy. Consequently, the two Administrative Council delistings did not cover copper and silver that are pure or that contains small amounts of impurities described above.

Effective reporting year 1999, however, the Administrative Council delisted pure (i.e., zero valance) copper and pure silver (including forms containing impurities), but not including aerosols.

The delisting for all metals described above **DO NOT** extend to aerosols, dissolved metals, metal compounds, or metals that are not zero valence throughout the entire production process. Note that aerosols are metal particles that are less than 50 microns in diameter.

These metals have not been delisted from the EPCRATRI List. Although delisting by the TURA Administrative Council means that no Toxics Use Report need be submitted, the federal Form R is still required by EPA. The federal Form R submitted to MassDEP should be identified as "federal only."

Guidance

Questions have been raised regarding implementation of these delistings. This guidance has been produced to assist the regulated community in complying with TURA. If you have any remaining questions after reading this document, please contact MassDEP for compliance assistance or the Office of Technical Assistance for further information.

The delisted metals are copper, nickel, chromium, cobalt, manganese and silver. Some of the processes in which those metals might be used are described below with specific guidance.

- Etching processes – When a metal is removed from metal stock through chemical processing, the resultant metal salt is reportable if it is produced in threshold quantities. (In this case, the metal salt is "coincidentally manufactured.") The 25,000-pound threshold would apply if the metal salt were the only reportable chemical. It should be noted that the entire weight of the metal salt is considered when determining whether a threshold has been met, and not just the amount of the metal in the salt. As for the stock itself, any delisted metals contained in it are not reportable.

- Electropolishing operations - The metal salts in solution are reportable as "coincidentally manufactured" if they are produced in threshold quantities. Any delisted metals contained in the stock are not reportable.

- Grinding Operations - The delisted metals are not exempt from reporting when contained in aerosols, i.e., particles less than 50 microns in diameter (in this case, the metal is reported as "processed"). These metals are reportable if they are present in threshold quantities. When determining whether the reporting threshold has been exceeded, only the weight of the listed metal in the aerosol is considered, and not the total weight of the aerosol. Any delisted metals contained in the stock are not reportable.

- Multiple processes - In production units with multiple processes, certain individual processes may produce metal aerosols or metal salts in solution. Those aerosols and metal salts in solution would be reportable if produced in threshold quantities, as described above.

- Alloys in powdered form - If a metal is used in the powdered form, the facility will need to perform a particle size analysis to determine the amount of material less than 50 microns in size. If threshold quantities are produced, the metals are reportable if they are present in particles less than 50 microns in size. When determining whether the reporting threshold has been exceeded, only the weight of the listed metal is considered, and not the total weight of particles.

Note: MassDEP's "Expanded Article" exemption is no longer applicable, since it applied to metals that have been delisted under TURA.

Difference in TRI and TURA Reporting of Hydrochloric Acid and Sulfuric Acid

- A qualifier was added to **hydrochloric acid (CAS No. 7647-01-0)** on the EPCRA list that relieves TRI reporting for non-aerosol forms, effective reporting year 1996. A similar qualifier was added for **sulfuric acid (CAS No. 7664-93-9)** effective reporting year 1995. TRI reporting only is required for acid aerosols including mists, gas, vapors, fog, and other airborne forms of any particle size. **This qualifier is only applicable to EPCRA Form Resubmissions**.

- Since this chemical is also on the CERCLA list, **all forms (both aerosol and non-aerosol) are reportable under TURA**. A "State-Only" Form R must be submitted with the Form S for these acids**,** in addition to the Form R submitted to EPA for only acid aerosols.

- For additional assistance on calculating and reporting sulfuric acid,please refer to the following EPA document: Sulfuric Acid: EPA-745-R-97-007 (11/97) Guidance for Reporting Sulfuric Acid (acid aerosols including mists, vapors, gas, fog and other forms of any particle size). This document is available from the EPA EPCRA Hotline 1-800-535-0202 and can be downloaded off the EPA TRI home page at http://www.epa.gov/tri/.

Rules for Reporting Glycol Ethers

There are separate categories for glycol ethers defined under EPCRA and CERCLA.
(Please refer to the TRI guidance document, "List of Toxic Chemicals within the Glycol Ethers Category and Guidance for Reporting," EPA 745-R-00-004.)

Reporting Guidance

EPCRA: Glycol Ethers are reportable as the glycol ethers category, (1022). The glycol ethers category is defined by the following formula:

R - (OCH2CH2)n - OR'

where:

n = 1, 2, or 3;
R = Alkyl C7 or less, or phenyl or alkyl substituted phenyl;
R' = H or alkyl C7 or less, or
OR' consisting of a carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate.

Chemicals that meet this category definition are reportable.

Individually Listed Glycol Ethers
There are two chemicals, 2-methoxyethanol (CAS number 109-86-4) and 2-ethoxyethanol (CAS number 110-80-5) that are on the individual chemical list and CAS number list (40 CFR 372.65(a) and (b)). Threshold determinations should be made for each of these chemicals individually and separately from the glycol ethers category.

CERCLA: Glycol Ethers are reportable under CERCLA as defined by the following chemical formula:

Includes mono and di-ethers of ethylene glycol, diethylene glycol, and triethylene glycol R-(OCH2CH2)n-OR' where:

-n= 1, 2, or 3.
-R= alkyl or aryl groups.
-R'= R, H, or groups which, when removed, yield glycol ethers with the structure: R-(OCH2CH2)n-OH. Polymers areexcluded from the glycol category.

Any glycol ether that meets the CERCLA definition only is reportable if it is specifically named on the TURA list. If glycol ether meets both the EPCRA and the CERCLA definitions, it is reportable under the EPCRA category (N230).

Rules for Reporting Specifically Listed Chemicals vs. Chemical Categories

The table below summarizes how to report chemicals that are specifically listed and/or listed as chemical categories. Descriptions of specific reporting requirements for each row follow the table.

Row No.	EPCRA or TURA Specific Chemical	EPCRA or TURA Category	CERCLA Specific Chemical	CERCLA Category	TURA NOL Category	Report as:
7		Yes			Yes	EPCRA or TURA Category
8			Yes		Yes	CERCLA Specific Chemical
9			Yes	Yes		CERCLA Specific Chemical
10				Yes		Do Not Report
11				Yes	Yes	TURA NOL category
12					Yes	TURA NOL category

Rows 1, 2 & 3:
If a specific chemical is an EPCRA/TURA chemical and it also is reportable under either an EPCRA/TURA, CERCLA, or a TURA NOL listed category, it should be reported **only as a specific EPCRA/TURA chemical, and not under any of the categories.**

✓Examples

EPCRA category (Compounds), EPCRA specifically listed
Report as: EPCRA specific chemical (Hydrogen Cyanide)

1,2,4 Trichlorobenzene: EPCRA specifically listed, CERCLA category (Chlorinated Benzenes)
Report as: EPCRA specific chemical (1,2,4 Trichlorobenzene)

Chloroform: EPCRA specifically listed chemical, TURA NOL Category (C1-C4)
Report as: EPCRA specific chemical (Chloroform)

Row 4:
Chemicals falling under an EPCRA or TURA chemical category or categories that are not specifically listed under EPCRA, TURA or CERCLA should be reported under the EPCRA chemical category or categories.

✓Example: Silver Nitrate, Reporting Two Competing Compound Classes

If you are reporting Silver Nitrate, you need to report under both the Silver Compounds and Nitrate Compounds categories.

∗ **Report the SAME weight for Silver Compounds and Nitrate Compounds use (total weight of the compound) on EACH Form S.**

∗ For Byproduct and Shipped in Product tracking, report ONLY the weight of the reportable constituent for each category.

∗ In Section 2 of each Form S, enter the weight of the chemical compound that is not the reportable constituent in d.

∗ Even though two separate Form S's will be filed for Silver Compounds and Nitrate Compounds, **only ONE TURA fee for both chemicals is paid**. (Example Form S's are shown below for a facility that processes 26,000 pounds of silver nitrate and generates 1,000 pounds of silver nitrate byproduct.)

✓Form S Example:

Section 1: Facility-Wide Use of Listed Chemical

1037	Silver Compounds
a. CAS #	b. Chemical Name (Dioxin should be in grams, decimal points may be used)

Facility-wide use of chemical identified in a. Enter the total amount (in POUNDS, except for dioxin) for each applicable category. NOTE: "Generated as byproduct" (item f.) means all waste containing the listed chemical before the waste is handled, transferred, treated, recycled or released. Please refer to the reporting instructions before completing this section.

c. Manufactured	26,000 d. Processed
e. Otherwise used	635 f. Generated as Byproduct
15,875 g. Shipped in or as product	1.05 h. Production or Activity Ratio

Section 2: Materials Balance

When the amounts reported in c, d and e in Section 1 are added together, the sum will in many cases equal the sum of f and g. In other words, lines c, d and e will often form a "materials balance." If lines c, d and e are not in approximate balance, you must use this section to explain why. Indicate all the reasons that apply by entering the number of pounds on the appropriate line below (e.g., 4,000 Chemical was held in inventory).

a. Chemical was recycled on site

b. Chemical was consumed or transformed

c. Chemical was held in inventory

9,490
d. Chemical is a compound

e. Other (explain below)

f. Did anything non-routine occur at your facility during the reporting year which affected the data reported?
☐ Yes* ☐ No *If your answer is Yes, you may explain in Section 4.l. on Page 3.

Section 1: Facility-Wide Use of Listed Chemical

1090
a. CAS #

Nitrate Compounds
b. Chemical Name (Dioxin should be in grams, decimal points may be used)

Facility-wide use of chemical identified in a. Enter the total amount (in POUNDS, except for dioxin) for each applicable category. **NOTE:** 'Generated as byproduct' (item f.) generally means all waste containing the listed chemical before the waste is handled, transferred, treated, recycled or released. Please refer to the reporting instructions before completing this section.

c. Manufactured

26,000
d. Processed

e. Otherwise used

365
f. Generated as Byproduct

9,125
g. Shipped in or as Product

1.05
h. Production or Activity Ratio

Section 2: Materials Balance

When the amounts reported in c, d and e in Section 1 are added together, the sum will in many cases equal the sum of f and g. In other words, lines c, d and e will often form a "materials balance." If lines c, d and e are not in approximate balance, you must use this section to explain why. Indicate all the reasons that apply by entering the number of pounds on the appropriate line below (e.g., 4,000 Chemical was held in inventory).

a. Chemical was recycled on site

b. Chemical was consumed or transformed

c. Chemical was held in inventory

15,510
d. Chemical is a compound

e. Other (explain below)

f. Did anything non-routine occur at your facility during the reporting year which affected the data reported?
☐ Yes* ☐ No *If your answer is Yes, you may explain in

Row 5:
Chemicals falling under an EPCRA or TURA chemical category and a CERCLA chemical category that are not specifically listed under EPCRA, TURA, or CERCLA should be reported under the EPCRA or TURA chemical category.

Row 6:
Chemicals falling under an EPCRA or TURA chemical category and are specifically listed under CERCLA, should be reported under the EPCRA or TURA chemical category.

Row 8:
If a specific chemical is a CERCLA chemical and it also is reportable under a TURA NOL listed category, it should be reported **only as a specific CERCLA chemical, and not under the TURA NOL category.**

✓Example

1,1-Dichloropropane (CAS 78-99-9): CERCLA specifically listed, TURA NOL Category (C1-C4 halogenated hydrocarbons/halocarbons NOL).

Report as: CERCLA specific chemical (1,1-Dichloropropane).

Row 9:
When a specifically listed CERCLA chemical falls within a CERCLA listed category, it should be reported **only as the specific CERCLA chemical.**

✓Example

Benzenesulfonyl Chloride: CERCLA specifically listed, CERCLA category (Chlorinated Benzenes)

Report as: CERCLA specific chemical (Benzenesulfonyl Chloride)

Row 10:
Chemicals that only are listed as a CERCLA category are not reportable.

CERCLA Category only: phthalate esters, polynuclear aromatic hydrocarbons, polycyclic organic matter, glycol ethers, chlorinated phenols, etc. should NOT be reported unless they are specifically named.

Row 11:
Chemicals falling under a CERCLA category and a TURA NOL category should be reported under the TURA NOL chemical category.

✓Example

Haloethers is a CERCLA category, and there are haloethers that are also part of the Certain PFAS NOL category. If you use a haloether that is part of the Certain PFAS NOL category, report it under that category.

Row 12:
Chemicals falling under a TURA NOL chemical category or categories that are not specifically listed under EPCRA, TURA or CERCLA, and are not part of an EPCRA/TURA category, should be reported under the TURA NOL chemical category or categories.

✓Example Reporting Two Competing Compound Classes

Propane, 1,1,1,2,2,3,3,3-octafluoro- (CAS 76-19-7): This chemical is reportable under both the C1-C4 DEP Category (**1047**) and the Certain PFAS NOL Category (**1300**).

> *Report the SAME weight for the C1-C4 NOL category and the Certain PFAS NOL category use on EACH Form S.*

Even though two separate Form S's will be filed for the C1-C4 NOL category and Certain PFAS NOL category, **only ONE TURA fee for both categories is paid**. (See the examples on the following page for processing 30,000 lb. of a chemical in both categories with no generation of byproduct.)

✓Form S Examples:

Section 1: Facility-Wide Use of Listed Chemical

1047 — a. CAS #

C1-C4 NOL — b. Chemical Name (Dioxin should be in grams, decimal points may be used)

Facility-wide use of chemical identified in a. Enter the total amount (in POUNDS, except for dioxin) for each applicable category. NOTE: "Generated as byproduct" (item f.) means all waste containing the listed chemical before the waste is handled, transferred, treated, recycled or released. Please refer to the reporting instructions before completing this section.

c. Manufactured	d. Processed
15,000	100
e. Otherwise used	f. Generated as Byproduct
	1.05
g. Shipped in or as product	h. Production or Activity Ratio

Section 1: Facility-Wide Use of Listed Chemical

1300 — a. CAS #

Certain PFAS NOL — b. Chemical Name (Dioxin should be in grams, decimal points may be used)

Facility-wide use of chemical identified in a. Enter the total amount (in POUNDS, except for dioxin) for each applicable category. NOTE: "Generated as byproduct" (item f.) means all waste containing the listed chemical before the waste is handled, transferred, treated, recycled or released. Please refer to the reporting instructions before completing this section.

c. Manufactured	d. Processed
15,000	100
e. Otherwise used	f. Generated as Byproduct
	1.05
g. Shipped in or as product	h. Production or Activity Ratio

Chemical Category Definitions

TURA requires reporting on many chemical categories. The individual chemicals included in each chemical category should always be reported in their parent chemical category (e.g., antimony compounds), and not as individual chemicals. Below is guidance on which individual chemicals are included in some of the reportable chemical categories. Please note that this is not an exhaustive list of reportable chemical categories or of individual chemicals within the chemical categories listed below.

Chemical Category	CAS	Chemical Name
1000 Antimony Compounds Includes any unique chemical substance that contains antimony as part of the chemical's infrastructure. Includes, but is not limited to:	1309-64-4	Antimony Trioxide
	7647-18-9	Antimony Pentachloride
	7783-56-4	Antimony Trifluoride
	7789-61-9	Antimony Tribromide
	10025-91-9	Antimony Trichloride
	28300-74-5	Antimony Potassium Tartrate
1001 ArsenicComponds Includes any unique chemical substance that contains arsenic as part of the chemical's infrastructure. Includes, but is not limited to:	692-42-2	Diethylarsine
	696-28-6	Dichlorophenylarsine
	1303-28-2	Arsenic Pentoxide
	1303-32-8	Arsenic Disulfide
	1303-33-9	Arsenic Trisulfide
	1327-52-2	Arsenic Acid
	1327-53-3	Arsenic Trioxide
	7631-89-2	Sodium Arsenate
	7645-25-2	Lead Arsenate
	7778-39-4	Arsenic Acid
	7778-44-1	Calcium Arsenate
	7784-34-1	Arsenous Trichloride
	7784-40-9	Lead Arsenate
	7784-41-0	Potassium Arsenate
	7784-46-5	Sodium Arsenite
	10102-48-4	Lead Arsenate
	10124-50-2	Potassium Arsenate
	52740-16-6	Calcium Arsenate
1002 Barium Compounds Includes any unique chemical substance that contains barium as part of the chemical's infrastructure. Does not include barium sulfate, CAS # 7727-43-7. Includes, but is not limited to:	542-62-1	Barium Cyanide
1003 Beryllium Compounds Includes any unique chemical substance that contains beryllium as part of the chemical's infrastructure. Includes, but is not limited to:	7787-47-5	Beryllium Chloride
	7787-49-7	Beryllium Fluoride
	7787-55-5	Beryllium Nitrate
	13597-99-4	Beryllium Nitrate
1004 Cadmium Compounds Includes any unique chemical substance that contains cadmium as part of the chemical's infrastructure. Includes, but is not limited to:	543-90-8	Cadmium Acetate
	7789-42-6	Cadmium Bromide
	10108-64-2	Cadmium Chloride
1009 Chlorophenols Please see EPA TRI reporting instructions. Includes, but is not limited to:	58-90-2	2,3,4,6-Tetrachlorophenol
	87-65-0	2,6 Dichlorophenol
	95-57-8	2-Chlorophenol
	609-19-8	3,4,5 Trichlorophenol
	933-75-5	2,3,6 Trichlorophenol
	933-78-8	2,3,5 Trichlorophenol
	5344-82-1	2-Chlorophenolthiourea
	7005-72-3	Chlorophenyl Phenyl Ether
	15950-66-0	2,3,4 trichlorophenol

Chemical Category	CAS	Chemical Name
	25167-82-2	Trichlorophenol
1216 Cr(VI) Chromium Compounds Hexavalent Chromium Compounds. Please refer to guidance on reporting Hexavalent Chromium Compounds in Appendix B. This list includes, but is not limited to the following compounds:	7788-98-9	$(NH_4)_2Cr0_4$Ammonium Chromate
	7789-09-5	$(NH_4)_2Cr_2O_7$ Ammonium Dichromate
	10294-40-3	$BaCrO_4$ Barium Chromate
	1189-85-1	$[(CH_3)_3CO]_2CrO_2$ tert-Butyl Chromate
	13765-19-0	CaCrO4 Calcium Chromate
	7738-94-5	H_2CrO_4 Chromic Acid
	14986-48-2	$CrCl_6$ Chromium VI Chloride
	1333-82-0	CrO_3 Chromic Trioxide
	18540-29-9	Cr^{6+} Hexavalent Chromium Ion
	7758-97-6	$PbCrO_4$ Lead Chromate
	8454-12-1	$PbCrO_4$-PbO Lead Chromate Oxide
	16037-50-6	$KCrO_3Cl$ Potassium Chlorochromate
	7789-00-6	K_2CrO_4 Potassium Chromate
	7778-50-9	$K_2Cr_2O_7$ Potassium Dichromate
	7784-01-2	Ag_2CrO_4 Silver Chromate
	7775-11-3 or 2146-10-8	Na_2CrO_4 Sodium Chromate
	7789-12-0	$Na_2Cr_2O_7 \cdot 2H_2O$Sodium Dichromate Dihydrate
	10588-01-9	$Na_2Cr_2O_7$ Sodium Dichromate
	7789-06-2 or 2151-06-8	$SrCrO_4$ Strontium Chromate
	13530-65-9	$ZnCrO_4$ Zinc Chromate
	14018-95-2	$ZnCr_2O_7$ Zinc Dichromate
	1066-30-4	Chromic Acetate
1217 Non Cr(VI) Chromium Compounds Non-Hexavalent Chromium Compounds. Includes, but is not limited to*: *Note: (trivalent) Chromic Oxide, CAS# 1308-38-9 (Cr_20_3) was delisted from TURA in 1995.	10101-53-8	Chromic Sulfate
	1308-31-2	Chromite
	10049-05-5	Chromous Chloride
	7788-97-8	Chromous Fluoride
	544-18-3	Cobaltous Formate
1013 Cobalt Compounds Includes any unique chemical substance that contains cobalt as part of the chemical's infrastructure. Includes, but is not limited to:	7789-43-7	Cobaltous Bromide
	14017-41-5	Cobaltous Sulfamate
	137-29-1	Copper, bis(dimethylcarbamodithioato-s-s)-
1015 Copper Compounds Includes any unique chemical substance that contains copper as part of the chemical's infrastructure. Does not include copper phthalocyanine compounds that are substituted with only hydrogen, and/or chlorine, and/or bromine. Includes, but is not limited to:	544-92-3	Copper Cyanide
	815-82-7	Cupric Tartrate
	3251-23-8	Cupric Nitrate
	5893-66-3	Cupric Oxalate
	7447-39-4	Cupric Chloride
	7758-98-7	Cupric Sulfate
	10380-29-7	Cupric Sulfate, Ammoniated
	57-12-5	Cyanides
1016 Cyanide Compounds X^+CN^- where $X = H^+$ or any other group where a formal dissociation may occur. For example KCN or $CA(Cn)_2$. Includes, but is not limited to:	143-33-9	Sodium Cyanide
	151-50-8	Potassium Cyanide
	460-19-5	Cyanogen
	506-61-6	Potassium Silver Cyanide
	506-64-9	Silver Cyanide
	506-68-3	Cyanogen Bromide
	506-77-4	Cyanogen Chloride
	542-62-1	Barium Cyanide
	544-92-3	Copper Cyanide
	557-19-7	Nickel Cyanide
	557-21-1	Zinc Cyanide
	592-01-8	Calcium Cyanide
	592-04-1	Mercuric Cyanide
	592-85-8	Mercuric Thiocyanate

Chemical Category	CAS	Chemical Name
	592-87-0	Lead Thiocyanate
	1762-95-4	Ammonium Thiocyanate
	91-93-0	3,3'-Dimethoxybenzidine-4,4' di-isocyanate
1050 Diisocyanates Includes only the chemicals listed here.	91-97-4	3-3'-Dimethyl-4,4'-diphenylene diisocyanate
	101-68-8	Methylenebis(phenylisocyanate)(MDI) (previously reportable under EPCRA)
	104-49-4	1,4 Phenylene diisocyanate
	123-61-5	1,3-Phenylene diisocyanate
	139-25-3	3-3' Dimethyl diphenylmethane-4-4' siisocyanate
	822-06-0	Hexamethylene 1,6 -diisocyanate
	2556-36-7	1,4 Cyclohexane diisocyanate
	3173-72-6	1,5 Naphthalene diisocyanate
	4098-71-9	Isophorone diisocyanate
	4128-73-8	4,4'-diisocyanatodiphenylether
	5124-30-1	1,1-Methylene bis(4-isocyanato-cyclohexane
	9016-87-9	Polmeric diphenylmethane diisocyanate
	10347-54-3	1,4-Bis(methylisocyonate)cyclohexane
	15646-96-5	2,4,4-Trimethylhexamethylene di-isocyanate
	16938-22-0	2,2,4-Trimethylhexamethylene diisocyanate
	38661-72-2	1,3-Bis(methylisocyanate)cyclo-hexane
	75790-84-0	4-Methyldiphenylmethane-3,4-diisocyanate
	75790-87-3	2,4'-Diisocyanatodiphenyl sulfide
	134190-37-7	Diethyldiisocyanatobenzene
	1746-01-6	2,3,7,8- Tetrachlorodibenzo-p-dioxin
1048 Diisononyl phthalate (DINP) Includes branched alkyl di-esters of 1,2 benzenedicarboxylic acid in which alkyl ester moieties contain a total of nine carbons. This category includes but is not limited to the chemicals listed here.	14103–61–8	Bis(3,5,5-trimethylhexyl) phthalate
	20548–62–3	Bis(7-methyloctyl) phthalate
	28553–12–0	Diisononyl phthalate
	71549–78–5	Branched dinonyl phthalate
	68515–48–0	Di(C8-10, C9 rich), branched alkyl phthalates
	111983–10–9	Bis(3-ethylheptan-2-yl) benzene-1,2-dicarboxylate
1060 Dioxin & Dioxin-Like Compounds Manufacturing; and the processing or otherwise use of dioxin or dioxin-like compounds if the dioxin and dioxin-like compounds are present as contaminants in a chemical and if they were created during the manufacture of that chemical. Includes only the chemicals listed here.	3268-87-92	1,2,3,4,6,7,8,9- Octachlorodibenzo-p-dioxin
	19408-74-3	1,2,3,7,8,9- Hexachlorodibenzo-p-dioxin
	35822-46-9	1,2,3,4,6,7,8- Heptachlorodibenzo-p-dioxin
	39001-02-0	1,2,3,4,6,7,8,9- Octachlorodibenzofuran
	39227-28-6	1,2,3,4,7,8-- Hexachlorodibenzo-p-dioxin
	40321-76-4 1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1,2,3,7,8-- Pentachlorodibenzo-p-dioxin
	51207-31-9 2,3,7,8-Tetrachlorodibenzofuran	2,3,7,8- Tetrachlorodibenzofuran
	55673-89-7	1,2,3,4,7,8,9- Heptachlorodibenzofuran
	57117-31-4 2,3,4,7,8-Pentachlorodibenzofuran	2,3,4,7,8- Pentachlorodibenzofuran

