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EPA

ARARs Fact Sheet

Compliance with the Clean Air Act and Associated Air Quality Requirements

Office of Emergency and Remedial Response
Hazardous Site Control Division 5203G

Quick Reference Fact Sheet

Section 121(d) of CERCLA, as amended by the 1986 Superfund Amendments and Reauthorization Act (SARA), requires that on-site remedial actions must attain or waive Federal and more stringent State applicable or relevant and appropriate requirements (ARARs) for environmental protection and facility siting, upon completion of the remedial action. The revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP) requires compliance with ARARs during remedial actions as well as at completion, and compels attainment of ARARs during removal actions to the extent practicable, considering the exigencies of the situation. (See 40 CFR Parts 300.415(i) and 300.435(b)(2) and 55 FR 8666 to 8865, March 8, 1990.)

To implement the ARARs provisions, EPA has developed guidance, *CERCLA Compliance With Other Laws Manual: Parts I and II* (EPA Publications EPA/540/G-89/006 and EPA/540/G-89/009), and has provided training to Regions and States on the identification of and compliance with ARARs. This ARARs Fact Sheet is one of the numerous guidance documents that address questions that arose in developing ARARs policies, in ARARs training sessions, and in identifying and complying with ARARs at specific sites. (See *Compendium of CERCLA ARARs Fact Sheets and Directives* [EPA Publication 9347.3-15] and, in particular, *Control of Air Emissions from Superfund Air Strippers at Superfund Groundwater Sites* [OSWER Directive 9355.0-28]).

This Fact Sheet provides updated guidance on compliance with the Clean Air Act, as amended November 1990 (42 U.S.C. 7401 et. seq.) and related air quality rules under other environmental statutes. It addresses statutory and regulatory changes that have occurred subsequent to the publication of the above-cited Compliance Manual. It also includes a chart that summarizes which air quality requirements may be potential ARARs for CERCLA response actions or cleanup technologies (see ***Attachment 1*** on pages 23 and 24). In addition, there are Air/Superfund Coordinators in each EPA regional office who can provide further assistance concerning these requirements (see ***Highlight 1***).

I. AIR QUALITY AT CERCLA SITES

CERCLA sites are potential sources of air pollutant emissions that can affect public health or welfare, and the natural environment. These air pollutant emissions may be present before and/or during the response action (i.e., the removal or remedial action), or during the operation and maintenance of the response action. Dozens of air pollutants have been documented at CERCLA sites. They include volatile and semi-volatile organics, particulate matter, heavy metals, and acids. The National Technical Guidance (NTG) developed by the Air/Superfund Coordination process has focussed its concern for the air pathway on those contaminants that are ozone precursors and/or hazardous air pollutants. Specific information about ozone precursors and hazardous air pollutants appears below in Sections VI and VIII of this Fact Sheet.

HIGHLIGHT 1
Air/Superfund Coordinators

OAQPS	(FTS/919) 541-5569
OERR	(FTS/703) 603-9035
REGION 1	(FTS/617) 565-3280
REGION 2	(FTS/212) 264-9868
REGION 3	(FTS/215) 597-9134
REGION 4	(FTS/404) 347-2864
REGION 5	(FTS/312) 886-9401
REGION 6	(FTS/214) 655-7223
REGION 7	(FTS/913) 551-7603
REGION 8	(FTS/303) 293-0969
REGION 9	(FTS/415) 744-1086
REGION 10	(FTS/206) 553-4198

The specific combination of contaminants at a particular CERCLA site depends upon the uncontrolled sources at the site, the selected treatment technology, and the residual materials at the completion of the response action. Landfills, lagoons, contaminated soil, and leaking drums are examples of uncontrolled sources of airborne contaminants at unremediated CERCLA sites. Equipment used during the cleanup process (i.e., remedial investigation, removal action, or construction of a selected remedy) may emit air pollutants. Examples of such equipment are soil handling operations, air strippers, on-site incinerators and solidification/stabilization processes. Residual emissions may continue after the selected remedy is constructed.

The Clean Air Act (CAA) is the primary Federal legislation for protecting air quality. EPA also promulgates air pollutant emission regulations for solid and hazardous waste management units under the Resource Conservation and Recovery Act (RCRA), and States often establish additional or more stringent standards. Substantive standards established by any of these regulations may be potential ARARs for CERCLA sites.

In order to identify whether CAA requirements are potential ARARs and then to determine whether they are either "applicable" or "relevant and appropriate," CERCLA site decisionmakers may need to know the following:

① Air quality designation of the site's location (i.e., attainment, nonattainment, unclassified, or transport) for each National Ambient Air Quality Standard (NAAQS). This information is published periodically in the *Federal Register* and also may be obtained from the Air/Superfund Coordinator in each Region .

② Classification of each designated nonattainment area (i.e., marginal, moderate, etc.). This information is published in the *Federal Register* and also may be obtained from the Air/Superfund Coordinator in each Region.

③ Required control measures including emissions limitations and emissions offsets. Under the NCP, the State is responsible for identifying its potential ARARs, including those that address air pollutant emissions. The Air/Superfund Coordinator in the Regional Office can be of assistance.

④ Baseline emission estimates at the site and estimated (i.e., modelled) air pollutant emissions associated with site investigation activities, construction of the remedy, and subsequent operation and maintenance of the remedy. The Air/Superfund Coordination program has developed the technical guidance to assist CERCLA site decisionmakers conducting air pathway analyses. Further information about the guidance can be obtained from the Air/Superfund Coordinator, who also can arrange for assistance in modelling emissions from proposed remedies. Superfund Regional Toxics Integration Coordinators will help in assessing the risk associated with those estimated emissions.

These points are discussed in greater detail in the remaining sections of this Fact Sheet.

II. OVERVIEW OF THE CLEAN AIR ACT

The CAA was derived from the Air Pollution Research and Technical Assistance Act of 1955 (Public Law 84-159). The CAA was first enacted in 1963 and was subsequently amended in 1965, 1967, 1970, 1977, and most recently in 1990. The 1990 amendments to the CAA contain the major titles shown in ***Highlight* 2.** This Fact Sheet will explicitly refer to the 1990 amendments when they have substantially altered the requirements of the CAA with respect to actions under CERCLA.

One purpose of the CAA is "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." The CAA provides the statutory framework within which EPA, the States, and localities will jointly attain this objective. It gives to EPA the task of establishing national standards for ambient air quality. The States are then obligated to implement, maintain, and enforce these standards.

Under Section 108 of the CAA, EPA has published a list of air pollutants whose emissions cause or contribute to air pollution that may reasonably be anticipated to endanger the public health or welfare. EPA is required to publish and periodically revise air quality criteria documents reflecting the latest scientific knowledge on the effects of these pollutants on public health and welfare. The term "criteria pollutants" is derived from these documents. Section 109 directs EPA to publish National Ambient Air Quality Standards (NAAQSs) for the criteria pollutants. These standards are discussed further in Section IV of this Fact Sheet.

The primary mechanism for attaining the NAAQSs is the State Implementation Plan (SIP), which each State must develop, adopt, and submit to EPA for approval under Section 110 of the CAA. The SIP must contain air pollutant emission standards, timetables for compliance with such standards, and any other measures necessary to attain and maintain the NAAQSs. Emission standards, which concern the amounts of air pollutants emitted by pollution sources, differ from ambient air quality standards, which concern the quality of the atmosphere external to buildings to which the public has access.

HIGHLIGHT 2
Major Titles of the Clean Air Act Amendments of 1990

TITLE I Addresses new requirements for areas that have not attained National Ambient Air Quality Standards.

TITLE II Covers mobile sources such as automobiles, trucks, and aircraft.

