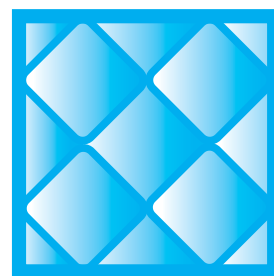


Chemical Guide

for

Carbon Filtered Enclosures



Protecting your
laboratory environment

LABCONCO

CAUTION

THIS GUIDE SHOULD ONLY BE USED AS SUPPORTING REFERENCE IN THE DETERMINATION OF A CHEMICAL'S SAFE USE WITH LABCONCO'S CARBON FILTERED ENCLOSURE. VARIABLES IN CONCENTRATION, TEMPERATURES, PHASES AND REACTIONS WITH OTHER CHEMICALS CONTRIBUTE TO UNCERTAINTY. A THOROUGH ANALYSIS BY THE ON-SITE TRAINED CHEMICAL SAFETY OFFICER MUST BE DONE FOR EACH APPLICATION.

The data included in the Chemical Guide has been compiled from current public sources. The chemicals listed are those included in the U.S. National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards, 2005. The general recommendations for "Compatibility" of each chemical are an opinion, based on the analysis of available data for chemical properties, exposure limits, odor and filter effectiveness.

New information with the respect to chemical hazards is adopted on a continual basis. Information contained in this Chemical Guide may become dated and therefore reinforces the need to research appropriateness for use at the start and at regular intervals.

For an on-line version of this guide, that is regularly updated, visit www.laboconco.com/chemicalguide. "Exposure Limits" documented in the Chemical Guide are for reference only, therefore consult the latest regulatory limits that apply to your location and industry.

Where the Paramount® Ductless Enclosure or any of Labconco's other carbon-filtered enclosures are used with hazardous chemicals, a formal Chemical Hygiene program must be established. The program should include education, training and maintenance to ensure the proper application, use and performance of the product. Appropriate personal protection clothing, gloves and eye wear along with proper handling of chemicals in fume hoods are the responsibility of the user and their employer.

DUCTLESS ENCLOSURES WILL NOT PROTECT AGAINST ALL CHEMICALS IN THE WORK ENVIRONMENT. SPECIFIC LIMITATIONS STATED IN THE USER'S MANUAL MUST BE FULLY REVIEWED AND UNDERSTOOD BEFORE USE. FAILURE TO HEED THE WARNINGS MAY RESULT IN SICKNESS OR DEATH.

How to Use this Chemical Guide

This guide is designed to provide chemical specific data to assist in determining the suitability of ductless filtration for your application. This Chemical Guide is not an approved list of chemicals, but a tool to help determine suitability. You and your safety officer must ultimately determine which chemicals and what quantities to ensure your personal safety.

Chart Key

Chemical Name

The chemical name found in the Occupational Safety and Health Administration (OSHA) General Industry Air Contaminants Standard and National Institute for Occupational Safety and Health (NIOSH) Pocket Guide is listed in this column.

CAS No.

This column lists the Chemical Abstracts Service registry number. The CAS number is unique for each chemical and allows for efficient searching on computerized databases.

Synonyms

This column contains an alphabetical list of common synonyms and trade names for each chemical.

Chemical Compatibility

The chemicals have icons indicating their compatibility with ductless filtration. Every application should be thoroughly evaluated by your safety officer.



Generally Compatible



Pay attention to the Warnings and Notes.



Call Labconco



Not Recommended. Do not use.

United States Exposure Limits

NIOSH

The NIOSH recommended exposure limits (RELs) are listed first in this section. This guide references the NIOSH publication No. 2005-149 published in September 2007.

The TWA indicates a time-weighted average concentration for up to a 10-hour workday during a 40-hour week.

An "ST" preceding the value represents a short

term exposure limit (STEL). The (STEL) is a 15-minute TWA exposure that should not be exceeded at any time during a workday, unless noted otherwise.

A "C" preceding the value represents a ceiling REL. Unless noted otherwise, the ceiling value should not be exceeded at any time.

A "Ca" preceding the value represents a substance NIOSH considers a potential occupational carcinogen.

OSHA

The OSHA permissible exposure limits (PELs) are listed second in this section. This guide references the values found in the OSHA General Industry Air Contaminants Standard (29 CFR 1910.1000) that were made effective July 1, 1993, and which are currently enforced by OSHA.

The TWA (time-weighted average) concentrations for OSHA PELs must not be exceeded during any 8-hour work shift of a 40-hour workweek.

An "ST" preceding the value represents a short term exposure limit (STEL). The (STEL) is a 15-minute TWA exposure that should not be exceeded at any time during a workday, unless noted otherwise.

A "C" preceding the value represents an OSHA ceiling concentration that should not be exceeded during any time of the workday. If instantaneous monitoring is not feasible, the ceiling must be assessed as a 15 minute TWA exposure.

Odor Threshold

Odor Threshold is the lowest concentration, in ppm, of a chemical in the air that is detectable by smell. The odor threshold should only be regarded as an estimate. Odor thresholds are commonly determined under controlled laboratory conditions using people trained in odor recognition. Since odor thresholds vary widely from person to person, you should not depend solely on odor for determining filter saturation. Some solvents produce "olfactory fatigue" – rapid loss of ability to smell the odor over a period of time.

Filter Capacity

The Filter Capacity value is the theoretical adsorption capacity of the filter provided by the activated carbon manufacturers. It is listed as a percentage of the filter weight at a 10 ppm evaporative concentration. Concentrations higher than 10 ppm have higher filter capacities and concentrations lower than 10ppm have lower filter capacities.

Example: The theoretical Filter Capacity for Toluene with an inlet concentration of 10ppm is: 20.1%.

Paramount Width	Weight of Carbon in Filters	Theoretical Weight of Toluene Adsorbed
2ft	15 lbs. (6.75 kg)	3 lbs. (1.35 kg)
3ft	30 lbs. (13.5 kg)	6 lbs. (2.7 kg)
4ft	45 lbs. (20.25 kg)	9 lbs. (4.1 kg)
5ft	45 lbs. (20.25 kg)	9 lbs. (4.1 kg)
6ft	60 lbs. (27 kg)	12 lbs (5.4 kg)

Humidity, temperature, inlet concentration and the presence of other chemicals are just a few of the factors that influence carbon adsorption and thus the filter capacity of the filters. These values presented are theoretical and can vary depending on your application.

To determine the specific filter life of a chemical filter, refer to the user's manual for your Labconco enclosure.

Filter Type

Filter Type is the recommended carbon or HEPA filter appropriate for the corresponding chemical. Some of the other carbon- filtered enclosures do not have as many filter types available. Please reference their user's manual for more specific information.

OV	Organic Vapor Filter
HEPA	HEPA (High Efficiency Particulate Air) Filter
AG	Acid Gas/Sulfur Filter
FORM	Formaldehyde Filter
AM	Ammonia/Amines Filter
MB	Mixed Bed Filter
RAD	Radioisotope Filter [For radioisotopes of Iodine only. For other radioisotopes please see your safety officer.]

Warnings

This section lists specific circumstances that should be acknowledged and considered before using that chemical in a Labconco Carbon Filtered Enclosure.

Carcinogen

Chemical is known or suspected to be a carcinogen

Exposure Limit Not Established

Exposure limits have not been established by NIOSH or OSHA.

Low Odor Threshold

Odor threshold is less than 1ppm. Since odor is so strong, extremely low concentrations in the room may be objectionable.

Very Low Odor Threshold Warning at less than 0.1ppm

Poor Odor Warning

The odor threshold is higher than the exposure limit. Exposure limits are exceeded before chemicals can be detected by smell.

Filter Capacity Warning at less than 5%

Low Filter Capacity Warning at less than 3%

Short Filter Life

The filter capacity is 1% or less.

Unknown Odor Threshold

An odor threshold has not been established for the chemical.

Unknown Filter Effectiveness

The filter capacity is unknown and the chemical should only be used in quantities below the exposure limit.

Notes

Special comments or information pertinent to the specific chemicals are listed here.

Working with Vaporous Chemicals

Criteria for Suitability

1. Is the chemical stable and safe to handle at operating conditions? (Flammability, explosiveness, reactivity, etc.) Consult a Chemical Safety Officer.
2. Has the chemical been shown to be adsorbed or neutralized effectively by the carbon media? Consult published data or Labconco Specialists.
3. Are the exposure limits known? Given the amount of chemical to be released within the enclosure, is it reasonably safe (with a safety factor) if the filter experiences breakthrough during a chemical operation? Review with a Chemical Safety Officer.

Minimizing Risk

1. Work with the smallest amounts of chemical possible and prevent unnecessary evaporation by keeping containers closed and sealed.
2. Always work with concentrations below the exposure limit for the chemical.
3. Know your filter condition. Monitor the exhaust with the Safety-First™ Vapor Sensor, detection tubes and your senses. If any of those three indicate potential breakthrough of the filter, replace the filter at that time.

DO NOT ASSUME THERE IS A PERIOD OF TIME WHERE THE FILTER IS PARTIALLY EFFECTIVE! CARBON FILTERS ARE TO BE REPLACED AT THE FIRST SIGN OF BREAKTHROUGH OR SATURATION.

4. The air exchanges within the room must exceed the exhaust output of the enclosure. Failure to ensure this condition can lead to an accumulation of chemical vapors in the event of an unmonitored breakthrough.

Example: Paramount Ductless Enclosure

Unit Size	Sash Opening	Airflow (cfm) at 80 fpm
2ft	9.4 in	115
3ft	9.4 in	175
3ft	12 in	230
4ft	9.4 in	235
4ft	12 in	305
5ft	9.4 in	295
6ft	12 in	465

Activated Carbon (OV) Filter Adsorption Capacities

A common misunderstanding regarding the capacity of activated carbon is that it adsorbs a predictable fixed weight of chemicals. Chemical adsorption is a result of the chemical concentration in the airstream attempting to reach equilibrium with the carbon media. The ultimate capacity of the activated carbon will increase significantly as the concentration goes higher. For example:

Percent-by-weight theoretical adsorptions for Chloroform (CHCl₃):

	@ 10 ppm	@ 100 ppm	@ 1000 ppm
% adsorbed/wt. of carbon	10.2	20.1	35.5

Based on physical and thermodynamic properties, mathematical equations have been developed to predict the adsorption of volatile organic compounds, (VOC's). The "Filter Capacity" provided in the Chemical Guide for OV filters are formula derived values for chemical concentrations in 10 ppm airstream. Use these capacity values as a relative measure of the filter effectiveness with the understanding that exact weight will vary with temperature, humidity, distribution across the media and chemical combinations.

Working with Mixtures

When working with mixtures, the filter capacity is typically reduced an additional 25-40 percent. Typically, the lower capacity chemical is the first chemical to be released from the carbon filter as its bond to the activated carbon is the weakest. Always account for this 25-40 percent reduction in filter capacity when working with mixtures.

CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1ppm(5mg/m3)	Warnings	Notes
Abietic Acid	514-10-3	Abietinic acid, sylvic acid, 13-isopropylpodocarpa-7,13-dien-15-oic acid		None	None	Not established		HEPA	X	X								Warning : Exposure Limit Not Established; Unknown Odor Threshold	HEPA filters are 99.99% rated
Acesulfame-K	55589-62-3	6-Methyl-1,2,3-oxathiazin-4(3H)-one 2,2-dioxide potassium salt; Acesulfame K; Sunett; Potassium acesulfame; Sweet One		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	The substance may be toxic to kidneys, liver. Repeated or prolonged exposure to the substance can produce target organs damage.
Acetaldehyde	75-07-0	Acetic aldehyde, Ethanal, Ethyl aldehyde		Ca	200 ppm (360 mg/m ³)	0.186	0.3	OV			X				X			Not Recommended: Filter Capacity <1% - Short Filter Life. Warning: Carcinogen; Odor Threshold < 1ppm	Closed containers exposed to heat may explode. Boiling point 69°F.
Acetic acid	64-19-7	Acetic acid (aqueous), Ethanoic acid, Glacial acetic acid (pure compound), Methanecarboxylic acid [Note: Can be found in concentrations of 5-8% in vinegar.]		10 ppm (25 mg/m ³) ST 15 ppm (37 mg/m ³)	10 ppm (25 mg/m ³)	0.016	3.7	OV					X	X				Call: Odor Threshold < 0.1 ppm. Warning: Filter Capacity <5%	
Acetic anhydride	108-24-7	Acetic acid anhydride, Acetic oxide, Acetyl oxide, Ethanoic anhydride		C 5 ppm (20 mg/m ³)	5 ppm (20 mg/m ³)	0.029	22.3	OV						X				Call: Odor Threshold < 0.1 ppm	
Acetone	67-64-1	Dimethyl ketone, Ketone propane, 2-Propanone		250 ppm (590 mg/m ³)	1000 ppm (2400 mg/m ³)	4.58	2	OV				X						Call: Filter Capacity <3% - Low Filter Capacity	
Acetone cyanohydrin	75-86-5	Cyanohydrin-2-propanone, 2-Cyano-2-propanol, alpha-Hydroxyisobutyronitrile, 2-Hydroxy-2-methyl-propionitrile, 2-Methylactonitrile		C 1 ppm (4 mg/m ³) [15-minute]	None	3	0.001	Not recommended			X					X		Not Recommended: Filter Capacity <1% - Short Filter Life. Warning: Odor Threshold > Exposure Limit - Poor Odor Warning	Decomposes to acetone and hydrogen cyanide (HCN) at room temperatures. HCN has an extremely short filter life.

= Generally Compatible

= Evaluate Warning

= Call Labconco

= Not Recommended

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Acetonitrile	75-05-8	Cyanomethane, Ethyl nitrile, Methyl cyanide [Note: Forms cyanide in the body.]	⊘	20 ppm (34 mg/m ³)	40 ppm (70 mg/m ³)	97.7	0.7	Not recommended			X					X		Not Recommended: Filter Capacity <1% - Short Filter Life. Warning: Odor Threshold > Exposure Limit - Poor Odor Warning	
Acetophenone	98-86-2	Methyl phenyl ketone, Acetyl benzene, Benzoyl methide, Hypnone, 1-Phenylethanone, acetylbenzene, phenyl methyl ketone, MPK, PMK	⚠	Not established	Not established	0.363		OV/HEPA	X						X			Warning: Exposure Limit Not Established; Unknown Filter Effectiveness; Odor Threshold < 1ppm	Requires both filters. May exist in both vapor and particulate phases.
2-Acetylaminofluorene	53-96-3	AAF, 2-AAF, 2-Acetaminofluorene, N-Acetyl-2-aminofluorene, FAA, 2-FAA, 2-Fluorenylacetamide	⚠	Ca	Ca	Not established		HEPA	X	X								Warning: Carcinogen; Exposure Limit Not Established; Unknown Odor Threshold	
Acetylene	74-86-2	Ethine, Ethyne [Note: A compressed gas used in the welding & cutting of metals.]	⊘	C 2500 ppm (2662 mg/m ³)	None	565	0.035	Not recommended			X							Not Recommended: Filter Capacity <1% - Short Filter Life	
Acetylene tetrabromide	79-27-6	Symmetrical tetrabromoethane; TBE; Tetrabromoacetylene; Tetrabromoethane; 1,1,2,2-Tetrabromoethane	⚠	Not Established (NIOSH questioned TWA 1 ppm)	1 ppm (4 mg/m ³)	1	36	OV							X	X		Warning: Odor Threshold = Exposure Limit - Poor Odor Warning, Exposure Limit < 1ppm (5 mg/m ³)	
Acetylsalicylic acid	50-78-2	o-Acetoxybenzoic acid, 2-Acetoxybenzoic acid, Aspirin	☑	5 mg/m ³	None	Not established		HEPA		X								Warning: Unknown Odor Threshold	Use Below TWA Perform Annual HEPA filter leak tests.

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Acrolein	107-02-8	Acraldehyde, Acrylaldehyde, Acrylic aldehyde, Allyl aldehyde, Propenal, 2-Propenal		0.1 ppm (0.25 mg/m³) ST 0.3 ppm (0.8 mg/m³)	0.1 ppm (0.25 mg/m³)	0.174	1.5	Not recommended				X			X	X	X	Not Recommended: Warning: Odor Threshold > Exposure Limit - Poor Odor Warning: Odor Threshold < 1ppm; OEL < 1ppm (5 mg/m³). Call: Filter Capacity > 3% - Low Filter Capacity.	Highly toxic. Use under exposure limit.
Acrylamide	79-06-1	Acrylamide monomer, Acrylic amide, Propenamide, 2-Propenamide		Ca TWA 0.03 mg/m³ [skin]	0.3 mg/m³ [skin]	Not established	37	OV/HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5 mg/m³).	Requires both filters. White odorless solid but may exist in both particulate and vapor phase.
Acrylic acid	79-10-7	Acroleic acid, Aqueous acrylic acid (technical grade is 94%), Ethylenecarboxylic acid, Glacial acrylic acid (98% in aqueous solution), 2-Propenoic acid		2 ppm (6 mg/m³) [skin]	None	0.4	14.8	OV						X				Warning: Odor Threshold < 1ppm (5mg/m³)	
Acrylonitrile	107-13-1	Acrylonitrile monomer, AN, Cyanoethylene, Propenenitrile, 2-Propenenitrile, VCN, Vinyl cyanide		Ca TWA 1 ppm C 10 ppm [15-minute] [skin]	2 ppm C 10 ppm [15-minute] [skin]	16.6	3.5	OV					X			X		Call: Warning: Filter Capacity < 5%; Odor Threshold > Exposure Limit - Poor Odor Warning.	
Adiponitrile	111-69-3	1,4-Dicyanobutane; Hexanedinitrile; Tetramethylene cyanide		4 ppm (18 mg/m³)	None	Not established	53.7	OV		X								Warning: Unknown Odor Threshold	
Aircraft Fuel	8008-20-6	Jet Fuel, Kerosene, Jet A (212110), Jet A-1 (212212), Jet A-1 (50) (212211), JP-8 (212130) Petroleum Distillate Fuel, Kerosene		Ca	Possible carcinogen.	Not established		OV/HEPA	X	X								Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	Highly volatile and potentially explosive.

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Aldrin	309-00-2	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-endo-1,4-exo-5,8-dimethanonaphthalene; HHDN; Octalene		Ca TWA 0.25 mg/m ³ [skin]	0.25 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Solid with mild odor.
Aliphatic hydrocarbons	N/A	N/A		None	100ppm	Not established		OV		X								Warning: Unknown odor threshold, unknown filter effectiveness	ACGIH TLV 400ppm, High Vapor ma cause respiratory tract irritation, headache, dizziness, anesthesia, drowsiness, unconsciousness or death.
Allyl alcohol	107-18-6	1,4-Dicyanobutane; Hexanedinitrile; Tetramethylene cyanide		2 ppm (5 mg/m ³) ST 4 ppm (10 mg/m ³) [skin]	2 ppm (5 mg/m ³) [skin]	0.47	5.9	OV							X			Warning: Odor Threshold < 1ppm (5mg/m ³)	
Allyl chloride	107-05-1	3-Chloropropene, 1-Chloro-2-propene, 3-Chloropropylene		1 ppm (3 mg/m ³) ST 2 ppm (6 mg/m ³)	1 ppm (3 mg/m ³)	0.489	10.2	OV											
Allyl glycidyl ether	106-92-3	AGE; 1-Allyloxy-2,3-epoxypropane; Glycidyl allyl ether; [(2-Propenyloxy)methyl] oxirane		5 ppm (22 mg/m ³) ST 10 ppm (44 mg/m ³) [skin]	C 10 ppm (45 mg/m ³)	Not established	18	OV		X								Warning: Unknown Odor Threshold	Liquid with pleasant odor.
Allyl propyl disulfide	2179-59-1	4,5-Dithia-1-octene; Onion oil; 2-Propenyl propyl disulfide; Propyl allyl disulfide		2 ppm (12 mg/m ³) ST 3 ppm (18 mg/m ³)	2 ppm (12 mg/m ³)	Not established		OV		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Liquid with onion-like odor. Use below exposure limit.
alpha-Alumina	1344-28-1	Alumina, Aluminum oxide, Aluminum trioxide [Note: alpha-Alumina is the main component of technical grade alumina. Corundum is natural Al ₂ O ₃ . Emery is an impure crystalline variety of Al ₂ O ₃ .]		Not established	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	Odorless.
Aluminum	7429-90-5	Aluminium, Aluminum metal, Aluminum, Elemental aluminum		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	Odorless metal.

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Aluminum (pyro powders and welding fumes, as Al)			☑	5 mg/m³	None	Not established		HEPA		X								Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	Odorless.
Aluminum (soluble salts and alkyls, as Al)			☑	2 mg/m³	None	Not established		HEPA		X							X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m³)	Odorless.
4-Aminodiphenyl	92-67-1	4-Aminobiphenyl, p-Aminobiphenyl, p-Aminodiphenyl, 4-Phenylaniline	⚠	Ca	OSHA Regulated Carcinogens	Not established		HEPA	X	X								Warning: Carcinogen; Exposure Limit Not Established; Unknown Odor Threshold.	Colorless crystal with a floral odor.
2-Aminopyridine	504-29-0	Alpha-Aminopyridine, alpha-Pyridylamine	⚠	0.5 ppm (2 mg/m³)	0.5 ppm (2 mg/m³)	Toxic concentrations may be achieved in air without an odor warning	13	OV/HEPA							X	X		Warning: OEL < 1ppm (5mg/m³); Odor Threshold > Exposure Limit - Poor Odor Warning.	Requires both filters.
Amitrole	61-82-5	Aminotriazole; 3-Aminotriazole; 2-Amino-1,3,4-triazole; 3-Amino-1,2,4-triazole	⚠	Ca TWA 0.2 mg/m³	None	0.37-1.24 mg/m³		OV/HEPA							X	X	X	Warning: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m³).	Requires both filters. Colorless white odorless crystalline.
Ammonia	7664-41-7	Anhydrous ammonia, Aqua ammonia, Aqueous ammonia [Note: Often used in an aqueous solution.]	☑	25 ppm (18 mg/m³) ST 35 ppm (27 mg/m³)	50 ppm (35 mg/m³)	5.0 ppm	10	AM											Not recommended with carbon filtration if used in solution, off gases HF fumes.
Ammonium acetate	631-61-8	Acetic acid; ammonium salt	⚠					OV/HEPA	X	X								Warning: Exposure Limit Not Established; Unknown Odor Threshold; Unknown Filter Effectiveness	Slight vinegar odor, white crystals.

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Ammonium bifluoride	1341-49-7	Ammonium hydrogen fluoride; ammonium difluoride; acid ammonium fluoride			2.5 mg/m ³			HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Use under TWA.
Ammonium chloride fume	12125-02-9	Ammonium chloride, Ammonium muriate fume, Sal ammoniac fume		10 mg/m ³ ST 20 mg/m ³	None	Not established		AM/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Requires both filters. Use Under TWA.
Ammonium heptamolybdate tetrahydrate	12027-67-7	Hexaammonium molybdate		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	
Ammonium hydroxide	1336-21-6	Ammonium hydroxide solutions; ammonia aqueous; ammonia solutions		25ppm	50ppm	1.48	10	AM											Lung and eye irritation also provides warning.
Ammonium metavanadate	7803-55-6	AMV, Ammonium Vanadate, Vanadic Acid, Ammonium Salt		0.05 (mg(V ₂ O ₅)/m ³)	Not established	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Use under TWA.

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Ammonium peroxydisulfate	7727-54-0	Ammonium persulfate, Ammonium persulfate [UN1444] [Oxidizer], Ammonium persulfate [UN1444] [Oxidizer], CCRIS 1430, Diammonium peroxodisulphate, Diammonium peroxydisulfate, Diammonium peroxydisulphate, Diammonium persulfate, diammonium sulfato sulfate, diammonium sulfonatoxy sulfate, diammonium [(sulfonato peroxy)sulfonyl] oxidanide, diazanium sulfonatoxy sulfate, EINECS 231-786-5, H ₈ N ₂ O ₈ S ₂ , LS-2430, PEROXYDISULFURIC ACID, DIAMMONIUM SALT, Peroxydisulfuric acid (((HO)S(O) ₂) ₂ O ₂), diammonium salt, Persulfate d'ammonium [French], UN1444	☑	None	None	Not established		HEPA	X						X			Warning: Exposure Limit Not Established; Odor Threshold < Exposure Limit - Poor Odor Warning.	Odorless.
Ammonium sulfamate	7773-06-0	Ammate herbicide, Ammonium amidosulfonate, AMS, Monoammonium salt of sulfamic acid, Sulfamate	☑	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		AM/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Requires both filters. Use under TWA
n-Amyl acetate	628-63-7	Amyl acetic ester, Amyl acetic ether, 1-Pentanol acetate, Pentyl ester of acetic acid, Primary amyl acetate	⚠	100 ppm (525 mg/m ³)	100 ppm (525 mg/m ³)	0.051	28.5	OV/HEPA						X				Warning: Odor Threshold < 0.1ppm.	Requires both filters. Possible particulate in high humidity.
sec-Amyl acetate	626-38-0	1-Methylbutyl acetate, 2-Pentanol acetate, 2-Pentyl ester of acetic acid	⚠	125 ppm (650 mg/m ³)	125 ppm (650 mg/m ³)	0.002-0.8	31.3	OV/HEPA						X				Warning: Odor Threshold < 0.1ppm.	Requires both filters. Possible particulate in high humidity.
Aniline (and homologs)	62-53-3	Aminobenzene, Aniline oil, Benzenamine, Phenylamine	⚠	Ca	5 ppm (19 mg/m ³) [skin]	0.676	15	OV							X			Warning: Carcinogen; Odor Threshold < 1ppm.	
Anisaldehyde	123-11-5	Anisic aldehyde * Aubepine * Cratagine * p-Methoxybenzaldehyde * 4-Methoxybenzaldehyde, p-anisaldehyde	⚠	None	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	Strong odor, Vapors may form explosive mixture with air.

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o-Anisidine	90-04-0	p-Methoxybenzaldehyde * 4-Methoxybenzaldehyde, p-anisaldehyde		Ca TWA 0.5 mg/m ³ [skin]	0.5 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Oily liquid.
p-Anisidine	104-94-9	para-Aminoanisole, 4-Anisidine, p-Methoxyaniline		TWA 0.5 mg/m ³ [skin]	TWA 0.5 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters.
Antimony	7440-36-0	Antimony metal, Antimony powder, Stibium		0.5 mg/ m ³ [*Note: The REL also applies to other antimony compounds (as Sb).]	0.5 mg/ m ³ [*Note: The REL also applies to other antimony compounds (as Sb).]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Crystals.
ANTU	86-88-4	alpha-Naphthyl thiocarbamide, 1-Naphthyl thiourea, alpha-Naphthyl thiourea		0.3 mg/m ³	0.3 mg/m ³	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Odorless. Rodenticide.
Arsenic (inorganic compounds, as As)	7440-38-2	Arsenic metal: Arsenia		Ca C 0.002 mg/m ³ [15-minute]	0.010 mg/ m ³	Not established		AG/HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Toxic.
Arsenic, organic compounds (as As)		Synonyms vary depending upon the specific organic arsenic compound		None	0.5 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Toxic.

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Arsine	7784-42-1	Arsenic hydride, Arsenic trihydride, Arseniuretted hydrogen, Arsenous hydride, Hydrogen arsenide		Ca C 0.002 mg/m ³ [15-minute]	0.05 ppm (0.2 mg/m ³)	0.5		Not recommended							X	X	X	Call; Warning: Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³).	Highly toxic gas.
Asbestos	1332-21-4	Actinolite, Actinolite asbestos, Amosite (cumingtonite-grunerite), Anthophyllite, Anthophyllite asbestos, Chrysotile, Crocidolite (Riebeckite), Tremolite, Tremolite asbestos		Ca	Ca			HEPA	X							X		Warning: Carcinogen; Exposure Limit Not Established; Odor Threshold < Exposure Limit - Poor Odor Warning.	Odorless solid. Prolonged exposure leads to respiratory diseases.
Ascorbic Acid	50-81-7	(5R)-[(1S)-1,2-dihydroxyethyl]-3,4-dihydroxyfuran-2(5H)-one, Vitamin C		Not established	Not established	Odorless		HEPA	X							X		Warning: Exposure Limit Not Established; Odor Threshold < Exposure Limit - Poor Odor Warning.	
Aspartame	22839-47-0	Tetramethoxy-9-oxobenzol[alpha]heptalen-7-yl) acetamide, Nutrasweet®		Not established	5 mg/m ³ (respirable) 8-hour TWA	Not established		HEPA		X								Warning: Unknown odor threshold	
Asphalt fumes	8052-42-4	Asphalt: Asphaltum, Bitumen (European term), Petroleum asphalt, Petroleum bitumen, Road asphalt, Roofing asphalt		Ca C 5 mg/m ³ [15-minute]	None	Not established		OV/HEPA		X								Warning: Carcinogen; Unknown Odor Threshold, Unknown Filter Effectiveness	Requires both filters.
Atrazine	1912-24-9	2-Chloro-4-ethylamino-6-isopropylamino-s-triazine; 6-Chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine		5 mg/m ³	None	Not established		AG/HEPA		X								Warning: Unknown Odor Threshold, Unknown Filter Effectiveness	Requires both filters. Odorless herbicide.
Azinphos-methyl	86-50-0	O,O-Dimethyl-S-4-oxo-1,2,3-benzotriazin-3(4H)-ylmethyl phosphorodithioate; Guthion®; Methyl azinphos		0.2 mg/m ³ [skin]	0.2 mg/m ³ [skin]	0.0002 mg/kg water		OV/HEPA						X			X	Warning: Odor Threshold < 0.1 ppm; Exposure Limit < 1ppm(5mg/m ³)	Requires both filters. Insecticide. Non combustible solid.

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Barium chloride (as Ba)	10361-37-2	Barium dichloride		0.5 mg/m ³ [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]	0.5 mg/m ³ [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]	Not established		HEPA		X						X	X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	Odorless solid. Use under TWA.
Barium chloride dihydrate	10326-27-9	Barium chloride		0.5 mg/m ³ [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]	0.5 mg/m ³ [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]	Not established		HEPA		X							X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	Odorless solid. Use under TWA.
Barium hydroxide	12230-71-6	Barium dihydroxide * Caustic baryta		None	0.5 mg/m ³	Not established		HEPA		X							X	Warning: OEL < 1ppm(5mg/m ³), unknown odor threshold	
Barium nitrate (as Ba)	10022-31-8	Barium dinitrate, Barium(II) nitrate (1:2), Barium salt of nitric acid		0.5 mg/m ³ [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]	0.5 mg/m ³ [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]	Not established		HEPA		X						X	X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	Odorless solid. Use under TWA.
Barium sulfate	7727-43-7	Artificial barite, Barite, Barium salt of sulfuric acid, Barytes (natural)	<input checked="" type="checkbox"/>	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X						X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	Odorless.

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Benomyl	17804-35-2	Methyl 1-(butylcarbamoyl)-2-benzimidazolecarbamate		Not established	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		AG/HEPA		X								Warning: Unknown Odor Threshold, Unknown Filter Effectiveness	Requires both filters. White solid with faint odor. Fungicide.
Benzaldehyde	100-52-7	Benzoic aldehyde, Oil of bitter almond, Benzenecarbonal, Phenylmethanal, Benzenecarboxaldehyde, Benzoic aldehyde		Not established	Not established	0.042		OV	X					X				Call: Odor Threshold < 0.1ppm. Warning: Exposure Limit Not Established; Unknown Filter Effectiveness.	
Benzene	71-43-2	Benzol, Phenyl hydride		Ca TWA 0.1 ppm ST 1 ppm	1 ppm ST 5 ppm	8.65	11.9	OV							X	X		Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	Monitor filters frequently. Change filters frequently.
Benzenethiol	108-98-5	Mercaptobenzene, Phenyl mercaptan, Thiophenol		C 0.1 ppm (0.5 mg/m ³) [15-minute]	None	0.062 mg/m ³		AG						X			X	Call: Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Offensive Odor. Use under exposure limit.
Benzidine	92-87-5	Benzidine-based dyes; 4,4'-Bianiline; 4,4'-Biphenyldiamine; 1,1'-Biphenyl-4,4'-diamine; 4,4'-Diaminobiphenyl; p-Diaminodiphenyl [Note: Benzidine has been used as a basis for many dyes.]		Ca	None	Not established		AG/HEPA	X	X								Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established, Unknown Filter Effectiveness.	Requires both filters. Poor odor warning
Benzoic acid	65-85-0	Benzene carbonic acid, Carboxybenzene, Dracyclic acid, Phenyl carboxylic acid, phenylformic acid, Retarder BA, Tenn-plas, Retardex, Solvo powder, Salvo liquid, Benzene methanoic acid, Benezeformic acid		Not established	Not established	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	Odor of benzoin or benzaldehyde, Dust may cause mild respiratory irritation with sore throat

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Benzophenone	119-61-9	Benzoyl benzene, Diphenyl ketone, Diphenyl methanone, Phenyl ketone		Not established	Not established	Not established		OV/HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established, Unknown Filter Effectiveness.	Requires both filters. Can exist in both particulate and vapor phase.
Benzoyl peroxide	94-36-0	Benzoperoxide, Dibenzoyl peroxide, diphenylglyoxal peroxide, Xerac BP 5, TCBA, diphenylglyoxal peroxide, nericur, peroxydex, acnegel, persadox, lucidol, benoxyl, benzoic acid peroxide, acetoxyl, acnegel, aztec BPO, benzac, incidol, fostex		5 mg/m ³	5 mg/m ³	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Requires both filters as vapor phase coexists sometimes with particulate.
Benzyl alcohol	100-51-6	alpha-Hydroxytoluene; alpha-Toluenol; Benzal alcohol; Benzenecarbinol; Benzenemethanol; Benzoyl alcohol; Benzenemethanol; Benzoyl alcohol; Hydroxytoluene; Methanol, phenyl-; Phenolcarbinol; Phenylcarbinol; Phenylmethanol; Phenylmethyl alcohol		Not established	1 ppm	5.5 ppm		OV							X			Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness.	
Benzyl chloride	100-44-7	Chloromethylbenzene, alpha-Chlorotoluene		C 1 ppm (5 mg/m ³) [15-minute]	1 ppm (5 mg/m ³)	0.03	8.5	(AG or MB)/HEPA						X				Warning: Odor Threshold < 0.1ppm.	Requires both filters as vapor phase exists sometimes. Contact with water produces toxic fumes. Incompatible with most metals and acids.
Benzyl mercaptan	100-53-8	Benzylhydrosulfide, Benzylthiol, (Mercaptanomethyl) Benzene, alpha-mercatotolluene, phenylmethanethiol, phenylmethyl mercaptan, thiobenzyl alcohol, alpha-toluolthiol, alpha-tolyl mercaptan, USAF EK-1509		Not established	Not established	0.00019		OV	X					X				Call: Odor Threshold < 0.1ppm. Warning: Exposure Limit Not Established; Unknown Filter Effectiveness.	Synthetic coffee flavoring agent for beverages, ice cream, ices, candy, and baked goods.

