



COLORADO

Small Business Assistance Program

Department of Public Health & Environment

A Guide to Environmental Regulations for: Abrasive Blasting Operations

Abrasive blast cleaning operations release pollutants that are regulated by the Colorado Department of Public Health and Environment's Air Pollution Control Division (the Division). Abrasive blast cleaning operations must comply with various federal and state air, waste, and water regulations. This guide was written to help this type of business better understand the environmental regulations that may affect their operations, and to provide additional resources and contacts for assistance.

Note: Some businesses that conduct abrasive blast cleaning also conduct surface coating operations. For information on environmental requirements specific to surface coating operations, visit the Division Guidance Document Library at: www.colorado.gov/cdphe/apen-and-permitting-guidance

AIR REQUIREMENTS

➤ Air Pollutants

The primary pollutant from abrasive blast cleaning operations is particulate matter (PM). PM is the general term used to describe small particles suspended in the air. PM occurs mainly in the form of dust from the fracturing of the blasting medium and from the material being cleaned. In addition to PM, blasting media may contain paint chips or metal fragments from the materials being cleaned. Emissions from blasting operations vary depending upon the substrate that is blasted and the type of blasting media used. The Air Pollution Control Division regulates PM and many of other substances released by abrasive blast cleaning operations.

➤ Hazardous Air Pollutants (HAPs)

A Hazardous Air Pollutant or HAP is a compound that has been included on the EPA list of 189 substances found to have adverse effects on humans and the environment such as chromium, lead compounds, or other heavy metals from paint chips or metal fragments from blasting debris. These substances are known to cause increased risk of cancer, birth defects, and other harmful effects.

➤ **Attainment and Non-Attainment Areas - What area is my business in?**

Air emission reporting and permitting requirements for abrasive blast cleaning operations in Colorado vary based on whether a business is located in an “attainment/attainment maintenance” area or a “nonattainment” area. Visit the Division’s Air Quality Planning website for more information at: www.colorado.gov/cdphe/state-implementation-plans-sips In general, air regulations are more stringent in “nonattainment” areas because these areas exceed the National Ambient Air Quality Standards for regulated pollutants such as particulate matter (PM), ozone, and others. At the time of this publication, all areas of Colorado are attainment or attainment maintenance for particulate matter or ozone. Regardless, air quality requirements can change and you should be aware of which area and what requirements may apply to your business. The Small Business Assistance Program (SBAP) is available to assist you.

➤ **Air Emission Reporting and Permitting Requirements**

In Colorado, air permitting is a two-step process. In Step 1, businesses with emissions above *reporting* thresholds must submit an Air Pollutant Emission Notice (APEN) to the Division. In Step 2, businesses with emission above *permitting* thresholds must obtain a permit from the Division. APEN and air permit thresholds for PM emissions from abrasive blast cleaning operations are shown in Table 1. Note that the thresholds are different for businesses located in “attainment/attainment maintenance” and “nonattainment” areas.

Table 1

Area of Colorado	APEN Threshold for Actual Uncontrolled Emissions of Particulate Matter ¹	Permit Threshold for Actual Uncontrolled Emissions of Particulate Matter ¹
Attainment and Attainment maintenance	2 ton/year	10 ton/year
Nonattainment	1 ton/year	5 ton/year

¹ “Uncontrolled emissions” refers to the amount of emissions that occur prior to treatment with a pollution control measure such as a partial or total enclosure of the blasting operations. As a rule of thumb, approximately 24 tons of sand passing through the nozzle of the unit will generate 1 ton of PM emissions.

➤ **Exemptions**

Colorado air regulations include two exemptions for certain types of abrasive blast cleaning operations. You do not need to file an APEN or obtain an air permit for operations that meet either of the following criteria:

- Blast cleaning equipment using a suspension of abrasive in water and any exhaust system or collector serving them exclusively. (Reg. 3, Section II.D.1.xx.)
- Sandblast equipment when the blast media is recycled and the blasting material is collected, including small sandblast glove booths. (Reg. 3, Section II.D.1.rrr.)

➤ **Calculating Emissions**

Operators of abrasive blasting facilities must calculate annual emissions based on the amount of blasting material that is propelled through the blasting nozzle. Calculating air pollution emissions from blasting operations is dependent on the type of abrasive blasting media that is used. Abrasive materials used in blasting can generally be classified as sand, slag, metallic shot or grit, synthetic, glass bead or other. Emission calculations for Particulate matter (PM) and particulate hazardous air pollutants (HAP) are the major concern relative to abrasive blasting. Table 13.2.6-1 in [Chapter 13.2.6, Abrasive Blasting, of AP-42 \(Fifth Edition, Volume I\)](#) presents total PM emission factors for abrasive blasting as a function of wind speed. However, emissions of PM10 and PM2.5 are not significantly wind dependent. The following table is specific emission factors using sand as the blasting media. Other blasting media (glass bead, shot...) can have lower emission factors.

