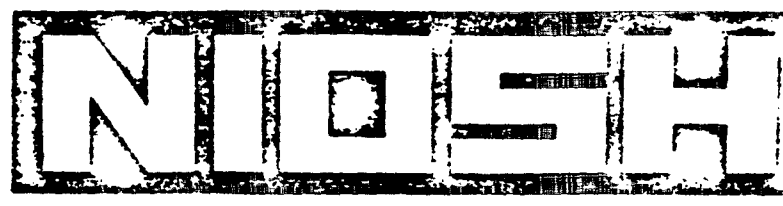


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LIST OF CRITERIA DOCUMENTS

1977 EDITION

REGISTRY of TOXIC EFFECTS of CHEMICAL SUBSTANCES

VOL. I

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Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health

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APPENDIX I

13346

SUMMARY OF NIOSH RECOMMENDATIONS FOR OCCUPATIONAL HEALTH STANDARDS SEPTEMBER 30, 1977

The following table contains a summary of the major environmental and medical recommendations found in the criteria documents published by the National Institute for Occupational Safety and Health. The intent of this table is to provide, in rapid-reference form, the NIOSH recommendations, the transmittal date of each document to the Department of Labor, and the current Federal standard. In addition, the significant health effects that were considered in developing the recommendations are presented. Other pertinent information is included under Comments.

It should be noted that no attempt has been made to provide all those details necessary for a complete understanding of the documents in the table. Reference to the full criteria document is recommended for those wishing more information from the recommended standard, such as work practices and sampling and analytical methods.

Any questions regarding the information contained in this Appendix should be directed to the Division of Criteria Documentation and Standards Development, Rockville, Maryland 20857.

A. Criteria Documents Completed

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Acetylene (PB 267068)	July 1, 1976	2,500 ppm (10% of lower explosive limit)	No exposure in excess of 2,500 ppm	Indirect asphyxia	Employers to check for, and inform employees of, contaminants such as arsine and phosphine
Acrylamide	October 21, 1976	0.3 mg/m ³ , 8-hr TWA (skin)	0.3 mg/m ³ TWA	Skin, eye, nervous system effects	Skin and eye con- tact must be prevented
Acrylonitrile	September 28, 1977 '173	20 ppm, 8-hr TWA (skin)	Not greater than 4 ppm by recommended method	Lung and bowel cancer	Chest X-ray required. First- aid and medical kits to be available during use. Hazardous liquid, skin
Alkanes (C5-C8)	March 29, 1977	pentane: 1000 ppm, 8-hr TWA; n-hexane, n-heptane, octane: 500 ppm, 8-hr TWA	350 mg/m ³ TWA; mixtures not to be greater than 350 mg/m ³ TWA; 1800 mg/m ³ ceiling, singly or mixtures (15-minute)	Skin and nervous system effects	Action level defined as 200 mg/m ³ for these substances
Allyl Chloride (PB 267071)	September 21, 1976	1 ppm, 8-hr TWA	1 ppm TWA; 3 ppm ceiling (15-minute)	Liver, kidney, lung effects	Urine, blood, and pulmonary function testing required
Ammonia (PB 246699)	July 15, 1974 74-136	50 ppm, 8-hr TWA	50 ppm ceiling (5-minute)	Airway irritation	Hazardous liquid, eye damage

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.
**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Arsenic, Inorganic (PB 246701)	January 21, 1974 Revised June 23, 1975	0.5 mg(As)/m ³ TWA	2 µg(As)/m ³ ceiling (15-minute)	Dermatitis; lung cancer	Chest X-ray required
Asbestos (PB 209510)	January 21, 1972 Revised December 15, 1976	2,000,000 fibers/m ³ , 8-hr TWA; 10,000,000 fibers/m ³ ceiling	100,000 fibers/m ³ over 5 microns TWA; 500,000 fibers/m ³ over 5 microns ceiling (15-minute)	Asbestosis; lung cancer	Federal standard promulgated July 7, 1972; TWA lowered July 1, 1976
Asphalt Fumes 901	September 27, 1977	TLV: 5 mg/m ³	5 mg/m ³ ceiling	Respiratory system effects; thermal burns (skin)	Recommend skin and respiratory protection
Benzene (PB 246700)	July 24, 1974 Revised July 25, 1977	10 ppm, 8-hr TWA; 25 ppm acceptable ceiling; 50 ppm maximum ceiling (10-minute)	1 ppm ceiling (60-minute)	Blood changes, including leukemia	Blood testing required
Benzoyl Peroxide	June 7, 1977	5 mg/m ³ , 8-hr TWA	5 mg/m ³ TWA	Airway and eye irritation; skin effects	
Beryllium (PB 210806)	June 30, 1972 Revised August 19, 1977	2 µg/m ³ , 8-hr TWA; 5 µg/m ³ acceptable ceiling; 25 µg/m ³ maximum ceiling (30-minute)	0.5 µg/m ³ (130-minute)	Lung cancer	Pulmonary function testing, chest X-ray, and sputum cytology required