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Beryllium & beryllium compounds (as Be)	7440-41-7	Beryllium metal; Beryllium		Ca C 0.0005 mg/m ³	0.002 mg/m ³ C 0.005 mg/m ³ 0.025 mg/m ³ [30-minute maximum peak]	Not established		HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Use under TWA.
Bismuth telluride, doped with Selenium sulfide (as Bi ₂ Te ₃)				5 mg/m ³	None	Not established		HEPA		X								Warning: Unknown Odor Threshold	Use under TWA.
Bismuth telluride, undoped	1304-82-1	Bismuth sesqu telluride, Bismuth telluride, Bismuth tritelluride, Tellurobismuthite		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	Use under TWA.
Borates, tetra, sodium salts (Anhydrous)	1330-43-4	Anhydrous borax, Borax dehydrated, Disodium salt of boric acid, Disodium tetraborate, Fused borax, Sodium borate (anhydrous), Sodium tetraborate		1 mg/m ³	None	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Use under TWA.
Borates, tetra, sodium salts (Decahydrate)	1303-96-4	Borax, Borax decahydrate, Sodium borate decahydrate, Sodium tetraborate decahydrate		5 mg/m ³	None	Not established		HEPA		X								Warning: Unknown Odor Threshold	Use under TWA.
Borates, tetra, sodium salts (Pentahydrate)	12179-04-3	Borax pentahydrate, Sodium borate pentahydrate, Sodium tetraborate pentahydrate		1 mg/m ³	None	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Use under TWA.
Boron oxide	1303-86-2	Boric anhydride, Boric oxide, Boron trioxide		10 mg/m ³	5 mg/m ³	Odorless		HEPA								X		Warning: Odor Threshold < Exposure Limit - Poor Odor Warning.	
Boron tribromide	10294-33-4	Boron bromide, Tribromoborane		C 1 ppm (10 mg/m ³)	None			AG		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Colorless liquid. Use below exposure limit.
Boron trifluoride	77133	Boron fluoride, Trifluoroborane		C 1 ppm (3 mg/m ³)	C 1 ppm (3 mg/m ³)	1.5		Not recommended								X		Call: Warning: Odor Threshold > Exposure Limit; Unknown Filter Effectiveness.	Colorless gas with suffocating odor.

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Bromacil	314-40-9	5-Bromo-3-sec-butyl-6-methyluracil, 5-Bromo-6-methyl-3-(1-methylpropyl)uracil		1 ppm (10 mg/m ³)	None	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Odorless, colorless solid. Herbicide.
Bromine	7726-95-6	Molecular bromine		0.1 ppm (0.7 mg/m ³) ST 0.3 ppm (2 mg/m ³)	0.1 ppm (0.7 mg/m ³)	0.066	6.6	AG						X			X	Warning: Odor Threshold < 0.1 ppm; Exposure Limit < 1 ppm (5mg/m ³)	Fuming liquid with irritating fumes; use under exposure limit.
Bromine Chloride	13863-41-7	Bromine monochloride, bromochloride		None	None	Not established		Not recommended		X	X							Warning: Unknown exposure limit, unknown odor threshold	
Bromine pentafluoride	7789-30-2	Bromine fluoride		0.1 ppm (0.7 mg/m ³)	None	Not established		AG		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness.	Fuming liquid. Use under exposure limit.
5-Bromo-2-Deoxyuridine	59-14-3	5-Bromouracil-2-Deoxyriboside; Bromodeoxyuridine		None	15mg/m ³	Not Established		HEPA		X								Warning: Unknown odor threshold	Antineoplastic agent- should be used in a biological safety cabinet, antiviral drug
Bromoform	75-25-2	Methyl tribromide, Tribromomethane		0.5 ppm (5 mg/m ³) [skin]	0.5 ppm (5 mg/m ³) [skin]	0.447	6.9	OV							X		X	Warning: Odor Threshold < 1 ppm; OEL < 1 ppm (5mg/m ³)	
Bromophenol blue	115-39-9	4,4'-(1,1-dioxido-3H-2,1-benzoxathiole-3,3-diyil)bis(2,6-dibromophenol)		Not established	Not established	Odorless		HEPA	X							X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; Exposure Limit Not Established.	Indicator dye- can be in dissolved in aqueous or organic solvents as pH indicator.
1,3-Butadiene	106-99-0	Biethylene, Bivinylyl, Butadiene, Divinylyl, Erythrene, Vinylyethylene		Ca	1 ppm ST 5 ppm	0.455	2	OV				X			X			Call: Filter Capacity < 3% - Low Filter Capacity. Warning: Carcinogen; Odor Threshold < 1 ppm.	Monitor Filter frequently. Colorless gas with a gasoline-like odor. Use small quantities only.

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1,4-Butanediol	110-63-4	Agrisynth B1D * Butanediol * Butane-1,4-diol * 1,4-Butylene glycol * 1,4-Dihydroxybutane * DIOL 14B * Sucol B * Tetramethylene 1,4-diol * 1,4-Tetramethylene glycol		None	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	
1,4-Butanediol dimethacrylate	2082-81-7	Butanediyl dimethylacrylate; tetramethylene dimethacrylate; butyleneglycol dimethacrylate		None	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold	
n-Butane	106-97-8	Normal-Butane, Butyl hydride, Diethyl, Methyl ethylmethane [Note: Also see specific listing for Isobutane.]		800 ppm (1900 mg/m ³)	None	204	2.3	OV				X						Call: Filter Capacity < 3% - Low Filter Capacity	Colorless gas. Use small quantities only. Monitor filters frequently.
2-Butanone	78-93-3	Ethyl methyl ketone, MEK, Methyl acetone, Methyl ethyl ketone		200 ppm (590 mg/m ³) ST 300 ppm (885 mg/m ³)	200 ppm (590 mg/m ³)	0.27	6.5	OV							X			Warning: Odor Threshold < 1ppm	
2-Butoxyethanol	111-76-2	Butyl Cellosolve®, Butyl oxitol, Dowanol® EB, EGBE, Ektasolve EB®, Ethylene glycol monobutyl ether, Jeffersol EB		5 ppm (24 mg/m ³) [skin]	50 ppm (240 mg/m ³) [skin]	0.001	35	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold
2-Butoxyethanol acetate	112-07-2	tert-Butyl ester of acetic acid		5 ppm (33 mg/m ³)	None	Not established		OV		X								Warning: Unknown Odor Threshold, Unknown Filter Effectiveness	Colorless liquid with fruity odor. Use under exposure limit.
n-Butyl acetate	123-86-4	Butyl acetate, n-Butyl ester of acetic acid, Butyl ethanoate		150 ppm (710 mg/m ³) ST 200 ppm (950 mg/m ³)	150 ppm (710 mg/m ³)	0.007	24.5	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold
tert-Butyl acetate	540-88-5	tert-Butyl ester of acetic acid		200 ppm (950 mg/m ³)	200 ppm (950 mg/m ³)	"4-47"	19.5	OV											
tert-Butyl acetate	540-88-5	tert-Butyl ester of acetic acid		200 ppm (950 mg/m ³)	200 ppm (950 mg/m ³)	"4-47"	19.5	OV											
sec-Butyl acetate	105-46-4	sec-Butyl ester of acetic acid, 1-Methylpropyl acetate		200 ppm (950 mg/m ³)	200 ppm (950 mg/m ³)	"3-7"	22.1	OV											

= Generally Compatible

= Evaluate Warning

= Call Labconco

= Not Recommended

CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Butyl acrylate	141-32-2	n-Butyl acrylate, Butyl ester of acrylic acid, Butyl-2-propenoate		10 ppm (55 mg/m ³)	None	0.003	30.5	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold
n-Butyl alcohol	71-36-3	1-Butanol, n-Butanol, Butyl alcohol, 1-Hydroxybutane, n-Propyl carbinol		C 50 ppm (150 mg/m ³) [skin]	100 ppm (300 mg/m ³)	0.03	15.4	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold
tert-Butyl alcohol	75-65-0	2-Methyl-2-propanol, Trimethyl carbinol		100 ppm (300 mg/m ³) ST 150 ppm (450 mg/m ³)	100 ppm (300 mg/m ³)	21.5	9.03	OV											
sec-Butyl alcohol	78-92-2	2-Butanol, Butylene hydrate, 2-Hydroxybutane, Methyl ethyl carbinol		100 ppm (305 mg/m ³) ST 150 ppm (455 mg/m ³)	150 ppm (450 mg/m ³)	1	10.7	OV											
n-Butylamine	109-73-9	1-Aminobutane, Butylamine		C 5 ppm (15 mg/m ³) [skin]	C 5 ppm (15 mg/m ³) [skin]	0.053	1.8	AM				X		X				Not Recommended: Call: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm	Very Low Odor Threshold
tert-Butyl chromate	1189-85-1	di-tert-Butyl ester of chromic acid		Ca TWA 0.001 mg Cr(VI)/m ³	0.005 mg CrO ₃ /m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm(5mg/m ³); Unknown Filter Effectiveness.	Low Exposure Limit
n-Butyl glycidyl ether	2426-08-6	BGE; 1,2-Epoxy-3-butoxypropane		C 5.6 ppm (30 mg/m ³) [15-minute]	50 ppm (270 mg/m ³)	Not established	15.4	OV		X								Warning: Unknown Odor Threshold	
n-Butyl lactate	138-22-7	Butyl ester of 2-hydroxypropanoic acid, Butyl ester of lactic acid, Butyl lactate		5 ppm (25 mg/m ³)	None	7.06	17.7	OV								X		Warning: Odor Threshold > Exposure Limit	

= Generally Compatible

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
n-Butyl mercaptan	109-79-5	Butanethiol, 1-Butanethiol, n-Butanethiol, 1-Mercaptobutane		C 0.5 ppm (1.8 mg/m ³) [15-minute]	10 ppm (35 mg/m ³)	0.001	1.2	OV				X		X			X	Not Recommended: Call: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³).	Very Low Odor Threshold
o-sec-Butylphenol	89-72-5	2-sec-Butylphenol, 2-(1-Methylpropyl)phenol		5 ppm (30 mg/m ³) [skin]	None	Not established	15.9	OV		X								Warning: Unknown Odor Threshold	Use under TWA
p-tert-Butyltoluene	98-51-1	4-tert-Butyltoluene, 1-Methyl-4-tert-butylbenzene		10 ppm (60 mg/m ³) ST 20 ppm (120 mg/m ³)	10 ppm (60 mg/m ³)	5.02	12.03	OV											
n-Butyronitrile	109-74-0	Butanenitrile, Butyronitrile, 1-Cyanopropane, Propyl cyanide, n-Propyl cyanide		8 ppm (22 mg/m ³)	None	Not established	9.8	Not recommended		X								Warning: Unknown Odor Threshold	Forms cyanide in the body. Highly Toxic, fatal if inhaled, swallowed, or absorbed through skin.
Cadmium dust (as Cd)	7440-43-9	Cadmium metal: Cadmium		Ca [*Note: The REL applies to all Cadmium compounds (as Cd).]	0.005mg/m ³ [*Note: The PEL applies to all Cadmium compounds (as Cd).]	Not established		HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Cadmium fume (as Cd)	1306-19-0	Cadmium monoxide, Cadmium oxide fume		Ca [*Note: The REL applies to all Cadmium compounds (as Cd).]	0.005mg/m ³ [*Note: The PEL applies to all Cadmium compounds (as Cd).]	Not established		HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Caffeine	58-08-2	1,3,7-trimethylxanthine; 3,7-Dihydro-1,3,7- trimethyl-1H-purine-2,6-dione, Trimethyl-1,3,7-dioxo-2,6-purine		None	None	Not established		HEPA	X	X								Unknown exposure limit, unknown odor threshold	MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. The substance may be toxic to heart, gastrointestinal tract, central nervous system (CNS).
Calcium arsenate (as As)	7778-44-1	Calcium salt (2:3) of arsenic acid, Cucumber dust, Tricalcium arsenate, Tricalcium ortho-arsenate		Ca C 0.002 mg/m ³ [15-minute]	0.010 mg/m ³	Not established		HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Calcium carbonate	1317-65-3	Calcium salt of carbonic acid		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	
Calcium cyanamide	156-62-7	Calcium carbimide, Cyanamide, Lime nitrogen, Nitrogen lime		0.5 mg/m ³	None	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Calcium hydroxide	1305-62-0	Calcium hydrate, Caustic lime, Hydrated lime, Slaked lime		5 mg/m ³	15 mg/m ³ (total) 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	
Calcium oxide	1305-78-8	Burned lime, Burnt lime, Lime, Pebble lime, Quick lime, Unslaked lime		2 mg/m ³	5 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Calcium silicate	1344-95-2	Calcium hydrosilicate, Calcium metasilicate, Calcium monosilicate, Calcium salt of silicic acid		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	
Calcium sulfate	7778-18-9	Anhydrous calcium sulfate, Anhydrous gypsum, Anhydrous sulfate of lime, Calcium salt of sulfuric acid [Note: Gypsum is the dihydrate form & Plaster of Paris is the hemihydrate form.]		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	

= Generally Compatible

= Evaluate Warning

= Call Labconco

= Not Recommended





CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Camphor (synthetic)	76-22-2	2-Camphonone, Gum camphor, Laurel camphor, Synthetic camphor		2 mg/m ³	2 mg/m ³	0.051		OV/HEPA							X		X	Call: Warning: Odor Threshold < 1ppm; OEL < 1ppm (5mg/m ³), Unknown Filter Effectiveness.	Requires both filters. Very Low Odor Threshold
Caprolactam	105-60-2	Aminocaproic lactam, epsilon-Caprolactam, Hexahydro-2H-azepin-2-one, 2-Oxohexamethyleneimine		Dust: TWA 1 mg/m ³ ST 3 mg/m ³ Vapor: TWA 0.22 ppm (1 mg/m ³) ST 0.66 ppm (3 mg/m ³)	None	0.064		OV/HEPA							X		X	Call: Warning: Odor Threshold < 1ppm; OEL < 1ppm (5mg/m ³), Unknown Filter Effectiveness.	Requires both filters. Very Low Odor Threshold
Captafol	5/31/21	Captofol; Difolatan®; N-((1,1,2,2-Tetrachloroethyl)thio)-4-cyclohexene-1,2-dicarboximide		Ca TWA 0.1 mg/m ³ [skin]	None	Not established		AG / HEPA		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters. White crystalline solid with slight pungent odor. Fungicide.
Captan	133-06-2	Captane; N-Trichloromethylmercapto-4-cyclohexene-1,2-dicarboximide		Ca TWA 5 mg/m ³	None	Not established		AG / HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Requires both filters. Odorless white crystalline. NIOSH lists as a combustible solid. Fungicide.
Carbaryl	63-25-2	alpha-Naphthyl N-methyl-carbamate; 1-Naphthyl N-Methyl-carbamate; Sevin®		5 mg/m ³	5 mg/m ³	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Carbofuran	1563-66-2	2,3-Dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate; Furacarb®; Furadan®		TWA 0.1 mg/m ³	None	Not established		AG / HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Odorless white or grayish crystalline solid. Insecticide.

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Carbon black	1333-86-4	Acetylene black, Channel black, Furnace black, Lamp black, Thermal black	<input checked="" type="checkbox"/>	TWA 3.5 mg/m ³ Ca TWA 0.1 mg PAHs/m ³ [Carbon black in presence of polycyclic aromatic hydrocarbons (PAHs)]	3.5mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Carbon dioxide	124-38-9	Carbonic acid gas, Dry ice [Note: Normal constituent of air (about 300 ppm)].		5000 ppm (9000 mg/m ³) ST 30,000 ppm (54,000 mg/m ³)	5000 ppm (9000 mg/m ³)	74,000		Not recommended								X		Not Recommended: Warning: Odor Threshold > Exposure Limit	Carbon Filtration is not an effective sorbent. CO ₂ is an atmospheric gas and should be handled in well ventilated spaces and under its Exposure Limit. Exposure limit is very high.
Carbon disulfide	75-15-0	Carbon bisulfide		1 ppm (3 mg/m ³) ST 10 ppm (30 mg/m ³) [skin]	20 ppm C 30 ppm 100 ppm (30-minute maximum peak)	0.096	1.9	OV				X		X				Not Recommended: Call: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm.	
Carbon monoxide	630-08-0	Carbon oxide, Flue gas, Monoxide		35 ppm (40 mg/m ³) C 200 ppm (229 mg/m ³)	50 ppm (55 mg/m ³)	100,000		Not recommended								X		Not Recommended: Warning: Odor Threshold > Exposure Limit - Poor Odor Warning	Carbon Filtration is not an effective sorbent. Carbon Monoxide should be used in well ventilated spaces and always under its Exposure Limit set by NIOSH/OSHA.
Carbon tetrabromide	558-13-4	Carbon bromide, Methane tetrabromide, Tetrabromomethane		0.1 ppm (1.4 mg/m ³) ST 0.3 ppm (4 mg/m ³)	None	Not established	20.8	OV		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Carbon tetrachloride	56-23-5	Carbon chloride; Carbon tet; Freon® 10; Halon® 104; Tetrachloromethane		Ca ST 2 ppm (12.6 mg/m ³) [60-minute]	10 ppm C 25 ppm 200 ppm (5-minute maximum peak in any 4 hours)	40.7	21.6	OV								X		Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning.	
Carbonyl fluoride	353-50-4	Carbon difluoride oxide, Carbon fluoride oxide, Carbon oxyfluoride, Carbonyl difluoride, Fluoroformyl fluoride, Fluorophosgene		2 ppm (5 mg/m ³) ST 5 ppm (15 mg/m ³)	None	Not established		Not recommended		X								Call; Warning: Unknown Odor Threshold	Highly Toxic. Often Fatal, Water Reactive.
Catechol	120-80-9	1,2-Benzenediol; o-Benzenediol; 1,2-Dihydroxybenzene; o-Dihydroxybenzene; 2-Hydroxyphenol; Pyrocatechol		5 ppm (20 mg/m ³) [skin]	None	Not established		OV/ HEPA		X								Warning: Unknown Odor Threshold, Unknown Filter Effectiveness	Requires both filters.
Cellulose	9004-34-6	Hydroxycellulose, Pyrocellulose	<input checked="" type="checkbox"/>	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	
Cellulose ethyl ether	9004-57-3	Methyl cellulose	<input checked="" type="checkbox"/>	None	None	Not established		HEPA	X	X								Unknown exposure limit, unknown odor threshold	
Cesium fluoride	13400-13-0	CsF	<input checked="" type="checkbox"/>	2.5 mg/m ³ , 10 hr TWA	2.5 mg/m ³ , PEL	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Cesium hydroxide	21351-79-1	Cesium hydrate, Cesium hydroxide dimer	<input checked="" type="checkbox"/>	2 mg/m ³	None	None		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Cetylpyridinium chloride monohydrate	6004-24-6	1-Hexadecylpyridinium chloride, Pyridinium, 1-hexadecyl-, chloridem, Cepacol		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Characteristic odor, eye and skin irritant.
Clonidine HCl	4205-91-8	2,6-Dichloro-N-2,2,6-Dichloro-N-2-imidazolidinylidenebenzenamine hydrochloride	<input checked="" type="checkbox"/>	None	None	Not established		HEPA	X	X								Unknown exposure limit, unknown odor threshold	

= Generally Compatible

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Chlordane	57-74-9	imidazolidinylidenebenzenamine hydrochloride		Ca TWA 0.5 mg/m ³ [skin]	0.5 mg/m ³ [skin]	Not established		OV		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Viscous liquid with a chlorine-like odor.
Chlorinated camphene	8001-35-2	Chlorocamphene, Octachlorocamphene, Polychlorocamphene, Toxaphene		Ca	0.5 mg/m ³ [skin]	2.36 mg/m ³		OV							X	X	X	Call: Warning: Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Amber waxy solid with a mild piney chlorine and camphor-like odor. Insecticide.
Chlorinated diphenyl oxide		Synonyms depend on the degree of chlorination of diphenyl oxide [(C ₆ H ₄) ₂ O], ranging from monochlorodiphenyl oxide [(C ₆ H ₄ Cl)O(C ₆ H ₄)] to decachlorodiphenyl oxide [(C ₆ Cl ₂)O(C ₆ Cl ₂)].		0.5 mg/m ³	0.5 mg/m ³	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters.
Chlorine	7782-50-5	Molecular chlorine		C 0.5 ppm (1.45 mg/m ³) [15-minute]	C 1 ppm (3 mg/m ³)	0.05	6.6	AG						X			X	Warning: Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m ³)	Very Low Odor Threshold. Use under NIOSH/OSHA TWA.
Chlorine dioxide	10049-04-4	Chlorine oxide, Chlorine peroxide		0.1 ppm (0.3 mg/m ³) ST 0.3 ppm (0.9 mg/m ³)	0.1 ppm (0.3 mg/m ³)	9.24		Not recommended								X	X	Not Recommended: Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	High vapor pressure. May explode near boiling point temperature.
Chlorine trifluoride	7790-91-2	Chlorine fluoride, Chlorotrifluoride		C 0.1 ppm (0.4 mg/m ³)	C 0.1 ppm (0.4 mg/m ³)	<3.0		AG/OV or MB								X	X	Call: Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters. High vapor pressure.

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Chloroacetaldehyde	107-20-0	Chloroacetaldehyde (40% aqueous solution), 2-Chloroacetaldehyde, 2-Chloroethanal		C 1 ppm (3 mg/m ³)	C 1 ppm (3 mg/m ³)	0.917		OV							X			Call: Warning: Odor Threshold < 1ppm; Unknown Filter Effectiveness	Used for stripping bark from trees. Use under TWA
Chloroacetic acid	79-11-8	Chloroethanoic acid Monochloroacetic acid MCA, MCAA		1 ppm	Not established	0.045		OV/HEPA						X				Warning: Odor Threshold < 0.1 ppm; Unknown Filter Effectiveness.	Very Low Odor Threshold. Use under NIOSH/OSHA TWA.
alpha-Chloroacetophenone	532-27-4	2-Chloroacetophenone; Chloromethyl phenyl ketone; Mace®; Phenacyl chloride; Phenyl chloromethyl ketone; Tear gas		0.3 mg/m ³ (0.05 ppm)	0.3 mg/m ³ (0.05 ppm)	0.026		OV/HEPA						X			X	Warning: Odor Threshold < 0.1 ppm; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Chemical is used as "tear gas" with low exposure limit. Requires both filters. Very Low Odor Threshold, Low TWA.
Chloroacetyl chloride	79-04-9	Chloroacetic acid chloride, Chloroacetic chloride, Monochloroacetyl chloride		0.05 ppm (0.2 mg/m ³)	None	0.011		AG/ OV						X			X	Warning: Odor Threshold < 0.1 ppm; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Very Low Odor Threshold, Low TWA.
Chlorobenzene	108-90-7	Benzene chloride, Chlorobenzol, MCB, Monochlorobenzene, Phenyl chloride		No established REL	75 ppm (350 mg/m ³)	0.741	19.9	OV							X			Warning: Odor Threshold < 1ppm.	
Chlorobromomethane	74-97-5	Bromochloromethane; CB; CBM; Fluorocarbon 101 1; Halon® 101 1; Methyl chlorobromide		200 ppm (1050 mg/m ³)	200 ppm (1050 mg/m ³)	399	10.1	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	
Chlorodifluoromethane	75-45-6	Difluorochloromethane; Fluorocarbon-22; Freon® 22; Genetron® 22; Monochlorodifluoromethane; Refrigerant 22		1000 ppm (3500 mg/m ³) ST 1250 ppm (4375 mg/m ³)	None	Nearly Odorless		Not recommended								X		Call: Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning	Listed as a known HCFC (Hydrochlorofluorocarbon). Main Hazards: Dangerous for the environment & Central Nervous System (CNS) depressant

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Chlorodiphenyl (42% chlorine)	53469-21-9	Aroclor® 1242, PCB, Polychlorinated biphenyl		Ca TWA 0.001 mg/m ³	1 mg/m ³	Not established		OV/HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters.
Chlorodiphenyl (54% chlorine)	11097-69-1	Aroclor® 1254, PCB, Polychlorinated biphenyl		Ca TWA 0.001 mg/m ³	0.5 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters.
Chloroform	67-66-3	Methane trichloride, Trichloromethane		Ca ST2 ppm (9.78 mg/m ³) [60-minute]	C 50 ppm (240 mg/m ³)	11.7	10.2	OV								X		Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning.	Will not smell vapors until concentration is above Exposure Limit, use with odorous tracer gas and below TWA!
bis-Chloromethyl ether	542-88-1	BCME, bis-CME, Chloromethyl ether, Dichlorodimethyl ether, Dichloromethyl ether, Oxybis(chloromethane)		Ca	OSHA regulated carcinogen	Not established	18.3	OV	X	X								Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established	Prolonged exposure can lead to lung cancer. Toxic
Chloromethyl methyl ether	107-30-2	Chlorodimethyl ether, Chloromethoxymethane, CMME, Dimethylchloroether, Methylchloromethyl ether		Ca	OSHA regulated carcinogen	Not established		Not recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established	Reacts with water to form HCl and formaldehyde. Prolonged exposure known to cause lung cancer
1-Chloro-1-nitropropane	600-25-9	Korax®, Lanstan®		2 ppm (10 mg/m ³)	20 ppm (100 mg/m ³)	Not established	17.4	OV		X								Warning: Unknown Odor Threshold	
Chloro-pentafluoroethane	76-15-3	Fluorocarbon-115; Freon® 115; Genetron® 115; Halocarbon 115; Monochloro-pentafluoroethane		1000 ppm (6320 mg/m ³)	None	Not established		Not recommended		X								Call: Warning: Unknown Odor Threshold	CFC - production/ consumption has been banned since January 1, 1996
Chloropicrin	76-06-2	Nitrochloroform, Nitrotrichloromethane, Trichloronitromethane		0.1 ppm (0.7 mg/m ³)	0.1 ppm (0.7 mg/m ³)	1.08	29	OV								X	X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1 ppm (5mg/m ³)	High toxicity.

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
beta-Chloroprene	126-99-8	2-Chloro-1,3-butadiene; Chlorobutadiene; Chloroprene		Ca C 1 ppm (3.6 mg/m ³) [15-minute]	25 ppm (90 mg/m ³) [skin]	14.9		OV								X		Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness	
o-Chlorostyrene	2039-87-4	2-Chlorostyrene, ortho-Chlorostyrene, 1-Chloro-2-ethenylbenzene		50 ppm (285 mg/m ³) ST 75 ppm (428 mg/m ³)	None	Not established		OV		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	
o-Chlorotoluene	95-49-8	1-Chloro-2-methylbenzene, 2-Chloro-1-methylbenzene, 2-Chlorotoluene, o-Tolyl chloride		50 ppm (250 mg/m ³) ST 75 ppm (375 mg/m ³)	None	0.219	19.6	OV							X			Warning: Odor Threshold < 1ppm.	
2-Chloro-6-trichloromethyl pyridine	1929-82-4	2-Chloro-6-(trichloro-methyl) pyridine; Nitrapyrin; N-serve®; 2,2,2,6-Tetrachloro-2-picoline		10 mg/m ³ (total) ST 20 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		Not recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Known skin, eye and GI irritant. Unknown filter sorbency.
Chloro-trifluoroethylene	79-38-9	CTFE, 2-Chloro-1,1,2-trifluoroethylene; Trithene; Trifluorochloroethylene; Fluoroplast 3; Genetron 1113; Daiflon; Trifluorovinyl Chloride		Not established	Not established	Not established		Not recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established, Unknown Filter Effectiveness	Known CFC. Discontinued use as a refrigerant, used to produce plastics (ECTFE).
Chlorotrimethylsilane	75-77-4	Silicone, chlorosilicones, chlorosilane, chlorotrimethylsilane, "silane, chlorotrimethyl", "silane, trimethylchloro-", "TL 1163"		None	None	0.262 ppm (detection), 10.06 ppm (recognition)		Not recommended	X						X			Not Recommend: Unknown exposure limit; odor threshold < 1 ppm; unknown filter effectiveness	
Chlorpyrifos	2921-88-2	Chlorpyrifos-ethyl; O,O-Diethyl O-3,5,6-trichloro-2-pyridyl phosphorothioate; Dursban®		0.2 mg/m ³ ST 0.6 mg/m ³ [skin]	None	Not established		Not recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Insecticide. Moderately toxic, chronic exposure linked to neurological effects, developmental disorders and autoimmune disorders.

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Chromic acid and chromates	1333-82-0	Chromic acid (CrO ₃); Chromic anhydride, Chromic oxide, Chromium(VI) oxide (1:3), Chromium		Ca TWA 0.001 mg/m ³	0.005 mg/m ³	Not established		AG/HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³), Unknown Filter Effectiveness	Requires both filters.
Chromium(II) compounds (as Cr)		Synonyms vary depending upon the specific Chromium(II)		0.5 mg/m ³	0.5 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Chromium(III) compounds (as Cr)		Synonyms vary depending upon the specific Chromium(III) compound		0.5 mg/m ³	0.5 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Chromium metal	7440-47-3	Chrome, Chromium		0.5 mg/m ³	1 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Chromium oxide	1308-38-9	Chromium Oxide greens; Chromium Oxide		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	
Chromyl chloride	14977-61-8	Green Powder; Chromium Sesquioxide; Green Chromium		Ca 0.001 mg Cr(VI)/m ³	None	Not established		AG		X							X	Call; Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Reacts with water to form HCl and hexavalent chromium (Cr-VI) - Carcinogen, can cause ulceration, and is a eye, skin and GI irritant. Very Low Exposure Limit.
Citric Acid	77-92-9	(III) Oxide powder; C.I. Pigment Gren 17; C.I. Number		Not established	15 mg/m ³ TWA (Total dust); 5 mg/m ³ TWA (Respirable Fraction)	Not established		HEPA		X								Warning: Unknown Odor Threshold	
Clopidol	2971-90-6	77288; Dichromium trioxide		10 mg/m ³ (total) ST 20 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	

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Coal dust		Anthracite coal dust, Bituminous coal dust, Lignite coal dust		1 mg/m ³ [measured according to MSHA method (CPSU)] / TWA 0.9 mg/m ³ [measured according to ISO/CEN/ACGIH criteria]	2.4 mg/m ³ [respirable, < 5% SiO ₂] TWA (10 mg/m ³) / (%SiO ₂ + 2) [respirable, > 5% SiO ₂]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Coal tar pitch volatiles	65996-93-2	Pyrene, phenanthrene, acridine, chrysene, anthracene & benzo(a)pyrene). [Note: NIOSH considers coal tar, coal tar pitch, and creosote to be coal tar products]		0.1 mg/m ³	0.2 mg/m ³	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Can contain multiple variations of (hydro) carbon chains released as vapor or aerosol.
Cobalt carbonyl (as Co)	10210-68-1	Di-mu-Carbonylhexacarbonyl-dicobalt, Cobalt octacarbonyl, Cobalt tetracarbonyl dimer, Dicobalt carbonyl, Dicobalt Octacarbonyl, Octacarbonyldicobalt		0.1 mg/m ³	None	Not established		Not recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Toxic. Orange-colored, pyrophoric solid that is thermally unstable. Isomeric in solution. When decomposing, releases Carbon monoxide. No effective sorbent.
Cobalt (II) chloride hexahydrate	7791-13-1	Cobaltous Chloride; Cobalt Muriate		Not established	Not established	None reported		HEPA	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established, Unknown Filter Effectiveness	Toxic. Deep purple crystal (anhydrous form is sky blue). If used out of solution can be used with HEPA filtration.
Cobalt hydrocarbonyl (as Co)	16842-03-8	Hydrocobalt tetracarbonyl, Tetracarbonylhydridocobalt, Tetracarbonylhydrocobalt		0.1 mg/m ³	None	Not established		Not recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Toxic, slightly acidic. Highly Repugnant Odor, bright yellow liquid.
Cobalt metal dust and fume (as Co)	7440-48-4	Cobalt metal dust, Cobalt metal fume		0.05 mg/m ³	0.1 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	

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Coke oven emissions		Synonyms vary depending upon the specific constituent		Ca TWA 0.2 mg/m ³ (benzene-soluble fraction)	0.150 mg/m ³ (benzene-soluble fraction)	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters.
Colchicine	4205-91-8	N-[(7S)-1,2,3,10-tetramethoxy-9-oxo-5,6,7,9-tetrahydrobenzo[a]heptalen-7-yl]acetamide		None	None	Not established		HEPA	X	X								Unknown exposure limit, unknown odor threshold	May be fatal if inhaled or swallowed.
Copper (dusts and mists, as Cu)	7440-50-8	Copper metal dusts, Copper metal fumes		1 mg/m ³	1 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³)	
Copper fume (as Cu)	1317-38-0	CuO; Black copper oxide fume, Copper monoxide fume, Copper(II) oxide fume, Cupric oxide fume		0.1mg/m ³	0.1mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³)	Very Low Exposure Limit
Copper II Sulfate	7758-99-8	Blue vitriol; Copper (II) Sulfate Pentahydrate		None	0.1 (mg/m ³)	Not established		HEPA		X							X	Warning: Unknown odor threshold; OEL < 1ppm(5mg/m ³)	The substance may be toxic to kidneys, liver. Repeated or prolonged exposure to the substance can produce target organs damage.
Cotton dust (raw)		Raw cotton dust		<0.200 mg/m ³		Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³)	Very Low Exposure Limit
Crag® herbicide	136-78-7	Crag® herbicide No. 1; 2-(2,4-Dichlorophenoxy)ethyl sodium sulfate; Sesone		10 mg/m ³ (total) 5 mg/m ³ (resp)	15 mg/m ³ (total) 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	
m-Cresol	108-39-4	meta-Cresol, 3-Cresol, m-Cresylic acid, 1-Hydroxy-3-methylbenzene, 3-Hydroxytoluene, 3-Methyl phenol		2.3 ppm (10mg/m ³)	5 ppm (22mg/m ³) skin	0.68	46.7	OV/HEPA							X			Warning: Odor Threshold < 1ppm	Requires both filters.
o-Cresol	95-48-7	ortho-Cresol, 2-Cresol, o-Cresylic acid, 1-Hydroxy-2-methylbenzene, 2-Hydroxytoluene, 2-Methyl phenol		2.3 ppm (10mg/m ³)	5 ppm (22mg/m ³) skin	0.26	12	OV/HEPA							X			Warning: Odor Threshold < 1ppm	Requires both filters.

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p-Cresol	106-44-5	para-Cresol, 4-Cresol, p-Cresylic acid, 1-Hydroxy-4-methylbenzene, 4-Hydroxytoluene, 4-Methyl phenol	<input checked="" type="checkbox"/>	2.3 ppm (10mg/m ³)	5 ppm (22mg/m ³) skin	0.2	12	OV/HEPA							X			Warning: Odor Threshold < 1ppm	Requires both filters.
Crotonaldehyde	4170-30-3	2-Butenal, beta-Methyl acrolein, Propylene aldehyde	<input checked="" type="checkbox"/>	2 ppm (6mg/m ³)	2 ppm (6mg/m ³)	0.135	10.4	OV							X			Warning: Odor Threshold < 1ppm	Strong odor.
Crufomate	299-86-5	4-t-Butyl-2-chlorophenylmethyl methylphosphoramidate; Dowco® 132; Ruelene®		TWA 5 mg/m ³ ST 20mg/m ³	None	Not established		Not Recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Low Exposure limit.
Cumene	98-82-8	Cumol, Isopropyl benzene, 2-Phenyl propane		TWA 50 ppm (245 mg/m ³) [skin]	TWA 50 ppm (245 mg/m ³) [skin]	0.024	28.9	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold. Use under NIOSH/OSHA TWA, and 1/5 LEL. Flammable.
Cyanamide	420-04-2	Amidocyanogen, Carbimide, Carbodiimide, Cyanogen nitride, Hydrogen cyanamide [Note: Cyanamide is also a synonym for Calcium cyanamide.]		2 mg/m ³	None	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Modest toxin in humans. Chemical common as Aerosol spray. Chronic exposure can lead to respiratory irritation, contact dermatitis, headaches and GI symptoms (e.g. nausea, vomiting or diarrhea)
Cyanogen	460-19-5	Carbon nitride, Dicyan, Dicyanogen, Ethanedinitrile, Oxalonitrile		10 ppm (20 mg/m ³)	None	231		Not Recommended								X		Call: Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness	Flammable Gas. Very Toxic. Dangerous for the environment. Reduces to Cyanide in the body. Inhalation can result in headaches, dizziness, rapid pulse, nausea, vomiting, loss of consciousness, convulsions and death.

