

**A GUIDE ON THE USES AND SOURCES
OF RELEASES OF NEW NPRI
SUBSTANCES FOR THE 1999
REPORTING YEAR**

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This version has had a limited input provided by the technical experts within Environment Canada and by industry. It is intended that a wider distribution of this Guide would lead to more improvements for the product.

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PREFACE

The National Pollutant Release Inventory (NPRI), has added 73 substances to the existing list of 176 substances, for the 1999 reporting year. This follows consultation with industry, ENGO's, and provinces. A Supplementary Notice regarding these new substances was published in the *Canada Gazette, Part I*, on April 24, 1999.

This document identifies the uses and sources of releases for these new substances, to assist facilities in recognizing if they potentially manufacture, process, or use these substances. The document is primarily made up of individual fact sheets, one for each substance. Certain substances are grouped together as the uses for them are very similar. These are: the two alkanes, the four diisocyanates, the eleven CFCs and HCFCs, the two halons, and the twelve nonylphenols and nonylphenol ethoxylates.

A listing of the types of industries using these substances is also included by the U.S. Standard Industrial Classification (SIC) codes and descriptions. This was sometimes done based on Environment Canada sources or through a concordance with the text descriptions, but majority of this SIC information was taken from the 1996 U.S. Toxics Release Inventory database. Since the U.S. Toxics Release Inventory would not capture all sectors covered by the NPRI as if it only considers the manufacturing industries, therefore whenever applicable extra efforts were made to ensure that the non-manufacturing sectors would also be included for the provision of SIC information. In order to use the fact sheet for each substance to its maximum potential, it is recommended that the text descriptions be considered along with the SIC information, and vice versa.

Please be aware that, despite an extensive search of information, it is possible that **not all** the uses and sources of releases of a substance are indicated in this guide, particularly if the substance is universal in its industrial or commercial applications

Many sources of information were used to develop the resulting document, with the following being the most noteworthy:

1. Health and Safety Reports from the U.S. National Toxicology Program (N.T.P.)
Web site address: http://ntp-support.niehs.nih.gov/htdocs/Chem_Hs_Index.html
2. Spectrum Chemical Fact Sheets from the Spectrum Laboratories Inc.
Web site address: <http://www.speclab.com/compound/>
3. Scorecard from the Environmental Defense Fund
Web site address: <http://www.scorecard.org/>
4. Information from Environment Canada sources used for Priority Substances List (PSL) assessments and other programs.

List of the 73 New NPRI Substances for the 1999 Reporting Year

Name	CAS No. ¹		
Acetophenone	98-86-2	Isophorone diisocyanate	4098-71-9
Alkanes, C ₆₋₁₈ , chloro	68920-70-7	Isoprene	78-79-5
Alkanes, C ₁₀₋₁₃ , chloro	85535-84-8	Lithium carbonate	554-13-2
Boron trifluoride	7637-07-2	2-Mercaptobenzothiazole	149-30-4
Bromine	7726-95-6	1,1-Methylenebis(4-isocyanatocyclohexane)	5124-30-1
1-Bromo-2-chloroethane	107-04-0	N-Methylolacrylamide	924-42-5
2-Butoxyethanol	111-76-2	2-Methylpyridine	109-06-8
C.I. Direct Blue 218	28407-37-6	N-Methyl-2-pyrrolidone	872-50-4
Calcium fluoride	7789-75-5	<i>p</i> -Nitroaniline	100-01-6
CFC-11	75-69-4	Nonylphenol	104-40-5
CFC-12	75-71-8	Nonylphenol hepta(oxyethylene) ethanol	27177-05-5
CFC-13	75-72-9	Nonylphenol, industrial	84852-15-3
CFC-114	76-14-2	Nonylphenol nona(oxyethylene) ethanol	27177-08-8
CFC-115	76-15-3	<i>n</i> -Nonylphenol ⁵	25154-52-3
Chlorendic acid	115-28-6	Nonylphenol polyethylene glycol ether	9016-45-9
3-Chloro-2-methyl-1-propene	563-47-3	<i>p</i> -Nonylphenol polyethylene glycol ether	26027-38-3
3-Chloropropionitrile	542-76-7	Nonylphenoxy ethanol	27986-36-3
Crotonaldehyde	4170-30-3	2-(<i>p</i> -Nonylphenoxy) ethanol	104-35-8
Cyclohexanol	108-93-0	2-(2-(<i>p</i> -Nonylphenoxy)ethoxy) ethanol	20427-84-3
2,6-Di- <i>t</i> -butyl-4-methylphenol	128-37-0	2-(2-(2-(<i>p</i> -Nonylphenoxy)ethoxy)ethoxy)ethoxy) ethanol	7311-27-5
3,3'-Dichlorobenzidine dihydrochloride	612-83-9	Paraldehyde	123-63-7
Dicyclopentadiene	77-73-6	Pentachloroethane	76-01-7
Dimethylamine	124-40-3	Potassium bromate	7758-01-2
Dimethyl phenol	1300-71-6	Propargyl alcohol	107-19-7
Diphenylamine	122-39-4	Sodium fluoride	7681-49-4
Ethoxynonyl benzene	28679-13-2	Sodium nitrite	7632-00-0
Fluorine	7782-41-4	Sulphur hexafluoride	2551-62-4
Formic acid	64-18-6	1,1,1,2-Tetrachloroethane	630-20-6
Halon 1211	353-59-3	Tetracycline hydrochloride	64-75-5
Halon 1301	75-63-8	Tetraethyl lead	78-00-2
HCFC-22	75-45-6	Triethylamine	121-44-8
HCFC-122 and all isomers ²	41834-16-6	2,2,4-Trimethylhexamethylene diisocyanate	16938-22-0
HCFC-123 and all isomers ³	34077-87-7	2,4,4-Trimethylhexamethylene diisocyanate	15646-96-5
HCFC 124 and all isomers ⁴	63938-10-3		
HCFC-141b	1717-00-6		
HCFC-142b	75-68-3		
Hexachlorophene	70-30-4		
<i>n</i> -Hexane	110-54-3		
Hydrogen sulphide	7783-06-4		
Iron pentacarbonyl	13463-40-6		

1 CAS Registry Number denotes the Chemical Abstracts Service Registry Number, as appropriate.

2 The isomers include, but are not necessarily limited to, HCFC-122 (CAS # 354-21-2).

3 The isomers include, but are not necessarily limited to, HCFC-123 (CAS # 306-83-2) and HCFC 123a (CAS # 90454-18-5).

4 The isomers include, but are not necessarily limited to, HCFC 124 (CAS # 2837-89-0), and HCFC 124a (CAS # 354-25-6).

5 "mixed isomers"

NPRI Substance Uses and Sources

ACETOPHENONE (CAS # 98-86-2)

Acetophenone is a colourless, slightly oily liquid with a sweet, pungent, orange blossom or jasmine-like odour. It is used as a fragrance ingredient in soaps, detergents, creams, lotions and perfumes.

Other uses include:

- as a flavouring agent in foods, non-alcoholic beverages, tobacco,
- as a specialty solvent for plastics and resins,
- as a catalyst for the polymerization of olefins and
- as a photosensitizer in organic syntheses.

Acetophenone is also found in emissions from waste incineration, fuel oil and coal combustion.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996. Additional SIC codes are included to correspond to the non-manufacturing sectors as mentioned in the text descriptions.

<i>CAS Number</i>	<i>Substance Name</i>
98-86-2	ACETOPHENONE
<i>US SIC Code</i>	<i>SIC Description</i>
2284	Thread Mills
2448	Wood Pallets and Skids
2812	Alkalies and Chlorine
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2836	Biological Products Exc. Diagnostic
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2844	Toilet Preparations
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers

NPRI Substance Uses and Sources

2879	Agricultural Chemicals, nec
2899	Chemical Preparations, nec
2911	Petroleum Refining
3087	Custom Compound Purchased Resins
3241	Cement, Hydraulic
3341	Secondary Nonferrous Metals
3351	Copper Rolling and Drawing
3355	Aluminum Rolling and Drawing, nec
3356	Nonferrous Rolling and Drawing, nec
3357	Nonferrous Wiredrawing & Insulating
3471	Plating and Polishing
3569	General Industrial Machinery, nec
3965	Fasteners, Buttons, Needles, & Pins
4911	Electric Services
4953	Refuse Systems
5169	Chemicals & Allied Products, nec
7389	Business Services, nec

BORON TRIFLUORIDE (CAS # 7637-07-2)

Due to its potency as a Lewis acid (or electron acceptor) and its great resistance to hydrolysis, boron trifluoride is widely used as an acidic catalyst for organic synthesis reactions, such as alkylation and isomerization.

Boron trifluoride can be used as a reagent for desulfurizing solvents and intermediates as well as desulfurizing cracked petroleum distillates. It is also used for separating xylene isomers or for absorbing the water of nitration.

Other uses of boron trifluoride include: brazing fluxes for metals and alloys, manufacture of lube oil additives and the production of high purity boron isotope.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
7637-07-2	BORON TRIFLUORIDE

NPRI Substance Uses and Sources

<i>US SIC Code</i>	<i>SIC Description</i>
2813	Industrial Gases
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2841	Soap and Other Detergents
2843	Surface Active Agents
2851	Paints and Allied Products
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2893	Printing Ink
2895	Carbon Black
2992	Lubricating Oils and Greases
3339	Primary Nonferrous Metals, nec
3341	Secondary Nonferrous Metals
3842	Surgical Appliances and Supplies

BROMINE (CAS # 7726-95-6)

Bromine is one of the few chemical elements with fire-resistant properties and is therefore used as the building block for some of the most effective flame-retarding agents available to the plastics industry.

Many pharmaceuticals rely on brominated intermediates during their manufacture. Examples of these bromine-containing pharmaceutical products include halothane, naproxen, 1-bromogalanthamine, bromohexine and bromocriptine.

Bromine is used in the production of high-performance drilling fluids for oil and gas recovery, and in the production of the gasoline additive, dibromoethane.

Bromine is often used to prepare a wide variety of inorganic bromides and organobromides, which can be used in swimming pools (spas) and industrial water treatment to control algae, bacteria and odours. Bromine-containing chemicals can also be used as the light-sensitive component of a photographic emulsion, as an ingredient in photo developing solutions or as pesticides in the

NPRI Substance Uses and Sources

production or storage of food crops. Producers of these bromine-containing chemicals for industrial and consumer applications are therefore involved with the use of bromine.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
7726-95-6	BROMINE
<i>US SIC Code</i>	<i>SIC Description</i>
2043	Cereal Breakfast Foods
2048	Prepared Feeds, nec
2087	Flavoring Extracts and Syrups, nec
2099	Food Preparations, nec
2812	Alkalies and Chlorine
2813	Industrial Gases
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2841	Soap and Other Detergents
2843	Surface Active Agents
2844	Toilet Preparations
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2874	Phosphatic Fertilizers
2875	Fertilizers, Mixing Only
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2893	Printing Ink

NPRI Substance Uses and Sources

2899	Chemical Preparations, nec
2911	Petroleum Refining
3339	Primary Nonferrous Metals, nec
3341	Secondary Nonferrous Metals
3449	Miscellaneous Metal Work
3479	Metal Coating and Allied Services
3674	Semiconductors and Related Devices
3812	Search and Navigation Equipment
3861	Photographic Equipment and Supplies

1-BROMO-2-CHLOROETHANE (CAS # 107-04-0)

This substance is a halogenated alkane used as a solvent, especially for cellulose esters and ethers. It is also used in organic synthesis and as a fumigant for vegetables and fruits.

This substance is not listed on the U.S. Toxics Release Inventory and therefore the Standard Industrial Classification (SIC) codes for reporting of manufacture, processing, or otherwise use of this substance in the U.S. are not available. The following SIC codes are based only on the uses described above.

<i>CAS Number</i>	<i>Substance Name</i>
107-04-0	1-BROMO-2-CHLOROETHANE

<i>US SIC Code</i>	<i>SIC Description</i>
2033	Canned Fruits and Vegetables
2034	Dehydrated Fruits, Vegetables, Soups
2035	Pickles, Sauces, and Salad Dressings
2037	Frozen Fruits and Vegetables
2823	Cellulosic Manmade Fibers
2869	Industrial Organic Chemicals, nec

2-BUTOXYETHANOL (CAS # 111-76-2)

This substance is a glycol ether widely used as a solvent in paints and protective coatings, in printing inks, in the dyeing and printing of textiles, in industrial cleaners, and in the manufacturing of electronic equipment.

It is also used as a solvent for nitrocellulose, natural and synthetic resins and as a de-icer in

NPRI Substance Uses and Sources

fuel and automotive brake fluids.

This substance is not listed on the U.S. Toxics Release Inventory. It is, however listed on the second Priority Substances List (PSL) under the Canadian Environmental Protection Act (CEPA). The following Standard Industrial Classification (SIC) codes are based on the data collected as part of the PSL assessment for toxicity.

<i>CAS Number</i>	<i>Substance Name</i>
111-76-2	2-BUTOXYETHANOL
<i>US SIC Code</i>	<i>SIC Description</i>
2711	Newspapers
2721	Periodicals
2731	Book Publishing
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2869	Industrial Organic Chemicals, nec
2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations, nec
2992	Lubricating Oils and Greases
2999	Petroleum and Coal Products, nec
3711	Motor Vehicles and Car Bodies
3714	Motor Vehicle Parts and Accessories

C.I. DIRECT BLUE 218 (CAS # 28407-37-6)

C.I. direct blue 218 is a copper chelated dye commonly used to colour cellulose, acetate, nylon, silk, wool, tissues and papers. In the textile industry, it is used for goods with a urea-formaldehyde finish.

The industrial sources of releases for this substance are listed below. These are the

NPRI Substance Uses and Sources

<i>CAS Number</i>	<i>Substance Name</i>
28407-37-6	C.I. DIRECT BLUE 218

<i>US SIC Code</i>	<i>SIC Description</i>
2611	Pulp Mills
2621	Paper Mills
2674	Bags: Uncoated Paper & Multiwall
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
5169	Chemicals & Allied Products, nec

CALCIUM FLUORIDE (CAS # 7789-75-5)

Calcium fluoride is one of the inorganic fluorides identified as being toxic, as a result of its assessment required for the first Priority Substances List (PSL) under the Canadian Environmental Protection Act (CEPA). The assessment has concluded that inorganic fluorides are entering the environment in quantities or under conditions that may be harmful to the environment.

It is used:

- as a flux in steel, glass and enamel production,
- as the raw material for the production of hydrofluoric acid and anhydrous hydrogen fluoride, and
- as a molten electrolyte for the separation of oxygen and alumina in aluminum production.

Fluorapatite, an important calcium fluoride-containing mineral, is used as a source of phosphates in the fertilizer industry.

This substance is not listed on the U.S. Toxics Release Inventory and therefore the Standard Industrial Classification (SIC) codes for reporting of manufacture, processing, or otherwise use of this substance in the U.S. are not available. The following SIC codes are based only on the uses described above.

<i>CAS Number</i>	<i>Substance Name</i>
7789-75-5	CALCIUM FLUORIDE

<i>US SIC Code</i>	<i>SIC Description</i>
2819	Industrial Inorganic Chemicals, nec

NPRI Substance Uses and Sources

2874	Phosphatic Fertilizers
3211	Flat Glass
3221	Glass Containers
3261	Vitreous Plumbing Fixtures
3262	Vitreous China Table & Kitchenware
3312	Blast Furnaces and Steel Mills
3334	Primary Aluminum

CHLOROFLUOROCARBONS (CFC's) and HYDROCHLOROFLUOROCARBONS (HCFC's)

The following CFC's and HCFC's are identified for NPRI reporting.

Substance	CAS Number
CFC-11	75-69-4
CFC-12	75-71-8
CFC-13	75-72-9
CFC-114	76-14-2
CFC-115	76-15-3
HCFC-22	75-45-6
HCFC-122 and all isomers	41834-16-6
HCFC-123 and all isomers 1	34077-87-7
HCFC-124 and all isomers 2	63938-10-3
HCFC-141b	1717-00-6
HCFC-142b	75-68-3

1 The isomers include, but are not necessarily limited to, HCFC-123 (CAS Number 306-83-2) and HCFC 123a (CAS Number 90454-18-5).

2 The isomers include, but are not necessarily limited to, HCFC 124 (CAS Number 2837-89-0), and HCFC 124a (CAS Number 354-25-6).

CFC's are derivatives of hydrocarbons, which are composed of carbon and hydrogen atoms. In CFC's, the hydrogen atoms are replaced with chlorine and fluorine atoms, yielding an array of nontoxic, nonflammable gases which are useful in a wide variety of applications.

HCFC's are essentially CFC's that include one or more hydrogen atoms. The presence of hydrogen makes these compounds less stable. As a result they are more susceptible to photodecomposition, have much shorter atmospheric lifetimes than CFC's, and

NPRI Substance Uses and Sources

consequently are less likely to migrate to the stratosphere where they would destroy ozone. They are, therefore, popular interim substitutes for CFC's.

Production and import of CFC's were banned in Canada on January 1st, 1996. CFC's are still used as coolants in air conditioning and refrigeration systems. Virgin material produced before 1996, as well as recovered, recycled and reclaimed CFC's are used to service existing equipment.

HCFC's are used mainly as blowing agents in the production of polymers. They are used as coolants in air conditioning and refrigeration systems, as lubricant, coating or cleaning fluid for electrical or electronic equipment, as stabilizers in sterilization, as propellants or solvents in aerosols and as an extinguishing agent in portable fire extinguishers.