TITLE III Addresses hazardous air pollutants, maximum achievable control technology (MACT) regulations, solid waste combustion, residual risks, accidental releases, and other issues.

TITLE IV Addresses acid deposition control and electric utility emissions of sulfur dioxide and oxides of nitrogen.

TITLE V Covers operating permits for stationary sources and establishing an operating permit program.

TITLE VI Addresses stratospheric ozone by phasing out ozone-depleting substances.

In general, a State can select any combination of emission standards and compliance timetables for existing air pollution sources as long as it can demonstrate that this combination would result in attainment of the NAAQSs. However, Sections 111 and 112 of the CAA specify that EPA (rather than the States) must establish two classes of national emission standards. The first class is New Source Performance Standards (NSPSs), which are emission standards for new and modified stationary sources categorized by EPA as contributing significantly to air pollution. The second class is National Emission Standards for Hazardous Air Pollutants (NESHAPs), which regulate air pollutants to which no ambient air quality standard is applicable and which may contribute to increases in mortality or in serious or incapacitating illness. These two classes of emission standards are discussed in Sections V and VIII of this Fact Sheet.

III. REGULATED SOURCES

The CAA governs air pollutant emissions from both mobile and stationary sources. The CAA provisions governing stationary sources have greater importance for CERCLA sites. The term "stationary source" means any building, structure, facility, or installation that emits or may emit any air pollutant. This term may mean a single point releasing pollutants into the atmosphere. It may also mean all of the pollutant-emitting activities that belong to the same industrial grouping, if they are located on one or more contiguous or adjacent properties, and if they are under the control of the same person.

Many of the statute's provisions apply only to "major" stationary sources. The emissions threshold for designating a major stationary source varies depending on the air pollutant, the source type, and the surrounding air quality level relative to the applicable NAAQS. It may range from 10 to 250 tons per year. Sections IV through VIII of this Fact Sheet provide additional information on these emissions thresholds.

The term "new source" means any stationary source, the construction or modification of which is commenced after the publication of regulations (or proposed regulations) prescribing a standard of performance that will be applicable to such a source. A "modification" consists of any change to an existing source that would result in emissions of a regulated pollutant above *de minimis* amounts. Other sources are "existing sources." A CERCLA site could be an existing source for the purpose of developing site-specific baseline emission estimates, which are defined by the NTG as "emission estimates from disturbed and undisturbed sites and are necessary for evaluating a no-action alternative and for evaluating potential emissions during" the response action (See *Volume I - Application of Air Pathway Analysis for Superfund Activities* (EPA publication EPA-450/1-89-001, July 1989), pp. 5-12). If it would create potential air quality impacts (e.g., soil washing, thermal treatment, air stripping), the response action could itself qualify as a new source.

In general, the requirements for new sources differ from those for existing sources. New sources are governed by State regulations that are derived from NSPSs. Existing sources are governed by State regulations that are derived from SIPs. Additionally, new and existing sources are treated differently in regulations for NAAQS nonattainment areas and for Prevention of Significant Deterioration in attainment areas (see Sections VI and VII of this Fact Sheet).

IV. NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQSs)

For each criteria pollutant, EPA must establish primary and secondary NAAQSs. These NAAQSs specify the maximum concentration of the pollutant which is to be permitted in the ambient air, as averaged over a specified time period. One of the major objectives of the CAA is the attainment of primary NAAQSs as expeditiously as practicable, but no later than a statutory deadline. The deadline varies with the pollutant involved, the severity of the nonattainment, and the availability and feasibility of pollution control measures. For pollutants other than ozone, the deadline ranges from 5 to 10 years after an area has been designated as being in nonattainment. For ozone, the deadline ranges from 1993 to 2010. (See Sections 172 and 181 of the CAA). Secondary NAAQSs are to be attained as expeditiously as practicable, but no deadline is specified in the CAA.

Primary standards are designed to protect the public health with an adequate margin of safety. The standards are set at levels that will protect both the healthy population and sensitive populations, such as individuals with pre-existing health conditions that may be complicated by excessive pollution. Under the statute, EPA may not consider technological feasibility and cost of compliance in setting primary NAAQSs.

Secondary standards protect the public welfare from any known or anticipated adverse effects of a pollutant. They are designed to protect against not only adverse effects on soil, water, crops, vegetation, animals, property, and visibility, but also any impacts on personal comfort and well-being. Secondary NAAQSs are the same as or more stringent than primary standards.

To date, EPA has established NAAQSs for six criteria pollutants (see 40 CFR Part 50), which are summarized in ***Highlight*** 3. EPA reviews NAAQSs at 5-year intervals and decides whether to update them. At present, EPA plans to propose more stringent NAAQSs for lead. Although NAAQSs form the basis for all regulations promulgated under the CAA, they are not enforceable in and of themselves. Rather, it is the emission standards, which are promulgated to attain the NAAQSs, that are directly enforceable and are potential ARARs.

Although NAAQSs are never ARARs, they may be used as other criteria or guidelines to be considered (TBCs) on an appropriate basis. This could include instances in which a SIP does not address an emission that is determined to be a health threat. As with all TBCs, the usage of NAAQSs must be justified on the basis that the public health or the environment needs to be protected.

Under Section 110 of the CAA, each State has primary responsibility for assuring air quality within its geographic area. Through a State Implementation Plan, the State establishes a program for regulating stationary and mobile sources that will achieve and maintain the NAAQSs. SIPs include emissions standards, monitoring, recordkeeping, enforcement, and other measures (e.g., economic incentives). The emissions standards and monitoring requirements are substantive requirements and are potential ARARs. The recordkeeping, enforcement and other measures are administrative requirements and are not potential ARARs. In developing its SIP, each State determines what categories of sources are responsible for nonattainment of NAAQSs. It then determines how much the emissions must be reduced by these source categories in order to attain the NAAQSs. The combination of emission standards and other measures that the State establishes to control a specific

HIGHLIGHT 3
Summary of NAAQSs

CRITERIA POLLUTANT	PRIMARY STANDARDS	SECONDARY STANDARDS	AVERAGING TIME
Carbon Monoxide	9 ppm	None	8-hour[a]
	35 ppm	None	1-hour
Lead	1.5 g/m ^{3}	Same	Quarterly
Nitrogen dioxide	0.53 ppm	Same	Annual (Arithmetic mean)
Particulate Matter (PM_{10})[b]	50 g/m ^{3}	Same	Annual (Arithmetic mean)[c]
	150 g/m ^{3}	Same	24-hour[d]
Ozone	0.12 ppm	Same	1-hour[e]
Sulfur Dioxide	0.03 ppm	None	Annual (Arithmetic mean)
	0.14 ppm	None	24-hour[a]
	None	0.5 ppm	3-hour[a]

[a] Not to be exceeded more than once in any consecutive 8-hour period per year.
[b] PM_{10} is the designation for particulate matter in the atmosphere that has an aerodynamic diameter of 10 m or less.
[c] The standard is attained where the expected annual arithmetic mean concentration, as determined in accordance with Appendix K (see 52 FR 24667, July 1, 1987), is less than or equal to 50 g/m ^{3}.
[d] The standard is attained when a 24-hour average concentration above 150 g/m ^{3} occurs no more than one day per calendar year.
[e] The standard is attained when a maximum hourly average concentration above 0.12 ppm occurs no more than one day per calendar year.

(Source: 40 CFR Part 50 and *Guidelines for the Interpretation of Air Quality Standards*, OAQPS No.1.2-008, Rev. 1977)

pollutant is called a control strategy.

States have discretion in determining the combination of emission controls for all sources necessary to meet the NAAQS for each criteria pollutant. In general, however,

standards set for stationary and mobile sources must be at least as stringent as any EPA has promulgated. With certain exceptions, State standards may be more stringent and may cover additional source categories.