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Cyanogen chloride	506-77-4	Chlorocyan, Chlorine cyanide, Chlorocyanide, Chlorocyanogen		C 0.3 ppm (0.6 mg/m ³)	None	0.976		Not Recommended							X	X	X	Call: Warning: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Highly Toxic. Immediate injury results from contact with the eyes or respiratory organs. Penetrates Respirator Filters. Highly controlled substance - See Chemical Weapons Convention.
Cyclohexane	110-82-7	Benzene hexahydride, Hexahydrobenzene, Hexamethylene, Hexanaphthene	<input checked="" type="checkbox"/>	TWA 300 ppm (1050 mg/m ³)	TWA 300 ppm (1050 mg/m ³)	83.8	9.2	OV											
Cyclohexanethiol	1569-69-3	Cyclohexylmercaptan, Cyclohexylthiol		0.5 ppm (2.4 mg/m ³) [15-minute]	None	Not established		OV/ HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters. Inlet concentration should be kept below 0.5 ppm.
Cyclohexanol	108-93-0	Anol, Cyclohexyl alcohol, Hexahydrophenol, Hexalin, Hydralin, Hydroxycyclohexane		50 ppm (200 mg/m ³) [skin]	50 ppm (200 mg/m ³)	0.068	35.3	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low odor Threshold. Flammable, skin irritant, reacts violently with oxidizing agents.
Cyclohexanone	108-94-1	Anone, Cyclohexyl ketone, Pimelic ketone		25 ppm (100 mg/m ³) [skin]	50 ppm (200 mg/m ³)	0.019	22	OV						X				Warning: Odor Threshold < 0.1ppm	Mild toxin
Cyclohexene	110-83-8	Benzene tetrahydride, Tetrahydrobenzene	<input checked="" type="checkbox"/>	300 ppm (1015 mg/m ³)	300 ppm (1015 mg/m ³)	0.363	12.2	OV							X			Warning: Odor Threshold < 1ppm	A colorless liquid with sharp odor. Can become unstable in storage
Cyclohexylamine	108-91-8	Aminocyclohexane, Aminohexahydrobenzene, Hexahydroaniline, Hexahydrobenzamine	<input checked="" type="checkbox"/>	10 ppm (40 mg/m ³)	None	2.66	24	OV											A clear liquid with a "fishy" odor. Flammable. Keep below 25 C. Corrosive and Toxic by ingestion and inhalation.

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Cyclonite	121-82-4	Cyclotrimethylenetrinitramine; Hexahydro-1,3,5-trinitro-s-triazine; RDX; Trimethylenetrinitramine; 1,3,5-Trinitro-1,3,5-triazacyclohexane		1.5 mg/m ³ ST 3 mg/m ³ [skin]	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Highly explosive. A white crystalline solid, stable in storage. Military Grade High Explosive.
Cyclopentadiene	542-92-7	1,3-Cyclopentadiene		75 ppm (200 mg/m ³)	75 ppm (200 mg/m ³)	3.8	4	OV					X					Warning: Filter Capacity < 5%.	Has a strong, unpleasant odor.
Cyclopentane	287-92-3	Pentamethylene		600 ppm (1720 mg/m ³)	None	Not established	5.7	OV		X								Warning: Unknown Odor Threshold	Use below NIOSH Exposure Limit. Highly Flammable.
Cyclopentanone	120-92-3	adipic ketone, ketocyclopentane		None	None	Not established		OV	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Flammable. Vapor is 2.3 times denser than air. Known harmful irritant to skin, eyes and respiratory system.
Cyhexatin	13121-70-5	TCHH, Tricyclohexylhydroxystannane, Tricyclohexylhydroxytin, Tricyclohexylstannium hydroxide, Tricyclohexyltin hydroxide		5 mg/m ³	0.32 mg/m ³ [0.1 mg/m ³ (as Sn)]	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Requires both filters. Inlet concentration should be kept below 3 mg/m ³ .
2,4-D	94-75-7	Dichlorophenoxyacetic acid; 2,4-Dichlorophenoxyacetic acid		10 mg/m ³	10 mg/m ³	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Requires both filters.
DDT	50-29-3	p,p'-DDT; Dichlorodiphenyltrichloroethane; 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane		None	1 mg/m ³ [skin]	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Toxic. Dangerous for the Environment.

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Decaborane	17702-41-9	Decaboron tetradecahydride		0.3 mg/m ³ (0.05 ppm) ST 0.9 mg/m ³ (0.15 ppm) [skin]	0.3 mg/m ³ (0.05 ppm) [skin]	0.06		Not Recommended						X			X	Call: Odor Threshold < 0.1 ppm. Warning: OEL < 1ppm (5mg/m ³); Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness	CNS Toxin. White Crystalline compound. Can become explosive in mixtures.
1-Decanethiol	143-10-2	Decylmercaptan, n-Decylmercaptan, 1-Mercaptododecane		0.5 ppm (3.6 mg/m ³) [15-minute]	None	Not established	41.8	OV		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Extremely low exposure limits.
1-Decanethiol	143-10-2	Decylmercaptan, n-Decylmercaptan, 1-Mercaptododecane		0.5 ppm (3.6 mg/m ³) [15-minute]	None	Not established	41.8	OV		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Extremely low exposure limits.
Demeton	8065-48-3	O-O-Diethyl-O(and S)-2-(ethylthio)ethyl phosphorothioate mixture; Systox®		0.1 mg/m ³ [skin]	0.1 mg/m ³ [skin]	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
Deuterium	7782-39-0	D ₂ , normal deuterium		Not established	Not established			Not Recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Contact Labconco.
Diacetone alcohol	123-42-2	Diacetone, 4-Hydroxy-4-methyl-2-pentanone, 2-Methyl-2-pentanol-4-one		50 ppm (240 mg/m ³)	50 ppm (240 mg/m ³)	0.891	33.1	OV							X			Warning: Odor Threshold < 1ppm	Flammable.
2,4-Diaminoanisole (and its salts)	615-05-4	1,3-Diamino-4-methoxybenzene; 4-Methoxy-1,3-benzene-diamine; 4-Methoxy-m-phenylene-diamine		Ca Minimize occupational exposure (especially skin exposures)	None	Not established		Not Recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold >/= OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
3,3- diaminobenzidine	91-95-2	3,3',4,4'-Biphenyltetramine (1,1'-Biphenyl)-3,3',4,4'-tetraamine 3,3',4,4'-Diphenyltetramine 3,3',4,4'-Tetraaminobiphenyl Biphenyl-3,3',4,4'-tetrayltetraamine		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	
o-Dianisidine	119-90-4	Dianisidine; 3,3'-Dianisidine; 3,3'-Dimethoxybenzidine		Ca	Ca	Not established		Not Recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	
Diazinon®	333-41-5	Basudin®; Diazide®; O,O-Diethyl-O-2-isopropyl-4-methyl-6-pyrimidinyl-phosphorothioate; Spectracide®		0.1 mg/m ³ [skin]	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
Diazomethane	334-88-3	Azimethylene, Azomethylene, Diazirine		0.2 ppm (0.4 mg/m ³)	0.2 ppm (0.4 mg/m ³)	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
Diborane	19287-45-7	Boroethane, Boron hydride, Diboron hexahydride		0.1 ppm (0.1 mg/m ³)	0.1 ppm (0.1 mg/m ³)	1.8-3.5		Not Recommended									X	Call: Warning: OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Colorless Gas at room temperature with a repulsively sweet odor. In atmospheric mixtures, can be explosive, and spontaneously ignite in moist air.
1, 2-Dibromo-3-chloropropane	96-12-8	1-Chloro-2,3-dibromopropane; DBCP; Dibromochloropropane		Ca	0.001 ppm	0.3 mg/m ³		Not Recommended						X			X	Call: Odor Threshold < 0.1 ppm. Warning: Carcinogen; EOL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Very Low Odor Threshold.

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Dibutyl amine	111-92-2			None	None	Not established	2.5	OV	X	X		X						Warning: Unknown exposure limit, unknown odor threshold, filter capacity < 3%,	
2-N-Dibutyl-aminoethanol	102-81-8	Dibutylaminoethanol; 2-Dibutylaminoethanol; 2-Di-N-butylaminoethanol; 2-Di-N-butylaminoethyl alcohol; N,N-Dibutylethanolamine		2 ppm (14 mg/m ³) [skin]	None	Not established		Not Recommended		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	
Dibutyl phosphate	107-66-4	Dibutyl acid o-phosphate, Di-n-butyl hydrogen phosphate, Dibutyl phosphoric acid		1 ppm (5 mg/m ³) ST 2 ppm (10 mg/m ³)	1 ppm (5 mg/m ³)	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Requires both filters. Only use with inlet concentrations below the TWA.
Dibutyl phthalate	84-74-2	DBP; Dibutyl-1,2-benzene-dicarboxylate; Di-n-butyl phthalate		5 mg/m ³	5 mg/m ³	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Requires both filters.
Dichloroacetylene	7572-29-4	DCA, Dichloroethyne [Note: DCA is a possible decomposition product of trichloroethylene or trichloroethane.]		Ca C 0.1 ppm (0.4 mg/m ³)	None	Not established		Not Recommended		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; Unknown Filter Effectiveness	No established adsorption characteristics.
o-Dichlorobenzene	95-50-1	o-DCB; 1,2-Dichlorobenzene; ortho-Dichlorobenzene; o-Dichlorobenzol		C 50 ppm (300 mg/m ³)	C 50 ppm (300 mg/m ³)	0.072	44.4	OV						X				Warning: Odor Threshold < 0.1 ppm	Very Low Odor Threshold,
p-Dichlorobenzene	106-46-7	p-DCB; 1,4-Dichlorobenzene; para-Dichlorobenzene; Dichlorocide		Ca	75 ppm (450 mg/m ³)	0.048		OV/HEPA						X				Warning: Carcinogen; Odor Threshold < 0.1 ppm; Unknown Filter Effectiveness	Colorless Solid. Strong Odor - Very Low Odor Threshold. Harmful substance. Dangerous to the Environment.
3,3'-Dichlorobenzidine (and its salts)	91-94-1	4,4'-Diamino-3,3'-dichlorobiphenyl; Dichlorobenzidine base; o,o'-Dichlorobenzidine; 3,3'-Dichlorobiphenyl-4,4'-diamine; 3,3'-Dichloro-4,4'-biphenyldiamine; 3,3'-Dichloro-4,4'-diaminobiphenyl		Ca	Ca	Not established		HEPA		X								Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established	

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Dichlorodifluoromethane	75-71-8	Difluorodichloromethane; Fluorocarbon 12; Freon® 12; Genetron® 12; Halon® 122; Propellant 12; Refrigerant 12		1000 ppm (4950 mg/m ³)	1000 ppm (4950 mg/m ³)	Not established	2.1	Not Recommended		X		X						Call: Filter Capacity < 3% - Low Filter Capacity. Warning: Unknown Odor Threshold	No known sorbent. Chemical is a listed CFC and a known Ozone depleting chemical - Dangerous to the environment. Banned by Montreal Protocol of 1994.
1,3-Dichloro-5,5-dimethylhydantoin	118-52-5	Dactin, DDH, Halane		0.2 mg/m ³ ST 0.4 mg/m ³	0.2 mg/m ³	0.01		OV/HEPA						X			X	Warning: Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Very Low Odor Threshold.
1,1-Dichloroethane	75-34-3	Asymmetrical dichloroethane; Ethylidene chloride; 1,1-Ethylidene dichloride		100 ppm (400 mg/m ³)	100 ppm (400 mg/m ³)	255	7.7	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning	Odor threshold exceeds PEL (TWA.)
1,2-Dichloroethylene	540-59-0	Acetylene dichloride, cis-Acetylene dichloride, trans-Acetylene dichloride, sym-Dichloroethylene		200 ppm (790 mg/m ³)	200 ppm (790 mg/m ³)	11.2	8	OV											Highly Flammable, with sharp, harsh odor. Used as an anesthetic. Causes a host of symptoms under varying degrees of exposure.
Dichloroethyl ether	111-44-4	bis(2-Chloroethyl)ether; 2,2'-Dichlorodiethyl ether; 2,2'-Dichloroethyl ether		Ca TWA 5 ppm (30 mg/m ³) ST 10 ppm (60 mg/m ³) [skin]	15 ppm (90 mg/m ³) [skin]	0.049	18.3	OV						X				Call: Odor Threshold < 0.1ppm	Very Low Odor Threshold
Dichloromonofluoromethane	75-43-4	Dichlorofluoromethane; Fluorodichloromethane; Freon® 21; Genetron® 21; Halon® 112; Refrigerant		10 ppm (40 mg/m ³)	1000 ppm (4200 mg/m ³)	Not established		Not Recommended		X							X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness	Poor filter effectiveness. A listed HCFC, colorless and odorless gas. To be phased out in 2015 per Montreal Protocol.
1,1-Dichloro-1-nitroethane	594-72-9	Dichloronitroethane		2 ppm (10 mg/m ³)	10 ppm (60 mg/m ³)	Not established		OV		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Only use below TWA concentrations.

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1,3-Dichloropropene	542-75-6	3-Chloroallyl chloride; DCP; 1,3-Dichloro-1-propene; 1,3-Dichloropropylene; Telone®		Ca TWA 1 ppm (5 mg/m ³) [skin]	None	1	12	OV										Warning: Carcinogen	Check filters frequently. Use only below TWA concentrations. Toxic. Dangerous to the Environment.
2,2-Dichloropropionic acid	75-99-0	Dalapon; 2,2-Dichloropropanoic acid; alpha,alpha-Dichloropropionic acid		1 ppm (6 mg/m ³)	None	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Requires both filters. Toxic. Use under NIOSH Exposure Limit
Dichloro-tetrafluoroethane	76-14-2	1,2-Dichlorotetrafluoroethane; Freon® 114; Genetron® 114; Halon® 242; Refrigerant 114		1000 ppm (7000 mg/m ³)	1000 ppm (7000 mg/m ³)	Not established		Not Recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Poor filter effectiveness. A listed CFC and refrigerant. Ozone depleting gas.
Dichlorvos	62-73-7	DDVP; 2,2-Dichlorovinyl dimethyl phosphate		1 mg/m ³ [skin]	1 mg/m ³ [skin]	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Poor filter effectiveness. Can be toxic during prolonged exposure.
Dicrotophos	141-66-2	Bidrin®; Carbicron®; 2-Dimethyl-cis-2-dimethylcarbamoyl-1-methylvinylphosphate		0.25 mg/m ³ [skin]	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Toxic. Commonly used as an insecticide.
Dicyclopentadiene	77-73-6	Bicyclopentadiene; DCPD; 1,3-Dicyclopentadiene dimer; 3a,4,7,7a-Tetrahydro-4,7-methanoindene		5 ppm (30 mg/m ³)	None	0.03	12	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold. White crystalline solid with a camphor-like odor.
Dicyclopentadienyl iron	102-54-5	bis(Cyclopentadienyl) iron, Ferrocene, Iron dicyclopentadienyl		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Brown-Orange Crystals.
Didecyl dimethyl Ammonium Chloride	7173-51-5	Quaternary Ammonium Disinfectant, 1-Decanaminium, N-decyl-N,N-dimethyl-, chloride, Ammonium, didecyl dimethyl-, chloride, Ammonium, didecyl dimethyl-, chloride, Arquad 10, Bardac 22 Quaternium 12		Not established	Not established	Not established		AM	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Mild amine-like odor. Test filters often.


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Dieldrin	60-57-1	HEOD; 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,exo-5,8-dimethanonaphthalene		Ca TWA 0.25 mg/m ³ [skin]	0.25 mg/m ³ [skin]	0.041		Not Recommended						X			X	Call: Odor Threshold < 0.1ppm. Warning: Carcinogen; OEL < 1ppm (5mg/m ³); Unknown Odor Threshold	Toxic. Banned in most of the world. Linked to Parkinson's, cancer, immune, reproductive, and nervous system damage. Very Low Odor Threshold
Diesel exhaust		Synonyms vary depending upon the specific diesel exhaust component.		Ca	None	Varies depending on the components		MB	X	X								Call: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Unknown warning characteristics. Diesel exhaust contains volatile or gaseous compounds, formaldehyde and hydrogen sulfide.
Diesel fuel	68476-30-2	Astral oil, Gas oil, Coal oil, Fuel oil, Home Heating oil, Marine diesel fuel		Ca	None. Possible carcinogen.	Not established		OV/HEPA	X	X								Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Contains Various hydrocarbon chains. Flammable.
Diethanolamine	111-42-2	DEA; Di(2-hydroxyethyl)amine; 2,2'-Dihydroxydiethylamine; Diolamine; bis(2-Hydroxyethyl)amine; 2,2'-Iminodiethanol		3 ppm (15 mg/m ³)	None	0.025	6.5	OV						X				Warning: Odor Threshold < 0.1ppm.	Colorless Liquid. Known skin irritant. Acute Toxicity in high exposure. Very Low Odor Threshold.
Diethylamine	109-89-7	Diethylamine; N,N-Diethylamine; N-Ethylethanamine		10 ppm (30 mg/m ³) ST 25 ppm (75 mg/m ³)	25 ppm (75 mg/m ³)	0.186	6.8	OV							X			Warning: Odor Threshold < 1ppm	OV filter is more effective than AM filter. A corrosive chemical. Contact with skin may cause irritation or burns. Strong and unpleasant odor.
2-Diethylaminoethanol	100-37-8	Diethylaminoethanol; 2-Diethylaminoethyl alcohol; N,N-Diethylethanamine; Diethyl-(2-hydroxyethyl)amine; 2-Hydroxytriethylamine		10 ppm (50 mg/m ³) [skin]	10 ppm (50 mg/m ³) [skin]	0.034	9.4	OV						X				Warning: Odor Threshold < 0.1 ppm	Very Low odor Threshold.

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Diethyl carbonate	105-58-8	DEC; Ethyl Carbonate; Ethoxyformic		None	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	
Diethyl ketone	96-22-0	anhydride		200 ppm (705 mg/m ³)	None	0.316	13.3	OV							X			Warning: Odor Threshold < 1ppm	Hazardous at contact with eyes and skin. Nervous and organ damage due to ingestion. Highly Flammable. Use in well ventilated spaces away from spark potential devices.
Diethyl phthalate	84-66-2	DEP, Diethyl ester of phthalic acid, Ethyl phthalate		5 mg/m ³	None	Not established		HEPA		X								Warning: Unknown Odor Threshold	Mildly toxic. Faint, disagreeable odor. Toxic gases formed when burnt. Colorless liquid at room temperature.
Diethylenetriamine	111-40-0	N-(2-Aminoethyl)-1,2-ethanediamine; bis(2-Aminoethyl)amine; DETA; 2,2'-Diaminodiethylamine		1 ppm (4 mg/m ³) [skin]	None	9.3	4.4	OV					X			X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; Filter Capacity < 5%.	Use only below TWA concentrations.
Difluoro-dibromomethane	75-61-6	Dibromodifluoromethane; Freon® 12B2; Halon® 1202		100 ppm (860 mg/m ³)	100 ppm (860 mg/m ³)	Not established	13	OV		X								Warning: Unknown Odor Threshold	Use only below TWA concentrations. Environmental Hazard.
Diglycidyl ether	7/4/34	Diallyl ether dioxide; DGE; Di(2,3-epoxypropyl) ether; 2-Epoxypropyl ether; bis(2,3-Epoxypropyl) ether		Ca TWA 0.1 ppm (0.5 mg/m ³)	C 0.5 ppm (2.8 mg/m ³)	4.61		Not Recommended							X	X		Call: Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	Requires both filters.
Diisobutyl ketone	108-83-8	DIBK; sym-Diisopropyl acetone; 2,6-Dimethyl-4-heptanone; Isovalerone; Valerone		25 ppm (150 mg/m ³)	50 ppm (290 mg/m ³)	0.339	33.2	OV/HEPA							X			Warning: Odor Threshold < 1ppm	Requires both filters.

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Diisopropylamine	108-18-9	DIPA, N-(1-Methylethyl)-2-propanamine	<input checked="" type="checkbox"/>	5 ppm (20 mg/m ³) [skin]	5 ppm (20 mg/m ³) [skin]	0.398	16.4	OV							X			Warning: Odor Threshold < 1ppm	Mildly Toxic.
Dimethyl acetamide	127-19-5	N,N-Dimethyl acetamide; DMAC		10 ppm (35 mg/m ³) [skin]	10 ppm (35 mg/m ³) [skin]	47.9	26.2	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning	Toxic. Use only under TWA concentrations.
Dimethylamine	124-40-3	Dimethylamine (anhydrous), N-Methylmethanamine		10 ppm (18 mg/m ³)	10 ppm (18 mg/m ³)	0.081	0.2	AM/OV or MB			X			X				Not Recommended: Filter Capacity < 1% - Short Filter Life. Call: Odor Threshold < 0.1ppm	Highly Flammable. Harmful. Very Low Odor Threshold.
4-Dimethyl-aminoazobenzene	60-11-7	Butter yellow; DAB; p-Dimethylaminoazobenzene; N,N-Dimethyl-4-aminoazobenzene; Methyl yellow		Ca	Ca	.005-.06		OV/HEPA	X					X				Call: Odor Threshold < 0.1ppm. Warning: Carcinogen; Exposure Limit Not Established; Unknown Filter Effectiveness	Requires both filters. Toxic. Very Low Odor Threshold.
bis(2-(Dimethylamino) ethyl) ether	3033-62-3	NIAX® A99; NIAX® Catalyst A1; 2,2'-Oxybis(N,N-dimethyl ethylamine) [Note: A component (5%) of NIAX® Catalyst ESN, along with dimethylaminopropionitrile (95%).]		Exposure should be limited. See Appendix C of NIOSH Guide.	Exposure should be limited. See Appendix C of NIOSH Guide.	Not established		Not Recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	
Dimethyl-aminopropionitrile	1738-25-6	3-(Dimethylamino) propionitrile; N,N-Dimethylamino-3-propionitrile [Note: A component (95%) of NIAX® Catalyst ESN, along with bis(2-(dimethylamino)ethyl) ether (5%).]		Exposure should be limited. Can cause disorders of the nervous and genitourinary system. See Appendix C of NIOSH Guide.	Exposure should be limited. Can cause disorders of the nervous and genitourinary system. See Appendix C of NIOSH Guide.	Not established		Not Recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	

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N,N-Dimethylaniline	121-69-7	N,N-Dimethylbenzeneamine; N,N-Dimethylphenylamine [Note: Also known as Dimethylaniline which is a correct synonym for Xylidine.]		5 ppm (25 mg/m ³) ST 10 ppm (50 mg/m ³) [skin]	5 ppm (25 mg/m ³) [skin]	0.219	40.2	OV							X			Warning: Odor Threshold < 1ppm.	
Dimethyl carbamoyl chloride	79-44-7	Chloroformic acid dimethylamide; Dimethylcarbamic chloride; N,N-Dimethylcarbamoyl chloride; DMCC		Ca	None	Not established		Not Recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	
Dimethyl carbonate	616-38-6	Carbonic acid, dimethyl ester, Methyl carbonate		TWA: 200 STEL: 400 (ppm)	TWA: 200 STEL: 400 (ppm)	Not established		Not Recommended		X								Warning: Unknown odor threshold	Vapor/air mixtures are explosive.
Dimethyl-1, 2-dibromo-2, 2-dichlorethyl phosphate	300-76-5	Dibrom®; 1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate; Naled		3 mg/m ³ [skin]	3 mg/m ³ [skin]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Use below Exposure limit.
Dimethyl ether	115-10-6	oxybismethane, wood ether, dimethyl oxide, methyl ether, DME,		Not established	Not established	0.3-9.0		Not Recommended	X						X			Call: Warning: Exposure Limit Not Established; Odor Threshold < 1ppm; Unknown Filter Effectiveness	Very short filter life. High flammability.
Dimethylformamide	68-12-2	Dimethyl formamide; N,N-Dimethylformamide; DMF		10 ppm (30 mg/m ³) [skin]	10 ppm (30 mg/m ³) [skin]	100	17.2	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning	Flammable. May be carcinogenic.
1, 1-Dimethylhydrazine	57-14-7	Dimazine, DMH, UDMH, Unsymmetrical dimethylhydrazine		Ca C 0.06 ppm (0.15 mg/m ³) [2-hr]	0.5 ppm (1 mg/m ³) [skin]	8.79		Not Recommended									X	Call: Warning: Carcinogen; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Toxic. Flammable. Environmental Hazard. Explosive in presence of oxidisers.
Dimethyl phthalate	131-11-3	Dimethyl ester of 1,2-benzenedicarboxylic acid; DMP		5 mg/m ³	5 mg/m ³	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Requires both filters.

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Dimethyl sulfate	77-78-1	Dimethyl ester of sulfuric acid, Dimethylsulfate, Methyl sulfate		Ca TWA 0.1 ppm (0.5 mg/m ³) [skin]	1 ppm (5 mg/m ³) [skin]	Not established	34.5	OV		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Poison. Contact Hazard. Inhalation Hazard. Corrosive. Environmental Hazard. Carcinogenic/ Mutagenic.
Dimethyl sulfoxide	67-68-5	Dimethyl sulphoxide, DMSO, methylsulfinylmethane, A 10846, deltan, demeso, demasorb, demavet, demsodrox, dermasorb, dimexide, DMS-70, DMS-90, hyadur, infiltrina, somipront, SQ 9453, syntexan, topsym, methyl sulfoxide, numerous other trade names		Not established	Not established	Not established		OV	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Practically an odorless chemical. Has shown minor toxic effect in exposed humans.
Dinitolmide	148-01-6	3,5-Dinitro-o-toluamide; 2-Methyl-3,5-dinitrobenzamide; Zoalene		5 mg/m ³	None	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Used as an antibiotic (anticoccide), broad-spectrum.
m-Dinitrobenzene	99-65-0	meta-Dinitrobenzene; 1,3-Dinitrobenzene		1 mg/m ³ [skin]	1 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters.
o-Dinitrobenzene	528-29-0	ortho-Dinitrobenzene; 1,2-Dinitrobenzene		1 mg/m ³ [skin]	1 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters.
p-Dinitrobenzene	100-25-4	para-Dinitrobenzene; 1,4-Dinitrobenzene		1 mg/m ³ [skin]	1 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters.
3,5-dinitrobenzoic acid	99-34-3	3-Carboxy-1,5-dinitrobenzene, Benzoic acid, 3,5-dinitro-, BENZOIC ACID, 3,5-DINITRO, Dinitrobenzoic acid, DNBA		None	None	Not established		Not established	X	X								Warning: Unknown exposure limit, unknown odor threshold	

= Generally Compatible

= Evaluate Warning

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Dinitro-o-cresol	534-52-1	4,6-Dinitro-o-cresol; 3,5-Dinitro-2-hydroxytoluene; 4,6-Dinitro-2-methyl phenol; DNC; DNOC		0.2 mg/m ³ [skin]	0.2 mg/m ³ [skin]	Not established		Not established		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Toxic
Dinitrotoluene	25321-14-6	Dinitrotoluol, DNT, Methyl dinitrobenzene [Note: Various isomers of DNT exist]		Ca TWA 1.5 mg/m ³ [skin]	1.5 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters. Pale yellow crystals. Highly Toxic.
Di(propylene glycol) methyl ether acetate	88917-22-0	DPMA; PD-125944; dowanol dpma; Arcosolv DPMA; DOWANOL ^(TM) DPMA; ARCOSOLV ^(®) DPMA; DOWANOL ^(®) DPMA; PPG-2 METHYL ETHER ACETATE		None	None	34.6		OV	X									Warning: Unknown exposure limit, unknown filter efficiency	
Di-sec octyl phthalate	117-81-7	DEHP, Di(2-ethylhexyl) phthalate, DOP, bis-(2-Ethylhexyl)phthalate, Octyl phthalate		Ca TWA 5 mg/m ³ ST 10 mg/m ³	5 mg/m ³	Not established		HEPA		X								Warning: Carcinogen; Unknown Odor Threshold.	
Dioxane	123-91-1	Diethylene dioxide; Diethylene ether; Dioxan; p-Dioxane; 1,4-Dioxane		Ca C 1 ppm (3.6 mg/m ³) [30-minute]	100 ppm (360 mg/m ³) [skin]	7.78	10	OV							X			Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning.	Flammable. Carcinogenic. Eye & Respiratory Irritant.
Dioxathion	78-34-2	Delnav [®] ; p-Dioxane-2,3-diyl ethyl phosphorodithioate; Dioxane phosphate; 2,3-p-Dioxanethiol-S,S-bis(O,O-diethyl phosphorodithioate); Navadel [®]		0.2 mg/m ³ [skin]	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Extremely Hazardous substance with multiple long term exposure symptoms. Banned in the U.S. Reddish-brown liquid or powder with a garlic-like odor.
Diphenyl	92-52-4	Biphenyl, Phenyl benzene		1 mg/m ³ (0.2 ppm)	1 mg/m ³ (0.2 ppm)	0.009		OV/HEPA						X			X	Call: Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Irritant. Environmental Hazard. Used as a preservative and antibiotic. Mildly Toxic.

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1,5-Diphenyl-carbohydrazide	140-22-7	1,5-Diphenylcarbohydrazide; 1,5-Diphenylcarbazide; Carbonic dihydrazide, 2,2'-diphenyl-; N,N'-Diphenylcarbazide	<input checked="" type="checkbox"/>	Not established	Not established.	Odorless		HEPA	X							X		Warning: Exposure Limit Not Established; Odor Threshold < Exposure Limit - Poor Odor Warning.	Can be an eye irritant, but is a stable chemical.
Diphenylamine	122-39-4	Anilinobenzene, DPA, Phenylaniline, N-Phenylaniline, N-Phenylbenzamine [Note: The carcinogen 4-Aminodiphenyl may be present as an impurity in the commercial product.]		10 mg/m ³	None	0.022		OV/HEPA						X				Warning: Odor Threshold < 0.1ppm; Unknown Filter Effectiveness	Requires both filters. Colorless Solid. Toxic. Possible Mutagen. Possible teratogen. Harmful in contact with skin and if swallowed or inhaled. Known Irritant.
Dipotassium phosphate	11/3/54	Dipotassium phosphate (K ₂ HPO ₄) Potassium monohydrogen phosphate Phosphoric acid dipotassium salt Potassium phosphate dibasic	<input checked="" type="checkbox"/>	Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Often used as a food additive. White Powder. Common source for Potassium and Phosphorus.
Dipropylene glycol methyl ether	34590-94-8	Dipropylene glycol monomethyl ether; Dowanol® 50B		None	None	34.6		OV	X									Warning: Unknown exposure limit, unknown filter efficiency	
dipropyheptyl phthalate	53306-54-0	DPHP		None	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	Strong penetrating odor
Dipropyl ketone	123-19-3	Butyrone, DPK, 4-Heptanone, Heptan-4-one, Propyl ketone	<input checked="" type="checkbox"/>	50 ppm (235 mg/m ³)	None	Not established	23.7	OV		X								Warning: Unknown Odor Threshold	Use under established exposure limit. Test filters regularly.
Diquat (Diquat dibromide)	85-00-7	Diquat dibromide; 1,1'-Ethylene-2,2'-bipyridylium dibromide [Note: Diquat is a cation (C ₁₂ H ₁₂ N ₂ ++; 1,1'-Ethylene-2,2-bipyridylium ion). Various diquat salts are commercially available.]		0.5 mg/m ³	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Moderately Toxic - fatal if swallowed, inhaled or absorbed through the skin in sufficient quantities.

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
disodium phosphate	7558-79-4	Disodium phosphate; DSP; Disodium hydrogen phosphate; Di sodium phosphate; Sodium phosphate dibasic.		None	15 mg/m ³ (total dust) 8-hr TWA, 5 mg/m ³ (respirable) 8-hr TWA	Not established		HEPA		X								Warning: Unknown odor threshold	
Disulfiram	97-77-8	Antabuse®; bis(Diethylthiocarbamoyl) disulfide; Ro-Sulfiram®; TETD; Tetraethylthiuram disulfide		2 mg/m ³ [Precautions should be taken to avoid concurrent exposure to ethylene dibromide.]	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Used as a drug to treat chronic alcohol and drug (cocaine) abuse.
Disulfoton	298-04-4	O,O-Diethyl S-2-(ethylthio)-ethyl phosphorodithioate; Di-Syston®; Thiodemeton		0.1 mg/m ³ [skin]	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Highly regulated by the U.S. Government.
Dithiothreitol	27565-41-9	DL-Dithiothreitol, Electrophoresis Grade; Cleland's Reagent; DL-DTT; 2,3-butanediol, 1,4-dimercapto-, DL-threo-; DL-threo-1,4-Dimercapto-2,3-butanediol; rac-Dithiothreitol		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	Amine-like odor, heat decomposition emits toxic fumes of NO ₂ - no detection
Diuron	330-54-1	3-(3,4-Dichlorophenyl)-1,1-dimethylurea; Direx®; Karmex®		10 mg/m ³	None	Not established		Not Recommended		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Harmful. Environmental Hazard. No known sorbent.
Divinyl benzene	1321-74-0	Diethyl benzene, DVB, Vinylstyrene [Note: Commercial product contains all 3 isomers, but m-isomer predominates. Usually contains an inhibitor to prevent polymerization.]		10 ppm (50 mg/m ³)	None	10	40.8	OV							X			Warning: Odor Threshold = Exposure Limit - Poor Odor Warning.	

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1-Dodecanethiol	112-55-0	Dodecyl mercaptan, 1-Dodecyl mercaptan, n-Dodecyl mercaptan, Lauryl mercaptan, n-Lauryl mercaptan, 1-Mercaptododecane		C 0.5 ppm (4.1 mg/m³) [15-minute]	None	4 mg/m³	43.1	OV								X	X	Warning: OEL < 1ppm (5mg/m³); Odor Threshold > Exposure Limit - Poor Odor Warning.	
EDTA	60-00-4	EthylMethylCarbonate(Emc) CARBONIC ACID ETHYL METHYL ESTER ETHYL METHYL CARBONATE, carbonicacidethylester-methylester Ethoxyacetic acid, methyl ester Methylene carbonate Carbonic acid ethyl methyl Carbonic acid methyl ethyl		None	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold	
Emery	1302-74-5	Aluminum oxide, Aluminum trioxide, Corundum, Impure corundum, Natural aluminum oxide [Note: Emery is an impure variety of Al ₂ O ₃ which may contain small impurities of iron, magnesium & silica Corundum is natural Al ₂ O ₃		Not established REL's after limited evaluation of the literature, concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m³	15 mg/m³ (total) TWA 5 mg/m³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	A mixture of minerals, typically granular.
Endosulfan	115-29-7	Benzoepin; Endosulphan; 6,7,8,9,10-Hexachloro-1,5,5a,6,9,9a-hexachloro-6,9-methano-2,4,3-benzodioxathiepin-3-oxide; Thiodan®		0.1 mg/m³ [skin]	None	Not established		Not Recommended		X							X	Call; Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness	Toxic - Acute Neurotoxin. Known Irritant. Environmental Hazard. An insecticide being phased out globally.