The industrial sources of releases for the different CFC's and HCFC's are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
75-69-4	TRICHLOROFLUOROMETHANE (CFC-11)
<i>US SIC Code</i>	<i>SIC Description</i>
2097	Manufactured Ice
2297	Nonwoven Fabrics
2791	Typesetting
2796	Platemaking Services
2812	Alkalies and Chlorine
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2843	Surface Active Agents
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2879	Agricultural Chemicals, nec

NPRI Substance Uses and Sources

3021	Rubber and Plastics Footwear
3087	Custom Compound Purchased Resins
3274	Lime
3295	Minerals, Ground or Treated
3471	Plating and Polishing
3479	Metal Coating and Allied Services
3499	Fabricated Metal Products, nec
3559	Special Industry Machinery, nec
3581	Automatic Vending Machines
3585	Refrigeration and Heating Equipment
3764	Space Propulsion Units and Parts
3769	Space Vehicle Equipment, nec
8733	Noncommercial Research Organizations

CAS Number

75-71-8

Substance Name

DICHLORODIFLUOROMETHANE (CFC-12)

US SIC Code

SIC Description

2038	Frozen Specialties, nec
2099	Food Preparations, nec
2611	Pulp Mills
2621	Paper Mills
2791	Typesetting
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2841	Soap and Other Detergents

NPRI Substance Uses and Sources

2843	Surface Active Agents
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2899	Chemical Preparations, nec
2911	Petroleum Refining
2992	Lubricating Oils and Greases
3069	Fabricated Rubber Products, nec
3087	Custom Compound Purchased Resins
3089	Plastics Products, nec
3581	Automatic Vending Machines
3585	Refrigeration and Heating Equipment
3632	Household Refrigerators and Freezers
3714	Motor Vehicle Parts and Accessories
3841	Surgical and Medical Instruments
3845	Electromedical Equipment
3861	Photographic Equipment and Supplies
3911	Jewelry, Precious Metal
5172	Petroleum Products, nec
5191	Farm Supplies
7623	Refrigeration Service and Repair
8711	Engineering Services
8731	Commercial Physical Research
9199	General Government, nec
9661	Space Research and Technology
9711	National Security

CAS Number

75-72-9

Substance Name

CHLOROTRIFLUOROMETHANE (CFC-13)

US SIC Code

2819

SIC Description

Industrial Inorganic Chemicals, nec

NPRI Substance Uses and Sources

2869 Industrial Organic Chemicals, nec

CAS Number

Substance Name

76-14-2

DICHLOROTETRAFLUOROETHANE (CFC-114)

US SIC Code

SIC Description

2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2843	Surface Active Agents
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2899	Chemical Preparations, nec
3086	Plastics Foam Products
5172	Petroleum Products, nec
5191	Farm Supplies
9199	General Government, nec
9711	National Security

CAS Number

Substance Name

76-15-3

MONOCHLOROPENTAFLUOROETHANE (CFC-115)

US SIC Code

SIC Description

2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2843	Surface Active Agents
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec

NPRI Substance Uses and Sources

<i>CAS Number</i>	<i>Substance Name</i>
75-45-6	CHLORODIFLUOROMETHANE (HCFC-22)
<i>US SIC Code</i>	<i>SIC Description</i>
2013	Sausages and Other Prepared Meats
2024	Ice Cream and Frozen Desserts
2026	Fluid Milk
2051	Bread, Cake, and Related Products
2053	Frozen Bakery Products, Except Bread
2064	Candy & Other Confectionery Products
2068	Salted and Roasted Nuts and Seeds
2079	Edible Fats and Oils, nec
2096	Potato Chips and Similar Snacks
2099	Food Preparations, nec
2297	Nonwoven Fabrics
2451	Mobile Homes
2522	Office Furniture, Except Wood
2541	Wood Partitions and Fixtures
2542	Partitions and Fixtures, Except Wood
2611	Pulp Mills
2621	Paper Mills
2676	Sanitary Paper Products
2791	Typesetting
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations

NPRI Substance Uses and Sources

2836	Biological Products Exc. Diagnostic
2841	Soap and Other Detergents
2843	Surface Active Agents
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations, nec
2911	Petroleum Refining
2992	Lubricating Oils and Greases
3061	Mechanical Rubber Goods
3069	Fabricated Rubber Products, nec
3082	Unsupported Plastics Profile Shapes
3086	Plastics Foam Products
3087	Custom Compound Purchased Resins
3088	Plastics Plumbing Fixtures
3089	Plastics Products, nec
3315	Steel Wire and Related Products
3339	Primary Nonferrous Metals, nec
3351	Copper Rolling and Drawing
3356	Nonferrous Rolling and Drawing, nec
3433	Heating Equipment, Except Electric
3442	Metal Doors, Sash, and Trim
3444	Sheet Metalwork
3448	Prefabricated Metal Buildings
3449	Miscellaneous Metal Work
3469	Metal Stampings, nec
3479	Metal Coating and Allied Services
3494	Valves and Pipe Fittings, nec
3496	Misc. Fabricated Wire Products

NPRI Substance Uses and Sources

3499	Fabricated Metal Products, nec
3556	Food Products Machinery
3561	Pumps and Pumping Equipment
3563	Air and Gas Compressors
3569	General Industrial Machinery, nec
3577	Computer Peripheral Equipment, nec
3581	Automatic Vending Machines
3582	Commercial Laundry Equipment
3585	Refrigeration and Heating Equipment
3632	Household Refrigerators and Freezers
3634	Electric Housewares and Fans
3639	Household Appliances, nec
3663	Radio & TV Communications Equipment
3669	Communications Equipment, nec
3674	Semiconductors and Related Devices
3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3715	Truck Trailers
3724	Aircraft Engines and Engine Parts
3728	Aircraft Parts and Equipment, nec
3769	Space Vehicle Equipment, nec
3842	Surgical Appliances and Supplies
3861	Photographic Equipment and Supplies
3999	Manufacturing Industries, nec
5075	Warm Air Heating & Air-conditioning
5171	Petroleum Bulk Stations & Terminals
7389	Business Services, nec
8711	Engineering Services
8731	Commercial Physical Research
8733	Noncommercial Research Organizations
9661	Space Research and Technology
9711	National Security

CAS Number

Substance Name

NPRI Substance Uses and Sources

306-83-2

2 2-DICHLORO-1 1 1-TRIFLUOROETHANE (HCFC-123)

US SIC Code

SIC Description

2791	Typesetting
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2834	Pharmaceutical Preparations
2843	Surface Active Agents
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2899	Chemical Preparations, nec
2911	Petroleum Refining
2999	Petroleum and Coal Products, nec
3053	Gaskets, Packing and Sealing Devices
3081	Unsupported Plastics Film & Sheet
3229	Pressed and Blown Glass, nec
3291	Abrasive Products
3585	Refrigeration and Heating Equipment
3643	Current-carrying Wiring Devices
3678	Electronic Connectors
3861	Photographic Equipment and Supplies
3999	Manufacturing Industries, nec
7623	Refrigeration Service and Repair

CAS Number

Substance Name

34077-87-7

DICHLOROTRIFLUOROETHANE

US SIC Code

SIC Description

2819	Industrial Inorganic Chemicals, nec
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NPRI Substance Uses and Sources

2869 Industrial Organic Chemicals, nec

CAS Number

Substance Name

2837-89-0

2-CHLORO-1,1,1,2-TETRAFLUOROETHANE (HCFC-124)

US SIC Code

SIC Description

2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2834	Pharmaceutical Preparations
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
3841	Surgical and Medical Instruments
3842	Surgical Appliances and Supplies
3845	Electromedical Equipment
3851	Ophthalmic Goods

CAS Number

Substance Name

354-25-6

1-CHLORO-1,1,2,2-TETRAFLUOROETHANE (HCFC-124a)

US SIC Code

SIC Description

2813	Industrial Gases
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2843	Surface Active Agents
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec

CAS Number

Substance Name

NPRI Substance Uses and Sources

1717-00-6

1 1-DICHLORO-1-FLUOROETHANE (HCFC-141b)

US SIC Code

SIC Description

1796	Installing Building Equipment, nec
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2253	Knit Outerwear Mills
2257	Weft Knit Fabric Mills
2258	Lace & Warp Knit Fabric Mills
2259	Knitting Mills nec
2269	Finishing Plants, nec
2281	Yarn Spinning Mills
2297	Nonwoven Fabrics
2299	Textile Goods, nec
2329	Men's and Boys' Clothing, nec
2369	Girls' and Children's Outerwear, nec
2431	Millwork
2451	Mobile Homes
2493	Reconstituted Wood Products
2511	Wood Household Furniture
2541	Wood Partitions and Fixtures
2542	Partitions and Fixtures, Except Wood
2631	Paperboard Mills
2671	Paper Coated & Laminated, Packaging
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2843	Surface Active Agents

NPRI Substance Uses and Sources

2844	Toilet Preparations
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2892	Explosives
2899	Chemical Preparations, nec
2911	Petroleum Refining
2992	Lubricating Oils and Greases
3069	Fabricated Rubber Products, nec
3082	Unsupported Plastics Profile Shapes
3086	Plastics Foam Products
3087	Custom Compound Purchased Resins
3088	Plastics Plumbing Fixtures
3089	Plastics Products, nec
3272	Concrete Products, nec
3296	Mineral Wool
3312	Blast Furnaces and Steel Mills
3316	Cold Finishing of Steel Shapes
3357	Nonferrous Wiredrawing & Insulating
3363	Aluminum Die-castings
3369	Nonferrous Foundries, nec
3421	Cutlery
3429	Hardware, nec
3442	Metal Doors, Sash, and Trim
3444	Sheet Metalwork
3446	Architectural Metal Work
3448	Prefabricated Metal Buildings
3451	Screw Machine Products
3466	Crowns and Closures
3469	Metal Stampings, nec
3471	Plating and Polishing

NPRI Substance Uses and Sources

3479	Metal Coating and Allied Services
3483	Ammunition, Exc. For Small Arms, nec
3492	Fluid Power Valves & Hose Fittings
3494	Valves and Pipe Fittings, nec
3496	Misc. Fabricated Wire Products
3498	Fabricated Pipe and Fittings
3499	Fabricated Metal Products, nec
3511	Turbines and Turbine Generator Sets
3544	Special Dies, Tools, Jigs & Fixtures
3561	Pumps and Pumping Equipment
3562	Ball and Roller Bearings
3566	Speed Changers, Drives, and Gears
3569	General Industrial Machinery, nec
3571	Electronic Computers
3581	Automatic Vending Machines
3585	Refrigeration and Heating Equipment
3589	Service Industry Machinery, nec
3593	Fluid Power Cylinders & Actuators
3621	Motors and Generators
3631	Household Cooking Equipment
3632	Household Refrigerators and Freezers
3633	Household Laundry Equipment
3634	Electric Housewares and Fans
3639	Household Appliances, nec
3641	Electric Lamps
3643	Current-carrying Wiring Devices
3644	Non Current Carrying Wiring Devices
3648	Lighting Equipment, nec
3651	Household Audio and Video Equipment
3652	Prerecorded Records and Tapes
3663	Radio & TV Communications Equipment
3669	Communications Equipment, nec
3672	Printed Circuit Boards
3674	Semiconductors and Related Devices

NPRI Substance Uses and Sources

3676	Electronic Resistors
3677	Electronic Coils and Transformers
3678	Electronic Connectors
3679	Electronic Components, nec
3692	Primary Batteries, Dry and Wet
3694	Engine Electrical Equipment
3699	Electrical Equipment & Supplies, nec
3714	Motor Vehicle Parts and Accessories
3715	Truck Trailers
3724	Aircraft Engines and Engine Parts
3728	Aircraft Parts and Equipment, nec
3732	Boat Building and Repairing
3761	Guided Missiles and Space Vehicles
3769	Space Vehicle Equipment, nec
3792	Travel Trailers and Campers
3799	Transportation Equipment, nec
3812	Search and Navigation Equipment
3821	Laboratory Apparatus and Furniture
3822	Environmental Controls
3824	Fluid Meters and Counting Devices
3826	Analytical Instruments
3827	Optical Instruments and Lenses
3829	Measuring & Controlling Devices, nec
3841	Surgical and Medical Instruments
3842	Surgical Appliances and Supplies
3845	Electromedical Equipment
3851	Ophthalmic Goods
3861	Photographic Equipment and Supplies
3915	Jewelers' Materials & Lapidary Work
3949	Sporting and Athletic Goods, nec
3999	Manufacturing Industries, nec
5013	Motor Vehicle Supplies and New Parts
5169	Chemicals & Allied Products, nec
7389	Business Services, nec

NPRI Substance Uses and Sources

<i>CAS Number</i>	<i>Substance Name</i>
75-68-3	1-CHLORO-1,1-DIFLUOROETHANE (142b)
<i>US SIC Code</i>	<i>SIC Description</i>
2451	Mobile Homes
2812	Alkalies and Chlorine
2813	Industrial Gases
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2891	Adhesives and Sealants
2899	Chemical Preparations, nec
3061	Mechanical Rubber Goods
3069	Fabricated Rubber Products, nec
3086	Plastics Foam Products
3351	Copper Rolling and Drawing
5169	Chemicals & Allied Products, nec

CHLORENDIC ACID (CAS # 115-28-6)

Chlorendic acid is used primarily as a chemical intermediate in the preparation of fire-retardant polyester resins and plasticizers.

It also has a number of other uses:

- as a chemical intermediate in the manufacture of corrosion resistant polyester resins,
- in the production of polymer systems used in oil-modified paints and coatings,
- as a hardening agent for epoxy resins used in printed circuit boards,
- in the production of flame-retardant additives such as dibutyl chlorendate and dimethyl chlorendate, and as an extreme pressure lubricant.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the

NPRI Substance Uses and Sources

U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
115-28-6	CHLORENDIC ACID
<i>US SIC Code</i>	<i>SIC Description</i>
2821	Plastics Materials and Resins

3-CHLORO-2-METHYL-1-PROPENE (CAS # 563-47-3)

3-Chloro-2-methyl-1-propene is a colourless to straw-coloured, volatile liquid with a pungent odour. It is used primarily as a chemical intermediate in the production of carbofuran, a carbamate insecticide used mostly on corn.

Other uses are:

- as a chemical intermediate in the production of herbicides,
- as a textile additive,
- as a perfume additive and
- as an intermediate in the production of plastics, pharmaceuticals and other chemicals.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
563-47-3	3-CHLORO-2-METHYL-1-PROPENE
<i>US SIC Code</i>	<i>SIC Description</i>
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2869	Industrial Organic Chemicals, nec
2879	Agricultural Chemicals, nec
2899	Chemical Preparations, nec

3-CHLOROPROPIONITRILE (CAS # 542-76-7)

NPRI Substance Uses and Sources

This nitrogen-containing substance is a colourless liquid used as a chemical intermediate in pharmaceutical and polymer synthesis.

3-Chloropropionitrile was listed on the U.S. Toxics Release Inventory in 1996, but there were no reports on the substance.

The following Standard Industrial Classification (SIC) codes are based on the uses described above.

<i>CAS Number</i>	<i>Substance Name</i>
542-76-7	3-CHLOROPROPIONITRILE
<i>US SIC Code</i>	<i>SIC Description</i>
2821	Plastics Materials and Resins
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations

CROTONALDEHYDE (CAS # 4170-30-3)

Crotonaldehyde is a colourless, to straw-coloured liquid with an irritating, pungent and suffocating odour..

Crotonaldehyde has many uses:

- as a chemical intermediate in the manufacture of butyl alcohol, butyl-aldehyde, quinaldine, crotonic acid, maleic acid, crotyl alcohol and butyl chloral hydrate,
- in polymer technology as a reaction medium, formulator, adhesive antioxidant, corrosion inhibitor and stabilizer and as a solvent for polyvinyl chloride,
- in organic synthesis in the manufacture of resins, dyestuffs, sedatives, pesticides, chemotherapeutic agents and flavouring agents,
- as a solvent for purification of mineral and lubricating oils,
- as an alcohol denaturant,
- as an odorant and warning agent in fuel gases,
- in leather tanning and the preparation of tanning materials,
- in the manufacture of surface-active agents,
- in the manufacture of rubber and rubber antioxidants and accelerators,
- in the manufacture of tear gas and chemical warfare agents, and
- in photographic emulsion as a hardening agent for gelatin.

The industrial sources of releases for this substance are listed below. These are the

NPRI Substance Uses and Sources

Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
4170-30-3	CROTONALDEHYDE
<i>US SIC Code</i>	<i>SIC Description</i>
2369	Girls' and Children's Outerwear, nec
2821	Plastics Materials and Resins
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2834	Pharmaceutical Preparations
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2893	Printing Ink

CYCLOHEXANOL (CAS # 108-93-0)

Cyclohexanol is used in the synthesis of adipic acid for nylon production.

Other uses include:

- as a solvent in textile finishing, plastics and resins manufacturing and in surface coatings,
- as a paint and varnish remover, and
- as an ingredient of germicide formulation.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
108-93-0	CYCLOHEXANOL
<i>US SIC Code</i>	<i>SIC Description</i>
2672	Paper Coated and Laminated, nec
2673	Bags: Plastics, Laminated, & Coated
2789	Bookbinding and Related Work
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins

NPRI Substance Uses and Sources

2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2844	Toilet Preparations
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2879	Agricultural Chemicals, nec
2899	Chemical Preparations, nec
3241	Cement, Hydraulic
3479	Metal Coating and Allied Services
3572	Computer Storage Devices
3577	Computer Peripheral Equipment, nec

2,6-DI-T-BUTYL-4-METHYLPHENOL (CAS # 128-37-0)

This chemical is a white crystalline solid, widely used as an antioxidant and preservative in food and in the animal feed industry. It is also used for food packaging (waxed inner liners and packaging board).

Other uses include:

- as an antioxidant and preservative in pharmaceutical preparations and cosmetic formulations containing fats and oils,
- in the manufacture of rubber and petroleum products.