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.
 **NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Boron Trifluoride	December 15, 1976	1 ppm ceiling	None recommended	Respiratory system effects	Adequate procedures for sampling and analysis not available; pulmonary function testing required
Cadmium	August 23, 1976	fume: 0.1 mg/m ³ , 8-hr TWA; 0.3 mg/m ³ ceiling (erroneously published as 3 mg/m ³); dust: 0.2 mg/m ³ , 8-hr TWA; 0.6 mg/m ³ ceiling	40 µg(Cd)/m ³ TWA; 200 µg(Cd)/m ³ ceiling (15-minute)	Lung and kidney effects	Urine and pulmonary function testing required
Carbaryl	September 30, 1976	5 mg/m ³ , 8-hr TWA	5 mg/m ³ TWA	Nervous system effects	Medical warnings of possible effects on reproductive system and minimum exposure during pregnancy required; skin and eye contact to be prevented
*Carbon Dioxide (PB 266597)	August 11, 1976	5,000 ppm, 8-hr TWA	10,000 ppm TWA; 30,000 ppm ceiling (10-minute)	Respiratory system effects	
Carbon Disulfide 77-156	May 4, 1977	20 ppm, 8-hr TWA; 30 ppm acceptable ceiling; 100 ppm maximum ceiling (30-minute)	1 ppm TWA; 10 ppm ceiling (15-minute)	Heart, nervous, and reproductive system effects	Employees to be advised of potential effects on reproductive system

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.
 **NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Carbon Monoxide (PB 212629) 15-11-72	August 3, 1972	50 ppm, 8-hr TWA	35 ppm TWA; 200 ppm ceiling	Heart effects	
Carbon Tetrachloride (PB 250424)	December 22, 1975 Revised June 9, 1976	10 ppm, 8-hr TWA; 25 ppm acceptable ceiling; 200 ppm maximum ceiling (5-min in four hours)	2 ppm ceiling (60-minute)	Liver cancer	
Chlorine (PB 266367)	May 25, 1976	1 ppm, 8-hr TWA	0.5 ppm ceiling (15-minute)	Eye and airway irritation	Chest X-rays required
Chloroform (PB 246695)	September 11, 1974 Revised June 9, 1976	50 ppm ceiling	2 ppm ceiling (60-minute)	Central nervous system effects; liver or kidney tumors	Current Federal standard should be TWA; published "C" in error
Chloroprene	August 12, 1977	25 ppm, 8-hr TWA	1 ppm ceiling (15-minute)	Reproductive effects; potential for cancer	Chest X-ray and pulmonary function testing required; medical warnings to workers concerning reproductive effects in animals; pregnant workers to be coun- seled about continuing work with chloroprene
Chromic Acid (PB 222221)	July 17, 1973	1 mg/10 m ³ ceiling	0.05 mg(CrO ₃)/m ³ TWA; 0.1 mg(CrO ₃)/m ³ ceiling (15-minute)	Nasal ulceration	

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.

**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Chromium (VI) (PB 248595)	December 1, 1975	100 $\mu\text{g}/10\text{ m}^3$ ceiling	1 $\mu\text{g}/\text{m}^3$ for carcinogenic Cr(VI); 25 $\mu\text{g}/\text{m}^3$ TWA for other Cr(VI); 50 $\mu\text{g}/\text{m}^3$ ceiling (15-minute)	Lung cancer; skin ulcers, lung irritation	Employer must demonstrate absence of carcinogenic Cr(VI); X-ray required
Coal Tar Products	September 27, 1977	None	0.1 mg/m ³ TWA (cyclohexane-extractable fraction)	Lung and skin cancer	Includes coal tar, creosote, and coal tar pitch. Pulmonary function testing, chest X-rays, and sputum cytology required
Coke Oven Emissions (PB 216167)	February 28, 1973	150 $\mu\text{g}/\text{m}^3$, 8-hr TWA	Work practices to minimize exposure to emissions	Lung cancer	Sputum cytology and chest X-ray required. Federal standard promulgated Oct. 22, 1976
Cotton Dust (PB 246696)	September 26, 1974	1 mg/m ³ (raw cotton dust)	0.2 mg/m ³ (lint-free cotton dust)	Pulmonary disease (bysinosis)	Pulmonary function testing required

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.