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Endrin	72-20-8	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,endo-5,8-dimethanonaphthalene; Hexadrin®		0.1 mg/m ³ [skin]	0.1 mg/m ³ [skin]	0.118		OV/HEPA							X	X	X	Call: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters. Neurotoxin, used as an insecticide and Rodenticide. Environmental toxin/poison, tightly regulated for (sea) water contamination.
Enflurane	13838-16-9	2-Chloro-1-(difluoromethoxy)-1,1,2-trifluoroethane; 2-Chloro-1,1,2-trifluoroethyl difluoromethyl ether; Ethrane®		C 2 ppm (15.1 mg/m ³) [60-minute] [*Note: REL for exposure to waste anesthetic gas.]	None	Not established		OV		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Used as an inhalational anesthetic, similar to its isomer isoflurane. Can have acute toxicity. Use below Exposure Limit.
Epichlorohydrin	106-89-8	1-Chloro-2,3-epoxypropane; 2-Chloropropylene oxide; gamma-Chloropropylene oxide		Ca	5 ppm (19 mg/m ³) [skin]	0.934	15.2	OV							X			Warning: Carcinogen; Odor Threshold < 1ppm.	A colorless liquid with pungent, garlic-like odor. Toxic. Irritant.
EPN	2104-64-5	Ethyl p-nitrophenyl benzenethionophosphonate, O-Ethyl O-(4-nitrophenyl) phenylphosphonothioate		0.5 mg/m ³ [skin]	0.5 mg/m ³ [skin]	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
Ethanolamine	141-43-5	2-Aminoethanol, beta-Aminoethyl alcohol, Ethylolamine, 2-Hydroxyethylamine, Monoethanolamine		3 ppm (8 mg/m ³) ST 6 ppm (15 mg/m ³)	3 ppm (6 mg/m ³)	2.59	27.3	OV											A colorless, viscous liquid with an ammonia-like odor. Toxic. Flammable. Corrosive.
1,2-Ethanedithiol	540-63-6	1,2-dimercaptoethane, dithioethyleneglycol, dithioglycol, ethylene dimercaptan, alpha-ethylene dimercaptan, ethylene dithioglycol, ethyl hydropersulfide		Not established	Not established	Not established		Not Recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Very toxic by inhalation. Smells like rotten cabbage. Flammable.

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Ethidium bromide	1239-45-8	Homidium bromide, 2,7-Diamino-10-ethyl-9-phenylphenanthridinium bromide, 3,8-Diamino-5-ethyl-6-phenylphenanthridinium bromide, 2,7-Diamino-9-phenyl-10-ethylphenanthridinium bromide, 2,7-Diamino-9-phenylphenanthridine ethobromide, Dromilac, RD 1572		Not established	Not established	Not established		OV/HEPA	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Carcinogen. May be fatal if inhaled. Toxic if Swallowed. Known skin, eye, respiratory irritant. Reproductive mutagen.
Ethion	563-12-2	O,O,O',O'-Tetraethyl S,S'-methylene di(phosphorodithioate)		0.4 mg/m ³ [skin]	None	Odorless		Not Recommended							X	X		Call: Warning: OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
2-Ethoxyethanol	110-80-5	Cellosolve®; EGEE; Ethylene glycol monoethyl ether	<input checked="" type="checkbox"/>	0.5 ppm (1.8 mg/m ³) [skin]	200 ppm (740 mg/m ³) [skin]	1.22	21.1	OV											Flammable. Harmful if swallowed, in contact with skin or inhaled. Reproductive toxin.
2-Ethoxyethyl acetate	111-15-9	Cellosolve® acetate; EGEEA; Ethylene glycol monoethyl ether acetate; Glycol monoethyl ether acetate	<input checked="" type="checkbox"/>	0.5 ppm (2.7 mg/m ³) [skin]	100 ppm (540 mg/m ³) [skin]	0.182	34.4	OV							X			Warning: Odor Threshold < 1ppm.	
Ethoxyquin	91-53-2	6-ethoxy-2,2,4-trimethyl-1,2-dihydroquinoline, Ethoxyquin, Santoquin, Aries Antox; 1,2-Dihydro-2,2,4-trimethyl-6-ethoxyquinoline		Not established	Not established			OV/AM	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	This compound is used as a food additive. It is also used as an anti-degradation agent for rubber, insecticide, antioxidant, flex-cracking inhibitor, post-harvest dip to prevent scald on apples and pears, fungicide and plant growth regulator.
Ethyl acetate	141-78-6	Acetic ester, Acetic ether, Ethyl ester of acetic acid, Ethyl ethanoate	<input checked="" type="checkbox"/>	400 ppm (1400 mg/m ³)	400 ppm (1400 mg/m ³)	0.61	9	OV							X			Warning: Odor Threshold < 1ppm.	Highly flammable. Irritant.


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Ethyl acrylate	140-88-5	Ethyl acrylate (inhibited), Ethyl ester of acrylic acid, Ethyl propenoate		Ca	25 ppm (100 mg/m ³) [skin]	0.001	6.6	OV						X				Call: Odor Threshold < 0.1ppm. Warning: Carcinogen.	Highly flammable. Highly reactive. Harmful if swallowed, in contact with skin or inhaled. Known eye, skin, respiratory irritant.
Ethyl alcohol	64-17-5	Alcohol, Cologne spirit, Ethanol, EtOH, Grain alcohol		1000 ppm (1900 mg/m ³)	1000 ppm (1900 mg/m ³)	0.136	1.3	OV				X			X			Call: Filter Capacity < 3% - Low Filter Capacity. Warning: Odor Threshold < 1ppm.	Highly flammable. High exposure limit. Volatile. Can be used as a "bench" chemical, commonly used as fuel for low profile flames. Can be substituted for Isopropyl Alcohol (IPA).
Ethylamine	75-04-7	Aminoethane, Ethylamine (anhydrous), Monoethylamine		10 ppm (18 mg/m ³)	10 ppm (18 mg/m ³)	0.324	0.2	Not Recommended			X				X			Not Recommended: Filter Capacity < 1% - Short Filter Life. Warning: Odor Threshold < 1ppm.	Strong Base. Extremely flammable. Harmful if swallowed. Causes burns. Known eye, skin, respiratory irritant. Keep away from ignition sources.
Ethyl benzene	100-41-4	Ethylbenzol, Phenylethane		100 ppm (435 mg/m ³) ST 125 ppm (545 mg/m ³)	100 ppm (435 mg/m ³)	2.3	27.2	OV/HEPA											Requires both filters. Highly Flammable. Harmful if inhaled.
Ethyl bromide	74-96-4	Bromoethane, Monobromoethane		200 ppm; STEL 250 ppm	200 ppm (890 mg/m ³)	3.09	5.3	OV										Warning: Carcinogen	Harmful if swallowed or inhaled. Highly Flammable. Possible carcinogen and reproductive toxin (California).
Ethyl butyl ketone	106-35-4	Butyl ethyl ketone, 3-Heptanone		50 ppm (230 mg/m ³)	50 ppm (230 mg/m ³)	0.1-10.0	28	OV/HEPA											Requires both filters.

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Ethyl chloride	75-00-3	Chloroethane, Hydrochloric ether, Monochloroethane, Muriatic ether		Potential occupational carcinogen	1000 ppm (2600 mg/m ³)	4.07	0.9	Not Recommended			X							Not Recommended: Filter Capacity < 1% - Short Filter Life.	Extremely Flammable. Limited evidence of a carcinogenic effect. Harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.
Ethyl 2-cyanoacrylate	7085-85-0	2-Cyano-2-propenoic acid, ethyl ester 2-Cyanoacrylic acid, ethyl ester Ethyl alpha-cyanoacrylate		Not established	2 ppm (6mg/m ³)			OV		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Crazy Glue. Fumes are known eye, nose, respiratory irritant. Typically used in fingerprinting and forensic sciences. Pungent odor. CA bonds to surfaces, may not be suitable for CFE usage unless unit is pretreated (RainX).
Ethyl 3-ethoxypropionate	763-69-9	Ethyl beta-Ethylpropionate; Propionic Acid, 3-Ethoxy, Ethyl Ester, EEP		Not established	Not established			OV	X	X								Call; Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Paint component
Ethyl lactate	97-64-3	Lactic Acid Ethyl Ester; Propanoic Acid, 2-Hydroxy-, Ethyl Ester		400 ppm	400 ppm	9		OV										Warning: Unknown Filter Effectiveness	Flammable. Respiratory irritant. Risk of serious damage to eyes.
Ethylene carbonate	96-49-1	1,3-Dioxolan-2-one		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	American Industrial Hygiene Association (AIHA) Workplace Environmental Exposure Level (WEEL):
Ethylene chlorohydrin	107-07-3	2-Chloroethanol, 2-Chloroethyl alcohol, Ethylene chlorohydrin		C 1 ppm (3 mg/m ³) [skin]	5 ppm (16 mg/m ³) [skin]	0.402	14.4	OV							X			Warning: Odor Threshold < 1ppm	Toxic.
Ethylenediamine	107-15-3	1,2-Diaminoethane; 1,2-Ethanediamine; Ethylenediamine (anhydrous)		10 ppm (25 mg/m ³)	10 ppm (25 mg/m ³)	4.27	9.6	OV											Flammable. Corrosive. Harmful in contact with skin or if swallowed. Causes burns.

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Ethylene dibromide	106-93-4	1,2-Dibromoethane; Ethylene bromide; Glycol dibromide	<input checked="" type="checkbox"/>	Ca 0.045 ppm C 0.13 ppm [15-minute]	20 ppm C 30 ppm 50 ppm [5-minute maximum peak]	9.84	46.8	OV										Warning: Carcinogen	Toxic by inhalation, in contact with skin and if swallowed. Known eye, skin, respiratory irritant. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Ethylene dichloride	107-06-2	1,2-Dichloroethane; Ethylene chloride; Glycol dichloride	<input checked="" type="checkbox"/>	Ca TWA 1 ppm (4 mg/m ³) ST 2 ppm (8 mg/m ³)	50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]	11.2	8	OV										Warning: Carcinogen	Highly flammable. Known eye, skin, respiratory irritant. Toxic. Corrosive.
1,2-Ethandithiol	540-63-6	1,2-dimercaptoethane, dithioethyleneglycol, dithioglycol, ethylene dimercaptan, alpha-ethylene dimercaptan, ethylene dithioglycol, ethyl hydropersulfide		Not established	Not established	Not established		Not recommended	X	X								Call: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Capacity.	Very toxic by inhalation.

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Ethylene glycol	107-21-1	1,2-Dihydroxyethane; 1,2-Ethanediol; Glycol; Glycol alcohol; Monoethylene glycol	<input checked="" type="checkbox"/>	Ceiling 50 ppm	None	60.3 mg/m ³	36.8	OV/HEPA											Requires both filters. Harmful if swallowed. Eye irritant.
Ethylene glycol monomethyl ether	110-71-4	Dimethyl Cellosolve®, 1,2-dimethoxyethane, dimethoxyethane, alpha,beta-dimethoxyethane, 2,5-dioxahexane, glyme, monoglyme, egome, ethylene dimethyl ether, glycol dimethyl ether		100ppm	200ppm (TWA) skin	0.011		OV						X				Call: Odor Threshold < 0.1ppm. Warning: Unknown Filter Effectiveness	Toxic. Reproductive and Skeletal toxin. Used in deicing fluid, varnishes, dyes and resins.
Ethylene glycol dinitrate	628-96-6	EGDN; 1,2-Ethanediol dinitrate; Ethylene dinitrate; Ethylene nitrate; Glycol dinitrate; Nitroglycol		0.1 mg/m ³ [skin]	0.2 ppm (1 mg/m ³) [skin]	Not established		OV		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Capacity	Risk of explosion by shock, friction, fire or other ignition sources. Very Toxic by inhalation, contact with skin and if swallowed. Long-term cumulative effects.
Ethyleneimine	151-56-4	Aminoethylene, Azirane, Aziridine, Dimethyleneimine, Dimethylenimine, Ethylenimine, Ethylimine		Ca	Potential occupational Carcinogens	1.5	0.5	Not Recommended	X		X							Not Recommended: Filter Capacity < 1% - Short Filter Life. Warning: Carcinogen, Exposure Limit Not Established.	Known eye, skin, respiratory irritant. Sensitizer. Possible Mutagen.
Ethylene oxide	75-21-8	Dimethylene oxide; 1,2-Epoxy ethane; Oxirane		Ca TWA <0.1 ppm (0.18 mg/m ³) C 5 ppm (9 mg/m ³) [10-min/day]	TWA 1 ppm 5 ppm [15-minute Excursion]	851	0.03	Not Recommended			X					X		Not Recommended: Filter Capacity < 1% - Short Filter Life. Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning	WEEL 8-hour TWA: 50 ppm
Ethylene thiourea	96-45-7	1,3-Ethylene-2-thiourea; N,N-Ethylenethiourea; ETU; 2-Imidazolidine-2-thione		Ca Use encapsulated form	None	Not established		Not Recommended	X	X								Call: Warning: Carcinogen, Unknown Odor Threshold, Exposure Limit Not Established; Unknown Filter Effectiveness	WEEL 8-hour TWA: 265 mg/m ³

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Ethyl ether	60-29-7	Diethyl ether, Diethyl oxide, Ethyl oxide, Ether, Solvent ether		[TWA 400 ppm; STEL 500 ppm]	400 ppm (1200 mg/m ³)	2.29	3.7	OV				X						Warning: Filter Capacity < 3% - Low Filter Capacity.	Extremely flammable. May form explosive peroxides. Harmful by inhalation or if swallowed. Prolonged exposure can cause dry skin, cracking of skin, dizziness or drowsiness.
Ethyl formate	109-94-4	Ethyl ester of formic acid, Ethyl methanoate		100 ppm (300 mg/m ³)	100 ppm (300 mg/m ³)	18.6	3.4	OV				X						Warning: Filter Capacity < 3% - Low Filter Capacity.	Cause eye, skin, respiratory irritations.
Ethylidene norbornene	16219-75-3	ENB, 5-Ethylidenebicyclo(2.2.1) hept-2-ene, 5-Ethylidene-2-norbornene [Note: Due to its reactivity, ENB may be stabilized with tert-butyl catechol.]		C 5 ppm (25 mg/m ³)	None	0.074	28.9	OV						X				Warning: Odor Threshold < 0.1ppm	CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION. CANCER HAZARD. CAN CAUSE CANCER. Nickel Sulfate may cause infertility in males; this effect is usually reversible with removal from exposure.
Ethyl mercaptan	75-08-1	Ethanethiol, Ethyl sulfhydrate, Mercaptoethane		C 0.5 ppm (1.3 mg/m ³) [15-minute]	C 10 ppm (25 mg/m ³)	0.001	2.5	OV				X		X			X	Not Recommended: Call: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³)	Strong odor. Toxic. A minor component of petroleum. Used as an odor warning chemical to odorless gas for leak detection.

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Ethyl Methyl Carbonate	623-53-0	EthylMethylCarbonate(Emc) CARBONIC ACID ETHYL METHYL ESTER ETHYL METHYL CARBONATE carbonicacidethylester-methylester Ethoxyacetic acid, methyl ester Methyl ethyl carbonate Carbonic acid ethyl methyl Carbonic acid methyl ethyl		None	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold	
N-Ethylmorpholine	100-74-3	4-Ethylmorpholine		5 ppm (23 mg/m ³) [skin]	20 ppm (94 mg/m ³) [skin]	0.275		OV							X			Call: Odor Threshold < 1ppm; Unknown Filter Effectiveness.	
Ethyl silicate	78-10-4	Ethyl orthosilicate, Ethyl silicate (condensed), Tetraethoxysilane, Tetraethyl orthosilicate, Tetraethyl silicate, TEOS		10 ppm (85 mg/m ³)	100 ppm (850 mg/m ³)	3.6		OV										Warning: Unknown Filter Effectiveness	
Fenamiphos	22224-92-6	Ethyl 3-methyl-4-(methylthio) phenyl-(1-methylethyl) phosphoramidate; Nemacur®; Phenamiphos		0.1 mg/m ³ [skin]	None	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³)	
Fensulfothion	115-90-2	Dasanit®; O,O-Diethyl O-(p-methylsulfinyl)phenyl phosphorothioate; Terracur P®		0.1 mg/m ³	None	Not established		OV		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Fenthion	55-38-9	Baytex; Entex; O,O-Dimethyl O-3-methyl-4-methylthiophenyl phosphorothioate		0.2 mg/m ³ (skin)	None	Not established		OV		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Harmful if swallowed or inhaled. Known skin, respiratory irritant. Acute poisoning can occur.
Ferbam	14484-64-1	tris(Dimethyldithiocarbamate) iron, Ferric dimethyl dithiocarbamate		10 mg/m ³	15 mg/m ³	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Ferric chloride	7705-08-0	Iron chloride, Iron III Chloride, Iron Tri Chloride		None	1 mg/m ³	Not established		HEPA		X	X						X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	

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Ferric Sulfate	10028-22-5	Sulfuric acid, iron(3+) salt (3:2), Iron (III) Sulfate		1 mg/m³	2 mg/m³			HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³)	In a solution can be very irritating to lungs and eyes.
Ferrovandium dust	12604-58-9	Ferrovandium		1 mg/m³ ST 3 mg/m³	1 mg/m³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³)	
Fibrous glass dust		Fiberglas®; Fiberglass; Glass fibers; Glass wool		3 fibers/cm³ (fibers with diameter < or = 3.5 µm & length > or = 10 µm.) TWA 5 mg/m³ (total)	15 mg/m³ (total) TWA 5 mg/m³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Fluorine	7782-41-4	Fluorine-19		0.1 ppm (0.2 mg/m³)	0.1 ppm (0.2 mg/m³)	0.126		Not Recommended								X	X	Call: Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness	Carbon is not a suitable sorbent. Highly toxic. Highly Corrosive oxidant. Extremely reactive to organic material. Attacks eyes, respiratory tract, lungs, liver and kidneys.
Fluorotrichloromethane	75-69-4	Freon® 11; Monofluorotrichloromethane; Refrigerant 11; Trichlorofluoromethane; Trichloromonofluoromethane		C 1000 ppm (5600 mg/m³)	1000 ppm (5600 mg/m³)	16.3		Not Recommended										Call: Warning: Unknown Filter Effectiveness	High ozone depletion rating as a CFC. Banned chemical.
Fluoroxene	406-90-6	2,2,2-Trifluoroethoxyethene; 2,2,2-Trifluoroethyl vinyl ether		C 2 ppm (10.3 mg/m³) [60-minute]	None	Not established		Not Recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	
Fluorosilicic acid	16961-83-4	Dihydrogen hexafluorosilicate; hexafluorosilicic acid; fluorosilicic acid; hexafluosilicic acid; hydrofluorosilicic acid; hydrogen hexafluorosilicate; hydrosilicofluoric acid; silicofluoric acid; silicon hexafluoride dihydride		Not established	Not established	Not established		Not Recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Causes burns - Corrosive.




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Fonofos	944-22-9	Dyfonate®; Dyphonate; O-Ethyl-S-phenyl ethylphosphorothioate; Fonophos		0.1 mg/m ³ [skin]	None	Not established		Not Recommended		X						X		Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Very Toxic.
Formaldehyde	50-00-0	Methanal, Methyl aldehyde, Methylene oxide		Ca TWA 0.016 ppm C 0.1 ppm [15-minute]	0.75 ppm ST 2 ppm	0.871	10	FORM							X	X	X	Warning: Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	Toxic by inhalation, contact with skin and if swallowed. Causes Burns - Corrosive. Sensitization by skin contact
Formalin (as formaldehyde)	50-00-0	Formaldehyde solution		Ca TWA 0.016 ppm C 0.1 ppm [15-minute]	0.75 ppm ST 2 ppm	0.8	10	FORM							X	X	X	Warning: Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	Toxic by inhalation, contact with skin and if swallowed. Causes Burns - Corrosive. Sensitization by skin contact
Formamide	75-12-7	Carbamide, Methanamide		10 ppm (15 mg/m ³) [skin]	None	80	36.5	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning	Highly Corrosive on contact with skin or eyes. Toxic if ingested.
Formic acid	64-18-6	Formic acid (85-95% in aqueous solution); Hydrogen carboxylic acid; Methanoic acid		5 ppm (9 mg/m ³)	5 ppm (9 mg/m ³)	28.2	0.2	OV			X					X		Not Recommended: Filter Capacity < 1% - Short Filter Life. Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	Flammable. Causes severe burns - Highly Corrosive.
Furfural	98-01-1	Fural, 2-Furancarboxaldehyde, Furfuraldehyde, 2-Furfuraldehyde		2 ppm (skin)	5 ppm (20 mg/m ³) [skin]	0.058	32.6	OV						X			X	Call: Odor Threshold < 0.1 ppm. Warning: OEL < 1ppm (5mg/m ³)	Very Low Odor Threshold. Mildly toxic. Skin irritant. Chronic exposure can lead to skin allergy and increases susceptibility to UV rays.

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Furfuryl alcohol	98-00-0	2-Furylmethanol, 2-Hydroxymethylfuran		10 ppm (40 mg/m ³) ST 15 ppm (60 mg/m ³) [skin]	50 ppm (200 mg/m ³)	7.83	38.9	OV/HEPA											Requires both filters. Used in treating wood for greater durability, hardness and preservation.
Gasoline	8006-61-9	Motor fuel, Motor spirits, Natural gasoline, Petrol [Note: A complex mixture of volatile hydrocarbons (paraffins, cycloparaffins & aromatics).]		Ca	None	0.3	20	OV	X						X			Warning: Carcinogen; Odor Threshold < 1ppm; Exposure Limit Not Established.	Composed of varying types of hydrocarbon chemicals. Highly flammable.
Germanium tetrahydride	7782-65-2	Germane, Germanium hydride, Germanomethane, Monogermane [Note: Used chiefly for the production of high purity germanium for use in semiconductors.]		0.2 ppm (0.6 mg/m ³)	None	Not established		Not recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Highly toxic. Highly flammable.
Glutaraldehyde	111-30-8	Glutaric dialdehyde; 1,5-Pentanedial		C 0.2 ppm (0.8 mg/m ³)	None	0.038	3	OV/HEPA				X			X		X	Not Recommended: Call: Filter Capacity < 3% - Low Filter Capacity. Warning: Odor Threshold < 1ppm; OEL < 1ppm (5mg/m ³).	Requires both filters. Use both filters as both vapor and particulate phase exist sometimes. Toxic. Known eye, nose, skin, respiratory irritant (Severe). Main source of occupational asthma in health care.

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Glycerin (mist)	56-81-5	Glycerin (anhydrous); Glycerol; Glycyl alcohol; 1,2,3-Propanetriol; Trihydroxypropane	<input checked="" type="checkbox"/>	Not established REL's -a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m³ for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)	15 mg/m³ (total) TWA 5 mg/m³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Glycerol polyglycidyl ether	25038-04-4	Eponate 12 Resin		None	None	Not established		OV	X	X								Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	
Glycidol	556-52-5	2,3-Epoxy-1-propanol; Epoxypropyl alcohol; Glycide; Hydroxymethyl ethylene oxide; 2-Hydroxymethyl oxiran; 3-Hydroxypropylene oxide	<input checked="" type="checkbox"/>	25 ppm (75 mg/m³)	50 ppm (150 mg/m³)	Not established	16.9	OV		X								Warning: Unknown Odor Threshold.	Known eye, skin, respiratory irritant. CNS depressant followed by stimulation. Possible Carcinogen.
Glycolonitrile	107-16-4	Cyanomethanol, Formaldehyde cyanohydrin, Glycolic nitrile, Glyconitrile, Hydroxyacetoneitrile		C 2 ppm (5 mg/m³) [15-minute]	None	Not established		Not recommended		X								Call; Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Extremely hazardous substance - decomposes readily into formaldehyde and hydrogen cyanide.

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Grain dust (oat, wheat, barley)		Grain dust consists of 60-75% organic materials (cereal grains) & 25-40% inorganic materials (soil), and includes fertilizers, pesticides & microorganisms.]	☑	4 mg/m³	10 mg/m³	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Graphite (natural)	7782-42-5	Black lead, Mineral carbon, Plumbago, Silver graphite, Stove black [Note: Also see specific listing for Graphite (synthetic)]	☑	2.5 mg/m³ (resp)	15 mppcf	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³)	
Graphite (synthetic)	7440-44-0	Acheson graphite, Artificial graphite [Note: Also see specific listing for Graphite (natural).]	☑	Not established REL's - a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m³ for alpha-alumina, benomyl, emery, glyc-erine (mist), graphite (synth	15 mg/m³ (total) TWA 5 mg/m³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Guaiacol	90-05-1	2-Methoxyphenol; Guaicol; Methylcatechol; o-Hydroxyanisole; o-Methoxyphenol; Pyroguaiac acid	⚠	None	None	Not established		OV/HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	

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Guanidine hydrochloride	50-01-1	Aminomethanamide; guanidine monohydrochloride; guanidine chloride; iminourea hydrochloride; carbamidine hydrochloride		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Used as a drug.
Guanidine thiocyanate	593-84-0	Vitamin K ₃ , menaquinone, menaquinon-4, menatetrenone, menatetren, menatetrenona, menatetrenonum, MK-4, E3100; 2-methyl-3-[[[2'E,6'E,10'E]-3;7;11;15'-tetramethylhexadeca-2;6;10;14'-tetraen-1'-yl]-1,4-naphthalenedione		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Harmful if swallowed or inhaled. Known eye, skin, respiratory irritant. Environmental hazard.
Gypsum	13397-24-5	Calcium(II) sulfate dihydrate, Gypsum stone, Hydrated calcium sulfate, Mineral white [Note: Gypsum is the dihydrate form of calcium sulfate; Plaster of Paris is the hemihydrate form.]		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Hafnium	7440-58-6	Celtium, Elemental hafnium, Hafnium metal		0.5 mg/m ³	0.5 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Halothane	151-67-7	1-Bromo-1-chloro-2,2,2-trifluoroethane; 2-Bromo-2-chloro-1,1,1-trifluoroethane; 1,1,1-Trifluoro-2-bromo-2-chloroethane; 2,2,2-Trifluoro-1-bromo-1-chloroethane		C 2 ppm (16.2 mg/m ³) [60-minute] [*Note: REL for exposure to waste anesthetic gas.]	None	33	16.5	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning	An inhalational general anesthetic. Profetic use as a 'core medicine' per WHO "Essential Drugs List".
Helium	7440-59-7	Helium Gas, Helium compressed, Helium-4, atomic Helium, UN 1046, He, Mat 10640, Rtecs MH6520000		None	None	Not established		Not recommended	X	X								Unknown exposure limit, unknown odor threshold	Carbon filtration not effective on gas
Heptachlor	76-44-8	1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene		Ca TWA 0.5 mg/m ³ [skin]	0.5 mg/m ³ [skin]	0.3mg/m ³		OV/HEPA							X		X	Warning: Carcinogen; Odor Threshold < 1ppm; OEL < 1ppm (5mg/m ³), Unknown Filter Effectiveness	Requires both filters.

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
n-Heptane	142-82-5	Heptane, normal-Heptane	<input checked="" type="checkbox"/>	85 ppm (350 mg/m ³) C 440 ppm (1800 mg/m ³) [15-minute]	500 ppm (2000 mg/m ³)	9.77	17.4	OV											Highly flammable. Irritant - skin. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Harmful - may cause lung damage if swallowed. Vapors may cause drowsiness or dizziness.
1-Heptanethiol	1639-09-4	Heptyl mercaptan, n-Heptyl mercaptan		C 0.5 ppm (2.7 mg/m ³) [15-minute]	None	Not established	34.7	OV		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Hexachlorobutadiene	87-68-3	HCBD; Hexachloro-1,3-butadiene; 1,3-Hexachlorobutadiene; Perchlorobutadiene		Ca TWA 0.02 ppm (0.24 mg/m ³) [skin]	None	1		OV								X	X	Call; Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Toxic - absorbed through oral, inhalation and skin.
Hexachloro-cyclopentadiene	77-47-4	HCCPD; Hexachloro-1,3-cyclopentadiene; 1,2,3,4,5,5-Hexachloro-1,3-cyclopentadiene; Perchlorocyclopentadiene		0.01 ppm (0.1 mg/m ³)	None	0.03	83.1	OV						X		X	X	Call; Odor Threshold < 0.1ppm. Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	Highly toxic with unpleasant odor. Highly regulated substance - Stockholm Convention on Persistent Organic Pollutants. Formerly used as a pesticide.
Hexachloroethane	67-72-1	Carbon hexachloride, Ethane hexachloride, Perchloroethane		Ca TWA 1 ppm (10 mg/m ³) [skin]	1 ppm (10 mg/m ³) [skin]	0.15		OV/HEPA							X			Warning: Carcinogen; Odor Threshold < 1ppm; Unknown Filter Effectiveness	Requires both filters. Colorless Solid. Commonly used in smoke based munitions (smoke grenades)
Hexachloronaphthalene	1335-87-1	Halowax® 1014		0.2 mg/m ³ [skin]	0.2 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³), Unknown Filter Effectiveness.	Requires both filters.

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1-Hexadecanethiol	2917-26-2	Cetyl mercaptan, Hexadecanethiol-1, n-Hexadecanethiol, Hexadecyl mercaptan		C 0.5 ppm (5.3 mg/m ³) [15-minute]	None	Not established		OV		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³), Unknown Filter Effectiveness	
Hexafluoroacetone	684-16-2	Hexafluoro-2-propanone; 1,1,1,3,3,3-Hexafluoro-2-propanone; HFA; Perfluoroacetone		0.1 ppm (0.7 mg/m ³) [skin]	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³), Unknown Filter Effectiveness	Compressed gas. Reacts violently with water (H ₂ O). Toxic - inhalation, contact with skin or if swallowed. Corrosive - causes burns. Reproductive Toxin.
Hexamethylene diisocyanate	822-06-0	1,6-Diisocyanatohexane; HDI; Hexamethylene-1,6-diisocyanate; 1,6-Hexamethylene diisocyanate; HMDI		0.005 ppm (0.035 mg/m ³) C 0.020 ppm (0.140 mg/m ³) [10-minute]	None	0.01		OV/HEPA						X			X	Call: Odor Threshold < 0.1 ppm. Warning: OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Work below exposure limits. Very Low Odor Threshold.
Hexamethyl phosphoramide	680-31-9	Hexamethylphosphoric triamide, Hexamethylphosphorotriamide, HMPA, Tris(dimethylamino)phosphine oxide		Ca	None	Not established		Not Recommended		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³), Unknown Filter Effectiveness	Mildly toxic. Causes respiratory carcinomas.
Hexamethylene tetramine	100-97-0	methenamine (INN), Hexamine; Methenamine; Urotropine; Hexamethylenetetramine, 1,3,5,7-Tetraazatricyclo [3.3.1.1 ^{3,7}]decane		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Highly flammable. Harmful - inhalation, or if swallowed. Methenamine hippurate is mainly used for urinary tract infections. It is activated by acidic urine, so only suitable for lower UTIs.

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n-Hexane	110-54-3	Hexane, Hexyl hydride, normal-Hexane	☑	50 ppm (180 mg/m ³)	500 ppm (1800 mg/m ³)	21.9	11.2	OV											Highly flammable. Irritant - skin. Harmful - inhalation (Severe), lung damage if swallowed. Reproductive Toxin. Vapors may cause dizziness/drowsiness. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Hexane isomers (excluding n-Hexane)		Diethylmethylethane; Diisopropyl; 2,2-Dimethylbutane; 2,3-Dimethylbutane; Isohexane; 2-Methylpentane; 3-Methylpentane [Note: Also see specific listing for n-Hexane.]	☑	100 ppm (350 mg/m ³) C 510 ppm (1800 mg/m ³) [15-minute]	None	65-248	9.6	OV											Highly flammable. Irritant - skin. Harmful - inhalation (Severe), lung damage if swallowed. Reproductive Toxin. Vapors may cause dizziness/drowsiness. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
n-Hexanethiol	111-31-9	1-Hexanethiol, Hexyl mercaptan, n-Hexyl mercaptan, n-Hexylthiol	☎	C 0.5 ppm (2.7 mg/m ³) [15-minute]	None	Not established		OV		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³), Unknown Filter Effectiveness	
2-Hexanone	591-78-6	Butyl methyl ketone, MBK, Methyl butyl ketone, Methyl n-butyl ketone	☑	1 ppm (4 mg/m ³)	100 ppm (410 mg/m ³)	0.166	21.6	OV							X			Warning: Odor Threshold < 1ppm.	Irritant - skin, eyes, respiratory. Harmful - inhalation, contact by skin, ingestion.
Hexone	108-10-1	Isobutyl methyl ketone, Methyl isobutyl ketone, 4-Methyl 2-pentanone, MIBK	☑	50 ppm (205 mg/m ³) ST 75 ppm (300 mg/m ³)	100 ppm (410 mg/m ³)	0.121	19.4	OV							X			Warning: Odor Threshold < 1ppm.	Highly flammable. Harmful - inhalation. Irritant - eyes, respiratory. Prolonged exposure may cause dryness/cracking of skin.
sec-Hexyl acetate	108-84-9	1,3-Dimethylbutyl acetate; Methylisoamyl acetate	☑	50 ppm (300 mg/m ³)	50 ppm (300 mg/m ³)	0.219	14.6	OV/HEPA							X			Warning: Odor Threshold < 1ppm.	Requires both filters.

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Hexylene glycol	107-41-5	2,4-Dihydroxy-2-methylpentane; 2-Methyl-2,4-pentanediol; 4-Methyl-2,4-pentanediol; 2-Methylpentane-2,4-diol		C 25 ppm (125 mg/m ³)	None	49.9	46.3	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning	Found in fire retardant foams.
Hydrazine	302-01-2	Diamine, Hydrazine (anhydrous), Hydrazine base		Ca C 0.03 ppm (0.04 mg/m ³) [2-hour]	1 ppm (1.3 mg/m ³) [skin]	3.6		Not Recommended								X	X	Call: Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Flammable. Toxic - inhalation, contact with skin, swallowed. Corrosive - causes burns. Sensitization - skin. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Hydrogen	1333-74-0	Hydrogen, Normal Hydrogen		None	None	Not established		Not Recommended	X	X								Warning: Unknown exposure limit, unknown odor threshold	Carbon filtration not effective on gas, Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.
Hydrogen bromide	10035-10-6	Anhydrous hydrogen bromide; Aqueous hydrogen bromide (i.e., Hydrobromic acid)		3 ppm (10 mg/m ³)	3 ppm (10 mg/m ³)	2	5	AG											Corrosive - causes burns. Irritant - respiratory.
Hydrogen chloride	7647-01-0	Anhydrous hydrogen chloride; Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid)		C 5 ppm (7 mg/m ³)	C 5 ppm (7 mg/m ³)	0.77	17	AG							X			Warning: Odor Threshold < 1ppm	Toxic - inhalation. Corrosive - causes burns.
Hydrogen cyanide	74-90-8	Formonitrile, Hydrocyanic acid, Prussic acid		ST 4.7 ppm (5 mg/m ³) [skin]	10 ppm (11 mg/m ³) [skin]	0.603		Not Recommended							X			Warning: Odor Threshold < 1ppm; Unknown Filter Effectiveness.	Extremely flammable. Very Toxic - inhalation. Environmental Hazard - very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Hydrogen fluoride	7664-39-3	Anhydrous hydrogen fluoride; Aqueous hydrogen fluoride (i.e., Hydrofluoric acid); HF-A		3 ppm (2.5 mg/m ³) C 6 ppm (5 mg/m ³) [15-minute]	3 ppm	0.042	3	Not recommended					X					Not Recommended: Warning: Odor Threshold < 0.1ppm	Attacks glass and is not recommended. Very Low Odor Threshold.