Table 13.2.6-1. PARTICULATE EMISSION FACTORS FOR ABRASIVE BLASTING

Source	Particulate Size	Emission Factor lb/1,000 lb abrasive
Sand blasting of mild steel panels	Total PM	
	5 mph wind speed	27
	10 mph wind speed	55
	15 mph wind speed	91
	PM 10	13
	PM 2.5	1.3

The following equation can be used to calculate annual uncontrolled emission rates:

$E = U \times EF$ where,

E= emissions of pollutant (for PM, PM10 or PM2.5) in (tons/year)

U= blast media usage (lb/year)

EF= emission factor for specific pollutant (lb/1000 lb)

The following equation can be used to calculate annual controlled emission rates:

$E = U \times EF \times [1 - (A/100)]$ where,

E = emissions of pollutant (for PM, PM10 or PM2.5) in (tons/year)

U = blast media usage (lb/year)

EF = emission factor for specific pollutant (lb/1000 lb)

A = abatement efficiency (% of control efficiency; i.e. 95% for a dust collector)

➤ **Submitting an APEN**

If your PM emissions exceed APEN reporting thresholds (as listed in Table 1 above) and no exemptions apply, you must submit a *General APEN* form and a *Fugitive Particulate Emissions Control Plan for Sand Blasting Operations* form to the division. These forms are available from the division and downloadable at: www.colorado.gov/cdphe/APENforms

The *General APEN* form is used to report general information about your abrasive blast cleaning operations, including the type and amount of material processed and the resulting emissions. On the APEN, you must indicate whether your unit is “stationary” or “portable.”

A stationary unit is located at only one site. A portable unit can be moved to a variety of job-sites. If you request that the unit be permitted as portable, you must submit a *Notice of Relocation* to the Division at least 10 days prior to moving the blasting equipment to a new job site and you must maintain a record of the location of the equipment at your home office. There is no cost to file the Notice of Relocation form. If you request that the unit is permitted as stationary and later decide to move the unit, you must submit a new APEN in order to modify your permit prior to the move. The appropriate APEN fee must be submitted with the APEN form.

The *Fugitive Particulate Emissions Control Plan for Sand Blasting Operations* form is used to provide information on how you will control fugitive emissions of PM. Pollution controls may include wet blasting, partial or total enclosure of blasting operations, vacuum systems, or alternative blast mediums such as soda ash or copper slag. You are not limited to one method of controlling emissions. Your company may choose to use more than one type of control method to reduce PM emissions for any given job.

APENs are valid for five years, and each APEN must be renewed at least 30 days before it expires. The division does not notify you when your APEN expires; therefore, it is your responsibility to file an APEN before it expires. A revised APEN must also be submitted to the division when certain changes occur at your facility, such as a name change, a change in ownership, a change in the business location, or a significant change in emissions.

➤ **Obtaining an Air Permit**

The division will use the information provided in your APEN to determine whether the operation requires an air permit. If an air permit is required, the APEN will become part of your permit application package. Construction Permits will be issued as “Issuances” (i.e. Issuance 1, Issuance 2, etc). A new Issuance will be written for each modification to a permit. The final step of the air permitting process, to finalize the permit, is to submit the Self-Certification Package. This step requires that the business certifies compliance with the terms and conditions of the permit and allows the business to make changes to the permit if necessary.

The Self-Certification Package can be downloaded from the following page under Permit Approval and Self Certification: www.colorado.gov/cdphe/air-permit-self-certification

Your air permit defines the type of air pollution control measures to be used (as provided in your control plan), limits the annual production at the site, provides opacity guidelines, and includes recordkeeping requirements. Take the time to review your air permit and be familiar with your regulatory requirements.

More information on the air permitting process can be found in the guidance document, “Reporting Your Air Emissions and Applying for Air Permits Step-by-Step for Colorado Small Businesses.” This document is available through the Division and downloadable at: www.colorado.gov/pacific/sites/default/files/AP_Air-Permits-Step-By-Step.pdf

➤ Recordkeeping

Abrasive blast cleaning equipment operators are required to maintain records of the amount of material passed through the nozzle or the amount of square feet cleaned so that PM emissions can be accurately calculated. These records must be available to the division for inspection upon request. For portable plants, records should indicate where the unit has been located, the length of time at each location, and the amount of material processed at each location. The site owner or operator should also maintain a copy of the most recent APEN, control plan, and air permit (if required). The air permit number must be permanently affixed on each piece of permitted equipment.

➤ What Fees Apply?

Filing Fee: A filing fee is required for each APEN submitted; this includes APENs submitted for administrative changes (e.g., change in ownership, change in location). Fees are subject to change by the legislature on an annual basis.