The State must submit the SIP to EPA for review and approval. Any substantive requirements embodied in a SIP, including locally promulgated ordinances that the State has incorporated into the SIP, are Federally enforceable and are thus potential ARARs. In some circumstances, if the SIP is inadequate or if the State fails to submit one, EPA must promulgate a Federal Implementation Plan (FIP), which is Federally enforceable.

The requirements for new sources of air pollutant emissions differ from the requirements for existing sources. Also, sources in areas that have not attained NAAQSs are subject to different standards than sources in attainment areas. Moreover, a CERCLA site may be in an area which has attained one NAAQS and which has not attained another NAAQS. Therefore, a source at some CERCLA sites, may have to meet both nonattainment and attainment provisions of the CAA. More information on this issue appears below in Sections VI and VII.

V. NEW SOURCE PERFORMANCE STANDARDS (NSPSs)

NSPSs are nationally uniform emission standards for major new stationary sources, particularly for industrial source categories (see Section 111 of the CAA). EPA's goal in promulgating these standards is to ensure that new sources and major modifications to existing sources are designed, built, equipped, operated, and maintained in a way that permits emissions to be controlled in a manner that considers both the best demonstrated technology (BDT) and economic feasibility. Because these standards are uniform across the Nation, they prevent new sources from being located selectively in areas with less stringent air pollution control regulations.

Section 111 of the CAA requires that EPA publish and periodically revise a list of categories of major stationary sources that cause, or contribute significantly to, air pollution that may be reasonably anticipated to endanger public health or welfare. These categories are listed at 40 CFR, Part 60. The CAA further requires that EPA promulgate NSPSs for these categories by a statutory deadline that the 1990 amendments extended to November 1996.

The process of promulgating NSPSs sometimes results in the indirect designation of particular air pollutants for control under these standards. Four air pollutants have been designated under NSPSs in addition to air pollutants for which air quality criteria documents have been issued. The four "designated pollutants" are fluorides, sulfuric acid mist, total reduced sulfur, and municipal waste combustor (MWC) emissions. MWC emissions are a composite pollutant, comprised of organics, acid gases, and metals. Section 111(d) of the CAA requires that EPA promulgate emissions guidelines for existing sources of designated pollutants. The States must establish standards of performance based on these guidelines.

The NSPSs are based on BDT, which is the "degree of emission reduction achievable through the application of the best system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environment impact and energy requirements) the Administrator determines has

been adequately demonstrated for that category of sources" (see Section 111 of the CAA). EPA may define BDT as an emissions limit or rate (i.e., a specified number of pounds per hour) or, where the setting of a limit is not feasible, as a design, equipment, work practice, or operational standard that reflects the "best technological system of continuous emission reduction."

To date, EPA has promulgated NSPSs for over 50 categories of sources, as shown in *Highlight 4*. At present, the NSPS source categories coincide with only a few of the air pollutant emission sources typically found at CERCLA sites. Thus, the NSPSs are not usually considered "applicable" to CERCLA activities. However, they may be "relevant and appropriate" if the pollutant emitted and the technology employed during the cleanup action are sufficiently similar to the pollutant and source category regulated by an NSPS that they are well-suited to the circumstances of the release at the CERCLA site. This is a site-specific determination based on the eight factors in the NCP (see 40 CFR Part 300.400 (g)(2)).

EPA has proposed a NSPS for air pollutant emissions from new municipal solid waste (MSW) landfills (see 56 FR 24468 to 24528, May 30, 1991). A MSW landfill is defined as an entire disposal facility in a contiguous geographical space where household waste is placed on or in land. A MSW landfill may receive other types of waste as well. The proposed Subpart WWW to 40 CFR Part 60 would establish a performance standard for nonmethane organic compounds (NMOCs) emissions from MSW landfill gases. A control device would then be used to reduce the NMOCs in the collected gas by 98 weight percent. For CERCLA municipal landfill remediations, these requirements would be potential ARARs for Records of Decision (RODs) signed after the rule's promulgation. . Until these requirements are promulgated, they are TBCs.

A NSPS for particulate matter emissions from municipal incinerators has existed since 1971. However, the 1990 amendments to the CAA require EPA to establish additional performance standards for new and existing solid waste incinerator units (see Section 129 of the CAA). Such units include MWCs, medical waste incinerators, infectious waste incinerators, and industrial waste incinerators. The CAA specifies that numerical emission limitations be promulgated for particulate matter, opacity, sulfur dioxide, hydrogen chloride, nitrogen oxides, carbon monoxide, lead, cadmium, mercury, and dioxins and dibenzofurans.

Under Subpart Ea of 40 CFR Part 60, EPA promulgated performance standards for emissions from new MWC plants with capacities greater than 250 tons per day of municipal solid waste or refuse-derived fuel. The regulated pollutants are nitrogen oxides and MWC emissions. The latter is a composite pollutant consisting of condensible metals associated with particulate matter, organics (i.e., dioxins and furans), and acid gases (i.e., sulfur dioxide and hydrogen chloride). Carbon monoxide emission limitations are specified as part of "good combustion practice" requirements.

Similar emission guidelines for existing MWC plants with capacities greater than 250 tons per day of municipal solid waste or refuse-derived fuel were promulgated under Subpart Ca of 40 CFR Part 60. States are required to develop emission standards based on these guidelines. These emission standards may be less strict than the NSPSs, but they cannot be less stringent than the average emission limitations achieved by the best-performing 12 percent of existing MWC plants.

HIGHLIGHT 4
Source Categories for which NSPSs Have Been Promulgated[a]

Fossil-Fuel Fired Steam Generators (D)

Industrial-Commercial-Institutional Steam Generating (Da)

Electric Utility Steam Generating (Db)

Incinerators (E)

Municipal Waste Combustors (Ca, Ea)

Portland Cement Plants (F)

Nitric Acid Plants (G)

Sulfuric Acid Plants (H)

Asphalt Concrete Plants (I)

Petroleum Refineries (J)

Petroleum Storage Vessels (K)

Secondary Lead Smelters (L)

Secondary Brass and Bronze Production Plants (M)

Primary Emissions from Basic Oxygen Process Furnaces (N)

Secondary Emissions from Basic Oxygen Process Steelmaking (Na)

Sewage Treatment Plants (O)

Primary Copper Smelters (P)

Primary Zinc Smelter (Q)

Primary Lead Smelters (R)

Primary Aluminum Reduction (S)

Wet Process Phosphoric Acid (T)

Superphosphoric Acid (U)

Diammonium Phosphate Plants (V)

Triple Superphosphate Plants (W)

Granular Triple Superphosphate Storage (X)

Coal Preparation Plants (Y)

Ferroalloy Production (Z)

Steel Electric Arc Furnaces (AA)

Kraft Pulp Mills (BB)

Glass Manufacturing (CC)

Grain Elevators (DD)

Surface Coating of Metal Furniture (EE)

Stationary Gas Turbines (GG)

Lime Manufacturing (HH)

Lead Acid Battery Manufacturing (KK)

Metallic Mineral Processing (LL)

Auto/Light-Duty Truck Coating (MM)

Phosphate Rock Plants (NN)

Ammonium Sulfate Manufacture (PP)

Publication Rotogravure Printing (QQ)

Pressure Sensitive Tape and Label Surface Coating (RR)

Industrial Surface Coating: Large Appliances (SS)

Metal Coil Surface Coating (TT)

Asphalt Processing and Roofing Manufacturing (UU)

Fugitive VOC Emissions in Synthetic Organic Chemicals Manufacturing (VV)

Beverage Can Surface Coating (WW)

Bulk Gasoline Terminals (XX)

Residential Wood Heaters (AAA)

Rubber Tire Manufacturing (BBB)

VOC Emissions from Polymer and Resin Manufacturing (DDD)

Flexible Vinyl and Urethane Coating and Printing (FFF)

Equipment Leaks of VOC in Petroleum Refineries (GGG)

Synthetic Fiber Production (HHH)

VOC Emissions from Synthetic Organic Chemical Manufacturing Industry Air Oxidation Process Units (III)

Petroleum Dry Cleaners (JJJ)

Equipment Leaks of VOC from Onshore Natural Gas Processing (KKK)

SO_2 Emissions from Onshore Natural Gas Processing (LLL)

VOC Emissions from Synthetic Organic Chemical Manufacturing Industry Distillation Operations (NNN)

Nonmetallic Mineral Processing (OOO)

Wool Fiberglass Insulation Manufacturing (PPP)

VOC Emissions from Petroleum Refinery Wastewater Systems (QQQ)

Magnetic Tape Coating (SSS)

Industrial Surface Coating: Plastic Parts for Business Machines (TTT)

Polymetric Coating (VVV)

[a] The letters in parentheses following each source category are the applicable subparts of 40 CFR Part 60 containing the NSPS.

