Preventing Air Pollution from: Commercial Construction

What is pollution prevention?
Pollution prevention is the use of materials, processes, or practices that reduce or eliminate pollution and waste at the source. It includes improved operating practices like materials substitution, process and equipment modifications, and energy and water conservation.

Why should commercial construction companies prevent pollution?
Pollution prevention practices save money on transportation, waste disposal, and raw materials.

It also safeguards the health of your workers, family, and the community. For example, during construction, particle pollution (dust), volatile organic compounds (VOC), and other pollutants can affect air quality and damage the health of workers, occupants in nearby buildings, and the surrounding community.

Why should I be concerned about air pollution from commercial construction?
- Paints, coatings, solvents, and sealers used in commercial construction can release volatile organic compounds (VOC) and some toxic air pollutants. Chemicals in these substances also react in the air to form ground level ozone (smog), which has been linked to a number of respiratory effects. Ozone continues to be a pollution problem in many areas of the United States.
- Site clearing, demolition, sanding, and excavation emit particle pollution (dust). For example, tearing down old buildings can generate dust. This particle pollution can cause respiratory problems and may contain toxic air pollutants, some of which can cause cancer.
- Diesel engines are frequently used to power equipment found at construction sites such as earth moving vehicles, generators, and compressors. Diesel exhaust contains particle pollution, ozone-forming nitrogen oxides and toxic air pollutants. Particle pollution and ozone pose serious public health problems. Exposure to these pollutants causes lung damage and exacerbates existing respiratory disease like asthma.
- Smaller engines such as those found in lawn mowers, weed eaters, and other landscaping tools emit greenhouse gases. Greenhouse gases are composed of several types of gases, including carbon monoxide and methane.

How can I reduce the pollution from my construction sites?

Limit Site Disturbance
- Minimize environmental disturbance by clearing the smallest area necessary for construction.

Reduce Particle Pollution
- Do not burn debris onsite or in the open without air pollution controls.
- Salvage materials to reduce dust and the amount of waste generated.
Use dust-reduction technologies, like windbreaks and sprinkling, to reduce the risk of accidents from poor visibility and dust-related health problems in workers. Where water is scarce, use surface sealants.

Restrict Transportation Activities
- Recycle waste onsite. For example, use recycled natural waste as mulch.
- When possible, perform operations like concrete batching onsite.
- Store required construction materials onsite to reduce transportation time and fuel.

Minimize Greenhouse Gas Generation
- Use cordless electric tools to decrease emissions from gasoline powered generators.
- Use hand tools instead of gasoline-powered tools for landscaping operations.
- Grow native vegetation, which will reduce the emissions of toxic air pollutants by decreasing the frequency of maintenance operations and pesticide/fertilizer applications.

Reduce Emissions
- Use water-based concrete curing agents to reduce VOC during curing.
- Use low-VOC or zero-VOC paints, caulks, glues and sealants.
- Use high-volume low-pressure spray guns (HVLP) to apply coatings that contain solvents to reduce misting and overspray and save raw materials.

Change Chemical Handling
- Improve spraying techniques for more efficient use of raw materials.
- Train workers in safe methods of handling chemicals to avoid spills.
- Keep storage bins covered to reduce evaporation of solvents and fuels.

If low- or zero-VOC paints cost more, why should I use them?
Low-VOC paints can reduce emissions and cost the same as other paints. Using low-VOC paints reduces emissions during construction and decreases health risks to the people who will work in the building.

Zero-VOC paints can cost up to 50% more than commonly used high-VOC paints, but they do not emit any VOC.

What are “green buildings”?
Green buildings are constructed from recyclable, renewable, or reused resources whenever possible. Also, a green building efficiently uses energy, has lower operating costs, and maintains healthy indoor air quality levels.

A good way to reduce air pollution from construction sites is to implement “green building” practices. These practices focus on environmental sustainability by considering all aspects of the materials and processes used in the construction.

What else can I do to reduce pollution?
Learn more about pollution prevention and waste reduction in the construction industry from the Construction Industry Compliance Assistance Center. Here you will find “plain language” explanations of environmental rules for the construction industry. Also provided are links to detailed information, including state regulations and other resources. This web site is being developed by the National Center for Manufacturing Sciences, in conjunction with:
- Associated General Contractors of America
- National Association of Home Builders
- American Road and Transportation Builders Association
- Associated Builders and Contractors Inc.
- Golf Course Builders Association of America.


In a study conducted in Illinois, replacing high maintenance turf with native landscaping reduced 50 tons of VOC per year for every 1,000 acres converted.

—Illinois Environmental Protection Agency
Did you know…

The EPA reduced the footprint of its site in North Carolina by building a two-lane road instead of a four-lane road, burying electric and communications cables under the road, and building parking decks. Land savings: 25 acres of forest Particle pollution reduction: 21 tons

— U.S. EPA

For Further Information

- High performance buildings: www.gggc.state.pa.us/building/default.htm
- Sustainable design guide: www.co.hennepin.mn.us/environmental/programs/solidw.html#sustainable
- Green building initiative: www.dec.state.ny.us/website/ppu/grnbldg/index.html
- Green buildings: www.c.san-jose.ca.us/esd/gb-home.htm
- Green building coalition: www.floridagreenbuilding.org/STANDARDS/Default.htm
- Waste reduction: www.wrrc.p2pays.org/industry/construct.htm
- Green building resources: www.green-rated.org
- Sustainable design: www.ga.wa.gov/EAS/green/WLCBWarehouse.doc
- Links: www.state.ga.us/dnr/p2ad/cbi_links.html
- Native plants: www.wildflower2.org

Programs
- City of Austin, Texas: www.ci.austin.tx/greenbuilder
- City of Santa Monica, California: www.greenbuildings.santa-monica.org/index.html
- Maryland Environmental Design: www.dnr.state.md.us/smartgrowth/ed

Construction of EPA’s North Carolina campus has shattered the notion that environmental enhancements are too expensive to be practical. Costs can be kept in balance with environmental ideals when builders are willing to sacrifice traditional methods for new environmentally friendly ones.

— U.S. EPA