**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Cyanide, Hydrogen and Cyanide Salts (PB 266230)	October 4, 1976	10 ppm, 8-hr TWA (hydrogen cyanide); 5 mg(CN)/m ³ (cyanide) (skin)	5 mg(CN)/m ³ ceiling (10-minute)	Thyroid, blood, and respiratory system effects	Concurrent measure- ment required for HCN when measuring for cyanide salt; trained first-aid personnel and first- aid kits to be avail- able during use. Hazardous liquid, skin and eyes
Decomposition Products of Fluorocarbon	September 26, 1977	None	None recommended	Lung effects; polymer fume fever	Workroom air to be monitored for inorganic fluorides and hydrogen fluoride
Dibromochloro- propane	September 2, 1977	None	10 ppb ceiling (30-minute)	Sterility; renal and liver effects	Medical warnings to workers of repro- ductive system abnor- malities including sterility, and notice of findings of cancer in animals following direct gastric application
Dioxane	September 1, 1977	100 ppm, 8-hr TWA (skin)	1 ppm ceiling (30-minute)	Liver and kidney effects; cancer	Blood and urine testing required. Hazardous liquid, skin

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.

**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Epichlorohydrin	September 17, 1976	5 ppm, 8-hr TWA (20 mg/m ³)	2 mg/m ³ TWA; 19 mg/m ³ ceiling (15-minute)	Skin, kidney, liver, and respiratory system effects	Medical warning of infertility effects required. Hazardous liquid, skin
Ethylene Dibromide	August 25, 1977	20 ppm, 8-hr TWA; 30 ppm acceptable ceiling; 50 ppm maximum peak (5-minute)	1 mg/m ³ ceiling (15-minute)	Damage to skin, eyes, heart, liver, spleen, respiratory and central nervous systems. Potential for cancer and mutagenesis	Medical warnings to workers of poten- tial reproductive abnormalities and cancer following direct administration in animals. Hazardous liquid, contact to be prevented
Ethylene Dichloride	March 9, 1976	50 ppm, 8-hr TWA; 100 ppm acceptable ceiling; 200 ppm ceiling (5-min in 3 hours)	5 ppm TWA; 15 ppm ceiling (15-minute)	Nervous system, respiratory system, heart, liver effects	Nursing infants at risk
Fibrous Glass	April 15, 1977	15 mg/m ³ total dust; 5 mg/m ³ respirable fraction (nuisance dust)	3,000,000 fibers/m ³ TWA (fibers < 3.5 microns diameter and > 10 microns length); 5 mg/m ³ TWA (total fibrous glass)	Eye, skin, and airway effects	NIOSH recommends this limit also apply to other man- made fibers
Fluorides, Inorganic (PB 246692)	June 30, 1975	2.5 mg/m ³ , 8-hr TWA	2.5 mg(F)/m ³ TWA	Kidney and bone effects	Urine monitoring required

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.
**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Formaldehyde	December 30, 1976	3 ppm, 8-hr TWA; 5 ppm acceptable ceiling; 10 ppm maximum ceiling (30-minute)	1.2 mg/m ³ ceiling (30-minute)	Irritation, lung effects	Hazardous liquid, skin
Hot Environments (PB 210794)	June 30, 1972	None	Variable (sliding scale)	Heat stress	Acclimatization required
Hydrogen Fluoride	March 9, 1976	3 ppm, 8-hr TWA	2.5 mg(F)/m ³ TWA; 5.0 mg(F)/m ³ ceiling (15-minute, fluoride ion)	Skin, eye, and airway irritation; bone effects	Pelvic X-ray (male) and urine testing required
Hydrogen Sulfide	May 4, 1977	20 ppm acceptable ceiling; 50 ppm maximum ceiling (10-minute)	15 mg/m ³ ceiling (10-minute)	Irritation; severe acute effects, nervous and respiratory systems	Continuous moni- toring required if potential exists for exposure to greater concen- tration; evacuation of area required if concentration > 70 mg/m ³
Isopropyl Alcohol	March 9, 1976	400 ppm, 8-hr TWA	400 ppm TWA; 800 ppm ceiling (15-minute)	Mucous membrane irritation; possible cancer threat in manufacturing process	More stringent work practices and medical surveillance for manufacturing workers

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.