<i>CAS Number</i>	<i>Substance Name</i>
128-37-0	2,6-DI-T-BUTYL-4-METHYLPHENOL
<i>US SIC Code</i>	<i>SIC Description</i>
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2047	Dog and Cat Food
2048	Prepared Feeds, nec

NPRI Substance Uses and Sources

2657	Folding Paperboard Boxes
2671	Paper Coated & Laminated, Packaging
2673	Bags: Plastics, Laminated, & Coated
2675	Die-cut Paper and Board
2822	Synthetic Rubber
2834	Pharmaceutical Preparations
2844	Toilet Preparations
2992	Lubricating Oils and Greases
2999	Petroleum and Coal Products, nec

3,3'-DICHLOROBENZIDINE DIHYDROCHLORIDE (CAS # 612-83-9)

This substance is a light tan coloured powder. Most companies in Canada will not have to be concerned with reporting of 3,3'-dichlorobenzidine dihydrochloride as Environment Canada has studied it extensively and believes that there is only one company in Canada using it.

The only known significant use of this substance is for the manufacture of colour pigments (used to colour printing inks, paints, textiles, plastics and crayons). Users of these pigments will not have to report.

The following Standard Industrial Classification (SIC) code would be associated with the use of this substance by that company.

<i>CAS Number</i>	<i>Substance Name</i>
612-83-9	3 3'-DICHLOROBENZIDINE DIHYDROCHLORIDE
<i>US SIC Code</i>	<i>SIC Description</i>
2865	Cyclic Crudes and Intermediates

DICYCLOPENTADIENE (CAS # 77-73-6)

Dicyclopentadiene is a colourless crystal which is used as a chemical intermediate for the manufacture of insecticides, paints and varnishes.

It is also used as a flame retardant in the production of plastics.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

NPRI Substance Uses and Sources

CAS Number

77-73-6

Substance Name

DICYCLOPENTADIENE

US SIC Code

SIC Description

2021	Creamery Butter
2269	Finishing Plants, nec
2295	Coated Fabrics, Not Rubberized
2369	Girls' and Children's Outerwear, nec
2499	Wood Products, nec
2521	Wood Office Furniture
2812	Alkalies and Chlorine
2813	Industrial Gases
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2841	Soap and Other Detergents
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2899	Chemical Preparations, nec
2911	Petroleum Refining
2992	Lubricating Oils and Greases
3083	Laminated Plastics Plate & Sheet
3089	Plastics Products, nec
3241	Cement, Hydraulic
3299	Nonmetallic Mineral Products, nec
3599	Industrial Machinery, nec
3711	Motor Vehicles and Car Bodies
3714	Motor Vehicle Parts and Accessories
3731	Ship Building and Repairing
3799	Transportation Equipment, nec
3821	Laboratory Apparatus and Furniture

NPRI Substance Uses and Sources

4493	Marinas
4499	Water Transportation Services, nec
5169	Chemicals & Allied Products, nec
7389	Business Services, nec

DIISOCYANATES

Isophorone diisocyanate (CAS # 4098-71-9)

1,1-Methylenebis(4-isocyanatocyclohexane) (CAS # 5124-30-1)

2,2,4-Trimethylhexamethylene diisocyanate (CAS # 16938-22-0)

2,4,4-Trimethylhexamethylene diisocyanate (CAS # 15646-96-5)

These four substances are diisocyanates which share the same characteristics, which include high stability, resistance to light discoloration and chemical resistance. These diisocyanates are widely used as the raw materials from which all polyurethane products are made. These products include polyurethane foams, insulation materials, car seats, furniture, foam mattresses, under-carpet padding, packaging materials, shoes, laminated fabrics, polyurethane rubbers, etc.

Their characteristic hardness, flexibility, abrasion and their chemical resistance to chalking and weathering, allows diisocyanates to be widely used in surface coatings such as paints, sealants and finishes.

These diisocyanates are used in elastomers for application as flexible textile coatings and industrial wire coatings. They are also used in the manufacture of contact lenses.

The industrial sources of releases for these substances are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996. It should be noted that the U.S. data represent the "diisocyanates" category of 20 substances reported as a whole, but since these four diisocyanates are part of the 20 substances included within the category, the same data are assumed to be applicable.

<i>CAS Number</i>	<i>Substance Name</i>
4098-71-9	ISOPHORONE DIISOCYANATE
<i>US SIC Code</i>	<i>SIC Description</i>
1796	Installing Building Equipment, nec
2011	Meat Packing Plants

NPRI Substance Uses and Sources

2076	Vegetable Oil Mills, nec
2079	Edible Fats and Oils, nec
2086	Bottled and Canned Soft Drinks
2099	Food Preparations, nec
2221	Broadwoven Fabric Mills, Manmade
2269	Finishing Plants, nec
2273	Carpets and Rugs
2295	Coated Fabrics, Not Rubberized
2296	Tire Cord and Fabrics
2297	Nonwoven Fabrics
2299	Textile Goods, nec
2321	Men's and Boys' Shirts
2331	Women's & Misses' Blouses & Shirts
2396	Automotive and Apparel Trimmings
2411	Logging
2421	Sawmills and Planing Mills, General
2426	Hardwood Dimension & Flooring Mills
2431	Millwork
2434	Wood Kitchen Cabinets
2435	Hardwood Veneer and Plywood
2436	Softwood Veneer and Plywood
2439	Structural Wood Members, nec
2448	Wood Pallets and Skids
2451	Mobile Homes
2452	Prefabricated Wood Buildings
2491	Wood Preserving
2493	Reconstituted Wood Products
2499	Wood Products, nec
2511	Wood Household Furniture
2514	Metal Household Furniture
2515	Mattresses and Bedsprings
2521	Wood Office Furniture
2522	Office Furniture, Except Wood
2531	Public Building & Related Furniture

NPRI Substance Uses and Sources

2541	Wood Partitions and Fixtures
2542	Partitions and Fixtures, Except Wood
2599	Furniture and Fixtures, nec
2621	Paper Mills
2631	Paperboard Mills
2653	Corrugated and Solid Fiber Boxes
2671	Paper Coated & Laminated, Packaging
2672	Paper Coated and Laminated, nec
2731	Book Publishing
2741	Miscellaneous Publishing
2754	Commercial Printing, Gravure
2759	Commercial Printing, nec
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2844	Toilet Preparations
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2875	Fertilizers, Mixing Only
2879	Agricultural Chemicals, nec

NPRI Substance Uses and Sources

2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations, nec
2911	Petroleum Refining
2951	Asphalt Paving Mixtures and Blocks
2952	Asphalt Felts and Coatings
2992	Lubricating Oils and Greases
2999	Petroleum and Coal Products, nec
3011	Tires and Inner Tubes
3021	Rubber and Plastics Footwear
3052	Rubber & Plastics Hose & Belting
3053	Gaskets, Packing and Sealing Devices
3061	Mechanical Rubber Goods
3069	Fabricated Rubber Products, nec
3081	Unsupported Plastics Film & Sheet
3082	Unsupported Plastics Profile Shapes
3083	Laminated Plastics Plate & Sheet
3084	Plastics Pipe
3085	Plastics Bottles
3086	Plastics Foam Products
3087	Custom Compound Purchased Resins
3088	Plastics Plumbing Fixtures
3089	Plastics Products, nec
3131	Footwear Cut Stock
3143	Men's Footwear, Except Athletic
3144	Women's Footwear, Except Athletic
3149	Footwear, Except Rubber, nec
3229	Pressed and Blown Glass, nec
3231	Products of Purchased Glass
3259	Structural Clay Products, nec
3261	Vitreous Plumbing Fixtures
3262	Vitreous China Table & Kitchenware
3269	Pottery Products, nec
3272	Concrete Products, nec

NPRI Substance Uses and Sources

3274	Lime
3275	Gypsum Products
3291	Abrasive Products
3296	Mineral Wool
3317	Steel Pipe and Tubes
3321	Gray and Ductile Iron Foundries
3322	Malleable Iron Foundries
3324	Steel Investment Foundries
3325	Steel Foundries, nec
3334	Primary Aluminum
3341	Secondary Nonferrous Metals
3353	Aluminum Sheet, Plate, and Foil
3354	Aluminum Extruded Products
3355	Aluminum Rolling and Drawing, nec
3356	Nonferrous Rolling and Drawing, nec
3357	Nonferrous Wiredrawing & Insulating
3363	Aluminum Die-castings
3365	Aluminum Foundries
3366	Copper Foundries
3369	Nonferrous Foundries, nec
3398	Metal Heat Treating
3421	Cutlery
3423	Hand and Edge Tools, nec
3429	Hardware, nec
3431	Metal Sanitary Ware
3432	Plumbing Fixture Fittings and Trim
3433	Heating Equipment, Except Electric
3441	Fabricated Structural Metal
3442	Metal Doors, Sash, and Trim
3443	Fabricated Plate Work (Boiler Shops)
3444	Sheet Metalwork
3446	Architectural Metal Work
3448	Prefabricated Metal Buildings
3449	Miscellaneous Metal Work

NPRI Substance Uses and Sources

3451	Screw Machine Products
3452	Bolts, Nuts, Rivets, and Washers
3462	Iron and Steel Forgings
3465	Automotive Stampings
3466	Crowns and Closures
3469	Metal Stampings, nec
3471	Plating and Polishing
3479	Metal Coating and Allied Services
3489	Ordnance and Accessories, nec
3491	Industrial Valves
3492	Fluid Power Valves & Hose Fittings
3494	Valves and Pipe Fittings, nec
3495	Wire Springs
3496	Misc. Fabricated Wire Products
3498	Fabricated Pipe and Fittings
3499	Fabricated Metal Products, nec
3511	Turbines and Turbine Generator Sets
3519	Internal Combustion Engines, nec
3523	Farm Machinery and Equipment
3524	Lawn and Garden Equipment
3531	Construction Machinery
3535	Conveyors and Conveying Equipment
3536	Hoists, Cranes, and Monorails
3542	Machine Tools, Metal Forming Types
3543	Industrial Patterns
3544	Special Dies, Tools, Jigs & Fixtures
3546	Power-driven Handtools
3549	Metalworking Machinery, nec
3559	Special Industry Machinery, nec
3561	Pumps and Pumping Equipment
3563	Air and Gas Compressors
3564	Blowers and Fans
3565	Packaging Machinery
3566	Speed Changers, Drives, and Gears

NPRI Substance Uses and Sources

3568	Power Transmission Equipment, nec
3569	General Industrial Machinery, nec
3571	Electronic Computers
3572	Computer Storage Devices
3575	Computer Terminals
3577	Computer Peripheral Equipment, nec
3581	Automatic Vending Machines
3582	Commercial Laundry Equipment
3585	Refrigeration and Heating Equipment
3586	Measuring and Dispensing Pumps
3589	Service Industry Machinery, nec
3593	Fluid Power Cylinders & Actuators
3599	Industrial Machinery, nec
3612	Transformers, Except Electronic
3613	Switchgear and Switchboard Apparatus
3621	Motors and Generators
3625	Relays and Industrial Controls
3629	Electrical Industrial Apparatus, nec
3631	Household Cooking Equipment
3632	Household Refrigerators and Freezers
3634	Electric Housewares and Fans
3635	Household Vacuum Cleaners
3639	Household Appliances, nec
3643	Current-carrying Wiring Devices
3644	Non Current Carrying Wiring Devices
3645	Residential Lighting Fixtures
3646	Commercial Lighting Fixtures
3647	Vehicular Lighting Equipment
3648	Lighting Equipment, nec
3651	Household Audio and Video Equipment
3652	Prerecorded Records and Tapes
3661	Telephone and Telegraph Apparatus
3663	Radio & TV Communications Equipment
3669	Communications Equipment, nec

NPRI Substance Uses and Sources

3671	Electron Tubes
3672	Printed Circuit Boards
3678	Electronic Connectors
3679	Electronic Components, nec
3694	Engine Electrical Equipment
3695	Magnetic and Optical Recording Media
3699	Electrical Equipment & Supplies, nec
3711	Motor Vehicles and Car Bodies
3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3715	Truck Trailers
3716	Motor Homes
3721	Aircraft
3724	Aircraft Engines and Engine Parts
3728	Aircraft Parts and Equipment, nec
3731	Ship Building and Repairing
3732	Boat Building and Repairing
3743	Railroad Equipment
3751	Motorcycles, Bicycles, and Parts
3764	Space Propulsion Units and Parts
3769	Space Vehicle Equipment, nec
3792	Travel Trailers and Campers
3799	Transportation Equipment, nec
3821	Laboratory Apparatus and Furniture
3822	Environmental Controls
3824	Fluid Meters and Counting Devices
3826	Analytical Instruments
3829	Measuring & Controlling Devices, nec
3841	Surgical and Medical Instruments
3842	Surgical Appliances and Supplies
3845	Electromedical Equipment
3861	Photographic Equipment and Supplies
3949	Sporting and Athletic Goods, nec
3993	Signs and Advertising Specialities

NPRI Substance Uses and Sources

3999	Manufacturing Industries, nec
4226	Special Warehousing and Storage, nec
4741	Rental of Railroad Cars
5013	Motor Vehicle Supplies and New Parts
5023	Homefurnishings
5169	Chemicals & Allied Products, nec
5192	Books, Periodicals, & Newspapers
7359	Equipment Rental & Leasing, nec
7377	Computer Rental & Leasing
7379	Computer Related Services, nec
8731	Commercial Physical Research
9661	Space Research and Technology

CAS Number

5124-30-1

Substance Name

1,1-METHYLENE BIS(4-ISOCYANATOCYCLOHEXANE)

US SIC Code

1796	Installing Building Equipment, nec
2011	Meat Packing Plants
2076	Vegetable Oil Mills, nec
2079	Edible Fats and Oils, nec
2086	Bottled and Canned Soft Drinks
2099	Food Preparations, nec
2221	Broadwoven Fabric Mills, Manmade
2269	Finishing Plants, nec
2273	Carpets and Rugs
2295	Coated Fabrics, Not Rubberized
2296	Tire Cord and Fabrics
2297	Nonwoven Fabrics
2299	Textile Goods, nec
2321	Men's and Boys' Shirts
2331	Women's & Misses' Blouses & Shirts
2396	Automotive and Apparel Trimmings
2411	Logging
2421	Sawmills and Planing Mills, General

NPRI Substance Uses and Sources

2426	Hardwood Dimension & Flooring Mills
2431	Millwork
2434	Wood Kitchen Cabinets
2435	Hardwood Veneer and Plywood
2436	Softwood Veneer and Plywood
2439	Structural Wood Members, nec
2448	Wood Pallets and Skids
2451	Mobile Homes
2452	Prefabricated Wood Buildings
2491	Wood Preserving
2493	Reconstituted Wood Products
2499	Wood Products, nec
2511	Wood Household Furniture
2514	Metal Household Furniture
2515	Mattresses and Bedsprings
2521	Wood Office Furniture
2522	Office Furniture, Except Wood
2531	Public Building & Related Furniture
2541	Wood Partitions and Fixtures
2542	Partitions and Fixtures, Except Wood
2599	Furniture and Fixtures, nec
2621	Paper Mills
2631	Paperboard Mills
2653	Corrugated and Solid Fiber Boxes
2671	Paper Coated & Laminated, Packaging
2672	Paper Coated and Laminated, nec
2731	Book Publishing
2741	Miscellaneous Publishing
2754	Commercial Printing, Gravure
2759	Commercial Printing, nec
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments

NPRI Substance Uses and Sources

2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2844	Toilet Preparations
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2875	Fertilizers, Mixing Only
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations, nec
2911	Petroleum Refining
2951	Asphalt Paving Mixtures and Blocks
2952	Asphalt Felts and Coatings
2992	Lubricating Oils and Greases
2999	Petroleum and Coal Products, nec
3011	Tires and Inner Tubes
3021	Rubber and Plastics Footwear
3052	Rubber & Plastics Hose & Belting
3053	Gaskets, Packing and Sealing Devices
3061	Mechanical Rubber Goods
3069	Fabricated Rubber Products, nec
3081	Unsupported Plastics Film & Sheet
3082	Unsupported Plastics Profile Shapes

NPRI Substance Uses and Sources

3083	Laminated Plastics Plate & Sheet
3084	Plastics Pipe
3085	Plastics Bottles
3086	Plastics Foam Products
3087	Custom Compound Purchased Resins
3088	Plastics Plumbing Fixtures
3089	Plastics Products, nec
3131	Footwear Cut Stock
3143	Men's Footwear, Except Athletic
3144	Women's Footwear, Except Athletic
3149	Footwear, Except Rubber, nec
3229	Pressed and Blown Glass, nec
3231	Products of Purchased Glass
3259	Structural Clay Products, nec
3261	Vitreous Plumbing Fixtures
3262	Vitreous China Table & Kitchenware
3269	Pottery Products, nec
3272	Concrete Products, nec
3274	Lime
3275	Gypsum Products
3291	Abrasive Products
3296	Mineral Wool
3317	Steel Pipe and Tubes
3321	Gray and Ductile Iron Foundries
3322	Malleable Iron Foundries
3324	Steel Investment Foundries
3325	Steel Foundries, nec
3334	Primary Aluminum
3341	Secondary Nonferrous Metals
3353	Aluminum Sheet, Plate, and Foil
3354	Aluminum Extruded Products
3355	Aluminum Rolling and Drawing, nec
3356	Nonferrous Rolling and Drawing, nec
3357	Nonferrous Wiredrawing & Insulating