Chemical Category	CAS	Chemical Name
	57117-41-6 1,2,3,7,8-Pentachlorodibenzofuran	1,2,3,7,8- Pentachlorodibenzofuran
	57117-44-9	1,2,3,6,7,8- Hexachlorodibenzofuran
	57653-85-7	1,2,3,6,7,8- Hexachlorodibenzo-p-dioxin
	60851-34-5	2,3,4,6,7,8- Hexachlorodibenzofuran
	67562-39-4	1,2,3,4,6,7,8- Heptachlorodibenzofuran
	70648-26-9	1,2,3,4,7,8- Hexachlorod-benzofuran
	72918-21-9	1,2,3,7,8,9- Hexachlorodibenzofuran
Ethylenebisdithiocarbamic acid, salts, esters Includes any unique chemical substance that contains an EBDC or an EBDC salt as part of that chemical's infrastructure. Includes, but is not limited to:	111-54-6	Ethylenebisdithiocarbamic acid, salts, esters
1022 Certain Glycol Ethers Please see guidance on Glycol Ethers in Appendix B	3194-55-6	1,2,5,6,9,10-hexabromocyclododecane

1047 Halogenated Compounds NOL (C1-C4) Please see guidance on reporting C1-C4 HalogenatedHydrocarbons/Halocarbons Not Otherwis Listed in Appendix B	74-96-4	Bromoethane	
	74-97-5	Methane, bromochloro-	
	75-03-6	Iodoethane	
	75-10-5	Methane, difluoro-	
	75-26-3	2-bromopropane	
	75-37-6	1,1-Difluoroethane	
	75-38-7	1,1-Difluoroethene	
	75-46-7	Methane, trifluoro-	
	75-73-0	Carbon tetrafluoride	
	76-16-4	Ethane, hexafluoro-	
	76-19-7	Octafluoropropane	
	79-38-9	Chlorotrifluoroethylene	
	106-95-6	Allyl bromide	
	107-04-0	Ethane, 1-bromo-2-chloro-	
	109-65-9	Butane, 1-bromo-	
	109-70-6	Propane, 1-bromo-3-chloro-	
	115-25-3	Octafluorocyclobutane (Perfluorocyclobutane)	
	116-15-4	1,1,2,3,3,3-Hexafluoro-1-propene	
	354-33-6	Pentafluoroethane	
	354-58-5	1,1,1-Trichlorotrifluoroethane	
	354-64-3	Pentafluoroethyl iodide	
	359-07-9	Ethane, 2-bromo-1,1-difluoro-	
	359-35-3	1,1,2,2-tetrafluoroethane	
	374-07-2	1,1-Dichlorotetrafluoroethane	
	382-10-5	1-Propene, 3,3,3-trifluoro-2-(trifluoromethyl)-	
	406-58-6	1,1,1,3,3-Pentafluorobutane	
	420-46-2	1,1,1-Trifluoroethane	
	420-46-2	1,1,1-Trifluoroethane	
	423-39-2	Perfluorobutyl iodide	
	431-31-2	1,1,1,2,3-Pentafluoropropane	
	431-89-0	1,1,1,2,3,3,3-Heptafluoropropane	
	460-73-1	1,1,1,3,3-Pentafluoropropane	
	507-20-0	2-chloro-2-methylpropane	
	557-91-5	1,1-Dibromoethane	
	677-21-4	1-Propene, 3,3,3-trifluoro-	
	690-39-1	1,1,1,3,3,3-Hexafluoropropane	
	754-12-1	2,3,3,3-Tetrafluoropropene	
	811-97-2	1,1,1,2-Tetrafluoroethane	
	5408-86-6	Butane, 2,3-dibromo-	
	29118-24-9	1,3,3,3-Tetrafluoropropene	
	102687-65-0	1-Chloro-3,3,3-trifluoropropene	
	75-11-6	Methane, diiodo-	
	75-47-8	Methane, triiodo-	
	75-61-6	Dibromodifluoromethane	
	75-82-1	1,2-Dibromo-1,1-difluoroethane	
	76-11-9	1,1,1,2-Tetrachloro-2,2-difluoroethane	
	76-12-0	1,1,2,2-Tetrachloro-1,2-difluoroethane	
	76-18-6	2-Chloro-1,1,1,2,3,3,3-heptafluoropropane	
	78-74-0	Ethane, 1,1,2-tribromo-	
	78-75-1	1,2-Dibromopropane	
	79-27-6	1,1,2,2-Tetrabromoethane	
	79-28-7	Ethene, tetrabromo-	
	79-35-6	1,1-Dichloro-2,2-difluoroethylene	
	96-11-7	1,2,3-Tribromopropane	
	109-64-8	1,3-Dibromopropane	
	124-72-1	Teflurane	
	156-59-2	cis-1,2-Dichloroethylene	
	338-75-0	2,3-Dichloro-1,1,1-trifluoropropane	
	353-36-6	Ethane, fluoro-	
	353-54-8	Methane, tribromofluoro-	
	353-83-3	1,1,1-Trifluoro-2-iodoethane	

354-04-1	Ethane, 1,2-dibromo-1,1,2-trifluoro-	
354-12-1	1,1,1-Trichloro-2,2-difluoroethane	
354-15-4	1,1,2-Trichloro-1,2-difluoroethane	
354-21-2	1,1,2-Trichloro-2,2-difluoroethane	
354-48-3	1,1,1-Tribromo-2,2,2-trifluoroethane	
354-55-2	Bromopentafluoroethane	
354-56-3	Pentachlorofluoroethane	
354-92-7	Propane, 1,1,1,2,3,3,3-heptafluoro-2-(trifluoromethyl)-	
355-20-4	Butane, 2,3-dichloro-1,1,1,2,3,4,4,4-octafluoro-	
355-24-8	Butane, 1,4-dichloro-1,1,2,2,3,3,4,4-octafluoro-	
355-25-9	Decafluorobutane (Perfluorobutane)	
356-18-3	Dichlorohexafluorocyclo Butane	
358-97-4	1,2-Dibromo-1-fluoroethane	
359-11-5	Ethene, trifluoro-	
359-28-4	1,1,2-Trichloro-2-fluoroethane	
359-58-0	1-Chloro-1,1,2,3,3,3-hexafluoropropane	
360-86-1	2-Butene, 1,3-dichloro-1,1,2,4,4,4-hexafluoro-	
360-88-3	2-Butene, 1,4-dichloro-1,1,2,3,4,4-hexafluoro-	
360-89-4	2-Butene, 1,1,1,2,3,4,4,4-octafluoro-	
375-17-7	1,1,1,2,2,3,3,4,4-Nonafluorobutane	
375-50-8	Butane, 1,1,2,2,3,3,4,4-octafluoro-1,4-diiodo-	
377-36-6	Butane, 1,1,2,2,3,3,4,4-octafluoro-	
377-41-3	Chloroheptafluorocyclo butane	
382-21-8	Perfluoroisobutylene	
407-81-8	*2-Butene, 1,4-difluoro-*	
420-44-0	2-Chloro-2-fluoropropane	
420-45-1	Propane, 2,2-difluoro-	
420-99-5	1-Chloro-2,2-difluoropropane	
421-04-5	1-Chloro-1,1,2-Trifluoroethane	
421-07-8	Propane, 1,1,1-trifluoro-	
421-73-8	2-Chloro-1,1,1,2-tetrafluoropropane	
421-75-0	1-Chloro-1,1,2,2-tetrafluoropropane	
421-99-8	1,1,3-Trichloro-1,2,2-trifluoropropane	
422-00-5	1,3-Dichloro-1,1,2,2-tetrafluoropropane	
422-02-6	3-Chloro-1,1,1,2,3-pentafluoropropane	
422-26-4	1,1,1,2,2,3-Hexachloro-3-fluoropropane	
422-49-1	1,1,1,3,3-Pentachloro-2,2-difluoropropane	
422-50-4	1,1,1,3-Tetrachloro-2,2,3-trifluoropropane	
422-51-5	1,1,1-Trichloro-2,2,3,3-tetrafluoropropane	
422-52-6	1,1,3,3-Tetrachloro-1,2,2-trifluoropropane	
422-53-7	1,1,3-Trichloro-1,2,2,3-tetrafluoropropane	
422-54-8	1,3,3-Trichloro-1,1,2,2-tetrafluoropropane	
422-55-9	1-Chloro-1,1,2,2,3,3-hexafluoropropane	
422-57-1	3-Chloro-1,1,1,2,2,3-hexafluoropropane	
422-78-6	1,1,1,2,2,3,3-Heptachloro-3-fluoropropane	
422-86-6	1-Chloro-1,1,2,2,3,3,3-heptafluoropropane	
425-94-5	1,2-Dichloro-1,2,3,3-tetrafluoropropane	
430-53-5	1,1-Dichloro-2-fluoroethane	
430-57-9	1,2-Dichloro-1-fluoroethane	
430-66-0	Ethane, 1,1,2-trifluoro-	
431-07-2	1-Chloro-1,2,2-Trifluoroethane	
431-63-0	1,1,1,2,3,3-Hexafluoropropane	
431-87-8	2-Chloro-1,1,1,3,3,3-hexafluoropropane	
462-39-5	Propane, 1,3-difluoro-	
471-43-2	1,1-Dichloro-2,2-difluoroethane	
507-25-5	Methane, tetraiodo-	
513-31-5	2,3-Dibromopropene	
513-92-8	Ethene, tetraiodo-	
540-49-8	1,2-Dibromoethylene	
540-54-5	1-Chloropropane	

556-56-9	Allyl iodide	
558-13-4	Tetrabromomethane	
590-11-4	cis-Dibromoethylene	
590-12-5	trans-1,2-Dibromoethylene	
593-53-3	Methyl fluoride	
593-66-8	Ethene, iodo-	
593-70-4	Chlorofluoromethane	
593-92-0	1,1-Dibromoethylene	
594-02-5	1,1-Diiodoethane	
594-16-1	Propane, 2,2-dibromo-	
594-37-6	1,2-dichloro-2-methylpropane	
594-73-0	Hexabromoethane	
598-16-3	Ethylene tribromide	
598-29-8	1,2-Diiodopropane	
624-72-6	*1,2-Difluoroethane (HFC-152)*	
624-73-7	*Ethane, 1,2-diiodo-*	
627-31-6	Propane, 1,3-diiodo-	
630-16-0	Ethane, 1,1,1,2-tetrabromo-	
661-95-0	Propane, 1,2-dibromo-1,1,2,3,3,3-hexafluoro-	
661-97-2	1,2-Dichloro-1,1,2,3,3,3-hexafluoropropane	
662-00-0	1,1,1,2,2,3,3-Heptafluorobutane	
662-01-1	1,3-Dichloro-1,1,2,2,3,3-hexafluoropropane	
677-54-3	1,1,1,3-Tetrachloro-2,2-difluoropropane	
677-55-4	1-Chloro-1,1,3,3,3-pentafluoropropane	
677-56-5	1,1,1,2,2,3-Hexafluoropropane	
679-85-6	3-Chloro-1,1,2,2-tetrafluoropropane	
679-86-7	1,1,2,2,3-Pentafluoropropane	
679-99-2	1-Chloro-1,1,2,2,3-pentafluoropropane	
685-63-2	*1,3-Butadiene, 1,1,2,3,4,4-hexafluoro-*	
697-11-0	Cyclobutene, hexafluoro-	
811-95-0	1,1,2-Trichloro-1-fluoroethane	
821-06-7	2-Butene, 1,4-dibromo-, (2E)-	
1112-01-2	1,1-Dichloro-2,2-difluoropropane	
1112-14-7	1,1,3,3-Tetrachloro-2,2-difluoropropane	
1112-36-3	1,3-Dichloro-2,2-difluoropropane	
1511-62-2	Bromodifluoromethane	
1516-64-9	2-Butene, 1,1,1,2,3,4,4,4-octafluoro-, (E)-	
1542-18-3	Propane, 2-(difluoroiodomethyl)-1,1,1,2,3,3,3-heptafluoro-	
1615-75-4	1-Chloro-1-fluoroethane	
1645-83-6	1,3,3,3-Tetrafluoropropene	
1691-13-0	1,2-Fluoroethene	
1814-88-6	Pentafluoropropane	
1842-05-3	1,1-Dichloro-1,2-difluoroethane	
1868-53-7	Methane, dibromofluoro-	
2252-84-8	1,1,2,2,3,3,3-Heptafluoropropane	
2268-46-4	1,2,2,3-Tetrachloro-1,1,3,3-tetrafluoropropane	
2311-14-0	1,1,1-Tribromoethane	
2354-06-5	1,1,1,3,3-Pentachloro-2,2,3-trifluoropropane	
2366-36-1	1,1,1-Trichloro-2-fluoroethane	
2730-43-0	1-Chloro-3,3,3-trifluoropropene	
2730-64-5	1-Chloro-1,1,3,3-tetrafluoropropane	
3017-69-4	1-Propene, 1-bromo-2-methyl- (9CI)	
3470-67-5	Ethane, 1,1,1,2-tetrabromo-2,2-difluoro-	
4071-01-6	1,1-Dichloro-2,2,3,3-tetrafluoropropane	
4259-43-2	1,1,1-Trichloro-2,2,3,3,3-pentafluoropropane	
4399-47-7	Bromocyclobutane	
4459-18-1	Propane, 1,1,1,3,3,3-hexafluoro-2-iodo-2-(trifluoromethyl)-	
4784-77-4	2-Butene, 1-bromo-	
5162-44-7	1-Butene, 4-bromo-	
6974-12-5	2-Butene, 1,4-dibromo-	
7051-34-5	Bromomethylcyclopropane	

	7125-99-7	1,1-Dichloro-1,2,2-trifluoropropane	
	11070-66-9	Butene, octafluoro-	
	13195-80-7	1-Propene, 1,1-dibromo-	
	17705-30-5	2,2-Dichloro-1,1,3,3-tetrafluoropropane	
	18599-22-9	1-Butene, 4-bromo-3,3,4-tetrafluoro-	
	19041-02-2	2-Chloro-1,1,3,3-tetrafluoropropane	
	19398-48-2	2-Butene, 2,3-dibromo-	
	20972-44-5	2-Butene, 1,4-dichloro-1,1,2,3,4,4-hexafluoro-, (2E)-	
	24270-66-4	1,1,2,3,3-Pentafluoropropane	
	25167-20-8	Tetrabromoethane	
	25429-23-6	Ethene, dibromo-	
	25497-29-4	Chlorodifluoroethane	
	25497-29-4	1-Chloro-1,2-difluoroethane	
	25915-78-0	Dichlorodifluoroethane	
	26391-16-2	1-Propene, 1,2-dibromo-	
	27072-47-5	Dibromopropane	
	27336-23-8	1,1-Dibromo-1,2,2,2-tetrafluoroethane	
	28103-66-4	1-Chloro-1,2,2,3,3-pentafluoropropane	
	28984-80-7	Butane, trichloroheptafluoro-	
	30283-90-0	Ethane, bromotetrafluoro-	
	31392-96-8	Ethane, dibromodifluoro-	
	40723-63-5	1,1,2,2-Tetrafluoropropane	
	40723-80-6	Butane, 1,1,1,2,2-pentafluoro-4-iodo-	
	51346-64-6	2-Chloro-1,1,1,2,3,3-hexafluoropropane	
	56758-54-4	1-Chloro-2,2,3-trifluoropropane	
	64712-27-2	1,1-Dichloro-1,3,3,3-tetrafluoropropane	
	67406-66-0	1-Chloro-1,2,2,3-tetrafluoropropane	
	67406-68-2	1,3-Dichloro-1,2,2-trifluoropropane	
	70192-63-1	1,1-Dichloro-1,2,2,3-tetrafluoropropane	
	70192-70-0	1,1-Dichloro-2,2,3-trifluoropropane	
	70192-76-6	1-Chloro-1,2,2-trifluoropropane	
	70341-81-0	1,3-Dichloro-1,2,2,3-tetrafluoropropane	
	72101-30-5	Propane, bromotrifluoro-	
	75995-72-1	1,1,1,2,3,4,4,4-Octafluorobutane	
	76140-39-1	1,3-Dichloro-1,1,3,3-tetrafluoropropane	
	76546-99-3	Hexachlorodifluoropropane	
	110587-14-9	Chlorofluoroethane	
	117970-90-8	2-Chloro-1,1,1,3-tetrafluoropropane	
	127564-83-4	Dichlorotetrafluoropropane	
	131211-71-7	1,1,1-Trichloro-2,2,3-trifluoropropane	
	131221-36-8	1,1,3-Trichloro-2,2,3-trifluoropropane	
	134190-48-0	Pentachlorofluoropropane	
	134190-49-1	Tetrachlorofluoropropane	
	134190-50-4	Chlorotetrafluoropropane	
	134190-51-5	Trichlorofluoropropane	
	134190-52-6	Dichlorodifluoropropane	
	134190-53-7	Chlorodifluoropropane	
	134190-54-8	Chlorofluoropropane	
	134237-36-8	Pentachlorodifluoro propane	
	134237-37-9	Tetrachlorotrifluoro propane	
	134237-38-0	Trichlorotetrafluoro propane	
	134237-39-1	Tetrachlorodifluoropropane	
	134237-40-4	Trichlorotrifluoropropane	
	134237-41-5	Chloropentafluoropropane	
	134237-42-6	Trichlorodifluoropropane	
	134237-43-7	Dichlorotrifluoropropane	
	134237-44-8	Chlorotrifluoropropane	
	134237-45-9	Dichlorofluoropropane	

Chemical Category	CAS	Chemical Name
	134251-06-2	2-Chloro-1,1,1,3,3-pentafluoropropane
	134308-72-8	Chlorohexafluoropropane
	146916-90-7	2,3-Dichloro-1,1,1,3-tetrafluoropropane
	149329-24-8	2,2-Dichloro-1,1,1,3-tetrafluoropropane
	149329-25-9	2,3-Dichloro-1,1,1,2-tetrafluoropropane
	149329-26-0	1,2-Dichloro-1,1,2,3-tetrafluoropropane
	149329-27-1	1,3-Dichloro-1,1,2-trifluoropropane
	151771-08-3	1,3-Dichloro-1,2,3-trifluoropropane
	n/f	Propane, dibromopentafluoro-
	n/f	Fluorotetrabromoethane
1240 Hexabromocyclododecane (HBCD) Includes only the chemicals listed here	25637-99-4	hexabromocyclododecane
	301-04-2	Lead Acetate
1026 Lead Compounds Includes any unique chemical substance that contains lead as part of the chemical's infrastructure. Includes, but is not limited to:	592-87-0	Lead Thiocyanate
	1072-35-1	Lead Stearate
	1314-87-0	Lead Sulfide
	1335-32-6	Lead Subacetate
	7428-48-0	Lead Stearate
	7446-27-7	Lead Phophate
	7446-14-2	Lead Sulfate
	7645-25-2	Lead Arsenate
	7758-95-4	Lead Chloride
	7783-46-2	Lead Fluoride
	10099-74-8	Lead Nitrate
	10101-63-0	Lead Iodide
	10102-48-4	Lead Arsenate
	13814-96-5	Lead Fluoborate
	15739-80-7	Lead Sulfate
	52652-59-2	Lead Stearate
	56189-09-4	Lead Stearate
	7722-64-7	Potassium Permanganate
1027 Manganese Compounds Includes any unique chemical substance that contains lead as part of the chemical's infrastructure. Includes, but is not limited to:	15339-36-3	Manganese, bis(dimethylcarbamodithiato-s-s)
	592-04-1	Mercuric Cyanide
1028 Mercury Compounds Includes any unique chemical substance that contains mercury as part of the chemical's infrastructure. Includes, but is not limited to:	592-85-8	Mercuric Thiocyanate
	628-86-4	Mercury Fulminate
	7782-86-7	Mercurous Nitrate
	7783-35-9	Mercuric sulfate
	10415-75-5	Mercurous Nitrate
	10045-94-0	Mercuric Nitrate
	557-19-7	Nickel Cyanide
1029 Nickel Compounds Includes any unique chemical substance that contains nickel as part of the chemical's infrastructure. Includes, but is not limited to:	7718-54-9	Nickel chloride
	7786-81-4	Nickel Sulfate
	12054-48-7	Nickel Hydroxide
	13463-39-3	Nickel Carbonyl
	14216-75-2	Nickel Nitrate
	15699-18-0	Nickel Ammonium Sulfate
	37211-05-5	Nickel chloride
	54-11-5	Nicotine
1055 Nicotine and Salts Includes any unique chemical substance that contains nicotine or a nicotine salt as part of the chemical's infrastructure. Includes, but is not limited to:	1004-54-0	Mercuric Nitrate
	7761-88-8	Silver Nitrate

Chemical Category	CAS	Chemical Name
1090 Nitrate Compounds (water dissociable) Includes, but is not limited to:	7779-88-6	Zinc Nitrate
	7782-86-7	Mercurous Nitrate
	7787-55-5	Beryllium Nitrate
	10099-74-8	Lead Nitrate
	10102-06-4	Uranyl nitrate
	10102-45-1	Thallium Nitrate
	10415-75-5	Mercurous Nitrate
	10421-48-4	Ferric Nitrate
	13597-99-4	Beryllium Nitrate
	13746-89-9	Zirconium Nitrate
	14216-75-2	Nickel Nitrate
	36478-76-9	Uranyl Nitrate
1034 Polybrominated Biphenyls (PBBs) Please see EPA guidance.		
1220 Nonylphenols Includes only the chemicals listed here	104–40–5	4-Nonylphenol
	11066–49–2	Isononylphenol
	25154–52–3	Nonylphenol
	26543–97–5	4-Isononylphenol
	84852–15–3	4-Nonylphenol, branched
	90481–04–2	Nonylphenol, branched
1046 Nonylphenol Ethoxylates (NPEs) Includes only the chemicals listed here	7311-27-5	Ethanol, 2-[2-[2-[2-(4-nonylphenoxy)ethoxy]ethoxy]ethoxy]-
	9016-45-9	Poly(oxy-1,2-ethanediyl), α-(nonylphenyl)-ω-hydroxy-
	20427-84-3	Ethanol, 2-[2-(4-nonylphenoxy)ethoxy]-
	26027-38-3	Poly(oxy-1,2-ethanediyl), α-(4-nonylphenyl)-ω-hydroxy-
	26571-11-9	3,6,9,12,15,18,21,24-Octaoxahexacosan-1-ol, 26-(nonylphenoxy)-
	27176-93-8	Ethanol, 2-[2-(nonylphenoxy)ethoxy]-
	27177-05-5	3,6,9,12,15,18,21-Heptaoxatricosan-1-ol, 23-(nonylphenoxy)-
	27177-08-8	3,6,9,12,15,18,21,24,27-Nonaoxanonacosan-1-ol, 29-(nonylphenoxy)-
	27986-36-3	Ethanol, 2-(nonylphenoxy)-
	37205-87-1	Poly(oxy-1,2-ethanediyl), α-(isononylphenyl)-ω hydroxy-
	51938-25-1	Poly(oxy-1,2-ethanediyl), α (2-nonylphenyl)-ω-hydroxy-
	68412-54-4	Poly(oxy-1,2-ethanediyl), α-(nonylphenyl)-ω-hydroxy-, branched
	127087-87-0	Poly(oxy-1,2-ethanediyl), α-(4-nonylphenyl)-ω-hydroxy-, branched