(Source: 40 CFR Part 60)

EPA plans to propose performance standards for MWC emissions from MWC plants with capacities equal to or less than 250 tons per year of pollutants. It also plans to propose performance standards for cadmium, lead, and mercury emissions for new MWC plants that emit more than 250 tons per year of pollutants.

VI. REQUIREMENTS FOR NONATTAINMENT AREAS

The 1970 CAA amendments made no provision for allowing new source construction in areas that had not attained NAAQSs. EPA developed an "emissions offset" policy to permit such industrial growth in such areas while making reasonable further progress toward attainment. Congress subsequently added this policy to the CAA (see Sections 171 through 178 of the CAA). When applying for permission to construct a new source in a nonattainment area, an applicant must enter into enforceable State agreements with owners or operators of existing sources to ensure that there is a net decrease in emissions in the area. Under these agreements, existing sources must reduce their emissions above and beyond that which would otherwise be required for them to offset the anticipated new emissions from the proposed new source. The sources would thus demonstrate progress toward attainment of NAAQSs. Major new sources in nonattainment areas have to meet the following requirements under the emissions offset policy:

① **New source review/preconstruction permit,** for construction or modification of any major source.

② **Air quality impact analysis,** to demonstrate that the proposed new source or modification would not cause or contribute to a projected degradation in pre-existing air quality beyond the allowance permitted by the nonattainment portion of the SIP.

③ **Emission offsets,** to obtain emission reductions from existing sources in an amount greater than the estimated new emissions.

④ **Lowest achievable emission rate (LAER),** a technology-based standard that is either (a) the most stringent emissions limitation contained in any SIP for that category of source, or (b) the most stringent emissions limitation which is achieved in practice for that category of source. It cannot be less stringent than any applicable NSPS. LAER is set on a case-by-case basis during the preconstruction permit review. EPA's Office of Air Quality Planning and Standards (OAQPS) maintains a clearinghouse which contains information on pollution control technology. Air/Superfund Coordinators in each Region can provide assistance in utilizing the clearinghouse.

In 1990, ninety-six cities and other areas continued to have ozone levels that at times exceed the NAAQSs. Forty-one areas had carbon monoxide levels that exceed the NAAQSs. Based on limited data, EPA has estimated that about 70 areas have PM_{10} levels that do not meet the NAAQSs. This failure to attain NAAQSs prompted stringent new nonattainment requirements in the 1990 amendments (see Sections 181 through 185 of the CAA).

Prior to 1990, any stationary source with a potential to emit 100 tons per year or more of any regulated pollutant was considered to be a major source. Under the 1990 CAA

amendments, the emissions threshold for determining a major source in nonattainment areas was changed for certain cases. As discussed below, the threshold for certain emissions now varies according to the severity of the nonattainment. Additionally, the amendments tightened emission offsets according to the severity of the nonattainment.

The cornerstone of the nonattainment requirements is a classification system for designating major sources, which must meet LAER. In general, the emissions threshold for a major source may be 100 tons per year for areas that have not attained the NAAQS. The emissions threshold may be lower for volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) in areas that have not attained the ozone NAAQS. The threshold varies with the severity of the nonattainment. As the severity of nonattainment increases, smaller and smaller sources become subject to regulation, and new sources must meet more stringent offset requirements (see ***Highlight 5***, showing emissions thresholds and offset ratios for VOCs and NO_x). States may set even more stringent emissions thresholds and offset ratios than those in the CAA.

HIGHLIGHT 5
Emission Thresholds and Offset Ratios for Nonattainment Areas

CLASSIFICATION OF NONATTAINMENT AREA	EMISSIONS THRESHOLD (tons per year)	VOC AND NO_x OFFSET RATIO[a]
Marginal	100	1.1 to 1
Moderate	100	1.15 to 1
Serious	50	1.2 to 1
Severe	25	1.3 to 1
Extreme	10	1.5 to 1

[a] The ratio of total emissions reductions to total increased emissions.

(Source: 40 CFR 52.21(b)(4))

The 1990 CAA amendments also changed the emissions threshold for determining a major source of carbon monoxide or PM_{10} in nonattainment areas. The carbon monoxide threshold is 50 tons per year for areas with "serious, severe, or extreme" nonattainment classifications. The PM_{10} threshold is 70 tons per year for areas with "serious, severe, or extreme" nonattainment classifications (see Sections 186 through 190 of the CAA).

In general, States establish emission standards for existing sources in the process of preparing their SIPs. Under the 1990 amendments, EPA is requiring more stringent emission standards in areas with "moderate" or more serious ozone nonattainment classifications (see Section 182 of the CAA). The following requirement now applies for existing sources in such areas:

① **Reasonably available control technology (RACT)** for existing sources are set by States based on EPA-issued Control Technique Guidelines (CTG). RACT is defined as devices, system process modifications, or other apparatus or techniques that are reasonably available taking into account (1) the necessity of imposing such controls in order to attain the NAAQSs, (2) the social, economic, and environmental impact of such controls, and (3) alternative means of providing for attainment. The CTGs are guidelines and the States have final determination responsibility. For source categories that have no CTG, the States must determine RACT on a case-by-case basis or by source category. EPA already has published 28 CTGs and is required to publish over one dozen more by November 1993. Information on RACT is available from OAQPS' pollution control technology clearinghouse with the assistance of the Air/Superfund Coordinators in each Region.

The 1990 amendments introduced the concept of "ozone transport region," which is a region in which ozone nonattainment may result not only from local sources of emissions, but also from the long-distance transport of ozone precursors (i.e., VOC and NO_x) from distant sources. The amendments establish a transport corridor of 11 States in the Northeast (i.e., CT, DE, MA, ME, MD, NH, NJ, NY, PA, RI, VT), the District of Columbia, and Northern Virginia. EPA has the authority to designate additional transport areas but has not done so yet. When VOC sources located in these transport areas have emissions in excess of 50 tons per year, they must meet the control requirements described above for major VOC sources in moderate ozone nonattainment areas. (See Section 184 of the CAA.)

The implications of nonattainment provisions for CERCLA sites are complicated. First, the lead agency must determine whether the site, or specific activities at the site, qualify as existing or new sources under the CAA. For new sources, the next determination is whether or not the source qualifies as a major source. Since all major new sources must meet LAER, LAER will be "applicable" for any CERCLA site which meets the CAA definitions of major and new. Even if the site is not a major source, LAER may be "relevant and appropriate." In cases where the site, or specific activities at the site, meet the definition of an existing source, RACT (as embodied in State regulations) may also constitute an ARAR. CERCLA response actions are not subject to administrative procedures and permit requirements. They will have to comply with any substantive standards associated with the nonattainment regulations.