NPRI Substance Uses and Sources

3363	Aluminum Die-castings
3365	Aluminum Foundries
3366	Copper Foundries
3369	Nonferrous Foundries, nec
3398	Metal Heat Treating
3421	Cutlery
3423	Hand and Edge Tools, nec
3429	Hardware, nec
3431	Metal Sanitary Ware
3432	Plumbing Fixture Fittings and Trim
3433	Heating Equipment, Except Electric
3441	Fabricated Structural Metal
3442	Metal Doors, Sash, and Trim
3443	Fabricated Plate Work (Boiler Shops)
3444	Sheet Metalwork
3446	Architectural Metal Work
3448	Prefabricated Metal Buildings
3449	Miscellaneous Metal Work
3451	Screw Machine Products
3452	Bolts, Nuts, Rivets, and Washers
3462	Iron and Steel Forgings
3465	Automotive Stampings
3466	Crowns and Closures
3469	Metal Stampings, nec
3471	Plating and Polishing
3479	Metal Coating and Allied Services
3489	Ordnance and Accessories, nec
3491	Industrial Valves
3492	Fluid Power Valves & Hose Fittings
3494	Valves and Pipe Fittings, nec
3495	Wire Springs
3496	Misc. Fabricated Wire Products
3498	Fabricated Pipe and Fittings
3499	Fabricated Metal Products, nec

NPRI Substance Uses and Sources

3511	Turbines and Turbine Generator Sets
3519	Internal Combustion Engines, nec
3523	Farm Machinery and Equipment
3524	Lawn and Garden Equipment
3531	Construction Machinery
3535	Conveyors and Conveying Equipment
3536	Hoists, Cranes, and Monorails
3542	Machine Tools, Metal Forming Types
3543	Industrial Patterns
3544	Special Dies, Tools, Jigs & Fixtures
3546	Power-driven Handtools
3549	Metalworking Machinery, nec
3559	Special Industry Machinery, nec
3561	Pumps and Pumping Equipment
3563	Air and Gas Compressors
3564	Blowers and Fans
3565	Packaging Machinery
3566	Speed Changers, Drives, and Gears
3568	Power Transmission Equipment, nec
3569	General Industrial Machinery, nec
3571	Electronic Computers
3572	Computer Storage Devices
3575	Computer Terminals
3577	Computer Peripheral Equipment, nec
3581	Automatic Vending Machines
3582	Commercial Laundry Equipment
3585	Refrigeration and Heating Equipment
3586	Measuring and Dispensing Pumps
3589	Service Industry Machinery, nec
3593	Fluid Power Cylinders & Actuators
3599	Industrial Machinery, nec
3612	Transformers, Except Electronic
3613	Switchgear and Switchboard Apparatus
3621	Motors and Generators

NPRI Substance Uses and Sources

3625	Relays and Industrial Controls
3629	Electrical Industrial Apparatus, nec
3631	Household Cooking Equipment
3632	Household Refrigerators and Freezers
3634	Electric Housewares and Fans
3635	Household Vacuum Cleaners
3639	Household Appliances, nec
3643	Current-carrying Wiring Devices
3644	Non Current Carrying Wiring Devices
3645	Residential Lighting Fixtures
3646	Commercial Lighting Fixtures
3647	Vehicular Lighting Equipment
3648	Lighting Equipment, nec
3651	Household Audio and Video Equipment
3652	Prerecorded Records and Tapes
3661	Telephone and Telegraph Apparatus
3663	Radio & TV Communications Equipment
3669	Communications Equipment, nec
3671	Electron Tubes
3672	Printed Circuit Boards
3678	Electronic Connectors
3679	Electronic Components, nec
3694	Engine Electrical Equipment
3695	Magnetic and Optical Recording Media
3699	Electrical Equipment & Supplies, nec
3711	Motor Vehicles and Car Bodies
3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3715	Truck Trailers
3716	Motor Homes
3721	Aircraft
3724	Aircraft Engines and Engine Parts
3728	Aircraft Parts and Equipment, nec
3731	Ship Building and Repairing

NPRI Substance Uses and Sources

3732	Boat Building and Repairing
3743	Railroad Equipment
3751	Motorcycles, Bicycles, and Parts
3764	Space Propulsion Units and Parts
3769	Space Vehicle Equipment, nec
3792	Travel Trailers and Campers
3799	Transportation Equipment, nec
3821	Laboratory Apparatus and Furniture
3822	Environmental Controls
3824	Fluid Meters and Counting Devices
3826	Analytical Instruments
3829	Measuring & Controlling Devices, nec
3841	Surgical and Medical Instruments
3842	Surgical Appliances and Supplies
3845	Electromedical Equipment
3861	Photographic Equipment and Supplies
3949	Sporting and Athletic Goods, nec
3993	Signs and Advertising Specialities
3999	Manufacturing Industries, nec
4226	Special Warehousing and Storage, nec
4741	Rental of Railroad Cars
5013	Motor Vehicle Supplies and New Parts
5023	Homefurnishings
5169	Chemicals & Allied Products, nec
5192	Books, Periodicals, & Newspapers
7359	Equipment Rental & Leasing, nec
7377	Computer Rental & Leasing
7379	Computer Related Services, nec
8731	Commercial Physical Research
9661	Space Research and Technology

CAS Number

16938-22-0

Substance Name

2,2,4-TRIMETHYLHEXAMETHYLENE DIISOCYANATE

US SIC Code

SIC Description

NPRI Substance Uses and Sources

1796	Installing Building Equipment, nec
2011	Meat Packing Plants
2076	Vegetable Oil Mills, nec
2079	Edible Fats and Oils, nec
2086	Bottled and Canned Soft Drinks
2099	Food Preparations, nec
2221	Broadwoven Fabric Mills, Manmade
2269	Finishing Plants, nec
2273	Carpets and Rugs
2295	Coated Fabrics, Not Rubberized
2296	Tire Cord and Fabrics
2297	Nonwoven Fabrics
2299	Textile Goods, nec
2321	Men's and Boys' Shirts
2331	Women's & Misses' Blouses & Shirts
2396	Automotive and Apparel Trimmings
2411	Logging
2421	Sawmills and Planing Mills, General
2426	Hardwood Dimension & Flooring Mills
2431	Millwork
2434	Wood Kitchen Cabinets
2435	Hardwood Veneer and Plywood
2436	Softwood Veneer and Plywood
2439	Structural Wood Members, nec
2448	Wood Pallets and Skids
2451	Mobile Homes
2452	Prefabricated Wood Buildings
2491	Wood Preserving
2493	Reconstituted Wood Products
2499	Wood Products, nec
2511	Wood Household Furniture
2514	Metal Household Furniture
2515	Mattresses and Bedsprings
2521	Wood Office Furniture

NPRI Substance Uses and Sources

2522	Office Furniture, Except Wood
2531	Public Building & Related Furniture
2541	Wood Partitions and Fixtures
2542	Partitions and Fixtures, Except Wood
2599	Furniture and Fixtures, nec
2621	Paper Mills
2631	Paperboard Mills
2653	Corrugated and Solid Fiber Boxes
2671	Paper Coated & Laminated, Packaging
2672	Paper Coated and Laminated, nec
2731	Book Publishing
2741	Miscellaneous Publishing
2754	Commercial Printing, Gravure
2759	Commercial Printing, nec
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2844	Toilet Preparations
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers

NPRI Substance Uses and Sources

2875	Fertilizers, Mixing Only
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations, nec
2911	Petroleum Refining
2951	Asphalt Paving Mixtures and Blocks
2952	Asphalt Felts and Coatings
2992	Lubricating Oils and Greases
2999	Petroleum and Coal Products, nec
3011	Tires and Inner Tubes
3021	Rubber and Plastics Footwear
3052	Rubber & Plastics Hose & Belting
3053	Gaskets, Packing and Sealing Devices
3061	Mechanical Rubber Goods
3069	Fabricated Rubber Products, nec
3081	Unsupported Plastics Film & Sheet
3082	Unsupported Plastics Profile Shapes
3083	Laminated Plastics Plate & Sheet
3084	Plastics Pipe
3085	Plastics Bottles
3086	Plastics Foam Products
3087	Custom Compound Purchased Resins
3088	Plastics Plumbing Fixtures
3089	Plastics Products, nec
3131	Footwear Cut Stock
3143	Men's Footwear, Except Athletic
3144	Women's Footwear, Except Athletic
3149	Footwear, Except Rubber, nec
3229	Pressed and Blown Glass, nec
3231	Products of Purchased Glass
3259	Structural Clay Products, nec
3261	Vitreous Plumbing Fixtures
3262	Vitreous China Table & Kitchenware

NPRI Substance Uses and Sources

3269	Pottery Products, nec
3272	Concrete Products, nec
3274	Lime
3275	Gypsum Products
3291	Abrasive Products
3296	Mineral Wool
3317	Steel Pipe and Tubes
3321	Gray and Ductile Iron Foundries
3322	Malleable Iron Foundries
3324	Steel Investment Foundries
3325	Steel Foundries, nec
3334	Primary Aluminum
3341	Secondary Nonferrous Metals
3353	Aluminum Sheet, Plate, and Foil
3354	Aluminum Extruded Products
3355	Aluminum Rolling and Drawing, nec
3356	Nonferrous Rolling and Drawing, nec
3357	Nonferrous Wiredrawing & Insulating
3363	Aluminum Die-castings
3365	Aluminum Foundries
3366	Copper Foundries
3369	Nonferrous Foundries, nec
3398	Metal Heat Treating
3421	Cutlery
3423	Hand and Edge Tools, nec
3429	Hardware, nec
3431	Metal Sanitary Ware
3432	Plumbing Fixture Fittings and Trim
3433	Heating Equipment, Except Electric
3441	Fabricated Structural Metal
3442	Metal Doors, Sash, and Trim
3443	Fabricated Plate Work (Boiler Shops)
3444	Sheet Metalwork
3446	Architectural Metal Work

NPRI Substance Uses and Sources

3448	Prefabricated Metal Buildings
3449	Miscellaneous Metal Work
3451	Screw Machine Products
3452	Bolts, Nuts, Rivets, and Washers
3462	Iron and Steel Forgings
3465	Automotive Stampings
3466	Crowns and Closures
3469	Metal Stampings, nec
3471	Plating and Polishing
3479	Metal Coating and Allied Services
3489	Ordnance and Accessories, nec
3491	Industrial Valves
3492	Fluid Power Valves & Hose Fittings
3494	Valves and Pipe Fittings, nec
3495	Wire Springs
3496	Misc. Fabricated Wire Products
3498	Fabricated Pipe and Fittings
3499	Fabricated Metal Products, nec
3511	Turbines and Turbine Generator Sets
3519	Internal Combustion Engines, nec
3523	Farm Machinery and Equipment
3524	Lawn and Garden Equipment
3531	Construction Machinery
3535	Conveyors and Conveying Equipment
3536	Hoists, Cranes, and Monorails
3542	Machine Tools, Metal Forming Types
3543	Industrial Patterns
3544	Special Dies, Tools, Jigs & Fixtures
3546	Power-driven Handtools
3549	Metalworking Machinery, nec
3559	Special Industry Machinery, nec
3561	Pumps and Pumping Equipment
3563	Air and Gas Compressors
3564	Blowers and Fans

NPRI Substance Uses and Sources

3565	Packaging Machinery
3566	Speed Changers, Drives, and Gears
3568	Power Transmission Equipment, nec
3569	General Industrial Machinery, nec
3571	Electronic Computers
3572	Computer Storage Devices
3575	Computer Terminals
3577	Computer Peripheral Equipment, nec
3581	Automatic Vending Machines
3582	Commercial Laundry Equipment
3585	Refrigeration and Heating Equipment
3586	Measuring and Dispensing Pumps
3589	Service Industry Machinery, nec
3593	Fluid Power Cylinders & Actuators
3599	Industrial Machinery, nec
3612	Transformers, Except Electronic
3613	Switchgear and Switchboard Apparatus
3621	Motors and Generators
3625	Relays and Industrial Controls
3629	Electrical Industrial Apparatus, nec
3631	Household Cooking Equipment
3632	Household Refrigerators and Freezers
3634	Electric Housewares and Fans
3635	Household Vacuum Cleaners
3639	Household Appliances, nec
3643	Current-carrying Wiring Devices
3644	Non Current Carrying Wiring Devices
3645	Residential Lighting Fixtures
3646	Commercial Lighting Fixtures
3647	Vehicular Lighting Equipment
3648	Lighting Equipment, nec
3651	Household Audio and Video Equipment
3652	Prerecorded Records and Tapes
3661	Telephone and Telegraph Apparatus

NPRI Substance Uses and Sources

3663	Radio & TV Communications Equipment
3669	Communications Equipment, nec
3671	Electron Tubes
3672	Printed Circuit Boards
3678	Electronic Connectors
3679	Electronic Components, nec
3694	Engine Electrical Equipment
3695	Magnetic and Optical Recording Media
3699	Electrical Equipment & Supplies, nec
3711	Motor Vehicles and Car Bodies
3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3715	Truck Trailers
3716	Motor Homes
3721	Aircraft
3724	Aircraft Engines and Engine Parts
3728	Aircraft Parts and Equipment, nec
3731	Ship Building and Repairing
3732	Boat Building and Repairing
3743	Railroad Equipment
3751	Motorcycles, Bicycles, and Parts
3764	Space Propulsion Units and Parts
3769	Space Vehicle Equipment, nec
3792	Travel Trailers and Campers
3799	Transportation Equipment, nec
3821	Laboratory Apparatus and Furniture
3822	Environmental Controls
3824	Fluid Meters and Counting Devices
3826	Analytical Instruments
3829	Measuring & Controlling Devices, nec
3841	Surgical and Medical Instruments
3842	Surgical Appliances and Supplies
3845	Electromedical Equipment
3861	Photographic Equipment and Supplies

NPRI Substance Uses and Sources

3949	Sporting and Athletic Goods, nec
3993	Signs and Advertising Specialities
3999	Manufacturing Industries, nec
4226	Special Warehousing and Storage, nec
4741	Rental of Railroad Cars
5013	Motor Vehicle Supplies and New Parts
5023	Homefurnishings
5169	Chemicals & Allied Products, nec
5192	Books, Periodicals, & Newspapers
7359	Equipment Rental & Leasing, nec
7377	Computer Rental & Leasing
7379	Computer Related Services, nec
8731	Commercial Physical Research
9661	Space Research and Technology

CAS Number

15646-96-5

Substance Name

2,4,4-TRIMETHYLHEXAMETHYLENE DIISOCYANATE

US SIC Code

SIC Description

1796	Installing Building Equipment, nec
2011	Meat Packing Plants
2076	Vegetable Oil Mills, nec
2079	Edible Fats and Oils, nec
2086	Bottled and Canned Soft Drinks
2099	Food Preparations, nec
2221	Broadwoven Fabric Mills, Manmade
2269	Finishing Plants, nec
2273	Carpets and Rugs
2295	Coated Fabrics, Not Rubberized
2296	Tire Cord and Fabrics
2297	Nonwoven Fabrics
2299	Textile Goods, nec
2321	Men's and Boys' Shirts
2331	Women's & Misses' Blouses & Shirts
2396	Automotive and Apparel Trimmings

NPRI Substance Uses and Sources

2411	Logging
2421	Sawmills and Planing Mills, General
2426	Hardwood Dimension & Flooring Mills
2431	Millwork
2434	Wood Kitchen Cabinets
2435	Hardwood Veneer and Plywood
2436	Softwood Veneer and Plywood
2439	Structural Wood Members, nec
2448	Wood Pallets and Skids
2451	Mobile Homes
2452	Prefabricated Wood Buildings
2491	Wood Preserving
2493	Reconstituted Wood Products
2499	Wood Products, nec
2511	Wood Household Furniture
2514	Metal Household Furniture
2515	Mattresses and Bedsprings
2521	Wood Office Furniture
2522	Office Furniture, Except Wood
2531	Public Building & Related Furniture
2541	Wood Partitions and Fixtures
2542	Partitions and Fixtures, Except Wood
2599	Furniture and Fixtures, nec
2621	Paper Mills
2631	Paperboard Mills
2653	Corrugated and Solid Fiber Boxes
2671	Paper Coated & Laminated, Packaging
2672	Paper Coated and Laminated, nec
2731	Book Publishing
2741	Miscellaneous Publishing
2754	Commercial Printing, Gravure
2759	Commercial Printing, nec
2796	Platemaking Services
2812	Alkalies and Chlorine

NPRI Substance Uses and Sources

2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2844	Toilet Preparations
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2875	Fertilizers, Mixing Only
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations, nec
2911	Petroleum Refining
2951	Asphalt Paving Mixtures and Blocks
2952	Asphalt Felts and Coatings
2992	Lubricating Oils and Greases
2999	Petroleum and Coal Products, nec
3011	Tires and Inner Tubes
3021	Rubber and Plastics Footwear
3052	Rubber & Plastics Hose & Belting
3053	Gaskets, Packing and Sealing Devices
3061	Mechanical Rubber Goods
3069	Fabricated Rubber Products, nec

NPRI Substance Uses and Sources

3081	Unsupported Plastics Film & Sheet
3082	Unsupported Plastics Profile Shapes
3083	Laminated Plastics Plate & Sheet
3084	Plastics Pipe
3085	Plastics Bottles
3086	Plastics Foam Products
3087	Custom Compound Purchased Resins
3088	Plastics Plumbing Fixtures
3089	Plastics Products, nec
3131	Footwear Cut Stock
3143	Men's Footwear, Except Athletic
3144	Women's Footwear, Except Athletic
3149	Footwear, Except Rubber, nec
3229	Pressed and Blown Glass, nec
3231	Products of Purchased Glass
3259	Structural Clay Products, nec
3261	Vitreous Plumbing Fixtures
3262	Vitreous China Table & Kitchenware
3269	Pottery Products, nec
3272	Concrete Products, nec
3274	Lime
3275	Gypsum Products
3291	Abrasive Products
3296	Mineral Wool
3317	Steel Pipe and Tubes
3321	Gray and Ductile Iron Foundries
3322	Malleable Iron Foundries
3324	Steel Investment Foundries
3325	Steel Foundries, nec
3334	Primary Aluminum
3341	Secondary Nonferrous Metals
3353	Aluminum Sheet, Plate, and Foil
3354	Aluminum Extruded Products
3355	Aluminum Rolling and Drawing, nec