Chemical Category	CAS	Chemical Name
1300 Certain PFAS NOL Is defined as those PFAS that contain: a perfluoroalkyl moiety[8] with three or more carbons (e.g., $–C_nF_{2n}–$, $n \geq 3$; or $CF_3–C_nF_{2n}–$, $n \geq 2$) a perfluoroalkylether moiety with two or more carbons (e.g., $–C_nF_{2n}OC_mF_{2m}–$ or $–C_nF_{2n}OC_mF_m–$, n and $m \geq 1$)	79-19-7	Propane, 1,1,1,2,2,3,3,3-octafluoro
	115-25-3	Cyclobutane, 1,1,2,2,3,3,4,4-octafluoro
	306-91-2	Phenanthrene, 1,1,2,2,3,3,4,4,4a,4b,5,5,6,6,7,7,8,8,8a,9,9,10,10,10a-tetracosafluorotetradecahydro-
	306-94-5	Naphthalene, 1,1,2,2,3,3,4,4,4a,5,5,6,6,7,7,8,8,8a-octadecafluorodecahydro-
	307-24-4	Hexanoic acid, 2,2,3,3,4,4,5,5,6,6,6-undecafluoro-
	307-30-2	1-Octanol, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-
	307-34-6	Octane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-octadecafluoro-
	307-60-8	Dodecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12-pentacosafluoro-12-iodo-
	307-63-1	Tetradecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14-nonacosafluoro-14-iodo-
	307-70-0	1-Undecanol, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11-eicosafluoro-
	307-98-2	2-Propenoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl ester
	311-89-7	1-Butanamine, 1,1,2,2,3,3,4,4,4-nonafluoro-N,N-bis(1,1,2,2,3,3,4,4,4-nonafluorobutyl)-
	355-02-2	Cyclohexane, 1,1,2,2,3,3,4,4,5,5,6-undecafluoro-6-(trifluoromethyl)-
	355-25-9	n-perfluorobutane
	355-38-4	Hexanoyl fluoride, 2,2,3,3,4,4,5,5,6,6,6-undecafluoro-
	355-42-0	Hexane, 1,1,1,2,2,3,3,4,4,5,5,6,6,6-tetradecafluoro-
	355-43-1	Hexane, 1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluoro-6-iodo-
	355-50-0	Hexadecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16-tritriacontafluoro-16-iodo-
	355-80-6	1-Pentanol, 2,2,3,3,4,4,5,5-octafluoro-
	356-24-1	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-, methyl ester
	356-27-4	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-, ethyl ester
	375-00-8	Butanenitrile, 2,2,3,3,4,4,4-heptafluoro-
	375-01-9	1-Butanol, 2,2,3,3,4,4,4-heptafluoro-
	375-03-1	Propane, 1,1,1,2,2,3,3-heptafluoro-3-methoxy-
	375-16-6	Butanoyl chloride, 2,2,3,3,4,4,4-heptafluoro-
	375-22-4	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-
	375-62-2	Pentanoyl fluoride, 2,2,3,3,4,4,5,5,5-nonafluoro-
	375-72-4	1-Butanesulfonyl fluoride, 1,1,2,2,3,3,4,4,4-nonafluoro-
	375-73-5	1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-
	375-84-8	Heptanoyl fluoride, 2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoro-
	375-85-9	Heptanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoro-
	375-88-2	Heptane, 1-bromo-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-
	376-73-8	Pentanedioic acid, 2,2,3,3,4,4-hexafluoro-
	376-90-9	1,5-Pentanediol, 2,2,3,3,4,4-hexafluoro-
	382-28-5	Morpholine, 2,2,3,3,5,5,6,6-octafluoro-4-(trifluoromethyl)-

[8] "In organic chemistry, a **moiety** is a part of a molecule that is given a name because it is identified as a part of other molecules as well." Source: Moiety (chemistry) - Wikipedia

	423-39-2	Butane, 1,1,1,2,2,3,3,4,4-nonafluoro-4-iodo
	423-62-1	Decane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-heneicosafluoro-10-iodo-
	425-38-7	Propanoyl fluoride, 2,2,3,3-tetrafluoro-3-(trifluoromethoxy)-
	428-59-1	Trifluoro(trifluoromethyl)oxirane
	507-63-1	Octane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8-heptadecafluoro-8-iodo-
	559-40-0	Cyclopentene, 1,2,3,3,4,4,5,5-octafluoro-
	647-42-7	1-Octanol, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-
	678-26-2	Pentane, 1,1,1,2,2,3,3,4,4,5,5,5-dodecafluoro-
	754-35-7	Propane, 1,1,1,2,2,3,3-heptafluoro-3-iodo-
	756-12-7	2-Butanone, 1,1,1,3,4,4,4-heptafluoro-3-(trifluoromethyl)-
	756-13-8	3-Pentanone, 1,1,1,2,2,4,5,5,5-nonafluoro-4-(trifluoromethyl)-
	773-14-8	Furan, 2,2,3,3,4,4,5,5-octafluorotetrahydro-
	813-44-5	Bis(perfluoroisopropyl)ketone
	813-45-6	3-Hexanone, 1,1,1,2,4,4,5,5,6,6,6-undecafluoro-2-(trifluoromethyl)-
	1547-26-8	1-Pentene, 2,3,3,4,4,5,5-heptafluoro-
	1623-05-8	Propane, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]-
	1682-78-6	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-(1,1,2,2,2-pentafluoroethoxy)-
	1805-22-7	Perfluoromethylcyclopentane
	1892-03-1	Cyclopentene, 1,3,3,4,4,5,5-heptafluoro-
	2043-47-2	1-Hexanol, 3,3,4,4,5,5,6,6,6-nonafluoro-
	2043-55-2	Hexane, 1,1,1,2,2,3,3,4,4-nonafluoro-6-iodo-
	2043-57-4	Octane, 1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluoro-8-iodo-
	2062-98-8	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-
	2144-53-8	2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl ester
	2218-54-4	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-, sodium salt (1:1)
	2641-34-1	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-[1,1,2,3,3,3-hexafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propoxy]-
	2706-90-3	Pentanoic acid, 2,2,3,3,4,4,5,5,5-nonafluoro-
	2923-26-4	Sodium perfluorohexanoate
	2927-83-5	2,3,3,3-Tetrafluoro-2-(trifluoromethoxy)propionyl fluoride
	2966-54-3	Potassium perfluorobutanoate
	2994-71-0	Cyclobutane, 1,1,2,2,3,4-hexafluoro-3,4-bis(trifluoromethyl)-
	3330-14-1	Propane, 1-[1-[difluoro(1,2,2,2-tetrafluoroethoxy)methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2,3,3,3-heptafluoro-
	3330-15-2	Perfluoro-3-(1H-perfluoroethoxy)propane
	3330-16-3	2H-Perfluoro(5,8-dimethyl-3,6,9-trioxadodecane)
	3794-64-7	Butanoic acid, 2,2,3,3,4,4,4-heptafluoro-, silver(1+) salt (1:1)
	3934-23-4	2-Propenoic acid, 2-methyl-, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl ester
	4089-58-1	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-[1,1,2,3,3,3-hexafluoro-2-[1,1,2,2-tetrafluoro-2-(fluorosulfonyl)ethoxy]propoxy]-
	6130-43-4	Heptanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoro-, ammonium salt (1:1)
	6588-63-2	Cyclohexanecarbonyl fluoride, 1,2,2,3,3,4,4,5,5,6,6-undecafluoro-

	9002-84-0	Polytetrafluoroethylene
	9011-17-0	Poly(vinylidene fluoride-co-hexafluoropropylene)
	10493-43-3	Ethene, 1,1,2-trifluoro-2-(1,1,2,2,2-pentafluoroethoxy)-
	10495-86-0	Ammonium perfluorobutanoate
	13221-71-1	Hexafluoro-1,3-bis(trifluoromethyl)cyclobutane
	13429-24-8	1-Propene, 1,1,2,3,3,3-hexafluoro-, dimer
	13695-31-3	2-Propenoic acid, 2-methyl-, 2,2,3,3,4,4,4-heptafluorobutyl ester
	15290-77-4	Cyclopentane, 1,1,2,2,3,3,4-heptafluoro-
	16090-14-5	Ethanesulfonyl fluoride, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-
	17527-29-6	2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl ester
	17631-68-4	Europium, tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionato-βO3,βO5)-
	17978-77-7	Praseodymium, tris(6,6,7,7,8,8,8-heptafluoro-2,2-dimethyl-3,5-octanedionato-βO3,βO5)-
	19430-93-4	1-Hexene, 3,3,4,4,5,5,6,6,6-nonafluoro-
	20006-68-2	Dichloro-3-(perfluoro-2-propoxy)propylmethylsilane
	21615-47-4	Hexanoic acid, 2,2,3,3,4,4,5,5,6,6,6-undecafluoro-, ammonium salt (1:1)
	24520-19-2	Pentafluoro(1,2,2-trifluoro-2-((trifluorovinyl)oxy)-1-(trifluoromethyl)ethoxy)benzene
	25038-02-2	Fomblin Y 04
	25038-71-5	poly(1,1,2,2-tetrafluorobutane-1,4-diyl)
	25067-11-2	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1,2,2-tetrafluoroethene
	25190-89-0	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene and 1,1,2,2-tetrafluoroethene
	25291-17-2	1-Octene, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-
	25684-76-8	Ethene, 1,1,2,2-tetrafluoro-, polymer with 1,1-difluoroethene
	26425-79-6	Ethene, 1,1,2,2-tetrafluoro-, polymer with 1,2,2-trifluoro-2-(trifluoromethoxy)ethene
	26650-09-9	Thiocyanic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl ester
	26654-97-7	Ethanesulfonyl fluoride, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene
	26655-00-5	Propane, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]-, polymer with 1,1,2,2-tetrafluoroethene
	26655-00-5	Perfluoroalkoxy alkanes (PFA)
	26658-70-8	Benzene, pentafluoro[1,2,2-trifluoro-2-[(trifluoroethenyl)oxy]-1-(trifluoromethyl)ethoxy]-, polymer with tetrafluoroethene and trifluoro(trifluoromethoxy)ethene
	26738-51-2	3,6,9,12-Tetraoxapentadecane, 1,1,1,2,4,4,5,7,7,8,10,10,11,13,13,14,14,15,15,15-eicosafluoro-5,8,11-tris(trifluoromethyl)-
	26779-98-6	Propanoic acid, ethenyl ester, polymer with 1,1-difluoroethene and 1,1,2,2-tetrafluoroethene
	27029-05-6	1-Propene, polymer with 1,1,2,2-tetrafluoroethene
	27619-88-1	1-Hexanesulfonyl chloride, 3,3,4,4,5,5,6,6,6-nonafluoro-
	27619-89-2	1-Octanesulfonyl chloride, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-
	27619-97-2	1-Octanesulfonic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-
	29809-34-5	Eicosane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,1

		3,13,14,14,15,15,16,16,17,17,18,18,19,19,20,20-hentetracontafluoro-20-iodo-
	29809-35-6	Octadecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18-heptatriacontafluoro-18-iodo-
	31175-20-9	Ethanesulfonic acid, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene
	34454-97-2	1-Butanesulfonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-N-methyl-
	34455-29-3	1-Propanaminium, N-(carboxymethyl)-N,N-dimethyl-3-[[(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulfonyl]amino]-, inner salt
	34788-82-4	Europium, tris[3-[2,2,3,3,4,4,4-heptafluoro-1-(oxo-βO)butyl]-1,7,7-trimethylbicyclo[2.2.1]heptan-2-onato-βO]-
	35397-13-8	Propane, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]-, polymer with 1-chloro-1,2,2-trifluoroethene and ethene
	35560-16-8	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with ethene and 1,1,2,2-tetrafluoroethene
	37486-69-4	3,6,9,12,15-Pentaoxaoctadecane, 1,1,1,2,4,4,5,7,7,8,10,10,11,13,13,14,16,16,17,17,18,18,18-tricosafluoro-5,8,11,14-tetrakis(trifluoromethyl)-
	37626-13-4	Poly[4,5-difluoro-2,2-bis(trifluoromethyl)-1,3-dioxole-co-tetrafluoroethylene]
	38565-52-5	Oxirane, 2-(2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoroheptyl)-
	42532-60-5	2,3,3,3-Tetrafluoro-2-(trifluoromethyl)propanenitrile
	45048-62-2	Perfluorobutanoate
	45187-15-3	Perfluorobutanesulfonate
	51798-33-5	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], α-(1-carboxy-1,2,2,2-tetrafluoroethyl)-ω-[tetrafluoro(trifluoromethyl)ethoxy]-
	51851-37-7	Silane, triethoxy(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-
	52591-27-2	2-Propenoic acid, 3,3,4,4,5,5,6,6,6-nonafluorohexyl ester
	53518-00-6	1-Propanaminium, N,N,N-trimethyl-3-[[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]-, chloride (1:1)
	54302-04-4	Chlorotrifluoro ethylene, ethylene, hexafluoroisobutylene terpolymer
	54950-05-9	Butanedioic acid, 2-sulfo-, 1,4-bis(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) ester, sodium salt (1:1)
	55716-11-5	Morpholine, 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,2,2,2-pentafluoroethyl)-
	56357-87-0	Ethene, 1,1,2,2-tetrafluoro-, polymer with 1,1-difluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
	56467-05-1	Poly(oxy-1,2-ethanediyl), α-(tridecafluorohexyl)-ω-hydroxy-
	57570-64-6	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene, 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
	58194-00-6	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-
	60164-51-4	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], α-(1,1,2,2,2-pentafluoroethyl)-ω-[tetrafluoro(trifluoromethyl)ethoxy]-

	63654-41-1	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propane and 1,1,2,2-tetrafluoroethene
	63863-43-4	Propanoic acid, 3-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, methyl ester
	63863-44-5	Propanoic acid, 3-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, methyl ester, polymer with 1,1,2,2-tetrafluoroethene
	65059-79-2	1-Butene, 4-bromo-3,3,4,4-tetrafluoro-, polymer with 1,1-difluoroethene, 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
	65208-35-7	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-[1,2,2,2-tetrafluoro-1-(fluorocarbonyl)ethyl]-.omega.-[tetrafluoro(trifluoromethyl)ethoxy]-
	65530-82-7	Poly(difluoromethylene), alpha,omega-difluoro-
	65530-85-0	Poly(difluoromethylene), .alpha.-(cyclohexylmethyl)-.omega.-hydro-
	67584-51-4	Glycine, N-ethyl-N-[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]-, potassium salt (1:1)
	67584-55-8	2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester
	67584-59-2	2-Propenoic acid, 2-methyl-, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester
	67939-95-1	1-Propanaminium, N,N,N-trimethyl-3-[[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]-, iodide (1:1)
	68182-34-3	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propane and 1,1,2,2-tetrafluoroethene
	68258-85-5	1-Hexene, 3,3,4,4,5,5,6,6,6-nonafluoro-, polymer with ethene and 1,1,2,2-tetrafluoroethene
	68259-10-9	1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, ammonium salt (1:1)
	68259-11-0	Pentanoic acid, 2,2,3,3,4,4,5,5,5-nonafluoro-, ammonium salt (1:1)
	68298-12-4	1-Butanesulfonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-
	68298-79-3	Poly(oxy-1,2-ethanediyl), α-[2-[ethyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl]-ω-hydroxy-
	68310-18-9	Poly[oxy(methyl-1,2-ethanediyl)], α-[2-[ethyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl]-ω-hydroxy-
	68555-77-1	1-Butanesulfonamide, N-[3-(dimethylamino)propyl]-1,1,2,2,3,3,4,4,4-nonafluoro-
	68891-05-4	Ethene, tetrafluoro-, homopolymer, α-fluoro-ω-(2-hydroxyethyl)-, citrate, reaction products with 1,6-diisocyanatohexane
	69087-47-4	Propanoic acid, 3-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene
	69116-73-0	Propanoic acid, 3-[1-[difluoro[1,2,2,2-tetrafluoro-1-(fluorocarbonyl)ethoxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, methyl ester
	69804-19-9	Perfluoro(3-(1-(ethenyloxy)propan-2-yloxy)propanenitrile)
	69991-61-3	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd.

	69991-62-4	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced
	69991-67-9	1-Propene, 1,1,2,3,3,3-hexafluoro-, oxidized, polymd.
	70225-18-2	1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, compd. with 2,2'-iminobis[ethanol] (1:1)
	71832-66-1	Propanenitrile, 3-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
	74398-72-4	1-Butene, 4-bromo-3,3,4,4-tetrafluoro-, polymer with 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene and 1,1,2,2-tetrafluoroethene
	74499-71-1	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with ethene, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propane and 1,1,2,2-tetrafluoroethene
	79070-11-4	Poly(difluoromethylene), α-chloro-ω-(2,2-dichloro-1,1,2-trifluoroethyl)-
	86508-42-1	Perfluoro compounds, C5-18
	88645-29-8	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced, Me esters, reduced
	101316-90-9	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced, Me esters, reduced, acrylates
	125061-94-1	Naphthalene, [difluoro(1,2,2,3,3,4,4,5,5,6,6-undecafluorocyclohexyl)methyl]heptadecafluorodecahydro-
	126066-30-6	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], α-[1,2,2,2-tetrafluoro-1-(hydroxymethyl)ethyl]-ω-[tetrafluoro(trifluoromethyl)ethoxy]-
	132182-92-4	Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-
	134035-61-3	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], α-[1,2,2,2-tetrafluoro-1-(methoxycarbonyl)ethyl]-ω-[tetrafluoro(trifluoromethyl)ethoxy]-
	147545-41-3	1-Butanesulfonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-N-methyl-, phosphate (ester)
	149935-01-3	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene, ethene, 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
	156559-18-1	2-Oxiranemethanol, polymers with reduced Me esters of reduced polymd. oxidized tetrafluoroethylene
	161075-12-3	Ethene, tetrafluoro-, oxidized, polymd., reduced, Me esters
	162492-15-1	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced, Me esters, reduced, ethoxylated
	163702-05-4	Butane, 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-
	163702-06-5	Propane, 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoro-
	163702-07-6	Butane, 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-
	163702-08-7	Propane, 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoro-
	165178-32-5	Propane, 1,1,1,2,2,3,3-heptafluoro-3-[(1,2,2-trifluoroethenyl)oxy]-, polymer with 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
	177484-43-4	Propanenitrile, 2,3,3,3-tetrafluoro-2-[1,1,2,2,3,3-hexafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propoxy]-, polymer with 1,1,2,2-tetrafluoroethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
	185701-88-6	Propanoyl fluoride, 2,3,3,3-tetrafluoro-2-[1,1,2,3,3,3-hexafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propoxy]-, polymer with 2,2,3-

		trifluoro-3-(trifluoromethyl)oxirane, reaction products with 3-(ethenyldimethylsilyl)-N-methylbenzenamine
	200013-65-6	Diphosphoric acid, polymers with ethoxylated reduced Me esters of reduced polymd. oxidized tetrafluoroethylene
	212335-64-3	2-Propenoic acid, reaction products with N-[3-(dimethylamino)propyl]-1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonamide
	220075-01-4	Propanedioic acid, 2-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-, 1,3-dimethyl ester
	220182-27-4	1-Propene, 1,1,2,3,3,3-hexafluoro-, telomer with chlorotrifluoroethene, oxidized, reduced, Et ester, hydrolyzed
	220459-70-1	Glycine, N,N-bis[2-hydroxy-3-(2-propen-1-yloxy)propyl]-, sodium salt (1:1), reaction products with ammonium hydroxide and 1,1,1,2,2-pentafluoro-2-iodoethane-tetrafluoroethylene telomer
	220689-12-3	Phosphonium, tetrabutyl-, 1,1,2,2,3,3,4,4,4-nonafluoro-1-butanesulfonate (1:1)
	226409-30-9	Propanedioic acid, 2-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)-, 1,3-bis[4-(ethenyloxy)butyl] ester
	274917-93-0	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C3 fraction
	274917-94-1	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C4 fraction
	274917-95-2	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C5 fraction
	274917-96-3	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C6 fraction
	274917-97-4	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C7 fraction
	274918-01-3	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C8 fraction
	274918-02-4	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C9 fraction
	274918-03-5	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C10 fraction
	274918-09-1	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C11 fraction
	274918-10-4	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C12 fraction
	274918-12-6	Ethene, tetrafluoro-, oxidized, polymd., reduced, decarboxylated, C13 fraction
	297730-93-9	Hexane, 3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-
	328389-90-8	1,2-Propanediol, 3-(diethylamino)-, polymers with 5-isocyanato-1
	332350-90-0	Phosphonium, tributyl(2-methoxypropyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-1-butanesulfonamide (1:1)
	332350-93-3	Phosphonium, triphenyl(phenylmethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-1-butanesulfonamide (1:1)
	421595-49-5	2-Propenoic acid, 2-hydroxyethyl ester, adduct with 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane (1:1), reaction products with ethoxylated reduced Me esters of reduced polymd. oxidized tetrafluoroethylene
	452080-67-0	Boron, trifluoro(tetrahydrofuran)-, (T-4)-, polymer with 3-methyl
	475678-78-5	Oxetane, 3-methyl-3-[[(3,3,4,4,5,5,6,6,6-nonafluorohexyl)oxy]methyl]-

	484024-67-1	1-Butanesulfonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-, ammonium salt (1:1)
	502164-17-2	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced, Et esters
	753501-40-5	Boron, trifluoro(tetrahydrofuran)-, (T-4)-, polymer with 3-methyl-3-[(
	753501-43-8	Boron, trifluoro(tetrahydrofuran)-, (T-4)-, polymer with .alpha.-hy
	864910-70-3	Boron, trifluoro(tetrahydrofuran)-, (T-4)-, polymer with 2-methy
	878545-84-7	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1,2,2-tetrafluoroethene, 1,1,2-trifluoro-2-(1,1,2,2,2-pentafluoroethoxy)ethene and 1,1,2-trifluoro-2-(trifluoromethoxy)ethene
	957209-18-6	Furan, 2,3,3,4,4-pentafluorotetrahydro-5-methoxy-2,5-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-
	1224429-82-6	Phosphoric acid, mixed esters with polyethylene glycol and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-1-octanol, ammonium salts
	1370442-66-2	Iodonium, diphenyl-, 4,4'-di-C10-13-alkyl derivs., (OC-6-11)-hexafluoroantimonates(1-)
	1092822-31-5	2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with 2-hyd
	1269217-82-4	Thieno[3,4-b]thiophene, homopolymer, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoroethanesulfonic acid-tetrafluoroethylene polymer-doped
	1279108-20-1	Hexane, 1,6-diisocyanato-, homopolymer, α-[1-[[[3-[[3-(dimethylamino)propyl]amino]propyl]amino]carbonyl]-1,2,2,2-tetrafluoroethyl]-ω-(1,1,2,2,3,3,3-heptafluoropropoxy)poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]]-blocked
	1029089-63-1	Boron, trifluoro(tetrahydrofuran)-, (T-4)-, polymer with 3-methyl-3-((2,2,3,3,3-pentafluoropropoxy)methyl)oxetane, ether with 2,2-dimethyl-1,3-propanediol (2:1), polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl) and 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane
	1033385-42-0	Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], α-[1,2,2,2-tetrafluoro-1-[[(2-hydroxyethyl)amino]carbonyl]ethyl]-ω-[tetrafluoro(trifluoromethyl)ethoxy]-, ether with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (2:1)
	1214752-87-0	Borate(1-), tetrahydro-, sodium (1:1), reaction products with reduced polymd. oxidized tetrafluoroethylene, hydrolyzed, diallyl ethers, polymers with 2,4,6,8-tetramethylcyclotetrasiloxane, Si-(8,13-dioxo-4,7,12-trioxa-9-azapentadec-14-en-1-yl) derivs.
	1378928-76-7	Ethanesulfonyl fluoride, 2-[1-[difluoro][(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene, hydrolyzed, potassium salts
	1378930-04-1	Ethanesulfonyl fluoride, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene, hydrolyzed
	1378930-30-3	Propanoic acid, 3-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-, methyl ester, polymer with 1,1,2,2-tetrafluoroethene, hydrolyzed, potassium salts