VII. PREVENTION OF SIGNIFICANT DETERIORATION

Sections 160 through 169A of the CAA establish the Prevention of Significant Deterioration (PSD) program to ensure that the air quality will not deteriorate significantly in areas that have attained the NAAQS. Regulation of the construction of new sources and major modifications is the primary control strategy. The PSD program allows some margin for future industrial growth in attainment areas, while preventing significant deterioration. PSD requirements will be "applicable" to a CERCLA action when such action is a major source or modification for any criteria pollutant and the source is located within (or possibly upwind of) an attainment area.

The CAA establishes three classes of PSD areas. Each class is allowed a specific increment of deterioration (i.e., the maximum allowable increase in air pollutant concentrations in the area.) Increments are calculated in relation to the "baseline concentration," which generally equals the air pollutant concentration existing on the date of the first major source PSD permit application. Class I increments are designed to protect pristine areas such as National Parks. Class II increments allow some limited industrial growth. Class III increments allow more intensive growth.

The cornerstone of the PSD program is a preconstruction or new source review of "major emitting facilities." In areas that have attained the NAAQS, the emissions threshold for designating a major emitting facility is 100 tons per year for 28 specified industrial categories (e.g., municipal incinerators and chemical processing plants)(see Section 169 of the CAA). The threshold is 250 tons per year for other industrial categories. State SIPs may have lower thresholds for applying PSD requirements. Substantive PSD requirements will be "applicable" if the response activity at a CERCLA site is a major source of emissions, considering the aggregate of all source emissions at the site. If the emissions threshold is not exceeded, the PSD requirements may be considered to determine if they are "relevant and appropriate," rather than "applicable." Administrative and permitting requirements can never be ARARs. Fugitive emissions (i.e., emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening) count towards the facility's potential to emit. The calculation of the potential to emit takes into account the effective operation of emission controls to the extent that they are Federally enforceable (see 40 CFR Part 52.21(b)(4)).

New sources in attainment areas must comply with the following requirements:

① **Best available control technology (BACT),** established for each pollutant from each source. BACT means an emission limitation based on the maximum degree of reduction of each regulated pollutant. The permitting authority determines, on a case-by-case basis, what is achievable through application of production processes and available methods, systems, and techniques. The authority must take into account energy, environmental, and economic impacts and other costs. BACT must be at least as stringent as NSPSs. (See Section 165 of the CAA and 40 CFR Part 52.) Information about BACT is available from OAQPS' pollution control technology clearinghouse.

② **Continuous air quality monitoring** for each regulated pollutant and meteorological monitoring and modeling to show that the source cannot cause or

contribute to violations of the NAAQS or exceedances of the PSD increments for sulfur dioxide, nitrogen dioxides, and particulates (see 40 CFR Part 52.21(c)).

③ The ban on impairment of visibility or adverse impacts on soils or vegetation, or air quality-related values of certain wilderness areas and national parks.

In general, PSD requirements for major new sources in an attainment area will constitute potential ARARs for response actions (e.g., incineration, air stripping, soil vapor extraction) that could affect air quality at CERCLA sites. When deemed to be ARARs, PSD requirements should be addressed in the investigation, planning, and design decision documents (including the scope of work for investigation, Records of Decision, and Action Memoranda).

VIII. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Prior to the 1990 amendments, Section 112 of the CAA required EPA to set nationally uniform National Emission Standards for Hazardous Air Pollutants (NESHAPs). These standards addressed both new and existing sources, and were oriented toward particular hazardous pollutants at their point of emission from specific sources (e.g., inorganic arsenic emissions from glass manufacturing plants). A hazardous air pollutant (HAP) under the old statute is an air pollutant for which no NAAQS exists and which causes or contributes to air pollution that may reasonably be anticipated to result in an increase in mortality or serious illness. EPA designated eight pollutants as hazardous (see ***Highlight 6***) and issued standards for all except coke oven emissions (which have been addressed specifically by the 1990 amendments). The Agency also listed 25 other pollutants, which it preliminarily assessed as HAPs.

EPA was required by a court decision to first determine the maximum amount of a HAP beyond which adverse health effects may take place and was then required to set an ample margin of safety below that level to protect the public health. Once the safe level was set, EPA could then consider costs and technical feasibility in establishing the NESHAPs. Design, work practice, equipment, or operational standards were substitutes for emission standards when the latter were not feasible to prescribe or enforce. Regulations for HAPs are found in 40 CFR Part 61. Previously promulgated NESHAPs remain in effect unless and until superseded by new regulations.

HIGHLIGHT 6
Hazardous Air Pollutants Under Old CAA

- Asbestos
- Benzene
- Beryllium
- Coke oven emissions*
- Inorganic arsenic
- Mercury
- Radionuclides
- Vinyl chloride

* Listed but not yet regulated

The NESHAP for asbestos is an example of a potential ARAR. Emissions of asbestos fibers are regulated under Subpart M of 40 CFR Part 61. This regulation includes requirements for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations, for active waste disposal sites, and for waste disposal for demolition and renovation operations. It does not include requirements for inactive waste disposal sites for demolition and renovation operations. Therefore, the

NESHAP will not be "applicable" to the cleanup of an inactive waste disposal site unless it was owned or operated by an asbestos mill, manufacturer or fabricator, or contained waste from such sources. However, the regulation may be "relevant and appropriate" to the control of asbestos fiber emissions at an inactive waste disposal site for demolition and renovation operations because the situation may be sufficiently similar.

The 1990 amendments significantly revamp the Section 112 approach to NESHAPs (see Section 301 of the 1990 CAA amendments). Key provisions of the amendments, which may create new ARARs, are:

① **Redefinition HAPs** -- The 1990 amendments redefined HAPs as those listed specifically as such by the amendments or by subsequent rulemaking. These pollutants present, or may present, a threat of adverse human health effects or adverse environmental effects. The term "adverse environmental effect" means any significant and widespread adverse effect, which may reasonably be anticipated, to wildlife, aquatic life, or other natural resources.

② **Statutory HAPs** -- The 1990 amendments replaced EPA's 8 designated HAPs and 25 preliminarily assessed HAPs with a list of 189 HAPs (see ***Attachment 2*** on pages 25 through 27). The amendments mandate that EPA regulate all new and existing major sources and certain areas sources which emit or may emit any of the 189 HAPs. Many of these substances are commonly found at CERCLA sites. EPA must periodically review and revise the list of HAPs, and may accept petitions to add or delete substances. Thus, CERCLA site managers should keep abreast of regulatory developments. EPA's Regulatory Agenda, published semiannually in the *Federal Register*, provides information (including the key EPA staff person to contact), on recently completed rules as well as those under development. The Air/Superfund Coordinator in each Region also can provide assistance in obtaining information.

③ **Regulated source categories and subcategories** -- Prior to 1990, NESHAPs were not generally "applicable" to CERCLA response actions because CERCLA sites do not usually contain one of the specific source categories that were regulated. However, the 1990 amendments significantly increased the number of source categories which must control HAP emissions. As required by the 1990 amendments, EPA has published a list of the major and area source categories that emit or may emit any of the 189 HAPs (see 57 FR 31576 to 31592, July 16, 1992). The list contains 174 source categories within 16 industry groups. Additionally, the specific HAPs associated with each source category are listed. The waste treatment and disposal industry group is composed of hazardous waste incineration, municipal landfills, sewage sludge incineration, site remediation, solid waste treatment storage and disposal facilities (TSDFs), and publicly owned treatment works emissions. Thirty-eight HAPs are listed under the waste treatment and disposal industry group. New and existing major sources in these 174 source categories will have to adopt controls when promulgated as described below. A major source is a plant site that emits 10 tons or more per year of a single hazardous air pollutant or 25 tons or more per year of any combination of hazardous air pollutants, after all emissions controls on the site are taken into account (see Section 112(a)(1) of CAA). The 1990 CAA

amendments give discretionary authority to EPA to lower the emissions threshold for designating a major source. This EPA decision would be based on the potency of the air pollutant, persistence, potential for bioaccumulation, other characteristics of the air pollutant, or other relevant factors. Smaller stationary sources of HAPs, whose emissions are less than the threshold, are called "area" sources. Some area sources are also regulated, as discussed below.

