

## **Air Toxics Strategy – Updated June 2007**

Air toxics, also known as hazardous air pollutants (HAP), can cause many acute and chronic diseases in humans exposed to them. About one-half of the 188 HAP listed in the Clean Air Act are known or suspected human carcinogens. EPA estimates that 4.5 million tons of HAP were emitted from autos, mobile machinery, and stationary source facilities nationwide in 1996. In 1999 it's estimated that 4.0 million tons of HAP were emitted—an 11% decrease for the 3-year period. Several EPA and Colorado regulations designed to control *criteria pollutants* (a legal category that includes carbon monoxide, ozone, oxides of nitrogen and sulfur, lead and particulate matter), as well as volatile organic compounds, have resulted in reductions of HAP emissions in the past several years.

Thanks to EPA's strategy and Colorado's efforts, including regulations and voluntary programs, continued reductions in HAP are predicted at least through 2007. A leveling off or slight increase in HAP emissions nationwide is predicted by 2020 due to population growth, increasing production and use of energy and commodities. (A downward trend in air toxics emissions could continue if population decreases, or if enough of us reduce energy usage and product consumption.)

The Air Toxics Strategy (previously known as the "Urban Air Toxics Strategy;" now sometimes referred to as the "Integrated Air Toxics Strategy") is required by the Clean Air Act Amendments of 1990, provisions at 112© and 112(k). The EPA also weaves in CAA provisions at 202(l) regarding mobile source toxics into an integrated strategy aimed at reducing air toxics emissions.

### Clean Air Act goals of the Integrated Urban Air Toxics Strategy:

- 202 (l): Control emissions of toxic emissions associated with motor vehicle exhaust and motor vehicle fuels.

The EPA limits benzene levels in gasoline, and with its most recent mobile source air toxics rule (Feb.'07) requires further reductions by 2011 via an averaging, banking and trading mechanism for refineries. Air toxics as well as criteria pollutants will be reduced into the future as federal requirements for lower sulfur fuels combine with catalytic converters for Model year 2007 and newer highway- and off-road diesel engines. These regulations are anticipated to reduce emissions of particulate matter (including many HAP) and to provide significant public health benefits—preventing an estimated 12,000 premature deaths, 8,900 hospitalizations, and one million work days lost by 2030.

- 112 (k): To reduce by 75% excess cancer risks from HAP between roughly 1993 to 2010 and achieve "substantial reductions" in both HAP emissions and public health risks other than cancer in this same time period.

The EPA measures progress towards these goals through National Air Toxics Assessments, dispersions and exposure modeling of inventory data, and via ambient air monitoring. EPA estimates that to date (Spring 2007), nationwide HAP have been reduced 48 percent overall.

Another goal of the Strategy is:

- 112 (k): To list at least 30 priority HAP, deemed to be most toxic and/or most prevalent.

EPA lists the following 33 HAP under the Strategy:

<b>Acetaldehyde</b> <b>Acrolein</b> <b>Acrylonitrile</b> <b>Arsenic and compounds</b> <b>Benzene</b> <b>Beryllium and compounds</b> <b>1,3-Butadiene</b> <b>Cadmium and compounds</b> <b>Carbon tetrachloride</b> <b>Chloroform</b> <b>Chromium VI and compounds</b> <b>Coke oven emissions</b>	<b>Dioxin</b> <b>1,3-Dichloropropene</b> <b>Ethylene dibromide (dibromomethane)</b> <b>Ethylene dichloride</b> <b>Ethylene oxide</b> <b>Formaldehyde</b> <b>Hexachlorobenzene</b> <b>Hydrazine</b> <b>Lead and lead compounds</b> <b>Manganese and compounds</b> <b>Mercury and compounds</b> <b>Methylene chloride (dichloromethane)</b>	<b>Nickel and compounds</b> <b>Polycyclic organic matter (POM)</b> <b>Polychlorinated biphenyls (PCBs)</b> <b>Propylene dichloride</b> <b>Quinoline</b> <b>1,1,2,2-Tetrachloroethane</b> <b>Tetrachloroethylene (Perchloroethylene)</b> <b>Trichloroethylene</b> <b>Vinyl chloride</b>
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Local air quality agencies may determine there are additional HAP of local concern, or that some types of HAP emissions don't occur in an area. For example, in Colorado curiously located spikes and fluctuations of the HAP **Acetonitrile** are being tracked for their significance.