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Hydrogenated terphenyls	61788-32-7	Hydrogenated diphenylbenzenes, Hydrogenated phenylbiphenyls, Hydrogenated triphenyls [Note: Complex mixture of terphenyl isomers that are partially hydrogenated]		0.5 ppm (5 mg/m ³)	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
Hydrogen peroxide	7722-84-1	High-strength hydrogen peroxide, Hydrogen dioxide, Hydrogen peroxide (aqueous), Hydroperoxide, Peroxide		1 ppm (1.4 mg/m ³)	1 ppm (1.4 mg/m ³)	Not established		Not Recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Contact with combustible material may cause spontaneous combustion. Harmful - inhalation, ingestion. Corrosive - causes burns (severe).
Hydrogen selenide	7/4/79	Selenium dihydride, Selenium hydride		0.05 ppm (0.2 mg/m ³)	0.05 ppm (0.2 mg/m ³)	0.3		Not Recommended							X	X	X	Call: Warning: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Highly toxic. Highly flammable. Environmental Toxin - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Hydrogen sulfide	6/3/79	Hydrosulfuric acid, Sewer gas, Sulfuretted hydrogen		C 10 ppm (15 mg/m ³) [10-minute]	C 20 ppm 50 ppm [10-minute maximum peak]	0.0005	6.5	AG						X				Warning: Odor Threshold < 0.1ppm.	Very Low Odor Threshold. Very flammable. Very Toxic - inhalation. Environmental Hazard - very toxic to aquatic animals.
Hydroquinone	123-31-9	p-Benzenediol; 1,4-Benzenediol; Dihydroxybenzene; 1,4-Dihydroxybenzene; Quinol		C 2 mg/m ³ [15-minute]	2 mg/m ³	Not established		OV/HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. White granular solid. Harmful - ingestion, eyes (severe). Sensitization - skin. Environmental Toxin. Irreversible effects.

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2-Hydroxypropyl acrylate	999-61-1	HPA, beta-Hydroxypropyl acrylate, Propylene glycol monoacrylate		0.5 ppm (3 mg/m ³) [skin]	None	Not established		OV		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness	
Imidazole	288-32-4	1,3-diaza-2,4-cyclopentadiene, glyoxaline		None	None	Not established		AM/HEPA		X								Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	Harmful - inhalation, ingestion, eyes (severe). Corrosive - burns. Common biochemical building block (amino acids). A component of the toxin causing urticaria - allergic hives.
Indene	95-13-6	Indonaphthene		10 ppm (45 mg/m ³)	None	0.009	39.9	OV						X				Warning: Odor Threshold < 0.1ppm	Flammable. Colorless liquid. Used for making resins. Very Low Odor Threshold.
Indium	7440-74-6	Indium metal		0.1 mg/m ³	None	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	An elemental, soft, malleable metal.
Iodine	7553-56-2	Iodine crystals, Molecular iodine		C 0.1 ppm (1 mg/m ³)	C 0.1 ppm (1 mg/m ³)	0.9		RAD/HEPA							X	X	X	Call: Warning: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. RAD Filter removes 25% organic vapor.
Iodoform	75-47-8	Triiodomethane		0.6 ppm (10 mg/m ³)	None	0.000-1.1		RAD/HEPA						X			X	Call: Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. RAD Filter removes 25% organic vapor. Harmful - inhalation, skin, ingestion. Irritant - skin, eyes, respiratory. Very Low Odor Threshold.
Iron oxide dust and fume (as Fe)	1309-37-1	Ferric oxide, Iron(III) oxide		5 mg/m ³	10 mg/m ³	Not established		HEPA		X								Warning: Unknown Odor Threshold.	

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Iron pentacarbonyl (as Fe)	13463-40-6	Iron carbonyl, Pentacarbonyl iron		0.1 ppm (0.23 mg/m ³) ST 0.2 ppm (0.45 mg/m ³)	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Straw-colored liquid with a pungent odor. Highly flammable. Highly Toxic - inhalation.
Iron salts (soluble, as Fe)		FeSO ₄ ; Ferrous sulfate, Iron(II) sulfate		1 mg/m ³	None	Not established		HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Iron(II) sulfate heptahydrate	7782-63-0	ferrous sulphate, ferrous sulfate, green vitriol, iron vitriol, mol-iron, iron sulfate, iron sulphate, iron protosulfate, haemofort, ironate, irosul, mol-iron, presfersul		1 mg/m ³ TWA (as Fe)	None	Not established		HEPA	X	X							X	Warning: Unknown exposure limit, unknown odor threshold, OEL < 1ppm (5mg/m ³)	
Isoamyl acetate	123-92-2	Banana oil, Isopentyl acetate, 3-Methyl-1-butanol acetate, 3-Methylbutyl ester of acetic acid, 3-Methylbutyl ethanoate		100 ppm (525 mg/m ³)	100 ppm (525 mg/m ³)	0.004	29.7	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold. A colorless liquid. Strong fruit-like (banana) odor.
Isoamyl alcohol (primary)	123-51-3	Fermentation amyl alcohol, Fusel oil, Isobutyl carbinol, Isopentyl alcohol, 3-Methyl-1-butanol, Primary isoamyl alcohol		100 ppm (360 mg/m ³) ST 125 ppm (450 mg/m ³)	100 ppm (360 mg/m ³)	0.045	23.2	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold. A colorless liquid. Strong fruit-like (banana) odor. Found in banana oil and flavoring.
Isoamyl alcohol (secondary)	6032-29-7	3-Methyl-2-butanol, Secondary isoamyl alcohol		100 ppm (360 mg/m ³) ST 125 ppm (450 mg/m ³)	100 ppm (360 mg/m ³)	0.045	19.4	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold. A colorless liquid. Strong fruit-like (banana) odor. Found in banana oil and flavoring.
Isobutane	75-28-5	2-Methylpropane [Note: Also see specific listing for n-Butane.]		800 ppm (1900 mg/m ³)	None	Not established		OV		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Highly flammable. (See n-butane). A colorless gas known as R-600a.
Isobutyl acetate	110-19-0	Isobutyl ester of acetic acid, 2-Methylpropyl acetate, 2-Methylpropyl ester of acetic acid, beta-Methylpropyl ethanoate		150 ppm (700 mg/m ³)	150 ppm (700 mg/m ³)	0.479	22.8	OV							X			Warning: Odor Threshold < 1ppm	

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isobutyl alcohol	78-83-1	IBA, Isobutanol, Isopropylcarbinol, 2-Methyl-1-propanol	<input checked="" type="checkbox"/>	50 ppm (150 mg/m ³)	100 ppm (300 mg/m ³)	0.832	13.9	OV							X			Warning: Odor Threshold < 1ppm	A colorless liquid/ important industrial chemical. Flammable. Irritant - skin, respiratory. Vapors cause dizziness/ drowsiness/ Severe potential for eye damage.
isobutyl methacrylate	97-86-9	Methacrylic acid, isobutyl ester; isobutyl «alpha»-methacrylate; isobutyl methacrylate; isobutyl 2-methyl-2-propenoate; 2-Methylpropyl methacrylate; isobutyl «alpha»-methacrylate; isobutylester kyseliny methakrylove; isobutyl methacrylate, inhibited; UN 2283; isobutyl 2-methylacrylate	<input type="checkbox"/>	None	None	Non established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	Causes burns by all exposure routes. Harmful if swallowed, inhaled, or absorbed through the skin
isobutyronitrile	78-82-0	Isopropyl cyanide, 2-Methylpropanenitrile, 2-Methylpropionitrile	<input type="checkbox"/>	8 ppm (22 mg/m ³)	None	Not established	8.3	OV/HEPA		X								Warning: Unknown Odor Threshold.	Requires both filters.
isoflurane	26675-46-7	Ether, 1-chloro-2,2,2-trifluoroethyl difluoromethyl, 2-Chloro-2-(difluoromethoxy)-1,1,1-trifluoroethane	<input checked="" type="checkbox"/>	C 2 ppm (16.2 mg/m ³) [60-minute] [*Note: REL for exposure to waste anesthetic gas.]	Not established	33	15	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning	Mild ether-like odor. Common general inhalational anesthetic (veterinary). Declining use in humans. Mildly toxic - risks and effects increase in combination with nitrous oxide and benzodiazepines such as midazolam.
Isooctane	540-84-1	2,2,4-Trimethylpentane, Octane, TMP, isobutyltrimethylmethane, isobutyltrimethylpentane	<input type="checkbox"/>	(Alkanes) 350 mg/m ³	None	Not established	10	OV		X								Warning: Unknown odor threshold	The substance may be toxic to central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.




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Isooctyl alcohol	26952-21-6	Isooctanol, Oxooctyl alcohol [Note: A mixture of closely related isomeric, primary alcohols with branched chains such as 2-Ethylhexanol]	<input checked="" type="checkbox"/>	50 ppm (270 mg/m ³) [skin]	None	0.138		OV							X			Warning: Odor Threshold < 1ppm; Unknown Filter Effectiveness.	Use below Exposure limit.
Isophorone	78-59-1	Isoacetophorone; 3,5,5-Trimethyl-2-cyclohexenone; 3,5,5-Trimethyl-2-cyclo-hexen-1-one	<input checked="" type="checkbox"/>	4 ppm (23 mg/m ³)	25 ppm (140 mg/m ³)	0.631	40.5	OV							X			Warning: Odor Threshold < 1ppm	Colorless to yellowish liquid. Naturally found in cranberries. Used as a solvent in industrial solutions (paints, lacquers, inks, etc...).
Isophorone diisocyanate	4098-71-9	3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl-isocyanate; Isophorone diamine diisocyanate		0.005 ppm (0.045 mg/m ³) ST 0.02 ppm (0.180 mg/m ³) [skin]	None	Not established		OV/HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Very low Exposure Limit.
2-Isopropoxyethanol	109-59-1	Ethylene glycol isopropyl ether; beta-Hydroxyethyl isopropyl ether; Isopropyl Cellosolve®; Isopropyl glycol		Not established REL's-after limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m ³ for alpha-alumina, benomyl, emery, glyc-erine (mist), graphite (synth)	None	0.738		OV	X						X			Warning: Odor Threshold < 1ppm; Exposure Limit Not Established; Unknown Filter Effectiveness.	

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Isopropyl acetate	108-21-4	Isopropyl ester of acetic acid, 1-Methylethyl ester of acetic acid, 2-Propyl acetate	<input checked="" type="checkbox"/>	Not established REL's-after limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m ³ for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)	None	0.05-4.1	11.6	OV	X					X				Warning: Odor Threshold < 0.1ppm; Exposure Limit Not Established.	Very Low Odor Threshold. Attacks many plastics. Flammable. Harmful - ingestion, inhalation. Fruity odor.
Isopropyl alcohol	67-63-0	Dimethyl carbinol, IPA, Isopropanol, 2-Propanol, sec-Propyl alcohol, Rubbing alcohol	<input checked="" type="checkbox"/>	400 ppm (980 mg/m ³) ST 500 ppm (1225 mg/m ³)	400 ppm (980 mg/m ³)	22	5	OV											Flammable. Irritant - eyes. Vapors may cause dizziness/drowsiness. Good replacement for Methyl and ethyl alcohols.





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Isopropylamine	75-31-0	2-Aminopropane, Monoisopropylamine, 2-Propylamine, sec-Propylamine		Not established REL's - after limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m ³ for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)	5 ppm (12 mg/m ³)	0.6	2.7	OV				X			X			Call: Filter Capacity < 3% - Low Filter Capacity. Warning: Odor Threshold < 1ppm.	Extremely Flammable. Irritant - eyes, skin, respiratory.
N-Isopropylaniline	768-52-5	N-IPA, Isopropylaniline, N-(1-Methylethyl)-benzamine, N-Phenylisopropylamine		2 ppm (10 mg/m ³) [skin]	None	Not established		OV		X								Call: Unknown Odor Threshold; Unknown Filter Effectiveness.	
Isopropyl ether	108-20-3	Diisopropyl ether, Diisopropyl oxide, 2-Isopropoxy propane		500 ppm (2100 mg/m ³)	500 ppm (2100 mg/m ³)	0.055	13.7	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold. Forms explosive peroxides in storage, test regularly. Highly flammable. Prolonged exposure may cause dryness/cracking of skin. Vapors may cause drowsiness/dizziness.
Isopropyl glycidyl ether	4016-14-2	1,2-Epoxy-3-isopropoxypropane; IGE; Isopropoxymethyl oxirane		C 50 ppm (240 mg/m ³) [15-minute]	50 ppm (240 mg/m ³)	297	13.8	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	Use below exposure limit.

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Kaolin	1332-58-7	China clay, Clay, Hydrated aluminum silicate, Hydrite, Porcelain clay	<input checked="" type="checkbox"/>	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	A clay mineral. Industrial uses include ceramics, medicine, coated paper, toothpaste additive, incandescent light bulbs and cosmetics.
Kepon	143-50-0	Chlordecone; Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta(cd)-pentalen-2-one; Decachlorooctahydro-kepon-2-one; Decachlorotetrahydro-4,7-methanoindeneone		Ca TWA 0.001 mg/m ³	None	Not established		OV/HEPA		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Used as insecticide in ant/roach baits and a fungicide. Dry powder easily absorbed through skin, respiratory. Harmful.
Kerosene	8008-20-6	Fuel Oil No. 1, Range oil	<input checked="" type="checkbox"/>	100 mg/m ³	None	1		OV/HEPA										Warning: Unknown Filter Effectiveness	Requires both filters as an aerosol. Flammable - used as fuel.
Ketene	463-51-4	Carbomethene, Ethenone, Keto-ethylene		0.5 ppm (0.9 mg/m ³) ST 1.5 ppm (3 mg/m ³)	0.5 ppm (0.9 mg/m ³)	Not established		Not Recommended		X							X	Call: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Colorless gas. Use under exposure limit. Irritant - eyes, respiratory. Toxic.
Lactic acid	50-21-5	1-Hydroxyethanecarboxylic acid; 2-hydroxypropanoic acid, Ethylidenelactic acid		None	None	Not established		OV	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Common acid, vital to various biochemical processes. No known hazards. Used as a "green" detergent and anti-bacterial agent.
Lauric Acid	143-07-7	dodecanoic acid, dodecoic acid, hydrofol acid 1295, hydrofol acid 1255		None	None	Not established		Acid	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	Fruity odor.
Lead	7439-92-1	Lead metal, Plumbum		TWA (8-hour) 0.050 mg/m ³	TWA 0.050 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	A soft, malleable metal. Poison - ingestion/inhalation.

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Lead dioxide	1309-60-0	PbO ₂ , Lead peroxide; lead superoxide; lead oxide brown; lead (IV) oxide; lead brown		0.1 mg/m ³ (TWA)	0.05 mg/m ³ (TWA)			HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Dark brown crystalline powder. Reproductive/fetal toxin. Harmful - inhalation, ingestion. Environmental Toxin.
Lead(II) acetate	301-04-2	Lead diacetate, Lead Acetate, Trihydrate; lead (II) acetate, trihydrate; acetic acid lead (II) salt, trihydrate; lead diacetate, trihydrate; Salt of Saturn		0.1 mg/m ³ (TWA)	0.05 mg/m ³ (TWA)			HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Possible Carcinogen. Can be lung irritant. White crystalline compound. Toxic.
Lead(II) oxide	1317-36-8	PbO, Lead monoxide, Litharge, Massicot, Plumbous oxide		0.1 mg/m ³ (TWA)	0.05 mg/m ³ (TNOA)			HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Possible Carcinogen. Red or yellow crystals. Reproductive/fetal toxin. Toxic - inhalation, ingestion. Environmental Toxin (Severe).
Lead(II,III,IV) oxide, Pb ₃ O ₄	1314-41-6	Pb ₃ O ₄ , Lead oxide; lead tetraoxide; minimum red lead; mineral red; Saturn red		0.1 mg/m ³ (TWA)	0.05 mg/m ³ (TWA)			HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Possible Carcinogen. Red or yellow crystals. Reproductive/fetal toxin. Toxic - inhalation, ingestion. Environmental Toxin (Severe).
Lead(IV) acetate	546-67-8	Lead tetraacetate, Lead (IV) acetate; acetic acid, lead (4+) salt		0.1 mg/m ³ (TWA)	0.05 mg/m ³ (TWA)			HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Possible Carcinogen. Toxic -fatal if inhaled, ingested or absorbed through the skin. Irritant - eyes, skin, respiratory. Reproductive toxin.
Lead nitrate	10099-74-8	Lead (II) nitrate (1:1); lead dinitrate; nitric acid, lead (2+)		0.1 mg/m ³ (TWA)	0.05 mg/m ³ (TWA)	Not established		HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Possible Carcinogen. Toxic - (fatal if...) inhalation, ingestion, absorbed through skin. Irritant - eyes, skin, respiratory. Reproductive/Fetal toxin. Environmental Toxin. Limited applications of lead(II) nitrate are under constant scrutiny.

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Limestone	1317-65-3	Calcium carbonate, Natural calcium carbonate	<input checked="" type="checkbox"/>	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Lindane	58-89-9	BHC; HCH; gamma-Hexachlorocyclohexane; gamma isomer of 1,2,3,4,5,6-Hexachlorocyclohexane		0.5 mg/m ³ [skin]	0.5 mg/m ³ [skin]	12		OV/HEPA								X	X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters. Use below Exposure Limit. Possible human carcinogen. Used in pharmaceutical - has side effects,
Lithium hexafluorophosphate	21324-40-3	Lithium PF ₅		None	None	Not established		Not Recommended	X	X								Not Recommended: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	Mixture with water may form HF (hydrogen fluoride) gas.
Lithium hydride	7580-67-8	Lithium monohydride		0.025 mg/m ³	0.025 mg/m ³			HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	A colorless or gray solid. LiH reacts explosively with water to give hydrogen gas and LiOH (LiOH is corrosive).
L.P.G.	68476-85-7	Bottled gas, Compressed petroleum gas, Liquefied hydrocarbon gas, Liquefied petroleum gas, LPG [Note: A fuel mixture of propane, propylene, butanes & butylenes.]		1000 ppm (1800 mg/m ³)	1000 ppm (1800 mg/m ³)	5000-20000		Not Recommended								X		Call: Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness	A mixture of hydrocarbon gases for use as fuel - Primarily propane and/or butane. Flammable. See Butane, Propane.
L-Lysine monohydrochloride	657-27-2	2,6-Diaminohexanoic acid hydrochloride; L-Lysine Hydrochloride; Lyamine; Lysine hydrochloride; Lysine monohydrochloride; Darvyl		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	Vapour-air mixtures explosive in certain proportions. Incompatible with rubber, various plastics. The vapor, being heavier than air, may roll over surfaces and collect in low points.

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Magnesite	546-93-0	Carbonate magnesium, Hydromagnesite, Magnesium carbonate, Magnesium(II) carbonate [Note: Magnesite is a naturally-occurring form of magnesium carbonate.]	<input checked="" type="checkbox"/>	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	Colorless or faintly hued crystal/mineral. Industrial uses include slag (steelmaking furnaces), synthetic rubber catalyst and flooring.
Magnesium oxide fume	1309-48-4	Magnesia fume	<input checked="" type="checkbox"/>	Not established REL's - after limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m ³ for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)	15 mg/m ³	Not established		HEPA		X								Warning: Unknown Odor Threshold	White powder. Used in cement, as a desiccant, medical (as an antacid and other), and in industrial applications. Irritant - skin, eyes, respiratory.
Magnesium sulfate	7487-88-9	Magnesium sulfate (1:1); sulfuric acid magnesium salt (1:1); Epsom Salts; Magnesium sulfate, anhydrous	<input checked="" type="checkbox"/>	None	None	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	White crystalline powder. Used in cement, as a desiccant, medical (to treat various diseases/illnesses).
Malathion	121-75-5	S-[1,2-bis(ethoxycarbonyl)ethyl]O,O-dimethylphosphorodithioate; Diethyl (dimethoxyphosphinothioylthio) succinate		10 mg/m ³ [skin]	15 mg/m ³ [skin]	13.5 mg/m ³		OV/HEPA										Warning: Unknown Filter Effectiveness	Requires both filters. Low risk potential.

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Maleic anhydride	108-31-6	cis-Butenedioic anhydride; 2,5-Furandione; Maleic acid anhydride; Toxic anhydride		1 mg/m ³ (0.25 ppm)	1 mg/m ³ (0.25 ppm)	0.318		OV/HEPA							X	X	X	Call: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters. White crystalline powder. Corrosive - causes burns. Harmful. Sensitization - inhalation, skin contact.
Malonaldehyde	542-78-9	Malonic aldehyde; Malonodialdehyde; Propanedial; 1,3-Propanedial [Note: Pure Malonaldehyde is unstable and may be used as its sodium salt.]		Ca	None	Not established		OV/HEPA	X	X								Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established.	Requires both filters. Reactive. Possible Mutagen.
Malononitrile	109-77-3	Cyanoacetone, Dicyanomethane, Malonic dinitrile		3 ppm (8 mg/m ³)	None	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold, Unknown Filter Effectiveness	Requires both filters. Toxic. Environmental Hazard.
Manganese compounds and fume (as Mn)	7439-96-5	Manganese metal; Colloidal manganese, Manganese-55		1 mg/m ³ ST 3 mg/m ³ [*Note: Also see specific listings for Manganese cyclopentadienyl tricarbonyl, Methyl cyclopentadienyl manganese tricarbonyl, and Manganese tetroxide.]	C 5 mg/m ³ [*Note: Also see specific listings for Manganese cyclopentadienyl tricarbonyl and Methyl cyclopentadienyl manganese tricarbonyl.]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Toxic - inhalation, ingestion (effects CNS).
Manganese cyclopentadienyl tricarbonyl (as Mn)	12079-65-1	Cyclopentadienyl manganese tricarbonyl, Cyclopentadienyl manganese, MCT		0.1 mg/m ³ [skin]	C 5 mg/m ³	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Requires both filters. Toxic - inhalation, ingestion (effects CNS).

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Manganese tetroxide (as Mn)	1317-35-7	Manganese oxide, Manganomanganic oxide, Trimanganese tetroxide, Trimanganese tetroxide	<input checked="" type="checkbox"/>	Not established REL's - a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m ³ for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)	C 5 mg/m ³	Not established		HEPA		X								Warning: Unknown Odor Threshold	
Marble	1317-65-3	Calcium carbonate, Natural calcium carbonate [Note: Marble is a metamorphic form of calcium carbonate.]	<input checked="" type="checkbox"/>	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold	
Menthol	2216-51-5	Hexahydrothymol;(1alpha,2beta,5alpha)-5-Methyl-2-(1-methylethyl)cyclohexanol		Not established	Not established	Not established		OV/HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Irritant - Skin, respiratory. Severe risk of damage to eyes. Flammable.
2-Mercaptoethanol	60-24-2	beta-Mercaptoethanol; 2-Hydroxyethyl Mercaptan; 2-Hydroxyethanethiol; Thioglycol, 2ME, Thioethyleneglycol, 2-Thioethanol, 2-Hydroxy-1-ethanethiol, 1-Hydroxy-2-mercaptoethane		Not established	Not established	0.12-0.64		Not recommended	X						X			Call: Warning: Odor Threshold < 1ppm; Exposure Limit Not Established, Unknown Filter Effectiveness.	Highly Toxic - May be fatal if absorbed through the skin. Irritant - respiratory, skin.

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Mercuric nitrate	7783-34-8	Mercuric nitrate monohydrate		Not established	Not established	Not established		Not Recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Toxic (fatal) - ingestion, inhaled, skin contact. Irritant - skin, eyes, respiratory. Sensitization (allergenic) - skin. Strong Oxidizer - flammable. Environmental Hazard/Toxin.
Mercury (I) nitrate dihydrate	10415-75-5	Mercurous Nitrate, Dihydrate; Nitric acid, mercury (1+) salt, dihydrate; mercury protonitrate; Mercury (I) Nitrate, Dihydrate		0.05 mg/m ³	Mercury and mercury compounds: 0.1 mg/m ³ (TWA), skin	Not available		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Toxic (fatal) - ingestion, inhaled, skin contact. Irritant - skin, eyes, respiratory. Sensitization (allergenic) - skin. Strong Oxidizer - flammable. Environmental Hazard/Toxin.
Mercury (organo) alkyl compounds (as Hg)		Synonyms vary depending upon the specific (organo) alkyl mercury compound.		0.01 mg/m ³ ST 0.03 mg/m ³ [skin]	0.01 mg/m ³ C 0.04 mg/m ³	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Toxic (fatal) - ingestion, inhaled, skin contact. Irritant - skin, eyes, respiratory. Sensitization (allergenic) - skin. Strong Oxidizer - flammable. Environmental Hazard/Toxin.
Mercury compounds [except (organo) alkyls] (as Hg)	7439-97-6	Mercury metal: Colloidal mercury, Metallic mercury, Quicksilver		Hg Vapor: TWA 0.05 mg/m ³ [skin] Other: C 0.1 mg/m ³ [skin]	0.1 mg/m ³	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Toxic (fatal) - ingestion, inhaled, skin contact. Irritant - skin, eyes, respiratory. Sensitization (allergenic) - skin. Strong Oxidizer - flammable. Environmental Hazard/Toxin.

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Mesityl oxide	141-79-7	Isobutenyl methyl ketone, Isopropylideneacetone, Methyl isobutenyl ketone, 4-Methyl-3-penten-2-one		10 ppm (40 mg/m ³)	25 ppm (100 mg/m ³)	0.056	22.8	OV						X				Warning: Odor Threshold < 0.1ppm.	Very Low Odor Threshold. Colorless, volatile liquid with strong peppermint-like odor. Flammable. Toxic - inhalation, ingestion, skin contact.
Methacrylic acid	79-41-4	Methacrylic acid (glacial), Methacrylic acid (inhibited), alpha-Methacrylic acid, 2-Methylacrylic acid, 2-Methylpropenoic acid		20 ppm (70 mg/m ³) [skin]	None	0.2	29.4	OV							X			Warning: Odor Threshold < 1ppm	Viscous liquid with an acrid unpleasant odor. Used in the manufacture of polymers (i.e. Plexiglas). Toxic. Flammable. Reactive.
Methanesulfonic acid ethyl ester	62-50-0	Ethyl Methanesulfonate; Ethyl ester of methanesulfonic acid; Ethyl ester of methylsulfonic acid; Ethyl ester of methylsulphonic acid; Ethyl methanesulphonate; Methylsulfonic acid, ethyl ester		Ca	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, warning: carcinogen, unknown filter effectiveness	
Methomyl	16752-77-5	Lannate®; Methyl N-((methylamino) carbonyl)oxy ethanimidothioate; S-Methyl-N(methylcarbamoyloxy) thioacetimidate		2.5 mg/m ³	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Insecticide, restricted use since 1966. Highly Toxic.
Methoxychlor	72-43-5	p,p'-Dimethoxydiphenyltrichloroethane; DMDT; Methoxy-DDT; 2,2-bis(p-Methoxyphenyl)-1,1,1-trichloroethane; 1,1,1-Trichloro-2,2-bis-(p-methoxyphenyl)ethane		Ca	15 mg/m ³	4.7 mg/kg in water		OV/HEPA							X			Warning: Carcinogen; Odor Threshold < 1ppm, Unknown Filter Effectiveness.	Requires both filters. Pesticide (banned in U.S. in 2003, EU in 2002). Highly Toxic. Reproductive toxin.
Methotrexate	59-05-2	Amethopterin, Amethopterin, Antifolin, Methotrexat, Methylaminopterin, Methylaminopterium, Ledertrexate; 4-Amino-4-deoxy-N(sup 10)-methylpteroylglutamate; 4-Amino-4-deoxy-N(sup 10)-methylpteroylglutamic acid; 4-Amino-N(sup 10)-methylpteroylglutamic acid		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	


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Methoxyflurane	76-38-0	2,2-Dichloro-1,1-difluoroethyl methyl ether; 2,2-Dichloro-1,1-difluoro-1-methoxyethane; Methoflurane; Methoxyfluorane; Penthrane		C 2 ppm (13.5 mg/m ³) [60-minute] [*Note: REL for exposure to waste anesthetic gas.]	None	Not established		Not Recommended		X								Call: Warning: Unknown Odor Threshold, Unknown Filter Effectiveness	Anesthetic Gas, used in acute cases. Toxic - renal organ failure.
4-Methoxyphenol	150-76-5	Hydroquinone monomethyl ether, p-Hydroxyanisole, Mequinol, p-Methoxyphenol, Monomethyl ether hydroquinone		5 mg/m ³	None	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness	Requires both filters. In combination with tretinoin, used to treat liver spots. Alone and in higher doses is used as a topical drug for depigmentation.
1-methoxy-2-propanol acetate	108-65-6	PGMEA; 1-Methoxy-2-acetoxypropane; 1-Methoxy-2-propyl acetate; Propylene glycol monomethylacetate; Propyleneglycol monomethyl ether acetate; Dowanol(R) PMA glycol ether acetate		Not established.	Not established.			OV	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	Paint ingredient. Could have a fairly strong odor.
Methyl acetate	79-20-9	Methyl ester of acetic acid, Methyl ethanoate		200 ppm (610 mg/m ³) ST 250 ppm (760 mg/m ³)	200 ppm (610 mg/m ³)	6.17	3.5	OV					X					Warning: Filter Capacity < 5%.	Flammable. Liquid with glue-like solvent odor. VOC exempt.
Methyl acetylene	74-99-7	Allylene, Propine, Propyne, 1-Propyne		1000 ppm (1650 mg/m ³)	1000 ppm (1650 mg/m ³)	Not established	0.1	Not Recommended		X	X							Not Recommended: Filter Capacity < 1% - Short Filter Life. Warning: Unknown Odor Threshold.	Mildly toxic - High exposure limit. Commonly used in gas welding and rocket fuels - more stable than traditional fuels.
Methyl acetylene-propadiene mixture	59355-75-8	MAPP gas, Methyl acetylene-allene mixture, Methyl acetylene-propadiene mixture (stabilized), Propadiene-methyl acetylene, Propyne-allene mixture, Propyne-propadiene mixture		1000 ppm (1800 mg/m ³) ST 1250 ppm (2250 mg/m ³)	1000 ppm (1800 mg/m ³)	100	0.1	Not Recommended			X							Not Recommended: Filter Capacity < 1% - Short Filter Life.	Mildly toxic - High exposure limit. Commonly used in gas welding and rocket fuels - more stable than traditional fuels.

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Methyl acrylate	96-33-3	Methoxycarbonylethylene, Methyl ester of acrylic acid, Methyl propenoate		10 ppm (35 mg/m³) [skin]	10 ppm (35 mg/m³) [skin]	0.263	5.8	OV							X			Warning: Odor Threshold < 1ppm.	Sensitization - contact allergen (present in nail lacquer). Highly flammable. Mildly Toxic.
Methylacrylonitrile	126-98-7	2-Cyanopropene-1, 2-Cyano-1-propene, Isoprene cyanide, Isopropenyl nitrile, Methacrylonitrile, alpha-Methylacrylonitrile, 2-Methylpropenenitrile		1 ppm (3 mg/m³) [skin]	None	6.8	6.7	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	Use below exposure limit.
Methylal	109-87-5	Dimethoxymethane, Formal, Formaldehyde dimethylacetal, Methoxymethyl methyl ether, Methylene dimethyl ether		1000 ppm (3100 mg/m³)	1000 ppm (3100 mg/m³)	Not established	3.6	OV		X			X					Warning: Filter Capacity < 5%; Unknown Odor Threshold.	Use below exposure limit. Flammable. Irritant - eyes, respiratory, skin.
Methyl alcohol	67-56-1	Carbinol, Columbian spirits, Methanol, Pyroigneous spirit, Wood alcohol, Wood naphtha, Wood spirit		200 ppm (260 mg/m³) ST 250 ppm (325 mg/m³) [skin]	200 ppm (260 mg/m³)	141	0.1	Not Recommended			X							Not Recommended: Filter Capacity < 1% - Short Filter Life.	Not recommended due to short service life. A colorless liquid with sweet odor (similar to ethyl alcohol). High exposure limit allows controlled usage as "bench" chemical. For carbon adsorption applications, may be replaceable with isopropyl (or other) alcohols. Highly flammable. Toxic - inhalation, skin contact, ingestion - danger of serious irreversible effects through inhalation, skin contact, ingestion.

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Methylamine	74-89-5	Aminomethane, Methylamine (anhydrous), Methylamine (aqueous), Monomethylamine		10 ppm (12 mg/m ³)	10 ppm (12 mg/m ³)	0.019		AM						X				Warning: Odor Threshold < 0.1ppm; Unknown Filter Effectiveness	Very Low Odor Threshold. Gas typically suspended in methanol, ethanol, THF and water. Very Flammable. Very Toxic. Irritant - Inhalation, ingestion. Controlled substance by US DEA as precursor to methamphetamine.
Methyl (n-amy) ketone	110-43-0	Amyl methyl ketone, n-Amyl methyl ketone, 2-Heptanone		100 ppm (465 mg/m ³)	100 ppm (465 mg/m ³)	0.897 ppb	28	OV							X			Warning: Odor Threshold < 1ppm.	Fruity odor at very low level.
Methyl bromide	74-83-9	Bromomethane, Monobromomethane		Ca	C 20 ppm (80 mg/m ³) [skin]	80 mg/m ³	0.3	Not Recommended			X							Not Recommended: Filter Capacity < 1% - Short Filter Life. Warning: Carcinogen.	Not recommended due to short service life. Toxic - inhalation, skin contact, ingestion. Corrosive - burns. Irritant - eyes, skin, respiratory. Harmful (Severe) - inhalation (prolonged). Ozone depleting. Environmental Hazard.
2-methyl butane	78-78-4	isopentane, 1,1,2-trimethylethane		None	None	10ppm	12.2	OV	X	X								Warning: Unknown exposure limit	Reproductive system/toxin/female, Development toxin [POSSIBLE]. The substance may be toxic to thyroid. Repeated or prolonged exposure to the substance can produce target organs damage.
Methyl Cellosolve®	109-86-4	EGME, Ethylene glycol monomethyl ether, Glycol monomethyl ether, 2-Methoxyethanol		0.1 ppm (0.3 mg/m ³) [skin]	25 ppm (80 mg/m ³) [skin]		13.1	OV		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	(NIOSH) OEL < 1ppm (5mg/m ³) - OSHA > 1ppm. Use below OEL. Toxic - reproductive, marrow. Used in dyes, varnishes and resins.

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Methyl Cellosolve® acetate	110-49-6	EGMEA, Ethylene glycol monomethyl ether acetate, Glycol monomethyl ether acetate, 2-Methoxyethyl acetate		0.1 ppm (0.5 mg/m ³) [skin]	25 ppm (120 mg/m ³) [skin]	1.07	13	OV								X	X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	(NIOSH) OEL < 1ppm (5mg/m ³) - OSHA > 1ppm. Use below OEL. Toxic - reproductive, marrow. Used in dyes, varnishes and resins.
Methyl chloride	74-87-3	Chloromethane, Monochloromethane		Ca	100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3 hours)	10.2	0.1	Not Recommended			X							Not Recommended: Filter Capacity < 1% - Short Filter Life. Warning: Carcinogen.	Not recommended due to short service life. Forms HCl with water.
Methyl chloroform	71-55-6	Chloroethene; 1,1,1-Trichloroethane; 1,1,1-Trichloroethane (stabilized)		C 350 ppm (1900 mg/m ³) [15-minute]	350 ppm (1900 mg/m ³)	22.4	17.3	OV											Irritant to the upper respiratory tract. Causes severe irritation and swelling to eyes. May form explosive perchlorates. Contributes to Ozone depletion.
Methyl-2-cyanoacrylate	137-05-3	Mcrylate, Methyl cyanoacrylate, Methyl alpha-cyanoacrylate, Methyl ester of 2-cyanoacrylic acid		2 ppm (8 mg/m ³) ST 4 ppm (16 mg/m ³)	None	2.16		OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness.	Krazy Glue. Fumes are known eye, nose, respiratory irritant. Typically used in fingerprinting and forensic sciences. Pungent odor. CA bonds to surfaces, may not be suitable for CFE usage unless unit is pretreated (RainX). Similar to ethyl-2-cyanoacrylate but is less common.
Methyl cyclopentadienyl manganese tricarbonyl (as Mn)	12108-13-3	Cl-2, Combustion Improver-2, Manganese tricarbonyl-methylcyclopentadienyl, 2-Methylcyclopentadienyl manganese tricarbonyl, MMT		0.2 mg/m ³ [skin]	C 5 mg/m ³	Not established		OV/HEPA		X							X	Warning: Unknown Exposure Limit; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Flammable. Toxic - ingestion, inhalation, skin contact.