NPRI Substance Uses and Sources

3356	Nonferrous Rolling and Drawing, nec
3357	Nonferrous Wiredrawing & Insulating
3363	Aluminum Die-castings
3365	Aluminum Foundries
3366	Copper Foundries
3369	Nonferrous Foundries, nec
3398	Metal Heat Treating
3421	Cutlery
3423	Hand and Edge Tools, nec
3429	Hardware, nec
3431	Metal Sanitary Ware
3432	Plumbing Fixture Fittings and Trim
3433	Heating Equipment, Except Electric
3441	Fabricated Structural Metal
3442	Metal Doors, Sash, and Trim
3443	Fabricated Plate Work (Boiler Shops)
3444	Sheet Metalwork
3446	Architectural Metal Work
3448	Prefabricated Metal Buildings
3449	Miscellaneous Metal Work
3451	Screw Machine Products
3452	Bolts, Nuts, Rivets, and Washers
3462	Iron and Steel Forgings
3465	Automotive Stampings
3466	Crowns and Closures
3469	Metal Stampings, nec
3471	Plating and Polishing
3479	Metal Coating and Allied Services
3489	Ordnance and Accessories, nec
3491	Industrial Valves
3492	Fluid Power Valves & Hose Fittings
3494	Valves and Pipe Fittings, nec
3495	Wire Springs
3496	Misc. Fabricated Wire Products

NPRI Substance Uses and Sources

3498	Fabricated Pipe and Fittings
3499	Fabricated Metal Products, nec
3511	Turbines and Turbine Generator Sets
3519	Internal Combustion Engines, nec
3523	Farm Machinery and Equipment
3524	Lawn and Garden Equipment
3531	Construction Machinery
3535	Conveyors and Conveying Equipment
3536	Hoists, Cranes, and Monorails
3542	Machine Tools, Metal Forming Types
3543	Industrial Patterns
3544	Special Dies, Tools, Jigs & Fixtures
3546	Power-driven Handtools
3549	Metalworking Machinery, nec
3559	Special Industry Machinery, nec
3561	Pumps and Pumping Equipment
3563	Air and Gas Compressors
3564	Blowers and Fans
3565	Packaging Machinery
3566	Speed Changers, Drives, and Gears
3568	Power Transmission Equipment, nec
3569	General Industrial Machinery, nec
3571	Electronic Computers
3572	Computer Storage Devices
3575	Computer Terminals
3577	Computer Peripheral Equipment, nec
3581	Automatic Vending Machines
3582	Commercial Laundry Equipment
3585	Refrigeration and Heating Equipment
3586	Measuring and Dispensing Pumps
3589	Service Industry Machinery, nec
3593	Fluid Power Cylinders & Actuators
3599	Industrial Machinery, nec
3612	Transformers, Except Electronic

NPRI Substance Uses and Sources

3613	Switchgear and Switchboard Apparatus
3621	Motors and Generators
3625	Relays and Industrial Controls
3629	Electrical Industrial Apparatus, nec
3631	Household Cooking Equipment
3632	Household Refrigerators and Freezers
3634	Electric Housewares and Fans
3635	Household Vacuum Cleaners
3639	Household Appliances, nec
3643	Current-carrying Wiring Devices
3644	Non Current Carrying Wiring Devices
3645	Residential Lighting Fixtures
3646	Commercial Lighting Fixtures
3647	Vehicular Lighting Equipment
3648	Lighting Equipment, nec
3651	Household Audio and Video Equipment
3652	Prerecorded Records and Tapes
3661	Telephone and Telegraph Apparatus
3663	Radio & TV Communications Equipment
3669	Communications Equipment, nec
3671	Electron Tubes
3672	Printed Circuit Boards
3678	Electronic Connectors
3679	Electronic Components, nec
3694	Engine Electrical Equipment
3695	Magnetic and Optical Recording Media
3699	Electrical Equipment & Supplies, nec
3711	Motor Vehicles and Car Bodies
3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3715	Truck Trailers
3716	Motor Homes
3721	Aircraft
3724	Aircraft Engines and Engine Parts

NPRI Substance Uses and Sources

3728	Aircraft Parts and Equipment, nec
3731	Ship Building and Repairing
3732	Boat Building and Repairing
3743	Railroad Equipment
3751	Motorcycles, Bicycles, and Parts
3764	Space Propulsion Units and Parts
3769	Space Vehicle Equipment, nec
3792	Travel Trailers and Campers
3799	Transportation Equipment, nec
3821	Laboratory Apparatus and Furniture
3822	Environmental Controls
3824	Fluid Meters and Counting Devices
3826	Analytical Instruments
3829	Measuring & Controlling Devices, nec
3841	Surgical and Medical Instruments
3842	Surgical Appliances and Supplies
3845	Electromedical Equipment
3861	Photographic Equipment and Supplies
3949	Sporting and Athletic Goods, nec
3993	Signs and Advertising Specialities
3999	Manufacturing Industries, nec
4226	Special Warehousing and Storage, nec
4741	Rental of Railroad Cars
5013	Motor Vehicle Supplies and New Parts
5023	Homefurnishings
5169	Chemicals & Allied Products, nec
5192	Books, Periodicals, & Newspapers
7359	Equipment Rental & Leasing, nec
7377	Computer Rental & Leasing
7379	Computer Related Services, nec
8731	Commercial Physical Research
9661	Space Research and Technology

DIMETHYLAMINE (CAS # 124-40-3)

NPRI Substance Uses and Sources

Dimethylamine is a colourless, flammable liquified gas with an ammonia and fish-like odour.

The uses of dimethylamine include:

- as a hairing agent in tanning,
- as an acid gas absorbent, a floatation agent, a gasoline stabilizer, or as an accelerator in the manufacture of dyes, pharmaceuticals, soaps, detergents and rubbers, and
- as an agricultural fungicide.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
124-40-3	DIMETHYLAMINE
<i>US SIC Code</i>	<i>SIC Description</i>
2041	Flour and Other Grain Mill Products
2273	Carpets and Rugs
2297	Nonwoven Fabrics
2491	Wood Preserving
2789	Bookbinding and Related Work
2812	Alkalies and Chlorine
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2841	Soap and Other Detergents
2843	Surface Active Agents
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec

NPRI Substance Uses and Sources

2873	Nitrogenous Fertilizers
2879	Agricultural Chemicals, nec
2893	Printing Ink
2895	Carbon Black
2899	Chemical Preparations, nec
2911	Petroleum Refining
3081	Unsupported Plastics Film & Sheet
3842	Surgical Appliances and Supplies
3861	Photographic Equipment and Supplies
5169	Chemicals & Allied Products, nec

DIMETHYL PHENOL (CAS # 1300-71-6)

This chemical compound is a white crystalline solid used in the preparation of coal tar disinfectants as well as in the manufacture of synthetic resins, polyphenylene oxide (2,6-isomer only), solvents, pharmaceuticals, insecticides and fungicides.

It is also used in manufacturing plasticizers, rubber chemicals, additives for lubricants and gasolines, wetting agents and dyestuffs.

This substance is not listed on the U.S. Toxics Release Inventory and therefore the Standard Industrial Classification (SIC) codes for reporting of manufacture, processing, or otherwise use of this substance in the U.S. are not available. The following SIC codes are based only on the uses described above.

<i>CAS Number</i>	<i>Substance Name</i>
1300-71-6	DIMETHYL PHENOL
<i>US SIC Code</i>	<i>SIC Description</i>
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2834	Pharmaceutical Preparations
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2879	Agricultural Chemicals, nec
2899	Chemical Preparations, nec

NPRI Substance Uses and Sources

DIPHENYLAMINE (CAS # 122-39-4)

Diphenylamine is a white crystalline solid used as an antioxidant in the lubricants and additives industries.

Other uses are:

- in rubber as antioxidants and accelerators,
- in solid rocket propellants,
- in the manufacture of pesticides, dyes and pharmaceuticals,
- in veterinary medicine as a topical application in anti-screwworm mixtures and in tests for nitrate or nitrite poisoning,
- in the storage preservation for apples,
- as a stabilizer for nitrocellulose explosives and cellulose and,
- in analytical chemistry, for the detection of nitrates, chlorates and other strong oxidizers.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
122-39-4	DIPHENYLAMINE
<i>US SIC Code</i>	<i>SIC Description</i>
2269	Finishing Plants, nec
2519	Household Furniture, nec
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2879	Agricultural Chemicals, nec

NPRI Substance Uses and Sources

2892	Explosives
2899	Chemical Preparations, nec
2992	Lubricating Oils and Greases
3011	Tires and Inner Tubes
3087	Custom Compound Purchased Resins

FLUORINE (CAS # 7782-41-4)

Fluorine is a pale yellow gas and is the most powerful known oxidizing agent, reacting with virtually all organic and inorganic substances. It is used in the preparation of numerous inorganic and organic fluorine compounds of commercial importance, such as uranium hexafluoride, sulphur hexafluoride, boron trifluoride, antimony trifluoride, cobalt trifluoride, chlorine trifluoride, sodium fluoride and hydrofluoric acid.

Fluorine, which is often diluted with nitrogen, reacts with hydrocarbons to form corresponding fluorocarbons in which some, or all, hydrogen has been replaced by fluorine. The resulting compounds are usually characterized by great stability, chemical inertness and high electrical resistance. Useful plastics with non-sticking qualities, such as polytetrafluoroethylene (known by the commercial name Teflon), are readily made from unsaturated fluorocarbons. Organic compounds containing chlorine, bromine, or iodine are fluorinated to produce compounds such as dichlorodifluoromethane (CFC-12), the coolant used in most household refrigerators and air conditioners.

Fluorine is used as an oxidizer in rocket fuels as well as in the production of aluminum, glass, enamel, bricks and superphosphate fertilizers.

Since fluorine is present in the mineral matter, coal power plants could be the sources of fluorine releases.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996. Additional SIC codes are included to correspond to the non-manufacturing sectors as mentioned in the text descriptions.

<i>CAS Number</i>	<i>Substance Name</i>
7782-41-4	FLUORINE
<i>US SIC Code</i>	<i>SIC Description</i>

NPRI Substance Uses and Sources

2791	Typesetting
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2869	Industrial Organic Chemicals, nec
3085	Plastics Bottles
3251	Brick and Structural Clay Tile
3253	Ceramic Wall and Floor Tile
3353	Aluminum Sheet, Plate, and Foil
4911	Electric Services

FORMIC ACID (CAS # 64-18-6)

Formic acid is used in natural and synthetic textile dyeing and finishing. It acts as a dye-exhausting agent, provides finishes to cotton and wool and is used as a compound to make fabrics shrink-proof and wrinkle-proof.

Its chemical uses are as an intermediate in preparing chemicals such as formates and oxalic acid, as a strong reducing agent for acids, salts, dyes, fumigants, insecticides, refrigerants, and pharmaceuticals and as a solvent for perfumes and lacquers.

A number of many other uses of formic acid are:

- in the leather processing industry as a de-liming agent and neutralizer and also to tan, dehair and plump hides,
- in the rubber industry as a coagulant for natural rubber latex and form making, as well as to preserve latex,
- in the electroplating industry to control particle size and plating thickness, in silvering glass and as a reducing agent in chrome dyeing and nickel plating baths,
- in paper dyeing and finishing,
- in ore flotation,
- as an antiseptic in wine and beer brewing,
- as a flavour adjunct in perfumes,
- as a preservative in animal feed additives and in cleaning solution compounds,
- as a compound for stripping wire and preparing bare wires for soldering,
- as a laundry sour and
- as an acidifying agent for oil wells.

The industrial sources of releases for this substance are listed below. These are the

NPRI Substance Uses and Sources

Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996. Additional SIC codes are included to correspond to the non-manufacturing sectors as mentioned in the text descriptions.

<i>CAS Number</i>	<i>Substance Name</i>
64-18-6	FORMIC ACID
<i>US SIC Code</i>	<i>SIC Description</i>
1011	Iron Ores
1021	Copper Ores
1031	Lead and Zinc Ores
1041	Gold Ores
1044	Silver Ores
1061	Ferroalloy Ores, Except Vanadium
1099	Metal Ores, nec
1311	Crude Petroleum and Natural Gas
2087	Flavoring Extracts and Syrups, nec
2099	Food Preparations, nec
2231	Broadwoven Fabric Mills, Wool
2259	Knitting Mills nec
2261	Finishing Plants, Cotton
2262	Finishing Plants, Manmade
2269	Finishing Plants, nec
2281	Yarn Spinning Mills
2361	Girls' & Children's Dresses, Blouses
2421	Sawmills and Planing Mills, General
2429	Special Product Sawmills, nec
2436	Softwood Veneer and Plywood
2493	Reconstituted Wood Products
2499	Wood Products, nec
2611	Pulp Mills
2621	Paper Mills
2631	Paperboard Mills
2653	Corrugated and Solid Fiber Boxes
2674	Bags: Uncoated Paper & Multiwall
2676	Sanitary Paper Products

NPRI Substance Uses and Sources

2679	Converted Paper Products, nec
2791	Typesetting
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2836	Biological Products Exc. Diagnostic
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2844	Toilet Preparations
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations, nec
2911	Petroleum Refining
2992	Lubricating Oils and Greases
2999	Petroleum and Coal Products, nec
3053	Gaskets, Packing and Sealing Devices
3069	Fabricated Rubber Products, nec
3081	Unsupported Plastics Film & Sheet

NPRI Substance Uses and Sources

3086	Plastics Foam Products
3111	Leather Tanning and Finishing
3229	Pressed and Blown Glass, nec
3291	Abrasive Products
3295	Minerals, Ground or Treated
3341	Secondary Nonferrous Metals
3399	Primary Metal Products, nec
3471	Plating and Polishing
3499	Fabricated Metal Products, nec
3569	General Industrial Machinery, nec
3643	Current-carrying Wiring Devices
3651	Household Audio and Video Equipment
3671	Electron Tubes
3672	Printed Circuit Boards
3678	Electronic Connectors
3679	Electronic Components, nec
3694	Engine Electrical Equipment
3711	Motor Vehicles and Car Bodies
3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3841	Surgical and Medical Instruments
3861	Photographic Equipment and Supplies
3999	Manufacturing Industries, nec
4911	Electric Services
5169	Chemicals & Allied Products, nec
9199	General Government, nec

HALONS (BROMOFLUOROCARBONS)

The following halons are identified for NPRI reporting.

Substance	CAS Number
Halon 1211	353-59-3
Halon 1301	75-63-8

NPRI Substance Uses and Sources

Bromofluorocarbons or halons are similar to CFCs except they contain at least one bromine atom. They are inert, non-toxic and evaporate without leaving any residue.

Production and import of halons were banned in Canada on January 1, 1994. Halons are still used as extinguishing agents in portable fire extinguishers and total flooding systems to protect high value equipment such as computer centres and airplanes. Virgin material produced before 1994 as well as recovered, recycled and reclaimed halons are used to service existing equipment.

The industrial sources of releases for the two different halons are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the

CAS Number

353-59-3

Substance Name

BROMOCHLORODIFLUOROMETHANE (Halon 1211)

US SIC Code

2869

Industrial Organic Chemicals, nec

3999

Manufacturing Industries, nec

5172

Petroleum Products, nec

5191

Farm Supplies

9199

General Government, nec

CAS Number

75-63-8

Substance Name

U.S. Toxics Release Inventory in 1996.

BROMOTRIFLUOROMETHANE (Halon 1301)

US SIC Code

3312

Blast Furnaces and Steel Mills

3728

Aircraft Parts and Equipment, nec

3999

Manufacturing Industries, nec

5172

Petroleum Products, nec

5191

Farm Supplies

8733

Noncommercial Research Organizations

9199

General Government, nec

HEXACHLOROPHENE (CAS # 70-30-4)

NPRI Substance Uses and Sources

Hexachlorophene is a chlorinated bisphenol. It is a white crystalline powder widely used as a disinfectant, bactericide, and germicide against animal pathogenic bacteria and fungi. These bacteria and fungi are generally found on premises and equipment where livestock is kept, in hospitals and on hospital equipment, on surgical instruments as well as on industrial premises and industrial equipment.

Because of its antibacterial characteristics, hexachlorophene is used as an agent in the manufacture of soaps and detergents and in the preparation of medicinal chemicals.

Hexachlorophene was listed on the U.S. Toxics Release Inventory in 1996, but there were no reports on the substance.

The following Standard Industrial Classification (SIC) codes are based on the uses described above.

<i>CAS Number</i>	<i>Substance Name</i>
70-30-4	HEXACHLOROPHENE
<i>US SIC Code</i>	<i>SIC Description</i>
2833	Medicinals and Botanicals
2841	Soap and Other Detergents

HEXANE (CAS #110-54-3)

Normal hexane (n-hexane) is a clear, colourless liquid that has a faint gasoline-like odour. It is made from crude oil and is commonly used as a laboratory reagent.

The major use of hexane is as a solvent to extract vegetable oils from crops such as soy beans, flax, peanuts and safflower seed. It is also used as a cleaning agent in the textile, furniture, shoemaking and printing industries, particularly rotogravure printing.

Hexane is an ingredient of special glues that are used in the roofing, shoe and leather industries. It is used for binding books, shaping pills and tablets, canning, manufacturing tires and making baseballs.