**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Kepone	January 27, 1976	None	1 $\mu\text{g}/\text{m}^3$ ceiling (15-minute)	Nervous system effects; liver cancer	Liver function testing required
*Lead, Inorganic (PB 214265)	January 5, 1973 Revised March 1977 in NIOSH testimony	0.2 mg/m ³ , 8-hr TWA	<100 $\mu\text{g}/\text{m}^3$	Kidney, blood, and nervous system effects	Air level to be maintained so that worker blood lead remains at or below 0.060 mg/100 g; blood monitoring required
Malathion (PB 267070)	July 1, 1976	15 mg/m ³ , 8-hr TWA	15 mg/m ³ TWA	Nervous system effects	Skin contact to be prevented; blood monitoring required
*Mercury, Inorganic (PB 222223)	January 5, 1973	0.1 mg/m ³ ceiling	0.05 mg/m ³ TWA	Central nervous system and mental effects	
Methyl Alcohol	March 22, 1976	200 ppm TWA	200 ppm TWA; 800 ppm ceiling (15-minute)	Blindness; metabolic acidosis	
Methyl Parathion	September 30, 1976	None	0.2 mg/m ³ TWA	Nervous system effects	Skin contact to be prevented; blood monitoring required

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.
 **NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Methylene Chloride	March 9, 1976	500 ppm, 8-hr TWA; 1000 ppm acceptable ceiling; 2000 ppm maximum ceiling (5-min in two hours)	75 ppm TWA; 500 ppm ceiling, (15-minute) TWA to be lowered in presence of carbon monoxide	Central nervous system effects, carbon monoxide toxicity	Blood monitoring required
Nickel, Inorganic	May 13, 1977	1 mg(Ni)/m ³ , 8-hr TWA	15 µg(Ni)/m ³ TWA	Lung and nasal cancer; skin effects	Chest X-ray and pulmonary function testing required
Nitric Acid	March 9, 1976	2 ppm, 8-hr TWA	2 ppm TWA	Dental erosion; nasal and lung irritation	Hazardous liquid, skin and eyes. Chest X-ray required
Nitrogen, Oxides	March 22, 1976	NO _x : 5 ppm, 8-hr TWA	NO _x : 1 ppm ceiling	Airway effects	Pulmonary function testing required
Noise (PB 213463)	August 10, 1972	NO: 25 ppm, 8-hr TWA 90 dBA, 8-hr TWA	NO: 25 ppm TWA 85 dBA TWA; 115 dBA ceiling	Blood effects Hearing damage	
Organotin Compounds	November 12, 1976	0.1 mg(Sn)/m ³ , 8-hr TWA	0.1 mg(Sn)/m ³ TWA	Eye, skin, liver, nervous system, and heart effects	Chest X-ray, blood and urine monitor- ing, eye tests, heart examina- tion, and nervous system testing required. Hazar- dous liquid, skin and eyes

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.

**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Parathion	June 30, 1976	0.11 mg/m ³ , 8-hr TWA (skin)	0.05 mg/m ³ TWA	Nervous system effects	Skin contact to be prevented; blood monitoring required
/ Phenol (PB 266495)	June 30, 1976	5 ppm, 8-hr TWA (skin)	20 mg/m ³ TWA; 60 mg/m ³ ceiling (15-minute)	Skin, eye, CNS, liver, and kidney effects	Hazardous sub- stance, skin and eyes
/ Phosgene (PB 267514)	February 23, 1976	0.1 ppm, 8-hr TWA	0.1 ppm TWA; 0.2 ppm ceiling (15-minute)	Airway effects	Pulmonary function testing and X-ray required
Polychlorinated Biphenyls	September 27, 1977	1 mg/m ³ , 8-hr TWA (42% chlorine); 0.5 mg/m ³ , 8-hr TWA (54% chlorine)	1 µg/m ³ TWA	Cancer; skin, liver, and reproductive effects	Blood testing required. Medical warning of adverse effects to be given to women workers of child- bearing age and nursing mothers