	1564254-27-8	Ethene, 1,1,2,2-tetrafluoro-, oxidized, polymd., reduced, Me esters, reduced, N-(3-isocyanatomethylphenyl)carbamates
	1627515-87-0	Hexanedioic acid, polymers with 1,3-butanediol, 1,4-butanediol, di-Et malonate, 1,6-diisocyanatohexane, ethoxylated reduced Me esters of reduced polymd. oxidized tetrafluoroethylene, 1,6-hexanediol, 1,1'-methylenebis[isocyanatobenzene], propylene glycol a
	1687740-67-5	Ethanesulfonyl fluoride, 1,1,2,2-tetrafluoro-2-[(1,2,2-trifluoroethenyl)oxy]-, polymer with 1,1,2,2-tetrafluoroethene, hydrolyzed, lithium salts
	1708962-18-8	Methanol, reaction products with 1,1,1,2,2,3,4,5,5,6,6,7,7,7-tetradecafluoro-3-heptene
	1708962-19-9	Methanol, reaction products with 1,1,1,2,3,4,4,5,5,6,6,7,7,7-tetradecafluoro-2-heptene
	1807944-82-6	1-Octanesulfonic acid, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoro-, barium salt (2:1)
	2728655-42-1	Alcohols, C8-16, γ-ω-perfluoro, reaction products with 1,6-diisocyanatohexane, glycidol and stearyl alc.
	2738952-61-7	Acetamide, N-[3-(dimethylamino)propyl]-, 2-[(γ-ω-perfluoro-C4-20-alkyl)thio] derivs.
	2744262-09-5	Acetic acid, 2-[(γ-ω-perfluoro-C4-20-alkyl)thio] derivs., 2-hydroxypropyl esters
	2742694-36-4	Acetamide, N-(2-aminoethyl)-, 2-[(γ-ω-perfluoro-C4-20-alkyl)thio] derivs., polymers with N1,N1-dimethyl-1,3-propanediamine, epichlorohydrin and ethylenediamine, oxidized
	2816091-53-7	Betaines, dimethyl(.gamma.-.omega.-perfluoro-.gamma.-hydro-C8-18-alkyl)
1045 Polychlorinated alkanes Please see EPA guidance.		
1035 Polycyclic Aromatic Compounds Includes only the chemicals listed here.	50-32-8	Benzo(a)pyrene
	53-70-3	Dibenzo(a,h)anthracene
	56-49-5	3-Methylcholanthrene
	56-55-3	Benz(a)anthracene
	57-97-6	7,12-Dimethylbenz(a)anthracene
	189-55-9	Benzo(r,s)pentaphene
	189-64-0	Benzo(a,h)pyrene
	191-30-0	Dibenzo(a,l)pyrene
	192-65-4	Dibenzo(a,e)pyrene
	193-39-5	Indeno[1,2,3-cd]pyrene
	194-59-2	7H-Dibenzo(c,g)carbazole
	205-99-2	Benzo(b)fluoranthene
	205-82-3	Benzo(j)fluoranthene
	206-44-0	Benzo(j.k)fluorine
	207-08-9	Benzo(k)fluoranthene
	218-01-9	Benzo(a)phenanthrene
	224-42-0	Dibenz(a,j)acridine
	226-36-8	Dibenz(a,h)acridine
	3697-24-3	5-Methylchrysene
	5385-75-1	Dibenzo(a,e)Fluoranthene
	5522-43-0	1-Nitropyrene
1036 Selenium Compounds Includes any unique chemical substance that contains selenium as part of the chemical's infrastructure. Includes, but is not limited to:	144-34-3	Carbamodithioic Acid, dimethyl-,Tetraanhydrosulfid with Orthothioselenious Acid
	630-10-4	Selenourea
	7446-08-4	Selenium Dioxide
	7488-56-4	Selenium sulfide
	7782-82-3	Sodium Selenite
	7783-00-8	Selenious Acid
	10102-18-8	Sodium Selenite
	12039-52-0	Selenious Acid, Dithallium (1+) Salt
1037 Silver Compounds	506-61-6	Potassium Silver Cyanide

Includes any unique chemical substance that contains silver as part of the chemical's infrastructure. Includes, but is not limited to:	506-64-9	Silver Cyanide
	7761-88-8	Silver Nitrate
1070 Strychnine and Salts Includes any unique chemical substance that contains strychnine or a strychnine salt as part of the chemical's infrastructure. Includes, but is not limited to:	57-24-9	Strychnine and Salts
1038 Thallium compounds Includes any unique chemical substance that contains thallium as part of the chemical's infrastructure. Includes, but is not limited to:	563-68-8	Thallium Acetate
	1314-32-5	Thallic Oxide
	6533-73-9	Thallous Carbonate
	7446-18-6	Thallium sulfate
	7791-12-0	Thallium Chloride
	10031-59-1	Thallium sulfate
	10102-45-1	Thallium Nitrate
	12039-52-0	Selenious Acid, dithallium (1+0 Salt
1065 Vanadium Compounds Includes any unique chemical substance that contains vanadium as part of the chemical's infrastructure. Includes, but is not limited to:	1314-62-1	Vanadium Pentoxide
1039 Zinc Compounds Includes any unique chemical substance that contains zinc as part of the chemical's infrastructure. Includes, but is not limited to:	127-82-2	Zinc Phenolsulfonate
	137-30-4	Zinc, Bis(dimethylcarbomodithiato-S,S)-
	557-21-1	Zinc Cyanide
	557-34-6	Zinc Acetate
	557-41-5	Zinc Formate
	1314-84-7	Zinc Phosphide
	1332-07-6	Zinc Borate
	3486-35-9	Zinc Carbonate
	7646-85-7	Zinc Chloride
	7699-45-8	Zinc Bromide
	7720-78-7	Zinc Sulfate
	7779-86-4	Zinc Hydrosulfite
	7779-88-6	Zinc Nitrate
	7783-49-5	Zinc Fluoride
	14324-55-1	Zinc,Bis(diethylcarbamodithioato-S,S)-
	14639-97-5	Zinc Ammonium Chloride
	14639-98-6	Zinc Ammonium Chloride
	16871-71-9	Zinc Silicofluoride
	52628-25-8	Zinc Ammonium Chloride

Appendix C: Form S, Section 4: Toxics Use by Production Unit

This section provides guidance in completing Section 4 of the Form S.The purpose of Section 4 of the Form S is to indicate if use and/or byproduct increased or decreased by more than 10% compared to the previous reporting year, and if so, what lead to the change as indicated by TUR technique codes).

Four examples are presented, followed by a properly completed Form S and the correct solution for each example.

- Example 1: Production increase and chemical use in production unit and waste treatment operations
- Example 2: Increase in production and TUR implementation
- Example 3: Product reformulation and on-site recycling
- Example 4: Web coating improved cleaning operation with chemical substitution

Example #1 – Production increase and chemical use in production unit and waste treatment operations

Company ABC (Facility ID 70709) etches aluminum with sodium hydroxide and then anodizes the aluminum part using sulfuric acid (CAS 8014-95-7). For reporting year 2018 the company reported 120,000 pounds of sulfuric acid otherwise used, 50,000 pounds of that use was waste treatment pH neutralization and 70,000 pounds was used in anodizing (process code AA-18) in production unit #1. The company reported 50,000 pounds of byproduct for reporting year 2009 and 20,000 pounds of sulfuric acid consumed or transformed on line 2b of the Form S.

The company's Form S for sulfuric acid in reporting year 2009 is:

1e.	120,000 lbs	Otherwise used
1f.	50,000 lbs	Generated as Byproduct
2b.	20,000 lbs	Chemical was consumed or transformed
3b.	50,000 lbs	Amount of chemical used in waste treatment

Assuming all process efficiencies stayed the same in reporting years 2018 and 2019, and the company did not implement TUR projects in reporting year 2019, how would the facility complete the reporting year 2019 Form S if they had a 14% increase in business production and used 80,000 pounds of sulfuric acid in production unit #1? Assume the company used 50,000 pounds of sulfuric acid in waste treatment in reporting year 2019 and it reported a facility-wide use of sulfuric acid of 130,000 pounds in reporting year 2019.

The company's Form S for sulfuric acid in reporting year 2019 is on the following page:

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

Toxics Use Report - Form S

Chemical Use Facility-Wide and by Production Units

2019
Reporting Year

ABC
Facility Name

70709
DEP Facility ID Number

Sulfuric Acid
Chemical Name

Section 1: Facility-Wide Use of Listed Chemical

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

7664-93-9
a. MA DEP CAS #

Sulfuric Acid
b. Chemical Name (Dioxin should be in grams, decimal points may be used)

Facility-wide use of chemical identified in a. Enter the total amount (in POUNDS, except for dioxin) for each applicable category. **NOTE:** 'Generated as byproduct' (item f.) means all waste containing the listed chemical before the waste is handled, transferred, treated, recycled or released. Please refer to the reporting instructions before completing this section.

c. Manufactured

d. Processed

130,000
e. Otherwise Used

57,143
f. Generated As Byproduct

g. Shipped In Or As Product

h. Production or Activity Ratio

Section 2: Materials Balance

When the amounts reported in c, d and e in Section 1 are added together, the sum will in many cases equal the sum of f and g. In other words, lines c, d and e will often form a "materials balance." If lines c, d and e are not in approximate balance, you must use this section to explain why. Indicate all the reasons that apply by entering the number of pounds on the appropriate line below (e.g., 4,000 Chemical was held in inventory).

a. Chemical Was Recycled On Site

22,857
b. Chemical Was Consumed Or Transformed

c. Chemical Was Held In Inventory

d. Chemical Is A Compound

e. Other

f. Did anything non-routine occur at your facility during the reporting year that affected the data reported?

☐ Yes* ☒ No *If your answer is Yes, you may explain in Section 4.m. on Page 3.

Section 3: Chemicals Used in Waste Treatment Units

a. Is this chemical used to treat waste or control pollution?

☒ Yes ☐ No* *If your answer is No, please skip ahead to Section 4.

b. Please enter the amount of the chemical (in pounds) used to treat waste or control pollution.

50,000
Pounds

Section 3: Chemicals Used in Waste Treatment Units (continued)

c. Did the use of this chemical for waste treatment or pollution control increase or decrease by 10 percent or more compared with the previous reporting year?

c.1 ☐ Yes* ☒ No *If your answer is Yes, you may explain in Section 4.m. on Page 3.

c.2 ☐ Yes ☒ No Are there more chemicals to report? (Use ONLY if ALL chemicals are used to treat waste or control pollution.)

Section 4: Toxics Use by Production Unit

1
a. Production Unit #

Use

b. Quantity of Chemical Code:

☐ 1. ≤5,000 lbs. ☐ 2. > 5,000 ≤10,000 lbs. ☒ 3. > 10,000 lbs. ≤100,000 lbs.

☐ 4. > 100,000 lbs. ≤500,000 lbs. ☐ 5. > 500,000 lbs.

c. Did the use of this chemical in this production unit increase or decrease by 10 percent or more compared with the previous reporting year and/or did you implement toxics use reduction?

☒ Yes ☐ No* *If your answer is No, skip ahead to g. below.

Process code(s) where most significant changes occurred (up to three in descending order)	Type of Change (Enter "I" for Increase, "D" for Decrease)	Technique Code(s) (up to three per process code)		
AA-18 d.1.	I 2.	68 3a.	3b.	3c.
e.1.	2.	3a.	3b.	3c.
f.1.	2.	3a.	3b.	3c.

Byproduct

g. Was byproduct generated for this chemical less than 1 percent of use in this production unit?

☐ Yes* ☒ No *If your answer is Yes, skip ahead to m. on Page 3.

h. Did the byproduct generated for this chemical in this production unit increase or decrease by 10 percent or more compared with the previous reporting year and/or did you implement toxics use reduction?

☒ Yes ☐ No* *If your answer is No, skip ahead to m. on Page 3.

Process code(s) where most significant changes occurred (up to three in descending order)	Type of Change (Enter "I" for Increase, "D" for Decrease)	Technique Code(s) (up to three per process code)		
AA-18 i.1.	I 2.	68 3a.	3b.	3c.
j.1.	2.	3a.	3b.	3c.
k.1.	2.	3a.	3b.	3c.

l. Are there more production units that use this chemical? ☐ Yes ☐ No

m. You may add any comments or explanations regarding chemical use and/or byproduct generated in this production unit, chemical use in waste treatment (from Section 3), and non-routine occurrences at your facility (from Section 2).

Solution for Problem #1:

Reporting Year: **2019**
Facility Name: **Company ABC**
DEP Facility ID Number: **70709**
Chemical Name: **Sulfuric Acid**

Section 1: Facility wide use of Listed Chemical

1a. **9014-95-7**

1b. **Sulfuric Acid**

1e. **130,000 lbs** **Otherwise Used** **(given)**

1f. **57,143 lbs** **Generated as Byproduct**

(50,000 lbs byproduct 2009/70,000 lbs used in anodizing 2018)*(80,000 lbs used in anodizing 2018) = 57,143 lbs of byproduct 2019

This calculation is based on the statement in the problem that "…all process efficiencies stayed the same in 2018 and 2019…"

Section 2: Materials Balance

2b. **22,860 lbs** **Chemical Was Consumed or Transformed**

80,000 lbs used in anodizing – 57,143 lbs byproduct = 22,857 lbs consumed or transformed

2f. **No**

Section 3: Chemicals Used in Waste Treatment Units

3a. **Yes**
3b. **50,000 lbs (given)**
3c. **No.**

Section 4: Toxics Use by Production Unit

4a. **Production Unit #1**
4b. **3. >10,000 lbs. ≤100,000 lbs.**
4c. **Yes**.

Formula: If:
(previous year's use)*0.9 < (reporting year's use) < (previous year's use)*1.1
Then: the use of the chemical did not change by 10%.

2018 use (70,000 lbs) * 1.1 = 77,000 lbs
2018 use (70,000 lbs) * 0.9 = 63,000 lbs

2019 Use = 80,000 lbs which is a greater than 10% increase.

4d1. **AA-18**
4d2. **I**
4d3a. **68 (Production increased)**

4g. **No.**
4h. **Yes.**

Formula: If:
(previous year's byproduct generation) * 0.9 < (reporting year's byproduct generation) < (previous year's byproduct generation) * 1.1
Then: byproduct generation of the chemical did not change by 10%.

2018 byproduct generation (50,000 lbs) * 1.1 = 55,000 lbs
2018 byproduct generation (50,000 lbs) * 0.9 = 45,000 lbs

2019 byproduct generation = 57,143 lbs which is a greater than 10% increase.

4i1. **AA-18.**
4i2. **I**
4i3. **68 (Production increased)**
4l. **No**

Example #2: Increase in production and TUR implementation

Boards Etc. (Facility ID 9763459) is a contract circuit board assembler. It attaches customer specified components on customer supplied circuit board via wave soldering (process code CC-08) in production unit #1. In reporting year 2018, it used tin-lead solder that contained 3,436 pounds of lead (CAS 7439-92-1), a TURA reportable substance. That same year the company sent 6,090 pounds of solder dross off-site for recycling and received a statement back from its recycler that 1,855 pounds of lead were recovered from the dross, after having removed 140 pounds of lead oxide. Results of engineering estimates show that 2.3 pounds of lead were released as an air point source and 1,448 pounds of lead were applied to customer circuit boards and shipped with products.

The company's Form S for lead and lead compounds, reported as lead compounds in reporting year 2018 is:

1c	140 lbs	Manufactured (lead oxide)
1d.	3,436 lbs	Processed (lead)
1f.	1,987.5 lbs	Generated as Byproduct (lead oxide)
1g.	1,448 lbs	Shipped in or as product

In reporting year 2019 the company purchased and processed 3,354 pounds of lead in their solder. During that same reporting year it processed 10% more circuit boards than in reporting year 2018 and implemented a dross control program that reduced dross generation and recoverable lead was reported as 1,585 pounds. Engineering estimates indicate 2.5 pounds of lead were released to the air as a point source.

Data:

Dross Composition from 63 Sn/37 Pb Solder, after dross control program.

Lead	**30%**	**(recoverable)**
Tin	**44%**	
Lead Oxide	**3%**	
Tin Oxide	**22%**	

Note: Reporting triggered for both lead and lead compounds reported with single Form S/Form R for lead compounds.

The company's Form S for lead compounds in reporting year 2019 is on the following page:

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

Toxics Use Report - Form S

Chemical Use Facility-Wide and by Production Units

2019
Reporting Year

Boards, etc.
Facility Name

9763459
DEP Facility ID Number

Lead Compounds
Chemical Name

Section 1: Facility-Wide Use of Listed Chemical

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

1026
a. MA DEP CAS #

Lead Compounds
b. Chemical Name (Dioxin should be in grams, decimal points may be used)

Facility-wide use of chemical identified in a. Enter the total amount (in POUNDS, except for dioxin) for each applicable category. **NOTE:** 'Generated as byproduct' (item f.) means all waste containing the listed chemical before the waste is handled, transferred, treated, recycled or released. Please refer to the reporting instructions before completing this section.

158.5
c. Manufactured

3,354
d. Processed

e. Otherwise Used

1734.5
f. Generated As Byproduct

1,619.5
g. Shipped In Or As Product

h. Production or Activity Ratio

Section 2: Materials Balance

When the amounts reported in c, d and e in Section 1 are added together, the sum will in many cases equal the sum of f and g. In other words, lines c, d and e will often form a "materials balance." If lines c, d and e are not in approximate balance, you must use this section to explain why. Indicate all the reasons that apply by entering the number of pounds on the appropriate line below (e.g., 4,000 Chemical was held in inventory).

a. Chemical Was Recycled On Site

147
b. Chemical Was Consumed Or Transformed

c. Chemical Was Held In Inventory

11.5
d. Chemical Is A Compound

e. Other

f. Did anything non-routine occur at your facility during the reporting year that affected the data reported?

☐ Yes* ☒ No *If your answer is Yes, you may explain in Section 4.m. on Page 3.

Section 3: Chemicals Used in Waste Treatment Units

a. Is this chemical used to treat waste or control pollution?

☐ Yes ☒ No* *If your answer is No, please skip ahead to Section 4.

b. Please enter the amount of the chemical (in pounds) used to treat waste or control pollution.

Pounds

Section 3: Chemicals Used in Waste Treatment Units (continued)

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

Toxics Use Report - Form S

Chemical Use Facility-Wide and by Production Units

2019
Reporting Year

Boards, etc.
Facility Name

9763459
DEP Facility ID Number

Lead Compounds
Chemical Name

c. Did the use of this chemical for waste treatment or pollution control increase or decrease by 10 percent or more compared with the previous reporting year?

c.1. ☐ Yes* ☐ No *If your answer is Yes, you may explain in Section 4.m. on Page 3.

c.2. ☐ Yes ☐ No Are there more chemicals to report? (Use ONLY if ALL chemicals are used to treat waste or control pollution.)

Section 4: Toxics Use by Production Unit

1
a. Production Unit #

Use

b. Quantity of Chemical Code:

☒ 1. ≤5,000 lbs. ☐ 2. > 5,000 ≤10,000 lbs. ☐ 3. > 10,000 lbs. ≤100,000 lbs.

☐ 4. > 100,000 lbs. ≤500,000 lbs. ☐ 5. > 500,000 lbs.

c. Did the use of this chemical in this production unit increase or decrease by 10 percent or more compared with the previous reporting year and/or did you implement toxics use reduction?

☒ Yes ☐ No* *If your answer is No, skip ahead to g. below.

Process code(s) where most significant changes occurred (up to three in descending order)	Type of Change (Enter "I" for Increase, "D" for Decrease)	Technique Code(s) (up to three per process code)		
CC-08	D	50	68	
d.1.	2.	3a.	3b.	3c.
e.1.	2.	3a.	3b.	3c.
f.1.	2.	3a.	3b.	3c.

Byproduct

g. Was byproduct generated for this chemical less than 1 percent of use in this production unit?

☐ Yes* ☒ No *If your answer is Yes, skip ahead to m. on Page 3.

h. Did the byproduct generated for this chemical in this production unit increase or decrease by 10 percent or more compared with the previous reporting year and/or did you implement toxics use reduction?

☒ Yes ☐ No* *If your answer is No, skip ahead to m. on Page 3.

Process code(s) where most significant changes occurred (up to three in descending order)	Type of Change (Enter "I" for Increase, "D" for Decrease)	Technique Code(s) (up to three per process code)		
CC-08	D	50	68	
i.1.	2.	3a.	3b.	3c.
j.1.	2.	3a.	3b.	3c.
k.1.	2.	3a.	3b.	3c.

l. Are there more production units to report? ☐ Yes ☒ No

m. You may add any comments or explanations regarding chemical use and/or byproduct generated in this production unit, chemical use in waste treatment (from Section 3), and non-routine occurrences at your facility (from Section 2).

Please note that lead use and byproduct generation decreased (by 2% and 13%, respectively), while production increased by 10%. We recycle our lead dross off-site.

Solution for Problem #2

Reporting Year: **2019**
Facility Name: **Boards, Etc.**
DEP Facility ID Number: **009-76-3459**
Chemical Name: **Lead Compounds**

Section 1: Facility wide use of Listed Chemical

1a. 1026
1b. Lead Compounds
1c. 158.5 lbs Manufactured (PbO - Lead Oxide)

From dross composition 3% lead oxide 30% lead
0.03 lb PbO/0.30 lb Pb x 1585 lbs Pb recovered from dross = 158.5 lbs PbO Lead Oxide

** Note that amount manufactured is reported by the compound weight and not the base metal weight.

1d. 3,354 lbs Lead (given)
1f. 1734.5 lb Lead Byproduct (to be reported as base metal lead – Pb)

1732 lbs lead in dross [1585 lb (recoverable lead in dross, given) + 147 lb (base metal lead in lead oxide in dross]+ 2.5 lb lead (air emissions, given) = 1734.5 lb Pb

Note: Base metal lead content of lead oxide in dross is 93% based on molecular weight.
158.5 lbs PbO x 0.93 lb Pb/lb PbO = 147 lb Lead

1g. 1619.5 lb Lead Shipped in or as Product (to be reported as base metal lead – Pb)

Input – Byproduct = Product
3,354 lb Pb (input) – 1734.5 lb Pb (byproduct) = 1,619.5 lb Pb

Section 2: Materials Balance

2b. 147 lb

Adjustment to material balance for amount of lead base metal reported as both processed and manufactured.

2d. 11.5 lb

Adjustment to material balance for amount of manufactured compound weight that is not base metal. 158.5 lb PbO – 147 lb Pb = 11.5 lb

2f No

Section 3: Chemicals Used in Waste Treatment Units
3a No

Section 4: Toxics Use by Production Unit
4a. **Production Unit #1**
4b. **1. ≤ 5,000 lbs.**
4c. **Yes– Toxics use reduction was implemented.**

Formula: If:
(previous year's use)*0.9 < (reporting year's use) < (previous year's use)*1.1
Then: the use of the chemical did not change by 10%.

2018 use (3,436 lbs) * 1.1 = 3,779.6 lbs
2018 use (3,436 lbs) * 0.9 = 3,092.4 lbs

2019 Use = 3,354 lb, so use did not change by more than 10%, however, toxics use reduction was implemented in the form of a dross control program.

4d1. **CC-08**
4d2. **D**
4d3a. **50 (Improved Operations and Maintenance), 68 (Production increased)**

4g. **No.**
4h. **Yes. (Toxics use reduction was implemented AND byproduct generation decreased by more than 10%).**

Formula: If:
(previous year's byproduct generation) * 0.9 < (reporting year's byproduct generation) < (previous year's byproduct generation) * 1.1
Then: byproduct generation of the chemical did not change by 10%.

2018 byproduct generation (1,987.5 lbs) * 1.1 = 2,186.25 lbs
2018 byproduct generation (1,987.5 lbs) * 0.9 = 1,788.75 lbs

2019 byproduct generation = 1,734.5 lbs.

4i1. **CC-08.**
4i2. **D**
4i3. **50 (Improved Operations and Maintenance), 68 (Production increased)**
4l. **No.**
4m. **Please note that lead use and byproduct generation decreased (by 2% and 13%, respectively), while production increased by 10%. We recycle our lead dross off-site.**

Example #3 Product reformulation and on-site recycling

The Green Paint Company (Facility ID 745978) prides itself in the manufacture of environmentally friendly paints. It manufactures a line of VOC compliant solvent based paint in production unit #1 for use in metal finishing applications that contain xylene mixed isomers (CAS 1330-20-7). In reporting year 2018 it processed 126,541 pounds of xylene mixed isomers (including reclaimed solvent) and produced 56,237 gallons of metal finishing paint.