④ **Technology-based standards** -- For all source categories that emit HAPs, EPA must develop Maximum Achievable Control Technology (MACT) standards. EPA must promulgate these emission standards for 40 source categories by November 1992 and must complete rulemaking for all source categories by November 2000 (see ***Highlight 7***). MACT standards are applicable to both new and existing sources within a source category. In determining MACT standards, the Agency may consider cost, non-air quality health and environmental impacts, and energy requirements. However, MACT standards for new sources must not be less stringent than the emission control achieved in practice by the best controlled similar source. In general, MACT standards for existing sources must be as stringent as the average control efficiency of the best-controlled 12 percent of similar sources. EPA usually will promulgate numerical emission limitation (i.e., a certain number of pounds per hour), but may instead elect to establish a work practice. For area sources, EPA may substitute generally available control technology or management practices (GACT) in the place of MACT standards.

HIGHLIGHT 7
MACT Standards Rulemaking Schedule

EPA SOURCE CATEGORIES	DEADLINE AFTER ENACTMENT
At least 40 categories/subcategories	2 years (November 1992)
Coke oven batteries	December 1992
25 percent of listed categories/subcategories	4 years (November 1994)
50 percent of listed categories/subcategories	7 years (November 1997)
100 percent of listed categories/subcategories	10 years (November 2000)

(Source: Section 112(e) of CAA)

For many CERCLA sites with a source in a regulated category, the MACT standards will be potential ARARs. To determine whether the MACT standards actually are ARARs, EPA will determine whether the site does or will include any regulated source categories and whether those sources emit or have the potential to emit HAPs. At sites with regulated stationary sources, the next decision is whether the CERCLA source meets the CAA definition of a major source. If so,

the MACT standard may be "applicable." Even where the MACT standard is not "applicable," it still may be "relevant and appropriate."

Federal rulemaking for EPA's initial list of source categories for the statutory HAPs will take a decade to complete. During that time, EPA may add or delete HAPs and regulated source categories. Thus, site decisionmakers should review the status of air regulations prior to the completion of Records of Decision, Action Memoranda, or other remedial and removal investigation, planning, or design decision documents. As noted above, the Air/Superfund Coordinator in the cognizant Regional Office can provide advice and assistance. It is useful to note that States will adopt operating permit programs (see Section IX of this Fact Sheet) to implement and enforce MACT standards as well as other air regulations. Although the NCP exempts CERCLA sites from obtaining permits for on-site actions, all remedial actions as well as removal actions (to the extent practicable) must identify and comply with (or explicitly waive) the substantive provisions of the permit regulations, such as MACT standards, that are determined to be ARARs.

⑤ **Health-based standards** -- Within 8 years after MACT standards are established (or 9 years for those established by November 1992), EPA must promulgate any necessary standards to protect against the remaining residual health or environmental risks associated with HAPs. These standards would be triggered if more than one MACT-regulated source in a category has an associated maximum individual cancer risk that exceeds 1 in one million (i.e., 10^{-6}). These residual risk standards would be based on existing CAA language that specifies that standards must achieve an "ample margin of safety." CERCLA site decisionmakers should note that the health-based standards will be consistent with the generally acceptable risk range of 10^{-4} to 10^{-6}, as discussed in the NCP (see 40 CFR Part 300.430(e)(2)(i)(A)(2) and 55 FR 8666 to 8865, March 8, 1990).

⑥ **Specific pollutants** -- EPA must regulate sources that account for at least 90 percent of the aggregate emissions of each of seven pollutants: alkylated lead compounds; polycyclic organic matter; hexachlorobenzene; mercury; polychlorinated biphenyls; 2,3,7,8-tetrachlorodibenzofuran; and, 2,3,7,8-tetrachlorodibenzo-p-dioxin. By November 1995, EPA must publish a list of the source categories and subcategories that are to be regulated by November 2000.

⑦ **Area source regulations** -- The 1990 amendments require EPA to list each category or subcategory of area sources which presents a threat of adverse effects to human health or the environment (by such sources individually or in the aggregate). EPA must regulate area sources that account for at least 90 percent of the area source emissions of the 30 HAPs posing the greatest threat to public health in the largest number of urban areas. By November 1995, EPA must list the area source categories and subcategories that are to be regulated by November 2000.

® **Radionuclide emissions** -- EPA is not required to promulgate standards for radionuclide emissions from source categories licensed by the Nuclear Regulatory Commission (NRC) if EPA determines that the NRC regulatory program provides an ample margin of safety to protect public health. States may adopt or enforce standards that are more stringent.

IX. TITLE V OPERATING PERMITS

The 1990 amendments, for the first time, require every major source (and certain other sources) regulated under the CAA to obtain an operating permit. States will develop the permitting programs in accordance with guidance from EPA (see Sections 501 and 502 of the CAA). EPA must review, and either approve or disapprove, the States' programs. CERCLA on-site actions are not subject to the administrative procedures and permit requirements. They will have to comply with any substantive standards associated with the permit programs that are determined to be ARARs. Such standards will be carried out through the Record of Decision (ROD) for the site, rather than through a permit.

X. AIR EMISSION STANDARDS UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

Regulations under RCRA address air pollutant emissions from several activities that may occur at CERCLA sites (e.g., incineration and air stripping). These RCRA regulations may be potential ARARs.

Regulations for air pollutant emissions from hazardous waste incinerators are set forth in 40 CFR Part 264, Subpart O. Performance standards were promulgated for emissions of principal organic hazardous constituents (POHCs) in the waste feed, hydrogen chloride and particulate matter. EPA has proposed amendments to these regulations (see 55 FR 17862 to 17921, 27 April 1990). These proposed rules would establish a more stringent performance standard for hydrogen chloride. They would also establish performance standards for toxic metals and for products of incomplete combustion (PICs). As of the date of the publication of this Fact Sheet, the proposed rules have not been promulgated, and thus are not potential ARARs until they are promulgated. However, they may constitute guidance TBC, if justified, on the record on a site-specific basis.

OSWER Directive 9347.0-1 (*Interim RCRA/CERCLA Guidance on Non-Contiguous Sites and On-Site Management of Waste and Treatment Residue)* provides the following information about limitations on the construction of hazardous waste incinerators for on-site CERCLA use:

> If an incinerator is to be constructed for on-site remedial action, there should be a clear intent to dismantle or remove the unit after the CERCLA action is completed. Dismantling or removal should be a part of the remedy presented in the ROD and funds should be included in the financial or contractual documents. Should there be plans to accept commercial waste at the facility after the CERCLA wastes have been treated or destroyed, it is EPA policy that a RCRA permit be obtained before the unit is constructed.

Additionally, EPA has promulgated regulations in 40 CFR Part 266, Subpart H concerning hazardous waste burned in boilers and industrial furnaces (BIFs). These regulations establish performance standards for emissions of toxic organic compounds (i.e., POHCs and PICs), particulate matter, toxic metals, hydrogen chloride and chlorine gas. These regulations are similar to the proposed regulations for hazardous waste incinerators.

Air pollutant emissions from other thermal treatments are covered in 40 CFR Part 265, Subpart P. These regulations specify that the owner or operator of the thermal treatment device must demonstrate that it meets the same performance standard as exists for hazardous waste incinerators.