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.
**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Refined Petroleum Solvents	July 19, 1977	500 ppm, 8-hr TWA (solvent)	350 mg/m ³ TWA (15-minute)	Skin, lung, and nervous system irritation	Blood and urine action level for petroleum ether, rubber solvent, naphthalene to be 200 mg/ m ³ TWA; action level for mineral spirits and Stoddard solvent to be 350 mg/ m ³ TWA; action level for kerosene to be 100 mg/m ³ TWA. Hazardous substance, skin
Silica, Crystalline (PB 246697)	November 11, 1974	250/%SiO ₂ + 5 in mppcf, or 10 mg/m ³ /%SiO ₂ + 2 (respirable quartz)	50 µg/m ³ TWA, respirable free silica	Chronic lung disease (silicosis)	X-ray and pulmonary function testing required
Sodium Hydroxide (PB 246694)	September 16, 1975	2 mg/m ³ , 8-hr TWA	2 mg/m ³ ceiling (15-minute)	Airway irritation	Hazardous liquid, skin and eyes
Sulfur Dioxide (PB 228152)	February 11, 1974 Revised May 12, 1977	5 ppm, 8-hr TWA	0.5 ppm TWA	Respiratory system effects	Pulmonary function testing required
Sulfuric Acid (PB 233098)	June 6, 1974	1 mg/m ³ , 8-hr TWA	1 mg/m ³ TWA	Pulmonary irritation	Hazardous liquid, skin and eyes
1,1,2,2-Tetra- chloroethane	December 17, 1976	5 ppm, 8-hr TWA (skin)	1 ppm TWA	Liver, gastrointes- tinal, and nervous system effects	Skin contact to be prevented; blood monitoring required

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.
**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Tetrachloro- ethylene (PB 266583)	July 2, 1976	100 ppm, 8-hr TWA; 200 ppm acceptable maximum ceiling; 300 ppm maximum ceiling (5-min in 3 hours)	50 ppm TWA; 100 ppm ceiling (15-minute)	Nervous system, heart, respiratory system, liver effects	Medical warning of possible con- genital abnormal- ities required
Toluene (PB 222219)	July 23, 1973	200 ppm, 8-hr TWA; 300 ppm acceptable ceiling; 500 ppm maximum ceiling (10-minute)	100 ppm TWA; 200 ppm ceiling (10-minute)	Central nervous system depressant	
Toluene Diisocyanate (PB 222220)	July 13, 1973	0.02 ppm ceiling	0.005 ppm TWA; 0.02 ceiling (20-minute)	Airway effects	Chest X-ray, blood tests, pulmonary function testing required
1,1,1-Tri- chloroethane (PB 267069)	July 2, 1976	350 ppm, 8-hr TWA	350 ppm ceiling (15-minute)	Nervous system, liver, and heart effects	Action level set at 200 ppm TWA; medical warning of possible con- genital abnormal- ities required
Trichloroethylene (PB 222222)	July 23, 1973	100 ppm, 8-hr TWA; 200 ppm acceptable ceiling; 300 ppm maximum ceiling (5-min in two hours)	100 ppm TWA; 150 ppm ceiling (10-minute)	Central nervous system depressant	NIOSH reevaluating environmental limit

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.
**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Tungsten and Cemented Tungsten Carbide	September 26, 1977	None	Insoluble tungsten: 5 mg/m ³ TWA; soluble tungsten: 1 mg/m ³ TWA; dust of cemented tungsten carbide (> 2% cobalt): 0.1 mg(Co)/m ³ TWA; dust of cemented tungsten carbide (> 0.3% nickel): 15 µg(Ni)/m ³ TWA	Lung and skin effects	Pulmonary function testing and chest X-ray required
Ultraviolet Radiation (PB 214268)	December 20, 1972	10 mW/cm ² averaged over any 1-hour period	1.0 mW/cm ² for over 1000 sec.; 100 mW sec/cm for periods under 1000 sec.	Skin and eye effects	
Vanadium	August 23, 1977	Vanadium pentoxide: 0.5 mg/m ³ ceiling (dust); 0.1 mg/m ³ ceiling (fume). Ferrovanadium: 1 mg/m ³ , 8-hr TWA	Vanadium compounds: 0.05 mg/m ³ ceiling (15-minute); metallic vanadium and vanadium carbide: 1 mg/m ³ TWA	Eye, skin, and lung effects	Pulmonary function testing and chest X-ray required
Vinyl Chloride (PB 246691)	March 11, 1974	1 ppm, 8-hr TWA; 5 ppm ceiling (15-minute sample)	Minimum detectable level; 1 ppm ceiling (15-minute)	Liver cancer	Standard promulgated October 4, 1974. Lung function testing required

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.
 **NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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A. Criteria Documents Completed (cont'd.)

