

US EPA ARCHIVE DOCUMENT



IX. Air Quality Requirements for Construction Activities

Air regulations for construction activities are designed to limit the generation of particulate and ozone precursor emissions. The air quality issues of concern to the construction industry include:

- Uncontrolled open burning of debris;
- Dust generation;
- Vehicle emissions;
- Combustion gases from oil-fired equipment; and
- Releases of chlorofluorocarbons (CFCs).

Definitions and Acronyms

Hot Mix Asphalt Plant—Facility or equipment used to prepare hot aggregate and mineral filler for mixing to make hot mix asphalt.

Portland Cement Plant—Any manufacturing facility producing Portland cement by either the wet or dry process.

Rock Crushing Plant—All activities to crush or grind nonmetallic minerals that include the crusher, grinding mill, screening, bucket elevator, conveyer, bagging, storage bin, and loading.

Sick Building Syndrome—Condition in which building occupants experience acute health and comfort effects that appear to be linked to indoor air quality and time spent in buildings.

CFC—Chlorofluorocarbons

DOT—Department of Transportation

SIP—State Implementation Plan

TIP—Transportation Improvement Plan

VOC—Volatile Organic Compound

For large construction sites, especially road construction activities, you may require a portable rock crusher, cement plant, or a hot mix asphalt plant for your operations. These sources are generally large emitters of particulate matter, combustion gases, and hazardous air pollutants. These sources are regulated under 40 CFR Part 60 - Standards of Performance for New Stationary Sources. Subpart F applies to Portland Cement Plants, Subpart I applies to Hot Mix Asphalt Facilities, and Subpart OOO applies to Nonmetallic Mineral Processing Plants. These facilities and regulations are not discussed in detail in this document because they are not common to most construction sites. If you own, operate, or maintain one of these facilities, you will need to follow all of the proper recordkeeping and monitoring requirements. For more information on each of these subparts, go to <http://www.epa.gov/docs/epacfr40/chapt-1.info/60tc.html>. The permitting requirements and the permit exemptions for these sources vary from state to state. Even if a New Source Performance Standard does not apply to your source, you should still consult with the proper state and local agencies to determine your permitting requirements.

A. What Clean Air Act (CAA) Programs Apply to Your Construction Project?

Ozone Depleting Substances

Before beginning any demolition or renovation activities on existing buildings, you should evaluate the potential for releasing ozone depleting substances such as chlorofluorocarbons (CFCs) that are in refrigerators, air conditioners, and other chiller units. EPA 40 CFR Part 82 (Protection of Stratospheric Ozone; Refrigerant Recycling) states that no person disposing of appliances may knowingly vent or otherwise release into the environment any CFC used as a refrigerant. You must ensure that all equipment containing ozone-depleting substances such as CFCs is properly disposed of. This will require following EPA recycling and recovery practices and using certified recycling and recovery equipment. Typically, this involves having items such as small air conditioners or chilling units sent to a recovery facility to have the CFCs removed by a certified specialist. If large industrial chillers are located at the site, then a certified CFC recovery specialist will have to remove the CFCs on site before demolition of the unit can begin. You will be required to maintain signed statements from the disposal contractor indicating that they have removed the refrigerant from the appliance.

State Implementation Plans

Currently, there are no federal CAA requirements for mobile and stationary sources that apply to construction activities. CAA requirements are implemented primarily by states through their State Implementation Plans (SIP). The following construction-related emissions may require a state permit under a SIP:

- Nitrogen oxides (NO_x) and fine particulates from diesel engines;
- Dust from vehicle traffic;
- Dust from loading and unloading of construction materials at transfer points;
- Dust from conveyor systems transporting building materials;
- Visible stack emissions from off-road equipment;
- Emissions from open burning of debris (illegal in many areas);

- Volatile organic compounds (VOCs) from paint and cleaning solvents; and
- Combustion gases from oil-fired heaters.

States have differing requirements for air emissions. Check with your local permitting authority to determine if you need a permit for your activities.

Transportation Conformity Rule

Projects requiring funding or approval from the Department of Transportation (DOT), the Federal Highway Administration, the Federal Transit Administration, or the Metropolitan Planning

Organization must comply with the Transportation Conformity Rule issued by DOT on November 24, 1993. These projects include federal road construction activities. These requirements may affect projects in an area that does not meet one or more of EPA's air quality standards.

Transportation conformity requirements can be found at:
<http://www.epa.gov/otaq/transp/traqconf.htm>

The Transportation Conformity Rule was established to control the impacts of transportation-related emissions on air quality. The rule requires that Metropolitan Planning Organizations develop a transportation improvement plan (TIP) that is consistent with a SIP. Before a construction project begins, you should determine if the Transportation Conformity Rule applies. If it does, you should verify that your project meets the requirements of the Transportation Conformity Rule. You should also confirm consistency between the TIP and SIP for the area where the road project is located. In most cases, this analysis occurs during the planning phases of a project, but the contractor should confirm that this analysis has occurred to avoid project delays or shut-down.

Voluntary Diesel Retrofit Program

To address air pollution from existing diesel construction equipment and heavy-duty vehicles, EPA has developed a Voluntary Diesel Retrofit Program

through which it is developing incentives to encourage construction equipment manufacturers and operators to implement control technology to reduce emissions. The most common types of "after treatment" control technologies are cleaner low-sulfur diesel fuel, anti-idling strategies, engine replacement, diesel exhaust catalysts, and particulate filters that remove pollutants from the exhaust stream before they can escape into the atmosphere. EPA has also developed additional initiatives for reducing pollution from new diesel engines and more stringent emission standards for new nonroad diesel engines which will begin in 2008. For more information on the proposed standards, go to <http://www.epa.gov/otaq/nonroad.htm>.