It is used as a catalyst carrier in the manufacture of polyolefins and certain elastomers and it assists in controlling molecular weight by dropping polymer out of a solution when a certain molecular weight is reached.

It is also used to help determine the refractive index of minerals.

Consumer products that contain small amounts of hexane include gasoline, rubber, cement,

NPRI Substance Uses and Sources

type-over correction fluids, non-mercury thermometers, alcohol preparations, paint thinners, degreasing agents or cleaners and aerosols in perfumes. Producers associated with these products are considered potential sources of hexane releases.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
110-54-3	N-HEXANE
<i>US SIC Code</i>	<i>SIC Description</i>
1321	Natural Gas Liquids
1479	Chemical and Fertilizer Mining, nec
2011	Meat Packing Plants
2015	Poultry Slaughtering and Processing
2021	Creamery Butter
2023	Dry, Condensed, Evaporated Products
2032	Canned Specialties
2033	Canned Fruits and Vegetables
2034	Dehydrated Fruits, Vegetables, Soups
2041	Flour and Other Grain Mill Products
2046	Wet Corn Milling
2047	Dog and Cat Food
2048	Prepared Feeds, nec
2074	Cottonseed Oil Mills
2075	Soybean Oil Mills
2076	Vegetable Oil Mills, nec
2077	Animal and Marine Fats and Oils
2079	Edible Fats and Oils, nec
2085	Distilled and Blended Liquors
2087	Flavoring Extracts and Syrups, nec
2091	Canned and Cured Fish and Seafoods
2096	Potato Chips and Similar Snacks
2099	Food Preparations, nec
2211	Broadwoven Fabric Mills, Cotton

NPRI Substance Uses and Sources

2221	Broadwoven Fabric Mills, Manmade
2269	Finishing Plants, nec
2281	Yarn Spinning Mills
2295	Coated Fabrics, Not Rubberized
2297	Nonwoven Fabrics
2299	Textile Goods, nec
2311	Men's and Boys' Suits and Coats
2369	Girls' and Children's Outerwear, nec
2393	Textile Bags
2431	Millwork
2434	Wood Kitchen Cabinets
2451	Mobile Homes
2452	Prefabricated Wood Buildings
2499	Wood Products, nec
2511	Wood Household Furniture
2514	Metal Household Furniture
2521	Wood Office Furniture
2522	Office Furniture, Except Wood
2531	Public Building & Related Furniture
2541	Wood Partitions and Fixtures
2542	Partitions and Fixtures, Except Wood
2599	Furniture and Fixtures, nec
2611	Pulp Mills
2621	Paper Mills
2631	Paperboard Mills
2655	Fiber Cans, Drums & Similar Products
2657	Folding Paperboard Boxes
2671	Paper Coated & Laminated, Packaging
2672	Paper Coated and Laminated, nec
2673	Bags: Plastics, Laminated, & Coated
2674	Bags: Uncoated Paper & Multiwall
2732	Book Printing
2752	Commercial Printing, Lithographic
2754	Commercial Printing, Gravure

NPRI Substance Uses and Sources

2759	Commercial Printing, nec
2789	Bookbinding and Related Work
2791	Typesetting
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2844	Toilet Preparations
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2892	Explosives
2893	Printing Ink
2895	Carbon Black
2899	Chemical Preparations, nec
2911	Petroleum Refining
2951	Asphalt Paving Mixtures and Blocks
2952	Asphalt Felts and Coatings
2992	Lubricating Oils and Greases

NPRI Substance Uses and Sources

2999	Petroleum and Coal Products, nec
3011	Tires and Inner Tubes
3021	Rubber and Plastics Footwear
3052	Rubber & Plastics Hose & Belting
3053	Gaskets, Packing and Sealing Devices
3069	Fabricated Rubber Products, nec
3081	Unsupported Plastics Film & Sheet
3082	Unsupported Plastics Profile Shapes
3086	Plastics Foam Products
3089	Plastics Products, nec
3149	Footwear, Except Rubber, nec
3229	Pressed and Blown Glass, nec
3231	Products of Purchased Glass
3241	Cement, Hydraulic
3272	Concrete Products, nec
3274	Lime
3291	Abrasive Products
3292	Asbestos Products
3295	Minerals, Ground or Treated
3296	Mineral Wool
3297	Nonclay Refractories
3321	Gray and Ductile Iron Foundries
3341	Secondary Nonferrous Metals
3353	Aluminum Sheet, Plate, and Foil
3355	Aluminum Rolling and Drawing, nec
3411	Metal Cans
3412	Metal Barrels, Drums, and Pails
3433	Heating Equipment, Except Electric
3442	Metal Doors, Sash, and Trim
3444	Sheet Metalwork
3469	Metal Stampings, nec
3471	Plating and Polishing
3479	Metal Coating and Allied Services
3482	Small Arms Ammunition

NPRI Substance Uses and Sources

3483	Ammunition, Exc. For Small Arms, nec
3489	Ordnance and Accessories, nec
3496	Misc. Fabricated Wire Products
3497	Metal Foil and Leaf
3499	Fabricated Metal Products, nec
3519	Internal Combustion Engines, nec
3533	Oil and Gas Field Machinery
3542	Machine Tools, Metal Forming Types
3545	Machine Tool Accessories
3546	Power-driven Handtools
3559	Special Industry Machinery, nec
3579	Office Machines, nec
3581	Automatic Vending Machines
3585	Refrigeration and Heating Equipment
3596	Scales and Balances, Exc. Laboratory
3599	Industrial Machinery, nec
3612	Transformers, Except Electronic
3624	Carbon and Graphite Products
3631	Household Cooking Equipment
3643	Current-carrying Wiring Devices
3647	Vehicular Lighting Equipment
3651	Household Audio and Video Equipment
3672	Printed Circuit Boards
3674	Semiconductors and Related Devices
3678	Electronic Connectors
3679	Electronic Components, nec
3692	Primary Batteries, Dry and Wet
3694	Engine Electrical Equipment
3695	Magnetic and Optical Recording Media
3711	Motor Vehicles and Car Bodies
3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3716	Motor Homes
3728	Aircraft Parts and Equipment, nec

NPRI Substance Uses and Sources

3731	Ship Building and Repairing
3732	Boat Building and Repairing
3743	Railroad Equipment
3751	Motorcycles, Bicycles, and Parts
3761	Guided Missiles and Space Vehicles
3764	Space Propulsion Units and Parts
3769	Space Vehicle Equipment, nec
3792	Travel Trailers and Campers
3823	Process Control Instruments
3841	Surgical and Medical Instruments
3851	Ophthalmic Goods
3861	Photographic Equipment and Supplies
3911	Jewelry, Precious Metal
3949	Sporting and Athletic Goods, nec
3993	Signs and Advertising Specialities
3999	Manufacturing Industries, nec
4226	Special Warehousing and Storage, nec
4231	Trucking Terminal Facilities
4311	U.S. Postal Service
4491	Marine Cargo Handling
4499	Water Transportation Services, nec
4612	Crude Petroleum Pipelines
4953	Refuse Systems
5085	Industrial Supplies
5153	Grain and Field Beans
5169	Chemicals & Allied Products, nec
5171	Petroleum Bulk Stations & Terminals
5541	Gasoline Service Stations
7389	Business Services, nec
8711	Engineering Services
8731	Commercial Physical Research
8733	Noncommercial Research Organizations
8734	Testing Laboratories
9199	General Government, nec

NPRI Substance Uses and Sources

HYDROGEN SULFIDE (CAS # 7783-06-4)

Hydrogen sulfide is a colourless, flammable, poisonous gas with the odour of rotten eggs. It burns in air with a pale blue flame.

Hydrogen sulfide is released during the burning of sulfur-containing fuel oil and coal and also during the extraction and refining of oil and natural gas.

It is released from pulp and paper plants using the kraft pulping process. It may also be generated by the leather industry, which uses sodium sulfide to remove hair from hides prior to tanning.

Large quantities of hydrogen sulfide are used in the production of heavy water for nuclear reactors.

Other uses are:

- in metallurgy for preparing metallic sulfides, separating metals and removing metallic impurities,
- in the manufacture of chemicals such as phosphorus-based additives for lubrication oils and greases,
- in the production of rayon textile, and
- as an analytical reagent in chemical analysis.

This substance is not listed on the U.S. Toxics Release Inventory and therefore the Standard Industrial Classification (SIC) codes for reporting of manufacture, processing, or

CAS Number

7783-06-4

Substance Name

HYDROGEN SULFIDE

US SIC Code

1311

Crude Petroleum and Natural Gas

2211

Broadwoven Fabric Mills, Cotton

2221

Broadwoven Fabric Mills, Manmade

2611

Pulp Mills

2621

Paper Mills

2631

Paperboard Mills

NPRI Substance Uses and Sources

2819	Industrial Inorganic Chemicals, nec
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services

otherwise use of this substance in the U.S. are not available. The following SIC codes are based only on the uses described above. IRON PENTACARBONYL (CAS # 13463-40-6)

Iron pentacarbonyl is a yellow, viscous liquid, capable of spontaneous combustion in the presence of air.

This organometallic chemical is used as a catalyst in organic synthesis. It is used to make carbonyl iron for high frequency coils for the radio and television industry and as an anti-knock agent in motor fuels.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
13463-40-6	IRON PENTACARBONYL
<i>US SIC Code</i>	<i>SIC Description</i>
2869	Industrial Organic Chemicals, nec

ISOPRENE (CAS # 78-79-5)

Isoprene is a colourless, volatile liquid used predominantly in the manufacture of synthetic and butyl rubbers. It can be used independently, or in combination with other rubbers, for the manufacture of tires and a variety of rubber articles, such as rubber footwear, sporting goods, bonding compounds and water repellents. It is also used for the manufacture of rubber articles used in the food and medical industries.

This substance is not listed on the U.S. Toxics Release Inventory and therefore the Standard Industrial Classification (SIC) codes for reporting of manufacture, processing, or

<i>CAS Number</i>	<i>Substance Name</i>
78-79-5	ISOPRENE
<i>US SIC Code</i>	<i>SIC Description</i>
2822	Synthetic Rubber
2899	Chemical Preparations, nec

NPRI Substance Uses and Sources

3011	Tires and Inner Tubes
3021	Rubber and Plastics Footwear
3069	Fabricated Rubber Products, nec

LITHIUM CARBONATE (CAS # 554-13-2)

Lithium carbonate is a white, soluble powder. It is used in ceramics, porcelain, varnishes, dyes and lubricating greases. As a catalyst, lithium carbonate has applications in battery alloys and semi-conductors. It is also used in aluminium smelting.

Lithium carbonate is an active ingredient in pharmaceutical products, therefore it may be released into the atmosphere by medicinal chemical manufacturers.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
554-13-2	LITHIUM CARBONATE
<i>US SIC Code</i>	<i>SIC Description</i>
1479	Chemical and Fertilizer Mining, nec
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2841	Soap and Other Detergents
2843	Surface Active Agents
2851	Paints and Allied Products
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2899	Chemical Preparations, nec
2992	Lubricating Oils and Greases
3229	Pressed and Blown Glass, nec
3241	Cement, Hydraulic

NPRI Substance Uses and Sources

3272	Concrete Products, nec
3291	Abrasive Products
3295	Minerals, Ground or Treated
3297	Nonclay Refractories
3299	Nonmetallic Mineral Products, nec
3334	Primary Aluminum
3355	Aluminum Rolling and Drawing, nec
3399	Primary Metal Products, nec
3431	Metal Sanitary Ware
3548	Welding Apparatus
3559	Special Industry Machinery, nec
3624	Carbon and Graphite Products
3728	Aircraft Parts and Equipment, nec
3999	Manufacturing Industries, nec

2-MERCAPTOBENZOTHIAZOLE - (CAS # 149-30-4)

2-Mercaptobenzothiazole is a fine yellow powder which is commonly used as a vulcanization accelerator for the manufacture of rubber, tire treads and carcasses. Other uses include:

- as a copper deactivator and corrosion inhibitor in cutting oils and petroleum products, particularly in auto radiator coolants,
- as an extreme pressure additive in greases,
- as an antioxidant/stabilizer in the manufacturing of plastics, and
- as a fungicide for preserving textiles.

The industrial sources of releases for this substance are listed below. These are the

<i>CAS Number</i>	<i>Substance Name</i>
149-30-4	2-MERCAPTOBENZOTHIAZOLE
<i>US SIC Code</i>	<i>SIC Description</i>
2211	Broadwoven Fabric Mills, Cotton
2269	Finishing Plants, nec
2273	Carpets and Rugs
2812	Alkalies and Chlorine

NPRI Substance Uses and Sources

2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2833	Medicinals and Botanicals
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2869	Industrial Organic Chemicals, nec
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2899	Chemical Preparations, nec
2992	Lubricating Oils and Greases
3011	Tires and Inner Tubes
3053	Gaskets, Packing and Sealing Devices
3061	Mechanical Rubber Goods
3069	Fabricated Rubber Products, nec
3087	Custom Compound Purchased Resins
3315	Steel Wire and Related Products
3357	Nonferrous Wiredrawing & Insulating

N-METHYLOLACRYLAMIDE (CAS # 924-42-5)

N-methylolacrylamide is a white crystalline material used as an intermediate for copolymerization of vinyl acetate and acrylic acid. It is used as a polymer for coatings, varnishes, adhesives, crease-proof fabrics, wrinkle-resistant fabrics, and permanent-press textiles by irradiation bonding.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
924-42-5	N-METHYLOLACRYLAMIDE
<i>US SIC Code</i>	<i>SIC Description</i>
2511	Wood Household Furniture
2812	Alkalies and Chlorine
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins

NPRI Substance Uses and Sources

2822	Synthetic Rubber
2841	Soap and Other Detergents
2843	Surface Active Agents
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations, nec
3087	Custom Compound Purchased Resins

2-METHYLPYRIDINE (CAS # 109-06-8)

2-Methylpyridine is a colourless liquid used as a chemical intermediate in the dye and resins industries. It is also used as an organic intermediate for the manufacture of pharmaceuticals, rubber chemicals, solvents and agricultural products such as the herbicide picloram.

2-Methylpyridine is released into the atmosphere from vinyl pyridine production facilities, waste water treatment plants, and energy-related processes such as coal gasification.

It has also been discovered that tobacco smoke contains 2-methylpyridine.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996. Additional SIC codes are included to correspond to the non-manufacturing sectors as mentioned in the text descriptions.

<i>CAS Number</i>	<i>Substance Name</i>
109-06-8	2-METHYLPYRIDINE
<i>US SIC Code</i>	<i>SIC Description</i>
1311	Crude Petroleum and Natural Gas
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers

NPRI Substance Uses and Sources

2879	Agricultural Chemicals, nec
2899	Chemical Preparations, nec
3312	Blast Furnaces and Steel Mills
4952	Sewerage Systems

N-METHYL-2-PYRROLIDONE (CAS # 872-50-4)

N-Methyl-2-Pyrrolidone (NMP) is a highly polar, colourless liquid with a mild amine odour.

It is widely used in the petroleum processing industry for large-scale recovery of hydrocarbons and aromatics by extractive distillation and also in the preparation of semi-permeable membranes designed for the processes of ultrafiltration and reverse osmosis separation.

There are many other uses of NMP:

- in the agricultural industry, as a component in the formulation of insecticides, pesticides, fungicides, herbicides and seed treatment products,
- in the plastics industry, as a solvent for natural and synthetic plastics, waxes, resins and various types of paints. It is also used in spinning fibers and yarns and to synthesize new polymers,
- in the electronics industry, as a cleaning agent for cleaning and degreasing single-crystal integrated circuits. It is also an active ingredient in a commercially available product that is a water-miscible, semi-aqueous cleaner used to deflux printed wiring boards (PWBs) after wave solder or vapour phase reflow,
- to clean engine parts (by removing oil and carbon deposits) and to remove such substances as printing ink residues, epoxies and temporary coatings from optical components,
- as a solvent for surface coatings, including acrylates, epoxies, polyurethanes, polyvinyl chlorides, polyamidimide-based wire enamels, water-based coatings and printing inks. It also works on varnishes, lacquers and burnt-on carbon deposits,
- as an ingredient in paint stripping products marketed for commercial and home use. It removes paint more slowly than methylene chloride, but it dissolves multiple layers rather than lifting each coat.