Substance (NTIS Stock No.)*	Transmitted to OSHA	Current OSHA Environmental Standard	NIOSH Recommendation for Environmental Exposure Limit** (Sampling Time)	Health Effects Considered	Comments
Waste Anesthetic Gases and Vapors	March 4, 1977	None for substances when used as anesthetic agents	2 ppm ceiling (1-hr) (halogenated anes- thetic agents); 25 ppm TWA during periods of use (nitrous oxide)	Reproductive effects and audiovisual performance decrements	Employees to be advised of potential effects; abnormal outcome of pregnancies of employees or wives to be documented
Xylene (PB 246702)	May 23, 1975	100 ppm, 8-hr TWA	100 ppm TWA; 200 ppm ceiling (10-minute)	Central nervous system depressant; airway irritation	
Zinc Oxide (PB 246693)	October 10, 1975	5 mg/m ³ , 8-hr TWA	5 mg/m ³ TWA; 15 mg/m ³ ceiling (15-minute)	Metal fume fever	

*Copies of these documents may be ordered from the National Technical Information Service, Springfield, Virginia 22161.

**NIOSH TWA recommendations based on up to a 10 hour exposure, unless otherwise noted.

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B. Criteria Documents Planned for Completion During FY 1978 — FY 1981

Please note that this is a tentative list and completion of any one document is subject to the availability of information needed to form an acceptable base for a standard. Topics on the list may be displaced by others considered to require more prompt attention.

Aliphatic Di- and Polyamines

Aliphatic Primary Monoamines

Alkanolamines

~~Aluminum Compounds~~

Antimony Compounds

Aromatic Amines

Benzyl Chloride

Brominated Aliphatics

Brominated Aromatics

Caisson and Tunnel Workers

Carbon Black

Cement Manufacturing and Use

Chlorinated Benzenes

Chlorophenols

Coal Gasification

Coal Liquefaction

Cobalt Compounds

~~Cresol and Cresylic Acid~~

Dichloropropane

Diesel Emissions

Dinitro-o-Cresol

~~Diphenyl~~

Dyeing and Finishing Textiles

Entering Confined Spaces

Epoxides

Flame Retardants

Fluorocarbons

Foundries

Furfuryl Alcohol

Glycidyl Ethers

Glycol Ethers

Glycols

Grain Handlers

Hexachlorobutadiene

Hexachlorocyclopentadiene

Hexachloroethane

Hexafluoroacetone

Hydrazines

~~Hydrogen Chloride~~

Hydroquinone

Infrared Radiation

Inorganic Azides

~~Inorganic Chromium (Non-Hexavalent)~~

~~Iron Compounds~~

Ketones

Lubricants and Greases

Manganese Compounds

Manufacture of Non-Metallic Pigments and Dyes

Manufacture and Formulation of Pesticides

Mercaptans

Methyl Chloride

Methyl Ethyl Ketone Peroxide

Monochloroacetic Acid

Monochloroethane

~~Naphthalene~~

Nitriles

Nitroglycerine and EGD

Nitrobenzenes

~~Nitrophenol~~

Nitrotoluene

Oil Mists

Organic Anhydrides

Organo Arsenic Compounds

Organo-Isocyanates

Organo Mercury Compounds

Organophosphates (Excluding Pesticide and Fire Retardants)

o-Tolidine

Oxalic Acid

~~Ozone~~

Paint and Allied Products Manufacturing

Pentachloroethane

Phthalates

Plastics and Resins Manufacturing

Printing Industry

Pulp and Paper Mills

Radiofrequency and Microwave Radiation

Roofing Industry

Secondary Aliphatic Monoamines

Slaughtering and Rendering Plants

Synthetic Rubber Manufacturing

~~Styrene~~

Talc

Terphenyl

Tertiary Aliphatic Monoamines

Tetrahydrofuran

Tire Manufacturing

Trichloropropane

Ultrasonics

Vibration, Whole Body

~~Vinyl Compounds~~

Vinyl Cyclohexene Dioxide

Welding and Brazing

Wood Dust

Wood Preserving