Design and operating requirements for waste piles, land disposal units, and landfills are established in 40 CFR Part 264, Subparts L, M, and N. If the pile, treatment zone, or landfill contains particulate matter that may be subject to wind dispersal, the owner or operator must cover or otherwise manage the pile, unit, or landfill to control wind dispersal.

Air pollutant emissions from miscellaneous units are covered in 40 CFR Part 264, Subpart X. These units must protect human health and the environment from adverse effects, including those due to migration of waste constituents in the air.

Subpart AA of 40 CFR Part 264 contains air pollutant emission standards for process vents, closed-vent systems, and control devices at hazardous waste treatment, storage, and disposal facilities (TSDFs). This subpart applies to equipment associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that treat substances that are identified or listed under RCRA as hazardous wastes and that have a total organics concentration of 10 parts per million by weight (ppmw) or greater. It establishes performance standards for total organic emissions from these operations. These standards may be "applicable" for remedial and removal action activities that use these operations for hazardous wastes whose total organics concentration exceeds the 10 ppmw threshold. These standards may be "relevant and appropriate" if the total organic concentration is less than 10 ppmw or if the organics are from nonhazardous wastes.

Additional guidance on the control of air emissions from CERCLA air strippers for groundwater treatment is given in OSWER Directive 9355.0-28 (*Control of Air Emissions from Superfund Air Strippers at Superfund Groundwater Sites*).

Air pollutant emission standards for equipment leaks at TSDFs are given in 40 CFR Part 264, Subpart BB. In general, this subpart applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight. This regulation contains design specifications for equipment such as pumps and compressors. It specifies that this equipment must be monitored for leaks periodically. When a leak is detected, it must be repaired as soon as practicable, but not later than 15 calendar days after the leak is detected. These organic emission control requirements may be considered as ARARs for the equipment components installed at CERCLA cleanup sites that contain or contact substances containing 10 percent by weight or more total organics.

EPA has proposed new standards for air pollutant emissions from TSDFs (see 56 FR 33490 to 33578, July 22, 1991). The proposed Subpart CC of 40 CFR Part 264 would apply to owners and operators of TSDFs using tanks, surface impoundments, and containers to

manage hazardous waste. It also would apply to hazardous waste generators using tanks and containers to accumulate hazardous waste on site. At these affected facilities, specific organic emissions controls would have to be installed on the tanks, surface impoundments and containers having a volatile organic concentration equal to or greater than 500 ppmw. A combination of covers, closed-vent systems, and control devices would have to be used to limit the organic emissions. This proposed rule is scheduled to be promulgated by 1993. As a proposed rule, these standards are merely TBCs. If promulgated, the organic emission control requirements would be "applicable"to on-site remedial and removal actions that use tanks, surface impoundments and containers to manage hazardous waste having more than 500 ppmw of volatile organic. They may be "relevant and appropriate" for nonhazardous wastes or for lower concentrations.

Subpart DD of 40 CFR Part 264 contains design and operating standards for containment buildings. Containment buildings are not land treatment units, so that hazardous wastes may be managed in such units without first meeting treatment standards. They allow nonliquid hazardous wastes to be stored and/or treated indoors in a secure structure (securely walled, roofed, and floored) that is designed to provide containment comparable to that provided by RCRA tanks or containers. Examples of hazardous wastes that could be stored in containment buildings are lead slags, spent potliners from primary aluminum production, recycled lead batteries and possibly electric arc furnace dusts. Because of the dusty nature of many of the hazardous wastes that may be managed in these units and the dusty conditions that can be caused by the handling of these wastes within the units, the standards require that owner/operators control fugitive dust emissions during normal operating conditions. Owner/operators must install and operate systems to control fugitive dust emissions unless they can demonstrate that the wastes to be managed in the unit will not release significant amounts of fine particulates from the building as they are handled or treated. The standards require that there be no visible emissions through any openings in the unit.

XI. STATE AIR TOXICS REGULATIONS

Several State air pollution control agencies have adopted programs to regulate toxic air pollutants. These requirements are likely to be the most significant air emission ARARs at CERCLA sites until EPA and the States make substantial progress in implementing the new provisions of Section 112 of the CAA. Because the regulated contaminants and specific control measures vary from one State to another, persons involved in performing response actions at CERCLA sites should coordinate with the appropriate Regional Air/Superfund Coordinator, ARARs Coordinator, On-Scene Coordinator, Site Remedial Project Manager, and the appropriate State agency to identify potential State ARARs.

XII. ADDITIONAL MATERIAL ON THE CLEAN AIR ACT

The following is a partial list of additional material concerning the Clean Air Act and the 1990 amendments:

① The Clean Air Act Amendments of 1990: Summary Materials. U.S. EPA, November 15, 1990 (20 pages; includes glossary, one page title summaries, and legislative chronology. Available from U.S. EPA--Office of Air and Radiation, Mail Code ANR-443, 401 M. Street, S.W., Washington, DC. 20460, (202) 260-7400.

② Clean Air Act Amendments of 1990: Detailed Summary of Titles. U.S. EPA, November 30, 1990 (Approximately 150 pages; includes a detailed summary for each title). Available from U.S. EPA--Office of Air and Radiation).

③ CERCLA Compliance with Other Laws Manual: Part II. Clean Air Act and Other Environmental Statutes and State Requirements, U.S. EPA Publication No. EPA-540/G-89-009, 1989. Available from National Technical Information Service, 5285 Port Royal Road, Springfield, VA. 22161, (703) 487-4600.

④ Self-instructional Course on Air Pollution Control Orientation. (SI:422) Available from U.S. EPA--Air Pollution Training Institute, Environmental Research Center, Mail Code MD17, Research Triangle Park, NC. 27711, (919) 541-2497.

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NOTICE: The policies set out in this Fact Sheet are not final Agency action but are intended solely as guidance. They are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the United States. EPA officials may decide to follow the guidance provided in this Fact Sheet, or to act at variance with the guidance, based on an analysis of site-specific circumstances. The Agency also reserves the right to change this guidance at any time without public notice.

ATTACHMENT 1

Air Quality Regulations That Are Potential ARARs for CERCLA Response Actions or Technologies

CERCLA Response Action or Technology	Fact Sheet Sections					
	Section IV *NAAQS-Derived* State Air Emissions Standards[a,b]	Section V New Source Performance Standards	Section VIII National Emissions Standards for Hazardous Air Pollutants[c]	Section IX Title V Operating Permits	Section X RCRA Standards	Section XI State Air Toxics Regulations[b]
A. Air Pollution and Gas Migration Control						
1. Capping				b,e		
2. Dust control	Probable			b,e	Yes	Probable
3. Vapor collection and treatment (air stripping,carbon adsorption, etc.)	Probable		TBD	d	Yes	Probable
B. Waste Treatment						
1. Municipal waste incinerators	Probable	Yes		b,e		
2. Hazardous waste incinerators			TBD	b,e	Yes	Probable
3. Other thermal treatment				b,e	Yes	Probable
4. Solidification/stabilization				b,e		
5. Biological treatment (activated sludge, etc.)	Probable	Yes		b,e		
6. Chemical treatment (neutralization, etc.)				b,e		
7. Physical treatment (carbon adsorption, etc.)	Probable			b,e	Yes	Probable
8. In situ treatment (soil vapor extraction, etc.)	Probable			b,e	Yes	Probable
C. Waste Management Units						
1. Tanks and containers			TBD	b,e	Yes	Probable
2. Waste piles				b,e	Yes	Probable
3. Municipal landfills (flaring, gas collection, etc.)	Probable	TBC[d]	TBD	b,e		
4. Hazardous waste landfills, (flaring, gas collection, etc.)				b,e	Yes	Probable
5. Surface impoundments			TBD	b,e	Yes	Probable
6. Land treatment				b,e	Yes	Probable
7. Injection				b,e		
8. Containment Buildings					Yes	Probable

