

1990 CLEAN AIR ACT AMENDMENTS

**Vinyl Chloride Safety Association
September 26-27, 1991
Denver, Colorado**

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Houston, Texas**

CTL019572

CLEAN AIR ACT

Titles

- Title I: Nonattainment (Ozone)**
- Title II: Motor Vehicles**
- Title III: Air Toxics**
- Title IV: Acid Rain**
- Title V: Permits**
- Title VI: Stratospheric Ozone**
- Title VII: Enforcement**
- Title VIII: Miscellaneous**
- Title IX: Research**
- Title X: Disadvantaged**
- Title XI: Jobs**

CLEAN AIR ACT

Air Toxics

Any air pollutant for which a national ambient air quality standard does not exist that may reasonably be anticipated to cause cancer, developmental effects, neurological disorders, reproductive dysfunctions, heritable gene mutations or other serious or irreversible chronic or acute health effects in humans.

189 substances

Includes VCM and EDC

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AIR TOXICS

Levels of Control

- **Technology-based regulations**
- **Residual risk reduction**

AIR TOXICS

Technology Standards

- **Maximum Achievable Control Technology**

MACT applies to major sources

**A major source emits 10T/Yr of any toxic or
25T/Yr total toxics**

- **Generally Available Control Technology**

GACT applies to minor sources

**Source is the complex within the
fenceline**

AIR TOXICS

Source Categories

Source category list by November, 1991

Examples

Polyvinyl Chloride & Copolymers Production

Dichloroethane Production

Methanol Production

Vinyl Chloride Production

Production of Synthetic Organic Chemicals

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AIR TOXICS

MACT Schedule

- **November, 1992**
Timetable for sources to be regulated
MACT for first 40 categories
- **November, 1994**
MACT for first 25% of categories
- **November, 1997**
MACT for second 25% of categories
- **November, 2000**
MACT for remaining categories

AIR TOXICS

MACT Compliance

Compliance with MACT within 3 years of publication

First 40 categories must be in compliance by November, 1995

A one year extension is available for special situations

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AIR TOXICS

Early Reduction Credits

- **MACT compliance can be delayed 6 years**
- **Voluntarily reduce air toxics 90%
before the MACT standards is proposed**
- **95% reduction for particulates**

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AIR TOXICS

MACT Definition

New sources - at least as good as the best similar sources have achieved

Existing sources - at least as good as the best 12% existing sources have achieved

These "MACT Floors" will be based on local, state and federal regulations

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MACT

Regulated Processes

- **Waste Operations**
- **Fugitive Emissions**
- **Storage Tanks**
- **Container Loading**
- **Process Vents**

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MACT

Waste Operations

- **Based on existing federal Benzene Waste Operations regulation**
- **Controls emissions from:**
 - Sewers**
 - Separators**
 - Impoundments**
 - Waste handling**
- **Wastes containing more than X ppm air toxics will need to be controlled**

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MACT

Fugitive Emissions

- **MACT based on recently negotiated rule among industry, environmentalists and EPA**
- **Valve leak frequency must be less than 2%**
- **A leak is 500 ppm**
- **Pump leak frequency must be less than 10%**
- **Failure to meet the frequency requires implimentation of an improvement program**

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MACT

Storage Tanks

- **MACT based on New Source Performance Standard for organic liquid tanks**
- **Floating roofs**
- **Alternatives that provide 95% emission reductions**

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MACT

Transport Loading

- **MACT based on the Benzene Loading rule**
- **Controls for loading of rail cars and trucks**
- **Barge and ship loading may be included**
- **95-98% emission reduction**

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MACT

Process Emissions

**Based on Reactor Emissions federal New
Source Performance Standard**

**Requires controls from process vents above a
minimum level**

- **Minimum is based on vent characteristics**
 - Organic content**
 - Flow rate**
 - Heating Value**

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AIR TOXICS

Impact on Vinyl Industry

- **VCM Plants likely to be in the first group
MACT compliance by November, 1995**
- **PVC Plants likely to be in the first 25% with
MACT compliance by November, 1997**
- **VCM emission probably already meet MACT**
- **EDC emissions will require the more work**

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MACT Implimentation

Operating Permits

State must develop operating permit programs by November, 1994

- **Sources (industry) must submit permit applications by November, 1995**

MACT requirements will be written into operating permits

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AIR TOXICS

Residual Risk

EPA must report to Congress on risk assessment techniques by November, 1996

A scientific panel is advising EPA

Once MACT is installed, industries must evaluate remaining air toxic risk

Fenceline

One in a million risk or less required

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CAS Number	Chemical Name
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	2-Acetylaminofluorene
107028	Acrolein
79061	Acrylamide
79107	Acrylic Acid
107131	Acrylonitrile
107051	Allyl Chloride
92671	4-Aminobiphenyl
62533	Aniline
90040	o-Anisidine
1332214	Asbestos
71432	Benzene (including Benzene from Gasoline)
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl Chloride
92524	Biphenyl
117817	Bis (2-Ethylhexyl) Phthalate (DEHP)
542881	Bis (Chloromethyl) Ether
75252	Bromoform
106990	1,3-Butadiene
156627	Calcium Cyanamide
105602	Caprolactam
133062	Captan
63252	Carbaryl
75150	Carbon Disulfide
56235	Carbon Tetrachloride
463581	Carbonyl Sulfide
120809	Catechol
133904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic Acid
532274	2-Chloroacetophenone
108907	Chlorobenzene
510156	Chlorobenzilate
67663	Chloroform
107302	Chloromethyl Methyl Ether
126998	Chloroprene