Information concerning the Voluntary Diesel Retrofit Program can be found at:
<http://www.epa.gov/otaq/retrofit/>.

Indoor Air Concerns

Some building materials contain chemicals that may be harmful if inhaled for extended periods of time. These materials may include:

- Paint/primers;
- Adhesives;

- Floor coatings;
- Carpet; and
- Plywood/particle board.

The most important danger from paints is from VOCs, which may include chemicals such as benzene, formaldehyde, and xylene that have been shown to cause cancer. Primer also contains many of the same chemicals found in paint. Some steps that you can take to improve air quality are to:

- Try to find paints that have low levels of Hazardous Air Pollutants (HAPs) and VOCs;
- Allow adequate drying time before occupying the building;
- Provide proper ventilation; and
- Dispose of all paints properly.

Information concerning paint can be found at <http://www.epa.gov/iaq/pubs>.

Adhesives are a substance capable of holding materials together by surface attachment. High levels of exposure to some adhesives may cause light headiness and nausea. It is important that proper ventilation is used when applying adhesives. Appropriate protection should be used to avoid breathing in the strong fumes. During the construction phase, bonding agents such as caulks, sealants, and glue are all necessary, although particular precaution must be taken in indoor conditions when you are dealing with large areas. Adhesives are also used as the primary backing for carpet. In order to reduce the “new carpet smell,” you should air the carpet out prior to installation.

Information concerning sick building syndrome can be found at <http://www.epa.gov/iaq/pubs/sbs.html>.

Particle board is a practical and inexpensive alternative to solid wood and has become one of the nation’s leading building materials. Floors, cabinets, and doors are all examples of particle board usage. Formaldehyde and other VOCs are the primary pollutants emitted from particle board. Before installing furniture, make sure it is well laminated to avoid giving off harmful vapors. For more information on formaldehyde, go to <http://www.epa.gov/iaq/formalde.html>.

For links to state and local agencies, go to <http://www.cicacenter.org/air.html>

During the construction phase, special consideration should be given to indoor air quality because many of the problems with a building will occur once it is occupied. HVAC contractors should make sure that all units are properly installed and that adequate drain pans are placed to avoid biological contaminants. Contaminants may breed in stagnant water that has accumulated in ducts, humidifiers, and drain pans.

B. Are You Responsible for the Permit?

As discussed earlier, most air permitting requirements for construction activities are at the state and local level. Therefore, either the owner, developer, contractor, or architect will need to contact the appropriate authority to determine the need for and to obtain the necessary CAA permit. To get a permit, you must submit your application to the state or local authority.

C. What Are the Penalties for Working Without the Proper Permit?

The penalties will vary from state to state. For example, in many areas, open burning of debris is not allowed at all. This activity may result in fines, or even criminal prosecution. Funding and implementation of a federal highway project in a non-attainment area can be suspended when the TIP does not conform with the SIP.

Federal environmental laws give a range of enforcement options to EPA, state agencies, and individual citizens. Most laws authorize EPA to: (1) issue an administrative order or impose an administrative penalty, (2) to file a civil action in a federal court for either injunctive relief or a civil penalty, or (3) to file a criminal action in a federal court to impose criminal sanctions.

In addition to fines, you may need to pay legal fees and face project delays. If legal action is taken against your construction site, you also may be subject to increased scrutiny at all of your other construction sites by regulatory agencies and the public.

D. Where Do You Get a Permit?

Contact your state environmental protection agency to discuss permitting requirements for sources.

E. What Questions Do You Need to Answer Before Starting Your Construction Project?

You can use the questions in Section II of Part I of this guide to start a discussion among all parties involved in the construction project and to assign tasks to ensure all environmental requirements are met. Each question has a space next to it to designate who will take the lead on each task. Note that designating a responsible party does not absolve you of your responsibility for meeting environmental requirements or liability for failing to meet these requirements.

F. Where Can You Get Additional Information?

- The Construction Industry Compliance Assistance Center (<http://www.cicacenter.org/air.html>) provides resources specific dust control and emission control as well as links to state and local agencies.
- The National Environmental Compliance Assistance Clearinghouse contains a search engine to help you find compliance assistance tools, contacts, and EPA-sponsored programs: <http://www.epa.gov/clearinghouse/>.
- EPA's web site provides links to every state environmental agency: <http://www.epa.gov/air/partners.html#state>. Each state agency will provide information concerning its air permitting requirements.

- The National Center for Manufacturing Sciences provides resources for highway and building construction to include air emissions data at: <http://ecm.ncms.org/ERI/new/IRRconstruc.htm>.
- Transportation conformity requirements can be found at: <http://www.epa.gov/otaq/transp/traq-conf.htm>
- Information concerning the Voluntary Diesel Retrofit Program can be found at: <http://www.epa.gov/otaq/retrofit/>.
- Information on State Implementation Plans can be found at: <http://www.epa.gov/compliance/resources/policies/civil/caa/sipguid.html>.
- Information on New Source Performance Standards can be found at: <http://www.epa.gov/ttnatw01/nsps/nspstbl.html>.