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Methylcyclohexane	108-87-2	Cyclohexylmethane, Hexahydrotoluene		400 ppm (1600 mg/m³)	500 ppm (2000 mg/m³)	500-630	17.9	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	Very Flammable.
Methylcyclohexanol	25639-42-3	Hexahydroresol, Hexahydromethylphenol		50 ppm (235 mg/m³)	100 ppm (470 mg/m³)	490	14.5	OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	Use below Exposure limit.
o-Methylcyclohexanone	583-60-8	2-Methylcyclohexanone		50 ppm (230 mg/m³) ST 75 ppm (345 mg/m³) [skin]	100 ppm (460 mg/m³) [skin]	0.5	15	OV							X			Warning: Odor Threshold < 1ppm.	
Methyl demeton	8022-00-2	Demeton methyl; O,O-Dimethyl 2-ethylmercaptoethyl thiophosphate; Metasystox®; Methyl mercaptophos; Methyl systox		0.5 mg/m³ [skin]	None	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness.	Toxic - skin contact, ingestion. Environmental Hazard.
Methylene bisphenyl isocyanate	101-68-8	4,4'-Diphenylmethane diisocyanate; MDI; Methylene bis(4-phenyl isocyanate); Methylene di-p-phenylene ester of isocyanic acid		0.05 mg/m³ (0.005 ppm) C 0.2 mg/m³ (0.020 ppm) [10-minute]	C 0.2 mg/m³ (0.02 ppm)	0.384		OV/HEPA							X		X	Warning: Odor Threshold < 1ppm. OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness.	Requires both filters. Harmful - inhalation. Irritant - eyes, skin, respiratory. Sensitization - inhalation, skin contact (allergenic). Low vapor pressure reduces handling hazards, but not benign.
Methylene Blue Trihydrate	7220-79-3	3,7-bis(dimethylamino) phenazathionium chloride trihydrate, C.I. basic blue 9 trihydrate, methylthionine trihydrate, tetramethylene blue trihydrate		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold, possible carcinogen	Fatty, floral odor reminiscent of wine
Methylene chloride	75-09-2	Dichloromethane, Methylene dichloride		Ca	25 ppm ST 125 ppm	0.912	2.5	OV				X			X			Call: Filter Capacity < 3% - Low Filter Capacity. Warning: Carcinogen; Odor Threshold < 1ppm.	A colorless liquid. High volatility leads to acute inhalation hazards. Toxic - metabolized to carbon monoxide.


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4,4'-Methylenebis(2-chloroaniline)	101-14-4	DACPM; 3,3'-Dichloro-4,4'-diaminodiphenylmethane; MBOCA; 4,4'-Methylenebis(o-chloro aniline); 4,4'-Methylenebis(2-chlorobenzamine); MOCA		Ca TWA 0.003 mg/m ³ [skin]	None			Not Recommended		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Extremely low exposure limit.
Methylene bis(4-cyclohexylisocyanate)	5124-30-1	Dicyclohexylmethane 4,4'-diisocyanate; DMDI; bis(4-Isocyanatocyclohexyl) methane; HMDI; Hydrogenated MDI; Reduced MDI; Saturated MDI		C 0.01 ppm (0.11 mg/m ³)	None	Not established		Not Recommended		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Extremely low exposure limit.
4,4'-Methylenedianiline	101-77-9	4,4'-Diaminodiphenylmethane; para, para'-Diamino-diphenylmethane; Dianilino-methane; 4,4'-Diphenylmethanediamine; MDA		Ca	0.010 ppm ST 0.100 ppm	Not established		Not Recommended		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Extremely low exposure limit.
Methyl ethyl ketone peroxide	1338-23-4	2-Butanone peroxide, Ethyl methyl ketone peroxide, MEKP, MEK peroxide, Methyl ethyl ketone hydroperoxide		C 0.2 ppm (1.5 mg/m ³)	None	Not established		Not Recommended		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Extremely low exposure limit.
Methyl formate	107-31-3	Methyl ester of formic acid, Methyl methanoate		100 ppm (250 mg/m ³) ST 150 ppm (375 mg/m ³)	100 ppm (250 mg/m ³)	93.3	0.4	OV			X							Not Recommended: Filter Capacity < 1% - Short Filter Life	Extremely short filter life. Highly flammable. Harmful.
5-Methyl-3-heptanone	541-85-5	Amyl ethyl ketone, Ethyl amyl ketone, 3-Methyl-5-heptanone		25 ppm (130 mg/m ³)	25 ppm (130 mg/m ³)	6	8.3	OV											
Methyl hydrazine	60-34-4	MMH, Monomethylhydrazine		Ca C 0.04 ppm (0.08 mg/m ³) [2-hr]	C 0.2 ppm (0.35 mg/m ³) [skin]	1.71		Not Recommended								X	X	Call: Warning: Carcinogen; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Volatile. Rocket Fuel. Flammable. Toxic. Environmental Hazard.

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Methyl iodide	74-88-4	Iodomethane, Monoiodomethane		Ca TWA 2 ppm (10 mg/m ³) [skin]	5 ppm (28 mg/m ³) [skin]	Not established		RAD		X								Warning: Carcinogen; Unknown Odor Threshold, Unknown Filter Effectiveness.	Naturally found in Rice fields. Volatile. Toxic - Inhalation, ingestion. Irritant - skin, respiratory.
Methyl isoamyl ketone	110-12-3	Isoamyl methyl ketone, Isopentyl methyl ketone, 2-Methyl-5-hexanone, 5-Methyl-2-hexanone, MIAK		50 ppm (240 mg/m ³)	100 ppm (475 mg/m ³)	0.042	27	OV						X				Warning: Odor Threshold < 0.1ppm.	Very Low Odor Threshold. Flammable. Harmful - inhalation. Irritant - eyes, respiratory.
Methyl isobutyl carbinol	108-11-2	Isobutylmethylcarbinol, Methyl amyl alcohol, 4-Methyl-2-pentanol, MIBC		25 ppm (100 mg/m ³) ST 40 ppm (165 mg/m ³) [skin]	25 ppm (100 mg/m ³) [skin]	1.1	24	OV											
Methyl isobutyl ketone	108-10-1	2-Pentanone, 4-methyl-; Hexone; MIBK; Isopropylacetone		Not established	Not established	0.121		OV	X						X			Call: Warning: Odor Threshold < 1ppm; Exposure Limit Not Established; Unknown Filter Effectiveness.	Not Recommended - May form explosive peroxides in air. Highly flammable. Harmful - inhalation. Irritant - eyes, respiratory.
Methyl isocyanate	624-83-9	Methyl ester of isocyanic acid, MIC		0.02 ppm (0.05 mg/m ³) [skin]	0.02 ppm (0.05 mg/m ³) [skin]	2.1	0.5	Not Recommended			X					X	X	Not Recommended: Filter Capacity < 1% - Short Filter Life. Warning: Odor Threshold > Exposure Limit - Poor Odor warning; OEL < 1ppm (5mg/m ³).	Highly toxic. Not recommended due to short service life. Highly flammable. Reacts dangerously with water.
Methyl isopropyl ketone	563-80-4	2-Acetyl propane, Isopropyl methyl ketone, 3-Methyl-2-butanone, 3-Methyl butan-2-one, MIPK		200 ppm (705 mg/m ³)	None	4.47	12.1	OV											Highly flammable.

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Methyl mercaptan	74-93-1	Mercaptomethane, Methanethiol, Methyl sulfhydrate		C 0.5 ppm (1 mg/m ³) [15-minute]	C 10 ppm (20 mg/m ³)	0.001	0.3	Not Recommended			X			X			X	Not Recommended: Filter Capacity < 1% - Short Filter Life. Call: Odor Threshold < 0.1ppm. Warning: Exposure Limit < 1ppm (5mg/m ³).	Not recommended due to short service life. Very Low Odor Threshold. Low exposure limit. By-product of metabolizing asparagus - responsible for distinct smell of urine after asparagus consumption.
Methyl methacrylate	80-62-6	Methacrylate monomer, Methyl ester of methacrylic acid, Methyl-2-methyl-2-propenoate		100 ppm (410 mg/m ³)	100 ppm (410 mg/m ³)	0.085	20.6	OV						X				Warning: Odor Threshold < 0.1ppm	Very Low Odor Threshold. Flammable. Used in production of acrylics.
Methyl parathion	298-00-0	Azophos®; O,O-Dimethyl-O-p-nitrophenylphosphorothioate; Parathion methyl		0.2 mg/m ³ [skin]	None	0.012		OV/HEPA						X			X	Warning: Odor Threshold < 0.1ppm, OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Very Low Odor Threshold. Low Exposure Limit. Used as an insecticide/acaricide, has been banned in many countries. Toxic - skin contact. Toxic (Severe) - inhalation, ingestion. Environmental Hazard.
N-Methyl-2-Pyrrolidone	872-50-4	1-Methyl-2-pyrrolidone, NMP		Not established	Not established			OV/AM	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	Requires both filters. Used to purify petroleum products and in multiple industrial settings. Flammable.
Methyl silicate	681-84-5	Methyl orthosilicate, Tetramethoxysilane, Tetramethyl ester of silicic acid, Tetramethyl silicate		1 ppm (6 mg/m ³)	None	Not established		OV		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Toxic - can cause blindness if hydrolysis occurs in the eyes. Use below exposure limit.
alpha-Methyl styrene	98-83-9	AMS, Isopropenyl benzene, 1-Methyl-1-phenylethylene, 2-Phenyl propylene		50 ppm (240 mg/m ³) ST 100 ppm (485 mg/m ³)	C 100 ppm (480 mg/m ³)	0.003	14	OV/HEPA						X				Warning: Odor Threshold < 0.1ppm.	Requires both filters. Very Low Odor Threshold. Very Toxic.

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Metribuzin	21087-64-9	4-Amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5(4H)-one		5 mg/m ³	None	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Requires both filters.
Mica (containing less than 1% quartz)	12001-26-2	Biotite, Lepidolite, Margarite, Muscovite, Phlogopite, Roscoelite, Zimwaldite		3 mg/m ³ (resp)	20 mppcf	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Sheet silicate mineral.
Mineral wool fiber		Man-made mineral fibers, Rock wool, Slag wool, Synthetic vitreous fibers [Note: Produced by blowing steam or air through molten rock (rock wool) or various furnace slags that are by-products of metal smelting or refining processes (slag wool).]		3 fibers/cm ³ (fibers with diameter < or = 3.5 µm & length > or = 10 µm.) TWA 5 mg/m ³ (total)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Recommend use of particulate ventilator (PPE).
Molybdenum	7439-98-7	Molybdenum metal		None	15 mg/m ³	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Toxic - ingestion, inhalation.
Molybdenum (soluble compounds, as Mo)		Synonyms vary depending upon the specific soluble molybdenum compound		None	5 mg/m ³	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Toxic - ingestion, inhalation.
Monocrotophos	6923-22-4	3-Hydroxy-N-methylcrotonamide dimethylphosphate, Monocron		0.25 mg/m ³	None			Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Emits toxic fumes. Acutely toxic to birds and humans. Banned in the U.S. and other countries. Environmental Hazard.
Monomethyl aniline	100-61-8	MA, (Methylamino) benzene, N-Methyl aniline, Methylphenylamine, N-Phenylmethylamine		0.5 ppm (2 mg/m ³) [skin]	2 ppm (9 mg/m ³) [skin]	1.74		OV								X	X	Call: Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Decomposes on heating to produce toxic fumes (aniline & nitrogen oxides). Reacts with acids, oxidants and plastics. Toxic - inhalation, skin contact, ingestion.

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Morpholine	110-91-8	Diethylene imidoxide; Diethylene oximide; Tetrahydro-1,4-oxazine; Tetrahydro-p-oxazine		20 ppm (70 mg/m ³) ST 30 ppm (105 mg/m ³) [skin]	20 ppm (70 mg/m ³) [skin]	0.036	19	OV						X				Warning: Odor Threshold < 0.1ppm.	Very Low Odor Threshold. Flammable. Corrosive - burns. Toxic - inhalation, ingestion, skin contact.
MTBE	1634-04-4	Propane, 2-methoxy-2-methyl-methyl-1,1-dimethylethylether		None	None	0.053		Not recommended.	X					X				Not Recommended: Odor Threshold < 0.1ppm	
Naphtha (coal tar)	8030-30-6	Crude solvent coal tar naphtha, High solvent naphtha, Naphtha		100 ppm (400 mg/m ³)	100 ppm (400 mg/m ³)	0.89		OV							X			Warning: Odor Threshold < 1ppm; Unknown Filter Effectiveness	May be carcinogenic. Consult your specific Naphtha vendor's MSDS. Various risks associated with different mixtures.
Naphthalene	91-20-3	Naphthalin, Tar camphor, White tar		10 ppm (50 mg/m ³) ST 15 ppm (75 mg/m ³)	10 ppm (50 mg/m ³)	0.015		OV/HEPA						X				Warning: Odor Threshold < 0.1ppm; Unknown Filter Effectiveness.	Requires both filters. Can exist as both particulate and vapor. Flammable. Sensitizer. Dust can form explosive mixtures with air. Strong odor of coal tar. Possible Carcinogen. Toxic - ingestion. Environmental Hazard. Very Low Odor Threshold.
Naphthalene diisocyanate	3173-72-6	1,5-Diisocyanatonaphthalene; 1,5-Naphthalene diisocyanate; 1,5-naphthalene ester of isocyanic acid; NDI		0.040 mg/m ³ (0.005 ppm) C 0.170 mg/m ³ (0.020 ppm) [10-minute]	None	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
p-Naphtholbenzein	145-50-6	alpha-naphtholbenzein, 4-[(4-hydroxy-1-naphthalenyl) phenyl(methylene)-1(4H) naphthalenone, 4,4'-(alpha-hydroxybenzylidene)di-1-naphthol		None	None	Not established		HEPA	X	X								Warning: Low exposure limit, unknown odor threshold	Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.

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alpha-Naphthylamine	134-32-7	1-Aminonaphthalene, 1-Naphthylamine		Ca	Identified as potential occupational carcinogen	Not established		Not Recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	
beta-Naphthylamine	91-59-8	2-Aminonaphthalene, 2-Naphthylamine		Ca	Identified as potential occupational carcinogen	Not established		Not Recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	
Niax® Catalyst ESN	62765-93-9	None [Note: A mixture of 95% dimethylaminopropionitrile & 5% bis(2-dimethylamino) ethyl ether.]		However, the limited studies to date indicate that these substances have chemical reactivity and mutagenicity similar to acetaldehyde and malonaldehyde. Therefore, NIOSH recommends that careful consideration should be given to reducing exposures to these nine related aldehydes.	However, the limited studies to date indicate that these substances have chemical reactivity and mutagenicity similar to acetaldehyde and malonaldehyde. Therefore, NIOSH recommends that careful consideration should be given to reducing exposures to these nine related aldehydes.	Not established		Not Recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	

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Nickel carbonyl	13463-39-3	Nickel tetracarbonyl, Tetracarbonyl nickel		Ca TWA 0.001 ppm (0.007 mg/m ³)	TWA 0.001 ppm (0.007 mg/m ³)	0.5-3.0		Not Recommended							X	X	X	Call; Warning: Carcinogen; Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Nickel chloride	7791-20-0	Nickel (II) Chloride Hexahydrate		None	0.1 Ni mg/m ³			HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	The substance is toxic to mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.
Nickel metal and other compounds (as Ni)	7440-02-0	Nickel metal: Elemental nickel, Nickel catalyst.		Ca TWA 0.015 mg/m ³ [*Note: The REL does not apply to Nickel carbonyl.]	TWA 1 mg/m ³ [*Note: The PEL does not apply to Nickel carbonyl.]	Not established		HEPA		X							X	Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Nickel sulphate	7786-81-4	Nickel (II) sulfate hexahydrate (1:1:6); sulfuric acid, nickel (2+) salt, hexahydrate		0.015 mg/m ³	1 mg/m ³	Not established		Not recommended		X							X	Not Recommended: Ca, Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Nicotine	54-11-5	3-(1-Methyl-2-pyrrolidyl) pyridine		0.5 mg/m ³ [skin]	0.5 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Ninhydrin	485-47-2	Ninhydrin monohydrate, 1,2,3-triketohydrindene monohydrate, 1,2,3-indantrione monohydrate, 2,2-dihydroxy-1,3-indandione, 1H-indene-1,2,3-trione monohydrate, triketohydrindene hydrate		Not established	Not established	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	

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Nitric acid	7697-37-2	Aqua fortis, Engravers acid, Hydrogen nitrate, Red fuming nitric acid (RFNA), White fuming nitric acid		2 ppm (5 mg/m ³) ST 4 ppm (10 mg/m ³)	2 ppm (5 mg/m ³)	0.267	12.5	AG							X			Warning: Odor Threshold < 1ppm.	
Nitric oxide	10102-43-9	Mononitrogen monoxide, Nitrogen monoxide		25 ppm (30 mg/m ³)	25 ppm (30 mg/m ³)	0.3		Not Recommended						X				Call: Odor Threshold < 0.1ppm; Unknown Filter Effectiveness.	
p-Nitroaniline	100-01-6	para-Aminonitrobenzene, 4-Nitroaniline, 4-Nitrobenzenamine, p-Nitrophenylamine, PNA		3 mg/m ³ [skin]	6 mg/m ³ (1 ppm) [skin]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Nitrobenzene	98-95-3	Essence of mirbane, Nitrobenzol, Oil of mirbane		1 ppm (5 mg/m ³) [skin]	1 ppm (5 mg/m ³) [skin]	0.044	51.3	OV						X				Warning: Odor Threshold < 0.1ppm.	
4-Nitrobiphenyl	92-93-3	p-Nitrobiphenyl, p-Nitrodiphenyl, 4-Nitrodiphenyl, p-Phenylnitrobenzene, 4-Phenylnitrobenzene, PNB		Ca	Identified as Potential occupational Carcinogens	Not established		Not Recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	
p-Nitrochlorobenzene	100-00-5	p-Chloronitrobenzene, 4-Chloronitrobenzene, 1-Chloro-4-nitrobenzene, 4-Nitrochlorobenzene, PCNB, PNCB		Ca	1 mg/m ³ [skin]	Not established		OV/HEPA									X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Nitroethane	79-24-3	Nitroetan		100 ppm (310 mg/m ³)	100 ppm (310 mg/m ³)	2.11	8	OV											
Nitrogen	7727-37-9			None	None	Not established				X								Warning: Unknown exposure limit, unknown odor threshold, Carbon filtration not an effective sorbent	Carbon filtration not effective on gas, Toxic, may be fatal if inhaled

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Nitrogen dioxide	10102-44-0	Dinitrogen tetroxide (N ₂ O ₄), Nitrogen peroxide		ST 1 ppm (1.8 mg/m³)	C 5 ppm (9 mg/m³)	0.186		Not Recommended							X			Call: Warning: Odor Threshold < 1ppm; Unknown Filter Effectiveness.	
Nitrogen trifluoride	7783-54-2	Nitrogen fluoride, Trifluorammine, Trifluorammonia		10 ppm (29 mg/m³)	10 ppm (29 mg/m³)	1475 mg/m³		Not Recommended								X		Call: Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness.	
Nitroglycerine	55-63-0	Glyceryl trinitrate; NG; 1,2,3-Propanetriol trinitrate; Trinitroglycerine		ST 0.1 mg/m³ [skin]	C 0.2 ppm (2 mg/m³) [skin]	Not established		Not Recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness.	
Nitromethane	75-52-5	Nitrocarbol		None	100 ppm (250 mg/m³)	3.5	2.1	OV				X						Call: Filter Capacity < 3% - Low Filter Capacity.	
2-Nitronaphthalene	581-89-5	beta-Nitronaphthalene		Ca	None			Not Recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	
1-Nitropropane	108-03-2	Nitropropane, 1-NP	<input checked="" type="checkbox"/>	25 ppm (90 mg/m³)	25 ppm (90 mg/m³)	7.09	16.7	OV											
2-Nitropropane	79-46-9	Dimethylnitromethane, iso-Nitropropane, 2-NP	<input checked="" type="checkbox"/>	Ca	25 ppm (90 mg/m³)	4.85	14.3	OV										Warning: Carcinogen.	
N-Nitrosodimethylamine	62-75-9	Dimethylnitrosamine; N,N-Dimethylnitrosamine; DMNA; N-Methyl-N-nitrosomethanamine; NDMA; N-Nitroso-N,N-dimethylamine		Ca	Identified as potential occupational carcinogen	Not established		Not Recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	
m-Nitrotoluene	99-08-1	m-Methylnitrobenzene, 3-Methylnitrobenzene, meta-Nitrotoluene, 3-Nitrotoluene	<input checked="" type="checkbox"/>	2 ppm (11 mg/m³) [skin]	5 ppm (30 mg/m³) [skin]	1.74	51.6	OV/HEPA											

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o-Nitrotoluene	88-72-2	o-Methylnitrobenzene, 2-Methylnitrobenzene, ortho-Nitrotoluene, 2-Nitrotoluene		2 ppm (11 mg/m ³) [skin]	5 ppm (30 mg/m ³) [skin]	0.05mg/l	52.1	OV/HEPA						X				Warning: Odor Threshold < 0.1ppm.	
p-Nitrotoluene	99-99-0	p-Methylnitrobenzene, 4-Methylnitrobenzene, para-Nitrotoluene, 4-Nitrotoluene		2 ppm (11 mg/m ³) [skin]	5 ppm (30 mg/m ³) [skin]	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	
Nitrous oxide	10024-97-2	Dinitrogen monoxide, Hyponitrous acid anhydride, Laughing gas		25 ppm (46 mg/m ³)	None	Not established		Not Recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	
Nonane	111-84-2	n-Nonane, Nonyl hydride		200 ppm (1050 mg/m ³)	None	1.26	23	OV											
1-Nonanethiol	1455-21-6	1-Mercaptononane, n-Nonyl mercaptan, Nonylthiol		C 0.5 ppm (3.3 mg/m ³) [15-minute]	None	Not established	40.1	OV		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Octachloronaphthalene	2234-13-1	Halowax® 1051; 1,2,3,4,5,6,7,8-Octachloronaphthalene; Perchloronaphthalene		0.1 mg/m ³ ST 0.3 mg/m ³ [skin]	0.1 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Contact Us: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
1-Octadecanethiol	2885-00-9	1-Mercaptooctadecane, Octadecyl mercaptan, Stearyl mercaptan		C 0.5 ppm (5.9 mg/m ³) [15-minute]	None	Not established		OV/HEPA		X							X	Contact Us: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Octane	111-65-9	n-Octane, normal-Octane		75 ppm (350 mg/m ³) C 385 ppm (1800 mg/m ³) [15-minute]	500 ppm (2350 mg/m ³)	5.75	17.5	OV											

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Octanol	111-87-5	Alcohol C-8, Capryl alcohol, Heptyl carbinol, n-Octanol, 1-Hydroxyoctane, N-Octyl alcohol		None	None	0.006		OV	X						X			Warning: Unknown exposure limit, very low odor threshold, unknown filter effectiveness	
1-Octanethiol	111-88-6	1-Mercaptooctane, n-Octyl mercaptan, Octylthiol, 1-Octylthiol		C 0.5 ppm (3.0 mg/m ³) [15-minute]	None		37.9	OV		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Oil mist (mineral)	8012-95-1	Heavy mineral oil mist, Paraffin oil mist, White mineral oil mist		5 mg/m ³ ST 10 mg/m ³	5 mg/m ³	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	
Osmium tetroxide	20816-12-0	Osmic acid anhydride, Osmium oxide		0.002 mg/m ³ (0.0002 ppm) ST 0.006 mg/m ³ (0.0006 ppm)	0.002 mg/m ³	0.002		Not Recommended						X		X	X	Not Recommended: Call: Odor Threshold < 0.1ppm. Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	
Oxalic acid	144-62-7	Ethanedioic acid, Oxalic acid (aqueous), Oxalic acid dihydrate		1 mg/m ³ ST 2 mg/m ³	1 mg/m ³	Odorless		OV/HEPA								X	X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Oxygen difluoride	7783-41-7	Difluorine monoxide, Fluorine monoxide, Oxygen fluoride		C 0.05 ppm (0.1 mg/m ³)	0.05 ppm (0.1 mg/m ³)	0.098		Not Recommended						X		X	X	Not Recommended: Call: Odor Threshold < 0.1ppm. Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³)	

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Ozone	10028-15-6	Triatomic oxygen		C 0.1 ppm (0.2 mg/m ³)	0.1 ppm (0.2 mg/m ³)	0.051		Not Recommended						X			X	Not Recommended: Call: Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³)	
Paraffin wax fume	8002-74-2	Paraffin fume, Paraffin scale fume		2 mg/m ³	None	Not established		OV/HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
paraformaldehyde	30525-89-4	Aldacide, Flo-Mor, Formagene, Paraform; Polyoxymethylene; Triformol; Trioxymethylene, metaformaldehyde		None	0.5ppm	Not established		FORM/HEPA		X								Warning: Low exposure limit, unknown odor threshold	
Paraquat (Paraquat dichloride)	1910-42-5	1,1'-Dimethyl-4,4'-bipyridinium dichloride; N,N'-Dimethyl-4,4'-bipyridinium dichloride; Paraquat chloride; Paraquat dichloride [Note: Paraquat is a cation (C ₁₂ H ₁₄ N ₂ ⁺⁺ ; 1,1-Dimethyl-4,4-bipyridinium ion); the commercial product is the dichloride salt of paraquat.]		0.1 mg/m ³ (resp) [skin]	0.5 mg/m ³ (resp) [skin]	Not established		OV/HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
Parathion	56-38-2	O,O-Diethyl-O(p-nitrophenyl) phosphorothioate; Diethyl parathion; Ethyl parathion; Parathion-ethyl		0.05 mg/m ³ [skin]	0.1 mg/m ³ [skin]	0.04		OV/HEPA						X			X	Call: Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Pentaborane	19624-22-7	Pentaboron nonahydride		0.005 ppm (0.01 mg/m ³) ST 0.015 ppm (0.03 mg/m ³)	0.005 ppm (0.01 mg/m ³)	0.97		Not Recommended							X	X	X	Call: Warning: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	

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Pentachloroethane	76-01-7	Ethane pentachloride, Pentalin		Handle with care in the workplace because of their structural similarity to the four chloroethanes shown to be carcinogenic in animals	None	Not established	58.2	OV	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Pentachloronaphthalene	1321-64-8	Halowax® 1013; 1,2,3,4,5-Pentachloronaphthalene		0.5 mg/m³ [skin]	0.5 mg/m³ [skin]	Not established		OV/HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness.	
Pentachlorophenol	87-86-5	PCP; Penta; 2,3,4,5,6-Pentachlorophenol		0.5 mg/m³ [skin]	0.5 mg/m³ [skin]	Not established		OV/HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness.	
Pentaerythritol	115-77-5	2,2-bis(Hydroxymethyl)-1,3-propanediol; Methane tetramethylol; Monopentaerythritol; PE; Tetrahydroxymethylolmethane; Tetramethyl-olmethane		10 mg/m³ (total) TWA 5 mg/m³ (resp)	15 mg/m³ (total) TWA 5 mg/m³ (resp)	Odorless		HEPA							X			Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	
n-Pentane	109-66-0	Pentane, normal-Pentane		120 ppm (350 mg/m³) C 610 ppm (1800 mg/m³) [15-minute]	1000 ppm (2950 mg/m³)	31.6	5.7	OV											
1-Pentanethiol	110-66-7	Amyl hydrosulfide, Amyl mercaptan, Amyl sulfhydrate, Pentyl mercaptan		C 0.5 ppm (2.1 mg/m³) [15-minute]	None	Not established	23.7	OV		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³).	

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1-pentanol	71-41-0	n-Amyl alcohol, n-Butyl carbinol, n-Pentyl alcohol, Amyl alcohol, n-Butyl alcohol, Pentanol, n-Pentanol		None	None	10 ppm	12.2	OV	X									Warning: Unknown exposure limit	Reproductive system/toxin/female, Development toxin [POSSIBLE]. The substance may be toxic to thyroid. Repeated or prolonged exposure to the substance can produce target organs damage.
2-Pentanone	107-87-9	Ethyl acetone, Methyl propyl ketone, MPK		150 ppm (530 mg/m ³)	200 ppm (700 mg/m ³)	1.55	13.3	OV											
Perchloric acid	7601-90-3	perchloric acid solution; dioxonium perchlorate solution; hydronium perchlorate		Not established	Not established	Not established		Not Recommended	X	X								Not Recommended: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	
Perchloromethyl mercaptan	594-42-3	PCM, PMM, Trichloromethane sulfonyl chloride, Trichloromethyl sulfur chloride		0.1 ppm (0.8 mg/m ³)	0.1 ppm (0.8 mg/m ³)	0.097		Not Recommended						X			X	Not Recommended: Call: Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Perchloryl fluoride	7616-94-6	Chlorine fluoride oxide, Chlorine oxyfluoride, Trioxychlorofluoride		3 ppm (14 mg/m ³) ST 6 ppm (28 mg/m ³)	3 ppm (13.5 mg/m ³)	11		Not Recommended								X		Call: Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness.	
Perlite	93763-70-3	Expanded perlite [Note: An amorphous material consisting of fused sodium potassium aluminum silicate.]		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Filter Effectiveness.	

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m³)	Warnings	Notes
Peroxyacetic Acid	79-21-0	PAA, Peroxyacetic acid, Acetic peroxide, Acetyl hydroperoxide, Proxitane, Ethaneperoxoic acid		Not established	Not established			Not Recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	
Petroleum distillates (naphtha)	5/8/98	Aliphatic petroleum naphtha, Petroleum naphtha, Rubber solvent		350 mg/m³ C 1800 mg/m³ [15-minute]	500 ppm (2000 mg/m³)	Not established		OV		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	
Phenol	108-95-2	Carbolic acid, Hydroxybenzene, Monohydroxybenzene, Phenyl alcohol, Phenyl hydroxide		5 ppm (19 mg/m³) C 15.6 ppm (60 mg/m³) [15-minute] [skin]	5 ppm (19 mg/m³) [skin]	0.011	10.4	OV/HEPA						X				Warning: Odor Threshold < 0.1ppm.	
Phenothiazine	92-84-2	Dibenzothiazine, Fenothiazine, Thiodiphenylamine		5 mg/m³ [skin]	None	Not established		Not Recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	
p-Phenylene diamine	106-50-3	4-Aminoaniline; 1,4-Benzenediamine; p-Diaminobenzene; 1,4-Diaminobenzene; 1,4-Phenylene diamine		0.1 mg/m³ [skin]	0.1 mg/m³ [skin]	Not established		OV/HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness	
Phenyl ether (vapor)	101-84-8	Diphenyl ether, Diphenyl oxide, Phenoxy benzene, Phenyl oxide		1 ppm (7 mg/m³)	1 ppm (7 mg/m³)	0.03	17.8	OV/HEPA						X				Warning: Odor Threshold < 0.1ppm.	
Phenyl ether-biphenyl mixture (vapor)	8004-13-5	Diphenyl oxide-diphenyl mixture; Dowtherm® A		1 ppm (7 mg/m³)	1 ppm (7 mg/m³)	0.001-0.01		OV/HEPA						X				Call: Odor Threshold < 0.1ppm. Warning: Unknown Filter Effectiveness.	
Phenyl glycidyl ether	122-60-1	1,2-Epoxy-3-phenoxy propane; Glycidyl phenyl ether; PGE; Phenyl 2,3-epoxypropyl ether		Ca C 1 ppm (6 mg/m³) [15-minute]	10 ppm (60 mg/m³)	Not established	17	OV		X								Warning: Carcinogen; Unknown Odor Threshold.	
Phenylhydrazine	100-63-0	Hydrazinobenzene, Monophenylhydrazine		Ca C 0.14 ppm (0.6 mg/m³)	5 ppm (22 mg/m³)	Not established	53.7	OV		X								Warning: Carcinogen; Unknown Odor Threshold.	


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N-Phenyl-beta-naphthylamine	135-88-6	2-Anilinonaphthalene, beta-Naphthylphenylamine, PBNA, 2-Phenylaminonaphthalene, Phenyl-beta-naphthylamine		Ca [Note: Since metabolized to beta-Naphthylamine]	None	Not established	Not recommended		X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	
Phenylphosphine	638-21-1	Fenylfosfin, PF, Phosphaniline		C 0.05 ppm (0.25 mg/m ³)	None	Not established	OV			X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
Phenolphthalein	77-09-8	3,3-bis(p-hydroxyphenyl) phthalide; 3,3-bis(4-hydroxyphenyl)-1(3H)-isobenzofuranone		Ca - Not established	Not established for chemical in solid form. If in solution form exposure limits of alcohols: 1000 ppm (TWA) for ethyl alcohol, 400 ppm (TWA) for isopropyl alcohol, 200 ppm (TWA) for methyl alcohol	Not established		OV/ HEPA	X	X								Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	
Phorate	298-02-2	O,O-Diethyl S-(ethylthio) methylphosphorodithioate; O,O-Diethyl S-ethylthio-methylthiothionophosphate; Thimet; Timet		0.05 mg/m ³ ST 0.2 mg/m ³ [skin]	None	Not established	Not recommended			X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
Phosdrin®	7786-34-7	2-Carbomethoxy-1-methylvinyl dimethyl phosphate, Mevinphos [Note: Commercial product is a mixture of the cis- & trans-isomers.]		0.01 ppm (0.1 mg/m ³) ST 0.03 ppm (0.3 mg/m ³) [skin]	0.1 mg/m ³ [skin]	Not established	Not recommended			X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	

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Phosgene	75-44-5	Carbon oxychloride, Carbonyl chloride, Carbonyl dichloride, Chloroformyl chloride		0.1 ppm (0.4 mg/m ³) C 0.2 ppm (0.8 mg/m ³) [15-minute]		0.55		Not recommended							X	X	X	Call: Warning: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Phosphine	7803-51-2	Hydrogen phosphide, Phosphorated hydrogen, Phosphorus hydride, Phosphorus trihydride		0.3 ppm (0.4 mg/m ³) ST 1 ppm (1 mg/m ³)	0.3 ppm (0.4 mg/m ³)	0.14		Not recommended							X		X	Call: Warning: Odor Threshold < 1ppm; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Phosphoric acid	7664-38-2	Orthophosphoric acid, Phosphoric acid (aqueous), White phosphoric acid		1 mg/m ³ ST 3 mg/m ³	1 mg/m ³	Odorless	11	AG / HEPA								X	X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning. OEL < 1ppm (5mg/m ³).	
Phosphorus-32				Not established	Not established			Not recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness	
Phosphorus oxychloride	10025-87-3	Phosphorus chloride, Phosphorus oxytrichloride, Phosphoryl chloride		0.1 ppm (0.6 mg/m ³) ST 0.5 ppm (3 mg/m ³)	None	Not established		AG		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
Phosphorus pentachloride	10026-13-8	Pentachlorophosphorus, Phosphoric chloride, Phosphorus perchloride		1 mg/m ³	1 mg/m ³	Not established		AG/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	

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Phosphorus pentasulfide	1314-80-3	Phosphorus persulfide, Phosphorus sulfide, Sulfur phosphide		1 mg/m ³ ST 3 mg/m ³	1 mg/m ³	0.0047		Not recommended						X			X	Call: Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Phosphorus trichloride	12/1/15	Phosphorus chloride		0.2 ppm (1.5 mg/m ³) ST 0.5 ppm (3 mg/m ³)	0.5 ppm (3 mg/m ³)	Not established		AG		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Phosphorus (yellow)	7723-14-0	Elemental phosphorus, White phosphorus		0.1 mg/m ³	0.1 mg/m ³	Not established		Not recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Phthalic anhydride	85-44-9	1,2-Benzenedicarboxylic anhydride; PAN; Phthalic acid anhydride		6 mg/m ³ (1 ppm)	12 mg/m ³ (2 ppm)	0.052		OV/HEPA						X				Warning: Odor Threshold < 0.1ppm; Unknown Filter Effectiveness.	
m-Phthalodinitrile	626-17-5	1,3-Benzenedicarbonitrile; m-Dicyanobenzene; 1,3-Dicyanobenzene; Isophthalodinitrile; m-PDN		5 mg/m ³	None	Not established		HEPA		X								Warning: Unknown Odor Threshold.	