There are also 21 listed mobile source air toxics, 13 of which are on the priority list:

**Acetaldehyde, Acrolein, Arsenic, Benzene, 1,3-Butadiene, Chromium, Dioxin/Furans, Diesel Exhaust Organic Gases and Particulates, Ethylbenzene, Formaldehyde, Nickel, B-Hexane, Lead, Manganese, Mercury, Napthalene, Nickel, POM (sum of 7 PAH), Styrene, Toluene, Xylene.**

- Bolded Toxics also on list of priority HAP
- POM – polycyclic organic matter – organics with > 1 benzene ring
- PAH – polynuclear aromatic hydrocarbons

Another Clean Air Act goal is:

- 112 (k): To list the HAP area source categories based on actual *or estimated* emissions, ensuring area sources emitting 90% of the priority HAP emissions are subject to standards.

The EPA now lists 71 such “area source” categories (facilities emitting < 10 tons per year of any one HAP or < 25 tons per year of any two or more HAP), of which 16 are now regulated by control technology standards. Additional regulations are to be developed for the remaining categories. Facilities emitting larger amounts of HAP are known as “major source facilities” and are subject to Maximum Achievable Control Technology (MACT) standards.

### Area sources to be regulated under the Air Toxics Strategy

#### 16 Area Source Categories Already Subject to Standards

Chromic Acid Anodizing	Industrial Boilers
Commercial Sterilization Facilities	Institutional/Commerical Boilers
Other Solid Waste Incinerators (Human/Animal Cremation)	Medical Waste Incinerators

Decorative Chromium Electroplating	Municipal Waste Combustors
Dry Cleaning Facilities	Open Burning of Scrap Tires
Halogenated Solvent Cleaners	Secondary Lead Smelting
Hard Chromium Electroplating	Stationary Internal Combustion Engines
Hazardous Waste Combustors	Portland Cement Manufacturing

## **55 Area Source Categories that will be subject to standards**

Acrylic Fibers/Modacrylic Fibers Production  
Lead Acid Battery Manufacturing  
Ag Chemicals & Pesticides Manufacturing  
Asphalt Processing & Asphalt Roofing Manufacturing  
Misc. Organic Chemical Manufacturing (MON)  
Autobody Refinishing Paint Shops  
Nonferrous Foundries  
Brick & Structural Clay  
Oil & Natural Gas Production  
Carbon Black Production  
Clay Ceramics  
Chemical Manufacturing: Chromium Compounds  
Other Solid Waste Incinerators  
(Human/Animal Cremation)  
Chemical Preparations  
Paint Stripping Operations  
Copper Foundries  
Paints & Allied Products Manufacturing  
Cyclic Crude & Intermediate Production  
Pharmaceutical Production  
Electrical & Electronic Equipment: Finishing Operations  
Plastic Parts & Products (surface coatings)  
Fabricated Metal Products.  
Plastic Materials and Resins Manufacturing  
Fabricated Structural Metal Manufacturing  
Plating & Polishing  
Ferroalloys Production: Ferromanganese & Silicomanganese  
Polyvinyl Chloride & Copolymers Production  
Flexible Polyurethane Foam Fabrication Operations  
Prepared Feeds Manufacturing  
Flexible Polyurethane Foam Production  
Primary Copper (not subject to Primary Copper Smelting MACT)  
Fabricated Plate Work  
Primary Metals Products Manufacturing  
Gasoline Distribution (Stage I)  
Primary Nonferrous Metals- Zinc, Cadmium and Beryllium  
Heating Equipment, except electric  
Pressed & Blown Glass & Glassware Manufacturing  
Hospital Sterilizers  
Secondary Copper Smelting  
Industrial Boilers  
Secondary Nonferrous Metals  
Industrial Inorganic Chemical Manufacturing  
Sewage Sludge Incineration  
Industrial Organic Chemical Manufacturing  
Stationary Internal Combustion Engines  
Industrial Machinery & Equipment: Finishing Operations  
Synthetic Rubber Manufacturing  
Inorganic Pigments Manufacturing  
Stainless & Non-stainless Steel Manufacturing: Electric Arc Furnaces (EAF)  
Institutional/Commercial Boilers  
Steel Foundries  
Iron Foundries  
Valves & Pipe Fittings  
Iron & Steel Forging  
Wood Preserving

The national Air Toxics Strategy continues to evolve, informed by air toxics inventories and modeling, especially National Air Toxics Assessments every three years (1999 nationwide estimates will be published summer 2004) and air toxics monitoring data.

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