Annual Fee: All sources required to file an APEN must pay annual fees based on the estimated annual emissions of air pollutants. Currently, the division does not assess annual fees for PM. If your facility emits other regulated pollutants, the Division will assess an annual fee per ton of criteria pollutants emitted (NO_x, SO_x, etc.) and a separate fee per ton of non-criteria (hazardous air pollutants) emitted. The Division mails invoices to small businesses for these fees in approximately March or June of each year. Fees are subject to change by the legislature on an annual basis.

Permit Processing Fee: In addition to the APEN filing fee, permit-processing fees are assessed at an hourly rate. If you decide to discontinue sand blasting operations, please notify the division in writing immediately.

See www.colorado.gov/cdphe/emissions-and-permitting-fees for current fee information.

➤ Housekeeping

The division requires that any material left on the ground as a result of abrasive blasting operations be cleaned up promptly to prevent it from becoming airborne. There may be other required cleanup and disposal procedures when removing material that contains lead, chromium or other hazardous materials. More information on hazardous materials is located on the Hazardous Materials and Waste Management Divisions website at: www.colorado.gov/cdphe/hazwaste

HAZARDOUS WASTE REQUIREMENTS

Your business should conduct sand blasting operations in a blasting booth or over a covered and curbed, impermeable concrete surface to collect excess sand or other blasting media. Residue from blasting media may contain paint chips or metal fragments and must be tested to determine if it is a hazardous waste. You must identify all of the hazardous wastes that you generate and ensure they are managed and disposed of properly. Improper disposal of hazardous waste can be expensive. Although you generally will not need to obtain a permit

to manage your hazardous wastes, you must notify the Hazardous Materials and Waste Management Division (HMWMD) of your hazardous waste management activities if you generate more than approximately 220 pounds (~25 gallons) of hazardous waste per calendar month. You will then be issued an EPA Identification Number unique to your facility. This number is not a permit. It is a means of identifying your facility for hazardous waste management purposes. If you have questions, contact the Hazardous Materials Technical Assistance Hotline at (303) 692-3320 (or toll-free at 1(888) 569-1831) or visit the HMWMD website at: www.colorado.gov/cdphe/hazwaste. If you are a small business owner or operator, contact the Generator Assistance Program (GAP) at (303) 692-3415 (toll-free at 1(888) 569-1831 ext. 3415) or visit their website at: www.colorado.gov/cdphe/gap

WATER REQUIREMENTS

➤ Wastewater

Sand blasting operations are subject to pre-treatment regulations established by the Colorado Department of Public Health & Environment's Water Quality Control Division and implemented by your local sewage treatment plant, known as a Publicly Owned Treatment Works (POTW). Wastewater is typically generated by operations such as the rinsing of parts and the washing down of equipment or tools. If water becomes mixed with blasting residue, oil, antifreeze, or solvents, it is important that it be properly treated and contained prior to discharge. You must have a permit or written authorization to discharge industrial water. State laws prohibit the discharge of oil or flammable solvents to the sewer system. These are regulated wastes that must be properly disposed of. Your POTW also may require you to install a sand trap or oil/water separator or to meet other requirements. If you have questions, contact the Water Control Quality Division (WQCD) at (303) 692-3500 or visit their website at: www.colorado.gov/cdphe/wq-commerce-and-industry-permits

➤ Stormwater

Rain or snow falling on your property can pick up contaminants from sand blasting operations and carry the contaminants through the drainage systems directly into streams, rivers, and lakes. The term "stormwater" refers to this type of runoff. Stormwater management and spill prevention go hand-in-hand. The aim of both is to prevent residue from sandblasting media or waste fluids from being washed into the environment along with stormwater run-off. The State of Colorado requires all industrial facilities, including sand blasting operations that may discharge directly to surface waters or indirectly through municipal storm sewers, to obtain a stormwater permit. The permit requirements include prohibitions against discharges of non-stormwater. This permit requires facilities to develop and implement a plan to control stormwater discharges from their facility. The plan must include Best Management Practices (BMPs) that may include treatment of stormwater discharges along with source reduction. For more information on stormwater requirements, contact the Water Quality Control Division (WQCD) at (303) 692-3500 or visit their website at: www.colorado.gov/cdphe/wq-commerce-and-industry-permits

➤ **HELP IS AVAILABLE**

The Colorado Small Business Assistance Program (SBAP) provides free services to small businesses seeking help in understanding and complying with air, hazardous waste, water, and other environmental regulations.

**Small Business Assistance Program
Colorado Department of Public Health and Environment**

Home Page: www.colorado.gov/cdphe/sbap

Program Contacts:

(303) 692-3175 or

(303) 692-3148



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