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Picloram	1/31/14	4-Amino-3,5,6-trichloropicolinic acid; 4-Amino-3,5,6-trichloro-2-picolinic acid; ATCP; Tordon®		Not established REL's - a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m³ for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)	15 mg/m³ (total) TWA 5 mg/m³ (resp)	Not established		Not recommended		X								Call; Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	
Picric acid	88-89-1	Phenol trinitrate; 2,4,6-Trinitrophenol [Note: An OSHA Class A Explosive (1910.109).]		0.1 mg/m³ ST 0.3 mg/m³ [skin]	0.1 mg/m³ [skin]	0.0005 mg/m³		HEPA					X				X	Warning: Odor Threshold < 0.1ppm; OEL < 1ppm (5mg/m³).	
Pindone	83-26-1	tert-Butyl valone; 1,3-Dioxo-2-pivaloyl-lindane; Pival®; Pivalyl; 2-Pivalyl-1,3-indandione		0.1 mg/m³	0.1 mg/m³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³).	
Piperidine	110-89-4	hexahydropyridine, pentamethyleimine, azacyclohexane, cyclopentimine, cypentil, hexazane,		None	None	Not established		Not recommended	X	X								Not recommended: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	
Piperazine dihydrochloride	142-64-3	Piperazine hydrochloride [Note: The monochloride, C₄H₁₀N₂ HCl, is also commercially available.]				Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	

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Plaster of Paris	26499-65-0	Calcium sulfate hemihydrate, Dried calcium sulfate, Gypsum hemihydrate, Hemihydrate gypsum	☑	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning Unknown Odor Threshold.	
Platinum	6/3/36	Platinum black, Platinum metal, Platinum sponge	☑	1 mg/m ³	None	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Platinum (soluble salts, as Pt)		Synonyms vary depending upon the specific soluble platinum salt	☑	0.002 mg/m ³	0.002 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Poly(methyl 2-methylpropenoate)	9011-14-7	Poly(methyl methacrylate) (PMMA) methyl methacrylate resin, Plexiglas	⚠					HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Polyurethane	Various	Can be polymerized from various chemicals	⚠	Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Polyvinylpyrrolidone K 30	9003-39-8	PVP; Povidone, K-30; Polyvinylpyrrolidone K-30; Poly[1-(2-oxo-1-pyrrolidiny) ethylene]	⚠	Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Portland cement	65997-15-1	Cement, Hydraulic cement, Portland cement silicate	☑	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	50 mppcf	Not established		HEPA		X								Warning Unknown Odor Threshold.	
Potassium	9-7-7440	Kalium	⊘	None	None	Not established			X	X								Not Recommended: Unknown exposure limit, unknown odor threshold	Explosive when exposed to water or water vapor.
Potassium bromate	1/1/54	Bromic Acid; Potassium Salt	⚠	None	None	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	

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Potassium bromide	7758-88-10	Hydrobromic Acid Potassium Salt; Bromide Salt of Potassium		None	None	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Potassium chloride	7447-40-7	Sylvite, Muriate of potash, Potassium monochloride						HEPA		X	X							Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Potassium chromate	7789-00-6	Dipotassium Chromate		Ca, 15.0 mg/m ³ As Cr(VI)	0.1 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Potassium cyanide (as CN)	151-50-8	Potassium salt of hydrocyanic acid		C 5 mg/m ³ (4.7 ppm) [10-minute] [*Note: The REL also applies to other cyanides (as CN) except Hydrogen cyanide.]	5 mg/m ³ [*Note: The PEL also applies to other cyanides (as CN) except Hydrogen cyanide.]	Not established		Not recommended		X								Call: Warning: Unknown Odor Threshold.	
Potassium dichromate	7778-50-9	Potassium bichromate, Potassium dichromate(VI)		Ca TWA 0.001 mg/m ³	TWA 0.005 mg/m ³			Not recommended		X							X	Not Recommended: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	
Potassium Ferrocyanide	13943-58-3 (Anhydrous); 14459-95-1 (Trihydrate)	Potassium hexacyanoferrate (II), trihydrate; Tetrapotassium ferrocyanide, trihydrate; Ferrate (4-), hexacyano, tetrapotassium, trihydrate		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	

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Potassium hydroxide	1310-58-3	Caustic potash, Lye, Potassium hydrate		C 2 mg/m³	None	Odorless		HEPA								X	X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m³).	
Potassium hydrogen phthalate	877-24-7	Potassium biphthalate; Potassium acid phthalate.		None	None	Not established		HEPA	X	X									
Potassium iodide	7681-11-0			None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	Requires both filters, pungent odor
Potassium permanganate	7722-64-7	Permanganic acid, potassium salt; Condy's crystals		Not established	5 mg/m³ Ceiling for manganese compounds as Mn			HEPA		X								Warning Unknown Odor Threshold.	
Potassium phosphate	7778-77-0	Monopotassium phosphate (KH₂PO₄) Potassium phosphate monobasic, Phosphoric acid, monopotassium salt						HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Potassium sodium tartrate	6381-59-5	Rochelle salt; Sodium Potassium Tartratetetrahydrate; L(+)-Tartaric acid potassium sodium salt		None	5mg/m³	Not established		HEPA		X								Warning: Unknown odor threshold	May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.
Potassium Sorbate	590-00-1	2,4-hexadienoic acid, Potassium salt; 2,4-hexadienoic acid, Potassium salt		None	None	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Propane	74-98-6	Bottled gas, Dimethyl methane, n-Propane, Propyl hydride		1000 ppm (1800 mg/m³)	1000 ppm (1800 mg/m³)	2,690.00	0.5	Not recommended			X					X		Not Recommended: Filter Capacity < 1% - Short Filter Life. Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	

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Propane sultone	1120-71-4	3-Hydroxy-1-propanesulphonic acid sultone; 1,3-Propane sultone		Ca	None	Not established		Not recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	
1-Propanethiol	107-03-9	3-Mercaptopropane, Propane-1-thiol, Propyl mercaptan, n-Propyl mercaptan		C 0.5 ppm (1.6 mg/m ³) [15-minute]	None	0.00075		Not recommended						X			X	Call: Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	
Propargyl alcohol	107-19-7	1-Propyn-3-ol; 2-Propyn-1-ol; 2-Propynyl alcohol		1 ppm (2 mg/m ³) [skin]	None	0.015	5.7	OV						X				Warning: Odor Threshold < 0.1ppm.	Very Low Odor Threshold. Flammable. Explosive. Toxic/ Irritant - inhalation, skin, eyes, ingestion.
beta-Propiolactone	57-57-8	BPL; Hydroacrylic acid, beta-lactone; 3-Hydroxy-beta-lactone; 3-Hydroxy-propionic acid; beta-Lactone; 2-Oxetanone; 3-Propiolactone		Ca	Identified as Potential occupational Carcinogen	Not established		OV	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	A colorless liquid with a sweet odor. Once used as a clinical disinfectant. Usage has been phased out.
Propionic acid	79-09-4	Carboxyethane, Ethancarboxylic acid, Ethylformic acid, Metacetic acid, Methyl acetic acid, Propanoic acid		10 ppm (30 mg/m ³) ST 15 ppm (45 mg/m ³)	None	0.037	14.9	OV						X				Warning: Odor Threshold < 0.1ppm.	Very Low Odor Threshold. Corrosive.
Propionitrile	107-12-0	Cyanoethane, Ethyl cyanide, Propanenitrile, Propionic nitrile, Propionitrile		6 ppm (14 mg/m ³)	None	Not established	3.5	OV		X			X					Warning: Filter Capacity < 5%; Unknown Odor Threshold.	Forms cyanide in the body. Poisonous when heated to decomposition or upon treatment with acid. Propanenitrile has been determined to be teratogenic due to the metabolic release of cyanide.

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Propoxur	114-26-1	Aprocarb®; o-Isopropoxyphenyl-N-methylcarbamate; N-Methyl-2-isopropoxyphenyl-carbamate		0.5 mg/m ³	None	Not established		Not recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Used as an insecticide and molluscicide against agricultural, forest, and household pests.
n-Propyl acetate	109-60-4	Propylacetate, n-Propyl ester of acetic acid	<input checked="" type="checkbox"/>	200 ppm (840 mg/m ³) ST 250 ppm (1050 mg/m ³)	200 ppm (840 mg/m ³)	0.575	16.8	OV							X			Warning: Odor Threshold < 1ppm.	Highly Flammable. Irritant - eyes.
n-Propyl alcohol	71-23-8	Ethyl carbinol, 1-Propanol, n-Propanol, Propyl alcohol	<input checked="" type="checkbox"/>	200 ppm (500 mg/m ³) ST 250 ppm (625 mg/m ³) [skin]	200 ppm (500 mg/m ³)	30	6.6	OV											Highly Flammable. Irritant - eyes.
Propylene Carbonate	108-32-7	4-Methyl-2-oxo-1,3-dioxolane		None	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	
Propylene dichloride	78-87-5	Dichloro-1,2-propane; 1,2-Dichloropropane	<input checked="" type="checkbox"/>	Ca	75 ppm (350 mg/m ³)	0.851	17.8	OV							X			Warning: Carcinogen; Odor Threshold < 1ppm.	Highly Flammable. Harmful - ingestion, inhalation.
Propylene glycol dinitrate	6423-43-4	PGDN; Propylene glycol-1,2-dinitrate; 1,2-Propylene glycol dinitrate		0.05 ppm (0.3 mg/m ³) [skin]	None	0.231		OV							X	X	X	Call: Warning: Odor Threshold < 1ppm. Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Flammable. Explosive - shock sensitive.
Propylene glycol methyl ether acetate	108-65-6	PGMEA, Glycol Ether PM Acetate		Not established	Not established			OV/HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	Requires both filters

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m³)	Warnings	Notes
Propylene glycol methyl ether	107-98-2	1-methoxy-2-propanol, methoxypropanol, PGME, 1-methoxypropan-2-ol, Dowanol 33B, Dowtherm 209, ucar solvent LM, poly-solve mpm, glycol ether PM, propylene glycol methyl ether		100 ppm	Not established			OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Polymerizes to 2-Methoxy-1-propanol, very flammable, may be explosive, objectionable
Propylene glycol monomethyl ether	107-98-2	Dowtherm® 209; 1-Methoxy-2-hydroxypropane; 1-methoxy-2-propanol; 2-Methoxy-1-methylethanol; Propylene glycol methyl ether		100 ppm (360 mg/m³) ST 150 ppm (540 mg/m³)	None	0.003		OV						X				Call: Odor Threshold < 0.1ppm. Warning: Unknown Filter Effectiveness.	Very Low Odor Threshold.
Propylene imine	75-55-8	2-Methylaziridine, 2-Methylethyleneimine, Propyleneimine, Propylene imine (inhibited), Propylenimine		Ca TWA 2 ppm (5 mg/m³) [skin]	2 ppm (5 mg/m³) [skin]	Not established	3	OV		X		X						Call: Filter Capacity >3%. Warning: Carcinogen; Unknown Odor Threshold.	
Propylene oxide	75-56-9	1,2-Epoxy propane; Methyl ethylene oxide; Methylloxirane; Propene oxide; 1,2-Propylene oxide		Ca	100 ppm (240 mg/m³)	33.1	1.2	OV				X						Call: Filter Capacity >3%. Warning: Carcinogen.	Highly Flammable. Toxic (Severe).
n-Propyl nitrate	627-13-4	Propyl ester of nitric acid		25 ppm (105 mg/m³) ST 40 ppm (170 mg/m³)	25 ppm (110 mg/m³)	50		OV								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness.	Use below exposure limit.
Putrescine	110-60-1	1,4-diaminobutane, Butanediamine		None	None		10	OV/HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Melting point is 27°C. Produced by the breakdown of amino acids in living and dead organisms.
Pyrethrum	8003-34-7	Cinerin I or II, Jasmolin I or II, Pyrethrin I or II, Pyrethrum I or II [Note: Pyrethrum is a variable mixture of Cinerin, Jasmolin, and Pyrethrin.]		5 mg/m³	5 mg/m³	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Requires both filters.
Pyridine	110-86-1	Azabenzene, Azine		5 ppm (15 mg/m³)	5 ppm (15 mg/m³)	0.17	16	OV							X			Warning: Odor Threshold < 1ppm.	Nauseating, fish-like odor.

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Pyrogalllic acid	87-66-1	1,2,3-Benzenetriol, 1,2,3-Trihydroxybenzene; pyrogallol; 1,2,3-benzenetriol		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Used in some photographic processes
Quinacrine	6151-30-0	6-Chloro-9=[4-(diethylamino-1-methylbutyl) amino]-2-methoxyacridine hydrochloride		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	Harmful if swallowed. Causes eye, skin, and respiratory tract irritation. Light sensitive. Hygroscopic (absorbs moisture from the air).
Quinone	106-51-4	1,4-Benzoquinone; p-Benzoquinone; 1,4-Cyclohexadiene dioxide; p-Quinone		0.4 mg/m ³ (0.1 ppm)	0.4 mg/m ³ (0.1 ppm)	0.012		OV/HEPA						X			X	Call: Odor Threshold < 0.1ppm. Warning: OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Very Low Odor Threshold. Natural & synthetic quinones show a biological/ pharmacological activity. Used in dyes and reagent organic chemistry.
Quinuclidine	100-76-5	1,4-Ethanopiperidine, 1,4-Ethylenepiperidine, 1-Azabicyclo[2.2.2]octane, [2,2,2]-Azabicyclooctane		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	
Resorcinol	108-46-3	1,3-Benzenediol; m-Benzenediol; 1,3-Dihydroxybenzene; m-Dihydroxybenzene; 3-Hydroxyphenol; m-Hydroxyphenol		10 ppm (45 mg/m ³) ST 20 ppm (90 mg/m ³)	None	Not established		HEPA		X								Warning: Unknown Odor Threshold.	OV and HEPA may be preferable when heat is involved. Harmful. Environmental Toxin.
Retinoic acid	302-79-4	Tretinoin, Retin-A		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	Retanoic acid is a metabolite of vitamin A.
Rhodamine 123	62669-70-9	2-(6-Amino-3-imino-3H-xanthen-9-yl)benzoic acid methyl ester		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Used as a dye in many biotechnology applications and in water flow.

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Rhodamine 6G	989-38-8	Rhodamine 590, R6G, Rh6G, C.I. Pigment Red 81, C.I. Pigment Red 169, Basic Rhodamine Yellow, C.I. 45160, Xanthylium, 9-[2-(ethoxycarbonyl)phenyl]-3,6-bis(ethylamino)-2,7-dimethyl-, chloride		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Used as a dye in water flow dynamics and as a laser dye.
Rhodamine B	81-88-9	9-(2-carboxyphenyl)-6-diethylamino-3-xanthenylidene]-diethylammonium chloride, 9-(2-carboxyphenyl)-6-diethylamino-3-xanthenylidene]-diethylammonium chloride		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Suspected carcinogen. Used as a dye in many biological applications and in water flow.
Rhodium (metal fume and insoluble compounds, as Rh)	7440-16-6	Rhodium metal: Elemental rhodium		0.1 mg/m³	0.1 mg/m³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m³)	Very Low Exposure Limit. Inert
Rhodium (soluble compounds, as Rh)		Synonyms vary depending upon the specific soluble rhodium compound		0.001 mg/m³	0.001 mg/m³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m³)	Very Low Exposure Limit
Ronnel	299-84-3	O,O-Dimethyl O-(2,4,5-trichlorophenyl) phosphorothioate; Fenchlorophos		10 mg/m³	15 mg/m³	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Requires both filters.
Rosin core solder, pyrolysis products (as formaldehyde)		Rosin flux pyrolysis products, Rosin core soldering flux pyrolysis products		0.1 mg/m³ [*Note: "Ca" in the presence of formaldehyde, acetaldehyde, or malonaldehyde. See Appendices A & C Aldehydes.]	None	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m³); Unknown Filter Effectiveness.	Requires both filters. Very low Exposure Limit.

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Rotenone	83-79-4	1,2,12a-Tetrahydro-8,9-dimethoxy-2-(1-methyl-ethenyl)-[1]benzopyrano [3,4-b]furo[2,3-h][1] benzopyran-6(6aH)-one		5 mg/m ³	5 mg/m ³	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Requires both filters. Linked to the development of Parkinson's Disease in mammals (including humans). Toxic - environmental (severe), ingestion, inhalation.
Rouge	1309-37-1	Iron(III)oxide, Iron oxide red, Red iron oxide, Red oxide		Not established REL's -a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m ³ for alpha-alumina, benomyl, emery, glyc-erine (mist), graphite (synth)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Red-brown solid (rust). Nanoparticles of iron(III) oxide are biocompatible, non-toxic, and are used in biomedical applications.
Salicylic acid	69-72-7	2-hydroxybenzoic acid		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Development

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Selenium	7782-49-2	Elemental selenium, Selenium alloy		0.2 mg/m ³ [*Note: The REL also applies to other selenium compounds (as Se) except Selenium hexafluoride.]	0.2 mg/m ³ [*Note: The PEL also applies to other selenium compounds (as Se) except Selenium hexafluoride.]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³)	Toxic - ingestion (prolonged).
Selenium hexafluoride	7783-79-1	Selenium fluoride		0.05 ppm	0.05 ppm (0.4 mg/m ³)	Not established		Not recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness.	Very Low Exposure Limit. Highly toxic.
Silica, amorphous	7631-86-9	Diatomaceous earth, Diatomaceous silica, Diatomite, Precipitated amorphous silica, Silica gel, Silicon dioxide (amorphous)		6 mg/m ³	20 mppcf (80 mg/m ³ %SiO ₂)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Long term exposure (respiratory) to finely divided crystalline silica can lead to silicosis, bronchitis or cancer. Inert in other systems.
Silica, crystalline (as respirable dust)	14808-60-7	Cristobalite, Quartz, Tridymite, Tripoli		Ca TWA 0.05 mg/m ³	30 mg/m ³ divided by the value %SiO ₂ + 2	Not established		HEPA		X							X	Warning: Carcinogen, Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³)	Long term exposure (respiratory) to finely divided crystalline silica can lead to silicosis, bronchitis or cancer. Inert in other systems.
Silicon	7440-21-3	Elemental silicon [Note: Does not occur free in nature, but is found in silicon dioxide (silica) & in various silicates]		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Silicon carbide	409-21-2	Carbon silicide; Carborundum®; Silicon monocarbide		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Has a number of industrial uses. Toxic (mild).
Silicon tetrahydride	7803-62-5	Monosilane, Silane, Silicane		5 ppm (7 mg/m ³)	None	Not established		Not recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Extremely Flammable - combustible in air. Toxic (mild). Highly Explosive.

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Silicone	63148-62-9	Silicone oil, dimethylpolysiloxane hydrolyzate		None	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	Weak odor
Silver (metal dust and soluble compounds, as Ag)	7440-22-4	Silver metal: Argentum		0.01 mg/m ³	0.01 mg/m ³	Not established		HEPA		X							X	Warning: Carcinogen, Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³)	Medical/Clinical usages including antibiotics. Silver is inert, silver salts can be toxic (carcinogenic).
Silver nitrate	7761-88-8	Lunar caustic; silver nitrate toughened; Nitric Acid, Silver (I) Salt		None	0.01 mg/m ³ (TWA) for silver metal dust and fume as Ag	Not established		HEPA		X							X	Warning: Carcinogen, Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³)	Heat, shock, friction, or contact with other materials may cause fire or explosion.
Soapstone (containing less than 1% quartz)		Massive talc, Soapstone silicate, Steatite		6 mg/m ³ (total) TWA 3 mg/m ³ (resp)	20 mppcf	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Sodium acetate trihydrate	6131-90-4	Acetic acid, sodium salt, trihydrate		None	None	Not established			X	X								Warning: Unknown exposure limit, unknown odor threshold	
Sodium aluminum fluoride (as F)	15096-52-3	Cryocide, Cryodust, Cryolite, Sodium hexafluoroaluminate		2.5 mg/m ³ [*Note: The REL also applies to other inorganic, solid fluorides]	2.5 mg/m ³ [*Note: The REL also applies to other inorganic, solid fluorides]	Not established		AG/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness	Requires both filters. Use below exposure limit.
Sodium azide	26628-22-8	Azide, Azium, Sodium salt of hydrazoic acid		C 0.1 ppm (as HN ₃) [skin] C 0.3 mg/m ³ (as NaN ₃) [skin]	None	Odorless		HEPA								X	X	Warning: Odor Threshold > Exposure Limit - Poor Odor Warning: OEL < 1 ppm (5mg/m ³)	Not recommended when forms hydrazoic acid in water. HEPA suitable when used as a solid. Contact with acids liberates very toxic gas. Toxic (Severe) - ingestion, environmental.

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Sodium benzoate	532-32-1	Antimol; Benzoate of soda; Sodium benzoic acid; Benzoate sodium		None	None	Not established		Not recommended	X	X								Not Recommended: Unknown exposure limit, unknown odor threshold	Biological Safety Cabinet should be used. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/ female, Reproductive system/ toxin/male [SUSPECTED]. The substance may be toxic to blood, the reproductive system, liver, central nervous system (CNS).
Sodium bicarbonate	144-55-8	Baking Soda, Bicarbonate of Soda		None	15 mg/ m ³ (total dust); 5 mg/ m ³ (resp fraction)	Not established		HEPA										Warning: Unknown odor threshold	
Sodium bisulfite	7631-90-5	Monosodium salt of sulfurous acid, Sodium acid bisulfite, Sodium bisulphite, Sodium hydrogen sulfite		5 mg/m ³	None	Not established		AG/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Requires both filters. White solid. Harmful if swallowed. Contact with acids liberates very toxic gas.
Sodium carbonate	497-19-8	Crystal Carbonate, Disodium Carbonate, Sal Soda, Soda Asha, Washing Soda		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	The substance may be toxic to upper respiratory tract, skin, eyes.
Sodium chloride	7647-14-5	Extra fine 200 salt, extra fine 325 salt, H.G. blending, salt, sea salt, table salt, common salt, dendritis, rock salt, top flake, white crystal, saline, halite, purex, USP sodium chloride		Not established	Not established	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Sodium citrate	6132-04-3	Sodium citrate dihydrate		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	

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Sodium cyanide (as CN-)	143-33-9	Sodium salt of hydrocyanic acid		C 5 mg/m ³ (4.7 ppm) [10-minute] [*Note: The REL also applies to other cyanides (as CN) except Hydrogen cyanide.]	5 mg/m ³ [*Note: The PEL also applies to other cyanides (as CN) except Hydrogen cyanide.]	Not established		Not Recommended		X								Not Recommended: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	May be fatal if inhaled, swallowed or adsorbed through skin.
Sodium dichromate	7789-12-0	Sodium bichromate, Sodium dichromate, dihydrate; Sodium bichromate dihydrate		Ca None	0.1 mg/m ³ (ceiling)	Not established		Not Recommended		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness	May be fatal if inhaled or swallowed. Toxic - reproductive/ fetal, skin, ingestion, inhalation (severe), environmental. Flammable. Sensitization - inhalation, skin.
Sodium dodecylbenzene sulfonate	68081-81-2	Dodecyl Benzene Sulfonic Acid, Dodecylbenzenesulfonic acid sodium salt, Sodium 4-dodecylbenzenesulphonate		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Skin and eye irritant. A detergent.
Sodium fluoride (as F)	7681-49-4	Floridine, Sodium monofluoride		2.5 mg/m ³ [*Note: The REL also applies to other inorganic, solid fluorides (as F).]	2.5 mg/m ³ [*Note: The REL also applies to other inorganic, solid fluorides (as F).]	Not established		AG/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Toxic - inhalation, ingestion. Irritant - eyes, skin. Contact with acids liberates very toxic gas.
Sodium fluoroacetate	62-74-8	SFA, Sodium monofluoroacetate		0.05 mg/m ³ ST 0.15 mg/m ³ [skin]	0.05 mg/m ³ [skin]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³).	Very low exposure limit. Highly toxic to mammals and insects. Toxic - ingestion.
Sodium gluconate	527-07-1	Sodium 2,3,4,5,6, pentahydroxy-hexanoate, D-Gluconic acid monosodium salt		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	

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Sodium hyaluronate	9067-32-7	Hyaluronic acid, sodium salt, Hyaluronan		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	The toxicological properties of this material have not been fully investigated.
Sodium hydroxide	1310-73-2	Caustic soda, Lye, Soda lye, Sodium hydrate		C 2 mg/m³	2 mg/m³	Odorless		HEPA							X	X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m³).	White crystalline solid. Corrosive - causes severe burns.
Sodium hypochlorite	7681-52-9	Bleach; hypochlorous acid, sodium salt; soda bleach; sodium oxychloride		Not established	PEL: 0.5 ppm (TWA), 1 ppm STEL as Chlorine	Not established		AG		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness	Use below exposure limit. Contact with acids liberates very toxic gas. Corrosive. Environmental Toxin. Solutions under 40% are classified as a moderate oxidizing hazard (NFPA).
Sodium iodide	7681-82-5	Sodium monoiodide, sodium iodine		Not established	Not established	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	White solid. Irritant. Reproductive/Fetal toxin. Commonly used to treat iodine deficiency.
Sodium laurel sulfate	151-21-3	Sodium dodecyl sulfate		Not established	Not established	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Characteristic. Faint odor of fatty substances (Slight.)
Sodium metabisulfite	7681-57-4	Disodium pyrosulfite, Sodium metabisulphite, Sodium pyrosulfite		5 mg/m³	None	0.5		AG/HEPA							X			Warning: Odor Threshold < 1ppm; Unknown Filter Effectiveness.	Requires both filters. Contact with acids liberates very toxic gas. Harmful if swallowed. Risk of serious damage to eyes.
Sodium perchlorate	7601-89-0	Perchloric Acid Sodium Salt		Not established	Not established	Not established		Not recommended	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Highly explosive in presence of reducing materials, of combustible materials, of organic materials, of metals, of acids.

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Sodium saccharin	6155-57-3	Soluble saccharin; Sodium o-benzosulfimide		Not established	Not established	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Sodium thiocyanate	540-72-7	Sodium Rhodanide; Sodium Sulfocyanate		Not established	Not established	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	
Stannous chloride	10025-69-1	Tin (II) chloride dihydrate; Stannous dichloride		2 (mg/m ³)	2 (mg/m ³)	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Starch	9005-25-8	Corn starch, Rice starch, Sorghum gum, alpha-Starch, Starch gum, Tapioca starch		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Stearic acid	57-11-4	Octadecanoic acid; 1-Heptadecanecarboxylic acid; Stearophanic acid; n-Octadecanoic acid		Not established	Not established	20		HEPA	X									Warning: Unknown exposure limit	A major component of shea and cocoa butter, animal fats, vegetable fats.
Stibine	7803-52-3	Antimony hydride, Antimony trihydride, Hydrogen antimonide		0.1 ppm (0.5 mg/m ³)	0.1 ppm (0.5 mg/m ³)	Not established		Not recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Highly toxic - environmental, inhalation, ingestion. Flammable.
Stoddard solvent	8052-41-3	Dry cleaning safety solvent, Mineral spirits, Petroleum solvent, Spotting naphtha [Note: A refined petroleum solvent with a flash point of 102-110°F, boiling point of 309-396°F, and containing >65% C ₁₀ or higher hydrocarbons.]		350 mg/m ³ C 1800 mg/m ³ [15-minute]	500 ppm (2900 mg/m ³)	"1-30" 0.5-5 mg/m ³	11	OV											Irritant. Mild acute toxin.
Strychnine	57-24-9	Nux vomica, Strychnos		0.15 mg/m ³	0.15 mg/m ³			HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Very low exposure limit. A highly toxic colorless crystalline alkaloid used as a pesticide, particularly for killing small vertebrates (birds & rodents).

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1ppm(5 mg/m ³)	Warnings	Notes
Styrene	100-42-5	Ethenyl benzene, Phenylethylene, Styrene monomer, Styrol, Vinyl benzene	<input checked="" type="checkbox"/>	50 ppm (215 mg/m ³) ST 100 ppm (425 mg/m ³)	100 ppm C 200 ppm 600 ppm (5-minute maximum peak in any 3 hours)	3.44	30	OV											Flammable. Irritant - eyes.
Subtilisins	1395-21-7	Bacillus subtilis, Bacillus subtilis BPN, Bacillus subtilis Carlsburg, Proteolytic enzymes, Subtilisin BPN, Subtilisin Carlsburg [Note: Commercial proteolytic enzymes are used in laundry detergents.]		ST 0.00006 mg/m ³ [60-minute]	None	Not established		Not recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Very low exposure limit. Used in detergents and cleansers. A protein-digesting enzyme.
Succinonitrile	110-61-2	Butanedinitrile; 1,2-Dicyanoethane; Dinile; Ethylene cyanide; Ethylene dicyanide; Succinic dinitrile	<input type="checkbox"/>	C 5 mg/m ³ (4.7 ppm) [10-minute] [*Note: The REL also applies to other cyanides (as CN) except Hydrogen cyanide.]	None	Not established		Not recommended		X								Not Recommended: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Forms cyanide in the body.
Sucrose	57-50-1	Beet sugar, Cane sugar, Confectioner's sugar, Granulated sugar, Rock candy, Saccarose, Sugar, Table sugar	<input checked="" type="checkbox"/>	TWA 10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Odorless		HEPA								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	


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Sulfamic acid	5329-14-6	Amidosulfonic acid; amidosulfuric acid; aminosulfonic acid; sulfamidic acid		Not established	Not established	Not established		OV/HEPA	X	X								Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	May have short filter life with OV Filter. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. May cause pulmonary edema, a medical emergency. Pulmonary edema may be delayed up to 48 hours.
Sulfur dioxide	2551-62-4	Sulfurous acid anhydride, Sulfurous oxide, Sulfur oxide		2 ppm (5 mg/m ³) ST 5 ppm (13 mg/m ³)		0.708	1.7	AG				X			X			Call: Filter Capacity < 3% - Low Filter Capacity. Warning: Odor Threshold < 1ppm.	Gas released by volcanoes and various industrial processes. Toxic - inhalation. Corrosive - causes burns.
Sulfur hexafluoride	2551-62-4	Sulfur fluoride [Note: May contain highly toxic sulfur pentafluoride as an impurity]		1000 ppm (6000 mg/m ³)	1000 ppm (6000 mg/m ³)	Odorless		Not recommended							X	X		Call: Warning: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; Unknown Filter Effectiveness	An inorganic, colorless, odorless, non-toxic, non-flammable greenhouse gas.
Sulfuric acid	7664-93-9	Battery acid, Hydrogen sulfate, Oil of vitriol, Sulfuric acid (aqueous)		1 mg/m ³	1 mg/m ³	>1mg/m ³	13	AG/HEPA							X	X	X	Warning: Odor Threshold < 1ppm; Odor Threshold > Exposure Limit - Poor Odor Warning; OEL < 1ppm (5mg/m ³).	Requires both filters. Irritant - 0.5 to 1.5 M. Corrosive - when > 1.5 M.

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Sulfur monochloride	10025-67-9	Sulfur chloride, Sulfur subchloride, Thiosulfurous dichloride		C 1 ppm (6 mg/m ³)	1 ppm (6 mg/m ³)	0.001		AG						X				Warning: Odor Threshold < 0.1 ppm; Unknown Filter Effectiveness.	Very Low Odor Threshold. Reacts violently with water. Toxic - inhalation, ingestion, environmental. Contact with water liberates toxic gas. Corrosive.
Sulfur pentafluoride	5714-22-7	Disulfur decafluoride, Sulfur decafluoride		C 0.01 ppm (0.1 mg/m ³)	0.025 ppm (0.25 mg/m ³)	Not established		AG		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness.	Highly toxic. Fatal if inhaled as sulfur decafluoride.
Sulfur tetrafluoride	7783-60-0	Tetrafluorosulfurane		C 0.1 ppm (0.4 mg/m ³)	None	Not established		AG		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness.	Highly toxic. Develops hydrofluoric acid (HF) in the presence of water or moisture.
Sulfuryl fluoride	2699-79-8	Sulfur difluoride dioxide, Vikane®		5 ppm (20 mg/m ³) ST 10 ppm (40 mg/m ³)	5 ppm (20 mg/m ³)	Not established		Not recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Toxic - inhalation (fluoride poisoning). Green house gas.
Sulprofos	35400-43-2	Bolstar®, O-Ethyl O-(4-methylthio)phenyl S-propylphosphorodithioate		1 mg/m ³	None	Not established		Not recommended		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1 ppm (5mg/m ³); Unknown Filter Effectiveness.	
2,4,5-T	93-76-5	2,4,5-Trichlorophenoxyacetic acid		10 mg/m ³	10 mg/m ³	Odorless		HEPA								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	A subcomponent of Agent Orange. Banned in the U.S. as an herbicide. A biproduct of manufacturing 2,4,5-T is TCDD which is highly Toxic.
Tacrolimus	104987-11-3			Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Eczema drug, organ transplant drug. May be irritating to eyes, skin and respiratory system.

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Talc (containing no asbestos and less than 1% quartz)	14807-96-6	Hydrous magnesium silicate, Steatite talc	<input checked="" type="checkbox"/>	2 mg/m ³ (resp)	20 mppcf	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Tantalum (metal and oxide dust, as Ta)	7440-25-7	Tantalum metal; Tantalum-181	<input checked="" type="checkbox"/>	5 mg/m ³ ST 10 mg/m ³	5 mg/m ³	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Chemically inert and highly biocompatible. Used in alloys and often in body implants and coatings.
Tartaric acid	87-69-4	L-tartaric acid, 2,3-Dihydroxybutanedioic acid; L-(+)-Tartaric Acid; Malic acid, 3-hydroxy-; Succinic acid, 2,3-dihydroxy	<input type="triangle"/>	Not established	Not established	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	
TEDP	3689-24-5	Bladafum®, Dithion®, Sulfotep, Tetraethyl dithionopyrophosphate, Tetraethyl dithiopyrophosphate, Thiotepp	<input type="phone"/>	0.2 mg/m ³ [skin]	0.2 mg/m ³ [skin]	Not established		Not recommended		X							X	Call; Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Very Low Exposure limit.
Tellurium	13494-80-9	Aurum paradoxum, Metallum problematicum	<input type="triangle"/>	0.1 mg/m ³ [*Note: The REL also applies to other tellurium compounds (as Te) except Tellurium hexafluoride and Bismuth telluride.]	0.1 mg/m ³ [*Note: The REL also applies to other tellurium compounds (as Te) except Tellurium hexafluoride and Bismuth telluride.]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Very low exposure limit. Used as an alloy, mildly toxic. Exposure is indicated by the development of "tellurium breath" which has a garlic-like odor.
Tellurium hexafluoride	7783-80-4	Tellurium fluoride	<input type="phone"/>	0.02 ppm (0.2 mg/m ³)	0.02 ppm (0.2 mg/m ³)	Not established		Not recommended		X							X	Call; Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness	Highly toxic. Unpleasant odor.
Temephos	3383-96-8	Abate®, Temefos; O,O,O',O'-Tetramethyl O,O'-thiodi-p-phenylene phosphorothioate	<input checked="" type="checkbox"/>	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	A larvicide used to treat water against disease-carrying insects and in lice control.