In the following reporting year 2019, the company manufactured/compounded (process code GG-01) a reformulated version of the metal finishing paint using a different resin that required the use of approximately 12% less xylene mixed isomers and no additional solvents. The company produced 58,116 gallons of the reformulated metal finishing paint using only 115,376 pounds of xylene mixed isomers. Fugitive emissions of xylene mixed isomers during processing operations were estimated at 1,135 pounds in reporting year 2018 and 1,098 pounds in reporting year 2019. The company has a non-integral on-site recycling solvent still (DD-02) that reclaimed approximately 800 pounds each year of xylene mixed isomers from processing operations. The amount of reclaimed xylene is included in the total facility-wide usage numbers stated above. The company shipped off-site 2 drums of hazardous waste in each year that it estimated contained a total of 250 pounds of xylene mixed isomers in reporting year 2018and 225 pounds in reporting year 2019.

The company's Form S for xylene mixed isomers in reporting year 2018 is:

1d.	126,541 lbs	Processed
1f.	2,185 lbs	Generated as Byproduct
1g	125,156 lbs	Shipped in or as product
2a.	800 lbs	Chemical was recycled on site

The company's Form S for xylene mixed isomers in reporting year 2019 is on the following page:

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

Toxics Use Report - Form S

Chemical Use Facility-Wide and by Production Units

2019
Reporting Year

Green Paint Company
Facility Name

745978
DEP Facility ID Number

Xylene (mixed isomers)
Chemical Name

Section 1: Facility-Wide Use of Listed Chemical

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

1330-20-7
a. MA DEP CAS #

Xylene (mixed isomers)
b. Chemical Name (Dioxin should be in grams, decimal points may be used)

Facility-wide use of chemical identified in a. Enter the total amount (in POUNDS, except for dioxin) for each applicable category. **NOTE:** 'Generated as byproduct' (item f.) means all waste containing the listed chemical before the waste is handled, transferred, treated, recycled or released. Please refer to the reporting instructions before completing this section.

c. Manufactured

114,576
d. Processed

e. Otherwise Used

2,123
f. Generated As Byproduct

113,253
g. Shipped In Or As Product

h. Production or Activity Ratio

Section 2: Materials Balance

When the amounts reported in c, d and e in Section 1 are added together, the sum will in many cases equal the sum of f and g. In other words, lines c, d and e will often form a "materials balance." If lines c, d and e are not in approximate balance, you must use this section to explain why. Indicate all the reasons that apply by entering the number of pounds on the appropriate line below (e.g., 4,000 Chemical was held in inventory).

800
a. Chemical Was Recycled On Site

b. Chemical Was Consumed Or Transformed

c. Chemical Was Held In Inventory

d. Chemical Is A Compound

e. Other

f. Did anything non-routine occur at your facility during the reporting year that affected the data reported?

☐ Yes* ☒ No *If your answer is Yes, you may explain in Section 4.m. on Page 3.

Section 3: Chemicals Used in Waste Treatment Units

a. Is this chemical used to treat waste or control pollution?

☐ Yes ☒ No* *If your answer is No, please skip ahead to Section 4.

b. Please enter the amount of the chemical (in pounds) used to treat waste or control pollution.

Pounds

Section 3: Chemicals Used in Waste Treatment Units (continued)

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

Toxics Use Report - Form S

Chemical Use Facility-Wide and by Production Units

2019
Reporting Year

Green Paint Company
Facility Name

745978
DEP Facility ID Number

Xylene (mixed isomers)
Chemical Name

c. Did the use of this chemical for waste treatment or pollution control increase or decrease by 10 percent or more compared with the previous reporting year?

c.1 ☐ Yes* ☐ No *If your answer is Yes, you may explain in Section 4.m. on Page 3.

c.2 ☐ Yes ☐ No Are there more chemicals to report? (Use ONLY if ALL chemicals are used to treat waste or control pollution.)

Section 4: Toxics Use by Production Unit

1
a. Production Unit #

Use

b. Quantity of Chemical Code:

☐ 1. ≤5,000 lbs. ☐ 2. > 5,000 ≤10,000 lbs. ☐ 3. > 10,000 lbs. ≤100,000 lbs.

☒ 4. > 100,000 lbs. ≤500,000 lbs. ☐ 5. > 500,000 lbs.

c. Did the use of this chemical in this production unit increase or decrease by 10 percent or more compared with the previous reporting year and/or did you implement toxics use reduction?

☒ Yes ☐ No* *If your answer is No, skip ahead to g. below.

Process code(s) where most significant changes occurred (up to three in descending order)	Type of Change (Enter "I" for Increase, "D" for Decrease)	Technique Code(s) (up to three per process code)		
GG-01	D	20		
d.1.	2.	3a.	3b.	3c.
e.1.	2.	3a.	3b.	3c.
f.1.	2.	3a.	3b.	3c.

Byproduct

g. Was byproduct generated for this chemical less than 1 percent of use in this production unit?

☐ Yes* ☒ No *If your answer is Yes, skip ahead to m. on Page 3.

h. Did the byproduct generated for this chemical in this production unit increase or decrease by 10 percent or more compared with the previous reporting year and/or did you implement toxics use reduction?

☒ Yes ☐ No* *If your answer is No, skip ahead to m. on Page 3.

Process code(s) where most significant changes occurred (up to three in descending order)	Type of Change (Enter "I" for Increase, "D" for Decrease)	Technique Code(s) (up to three per process code)		
GG-01	D	20		
i.1.	2.	3a.	3b.	3c.
j.1.	2.	3a.	3b.	3c.
k.1.	2.	3a.	3b.	3c.

l. Are there more production units that use this chemical? ☐ Yes ☒ No

m. You may add any comments or explanations regarding chemical use and/or byproduct generated in this production unit, chemical use in waste treatment (from Section 3), and non-routine occurrences at your facility (from Section 2).

The use and byproduct generation of xylene (mixed isomers) decreased even with an increase in business. We reformulated our metal finishing line of paint that requires the use of approximately 12% less xylene per gallon of paint produced.

Example #3:

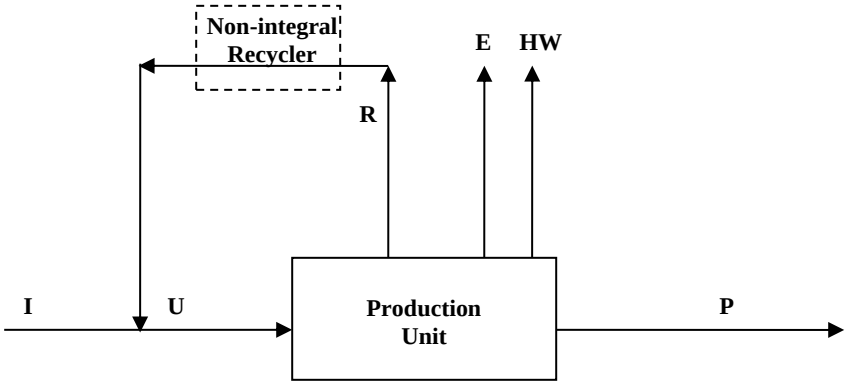
Reporting Year: **2019**
Facility Name: **Green Paint Company**
DEP Facility ID Number: **745978**
Chemical Name: **Xylene mixed isomers**

Section 1: Facility wide use of Listed Chemical
1a. **1330-20-7**

1b. **Xylene mixed isomers**

1d. **114,576 lbs Processed (as purchased and non-integral recycle)**

1f. **2,123 lbs Generated as Byproduct**



I = Initial input = 115,376 lbs used – 800 lbs recycled = 114,576 lbs. It states in the problem that "The amount of reclaimed xylene is included in the total facility-wide usage numbers stated above" – therefore, the amount of non-recycled xylene must be less than that used.

U = Used at facility = 115,376 lbs (given in problem)

P = Amount shipped in product = 115,376 lbs used (U) – 1,098 lbs fugitive emissions(E) – 225 lbs hazardous waste (HW) = 114,043 lbs

HW = Hazardous Waste = 225 lbs disposed of in drums

E = Fugitive emissions = 1,098 lbs

R = Non-integrally recycled xylene = 800 lbs

Total byproduct = 800 lbs (recovered by non-integral onsite recycling) + 1,098 lbs released as fugitive emissions + 225 lbs hazardous waste = 2,123 lbs

1g. **113,253 lbs Shipped In or As Product**

114,576 lbs (I) – 1,098 lbs fugitive emissions – 225 lbs hazardous waste = 113,253 lbs.

Section 2: Materials Balance

2a. **800 lbs Chemical Was Recycled Onsite**

2f. **No**

Section 3: Chemicals Used in Waste Treatment Units

3a. **No**

Example 4: Toxics Use by Production Unit

4a. Production Unit **#1**
4b. **4. > 100,000 lbs. ≤ 500,000 lbs.**
4c. **Yes – Toxics use reduction was implemented.**

Formula: If:
(previous year's use)*0.9 < (reporting year's use) < (previous year's use)*1.1
Then: the use of the chemical did not change by 10%.

2018 use (126,541 lbs) * 1.1 = 139,195 lbs
2018 use (126,541 lbs) * 0.9 = 113,887 lbs

2019Use = 115,376 lbs. However, toxics use reduction was implemented through product reformulation.

4d1. **GG-01**
4d2. **D**
4d3a. **20 (Product reformulation)**

4g. **No.**
4h. **Yes – Toxics use reduction was implemented.**

Formula: If:
(previous year's byproduct generation) * 0.9 < (reporting year's byproduct generation) < (previous year's byproduct generation) * 1.1
Then: byproduct generation of the chemical did not change by 10%.

2018 byproduct generation (2,185 lbs) * 1.1 = 2404 lbs
2018 byproduct generation (2,185 lbs) * 0.9 = 1967 lbs

2019 byproduct generation = 2,123 lbs. However, toxics use reduction was implemented.

4i1. **GG-01.**
4i2. **D**
4i3. **20 (Product reformulation)**
4l. **No.**
4m. **The use and byproduct generation of xylene mixed isomers decreased even with an increase in business. We reformulated our metal finishing line of paint that requires the use of approximately 12% less xylene per gallon of paint produced.**

Example #4 Web coating improved cleaning operation with chemical substitution

Web Coating PST Company (Facility ID 996492) offers an array of solvent-based coating services and products. The company uses a thermal oxidizer to destroy the half-dozen different VOCs the company uses to apply adhesives (process code AA-03) and apply other solvent-based coatings (process code AA-03). In reporting year 2009 the facility-wide usage of methyl ethyl ketone (MEK - CAS 78-93-3) was 226,541 pounds. It used 125,789 pounds of MEK in an adhesive (production unit #3) applied to 1.2 million square yards of product and the remaining 100,752 pounds of MEK in facility-wide equipment clean up (process code FF-01) operations (production unit #9).

The company's Form S for methyl ethyl ketone in reporting year 2018 is:

1e.	226,541 lbs	Otherwise Use
1f.	226,541 lbs	Byproduct

In reporting year 2019 the company implemented a number of changes to its equipment clean-up operations. It began substituting a non-reportable terpene-based alternative for clean-up of several different coatings. It adjusted the dams in the coater reservoir (process code AA-03) to decrease the amount of adhesive leaking past the dam, reducing clean-up needed. It also provided worker training on using mechanical scraping and wiping prior to solvent application in roller and equipment clean-up. The company will be evaluating the installation of a centralized cleaning unit and the possibility of on-site solvent recycling in reporting year2019.

In reporting year 2019 the company used 123,642 pounds of MEK in production unit #3 and produced 1.16 million yards of product. It used only 61,267 pounds of MEK in clean-up operations, even though they produced a comparable amount of product facility-wide as in reporting year 2018. The most significant reductions of MEK in clean-up operations (production unit #9) in order of descending importance are: the use of a terpene cleaner alternative, dam adjustment, worker training, and better use of mechanical scrapers.

The company's Form S for methyl ethyl ketone in reporting year 2019 is on the following page:

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

Toxics Use Report - Form S

Chemical Use Facility-Wide and by Production Units

2019
Reporting Year

Web Coating PST Company
Facility Name

996492
DEP Facility ID Number

Methyl Ethyl Ketone
Chemical Name

Section 1: Facility-Wide Use of Listed Chemical

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

78-93-3
a. MA DEP CAS #

Methyl Ethyl Ketone
b. Chemical Name (Dioxin should be in grams, decimal points may be used)

Facility-wide use of chemical identified in a. Enter the total amount (in POUNDS, except for dioxin) for each applicable category. **NOTE:** 'Generated as byproduct' (item f.) means all waste containing the listed chemical before the waste is handled, transferred, treated, recycled or released. Please refer to the reporting instructions before completing this section.

c. Manufactured

d. Processed

184,909
e. Otherwise Used

184,909
f. Generated As Byproduct

g. Shipped In Or As Product

h. Production or Activity Ratio

Section 2: Materials Balance

When the amounts reported in c, d and e in Section 1 are added together, the sum will in many cases equal the sum of f and g. In other words, lines c, d and e will often form a "materials balance." If lines c, d and e are not in approximate balance, you must use this section to explain why. Indicate all the reasons that apply by entering the number of pounds on the appropriate line below (e.g., 4,000 Chemical was held in inventory).

a. Chemical Was Recycled On Site

b. Chemical Was Consumed Or Transformed

c. Chemical Was Held In Inventory

d. Chemical Is A Compound

e. Other

f. Did anything non-routine occur at your facility during the reporting year that affected the data reported?

☐ Yes* ☒ No *If your answer is Yes, you may explain in Section 4.m. on Page 3.

Section 3: Chemicals Used in Waste Treatment Units

a. Is this chemical used to treat waste or control pollution?

☐ Yes ☒ No* *If your answer is No, please skip ahead to Section 4.

b. Please enter the amount of the chemical (in pounds) used to treat waste or control pollution.

Pounds

Section 3: Chemicals Used in Waste Treatment Units (continued)

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention

Toxics Use Report - Form S

Chemical Use Facility-Wide and by Production Units

2019
Reporting Year

Web Coating PST Company
Facility Name

996492
DEP Facility ID Number

Methyl Ethyl Ketone
Chemical Name

c. Did the use of this chemical for waste treatment or pollution control increase or decrease by 10 percent or more compared with the previous reporting year?

c.1. ☐ Yes* ☐ No *If your answer is Yes, you may explain in Section 4.m. on Page 3.

c.2. ☐ Yes ☐ No Are there more chemicals to report? (Use ONLY if ALL chemicals are used to treat waste or control pollution.)

Section 4: Toxics Use by Production Unit

003
a. Production Unit #

Use

b. Quantity of Chemical Code:

☐ 1. ≤5,000 lbs. ☐ 2. > 5,000 ≤10,000 lbs. ☐ 3. > 10,000 lbs. ≤100,000 lbs.

☒ 4. > 100,000 lbs. ≤500,000 lbs. ☐ 5. > 500,000 lbs.

c. Did the use of this chemical in this production unit increase or decrease by 10 percent or more compared with the previous reporting year and/or did you implement toxics use reduction?

☐ Yes ☒ No* *If your answer is No, skip ahead to g. below.

Process code(s) where most significant changes occurred (up to three in descending order)	Type of Change (Enter "I" for Increase, "D" for Decrease)	Technique Code(s) (up to three per process code)		
d.1.	2.	3a.	3b.	3c.
e.1.	2.	3a.	3b.	3c.
f.1.	2.	3a.	3b.	3c.

Byproduct

g. Was byproduct generated for this chemical less than 1 percent of use in this production unit?

☐ Yes* ☒ No *If your answer is Yes, skip ahead to m. on Page 3.

h. Did the byproduct generated for this chemical in this production unit increase or decrease by 10 percent or more compared with the previous reporting year and/or did you implement toxics use reduction?

☐ Yes ☒ No* *If your answer is No, skip ahead to m. on Page 3.

Process code(s) where most significant changes occurred (up to three in descending order)	Type of Change (Enter "I" for Increase, "D" for Decrease)	Technique Code(s) (up to three per process code)		
i.1.	2.	3a.	3b.	3c.
j.1.	2.	3a.	3b.	3c.
k.1.	2.	3a.	3b.	3c.

l. Are there more production units that use this chemical? ☒ Yes ☐ No

m. You may add any comments or explanations regarding chemical use and/or byproduct generated in this production unit, chemical use in waste treatment (from Section 3), and non-routine occurrences at your facility (from Section 2).

Section 4: Toxics Use by Production Unit (continued)

009
a. Production Unit #

Use

b. Quantity of Chemical Code:

☐ 1. ≤5,000 lbs. ☐ 2. > 5,000 ≤10,000 lbs. ☒ 3. > 10,000 lbs. ≤100,000 lbs.

☐ 4. > 100,000 lbs. ≤500,000 lbs. ☐ 5. > 500,000 lbs.

c. Did the use of this chemical in this production unit increase or decrease by 10 percent or more compared with the previous reporting year and/or did you implement toxics use reduction?

☒ Yes ☐ No* *If your answer is No, skip ahead to g. below.

Process code(s) where most significant changes occurred (up to three in descending order)	Type of Change (Enter "I" for Increase, "D" for Decrease)	Technique Code(s) (up to three per process code)		
FF-01	D	10	50	
d.1.	2.	3a.	3b.	3c.
AA-03	D	50		
e.1.	2.	3a.	3b.	3c.
f.1.	2.	3a.	3b.	3c.

Byproduct

g. Was byproduct generated for this chemical less than 1 percent of use in this production unit?

☐ Yes* ☒ No *If your answer is Yes, skip ahead to m. on Page 3.

h. Did the byproduct generated for this chemical in this production unit increase or decrease by 10 percent or more compared with the previous reporting year and/or did you implement toxics use reduction?

☒ Yes ☐ No* *If your answer is No, skip ahead to m. on Page 3.

Process code(s) where most significant changes occurred (up to three in descending order)	Type of Change (Enter "I" for Increase, "D" for Decrease)	Technique Code(s) (up to three per process code)		
FF-01	D	10	50	
i.1.	2.	3a.	3b.	3c.
AA-03	D	50		
j.1.	2.	3a.	3b.	3c.
k.1.	2.	3a.	3b.	3c.

l. Are there more production units that use this chemical? ☐ Yes ☒ No

m. You may add any comments or explanations regarding chemical use and/or byproduct generated in this production unit, chemical use in waste treatment (from Section 3), and non-routine occurrences at your facility (from Section 2).

We substituted a less toxic terpene for MEK in cleanup operations. We also made adjustments to operating equipment resulting in less equipment requiring adhesive removal in clean-up operations.

Solution for Problem #4:

Reporting Year: **2019**
Facility Name: **Web Coating PST Company**
DEP Facility ID Number: **996492**
Chemical Name: **Methyl Ethyl Ketone (MEK)**

Section 1: Facility wide use of Listed Chemical

1a. **78-93-3**

1b. **Methyl Ethyl Ketone (MEK)**

1e. **184,909 lbs** **Otherwise Used**
Total use = Amount used in P.U. #3 (123,642 lbs) + Amount used in P.U. #9 (61,267 lbs) = 184,909 lbs

1f. **184,909 lbs** **Generated as Byproduct**
(Assumes all solvent evaporates from product)

Section 2: Materials Balance

2f. **No**

Section 3: Chemicals Used in Waste Treatment Units

3a. **No**

Section 4: Toxics Use by Production Unit – Production Unit #3

4a. **Production Unit #3**
4b. **4. > 100,000 lbs. ≤ 500,000 lbs.**
4c. **No.**

Formula: If:
(previous year's use)*0.9 < (reporting year's use) < (previous year's use)*1.1
Then: the use of the chemical did not change by 10%.

2018 use (125,789 lbs) * 1.1 = 138,368 lbs
2018 use (125,789 lbs) * 0.9 = 113,210 lbs

2019 Use = 123,642 lbs. No toxics use reduction was implemented for this production unit.

4g. **No.**
4h. **No.**

Formula: If:
(previous year's byproduct generation) * 0.9 < (reporting year's byproduct generation) < (previous year's byproduct generation) * 1.1
Then: byproduct generation of the chemical did not change by 10%.

2018 byproduct generation (125,789 lbs) * 1.1 = 138,368 lbs
2018 byproduct generation (125,789 lbs) * 0.9 = 113,210 lbs

2019 byproduct generation = 123,642 lbs. No toxics use reduction was implemented for this production unit.

4l. **Yes.**

Section 4: Toxics Use by Production Unit – Production Unit #9

4a. **Production Unit #9**
4b. **3. > 10,000 lbs. ≤ 100,000 lbs.**
4c. **Yes.**

Formula: If:
(previous year's use)*0.9 < (reporting year's use) < (previous year's use)*1.1
Then: the use of the chemical did not change by 10%.

2018 use (100,752 lbs) * 1.1 = 110,827 lbs
2018use (100,752 lbs) * 0.9 = 90,677 lbs

2019 Use = 61,267 lbs.

4d1. **FF-01.**
4d2. **D**
4d3a. **10**
4d3b. **50**
4e1. **AA-03**
4e2. **D**
4e3a. **50**
4g. **No.**
4h. **Yes.**

Formula: If:
(previous year's byproduct generation) * 0.9 < (reporting year's byproduct generation) < (previous year's byproduct generation) * 1.1
Then: byproduct generation of the chemical did not change by 10%.

2018 byproduct generation (100,752 lbs) * 1.1 = 110,827 lbs
2018 byproduct generation (100,752 lbs) * 0.9 = 90,677 lbs

2019 byproduct generation = 61,267 lbs.

4i1. **FF-01.**
4i2. **D**
4i3a. **10**
4i3b. **50**
4j1. **AA-03**
4j2. **D**
4j3a. **50**
4l. **No.**
4m. **We substituted a less toxic terpene for MEK in clean-up operations. We also made adjustments to operating equipment resulting in less equipment requiring adhesive removal in clean-up operations.**

Appendix D: Common Reporting Errors

1. The toxics use report is missing forms.

A complete toxics use report includes the following:

- ✓ Form S Cover Sheet
- ✓ Form S for each chemical
- ✓ Form R for each chemical (or Form A, if applicable)
- ✓ Fee worksheet

Incomplete TURA reporting may result in late fees, enforcement and fines. **Each facility must file one Form S cover sheet for the facility as a whole. For each chemical reported, a Form R and Form S must be completed.** For ease of review, please place the Form R on top of the Form S for each chemical reported

2. Total chemical use as reported in Sections 1 c, d, and e of the Form S is not equal to the sum of the amounts generated as byproduct (Section 1 f) and shipped in product (Section 1 g).

Section of the report that may need correcting: FORM S: Section 1: Facility-wide Use of Chemical

Generally, there is a materials balance between chemical inputs and outputs on a facility-wide basis:

manufactured + processed + otherwise used = byproduct + shipped in product

If this is not the case on all of your forms, you should have checked one of the explanations (i.e., chemical was recycled on-site) in Section 2 on the Form. Otherwise, your materials accounting for the chemical may need to be checked.

3. The amount reported as byproduct on the Form S is *less than* the quantities reported in Section 8 (Source Reduction and Recycling Activities) of the Form R.

Sections of the report that may need correcting: FORM S: Section 1, item f: Facility-Wide byproduct generated and/or FORM R: Sections 5 and 6.

Byproduct will usually be equal to, or exceed, transfers and releases, since byproduct is the total quantity of waste that is generated during the production process calculated **before** it has been treated. The only time byproduct is less than transfers and releases is when some byproduct is reported as product on the Form S.

4. The amount reported as byproduct on the Form S, is *greater than* the quantities reported in Section 8 (Source Reduction and Recycling Activities) of the Form R when there is no on-site energy recovery, recycling, or destructive treatment.

Sections of the report that may need correcting: FORM S: Sections 1 item f: Facility-Wide byproduct generated, Section 2: Materials Balance and/or FORM R: Section 7.

Byproduct is the total quantity of waste that is generated during the production process, calculated **before** it has been treated. If a treatment system destroys some or all of the byproducts, or some of the byproducts are recycled, the reported byproducts will be greater than releases and transfers off-site. If there is no destructive treatment (including energy recovery), on-site recycling, or byproduct reported as product, then total byproduct on the Form S will be equal to Section 8 of the Form R.