Commercial trade names of this substance, including blends are:

M-Pyrol Solvent, "Surfadone", LP-100 and LP-300 (N-alkylpyrrolidones), Non Meth and SP-NMP.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

NPRI Substance Uses and Sources

CAS Number

872-50-4

Substance Name

N-METHYL-2-PYRROLIDONE

US SIC Code

SIC Description

2011	Meat Packing Plants
2077	Animal and Marine Fats and Oils
2099	Food Preparations, nec
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2241	Narrow Fabric Mills
2258	Lace & Warp Knit Fabric Mills
2261	Finishing Plants, Cotton
2262	Finishing Plants, Manmade
2269	Finishing Plants, nec
2284	Thread Mills
2295	Coated Fabrics, Not Rubberized
2297	Nonwoven Fabrics
2299	Textile Goods, nec
2331	Women's & Misses' Blouses & Shirts
2396	Automotive and Apparel Trimmings
2399	Fabricated Textile Products, nec
2451	Mobile Homes
2521	Wood Office Furniture
2657	Folding Paperboard Boxes
2671	Paper Coated & Laminated, Packaging
2672	Paper Coated and Laminated, nec
2674	Bags: Uncoated Paper & Multiwall
2711	Newspapers
2752	Commercial Printing, Lithographic
2754	Commercial Printing, Gravure
2759	Commercial Printing, nec
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2819	Industrial Inorganic Chemicals, nec

NPRI Substance Uses and Sources

2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2836	Biological Products Exc. Diagnostic
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2844	Toilet Preparations
2851	Paints and Allied Products
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2874	Phosphatic Fertilizers
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations, nec
2911	Petroleum Refining
2951	Asphalt Paving Mixtures and Blocks
2992	Lubricating Oils and Greases
2999	Petroleum and Coal Products, nec
3052	Rubber & Plastics Hose & Belting
3053	Gaskets, Packing and Sealing Devices
3069	Fabricated Rubber Products, nec
3081	Unsupported Plastics Film & Sheet
3082	Unsupported Plastics Profile Shapes
3083	Laminated Plastics Plate & Sheet
3085	Plastics Bottles
3086	Plastics Foam Products
3087	Custom Compound Purchased Resins
3088	Plastics Plumbing Fixtures

NPRI Substance Uses and Sources

3089	Plastics Products, nec
3111	Leather Tanning and Finishing
3229	Pressed and Blown Glass, nec
3241	Cement, Hydraulic
3295	Minerals, Ground or Treated
3315	Steel Wire and Related Products
3321	Gray and Ductile Iron Foundries
3322	Malleable Iron Foundries
3324	Steel Investment Foundries
3351	Copper Rolling and Drawing
3357	Nonferrous Wiredrawing & Insulating
3363	Aluminum Die-castings
3365	Aluminum Foundries
3411	Metal Cans
3421	Cutlery
3425	Saw Blades and Handsaws
3431	Metal Sanitary Ware
3443	Fabricated Plate Work (Boiler Shops)
3444	Sheet Metalwork
3446	Architectural Metal Work
3449	Miscellaneous Metal Work
3451	Screw Machine Products
3465	Automotive Stampings
3469	Metal Stampings, nec
3471	Plating and Polishing
3479	Metal Coating and Allied Services
3496	Misc. Fabricated Wire Products
3497	Metal Foil and Leaf
3519	Internal Combustion Engines, nec
3555	Printing Trades Machinery
3556	Food Products Machinery
3569	General Industrial Machinery, nec
3571	Electronic Computers
3572	Computer Storage Devices

NPRI Substance Uses and Sources

3577	Computer Peripheral Equipment, nec
3589	Service Industry Machinery, nec
3621	Motors and Generators
3624	Carbon and Graphite Products
3647	Vehicular Lighting Equipment
3663	Radio & TV Communications Equipment
3672	Printed Circuit Boards
3674	Semiconductors and Related Devices
3676	Electronic Resistors
3679	Electronic Components, nec
3691	Storage Batteries
3692	Primary Batteries, Dry and Wet
3711	Motor Vehicles and Car Bodies
3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3716	Motor Homes
3728	Aircraft Parts and Equipment, nec
3732	Boat Building and Repairing
3743	Railroad Equipment
3751	Motorcycles, Bicycles, and Parts
3764	Space Propulsion Units and Parts
3769	Space Vehicle Equipment, nec
3812	Search and Navigation Equipment
3821	Laboratory Apparatus and Furniture
3823	Process Control Instruments
3825	Instruments to Measure Electricity
3829	Measuring & Controlling Devices, nec
3851	Ophthalmic Goods
3861	Photographic Equipment and Supplies
3949	Sporting and Athletic Goods, nec
3951	Pens and Mechanical Pencils
3952	Lead Pencils and Art Goods
3993	Signs and Advertising Specialities
3999	Manufacturing Industries, nec

NPRI Substance Uses and Sources

4581	Airports, Flying Fields, & Services
4741	Rental of Railroad Cars
4953	Refuse Systems
5169	Chemicals & Allied Products, nec
5171	Petroleum Bulk Stations & Terminals
5191	Farm Supplies
5999	Miscellaneous Retail Stores, nec
7389	Business Services, nec
8731	Commercial Physical Research
9711	National Security

p-NITROANILINE (CAS # 100-01-6)

p-Nitroaniline is a bright yellow powder with a faint ammonia-like odour. It is used:

- as an intermediate in the manufacture of azo dyes, colouring agents, pharmaceuticals and pesticides,
- as an intermediate in the preparation of antioxidants, gasoline, gum inhibitors and veterinary medicines for poultry, and
- as an intermediate in the production of p-phenylenediamine.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
100-01-6	P-NITROANILINE
<i>US SIC Code</i>	<i>SIC Description</i>
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2836	Biological Products Exc. Diagnostic
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec

NPRI Substance Uses and Sources

NONYLPHENOLS AND NONYLPHENOL ETHOXYLATES

The following nonylphenols and nonylphenol ethoxylates are identified for NPRI reporting:

Substance	CAS Number
1. Ethoxynonyl benzene	28679-13-2
2. Nonylphenol	104-40-5
3. Nonylphenol hepta(oxyethylene) ethanol	27177-05-5
4. Nonylphenol, industrial	84852-15-3
5. Nonylphenol nona(oxyethylene) ethanol	27177-08-8
6. n-Nonylphenol (mixed isomers)	25154-52-3
7. Nonylphenol polyethylene glycol ether	9016-45-9
8. p-Nonylphenol polyethylene glycol ether	26027-38-3
9. Nonylphenoxy ethanol	27986-36-3
10. 2-(p-Nonylphenoxy) ethanol	104-35-8
11. 2-[2-(p-Nonylphenoxy)ethoxy] ethanol	20427-84-3
12. 2-[2-[2-(p-Nonylphenoxy)ethoxy]ethoxy]ethoxy] ethanol	7311-27-5

Nonylphenols and nonylphenol ethoxylates are a class of surfactants, which are used in high volumes as detergents, emulsifiers, wetting agents and dispersing agents.

The other uses of these chemicals are as additives, chemical intermediates and absorbents, also as catalysts, accelerators, initiators and activators and as flavouring agents for fragrances, perfumes and deodorants.

They are also used as oil well treating agents, photosensitive agents and as antioxidants, corrosion inhibitors, and tarnish inhibitors.

Products containing nonylphenol ethoxylates are used in many sectors including: soap and detergent manufacturing, textile manufacturing, pulp and paper manufacturing, paints and protective coatings, plastics and resins production, petroleum production, oil and gas recovery, steel manufacturing, pest control products formulation and manufacturing, leather processing, food and beverage processing and power generation. The products have numerous applications, including controlling deposits on machinery, cleaning equipment and scouring fibres. They are also used in dyeing, machine felt cleaning and conditioning and in product finishing.

For the textile and leather industries, the following commercial products containing nonylphenol ethoxylates (as marketed under the various trade names) are believed to be used:

NPRI Substance Uses and Sources

Cloterge CS and OE, Conco NI-40, Daraclean 6028, Div-O-Jay, Hyonic PE-100, Iconol, Igepal CO-210, Igepal CO-530, Igepal CO-710, Igepal CO-850, Igepal CO-880, Makon 4, Makon 6, Makon 8, Makon 10, Makon 12, Makon 14, Makon 30, PC 3960, Polytergent B-150, Polytergent B-200, Polytergent B-300, Polytergent B-350, Polytergent B-500, Rexol 25/1, Rexol 25/507, Rildet TD-5, Stantex, Sterox ND, Sterox NJ, Sterox NK, Sure Safe 405, Surfonic N-10, Surfonic N-31.5, Surfonic N-40, Surfonic N-60, Surfonic N-95, Surfonic N-100, Surfonic N-120, Surfonic N-300, T-DET-N-4, T-DET-N-6, T-DET-N-9.5, T-DET-N-14, Tergitol NP-4, Tergitol NP-7, Tergitol NP-9, Tergitol NP-40, Triton N-57, Triton N-111 and Versamine.

As well as being used in industry, a variety of cleaning products, degreasers and detergents containing nonylphenol ethoxylates are available for institutional or domestic use. These products, after their use, could be discharged into municipal wastewater treatment plants. These treatment plants, therefore, must be considered as a potential source of the release of nonylphenol ethoxylates into the environment.

The nonylphenols and nonylphenol ethoxylates are not listed on the U.S. Toxics Release Inventory and therefore the Standard Industrial Classification (SIC) codes for reporting of their manufacture, processing, or otherwise use in the U.S. are not available. The following SIC codes are based only on the uses described above.

CAS Number

28679-13-2

Substance Name

Benzene, ethoxynonyl-

US SIC Code

SIC Description

1311	Crude Petroleum and Natural Gas
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills

NPRI Substance Uses and Sources

2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services
4952	Sewerage Systems

CAS Number

104-40-5

Substance Name

Nonylphenol

US SIC Code

SIC Description

1311	Crude Petroleum and Natural Gas
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services

NPRI Substance Uses and Sources

4952

Sewerage Systems

CAS Number

Substance Name

27177-05-5

Nonylphenol hepta(oxyethylene) ethanol

US SIC Code

SIC Description

1311

Crude Petroleum and Natural Gas

2011

Meat Packing Plants

2013

Sausages and Other Prepared Meats

2082

Malt Beverages

2084

Wines, Brandy, and Brandy Spirits

2085

Distilled and Blended Liquors

2086

Bottled and Canned Soft Drinks

2211

Broadwoven Fabric Mills, Cotton

2221

Broadwoven Fabric Mills, Manmade

2231

Broadwoven Fabric Mills, Wool

2611

Pulp Mills

2621

Paper Mills

2821

Plastics Materials and Resins

2841

Soap and Other Detergents

2842

Polishes and Sanitation Goods

2851

Paints and Allied Products

2879

Agricultural Chemicals, nec

2911

Petroleum Refining

3111

Leather Tanning and Finishing

3312

Blast Furnaces and Steel Mills

4911

Electric Services

4952

Sewerage Systems

CAS Number

Substance Name

84852-15-3

Industrial nonylphenol

US SIC Code

SIC Description

1311

Crude Petroleum and Natural Gas

2011

Meat Packing Plants

2013

Sausages and Other Prepared Meats

2082

Malt Beverages

2084

Wines, Brandy, and Brandy Spirits

NPRI Substance Uses and Sources

2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services
4952	Sewerage Systems

CAS Number

27177-08-8

Substance Name

Nonylphenol nona(oxyethylene) ethanol

US SIC Code

SIC Description

1311	Crude Petroleum and Natural Gas
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills
2821	Plastics Materials and Resins
2841	Soap and Other Detergents

NPRI Substance Uses and Sources

2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services
4952	Sewerage Systems

CAS Number

Substance Name

25154-52-3 n-Nonylphenol (mixed isomers)

US SIC Code

SIC Description

1311	Crude Petroleum and Natural Gas
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services
4952	Sewerage Systems

CAS Number

Substance Name

NPRI Substance Uses and Sources

9016-45-9 Nonylphenol polyethylene glycol ether

US SIC Code

SIC Description

1311	Crude Petroleum and Natural Gas
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services
4952	Sewerage Systems

CAS Number

Substance Name

26027-38-3 p-Nonylphenol polyethylene glycol ether

US SIC Code

SIC Description

1311	Crude Petroleum and Natural Gas
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks

NPRI Substance Uses and Sources

2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services
4952	Sewerage Systems

CAS Number

Substance Name

27986-36-3 (Nonylphenoxy)ethanol

US SIC Code

SIC Description

1311	Crude Petroleum and Natural Gas
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products

NPRI Substance Uses and Sources

2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services
4952	Sewerage Systems

<i>CAS Number</i>	<i>Substance Name</i>
104-35-8	2-(p-Nonylphenoxy)ethanol

<i>US SIC Code</i>	<i>SIC Description</i>
1311	Crude Petroleum and Natural Gas
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services
4952	Sewerage Systems

<i>CAS Number</i>	<i>Substance Name</i>
20427-84-3	Ethanol, 2-[2-(p-nonylphenoxy)ethoxy]-

<i>US SIC Code</i>	<i>SIC Description</i>
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NPRI Substance Uses and Sources

1311	Crude Petroleum and Natural Gas
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services
4952	Sewerage Systems

CAS Number

7311-27-5

Substance Name

Ethanol, 2-[2-[2-[2-(4-nonylphenoxy)ethoxy]ethoxy]ethoxy]-

US SIC Code

1311	Crude Petroleum and Natural Gas
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2082	Malt Beverages
2084	Wines, Brandy, and Brandy Spirits
2085	Distilled and Blended Liquors
2086	Bottled and Canned Soft Drinks
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade

NPRI Substance Uses and Sources

2231	Broadwoven Fabric Mills, Wool
2611	Pulp Mills
2621	Paper Mills
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2879	Agricultural Chemicals, nec
2911	Petroleum Refining
3111	Leather Tanning and Finishing
3312	Blast Furnaces and Steel Mills
4911	Electric Services
4952	Sewerage Systems

PARALDEHYDE (CAS # 123-63-7)

Paraldehyde is a clear, colourless liquid used as a rubber accelerator and antioxidant.

It is used as an intermediate for the manufacture of dyestuff and many synthetic organic chemicals. It is also used as a solvent for the production of fats, oils, gums, resins, and leather and as a solvent mixture for cellulose derivatives.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
123-63-7	PARALDEHYDE
<i>US SIC Code</i>	<i>SIC Description</i>
2369	Girls' and Children's Outerwear, nec
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2824	Organic Fibers, Noncellulosic
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
3861	Photographic Equipment and Supplies

NPRI Substance Uses and Sources

PENTACHLOROETHANE (CAS # 76-01-7)

Pentachloroethane is used as a solvent for oil and grease in metal cleaning and in separating coal from impurities by determining the density difference.

Other uses include:

- as a chemical intermediate in the manufacture of tetrachloroethylene and dichloroacetic acid,
- as a solvent for cellulose acetate, as well as for certain cellulose ethers, resins and gums, and
- as a drying agent in the timber industry.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
76-01-7	PENTACHLOROETHANE
<i>US SIC Code</i>	<i>SIC Description</i>
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2911	Petroleum Refining

POLYCHLORINATED ALKANES

Alkanes, C₆₋₁₈, chloro (CAS # 68920-70-7)

Alkanes, C₁₀₋₁₃, chloro (CAS # 85535-84-8)

Alkanes, C₁₀₋₁₃, chloro (CAS # 85535-84-8) are chemical mixtures that fit into the definition of short chain chlorinated paraffins category. The other substance Alkanes, C₆₋₁₈, chloro (CAS # 68920-70-7)

NPRI Substance Uses and Sources

may contain short chain chlorinated paraffins, though strictly speaking it does not meet the definition because it also contains carbon chain lengths of less than 10, as well as carbon chain lengths that are greater than 13.

It is an accepted convention that short chain chlorinated paraffins generally have a carbon chain length of between 10 and 13 carbon atoms and a chlorine content of between 40% and 70% by weight. They are considered to be more toxic than those species of intermediate or long chain designations - that is, carbon chain lengths of 14 or more carbon atoms.

Chlorinated Paraffins Industry Association (CPIA) has claimed that based on a recent informal survey of North American chlorinated paraffin producers, there seems to be no company currently producing a product that conforms to CAS #68920-70-7.

Chlorinated paraffins are generally meant to include products produced from the chlorination of petroleum-based paraffin fractions only. For NPRI reporting, any product conforming to the alkanes, C₁₀₋₁₃, chloro (CAS # 85535-84-8) definition should be reported.

Because of their high chemical stability in a variety of conditions, short chain chlorinated paraffins are widely used in numerous applications. The most common use is as an extreme-pressure, anti-wear additive in lubricants used for metal machinery (particularly cutting oils). The demand is particularly evident in the manufacture of automobiles, automobile parts and appliances.

Short chain chlorinated paraffins are frequently used as plasticizers in plastics (including vinyls, resins and foams), paints (including enamels, polyurethanes and vinyls) and to a lesser degree in adhesives, caulks and sealants.

They are also used as water repellants, as well as flame retardants in rubber and plastics .

The short chain chlorinated paraffins are marketed under numerous trade names, such as; Cereclor, Chlorez, Chlorowax, Chlorparaffin, Witaclor, Chlorflo, Paraoil and Unichlor.

The industrial sources of releases for these substances are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996. It should be noted that the U.S. data represent the polychlorinated alkanes category consisting of many individual chemicals and/or mixtures, but since these two substances are believed to be part of the polychlorinated alkanes category, the same data are assumed to be applicable.