CAS Number	Chemical Name
1319773	Cresols/Cresylic Acid (Isomers and Mixture)
95487	o-Cresol
108394	m-Cresol
106445	p-Cresol
98828	Cumene
94757	2,4-D, Salts and Esters
3547044	DDE
334883	Diazomethane
132649	Dibenzofurans
96128	1,2-Dibromo-3-Chloropropane
84742	Dibutylphthalate
106467	1,4-Dichlorobenzene (p)
91941	3,3-Dichlorobenzidine
111444	Dichloroethyl Ether (Bis (2-Chloroethyl) Ether)
542756	1,3-Dichloropropene
62737	Dichlorvos
111422	Diethanolamine
121697	N,N-Diethyl Aniline (N,N-Dimethylaniline)
64675	Diethyl Sulfate
119904	3,3-Dimethoxybenzidine
60117	Dimethyl Aminoazobenzene
119937	3,3'-Dimethyl Benzidine
79447	Dimethyl Carbamoyl Chloride
68122	Dimethyl Formamide
57147	1,1-Dimethyl Hydrazine
131113	Dimethyl Phthalate
77781	Dimethyl Sulfate
534521	4,6-Dinitro-O-Cresol and Salts
51285	2,4-Dinitrophenol
121142	2,4-Dinitrotoluene
123911	1,4-Dioxane (1,4-Diethyleneoxide)
122667	1,2-Diphenylhydrazine
106898	Epichlorohydrin (1-Chloro-2,3-Epoxypropane)
106887	1,2-Epoxybutane
140885	Ethyl Acrylate
100414	Ethyl Benzene
51796	Ethyl Carbamate (Urethane)
75003	Ethyl Chloride (Chloroethane)
106934	Ethylene Dibromide (Dibromoethane)
107062	Ethylene Dichloride (1,2-Dichloroethane)
107211	Ethylene Glycol

CAS Number	Chemical Name
151564	Ethylene Imine (Aziridine)
75218	Ethylene Oxide
96457	Ethylene Thiourea
75343	Ethylidene Dichloride (1,1-Dichloroethane)
50000	Formaldehyde
76448	Heptachlor
118741	Hexachlorobenzene
87683	Hexachlorobutadiene
77474	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene-1,6-Diisocyanate
680319	Hexamethylphosphoramide
110543	Hexane
302012	Hydrazine
7647010	Hydrochloric Acid
7664393	Hydrogen Fluoride (Hydrofluoric Acid)
123319	Hydroquinone
78591	Isophorone
58899	Lindane (All Isomers)
108316	Maleic Anhydride
67561	Methanol
72435	Methoxychlor
74839	Methyl Bromide (Bromomethane)
74873	Methyl Chloride (Chloromethane)
71556	Methyl Chloroform (1,1,1-Trichloroethane)
78933	Methyl Ethyl Ketone (2-Butanone)
60344	Methyl Hydrazine
74884	Methyl Iodide (Iodomethane)
108101	Methyl Isobutyl Ketone (Hexone)
624839	Methyl Isocyanate
80626	Methyl Methacrylate
1634044	Methyl Tert Butyl Ether
101144	4,4-Methylene Bis (2-Chloroaniline)
75092	Methylene Chloride (Dichloromethane)
101688	Methylene Diphenyl Diisocyanate (MDI)
101779	4,4'-Methylenedianiline
91203	Naphthalene
98953	Nitrobenzene
92933	4-Nitrobiphenyl
100027	4-Nitrophenol
79469	2-Nitropropane

CAS Number	Chemical Name
684935	N-Nitroso-N-Methylurea
62759	N-Nitrosodimethylamine
59892	Parathion
82688	Pentachloronitrobenzene (Quintobenzene)
87865	Pentachlorophenol
108952	Phenol
106503	p-Phenylenediamine
75445	Phosgene
7803512	Phosphine
7723140	Phosphorus
85449	Phthalic Anhydride
1336363	Polychlorinated Biphenyls (Aroclors)
1120714	1,3-Propane Sulfone
57578	Beta-Propiolactone
123386	Propionaldehyde
114261	Propoxur (Baygon)
78875	Propylene Dichloride (1,2-Dichloropropane)
75569	Propylene Oxide
75558	1,2-Propylenimine (2-Methyl Aziridine)
91225	Quinoline
106514	Quinone
100425	Styrene
96093	Styrene Oxide
1746016	2,3,7,8-Tetrachlorodibenzo-p-Dioxin
79345	1,1,2,2-Tetrachloroethane
127184	Tetrachloroethylene (Perchloroethylene)
7550450	Titanium Tetrachloride
108883	Toluene
95807	2,4-Toluene Diamine
584849	2,4-Toluene Diisocyanate
95534	o-Toluidine
8001352	Toxaphene (Chlorinated Camphene)
120821	1,2,4-Trichlorobenzene
79005	1,1,2-Trichloroethane
79016	Trichloroethylene
95954	2,4,5-Trichlorophenol
88062	2,4,6-Trichlorophenol
121448	Triethylamine
1582098	Trifluralin
540841	2,2,4-Trimethylpentane
108054	Vinyl Acetate

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CAS Number	Chemical Name
593602	Vinyl Bromide
75014	Vinyl Chloride
75354	Vinylidene Chloride (1,1-Dichloroethyl ne)
1330207	Xylenes (Isomers and Mixture)
95476	o-Xylenes
108383	m-Xylenes
106423	p-Xylenes
	Antimony Compounds
	Arsenic Compounds (Inorganic including Arsine)
	Beryllium Compounds
	Cadmium Compounds
	Chromium Compounds
	Cobalt Compounds
	Coke Oven Emissions
	Cyanide Compounds
	Glycol Ethers
	Lead Compounds
	Manganese Compounds
	Mercury Compounds
	Fine Mineral Fibers
	Nickel Compounds
	Polycyclic Organic Matter
	Radionuclides (including Radon)
	Selenium Compounds

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