5. The production ratio in Section 1.i of the Form S is reported as <0.2 or >10.

This is the same production ratio that is reported on the Form R. It is the current year production amount in those production units in which the chemical is used, divided by the previous year's production level. *Note: The production ratio should never be a negative number. If the production level decreased from the previous year, the production ratio should be a decimal number less than one (e.g., 0.80 means that the production level in the reporting year was 80% of the production in the previous year). If the production level has increased from the previous year, the production ratio should be a decimal number greater than one (e.g., 1.2 means that the production level in the reporting year was 20% greater than the production level in the previous year).*

6. A facility does not meet the requirements for filing a State Only Form A

A facility may only use a Form A, IF the total of the amount treated, recycled, disposed, released, used for energy recovery onsite and offsite IS LESS THAN 500 pounds. These volumes correspond to the sum of amounts reportable for data elements in Section 8, the summary of the report: Section 8.1 (quantity released), Section 8.2 (quantity used for energy recovery onsite), Section 8.3 (quantity used for energy recovery off-site), Section 8.4 (quantity recycled onsite), Section 8.5 (quantity recycled off-site), section 8.6 (quantity treated onsite), and Section 8.7 (quantity treated off-site).If more than a total of 500 pounds is reported in Section 8, the facility must report a State Only Form R. If a facility does not meet these requirements and uses a Form A, then Mass DEP may follow up with an enforcement action**.**

Appendix E: Questions and Answers

GENERAL REPORTING QUESTIONS

1. What happens if the facility reported last year but is exempt this year?

If the facility does not have to report this year but reported in a previous year, MassDEP recommends notification to MassDEP in writing with an explanation as to why they do not have to report. This will help MassDEP distinguish facilities that are exempt from those that are out of compliance. The Form S Cover Sheet has a section that may be completed if the facility is newly exempt from reporting. A letter may also be sent to MassDEP.

2. When should a plan summary be submitted?

Facilities must prepare or update their Plans in even-numbered calendar years only. A plan summary, resource conservation summary, or EMS progress report must be submitted to MassDEP by July 1st of the even-numbered year.

3. How does a facility file a trade secret claim?

To make trade secret claim in the facility's toxics use report, please call MassDEP's TURA Program at 617-292-5711 to request the "Trade Secret Special Instructions".

WASTE TREATMENT CHEMICALS

4. If the whole facility is claimed as a production unit, can the waste treatment system be included as part of the production unit?

No. Waste treatment units are not considered manufacturing processes and therefore cannot be included in production units. Companies should track chemicals used in waste treatment units separately from those used in production units. Companies should report chemical use associated with waste treatment operations in Section 3 of the Form S, Chemicals Used in Waste Treatment Units.

5. What if the waste treatment unit is "hard-piped" or "integral" to the production process, can it then be considered as part of the production unit?

No. Waste treatment units are not considered production processes even if they are "integral" to the manufacturing process. Chemicals used in them are reported separately from production units.

6. How can you correct reporting if a previously reported waste treatment unit was part of the production unit?

Consider all waste streams previously treated by the waste treatment unit as byproducts from production units in the facility. These byproducts should be allocated back to the production unit where they were generated. Chemicals used to perform the waste treatment operations (for example, acids and bases used for pH adjustment) can be reported separately in Section 3 of the Form S.

7. When spent acid process bath is dumped, it is used in the facility's waste treatment, as is, without further treatment. Can the byproduct be reported as product?

No. Byproduct as product that is used on site must be used in a manufacturing process to be considered byproduct as product. Amounts of spent acid and base baths that are used to adjust pH in waste treatment operations can be used to reduce facility-wide use of the reportable chemicals. They are still considered byproducts when they leave the production unit.

TUR PLANNER CERTIFICATION

8. How can one apply for certification or recertification as a TUR Planner?

Please call 617-292-5982 for a "Planner Certification Application" or "Planner Recertification Application," depending upon your situation. Please refer to MassDEP's website at: https://www.mass.gov/how-to/tu-01-03-general-practice-tur-planner-certification-or-recertification.

9. If a planner has questions concerning applying for certification or recertification, how can they get assistance?

Yes. Please call the MassDEP Planner Certification Program at 617-292-5982.

10. Can a planner receive credit for applicable courses taken outside the TURI and OTA curriculum?

Yes, as long as the courses fit the regulatory requirements found in 310 CMR 50.58. Courses offered by either OTA or TURI are usually pre-approved by MassDEP for use by TUR Planners seeking recertification credit. However, Planners do not receive credit by simply attending the pre-approved course; they must apply to MassDEP using the TUR Planner Continuing Education Credit Pre-approval Form to receive the credit.

Any organization wishing to offer courses pre-approved for credit for TUR Planners may contact the MassDEP Planner Program at 617-292-5982for more information. MassDEP normally requests some tangible information (e.g., a syllabus, course description and length of time) prior to pre-approving a course for Planner credit. Once again, each Planner attending a pre-approved course and seminar must apply to MassDEP in order to receive the credit.

11. How can a TUR Planner find out what courses TURI is offering or planning to offer that are suitable for credit toward recertification?

Information on courses offered by TURI is available on the TURI web site at www.turi.org.

12. If a TUR Planner takes a course approved by MassDEP for TUR Planner credits, does he/she still need to apply to MassDEP for credit?

Yes. MassDEP may give a course instructor permission to state that MassDEP has approved his or her course for use by TUR Planners for recertification credit. However, in order to receive the credit, a Planner must apply to MassDEP. A Planner may wait until all the required credits are obtained or may use the TUR Planner Continuing Education Credit Pre-approval Form to receive credit immediately.

13. Is there a rollover of recertification credits into the next 2-year period allowed for those TUR Planners who have accumulated more than the required credits in any given certification and recertification period?

Generally no, since allowing a rollover of extra credits into the next recertification period would defeat the basic purpose of recertification, which is to keep TUR Planners up-to-date on current TUR planning techniques. However, exceptions may be made in certain situations. For example, an exception could be made for obtaining extra credits by taking a relevant TUR course during the end of a TUR Planner's certification or recertification period. In this case, some of the surplus credits could possibly be used toward the next recertification period.

14.What are the TUR Planner requirements for certifying Resource Conservation (RC) Plans and Environmental Management Systems (EMS)?

The requirements can be found on MassDEP's web page: https://www.mass.gov/doc/instructions-general-practice-tur-planner-certificationrecertification

15. **Do TUR Planners need additional credits to sign RC Plans and EMS plans**?

No. Any RC and EMS credits obtained count toward the total number of credits required for recertification.

16. **When are TUR Planner examinations held?**

There are no set dates for TUR Planner examinations. MassDEP generally offers the examination once each year during late fall (in November or December), after TURI's planner course has been completed. TURI announces the pending examination in its planner classes.

Appendix F: Chemicals that Have Been Delisted Under TURA

The following chemicals have been delisted from TURA (but in certain cases are reportable under EPCRA):

Reporting Year/Chemical Delisted	Reason/Note
1994	
Barium Sulfate	EPCRA delisting and not CERCLA reportable
All copper phthalocyanine compounds that are substituted with only hydrogen and/or chlorine and/or bromine (delisted from the copper compounds category)	EPCRA delisting and not CERCLA reportable
High molecular weight glycol ethers	EPCRA delisting and not CERCLA reportable
1995	
Certain Metal Alloys (refer to Appendix B, Guidance for TURA Reporting and Planning for Certain Metals and Metal Alloys)	TURA Administrative Council delisting
Chromium (III) Oxide from chromium compounds category	TURA Administrative Council delisting
Ammonium Sulfate Solution (CAS#7783-20-2)	EPCRA delisting and not CERCLA reportable
Ammonium Nitrate Solution (CAS#6484-52-2)	EPCRA delisting and not CERCLA reportable
1996	
Hydroquinone (except for the manufacture of the chemical)	TURA Administrative Council delisting
Acetic Acid at concentrations of 12% or less	TURA Administrative Council delisting
Di-(2-ethylhexyDadipate (DEHA) (CAS#103-23-1)	EPCRA delisting and not CERCLA reportable

1997	
Zinc Oxide from zinc compounds category	TURA Administrative Council delisting
Radionuclides	TURA Administrative Council delisting
2-bromo-2-nitropropane (Bronopol) (CAS#52-51-7)	EPCRA delisting and not CERCLA reportable
2, 6 dimethylphenol (CAS# 576-26-1)	EPCRA delisting and not CERCLA reportable
Carbamate waste category	CERCLA delisting and not EPCRA reportable
1998	
Silver-Copper Alloy	TURA Administrative Council delisting
1999	
Pure Copper and Pure Silver	TURA Administrative Council delisting
Caprolactum (CAS# 105602)	CERCLA delisting and not EPCRA reportable
2000	
Zinc Stearate from zinc compounds category	TURA Administrative Council delisting
2010	
Adipic Acid	TURA Administrative Council delisting
Ammonium Bicarbonate	TURA Administrative Council delisting
Ammonium Chloride	TURA Administrative Council delisting
Ammonium Sulfamate	TURA Administrative Council delisting
Amyl Acetate	TURA Administrative Council delisting
Fumaric Acid	TURA Administrative Council delisting
Maleic Acid	TURA Administrative Council delisting

Appendix G: Integral Recycling Guidance under TURA

Introduction

The Toxics Use Reduction Act (TURA) identifies six (6) techniques that constitute toxics use reduction. The sixth technique is "recycling, reuse or extended use of toxics by using equipment or methods which become an integral part of the production unit of concern, including but not limited to filtration and other closed loop methods." TURA also states, in part, that "toxics use reduction shall not include... off-site or out-of-production unit waste recycling." This guidance provides detail on what types of activities are considered "integral recycling" under TURA.

Should the use of this integral recycling guidance at the facility result in significant reductions in thefacility-wide use or byproduct amounts, please contact Lynn Cain at lynn.cain@mass.gov. Significant changes in reporting can skew TURA trend data analysis and notification to MassDEP will allow the Department to modify amounts to prevent over counting of actual reductions.

Definitions: Activities Considered "Integral Recycling" Under This Guidance

- In order for an activity to qualify as "integral recycling" the material must be recycled or reused, not treated at the end of the process. The TURA statutory language refers to "recycling, reuse or extended use of toxics..." and the statutory definition of "toxics use reduction" specifically excludes anything that is, or that promotes, "end-of-pipe treatment."

  If the recycling equipment and piping are permanently connected to a single production unit, or if the recycling equipment is connected via detachable* hoses to a single production unit, the operation is integral.

- Detachable*, portable recycling equipment directly connected to the production unit while the recycling equipment is in operation is considered integral. There must be a sealed connection while the unit is in operation.

- If a manufacturing process includes a directly connected holding tank as part of its production unit, and the recycling unit is directly connected to the tank, this qualifies as integral recycling under this policy.

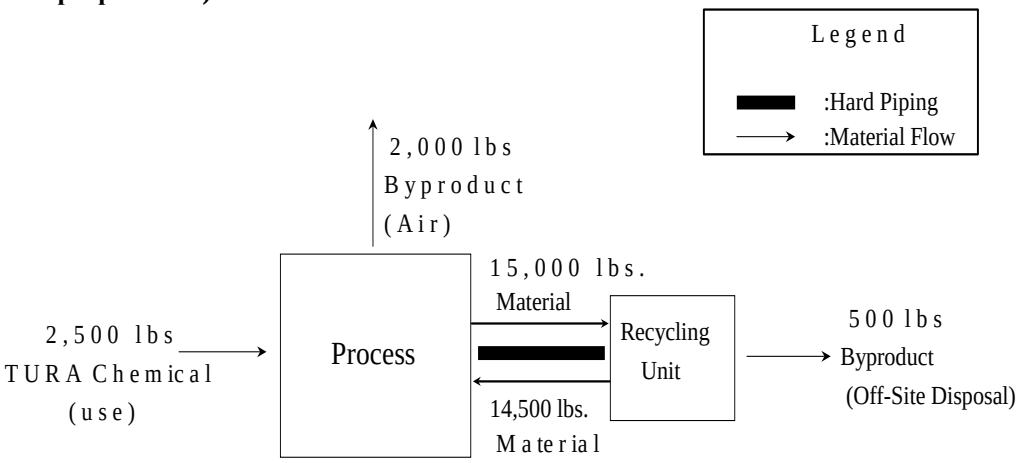
- Recycling, reuse, or extended use of toxics by using equipment or methods which become an integral part of the production unit of concern, including but not limited to filtration and other closed loop methods, are considered to be 'integral'. TURA's definition of integral recycling may not meet the definition of RCRA's "totally enclosed", but it is in compliance with MassDEP's hazardous waste regulations (310 CMR 30.00). If the facility has a RCRA integral treatment, then the only amount that would count under TURA is the amount of byproduct that comes out of that treatment.

* Whenever detachable pipes are used in conjunction with a recycling unit, a written spill prevention plan must be prepared and kept on file to minimize worker exposure and to prevent releases when connecting, disconnecting, and operating the recycling unit. This spill prevention plan minimizes any increased risk of worker exposures that may arise from this expanded definition of integral recycling under TURA. TURA filers who do not wish to prepare and keep on file this spill contingency plan should consider the recycling unit (connected via detachable hoses) non-integral under TURA and report accordingly.

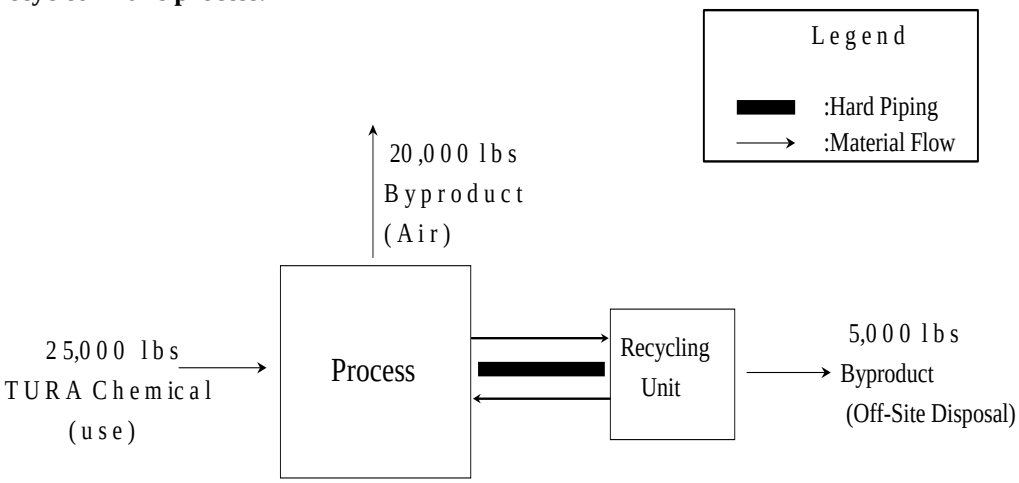
INTEGRAL RECYCLING EXAMPLES

✓Example: 1

A. This diagram illustrates the accounting of chemicals used and quantities of waste generated each time (batch) the reportable chemical is input to this process. (For this example, the chemical use occurs ten times each year. This example is further discussed below under "description of example process".)



B. This diagram shows quantities that are reported <u>annually</u> for a chemical thatis integrally recycled in this process.



Description of example process: In diagram A, ten times per year 2,500 lbs of virgin chemical is fed into the process to supplement the 14,500 lbs of integrally recycled chemical thatis reintroduced to the process on the same schedule. During the process that uses each of the ten batches of chemicals 2,000 lbs of byproduct is released into the air. Once each batch of chemical is spent, the spent chemical is pumped through the integrally connected recycling unit tha tproduces 500 lbs of byproduct as off-site disposal per batch.

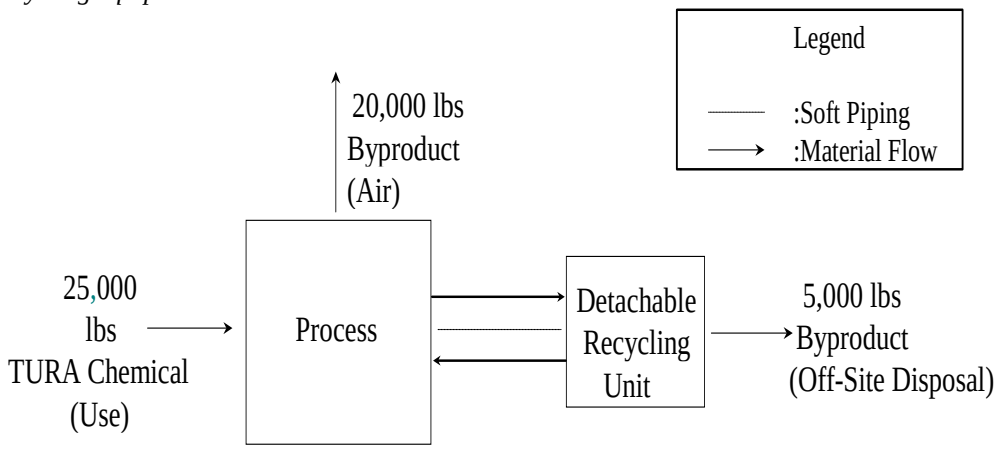
The quantities in diagram B represent the annual amounts of byproduct produced and material processed. Because the unit is integrally connected, the chemical recycled is not reported as an input to the process, and spent chemical piped to the recycling unit is not considered byproduct.

For this example of Integral Recycling, the Form S, Section 1 would be completed as follows:

c. Manufactured: 0 d. Processed: 0
e. Otherwise Used: **25,000**f. Generated as Byproduct: **25,000**
g. Shipped in or as Product: 0

✓Example: 2

To qualify as integral recycling, the detachable recycling unit must be connected to the process unit while the recycling unit is in operation via detachable couplings. The couplings must be appropriate for this use and perform similarly ashard piping. A written spill prevention plan must be developed to minimize risk of worker exposure and to prevent spills or leaks when connecting, disconnecting, or operating the recycling equipment.



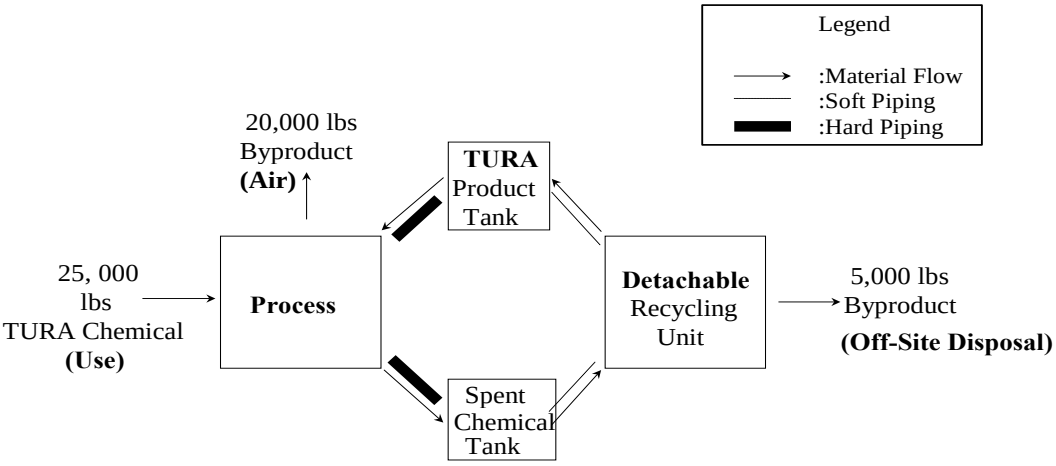
Description of example process: *The quantities in the diagram show the annual amounts of byproduct produced and material processed. Because the recycling unit is integrally connected, the chemical recycled is* ***not*** *reported as an input to the process, and spent chemical piped to the recycling unit is* ***not*** *considered byproduct.*

For this example of Integral Recycling, the Form S Section 1 would be filled out as follows:

c. Manufactured:	*0*	*d. Processed:*	*0*
e. Otherwise Used:	***25,000***	*f. Generated as Byproduct:*	***25,000***
g. Shipped in or as Product: 0			

✓**Example: 3**

A recycling process used to store spent chemicals that are subsequently recycled using either a hard-piped or detachable recycling unit, qualifies as "integral." The recycling unit must be connected to the tank when the recycling unit is in operation. A written spill prevention plan must be developed to minimize risk of worker exposure, and prevent spills or leaks when connecting and disconnecting or operating the recycling equipment.



Description of sample process: The quantities in the diagram show the yearly amounts of byproduct produced and material processed. Because the unit is integrally connected, the recycled chemical is not reported as an input to the process, and spent chemical piped to the recycling unit is not considered byproduct.

For this example of Integral Recycling, the Form S, Section 1 would be filled out as follows:

c. Manufactured: 0 d. Processed: 0
e. Otherwise Used: **25,000**f. Generated as Byproduct: **25,000**
g. Shipped in or as Product: 0

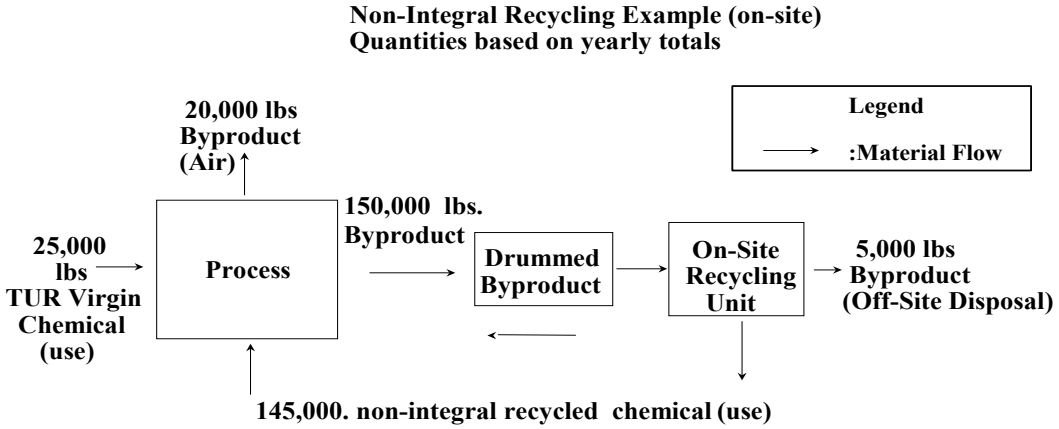
NON-INTEGRAL RECYCLING (ON-SITE)

Activities where spent material is removed from the process and transferred into tanks, barrels, or other containers for disposal or recycling at a different location in the facility are **not** considered integral under

this policy. To be considered integral, spent material from the production process must be pumped directly into the recycling unit or into a directly connected tank, and then to a directly connected recycling unit.

✓Example: 4

Non-integral, On-Site Recycling Reporting: Many companies have non-integral recycling operations on-site. Their processes include drumming and transporting the material to be recycled at a different location in the facility at some point during the operation. These recycling processes are not considered "integral recycling"; however TURA and this guidance recognize on-site, non-integral recycling as follows: Companies practicing on-site, non-integral recycling are required to count the recycled chemical as byproduct each time the recycled chemical exits the production unit. Additionally, each time the recycled material is re-introduced as an input to the production unit, it should be added to chemical use quantities at the production unit level, but not to the facility-wide use levels. Therefore, any type of on-site recycling is not counted towards facility-wide use of the chemical, and will result in a reduction in the facility-wide total usage number.