CAS Number

68920-70-7

Substance Name

ALKANES, C6-18, CHLORO

US SIC Code

SIC Description

NPRI Substance Uses and Sources

2295	Coated Fabrics, Not Rubberized
2611	Pulp Mills
2621	Paper Mills
2671	Paper Coated & Laminated, Packaging
2672	Paper Coated and Laminated, nec
2812	Alkalies and Chlorine
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2869	Industrial Organic Chemicals, nec
2891	Adhesives and Sealants
2892	Explosives
2899	Chemical Preparations, nec
2911	Petroleum Refining
2992	Lubricating Oils and Greases
3061	Mechanical Rubber Goods
3069	Fabricated Rubber Products, nec
3086	Plastics Foam Products
3089	Plastics Products, nec
3291	Abrasive Products
3321	Gray and Ductile Iron Foundries
3351	Copper Rolling and Drawing
3462	Iron and Steel Forgings
3465	Automotive Stampings
3469	Metal Stampings, nec
3471	Plating and Polishing
3479	Metal Coating and Allied Services
3519	Internal Combustion Engines, nec
3524	Lawn and Garden Equipment
3541	Machine Tools, Metal Cutting Types
3544	Special Dies, Tools, Jigs & Fixtures
3585	Refrigeration and Heating Equipment

NPRI Substance Uses and Sources

3644	Non Current Carrying Wiring Devices
3692	Primary Batteries, Dry and Wet
3694	Engine Electrical Equipment
3711	Motor Vehicles and Car Bodies
3714	Motor Vehicle Parts and Accessories
3728	Aircraft Parts and Equipment, nec
3824	Fluid Meters and Counting Devices

CAS Number

Substance Name

85535-84-8 ALKANES, C10-13, CHLORO

US SIC Code

SIC Description

2295	Coated Fabrics, Not Rubberized
2611	Pulp Mills
2621	Paper Mills
2671	Paper Coated & Laminated, Packaging
2672	Paper Coated and Laminated, nec
2812	Alkalies and Chlorine
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2851	Paints and Allied Products
2869	Industrial Organic Chemicals, nec
2891	Adhesives and Sealants
2892	Explosives
2899	Chemical Preparations, nec
2911	Petroleum Refining
2992	Lubricating Oils and Greases
3061	Mechanical Rubber Goods
3069	Fabricated Rubber Products, nec
3086	Plastics Foam Products
3089	Plastics Products, nec
3291	Abrasive Products
3321	Gray and Ductile Iron Foundries
3351	Copper Rolling and Drawing

NPRI Substance Uses and Sources

3462	Iron and Steel Forgings
3465	Automotive Stampings
3469	Metal Stampings, nec
3471	Plating and Polishing
3479	Metal Coating and Allied Services
3519	Internal Combustion Engines, nec
3524	Lawn and Garden Equipment
3541	Machine Tools, Metal Cutting Types
3544	Special Dies, Tools, Jigs & Fixtures
3585	Refrigeration and Heating Equipment
3644	Non Current Carrying Wiring Devices
3692	Primary Batteries, Dry and Wet
3694	Engine Electrical Equipment
3711	Motor Vehicles and Car Bodies
3714	Motor Vehicle Parts and Accessories
3728	Aircraft Parts and Equipment, nec
3824	Fluid Meters and Counting Devices

POTASSIUM BROMATE (CAS # 7758-01-2)

Potassium bromate is a white crystalline powder which is used:

- as a laboratory reagent,
- as a food additive, particularly as a maturing agent (conditioner) in the preparation of bread and flour,
- as a powerful brominating agent for deactivated aromatics and
- as a mixture with aluminum and dinitrotoluene to prevent/repair concrete fracturing.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
7758-01-2	POTASSIUM BROMATE
<i>US SIC Code</i>	<i>SIC Description</i>
2099	Food Preparations, nec

PROPARGYL ALCOHOL (CAS # 107-19-7)

NPRI Substance Uses and Sources

Propargyl alcohol is used as a corrosion inhibitor, a solvent stabilizer and a laboratory reagent. It is also used as a chemical intermediate for the synthesis of many chemicals.

Propargyl alcohol has been applied to prevent steel becoming brittle as a result of exposure to hydrogen.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
107-19-7	PROPARGYL ALCOHOL
<i>US SIC Code</i>	<i>SIC Description</i>
2789	Bookbinding and Related Work
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2841	Soap and Other Detergents
2843	Surface Active Agents
2844	Toilet Preparations
2851	Paints and Allied Products
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2879	Agricultural Chemicals, nec
2899	Chemical Preparations, nec
3295	Minerals, Ground or Treated
4953	Refuse Systems

SODIUM FLUORIDE (CAS # 7681-49-4)

Sodium fluoride is one of the inorganic fluorides identified as being toxic, as a result of the first Priority Substances List (PSL) assessment under the Canadian Environmental Protection Act (CEPA). The assessment has concluded that inorganic fluorides are

NPRI Substance Uses and Sources

entering the environment in quantities or under conditions that may be harmful to the environment.

Sodium fluoride is a white, crystalline, water-soluble powder widely used in municipal water fluoridation systems and in many dental products.

It is used in a variety of industrial applications: as a preservative in certain glues, in glass and enamel production, laundry soap manufacture, as a flux in steel and aluminum production, in electroplating fluxes and heat treating salt compositions.

It is also used as a disinfectant for brewery apparatus, an anthelmintic in veterinary medicine, an insecticide, a wood preservative and in the removal of hydrogen fluoride from exhaust gases

Single crystals are used as windows in ultraviolet and infrared radiation detecting devices. This substance is not listed on the U.S. Toxics Release Inventory and therefore the Standard Industrial Classification (SIC) codes for reporting of manufacture, processing, or otherwise use of this substance in the U.S. are not available. The following SIC codes are based only on the uses described above.

CAS Number

7681-49-4

Substance Name

SODIUM FLUORIDE

US SIC Code

SIC Description

2491	Wood Preserving
2834	Pharmaceutical Preparations
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2844	Toilet Preparations
2891	Adhesives and Sealants
3211	Flat Glass
3221	Glass Containers
3261	Vitreous Plumbing Fixtures
3262	Vitreous China Table & Kitchenware
3312	Blast Furnaces and Steel Mills
3334	Primary Aluminum
3398	Metal Heat Treating
3471	Plating and Polishing
3844	X-ray Apparatus and Tubes

NPRI Substance Uses and Sources

4911 Electric Services

4941 Water Supply

SODIUM NITRITE (CAS # 7632-00-0)

Sodium nitrite is a white crystalline powder used:

- as a material for making dyestuff, saccharin, chemical reagents and pharmaceuticals,
- as a rubber accelerator,
- as a sharp bleaching agent in the textile industry,
- in the food industry, as a colour fixative and preservative in cured meats, meat products and fish,
- in the machinery manufacturing and repairs industry, as an agent for heat treating metals,
- in the electroplating industry, as it is an excellent corrosion inhibitor for steel.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
7632-00-0	SODIUM NITRITE
<i>US SIC Code</i>	<i>SIC Description</i>
2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2015	Poultry Slaughtering and Processing
2037	Frozen Fruits and Vegetables
2047	Dog and Cat Food
2082	Malt Beverages
2083	Malt
2099	Food Preparations, nec
2211	Broadwoven Fabric Mills, Cotton
2221	Broadwoven Fabric Mills, Manmade
2241	Narrow Fabric Mills
2261	Finishing Plants, Cotton
2262	Finishing Plants, Manmade
2269	Finishing Plants, nec
2281	Yarn Spinning Mills

NPRI Substance Uses and Sources

2282	Throwing and Winding Mills
2299	Textile Goods, nec
2389	Apparel and Accessories, nec
2521	Wood Office Furniture
2522	Office Furniture, Except Wood
2541	Wood Partitions and Fixtures
2542	Partitions and Fixtures, Except Wood
2611	Pulp Mills
2631	Paperboard Mills
2672	Paper Coated and Laminated, nec
2711	Newspapers
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2836	Biological Products Exc. Diagnostic
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2844	Toilet Preparations
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants

NPRI Substance Uses and Sources

2892	Explosives
2893	Printing Ink
2895	Carbon Black
2899	Chemical Preparations, nec
2911	Petroleum Refining
2992	Lubricating Oils and Greases
2999	Petroleum and Coal Products, nec
3052	Rubber & Plastics Hose & Belting
3053	Gaskets, Packing and Sealing Devices
3061	Mechanical Rubber Goods
3069	Fabricated Rubber Products, nec
3084	Plastics Pipe
3086	Plastics Foam Products
3089	Plastics Products, nec
3211	Flat Glass
3231	Products of Purchased Glass
3299	Nonmetallic Mineral Products, nec
3312	Blast Furnaces and Steel Mills
3313	Electrometallurgical Products
3315	Steel Wire and Related Products
3316	Cold Finishing of Steel Shapes
3317	Steel Pipe and Tubes
3321	Gray and Ductile Iron Foundries
3341	Secondary Nonferrous Metals
3351	Copper Rolling and Drawing
3356	Nonferrous Rolling and Drawing, nec
3363	Aluminum Die-castings
3398	Metal Heat Treating
3411	Metal Cans
3412	Metal Barrels, Drums, and Pails
3421	Cutlery
3423	Hand and Edge Tools, nec
3425	Saw Blades and Handsaws
3441	Fabricated Structural Metal

NPRI Substance Uses and Sources

3442	Metal Doors, Sash, and Trim
3449	Miscellaneous Metal Work
3451	Screw Machine Products
3452	Bolts, Nuts, Rivets, and Washers
3465	Automotive Stampings
3469	Metal Stampings, nec
3471	Plating and Polishing
3479	Metal Coating and Allied Services
3484	Small Arms
3489	Ordnance and Accessories, nec
3494	Valves and Pipe Fittings, nec
3495	Wire Springs
3496	Misc. Fabricated Wire Products
3499	Fabricated Metal Products, nec
3519	Internal Combustion Engines, nec
3523	Farm Machinery and Equipment
3524	Lawn and Garden Equipment
3531	Construction Machinery
3549	Metalworking Machinery, nec
3559	Special Industry Machinery, nec
3561	Pumps and Pumping Equipment
3562	Ball and Roller Bearings
3568	Power Transmission Equipment, nec
3569	General Industrial Machinery, nec
3585	Refrigeration and Heating Equipment
3592	Carburetors, Pistons, Rings, Valves
3594	Fluid Power Pumps and Motors
3612	Transformers, Except Electronic
3631	Household Cooking Equipment
3632	Household Refrigerators and Freezers
3633	Household Laundry Equipment
3639	Household Appliances, nec
3641	Electric Lamps
3652	Prerecorded Records and Tapes

NPRI Substance Uses and Sources

3669	Communications Equipment, nec
3691	Storage Batteries
3694	Engine Electrical Equipment
3699	Electrical Equipment & Supplies, nec
3711	Motor Vehicles and Car Bodies
3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3728	Aircraft Parts and Equipment, nec
3751	Motorcycles, Bicycles, and Parts
3795	Tanks and Tank Components
3812	Search and Navigation Equipment
3824	Fluid Meters and Counting Devices
3861	Photographic Equipment and Supplies
3949	Sporting and Athletic Goods, nec
3996	Hard Surface Floor Coverings, nec
4226	Special Warehousing and Storage, nec
4911	Electric Services
4931	Electric and Other Services Combined
4961	Steam and Air-conditioning Supply
5093	Scrap and Waste Materials
5169	Chemicals & Allied Products, nec
6719	Holding Companies, nec
9199	General Government, nec

SULPHUR HEXAFLUORIDE (CAS # 2551-62-4)

Sulphur hexafluoride is one of the inorganic fluorides identified as being toxic, as a result of the first Priority Substances List (PSL) assessment under the Canadian Environmental Protection Act (CEPA). The assessment has concluded that inorganic fluorides are entering the environment in quantities or under conditions that may be harmful to the environment.

Sulphur hexafluoride is a colourless, odourless, non-flammable, liquefied gas used by the semiconductor industry for plasma etching, prior to chemical vapour deposition.

The gas is widely used in the power utility industry as an insulator for electrical switch-gear, such as power circuit breakers. It is also used in cables, tubular transmission lines, electrostatic generators and transformers.

NPRI Substance Uses and Sources

Sulphur hexafluoride is used as a protective, inert gas over molten metals such as magnesium and aluminum. Therefore, magnesium producers and aluminum foundries are possibly the sources of sulphur hexafluoride releases.

Sulphur hexafluoride is also used as a tracer gas in environmental monitoring equipment. (Environment Canada believes the quantity of such use will be insignificant to trigger the threshold for NPRI reporting).

This substance is not listed on the U.S. Toxics Release Inventory and therefore the Standard Industrial Classification (SIC) codes for reporting of manufacture, processing, or

<i>CAS Number</i>	<i>Substance Name</i>
2551-62-4	SULPHUR HEXAFLUORIDE
<i>US SIC Code</i>	<i>SIC Description</i>
3365	Aluminum Foundries
3612	Transformers, Except Electronic
3613	Switchgear and Switchboard Apparatus
3621	Motors and Generators
3671	Electron Tubes
3674	Semiconductors and Related Devices

1,1,1,2-TETRACHLOROETHANE (CAS # 630-20-6)

1,1,1,2-tetrachloroethane is used as a chemical intermediate and solvent. It is used in the manufacture of pesticides, paints and varnishes and in laboratory reagent.

Another use is as a feedstock for the production of solvents such as trichloroethylene and tetrachloroethylene.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
630-20-6	1 1 1 2-TETRACHLOROETHANE
<i>US SIC Code</i>	<i>SIC Description</i>

NPRI Substance Uses and Sources

2791	Typesetting
2796	Platemaking Services
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2824	Organic Fibers, Noncellulosic
2834	Pharmaceutical Preparations
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2899	Chemical Preparations, nec
2911	Petroleum Refining

TETRACYCLINE HYDROCHLORIDE (CAS # 64-75-5)

Tetracycline hydrochloride is a yellow powder which is used as an antimicrobial agent against bacteria. Releases to the environment may occur when this substance is used in pharmaceutical preparations.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996.

<i>CAS Number</i>	<i>Substance Name</i>
64-75-5	TETRACYCLINE HYDROCHLORIDE
<i>US SIC Code</i>	<i>SIC Description</i>
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2836	Biological Products Exc. Diagnostic
8731	Commercial Physical Research

TETRAETHYL LEAD (CAS # 78-00-2)

Tetraethyl lead (TEL) is a colourless oily liquid. It was used as an antiknock agent in leaded

NPRI Substance Uses and Sources

gasoline and as a chemical intermediate for organomercury fungicides, but applications for these activities are gradually phasing out as a result of environmental regulations which address public health concerns.

TEL is no longer manufactured in Canada. Gasoline containing high concentrations of TEL is still used by piston-powered airplanes and competition vehicles.

TEL is currently used to make other metal alkyls and as a chemical intermediate for mixed alkyl leads for gasoline additives.

This substance is not listed on the U.S. Toxics Release Inventory and therefore the Standard Industrial Classification (SIC) codes for reporting of manufacture, processing, or otherwise use of this substance in the U.S. are not available. The following SIC codes are based only on the uses described above.

<i>CAS Number</i>	<i>Substance Name</i>
78-00-2	TETRAETHYL LEAD
<i>US SIC Code</i>	<i>SIC Description</i>
2819	Industrial Inorganic Chemicals, nec
2899	Chemical Preparations, nec

TRIETHYLAMINE (CAS # 121-44-8)

Triethylamine is a colourless liquid with a strong ammonia-like odour.

It is used:

- as a catalytic solvent in chemical syntheses,
- as an accelerator activator for rubber,
- as a corrosion inhibitor,
- as a propellant,
- as a curing and hardening agent for polymers,
- as a wetting, penetrating and waterproofing agent in the manufacture of quaternary ammonium compounds,
- in textile manufacture,
- in the desalination of seawater,
- in sewage treatment plants and
- in natural gas production.

The industrial sources of releases for this substance are listed below. These are the Standard Industrial Classification (SIC) codes for sectors which reported releases to the U.S. Toxics Release Inventory in 1996. Additional SIC codes are included to correspond to the non-manufacturing sectors as mentioned in the text descriptions.

NPRI Substance Uses and Sources

<i>CAS Number</i>	<i>Substance Name</i>
121-44-8	TRIETHYLAMINE
<i>US SIC Code</i>	<i>SIC Description</i>
1311	Crude Petroleum and Natural Gas
2331	Women's & Misses' Blouses & Shirts
2493	Reconstituted Wood Products
2521	Wood Office Furniture
2671	Paper Coated & Laminated, Packaging
2754	Commercial Printing, Gravure
2812	Alkalies and Chlorine
2813	Industrial Gases
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, nec
2821	Plastics Materials and Resins
2822	Synthetic Rubber
2823	Cellulosic Manmade Fibers
2824	Organic Fibers, Noncellulosic
2833	Medicinals and Botanicals
2834	Pharmaceutical Preparations
2835	Diagnostic Substances
2836	Biological Products Exc. Diagnostic
2841	Soap and Other Detergents
2842	Polishes and Sanitation Goods
2843	Surface Active Agents
2851	Paints and Allied Products
2861	Gum and Wood Chemicals
2865	Cyclic Crudes and Intermediates
2869	Industrial Organic Chemicals, nec
2873	Nitrogenous Fertilizers
2874	Phosphatic Fertilizers
2879	Agricultural Chemicals, nec
2891	Adhesives and Sealants
2893	Printing Ink
2899	Chemical Preparations, nec

NPRI Substance Uses and Sources

2911	Petroleum Refining
3069	Fabricated Rubber Products, nec
3085	Plastics Bottles
3087	Custom Compound Purchased Resins
3089	Plastics Products, nec
3111	Leather Tanning and Finishing
3241	Cement, Hydraulic
3261	Vitreous Plumbing Fixtures
3295	Minerals, Ground or Treated
3296	Mineral Wool
3321	Gray and Ductile Iron Foundries
3322	Malleable Iron Foundries
3324	Steel Investment Foundries
3325	Steel Foundries, nec
3334	Primary Aluminum
3341	Secondary Nonferrous Metals
3353	Aluminum Sheet, Plate, and Foil
3363	Aluminum Die-castings
3365	Aluminum Foundries
3398	Metal Heat Treating
3412	Metal Barrels, Drums, and Pails
3421	Cutlery
3431	Metal Sanitary Ware
3444	Sheet Metalwork
3448	Prefabricated Metal Buildings
3449	Miscellaneous Metal Work
3491	Industrial Valves
3494	Valves and Pipe Fittings, nec
3498	Fabricated Pipe and Fittings
3499	Fabricated Metal Products, nec
3543	Industrial Patterns
3568	Power Transmission Equipment, nec
3621	Motors and Generators
3711	Motor Vehicles and Car Bodies

NPRI Substance Uses and Sources

3713	Truck and Bus Bodies
3714	Motor Vehicle Parts and Accessories
3721	Aircraft
3861	Photographic Equipment and Supplies
3999	Manufacturing Industries, nec
4214	Local Trucking With Storage
4493	Marinas
4911	Electric Services
4952	Sewerage Systems
4953	Refuse Systems
5169	Chemicals & Allied Products, nec
7699	Repair Services, nec
8243	Data Processing Schools
8731	Commercial Physical Research
8743	Public Relations Services