(continued)

ATTACHMENT 1
Air Quality Regulations That Are Potential ARARs For CERCLA Response Actions or Technologies (continued)

CERCLA Response Action or Technology	Fact Sheet Sections					
	Section IV *NAAQS-Derived* State Air Emissions Standards[a,b]	Section V New Source Performance Standards	Section VIII National Emissions Standards for Hazardous Air Pollutants[c]	Section IX Title V Operating Permits	Section X RCRA Standards	Section XI State Air Toxics Regulations[b]
D. Soil and Sediment Containment and Removal						
1. Excavation				b,e		
2. Dredging				b,e		
3. Grading				b,e		
4. Capping				b,e		
5. Revegetation				b,e		
E. Surface Water Controls						
1. Capping				b,e		
2. Grading				b,e		
3. Revegetation				b,e		
4. Diversion and collection				b,e		
F. Leachate and Groundwater Controls						
1. Containment barriers (slurry walls, etc.)				b,e		
2. Groundwater pumping				b,e		
3. Subsurface collection drains				b,e		
4. Permeable treatment beds				b,e		
5. Capping				b,e		

[a] NAAQSs cannot be ARARs. They are not enforceable in and of themselves.
[b] For information about specific state regulations, consult the Air/Superfund coordinator in the appropriate EPA regional office.
[c] To be determined. A source category list will be published by EPA.
[d] To be considered. Regulations have been proposed (but not promulgated) for organic emissions from municipal solid waste landfills.
[e] Regulations have been proposed (but not promulgated) for the operating permit program and, therefore, these standards are TBCs. States will develop permitting programs in accordance with the promulgated regulations. Substantive standards associated with this program may be ARARs, but administrative procedures and permit requirements are <u>not</u> potential ARARs.

ATTACHMENT 2
Hazardous Air Pollutants Listed in the 1990 amendments (see Section 112(b)(1)

CAS Number	Chemical Name[a]
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	2-Acetylaminofluorene
107028	Acrolein
79061	Acrylamide
79107	Acrylic acid
107131	Acrylonitrile
107051	Allyl chloride
97671	4-Aminobiphenyl
62533	Aniline
90040	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
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 dipenyl diisocyanate (MDI)
101779	4,4'-Methylenedianiline
91203	Naphthalene
98953	Nitrobenzene
92933	4-Nitrobiphenyl
100027	4-Nitrophenol
79469	2-Nitropropane
684935	N-Nitroso-N-methylurea
62759	N-Nitrosodimethylamine
59892	N-Nitrosomorpholine
56382	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 sultone
57578	beta-Propiolactone
123386	Propionaldehyde

(continued)

ATTACHMENT 2
Hazardous Air Pollutants Listed in the 1990 amendments (see Section 112(b)(1)

CAS Number	Chemical Name[a]	CAS Number	Chemical Name
126998	Chloroprene	114261	Propoxur (Baygon)
1319773	Cresols/Cresylic acid (isomers and mixture)	78875	Propylene dichloride (1,2-Dichloropropane)
95487	o-Cresol	75569	Propylene oxide
108394	m-Cresol	75558	1,2-Propylenimine (2-Methyl aziridine)
106445	p-Cresol	91225	Quinoline
98828	Cumene	106514	Quinone
94757	2,4-D,salts and esters	100425	Styrene
3547044	DDE	96093	Styrene oxide
334883	Diazomethane	1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin
132649	Dibenzofurans	79345	1,1,2,2-Tetrachloroethane
96128	1,2-Dibromo-3-chloropropane	127184	Tetrachloroethylene (Perchloroethylene)
84742	Dibutylphthalate	7550450	Titanium tetrachloride
106467	1,4-Dichlorobenzene(p)	108883	Toluene
91941	3,3-Dichlorobenzidene	95807	2,4-Toluene diamine
111444	Dichloroethyl ether (Bis(2-chloroethyl)ether)	584849	2,4-Toluene diisocyanate
542756	1,3-Dichloropropene	95534	o-Toluidine
62737	Dichlorvos	8001352	Toxaphene (chlorinated camphene)
111422	Diethanolamine	120821	1,2,4-Trichloroebenzene
121697	N,N-Diethyl aniline (N,N-Dimethylaniline)	79005	1,1,2-Trichloroethane
64675	Diethyl sulfate	79016	Trichloroethylene
119904	3,3-Dimethoxybenzidine	95954	2,4,5-Trichlorophenol
60117	Dimethyl aminoazobenzene	88062	2,4,6-Trichlorophenol
119937	3,3'-Dimethyl benzidine	121448	Triethylamine
79447	Dimethyl carbamoyl chloride	1582098	Trifluralin
68122	Dimethyl formamide	540841	2,2,4-Trimethylpentane
57147	1,1-Dimethyl hydrazine	108054	Vinyl acetate
131113	Dimethyl phthalate	593602	Vinyl bromide
77781	Dimethyl sulfate	75014	Vinyl chloride
534521	4,6-Dinitro-o-cresol, and salts	75354	Vinylidene chloride (1,1-Dichloroethylene)
51285	2,4-Dinitrophenol	1330207	Xylenes (isomers and mixture)
121142	2,4-Dinitrotoluene	95476	o-Xylenes
123911	1,4-Dioxane (1,4-Diethyleneoxide)	108383	m-Xylenes
122667	1,2-Diphenylhydrazine	106423	p-Xylenes
106898	Epichlorohydrin (1-Chloro-2,3-epoxypropane)	0	Antimony Compounds
106887	1,2-Epoxybutane	0	Arsenic Compounds (inorganic including arsine)
140885	Ethyl acrylate	0	Beryllium Compounds
100414	Ethyl benzene	0	Cadmium Compounds
51796	Ethyl carbamate (Urethane)	0	Chromium Compounds
75003	Ethyl chloride (Chloroethane)	0	Cobalt Compounds

(continued)

ATTACHMENT 2

Hazardous Air Pollutants Listed in the 1990 amendments (see Section 112(b)(1)

CAS Number	Chemical Name[a]
106934	Ethyl dibromide (Dibromoethane)
107062	Ethylene dichloride (1,2-Dichloroethane)
107211	Ethylene glycol
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

CAS Number	Chemical Name
0	Coke Oven Emissions
0	Cyanide Compounds[b]
0	Glycol ethers[c]
0	Lead Compounds
0	Manganese Compounds
0	Mercury Compounds
0	Fine mineral fibers[d]
0	Nickel Compounds
0	Polycyclic Organic Matter[e]
0	Radionuclides (including radon)[f]
0	Selenium Compounds

NOTE: For all listings above that contain the word "compounds," and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical's infrastructure.

[a]Chemical Abstracts Service registry number.

[b]X'CN where X = H' or any other group where a formal dissociation may occur (for example, KCN or $Ca(CN)_2$).

[c]Includes mono- and di-ethers of ethylene glycol, diethylene glycol, and triethylene glycol $R\text{-}(OCH_2CH_2)_n\text{-}OR'$ where
n = 1, 2, or 3
R = alkyl or aryl groups
R' = R, H, or groups which, when removed, yield glycol ethers with the structure: $R\text{-}(OCH_2CH_2)_n\text{-}OH$. Polymers are excluded from the glycol category.

[d]Includes mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral-derived fibers) having the average diameter of 1 micrometer or less.

[e]Includes organic compounds having more than one benzene ring and a boiling point equal to or greater than 100 degrees Celsius.

[f]A type of atom which spontaneously undergoes radioactive decay.

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