Description of Sample Process: *Each year, 25,000 lbs of virgin chemical plus 145,000 lbs of recycled chemical are added to the process (inputs). Each year, 20,000 lbs of byproduct are released to the air and 150,000 lbs of spent chemical are drummed and brought to the on-site recycling unit. The quantities in the diagram show the annual amount of byproduct produced and materials processed. Because this is on-site non-integral recycling, the 145,000 lbs of recycled chemical are not counted towards facility-wide use, but are counted toward chemical use at the production unit level. (The total byproduct from the production unit is the 150,000 lbs of chemical drummed for recycling and the 20,000 lbs of air emissions. The 5,000 lbs of off-site disposal is already included in the byproduct number.)*

For this example of a company performing Non-Integral On-Site Recycling, the Form S, Section 1, would be filled out as follows:

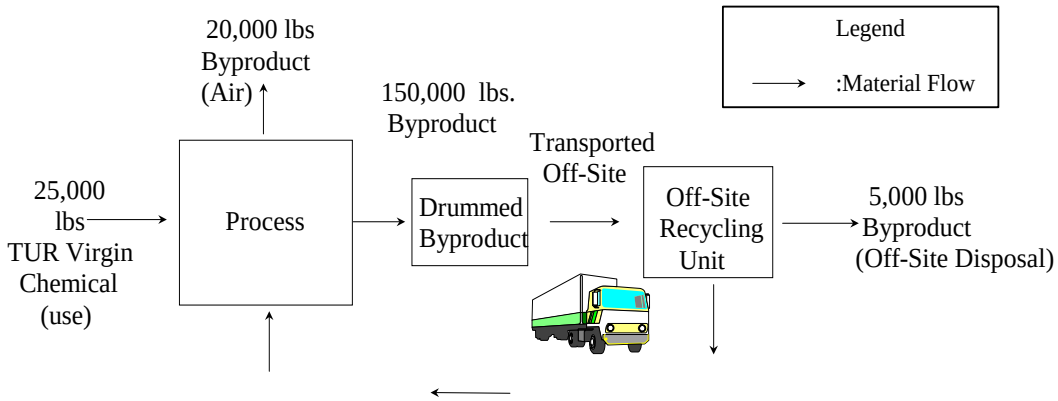
c. Manufactured: 0 d. Processed: 0
e. Otherwise Used: **25,000** f. Generated as Byproduct: **170,000**
g. Shipped in or as Product: 0

*Comparing Example 4 with the non-integral off-site recycling explained in Example 5 below demonstrates how facility-wide input numbers are minimized with non-integral, **on-site** recycling versus non-integral off-site recycling. It should be noted on the Form S, Section 2, that on-site recycling has affected the materials balance for the chemicals in question.*

✓Example: 5

Non-Integral Off-Site Recycling Reporting: Activities where materials are sent off-site for recycling are **not** considered integral under this guidance. Materials recycled off-site and re-introduced into the process, must be counted as byproduct and use both at the facility-wide and production unit levels. This can add significantly to the amount of chemical brought on-site and reported as facility-wide chemical use.

Non-Integral Recycling Example (off-site)
Quantities based on yearly totals reported



Description of Example Process: *25,000 lbs of virgin solvent plus 145,000 lbs of recycled solvent are added to the process (inputs) annually. Each year, 20,000 lbs of byproduct are released to the air and 150,000 lbs spent chemical is drummed and shipped off-site to a company which recycles spent solvent. This off-site recycling unit generates 5,000 lbs of waste. The quantities in the diagram show the annual amounts of byproduct produced and material processed. Because this facility uses off-site non-integral recycling, the recycled chemical, as well as the virgin chemical, must be counted as inputs to the process. Additionally, the spent chemical, as well as the byproduct emitted to the air, must be counted as byproduct. The 5,000 lbs of waste is neither generated nor reported by this facility.*

For this example of a company performing Non-Integral Off-Site Recycling, the Form S, Section 1, would be filled out as follows:

c. Manufactured: 0 d. Processed:0
e. Otherwise Used: 170,000 f. Generated as Byproduct: 170,000
g. Shipped in or as Product: 0

Appendix H: Guidance For Using TURA Production Process Codes

This appendix explains how to use the new standardized codes to describe the production processes included in your production unit(s).

Under TURA, the "production unit" [defined as the process(es) used to produce a product] is the basic unit for reporting and planning. In its regulations, MassDEP chose to give firms flexibility over how they designate their production units. The rationale was that firms are better suited to determine meaningful product and process combinations than are the regulators.

In TURA reporting, firms list their production units (as they chose to define them) in the Form S Cover Sheet -- identifying the products using one or more six-digit NAICS codes and describing the processes in their own words. MassDEP amended the TURA regulations (310 CMR 50.30) to incorporate reporting on production processes using generic codes.

This Appendix describes how and why the codes were developed and then explains how to use them to report information on the Form S Cover Sheet. (See "TUR Production Process Codes by Procsess Type" below for the annotated list of the codes.)

Do the codes require that a firm make changes in the way it defined its production unit?

No. The coding system is intended to maintain the traditional flexibility firms have been given in grouping products and processes into production units. No change in how firms define their production units is required. The codes are generic enough that most firms should only need a few codes to describe their processes.

Why were these codes developed?

The standardized process codes were developed, in large part, because of differences in the way similar processes were described by different companies. MassDEP wants to retain the flexibility given to firms in designating production units. We also need to identify, however, the similarities and differences in processes as part of potentially developing user segment regulations.

The coding system is intended to be used to group the 800+ processes reported each year into broad categories based on similarities and differences in such things as: 1) processes, 2) chemical use, 3) byproduct production, and 4) opportunities for TUR. Alpha-numeric codes have been assigned to each generic category.

✓Example 1: Off-Site Non-Integral Recycling

Each year, a number of firms report deionization of water as a production unit, although the way they describe this process varies. Some refer to it as "D/I Unit," others report only the "regeneration of resins for deionization," etc.

These firms represent a variety of industries, including paper making, pharmaceuticals, electroplating, and co-generation of steam. With the coding system, these firms would uniformly report HH-01 for deionizing water. Once this code is entered into the computer system, MassDEP can run a report, for example, to determine what TUR techniques have been adopted. Any promising developments in one industry can be researched for potential applicability in other industries.

MassDEP has, in fact, seen examples where technology transfers look promising. One TURA filer, primarily a chemical manufacturer, uses electroplated copper powders or flakes as a component in its products. That firm has developed an electroplating process that eliminates the need to use cyanide compounds. Although the process is patented, its development in one industry suggests the potential for technology transfer to traditional electroplating firms.

How To Use the Production Process Codes

Shown below is an excerpt from the **Form S Cover Sheet** showing the top half of Section 4, and calls for identifying the production unit by number, describing the processes involved, describing the product etc.

Section 4: Facility-Wide Listing of Production Units

A PRODUCTION UNIT is best thought of as the combination of the process (or activities) used to produce a product or service and the product or service. In this section, please identify the PRODUCTION UNITS at the facility, then use the production unit number to report on chemical use in the Form S.

If there has been a substantial change in a PRODUCTION UNIT from the previous reporting year, the PRODUCTION UNIT must be given a new, unique number.

a. Production Unit #

is this production unit IN USE for the reporting year of this submittal?

☐yes☐ no

b. Describe the Process:

c. Describe the Product:

Enter up to four (4) six-digit NAICS Codes that best describe the Product from this Production Unit:

d. NAICS Code e. NAICS Code f. NACIS Code g. NAICS Code

h. Check the appropriate description for the unit of product:

☐area☐ dollar ☐ hours ☐ kilowatt ☐ length ☐ N/A ☐ number ☐ volume ☐ weight

Where the form calls for information concerning the process, a firm should describe any process step that involves a TURA-reported chemical as an input, output or throughput.

A firm need NOT describe a process step that does not involve a TURA chemical. For example, a juice manufacturer would not have to describe mixing as a process step unless a TURA chemical being reported this year was involved. Another manufacturer that mixed food grade acetic acid to produce salad dressing would report the mixing step.

MassDEP does not expect extremely detailed descriptions of process steps and in the past most firms have described their processes in sufficient detail. However, more specific descriptions will help MassDEP identify similarities and differences in the production processes of firms.

✓Example 2: Off-Site Non-Integral Recycling

Instead of describing process as "household appliance manufacturing," it would be more helpful if the firm reported "spray coating and assembly of household appliances."

After describing the process, a firm describes the product and enters the six-digit NAICS code(s) that best describes that product. Then the unit of product is described in narrative fashion. (See the reporting instructions for more detailed information on completing the first part of Section 4 of the Form S Cover Sheet.)

Using the standardized process codes

Shown below is that part of Section 4 that calls for firms to enter the appropriate standardized process codes.

Production Process Step Information For This Production Unit

i. Enter the production process codes to identify the process steps that involve TURA-reportable chemicals as an input, output or throughput. (See the reporting guidance document for the list of production process codes and instructions on when a given code needs to be listed.)

1. _____ Process Code	2. _____ Process Code	3. _____ Process Code	4. _____ Process Code
5. _____ Process Code	6. _____ Process Code	7. _____ Process Code	8. _____ Process Code
9. _____ Process Code	10. _____ Process Code	11. _____ Process Code	12. _____ Process Code
13 _____ Process Code	14. _____ Process Code	15. _____ Process Code	16. _____ Process Code
17 _____ Process Code	18. _____ Process Code	19. _____ Process Code	20. _____ Process Code
21 _____ Process Code	22. _____ Process Code	23. _____ Process Code	24. _____ Process Code

To complete this part of the cover sheet, firms need to determine which production process code(s) best describe their activities. Note that the production process codes (which are listed in Appendix H herein) have been divided into three groups.

Note: There are some firms that may have to review the codes in all the groups. For example, this might occur with a textile manufacturer that not only dyes fabric but also formulates the dye using a chemical reaction.

Note: The examples and cross - references provided by MassDEP are based upon the agency's best understanding of production processes as described in TURA reports submitted in previous years.

With the first two groups, a distinction has been drawn between production processes generally used to provide services or make (or process) objects (Group 1) and those processes typically associated with the manufacture of chemicals (Group 2).

Group 1 contains processes that typically are used by firms that primarily make or process objects and goods (or provide services).

Group 2 is designed primarily for use by firms that manufacture or process chemicals. (Mainly firms in SIC code 28, 29, 30, some firms in 33 who recover metals, and chemical distributors.)

Group 3 lists miscellaneous processes that might be used by any firm, regardless of whether services are provided, goods are made, or chemicals produced.

DETERMINING WHICH PROCESS GROUP LIST TO USE

If the firm primarily makes or processes objects (or provides services), look first at the codes in Groups 1 and 3. If there are codes on these lists that adequately describe the processes, then there is no need to evaluate or report any of the chemical process codes in Group 2.[9] Similarly, a firm that primarily manufactures or processes chemicals should first look at Groups 2 and 3 for applicable codes.

If the firm makes and processes objects (or provides services) and there is no code in Group 1 or Group 3 that adequately describes the process, then check the Group 2 codes. There may be a generic chemical process code that can be used. Any questions, please call MassDEP at (617) 292-5711.

For many firms, using the process code lists should be straightforward. However, MassDEP does recognizethat questions and issues of interpretation of the codes may arise. To assist TURA reporters, MassDEP has included examples or other comments in the attached list of codes.

The examples and cross-references are intended ONLY as a guide; each filer is encouraged to use their own best judgment concerning which codes to use. There are, however, some general principles for using the production process codes.

[9]Many process steps in **Group 1** are themselves chemical reactions. For example, electroplating is an oxidation/reduction reaction. An electroplating firm, however, would enter one of the codes for electroplating (AA-12 or AA-13, for example). The firm would NOT enter the **Group 2** code (EE-07) for oxidation/reduction reactions.

1. **Each generic process code refers to the specific steps (or unit operations) normally associated with that process.**

✓**Example: 3**

A textile manufacturer reports, "acid aging," not as a bleaching process but as a step by which dyes are chemically activated. That manufacturer would use the code AA-22 Pigmentation and Dyeing for "acid aging" and all other steps normally associated with dyeing.

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2. **If a number of process steps can be categorized by one code, that code should be entered ONLY once for a given production unit.**

✓**Example: 4**

A tool manufacturer cuts, drills, and turns metal to produce hand tools. Generally all those processes can be classed as BB-05 Removal by Mechanical Means (Gross Mass Removal). The code BB-05 would be entered once for all those operations if they all are included in a given production unit. (If the firm had a second production unit with the same three processes, BB-05 would be reported for that production unit as well.)

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3. **Use all the codes that apply.**

✓**Example: 5**

Electroplating as a generic process includes a product-cleaning step. The appropriate code for electroplating should be reported, as well as the appropriate product cleaning code.

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4. **Using the "not otherwise specified" codes.**

The production processes are generally placed in subgroups, such as the "Product Molding and Forming" subgroup that includes CC-01 (Casting and Molding), CC-02 (Extrusion and Drawing) CC-03 (Forging), etc.

In some groups, the last code contains the abbreviation N.O.S. for "not otherwise specified." This code should be used for processes that cannot be categorized into one of the codes above it in the subgroup.

What to do if a process is not adequately described by a listed code?

After looking at Group 1 and 3 codes, a firm that makes or processes objects should next look at the Group 2 chemical reaction codes. If one of those codes applies, use it. If no code truly seems to apply, a firm should use its best judgment to determine which coded process is "most like" the activity being reported.

✓Example: 6

In the plastics industry there is a relatively new process for forming products known as "pultrusion." With this process, heated plastic is pulled through a die that gives it a specific shape. Assume no existing code is applicable.

However, the annotations in **Group 1** listindicate that CC-02: Extrusion and Drawing are processes that give a specific shape to a product by forcing it through a die. "Pultrusion" could be considered "most like" extrusion because a die is used to give shape to a product, even though the plastic is pulled, not pushed.

✓Example: 7

A food manufacturer uses a TURA-reportable chemical to "fumigate" its facility. Assume that there is no code that covers this process. However, there are two processes that are similar: FF-04: Equipment Cleaning (Solvent-Based) (includes sanitizing) and HH-02 Process Water Treatment – Biocides and Disinfection (which includes chlorination).

This firm would have to use its best judgment as to which code "fumigation" is most like. If the fumigant used is a solvent, the equipment cleaning code could be viewed as the most applicable. As this example illustrates, there is not necessarily any one "right" answer for which process code is most like "fumigation."

Reporting on the chemicals associated with a production unit

Each production unit may be associated with one or more chemicals. In the last part of section 4, firms list the particular chemical(s) that are associated with the given production unit. There is a space for the chemical name and the chemical abstract service (CAS) number. (If there is no CAS number, leave that line blank.) The form then asks whether the chemical listed is associated with all the process steps coded above. If so, check "YES" and no process codes need to be entered for the chemical. If the chemical is associated with some but not all of the processes, the appropriate process codes should be listed.

To illustrate Section 4 reporting, consider a firm that makes jewelry which reports two chemicals: trichloroethane (used to clean jewelry) and ammonia (used in etching).

The cleaning step would be BB-01: Product Cleaning - Solvent-Based, and the etching process would be BB-04: Removal by Chemical Means. This firm would report as shown below.

✓Example 8: Production Units

01
a. Production Unit #

is this production unit IN USE for the reporting year of this submittal?

☐yes☐ no

b. Describe the Process:

Cleaning and etching and jewelry

c. Describe the Product:

Jewelry

Enter up to four (4) six-digit NAICS Codes that best describe the Product from this Production Unit:

d. NAICS Code	e. NAICS Code	f. NAICS Code	g. NAICS Code
339914			

h. Check the appropriate description for the unit of product:

☐area ☐ dollar ☐ hours ☐ kilowatt ☐ length ☐ N/A ☒ number ☐ volume ☐ weight

✓Example 8: Production Units (Con't)

Production Process Step Information For This Production Unit

i. Enter the production process codes to identify the process steps that involve TURA-reportable chemicals as an input, output or throughput. (See the reporting guidance document for the list of production process codes and instructions on when a given code needs to be listed.)

1. BB-01 Process Code	2. BB-04 Process Code	3. _____ Process Code	4. _____ Process Code
5. _____ Process Code	6. _____ Process Code	7. _____ Process Code	8. _____ Process Code
9. _____ Process Code	10. _____ Process Code	11. _____ Process Code	12. _____ Process Code
13. _____ Process Code	14. _____ Process Code	15. _____ Process Code	16. _____ Process Code
17. _____ Process Code	18. _____ Process Code	19. _____ Process Code	20. _____ Process Code
21. _____ Process Code	22. _____ Process Code	23. _____ Process Code	24. _____ Process Code

List the TURA-reportable chemicals associated with this production unit. If a chemical is associated with ALL the process steps entered in i. above, check ALL. If a chemical is associated with some but not all of the process steps, check the numbers that correspond to the process codes entered in i. above (i.e. box 1 below corresponds to the process code entered in i.1).

j. Production unit number: 01 (Prod. Unit #)

k. TURA Chemica: 79016 (CAS #) TRICHLOROETHYLENE (Chemical Name)

Check "All" or the numbers that correspond to the process codes entered in i. **All.** ☐

1. ☒	2. ☐	3. ☐	4. ☐	5. ☐	6. ☐	7. ☐	8. ☐	9. ☐	10. ☐	11. ☐	12. ☐
13. ☐	14. ☐	15. ☐	16. ☐	17. ☐	18. ☐	19. ☐	20. ☐	21. ☐	22. ☐	23. ☐	24. ☐

l. TURA Chemica: 7664417 (CAS #) AMMONIA (Chemical Name)

Check "All" or the numbers that correspond to the process codes entered in i. **All.** ☐

1. ☐	2. ☒	3. ☐	4. ☐	5. ☐	6. ☐	7. ☐	8. ☐	9. ☐	10. ☐	11. ☐	12. ☐
13. ☐	14. ☐	15. ☐	16. ☐	17. ☐	18. ☐	19. ☐	20. ☐	21. ☐	22. ☐	23. ☐	24. ☐

TURA Production Process Codes Listing by Process Type

Group 1: Processes Typically Used by Firms that Make and Process Objects or Provide Services

General Guide to Group 1 Process Codes: Codes with the prefix "AA" generally refer to processes that add coatings or other matter to a product. The "BB" codes refer to processes that remove matter from a product. The "CC" codes represent processes by which products are given form, shape, physical dimension or other physical properties.

PROCESS and PROCESS CODE	COMMENTS and EXAMPLES
Coating & Painting Processes	Note: firms that use extrusion to coat objects should use the Extruding/Drawing (CC-02)
AA-01: Dip, Flow & Curtain Coating	Example: processes where excess coating material is allowed to flow or drain off
AA-02: Spray Coating	Example: applying coating as a fine mist or spray Note, however, electrostatic spray coating is included under AA-04 rather than this code
AA-03: Knife/Spread/Roll Coating	Example: using a roller, doctor knife or brush to apply coating
AA-04: Electrostatic Coating Methods	Examples: electrostatic spray coating, electrostatic powder coating, electrocoating
Printing Processes	
AA-05: Letterpress & Flexographic	Example: ink applied to a raised surface of printing plate
AA-06: Lithographic	Example: ink adheres to hydrophobic area/fountain solution adheres to hydrophilic area Use this code to describe the lithographic processes used in semiconductor and printed circuit board manufacturing
AA-07: Gravure	Example: ink remains in recessed areas of the plate Includes gravure coating as well as printing

AA-08: Screen Printing	Example: ink forced through open or porous areas of screen or plate
AA-09: Pad Printing	Example: use of a silicone pad to transfer ink from etched/engraved plate to work piece
AA-10: Printing Using Carrier Films or Foils	Examples: hot stamping, in-mold decorating of plastics using films or foils
AA-11: Jet Printing	Example: use of jet(s) to apply text or a pattern
Plating Processes	
AA-12: Electroplating (Barrel) AA-13: Electroplating (Rack)	
AA-14: Electroless (Barrel) AA-15: Electroless (Rack)	
AA-16: Mechanical Plating	Example: coating a substrate by tumbling or other mechanical means, e.g., using metal powders
AA-17: Hot Dip Coating (of metal)	Examples: galvanizing, hot tin dipping
Processes that penetrate surface layer	
AA-18: Anodizing, Conversion Coating and Case Hardening (through diffusion)	Examples: anodizing, black oxide conversion, bright dipping, chromating, passivating, phosphating Includes case hardening through diffusion of substances in the surface layer of metal (e.g., nitriding, nitrocarburizing) For case hardening through the application of energy/heat, see CC-04
AA-19: Deposition	Examples: vacuum metallizing, sputtering, metal (flame) spraying
Processes that add material throughout the mass of a product	
AA-20: Pigmentation/Dyeing	
AA-21: Infiltration/Saturation	Example: kraft paper saturation
AA-22: Impregnation/Implantation	Examples: (from semiconductor industry) - doping (through diffusion), ion implantation, vacuum impregnation
Processes that remove material from product	

Product or Parts Cleaning	Removing dirt, grease and other foreign matter from product For drying that occurs as part of cleaning use BB-09
BB-01: Solvent-Based	
BB-02: Aqueous	Includes rinsing
BB-03: Mechanical	Examples: sand blasting, cleaning with saw dust
Removal of Mass from Substrate (excluding Cleaning)	
BB-04: Removal by Chemical Means	Includes bleaching (in textiles), chemical stripping, electropolishing, etching, pickling (of metals)
BB-05: Removal by Mechanical Means (Gross Mass Removal)	Includes processes that remove pieces or chips from product; can include cutting, drilling, lathing, turning
BB-06: Removal by Mechanical Means (Fine Mass Removal/Size Reduction)	Includes removal methods that produce fine particles/dust; can include abrasive blasting, grinding, milling, polishing (processes that smooth the surface without removing material should be reported as CC-06)
BB-07: Removal by Chemical and Mechanical Means	Example: (in paper making) pulping where mechanical and chemical processes are used
BB-08: Removal by Application of Heat or Energy	Example: laser cutting
BB-09: Drying NOS	Drying not otherwise specified; includes chemical drying
Product Molding/Forming	
CC-01: Casting/Molding	Includes all forms of casting, injection molding, blow molding and similar processes
CC-02: Extrusion/Drawing	Includes processes by which a product is given shape by pushing material through a die or similar device Firms that coat products by extrusion should use this code
CC-03: Forging	

CC-04: Heat Treating NOS	Examples: controlled heating of metal to increase or decrease hardness, improve machinability, relieve stresses etc. (annealing, austempering, tempering and case hardening)
CC-05: Quenching	Example: rapid cooling after heat treating through contact with liquids, gases or solids
CC-06: Forming by Mechanical Means NOS	Forming by Mechanical Means not otherwise specified Examples: bending, cold heading, embossing, rolling
Bonding/Joining	
CC-07: Application of Adhesives	
CC-08: Soldering/Brazing	
CC-09: Welding	
CC-10: Sintering/Powder Metallurgy	
CC-11: Joining through Application of Heat/Energy NOS	Joining through Application of Heat/Energy not otherwise specified
CC-12: Joining through Chemical Means NOS	Joining through Chemical Means not otherwise specified
CC-13: Joining through Mechanical Means NOS	Joining through Mechanical Means not otherwise specified Examples: cladding

Group 2: Production Processes Typically Used by Firms that Manufacture and Process Chemicals

PROCESS and PROCESS CODE	COMMENTS and EXAMPLES
SEPARATION/REFINING	
DD-01: Centrifuge/Filtration	
DD-02: Distillation	
DD-03: Drying	
DD-04: Extraction	
DD-05: Precipitation	
DD-06: Refining/Purification	
DD-07: Smelting	
CHEMICAL REACTIONS	
EE-01: Acetalization	
EE-02: Condensation	
EE-03: Curing, Vulcanizing, Cross Linking	
EE-04: Dehydrogenation	
EE-05: Esterification	
EE-06: Hydrogenation	
EE-07: Oxidation/Reduction	
EE-08: pH Adjust	
EE-09: Polymerization	
EE-10: Substitution Reactions	Includes halogenization and chlorination
EE-11: Chemical Reactions NOS	Chemical Reactions not otherwise specified

Group 3: Miscellaneous Processes that could be used by any firm

PROCESS and PROCESS CODE	COMMENTS and EXAMPLES
Production Equipment Cleaning	Examples: cleaning of vessels, process lines, printing plates, such devices as spray guns. Also includes descaling of boilers NOTE: Equipment cleaning includes SANITIZING
FF-01: Solvent-Based	
FF-02: Aqueous	Example: use of caustic solutions to clean production equipment
FF-03: Mechanical	Example: use of wiper blades, squeegees
Materials Storage/Handling	
GG-01: Blending, Mixing, Compounding	
GG-02: Particle Size Reduction	Example: grinding mills
GG-03: Packaging/Filling	Examples: bottling liquid products, repackaging
GG-04: Materials Storage/Handling NOS	Materials Storage Handling not otherwise specified Use for storage and handling processes that generate losses such as spills or evaporative losses
Treatment of Process Water	
HH-01: Deionization, Demineralization	Examples: deionization, water softening, including associated process like regeneration of deionization resins
HH-02: Use of Biocides/Disinfection	Examples: water chlorination, use of algaecides in cooling towers
HH-03: pH Control of Process Water NOS	pH Control of Process Water (including water in boilers), not otherwise specified
Refrigeration/Temperature Control	
II-01: Refrigeration	
II-02: Heat Exchange Unit	
II-03: Contact Cooling NOS	Contact Cooling not otherwise specified Do not use for quenching. Quenching is CC-05

II-04: Noncontact Cooling NOS	Noncontact Cooling not otherwise specified
Power Generation	
JJ-01: Production of Electricity, Steam, Facility Heat	Applies to processes producing electricity, steam or heat through combustion, includes co-generation Note: use an FF code for equipment cleaning associated with power production and a HH code for treatment of cooling or boiler water

TURA Production Process Codes: Alphabetized Listing of Group 1 and 3

MassDEP has prepared the following alphabetical listing of some of the more commonly reported production processes with cross-references to the recommended codes listed above. This appendix explains how to use generic codes to report on production processes in the Form S Cover Sheet. The alphabetical list covers selected processes from Groups 1 and 3 of the codes listed in "TUR Production Process Codes by Process Type" above.[10](Firms that are primarily in the chemical manufacturing NAICS codes should also refer to the Group 2 codes. The processes associated with chemical manufacturing are not included in this alphabetical list.)