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TEPP	107-49-3	Ethyl pyrophosphate, Tetraethyl pyrophosphate, Tetron®		0.05 mg/m ³ [skin]	0.05 mg/m ³ [skin]	Not established		Not recommended		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
m-Terphenyl	92-06-8	m-Diphenylbenzene; 1,3-Diphenylbenzene; Isodiphenylbenzene; 3-Phenylbiphenyl; 1,3-Terphenyl; meta-Terphenyl; m-Triphenyl	<input checked="" type="checkbox"/>	C 5 mg/m ³ (0.5 ppm)	C 9 mg/m ³ (1 ppm)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	OV/HEPA may be preferable when heat is involved. Irritant - eyes, skin, respiratory. Environmental toxin.
o-Terphenyl	84-15-1	o-Diphenylbenzene; 1,2-Diphenylbenzene; 2-Phenylbiphenyl; 1,2-Terphenyl; ortho-Terphenyl; o-Triphenyl	<input checked="" type="checkbox"/>	C 5 mg/m ³ (0.5 ppm)	C 9 mg/m ³ (1 ppm)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	OV/HEPA may be preferable when heat is involved. Irritant - eyes, skin, respiratory. Environmental toxin.
p-Terphenyl	92-94-4	p-Diphenylbenzene; 1,4-Diphenylbenzene; 4-Phenylbiphenyl; 1,4-Terphenyl; para-Terphenyl; p-Triphenyl	<input checked="" type="checkbox"/>	C 5 mg/m ³ (0.5 ppm)	C 9 mg/m ³ (1 ppm)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	OV/HEPA may be preferable when heat is involved. Irritant - eyes, skin, respiratory. Environmental toxin.
2,3,7,8-Tetrachloro-dibenzo-p-dioxin	1746-01-6	Dioxin; Dioxine; TCDBD; TCDD; 2,3,7,8-TCDD [Note: Formed during past production of 2,4,5-trichlorophenol, 2,4,5-T & 2(2,4,5-trichlorophenoxy) propionic acid.]		Ca	None	Not established		Not recommended	X	X								Call: Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	
1,1,1,2-Tetrachloro-2,2-difluoroethane	76-11-9	2,2-Difluoro-1,1,1,2-tetrachloroethane; Freon® 112a; Halocarbon 112a; Refrigerant 112a		500 ppm (4170 mg/m ³)	500 ppm (4170 mg/m ³)	Not established		OV		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	
1,1,2,2-Tetrachloro-1,2-difluoroethane	76-12-0	1,2-Difluoro-1,1,2,2-tetrachloroethane; Freon® 112; Halocarbon 112; Refrigerant 112		500 ppm (4170 mg/m ³)	500 ppm (4170 mg/m ³)	Not established		OV		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	
1,1,1,2-Tetrachloroethane	630-20-6	None		Ca	None	Not established	41	OV	X	X								Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established.	Monitor OV Filters frequently.

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1, 1, 2, 2-Tetrachloroethane	79-34-5	Acetylene tetrachloride, Symmetrical tetrachloroethane		Ca TWA 1 ppm (7 mg/m ³) [skin]	5 ppm (35 mg/m ³) [skin]	0.21	48	OV							X			Warning: Carcinogen; Odor Threshold < 1ppm.	Little use in the U.S. due to toxicity.
Tetrachloroethylene	127-18-4	Perchloroethylene, Perchloroethylene, Perk, Tetrachloroethylene		Ca Minimize workplace exposure concentrations	100 ppm/ C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm	6.17	39.2	OV										Warning: Carcinogen.	Use below exposure limits. Environmental Toxin.
Tetrachloronaphthalene	1335-88-2	Halowax®, Nibren wax, Seekay wax		2 mg/m ³ [skin]	2 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.
Tetraethyl lead (as Pb)	78-00-2	Lead tetraethyl, TEL, Tetraethylplumbane		0.075 mg/m ³ [skin]	0.075 mg/m ³ [skin]	Not established		OV		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Very low exposure limit.
Tetraethyl silicate	78-10-4	Silicic acid tetraethyl ester		Not established	Not established	3.6		OV	X				X					Warning: Unknown exposure limit, unknown filter efficiency	
Tetrafluoroethane	811-97-2	Ethane, 1,1,1,2-Tetrafluoro-; 1,2,2,2-Tetrafluoroethane; R 134A; Quickfreeze; E-Series(R) Freez-It(R) 2000		1000 ppm TWA	1000 ppm TWA	Not established		OV/HEPA		X								Not recommended: Unknown filter effectiveness	Gas-use Fume Hood, inhalation and skin contact: frostbite
Tetrahydrofuran	109-99-9	Diethylene oxide; 1,4-Epoxybutane; Tetramethylene oxide; THF		200 ppm (590 mg/m ³) ST 250 ppm (735 mg/m ³)	TWA 200 ppm (590 mg/m ³)	3.6	4.4	OV					X					Warning: Filter Capacity < 5%.	Requires both filters. Food additive, used in the manufacture of containers for food
Tetrahydrofurfuryl alcohol	97-99-4	THFA; Tetrahydro-2-furanmethanol; Tetrahydro-2-furancarbinol; Tetrahydro-2-furylmethanol		Not established	Not established	8.6mg/l		OV/HEPA	X									Call: Warning: Exposure Limit Not Established; Unknown Filter Effectiveness.	Requires both filters. Food additive, used in the manufacture of containers for food.

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Tetramethyl ammonium chloride	75-57-0	tetramine chloride, N,N,N-trimethylmethanaminium, TMCI; TMACI; tetranine		None	None	Not established		HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Commonly used in PCR work to increase yield and specificity. Toxic.
Tetramethylammonium hydroxide	75-59-2	TMAH		Not established	Not established			AM	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	It also smells like dead fish, if it is not pure, from trimethylamine impurity. TMAH has virtually no odor when pure.
tetramethylenediamine	110-18-9			Not established	Not established	Not established		AM	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	Amine-like odor
Tetramethyl lead (as Pb)	75-74-1	Lead tetramethyl, Tetramethylplumbane, TML		TWA 0.075 mg/m ³ [skin]	TWA 0.075 mg/m ³ [skin]	Not established		OV		X							X	Call: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Very Low Exposure Limit.
Tetrasodium ethylenediamine tetraacetate	64-02-8	Ethylenediaminetetraacetic acid tetrasodium salt Acetic acid, (ethylenedinitrilo) tetra-, tetrasodium salt N,N'-Ethylenediaminediacetic acid tetrasodium salt EDTA Tetrasodium		Not established	Not established			OV	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.
Tetramethyl succinonitrile	3333-52-6	Tetramethyl succinodinitrile, TMSN		3 mg/m ³ (0.5 ppm) [skin]	3 mg/m ³ (0.5 ppm) [skin]	Not established		OV		X							X	Call: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Highly toxic and hazardous. Acute and prolonged exposure lead to multiple symptoms.
Tetranitromethane	509-14-8	Tetan, TNM		1 ppm (8 mg/m ³)	1 ppm (8 mg/m ³)	Not established	45	OV		X								Warning: Unknown Odor Threshold.	Use below exposure limit. Toxic (severe). Oxidant - can form explosive mixtures.

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Tetrasodium pyrophosphate	7722-88-5	Pyrophosphate, Sodium pyrophosphate, Tetrasodium diphosphate, Tetrasodium pyrophosphate (anhydrous), TSPP		5 mg/m ³	None	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Common food additive.
Tetrazolium blue chloride	1871-22-3	dimethoxy neotetrazolium, ditetrazolium chloride		None	None	Not established		HEPA	X	X								Unknown exposure limit, unknown odor threshold	
Tetryl	479-45-8	N-Methyl-N,2,4,6-tetranitroaniline; Nitramine; 2,4,6-Tetryl; 2,4,6-Trinitrophenyl-N-methylnitramine		1.5 mg/m ³ [skin]	1.5 mg/m ³ [skin]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Class A explosive. Toxic. Explosive - friction, shock.
Thallium (soluble compounds, as TI)		Synonyms vary depending upon the specific soluble thallium compound		0.1 mg/m ³ [skin]	0.1 mg/m ³ [skin]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Thallium and its compounds are extremely toxic.
4,4'-Thiobis(6-tert-butyl-m-cresol)	96-69-5	4,4'-Thiobis(3-methyl-6-tert-butylphenol); 1,1'-Thiobis(2-methyl-4-hydroxy-5-tert-butylbenzene)		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		AG/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Requires both filters.
Thioglycolic acid	68-11-1	Acetyl mercaptan, Mercaptoacetate, Mercaptoacetic acid, 2-Mercaptoacetic acid, 2-Thioglycolic acid, Thiovanic acid		1 ppm (4 mg/m ³) [skin]	None	Not established		OV		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Monitor filters closely.
Thionyl chloride	9/6/15	Sulfinyl chloride, Sulfur chloride oxide, Sulfurous dichloride, Sulfurous oxychloride, Thionyl dichloride		C 1 ppm (5 mg/m ³)	None	Not established		AG		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Monitor filters closely. Explosive in presence of water or moisture - releases dangerous gases. Controlled under Chemical Weapons Convention.
Thiram	137-26-8	bis(Dimethylthiocarbamoyl) disulfide, Tetramethylthiuram disulfide		5 mg/m ³	5 mg/m ³	Not established		AG/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Requires both filters. Yellow to white crystalline powder. Toxic (acute & chronic) - ingestion, inhalation (severe). Irritant - eyes, skin, respiratory. Sensitization - skin.

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold >/= OEL	OEL < 1ppm(5mg/m ³)	Warnings	Notes
Thymidine	50-89-5	1-(2-Deoxy-beta-D-ribofuranosyl)-5-methyluracil 1-(2-Deoxy-beta-D-ribofuranosyl)thymine Thymine deoxyriboside dT		None	5mg/m ³	Not established		HEPA		X								Warning: Unknown odor threshold	
Tin	7440-31-5	Metallic tin, Tin flake, Tin metal, Tin powder		2 mg/m ³ [*Note: The REL also applies to other inorganic tin compounds (as Sn) except tin oxides.]	2 mg/m ³ [*Note: The REL also applies to other inorganic tin compounds (as Sn) except tin oxides.]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Inorganic tin is mostly inert and non-toxic. Organotin compounds are toxic - comparable to cyanide.
Tin (organic compounds, as Sn)		Synonyms vary depending upon the specific organic tin compound. [Note: Also see specific listing for Cyhexatin		0.1 mg/m ³ [skin] [*Note: The REL applies to all organic tin compounds except Cyhexatin.]	0.1 mg/m ³ [*Note: The PEL applies to all organic tin compounds.]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.
Tin(II) oxide (as Sn)	21651-19-4	Stannous oxide, Tin protoxide [Note: Also see specific listing for Tin(IV) oxide (as Sn).]		2 mg/m ³	None	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	
Tin(IV) oxide (as Sn)	18282-10-5	Stannic dioxide, Stannic oxide, White tin oxide [Note: Also see specific listing for Tin(II) oxide (as Sn).]		2 mg/m ³	None	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³).	Mild toxin. Used as the detecting agent in Carbon Monoxide Alarms.
Titanium dioxide	13463-67-7	Rutile, Titanium oxide, Titanium peroxide		Ca	15 mg/m ³	Not established		HEPA		X								Warning: Carcinogen; Unknown Odor Threshold.	White Solid used as a pigment or hardening agent. Can be found in Nanotubule (nanoparticle) form.
o-Tolidine	119-93-7	4,4'-Diamino-3,3'-dimethylbiphenyl; Diaminoditoly; 3,3'-Dimethylbenzidine; 3,3'-Dimethyl-4,4'-diphenyldiamine; 3,3'-Tolidine		Ca C 0.02 mg/m ³ [60-minute] [skin]	Cancer Risk	Not established		OV/HEPA		X								Warning: Carcinogen; Unknown Odor Threshold; Unknown Filter Effectiveness.	Requires both filters. Toxic - ingestion, environmental.

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m³)	Warnings	Notes
Toluene	108-88-3	Methyl benzene, Methyl benzol, Phenyl methane, Toluol	<input checked="" type="checkbox"/>	100 ppm (375 mg/m³) ST 150 ppm (560 mg/m³)	200 ppm C 300 ppm 500 ppm (10-minute maximum peak)	0.16	20.1	OV							X			Warning: Odor Threshold < 1ppm.	Toxic - inhalation, ingestion (damage to lungs), fetal. Flammable.
Toluenediamine	25376-45-8<	Diaminotoluene, Methylphenylene diamine, TDA, Toluenediamine isomers, Tolylenediamine [Note: Various isomers of TDA exist.]	<input type="checkbox"/>	Ca	None	Not established		HEPA		X								Warning: Carcinogen; Unknown Odor Threshold.	Colorless Crystalline solid, used in hair coloring.
Toluene-2,4-diisocyanate	584-84-9	TDI; 2,4-TDI; 2,4-Toluene diisocyanate	<input type="checkbox"/>	Ca (2.5ppm)	0.02ppm	0.4ppm		OV/HEPA							X			Warning: Carcinogen; Odor Threshold < 1ppm.	Requires both filters. Vapors should be avoided. Sensitization - respiratory (causes asthma). Toxic - inhalation, environmental. Irritant - skin, eyes, respiratory.
m-Toluidine	108-44-1	3-Amino-1-methylbenzene, 1-Aminophenylmethane, m-Aminotoluene, 3-Methylaniline, 3-Methylbenzenamine, 3-Toluidine, m-Tolylamine	<input checked="" type="checkbox"/>	Not established REL's - a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m³ for alpha-alumina, benomyl, emery, glyc-erine (mist), graphite (synth)	None	0.46-5.90	42.4	OV	X						X			Warning: Exposure Limit Not Established; Odor Threshold < 1ppm.	Used as an adhesive accelerator (cyanoacrylates glues) and in forensic testing for presence of blood. Toxic.


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o-Toluidine	95-53-4	o-Aminotoluene, 2-Aminotoluene, 1-Methyl-2-aminobenzene, o-Methylaniline, 2-Methylaniline, ortho-Toluidine, o-Tolylamine		Ca	5 ppm (22 mg/m ³) [skin]	0.025-6.60	43.2	OV						X				Call: Odor Threshold < 0.1ppm. Warning: Carcinogen.	Used as an adhesive accelerator (cyanoacrylates glues) and in dyes. Toxic.
p-Toluidine	106-49-0	4-Aminotoluene, 4-Methylaniline, 4-Methylbenzenamine, 4-Toluidine, p-Tolylamine		Ca	None	0.027-3.2		OV						X				Call: Odor Threshold < 0.1ppm. Warning: Carcinogen.	Used as an adhesive accelerator (cyanoacrylates glues) and in dyes. Toxic.
Tributyl phosphate	126-73-8	Butyl phosphate, TBP, Tributyl ester of phosphoric acid, Tri-n-butyl phosphate		0.2 ppm (2.5 mg/m ³)	5 mg/m ³	Not established		OV/HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. In contact with concentrated nitric acid, TBP-kerosene solutions forms hazardous and explosive red oil. Toxic. Flammable.
Trichloroacetic acid	76-03-9	TCA, Trichloroethanoic acid		1 ppm (7 mg/m ³)	None	0.295		OV/HEPA							X			Warning: Odor Threshold < 1ppm; Unknown Filter Effectiveness.	Requires both filters. Used as a weed killer and in the removal of skin malformations including warts and tattoos. Safe for use while pregnant. Corrosive - causes burns (prolonged). Environmental Toxin.
1, 2, 4-Trichlorobenzene	120-82-1	unsym-Trichlorobenzene; 1,2,4-Trichlorobenzol		C 5 ppm (40 mg/m ³)	None	2.91	58.6	OV											
1, 1, 2-Trichloroethane	79-00-5	Ethane trichloride, beta-Trichloroethane, Vinyl trichloride		Ca TWA 10 ppm (45 mg/m ³) [skin]	10 ppm (45 mg/m ³) [skin]	Not established	26.4	OV		X								Warning: Carcinogen; Unknown Odor Threshold.	Toxic - inhalation, ingestion, skin contact. Irritant - eye, respiratory.
Trichloroethylene	79-01-6	Ethylene trichloride, TCE, Trichloroethene, Trilene		Ca	100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)	1.36	19.9	OV										Warning: Carcinogen.	Most commonly used for cleaning metal parts (degreaser). Toxic - inhalation, ingestion.

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Trichloromethylsilane	75-54-7	Methylchlorosilane		None	None	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	
Trichloronaphthalene	1321-65-9	Halowax®, Nibren wax, Seekay wax		5 mg/m³ [skin]	5 mg/m³ [skin]	Not established		OV/HEPA		X								Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.
1, 2, 3-Trichloropropane	96-18-4	Allyl trichloride, Glycerol trichlorohydrin, Glyceryl trichlorohydrin, Trichlorohydrin		Ca TWA 10 ppm (60 mg/m³)	50 ppm (300 mg/m³)	100	42.9	OV										Warning: Carcinogen	Used as an industrial solvent, paint/varnish remover, cleaning agent and in chemical synthesis. Toxic (acute & chronic) - inhalation, ingestion, skin contact.
1, 1, 2-Trichloro-1, 2, 2-trifluoroethane	76-13-1	Chlorofluorocarbon-113, CFC-113, Freon® 113, Genetron® 113, Halocarbon 113, Refrigerant 113, TTE		1000 ppm (7600 mg/m³) ST 1250 ppm (9500 mg/m³)	1000 ppm (7600 mg/m³)	487	28.1	OV											Chlorofluorocarbon - Ozone depleting catalyst. Phased out in 2010 per the Montreal Protocol (1987).
Triethanolamine	102-71-6	2,2,2'-Nitrilotriethanol; daltogen; trolamine; TEA; triethylolamine		None	None	Not established		OV/HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	Irritant - eyes, skin (contact allergen), respiratory. Possible Carcinogen, but not listed as such.

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Triethylamine	121-44-8	TEA		Not established REL's -a limited evaluation of the literature and concluded that the documentation cited by OSHA was inadequate to support the proposed PEL (as an 8-hour TWA) of 10 mg/m ³ for alpha-alumina, benomyl, emery, glycerine (mist), graphite (synth)	25 ppm (100 mg/m ³)	0.001	7	OV						X				Warning: Odor Threshold < 0.1ppm.	OV Filter is more effective than AM. Very low odor threshold. Highly Flammable. Harmful - ingestion, inhalation, skin contact. Corrosive.
Trifluoroacetic acid	76-05-1	Perfluoroacetic acid; trifluoroacetic acid; trifluoroethanoic acid; trifluoro-acetic acid, TFA		Not established	Not established	Not established		Not recommended	X	X								Call: Warning: Unknown Odor Threshold: Exposure Limit Not Established; Unknown Filter Effectiveness	Harmful by inhalation. Environmental Toxin. Corrosive - causes burns. Carbon is not an effective sorbent.
Trifluorobromomethane	75-63-8	Bromotrifluoromethane, Fluorocarbon 1301, Freon® 13B1, Halocarbon 13B1, Halon® 1301, Monobromotrifluoromethane, Refrigerant 13B1, Trifluoromonobromomethane		1000 ppm (6100 mg/m ³)	1000 ppm (6100 mg/m ³)	16.3	0.1	Not recommended			X							Not Recommended: Filter Capacity < 1% - Short Filter Life.	100 lbs. of carbon holds less than 0.1 lbs. of 13B1. Used as a fire suppressant. Ozone depleting agent. Has many alternatives.

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Trimellitic anhydride	552-30-7	1,2,4-Benzenetricarboxylic anhydride; 4-Carboxyphthalic anhydride; TMA; TMAN; Trimellitic acid anhydride [Note: TMA is also a synonym for Trimethylamine.]		0.005 ppm (0.04 mg/m ³) Should be handled in the workplace as an extremely toxic substance.	None	Not established		OV/HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase. Very low exposure limit.
Trimethylamine	75-50-3	N,N-Dimethylmethanamine; TMA [Note: May be used in an aqueous solution (typically 25%, 30%, or 40% TMA.)]		10 ppm (24 mg/m ³) ST 15 ppm (36 mg/m ³)	None	0.001	1.5	OV				X		X				Not Recommended: Call: Filter Capacity < 3% - Low Filter Capacity; Odor Threshold < 0.1ppm.	OV Filter is more effective than AM filter. Very low odor threshold.
1,2,3-Trimethylbenzene	526-73-8	Hemellitol [Note: hemimellitene is a mixture of the 1,2,3-isomer with up to 10% of related aromatics such as the 1,2,4-isomer.]		25 ppm (125 mg/m ³)	None	2.4	35.4	OV											
1,2,4-Trimethylbenzene	95-63-6	Asymmetrical trimethylbenzene, psi-Cumene, Pseudocumene [Note: hemimellitene is a mixture of the 1,2,3-isomer with up to 10% of related aromatics such as the 1,2,4-isomer]		25 ppm (125 mg/m ³)	None	2.4	34	OV											
1,3,5-Trimethylbenzene	108-67-8	Mesitylene, Symmetrical trimethylbenzene, sym-Trimethylbenzene		25 ppm (125 mg/m ³)	None	2.4	33.4	OV											
Trimethyl phosphite	121-45-9	Methyl phosphite, Trimethoxyphosphine, Trimethyl ester of phosphorous acid		2 ppm (10 mg/m ³)	None	0.001	15.9	OV						X				Warning: Odor Threshold < 0.1ppm.	Very Low Odor Threshold.
Trimethylpropane trimethacrylate ester	3290-92-4	TMPTMA		Not established	Not established	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	No significant signs or symptoms indicative of any adverse health hazard are expected to occur at standard conditions due to the low volatility of this material.

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2,4,6-Trinitrotoluene	118-96-7	1-Methyl-2,4,6-trinitrobenzene; TNT; Trinitrotoluene; sym-Trinitrotoluene; Trinitrotoluol		0.5 mg/m ³ [skin]	1.5 mg/m ³ [skin]	Not established		OV/HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase. Class A explosive.
Triorthocresyl phosphate	78-30-8	TCP, TOCP, Tri-o-cresyl ester of phosphoric acid, Tri-o-cresyl phosphate		0.1 mg/m ³ [skin]	0.1 mg/m ³			HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	Flammable - combustible. Severe neurotoxin - TCP cause for "Gingerjake" syndromes during prohibition. Acute toxicity can be fatal.
Triphenylamine	603-34-9	N,N-Diphenylaniline; N,N-Diphenylbenzenamine		5 mg/m ³	None	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Harmful - inhalation, ingestion, skin contact.
Triphenyl phosphate	115-86-6	Phenyl phosphate, TPP, Triphenyl ester of phosphoric acid		3 mg/m ³	3 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	OV/HEPA preferable when heat is involved. Harmful.
Tri-potassium citrate	866-84-2	Tripotassium citrate		Not established	Not established	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	The substance is toxic to mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage
Tripotassium phosphate	7778-53-2	Tripotassium phosphate (K ₃ PO ₄)		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	Food additive


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Tritium	10028-17-8	Hydrogen-3		Not established	Not established				X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	Contact Labconco. Radioactive. The low-energy beta radiation from tritium cannot penetrate human skin, so tritium is only dangerous if inhaled, ingested, or—if it is in water molecules, as with tritiated water—absorbed through pores in the skin. Its low energy also creates difficulty detecting tritium labeled compounds except by using liquid scintillation counting.
Triton	9002-93-1	Polyethylene glycol octylphenyl ether; ctylphenoxy polyethoxyethanol; Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl) phenyl] ether		Not established	Not established	Not established		OV	X	X								Warning: Unknown exposure limit, unknown odor threshold, unknown filter effectiveness	
Trizol	45-00-0	Phenol solution		None	Phenol: 19 mg/m ³ / 5 ppm		0.05	OV/HEPA		X					X			Warning: Odor threshold < 1 ppm, unknown filter effectiveness	Contains phenol and thiocyanate compounds, Overexposure may be fatal, Sweet, tarry, pungent
Tungsten	7440-33-7	Tungsten metal, Wolfram		5 mg/m ³ ST 10 mg/m ³ [*Note: The REL also applies to other insoluble tungsten compounds (as W).]	None	Not established		HEPA		X								Warning: Unknown Odor Threshold.	Chemical Element and compounds are generally inert.

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Tungsten (soluble compounds, as W)		Synonyms vary depending upon the specific soluble tungsten compound.		1 mg/m³ ST 3 mg/m³	None	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³)	The median lethal dose (LD50) depends on the organism and vector of administration - 59 mg/kg to 5000 mg/kg.
Turpentine	8006-64-2	Gumspirits, Gum turpentine, Spirits of turpentine, Steam distilled turpentine, Sulfate wood turpentine, Turps, Wood turpentine		100 ppm (560 mg/m³)	100 ppm (560 mg/m³)	100-200	10	OV/HEPA								X		Warning: Odor Threshold > Exposure Limit - Poor Odor Warning.	Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.
1-Undecanethiol	5332-52-5	Undecyl mercaptan		C 0.5 ppm (3.9 mg/m³) [15-minute]	None	Not established		OV		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness.	
Undecylenic acid	112-38-9	Declid, Desenex, Renselin, Sevinon; 10- Henedecenoic; 10-Henedecenoic acid; 10-Undecylenic acid; Undecyl-10-enic acid		Not established	Not established	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	
Uranium (insoluble compounds, as U)	7440-61-1	Uranium metal: Uranium I Synonyms of other insoluble uranium compounds vary depending upon the specific compound		Ca TWA 0.2 mg/m³ ST 0.6 mg/m³	0.25 mg/m³	Not established		Not recommended		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness.	
Uranium (soluble compounds, as U)		Synonyms vary depending upon the specific soluble uranium compound		Ca TWA 0.05 mg/m³	0.05 mg/m³	Not established		Not recommended		X							X	Call: Warning: Carcinogen; Unknown Odor Threshold; OEL < 1ppm (5mg/m³); Unknown Filter Effectiveness.	

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Urethane	51-79-6	Carbamic acid, ethyl ester; Ethyl carbamate		Not established	Not established			HEPA	X	X								Warning: Unknown Odor Threshold; Exposure Limit Not Established.	If swallowed, inhaled or absorbed through skin, it causes eye/nose/throat/skin irritation. Very high exposure can cause nausea, vomiting, light-headedness or faintness.
n-Valeraldehyde	110-62-3	Amyl aldehyde, Pentanal, Valeral, Valeraldehyde, Valeric aldehyde		50 ppm (175 mg/m ³) See Appendix C (Aldehydes) of the NIOSH guide for more information	None	0.006	13.7	OV						X				Warning: Odor Threshold < 0.1ppm.	Very Low Odor Threshold.
Vanadium dust	1314-62-1	Divanadium pentoxide dust, Vanadic anhydride dust, Vanadium oxide dust, Vanadium pentaoxide dust		C 0.05 mg V/m ³ [15-minute] [*Note: The REL applies to all vanadium compounds except Vanadium metal and Vanadium carbide (see Ferro-vanadium dust).]	C 0.5 mg V ₂ O ₅ /m ³ (resp)	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Vanadium fume	1314-62-1	Divanadium pentoxide fume, Vanadic anhydride fume, Vanadium oxide fume, Vanadium pentaoxide fume		C 0.05 mg V/m ³ [15-minute]	C 0.1 mg V ₂ O ₅ /m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Vegetable oil mist	68956-68-3	Vegetable mist		10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	

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Vinyl acetate	108-05-4	1-Acetoxyethylene, Ethenyl acetate, Ethenyl ethanoate, VAC, Vinyl acetate monomer, Vinyl ethanoate		C 4 ppm (15 mg/m ³) [15-minute]	None	0.603	8.6	OV							X			Warning: Odor Threshold < 1ppm.	Highly flammable.
Vinyl bromide	593-60-2	Bromoethene, Bromoethylene, Monobromoethylene		Ca	None	3,000		Not recommended	X									Call: Warning: Carcinogen; Exposure Limit Not Established; Unknown Filter Effectiveness.	Very high odor threshold. Extremely flammable. Harmful - inhalation, ingestion, skin contact. Irritant - eyes, skin, respiratory.
Vinyl chloride	75-01-4	Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, Vinyl chloride monomer (VCM)		Ca	1 ppm C 5 ppm [15-minute]	0.253	0.4	Not recommended			X				X			Not Recommended: Filter Capacity < 1% - Short Filter Life. Warning: Carcinogen; Odor Threshold < 1ppm.	Monomer used for production of PVC. Highly toxic. Highly flammable.
Vinyl cyclohexene dioxide	106-87-6	1-Epoxyethyl-3,4-epoxy-cyclohexane; 4-Vinylcyclohexene diepoxide; 4-Vinyl-1-cyclohexene dioxide		Ca TWA 10 ppm (60 mg/m ³) [skin]	None	Not established		OV		X								Call: Warning: Carcinogen; Unknown Odor Threshold; Unknown Filter Effectiveness.	
Vinyl fluoride	75-02-5	Fluoroethene, Fluoroethylene, Monofluoroethylene, Vinyl fluoride monomer		1 ppm C 5 ppm [use 1910.1017]	None	Not established		Not recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	IARC Group 2A carcinogen. Extremely flammable.
Vinyl methyl ether	107-25-5	methyl vinyl ether; methoxyethylene, ethylene, methoxy-; MVE, Vinyl methyl ether; ethene, methoxyethene; 1-methoxyethylene		Not established	Not established			Not recommended	X	X								Call: Warning: Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	Extremely flammable, liquefied gas


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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m³)	Warnings	Notes
Vinyl toluene	25013-15-4	Ethenylmethylbenzene, Methylstyrene, Tolyethylene		100 ppm (480 mg/m³)	100 ppm (480 mg/m³)	10	35.8	OV											
Vinylidene chloride	75-35-4	1,1-DCE; 1,1-Dichloroethene; 1,1-Dichloroethylene; VDC; Vinylidene chloride monomer; Vinylidene dichloride		Ca	None	35.5	6.4	OV	X									Warning: Carcinogen, Exposure Limit Not Established.	Extremely Explosive. Toxic - CNS acute at high concentrations.
Vinylidene fluoride	75-38-7	Difluoro-1,1-ethylene; 1,1-Difluoroethene; 1,1-Difluoroethylene; Halocarbon 1132A; VDF; Vinylidene difluoride		1 ppm C 5 ppm [use 1910.1017]	None	Not established		Not recommended		X								Call: Warning: Unknown Odor Threshold; Unknown Filter Effectiveness.	
VM & P Naphtha	8032-32-4	Ligroin, Painters naphtha, Petroleum ether, Petroleum spirit, Refined solvent naphtha, Varnish makers' & painters' naphtha		350 mg/m³ C 1800 mg/m³ [15-minute]	None	0.89		OV							X			Warning: Odor Threshold < 1ppm; Unknown Filter Effectiveness.	
Warfarin	81-81-2	3-(alpha-Acetyl)-benzyl-4-hydroxycoumarin, 4-Hydroxy-3-(3-oxo-1-phenyl butyl)-2H-1-benzopyran-2-one, WARF		0.1 mg/m³	0.1 mg/m³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m³)	
Welding fumes		Synonyms vary depending upon the specific component of the welding fumes		Ca	None	Not established		OV/HEPA	X	X								Warning: Carcinogen; Unknown Odor Threshold; Exposure Limit Not Established; Unknown Filter Effectiveness.	Requires both filters.

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Wood dust		Hard wood dust, Soft wood dust, Western red cedar dust	<input checked="" type="checkbox"/>	Ca 1 mg/m ³	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
m-Xylene	108-38-3	1,3-Dimethylbenzene; meta-Xylene; m-Xylol	<input checked="" type="checkbox"/>	100 ppm (435 mg/m ³) ST 150 ppm (655 mg/m ³)	100 ppm (435 mg/m ³)	0.324	27.6	OV							X			Warning: Odor Threshold < 1ppm.	Some Acute and Chronic symptoms have been recorded. Irritant - skin, eyes, respiratory.
o-Xylene	95-47-6	1,2-Dimethylbenzene; ortho-Xylene; o-Xylol	<input checked="" type="checkbox"/>	100 ppm (435 mg/m ³) ST 150 ppm (655 mg/m ³)	100 ppm (435 mg/m ³)	0.851	28.7	OV							X			Warning: Odor Threshold < 1ppm.	Some Acute and Chronic symptoms have been recorded. Irritant - skin, eyes, respiratory.
p-Xylene	106-42-3	1,4-Dimethylbenzene; para-Xylene; p-Xylol	<input checked="" type="checkbox"/>	100 ppm (435 mg/m ³) ST 150 ppm (655 mg/m ³)	100 ppm (435 mg/m ³)	0.49	27.4	OV							X			Warning: Odor Threshold < 1ppm.	Some Acute and Chronic symptoms have been recorded. Irritant - skin, eyes, respiratory.
m-Xylene-alpha, alpha'-diamine	1477-55-0	1,3-bis(Aminomethyl)benzene; 1,3-Benzenedimethanamine; MXDA; m-Phenylenebis(methylamine); m-Xylylenediamine		C 0.1 mg/m ³ [skin]	None	Not established		OV/HEPA		X							X	Call: Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³); Unknown Filter Effectiveness.	Requires both filters. Compound has been identified as possibly existing in both vapor and particulate phase.
Xylidine	1300-73-8	Aminodimethylbenzene, Aminoxylylene, Dimethylaminobenzene, Dimethylaniline, Xylidine isomers (e.g., 2,4-Dimethylaniline) [Note: Dimethylaniline is also used as a synonym for N,N-Dimethylaniline]		2 ppm (10 mg/m ³) [skin]	5 ppm (25 mg/m ³) [skin]	0.005-0.06		OV/HEPA						X				Warning: Odor Threshold < 0.1ppm, unknown filter effectiveness	Requires both filters. Very low odor threshold.

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CHEMICAL NAME	CAS No.	Synonyms	RATING	United States Exposure Limits (TWA) NIOSH	United States Exposure Limits (TWA) OSHA	Odor Threshold (ppm)	Filter Capacity (% Weight @ 10ppm)	Filter Type	OEL Not Established	Unknown Odor Threshold	Filter Capacity < 1%	Filter Capacity < 3%	Filter Capacity < 5%	Odor Threshold < 0.1ppm	Odor Threshold < 1 ppm	Odor Threshold > / = OEL	OEL < 1 ppm (5mg/m ³)	Warnings	Notes
Yttrium	7440-65-5	Yttrium metal		1 mg/m ³ [*Note: The REL also applies to other yttrium compounds (as Y).]	1 mg/m ³ [*Note: The REL also applies to other yttrium compounds (as Y).]	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Zinc chloride fume	7646-85-7	Zinc dichloride fume		1 mg/m ³ ST 2 mg/m ³	1 mg/m ³	Not established		HEPA		X							X	Warning: Unknown Odor Threshold; OEL < 1ppm (5mg/m ³)	
Zinc oxide	1314-13-2	Zinc peroxide	<input checked="" type="checkbox"/>	Dust: TWA 5 mg/m ³ C 15 mg/m ³ Fume: TWA 5 mg/m ³ ST 10 mg/m ³	5 mg/m ³ (fume) TWA 15 mg/m ³ (total dust) TWA	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Zinc stearate	557-05-1	Dibasic zinc stearate, Zinc salt of stearic acid, Zinc distearate	<input checked="" type="checkbox"/>	10 mg/m ³ (total) TWA 5 mg/m ³ (resp)	15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	Not established		HEPA		X								Warning: Unknown Odor Threshold.	
Zinc sulfate	7446-19-7	Zinc Sulfate Monohydrate		None	None	Not established		HEPA	X	X								Warning: Unknown exposure limit, unknown odor threshold	
Zirconium compounds (as Zr)	7440-67-7	Zirconium metal: Zirconium	<input checked="" type="checkbox"/>	5 mg/m ³ ST 10 mg/m ³ [*Note: The REL applies to all zirconium compounds (as Zr) except Zirconium tetrachloride.]	5 mg/m ³	Not established		HEPA		X								Warning: Unknown Odor Threshold.	

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