"TUR Production Process Codes by Process Type" should also be consulted to confirm the applicability of a code. While the appendix and this list are intended to provide guidance, each filer is encouraged to use his or her best judgment concerning which code(s) adequately describes its processes.

IMPORTANT NOTE ON THE "MOST LIKE" AND "NOT OTHERWISE SPECIFIED" CODING:

"TUR Production Process Codes by Process Type" divides the codes into subgroups, such as CC-01 through CC-06 for the product molding and forming codes. Some of the subgroups contain one or more codes containing the abbreviation "NOS" for "not otherwise specified."

Each NOS code is a default code for its group. For example, CC-06 (Forming by Mechanical Means NOS) should be used for any mechanical product forming process other than those specifically named in its group (e.g., casting, molding, extrusion, etc.). The use of the "most like" coding method discussed above should only be used as a last resort, i.e., if there is no applicable code, NOS or otherwise.

ALPHABETICAL LISTING OF PRODUCTION PROCESSES

[10]TUR Production Process Codes by Procsess Type"divides the codes into three groups: Group 1 lists processes typically used by firms that primarily make or process objects (or provide services). Group 2 lists processes typically used by firms that are primarily in the chemical manufacturing SIC codes. Group 3 lists miscellaneous processes that might be used by any firm regardless of whether objects or chemicals are made/processed (or services provided).

Process Step	Cross-Reference / Comment
abrasive blasting	*see codes listed below under "removal of mass from substrate"*
acid aging	see AA-20 (Pigmentation/Dyeing), for acid aging as a step in dyeing
annealing	see CC-04 (Heat Treating NOS)
anodizing	see AA-18 (Anodizing, Conversion Coating & Case Hardening [through diffusion])
application of adhesives	see CC-07 (Application of Adhesives - Bonding/Joining)
aqueous-based cleaning	see FF-02 (Aqueous Cleaning of Production Equipment) of production equipment
aqueous-based cleaning	see BB-02 (Aqueous Cleaning of Product or Parts) of work product
austempering	see CC-04 (Heat Treating NOS)
bending	see CC-06 (Forming by Mechanical Means NOS)
black oxide	see AA-18 (Anodizing, Conversion Coating & Case Hardening conversion coating [through diffusion])
blanking	*see codes listed below under "removal of mass from substrate"*
bleaching	see BB-04 (Removal by Chemical Means)
blending	see GG-01 (Blending, Mixing, Compounding)
blow molding	see CC-01 (Casting/Molding)
bonding/joining	see as appropriate: CC-07 (Application of Adhesives) CC-08 (Soldering/Brazing) CC-09 (Welding) CC-10 (Sintering/Powder Metallurgy) CC-11 (Joining through Application of Heat/Energy NOS) CC-12 (Joining through Chemical Means NOS) CC-13 (Joining through Mechanical Means NOS)

boring	*see codes listed below under "removal of mass from substrate"*
bottling liquid products	see GG-03 (Packaging/Filling)
brazing	see CC-08 (Soldering/Brazing)
bright dipping	see AA-18 (Anodizing, Conversion Coating & Case Hardening [through diffusion]) if bright dipping is intended to alter the chemical structure of the workpiece's surface seeBB-04 (Removal by Chemical Means) if bright dipping is intended to remove mass from the workpiece
broaching	*see codes listed below under "removal of mass from substrate"*
brush-on coating	see AA-03 (Knife/Spread/Roll Coating)
buffing	see as appropriate: CC-06 (Forming by Mechanical Means NOS), if the process is not intended to remove material from the work piece *codes listed below under "removal of mass from substrate,"* if the process is intended to remove material from the work piece
burnishing	see as appropriate: CC-06 (Forming by Mechanical Means NOS), if the process is not intended to remove material from the work piece *codes listed below under "removal of mass from substrate,"* if the process is intended to remove material from the work piece
calendering	see CC-06 (Forming by Mechanical Means NOS)
case hardening	see AA-18 (Anodizing, Conversion Coating & Case Hardening [through diffusion]), includes processes such as nitriding
case hardening by heat treating	see CC-04 (Heat Treating NOS)

casting	see CC-01 (Casting/Molding)
chemical drying	see BB-09 (Drying NOS), if chemical drying refers, for example, to the use solvents for drying a work product seeDD-03 (Drying) for chemical manufacturers that dry chemicals
chemical stripping	see BB-04 (Removal by Chemical
chromating	see AA-18 (Anodizing, Conversion Coating & Case Hardening [through diffusion])
cladding	see CC-13 (Joining through Mechanical Means (NOS) leaning of production equipment see as appropriate: FF-01 (Solvent-Based Cleaning of Production Equipment) FF-02 (Aqueous Cleaning of Production Equipment) FF-03 (Mechanical Cleaning of Production Equipment) cleaning of work product see as appropriate: BB-01 (Solvent-Based Cleaning of Product or Parts) BB-02 (Aqueous Cleaning of Product or Parts) BB-03 (Mechanical Cleaning of Product or Parts)
co-extrusion	see CC-02 (Extrusion/Drawing)
co-generation	see JJ-01 (Production of Electricity, Steam, Facility Heat)
cold heading	see CC-06 (Forming by Mechanical Means NOS)
compounding	see GG-01 (Blending, Mixing, Compounding
contact cooling	see II-03 (Contact Cooling NOS) or quenching, however, use CC-05 (Quenching)
conversion coating	see AA-18 (Anodizing, Conversion Coating & Case Hardening [through diffusion])
conveyorized degreasing	*see codes listed above under "cleaning of work product"*
crystal growth	see AA-19 (Deposition)
curtain coating	see AA-01 (Dip, Flow & Curtain Coating)

cutting	*see codes listed below under "removal of mass from substrate"*
deburring	*see codes listed below under "removal of mass from substrate"*
degreasing	*see codes listed above under "cleaning of work product"*
deionization	see HH-01 (Deionization, Demineralization), includes the regeneration of deionization resins (of process water)
demineralization	see HH-01 (Deionization, Demineralization)
deposition	see AA-19 (Deposition) use this code for processes that in deposit thin films (usually of metal) and for crystal growth (includes metal [flame] spraying, sputtering, vacuum metallizing)
descaling of boilers	*see codes listed above under "cleaning of production equipment"*
descaling of work product	*see codes listed below under "removal of mass from substrate"*
desmutting	*see codes listed below under "removal of mass from substrate"*
dip coating	see AA-01 (Dip, Flow & Curtain Coating)
disinfection	see HH-02 (Treatment of Process Water: Use of of process water Biocides/Disinfection)
doping (through diffusion)	see AA-22 (Impregnation/Implantation)
drawing	see CC-02 (Extrusion/Drawing)
drilling	*see codes listed below under "removal of mass from substrate"*
dry cleaning (of clothes)	*see codes listed above under "cleaning of work product"*
drying (of work product)	see BB-09 (Drying NOS)
dyeing	see AA-20 (Pigmentation/Dyeing)
electric power generation	see JJ-01 (Production of Electricity, Steam, Facility Heat)

electrocoating	see AA-04 (Electrostatic Coating Methods)
electroless plating (barrel)	see AA-14 (Electroless Plating [Barrel])
electroless plating (rack)	see AA-15 (Electroless Plating [Rack])
electroplating (barrel)	see AA-12 (Electroplating [Barrel])
electroplating (rack)	see AA-13 (Electroplating [Rack])
electropolishing	see BB-04 (Removal by Chemical Means)
electrostatic coating methods	see AA-04 (Electrostatic Coating Methods)
electrostatic powder coating	see AA-04 (Electrostatic Coating Methods)
electrostatic spray coating	see AA-04 (Electrostatic Coating Methods
embossing	see CC-06 (Forming by Mechanical Means NOS)
equipment cleaning	*see codes listed above under "cleaning of production equipment"*
etching	see BB-04 (Removal by Chemical Means)
extrusion	see CC-02 (Extrusion/Drawing)
filling	see GG-03 (Packaging/Filling)
flame and arc cutting	see BB-08 (Removal by Application of Heat or Energy)
flexographic printing	see AA-05 (Letterpress & Flexographic Printing)
flow coating	see AA-01 (Dip, Flow & Curtain Coating)
foam molding	see CC-01 (Casting/Molding)
forging	see CC-03 (Forging)
forming by mechanical means NOS	see CC-06 (Forming by Mechanical Means NOS) mechanical forming processe other than casting/molding (CC-01), extrusion/drawing (CC-02) or forging (CC-03)

galvanizing	see as appropriate: AA-17 (Hot Dip Coating of Metal) AA-12 (Electroplating, Barrel) &AA-13 (Electroplating, Rack), if galvanizing is by electroplating
gravure printing	see AA-07 (Gravure)
gravure coating	see AA-07 (Gravure)
grinding	see as appropriate: *codes listed below under "removal of mass from substrate"* GG-02 (Particle Size Reduction) for grinding of chemicals, as in grinding of paint pigments
heat exchange unit	see II-02 (Heat Exchange Unit)
heat treating	see CC-04 (Heat Treating NOS)
hobbing	*see codes listed below under "removal of mass from substrate*
hot dip coating (of metal)	see AA-17 (Hot Dip Coating of Metal)
hot stamping	see AA-10 (Printing Using Carrier Films or Foils) (printing)
hot tin dipping	see AA-17 (Hot Dip Coating of Metal)
implantation	see AA-22 (Impregnation/Implantation)
impregnation	see AA-22 (Impregnation/Implantation)
in-mold decorating of plastics	see AA-10 (Printing Using Carrier Films or Foils) using films or foils
infiltration	see AA-21 (Infiltration/Saturation)
injection molding	see CC-01 (Casting/Molding)
ion implantation	see AA-22 (Impregnation/Implantation)
jet printing	see AA-11 (Jet Printing)
knife coating	see AA-03 (Knife/Spread/Roll Coating)

knife over roll coating	see AA-03 (Knife/Spread/Roll Coating)
kraft paper saturation	see AA-21 (Infiltration/Saturation)
laser cutting	see BB-08 (Removal by Application of Heat or Energy)
lathing	*see codes listed below under "removal of mass from substrate"*
letterpress printing	see AA-05 (Letterpress & Flexographic Printing)
lithographic printing	see AA-06 (Lithographic)
machining	*see codes listed below under "removal of mass from substrate"*
materials storage/handling	see as appropriate: GG-01 (Blending, Mixing, Compounding) GG-02 (Particle Size Reduction) GG-03 (Packaging/Filling) GG-04 (Materials Storage Handling NOS)
mechanical plating	see AA-16 (Mechanical Plating)
metal (flame) spraying	see AA-19 (Deposition)
milling	see as appropriate: *codes listed below under "removal of mass from substrate"* GG-02 (Particle Size Reduction) as in the use of grinding mills
mixing	see GG-01 (Blending, Mixing, Compounding)
molding	see CC-01 (Casting/Molding)
neutralization	if neutralization is a step in a coded process, use that code for that process, for example, if neutralization is a step in dyeing, the appropriate code would be AA-20 (Pigmentation/Dyeing)
use EE-08	if neutralization is used in the manufacture of a chemical, (pH Adjust)
nitriding	see AA-18 (Anodizing, Conversion Coating & Case Hardening [through diffusion])

nitrocarburizing	see AA-18 (Anodizing, Conversion Coating & Case Hardening [through diffusion])
noncontact cooling	see II-04 (Noncontact Cooling NOS) (where cooling fluid is kept separate from the production process)
packaging	see GG-03 (Packaging/Filling)
pad printing	see AA-09 (Pad Printing)
particle size reduction	see GG-02 (Particle Size Reduction), for processes such as the grinding of paint pigments
passivating	see AA-18 (Anodizing, Conversion Coating & Case Hardening [through diffusion])
pH control	see HH-03 (pH Control of Process Water [including water in of process water boilers] NOS)
photolithography	see AA-06 (Lithographic)
phosphatizing	see AA-18 (Anodizing, Conversion Coating & Case Hardening [through diffusion])
pickling (of metals)	see BB-04 (Removal by Chemical Means)
pigmentation	see AA-20 (Pigmentation/Dyeing)
polishing	*codes listed below under "removal of mass from substrate,"* if material is removed from work piece
polishing (continued)	CC-06 (Forming by Mechanical Means NOS) if material is not removed from work piece
powder metallurgy	see CC-10 (Sintering/Powder Metallurgy)
pressure treating (wood)	see AA-22 (Impregnation/Implantation)
printing using	see AA-10 (Printing Using Carrier or Filmscarrier films or Foils)

NOTE: some mechanical "removal" processes (e.g., polishing) can be used either to remove material or to smooth the surface of a product without removing material. The code for such mechanical surface "smoothing" is CC-06 (Forming by Mechanical Means NOS).

pulping (in paper making)	see as appropriate: BB-05 (Removal by Mechanical Means - Gross Mass Removal) BB-06 (Removal by Mechanical Means - Fine Mass Removal) BB-07 (Removal by Chemical & Mechanical Means)
punching	*see codes listed below under "removal of mass from substrate"*
quenching	see CC-05 (Quenching)
refrigeration	see II-01 (Refrigeration)
regeneration of deionization resins	see HH-01 (Deionization, Demineralization)
removal of mass from substrate	refers to processes which can be used to a work product, generally, excluding the removal of dirt or grease cleaning as in removal The six removal codes are: BB-04 (Removal by Chemical Means) BB-05 (Removal by Mechanical Means -- Gross Mass Removal), to be used if process removes pieces or chips BB-06 (Removal by Mechanical Means -- Fine Mass Removal/ Size Reduction), to be used if process produces fine particles or dust BB-07 (Removal by Chemical & Mechanical Means) BB-08 (Removal by Application of Heat or Energy) BB-09 (Drying NOS) for drying work products
repackaging	see GG-03 (Packaging/Filling)
reverse roll coating/printing	see AA-03 (Knife/Spread/Roll Coating)
rinsing	see BB-02 (Aqueous Cleaning of Product or Parts)
roll coating	see AA-03 (Knife/Spread/Roll Coating)

rolling	see CC-06 (Forming by Mechanical Means NOS)
rotary screen printing	see AA-08 (Screen Printing)
sand blasting	*see codes listed above under "removal of mass from substrate"*
sanitizing (production equipment)	*see codes listed above under "cleaning of production equipment"*
saturation	see AA-21 (Infiltration/Saturation)
sawing	*see codes listed above under "removal of mass from substrate"*
semi-aqueous cleaning	see BB-01 (Solvent-Based Cleaning of Product or of work product parts)
scouring (textile products)	*see codes listed above under "cleaning of work product"*
screen printing	see AA-08 (Screen Printing)
shearing	*see codes listed above under "removal of mass from substrate"*
sintering	see CC-10 (Sintering/Powder Metallurgy)
soldering	see CC-08 (Soldering/Brazing)
solvent-based cleaning	see FF-01 (Solvent-Based Production Equipment of production equipment Cleaning)
solvent-based cleaning	see BB-01 (Solvent-Based Cleaning of Product or of work product Parts)
solvent drying	see BB-09 (Drying NOS), for the use solvents to dry a product or work piece
spray coating	see AA-02 (Spray Coating) (does not include electrostatic spray coating)
spray coating	seeAA-04 (Electrostatic Coating Methods) for electrostatic

spread coating	see AA-03 (Knife/Spread/Roll Coating)
sputtering	see AA-19 (Deposition)
steam generation via combustion	see JJ-01 (Production of Electricity, Steam, Facility Heat)
straightening	see CC-06 (Forming by Mechanical Means NOS)
tempering	see CC-04 (Heat Treating NOS)
trimming	*see codes listed above under "removal of mass from substrate"*
tumbling	see as appropriate: AA-16 (Mechanical Plating), if tumbling is used to plate *codes listed above under "removal of mass from substrate,"* if tumbling is used to remove mass from a work product, such as tumbling to deburr CC-06 (Forming by Mechanical Means NOS), if tumbling is used to smooth a work product without removing mass turning *see codes listed above under "removal of mass from substrate"*
ultrasonic cleaning of parts	*see codes listed above under "cleaning of work product"*
use of biocides	see HH-02 (Treatment of Process Water: Use of in process water/cooling towers Biocides/Disinfection)
use of squeegees/wiper blades/rags	*see codes listed above under "cleaning of production equipment"*to clean production equipment
vacuum impregnation	see AA-22 (Impregnation/Implantation)
vacuum metallizing	see AA-19 (Deposition)
vapor degreasing	*see codes listed above under "cleaning of work product"*
water deionization	see HH-01 (Deionization, Demineralization)
water chlorination Biocides/Disinfection	see HH-02 (Treatment of Process Water: Use of
water softening	see HH-01 (Deionization, Demineralization)
welding	see CC-09 (Welding)

Appendix I: Production Units

The Form S contains both facility-wide and process-specific information. Facilities report information on the quantity of chemical used and the amount generated as byproduct (waste) on a facility-wide level. Any progress in reducing byproduct through the implementation of toxics use reduction is measured and reported at the process (or "production unit") level.

A **production unit** is "a process, line, method, activity, or techniques, or a combination or series thereof, used to produce a product or a family of products."

A **product** means "a product, family of products, an intermediate product, a family of intermediate products, or a desired result or family of results."

A **result** is, for example, clean laundry after an industrial cleaning process.

A **family of products** is, for example, three different rubber compounds grouped together as one product.

Intermediate product is, for example: A chemical manufacturer produces methanol as an intermediate step in the production of formaldehyde. The methanol can be considered a product.

With these definitions TURA gives facilities flexibility in how they divide their facility into production units:

- A production unit can include all of the processes used to produce an individual item such as a particular shade of paint or a plated knife, or produce a desired result such as cleaned out lines and mixing vats.

- Products can be grouped together into a family of products so that, for instance, all of the processes used to create several different shades of paint could be considered one production unit.

- An individual process step such as degreasing coupled with the result of that step (for example, a degreased piece of metal), can be considered a separate production unit.

- Separate process lines that make the same product can be considered as one production unit.

For guidance on factors that should be considered when establishing production units, please refer to MassDEP's "Guidelines for Classifying Production Units". This can be obtained on the MassDEP web site at: https://www.mass.gov/media/1784276.

In addition to identifying production units, facilities must also establish a "unit of product." There are two basic explanations for a decline in the quantity of chemical generated as byproduct: 1) there could have been a drop in production levels; or 2) through the implementation of TUR, less byproduct could have been generated per unit of product produced.

In order to distinguish byproduct reductions that occur through declines in production from those that occur because of the implementation of TUR, production level reporting is done on a "per unit of product" basis.

As with production units, facilities are free to select the unit of product. The key to choosing a unit of product is that the measure should be a reliable indicator of changes in production levels. The unit of product should be one that reliably increases or decreases as production goes up or down. The Guidelines for Classifying Production Units discusses considerations for selecting a unit of product.

In most cases, an acceptable choice will be a physical measure such as pounds of ammonia manufactured by the production unit or square yards of printed fabric.

✓Example

Example	**Units of Product**
No. of Products/year	No. of wood chairs
Square feet/year	square feet of anodized parts
Pounds/year	pounds of formaldehyde produced
Gallons/year	gallons of paint produced

Sometimes, however, it may not be possible to identify a physical measure that reliably reflects outputs. In such a case, a non-physical measure may be used as a way to quantify changes in production. Examples of this may include: hours of operation, labor hours, and dollar sales.

Non-physical measures can be affected by things that have nothing to do with changing levels of production. For instance, dollar sales will be influenced by changes in inflation, or perhaps, by product pricing. Labor hours might be less reliable if there has been a mid-year shift to automation, making output more efficient.

If you chose a non-physical unit of product, you must provide a written explanation as to why a physical measure cannot be used. You must also state how the non-physical measure has been adjusted to accurately reflect production levels rather than changes in costs, prices, inventory, productivity or other factors.

Appendix J: Glossary of Terms

Alloy: a substance possessing metallic properties and composed of two or more elements of which at least one must be a metal. The term refers to those cases where there is an intentional addition to a metal for the purpose of improving certain properties.

Byproduct: Non-product outputs of toxic or hazardous substances generated by a production unit, before handling, transfer, treatment or release. Otherwise used substances shall be counted as byproduct when they leave a production unit.

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act, commonly referred to as "Superfund."

EPCRA: Emergency Planning and Community Right to Know Act.

Facility: all buildings, equipment, structures, and other stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person, or by any person who controls, is controlled by, or is under common control with such person.

Full-Time Employee Equivalent: An FTE is defined as 2,000 work hours per year. The 10 FTE criteriais met if a total of 20,000 hours were worked by all employees (including consultants) whether they worked full or part-time.

Note: repackaging the chemical is considered processing.

Higher Hazard Substance: means a substance designated by the Council as a higher hazard substance pursuant to M.G.L. c. 21I, § 9 and 301 CMR 41.00.

Included NAICS/SIC Codes: This is one of the areas where TURA's requirements differ from those of EPCRA.

Under TURA, the NAICS/SIC code criteria are met if any of thebusiness activities are conducted in the areas represented by TURA's longer list of included NAICS/SIC codes. The TURA list includes manufacturing plus business activities such as transportation, wholesale trade, and business or personal services.

EPCRA reporting is only required of firms that derive more than 50% of their business from **manufacturing**. For the descriptions of the NAICS/SIC codes, see Appendix A.

Lower Hazard Substance: means a substance designated by the Council as a lower hazard substance pursuant to M.G.L. c. 21I, § 9 and 301 CMR 41.00.

Manufacture: to produce, prepare, import or compound a toxic or hazardous substance. Manufacture shall also mean to produce a toxic or hazardous substance coincidentally during the manufacture, processing, use, or disposal of another substance that is separated from that other substance or mixture of substances as a byproduct, and a toxic substance that remains in that other substance or mixture of substances as an impurity.

Otherwise Use: EPA has revised it's definition of OTHERWISE USE to mean 'any use of a toxic chemical, including a toxic chemical contained in a mixture or other trade name product or waste, that is not covered in the terms "manufacture" or "process." OtherwiseUse of a toxic chemical does not include disposal, stabilization (without subsequent distribution in commerce), or treatment for destruction unless:

- The toxic chemical that was disposed, stabilized, or treated for destruction was received fromoff-site for the purposes of further waste management; or

- The toxic chemical that was disposed, stabilized, or treated for destruction was manufactured as a result of waste management activities on materials received from off-site for the purposes of further waste management activities. Relabeling or redistributing of the toxic chemical where no repackaging of the toxic chemical occurs does not constitute otherwise use or processing the toxic chemical.

Process: the preparation of a toxic or hazardous substance, including, without limitation, a toxic substance contained in a mixture or trade name product, after its manufacture, for distribution in commerce:

- In the same form or physical state, or in a different form or physical state from that in which it was received by the toxics user preparing such substance; or
- As part of an article containing the toxic or hazardous substance.

Product: a product, a family of products, an intermediate product, family of intermediate products, or a desired result or a family of results. "Product" also means a byproduct that is used as a raw material without treatment.

Sanitized vs. Unsanitized Reports: If you make a Trade Secret claim, you must submit two versions of your report -- one that contains the Trade Secret information (**unsanitized**) and one that does not (**sanitized**). In Item g. in Section 1 of the Form S Cover Sheet, indicate whether the version of the report is sanitized or unsanitized.

Shipped in or as Product: the quantity of the chemical that leaves the facility as product.