




KEEPING IT UNDER CONTROL

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A refresher on the EPA's
NESHAP Rule 6X keeps welders
breathing easy



High-efficiency dust and fume collectors can reduce or nearly eliminate harmful welding fumes, thereby complying with EPA regulations and improving worker morale.

When the EPA's National Emission Standard for Hazardous Air Pollutants (NESHAP)

Rule 6X went into effect in July 2011, many welding shops were unaware of the rule or how it affected them. This was especially true for smaller facilities that didn't have a dedicated environmental health and safety specialist on staff.

Over time, more and more metalworking operations caught on – either before or after violations were discovered. Because 6X is still highly applicable to the welding industry, it's time for a refresher on what the rule says, compliance requirements and effective corrective strategies.

METAL FINISHING HAZARDS

The EPA enforces air emissions standards to reduce exposure to hazardous air pollutants known to cause cancer or other serious health effects. Within NESHAP Rule 6X are materials listed as Metal Finishing Hazardous Air Pollutants (MFHAPs) that apply to the metal fabrication industries.

These are defined as materials that contain 0.1 percent by weight cadmium, chromium, lead or nickel or 1.0 percent by weight manganese. Manganese, a widely used substance in welding processes, is the material of widest concern to the industry.

To learn if your facility is using these materials, check the Material Safety Data Sheets (MSDS) for the base materials that you are using, such as welding rods and welding wire. A standard MSDS will list hazardous ingredients in Section 2. If, for example, the material is shown to contain more than 2.50 percent manganese by weight, it is subject to Rule 6X.

If your company applies 50 percent or more of total labor in one or more of the following categories, it is subject to the rule: electrical and electronic equipment finishing, fabricated metal products, fabricated plate work (boiler shops), fabricated structural metal manufacturing, heating equipment (except electric), industrial machinery and equipment finishing, iron and steel forging, primary metal products ▶



At Camfil APC's factory in Jonesboro, Ark., a robotic welder's fumes must be properly extracted to conform with NESHAP Rule 6X.

manufacturing, and valve and pipe fittings. Moreover, operations that are impacted by the rule cover these processes: welding, dry abrasive blasting (three types), dry grinding, dry polishing with machines, dry machining, and spray painting (two types).

Certain defined operations are exempt from the rule, including military installations; NASA facilities; national nuclear security facilities; military munitions facilities; research or laboratories as defined in the Clean Air Act; tool, quality control and equipment repair facilities; and welding facilities using less than 2,000 lbs. of rod or wire that does not contain any identified hazardous air pollutants, per the MSDS.

METHOD 22 TEST

Your facility is likely to be impacted if you are in one of the industry categories listed above, are primarily engaged in one of the processes identified above, exhaust the air straight outdoors and fail an EPA Method 22 Fugitive Emission test.

The Method 22 test is conducted to provide a visual determination of fugitive emissions from material sources. It's recommended to have an environmental engineering consultant conduct the Method 22 test and provide third-party confirmation of the compliance results.

The consultant performs the test with two stopwatches while standing 15 ft. or more from an exhaust stack with a clear view of the exhaust against a dark background and with the sun at his back.

He starts the left-hand watch, running it continuously for 15 min., and starts the right-hand watch when emissions are observed (opacity). He stops the right-hand watch when emissions stop being observed. Rule 6X applies if opacity – defined as the quality of a particle that makes it impervious to light – is observed during 20 percent (3 min.) or more of the 15-min. test period.

If your company fits the criteria for Rule 6X and fails the Method ▶

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Method 22 test, you must notify the EPA. A “Tier 1” response means you must change the process to eliminate the hazardous air pollutants. This could be accomplished by experimenting with different materials and/or different settings to reduce emissions.

Keep in mind, however, that whatever changes you make, you must always operate equipment in accordance with manufacturer’s instructions.

After the adjustments are made, conduct another Method 22 test. If the second test fails, corrective action must take place immediately. According to the Federal Register, page 42985, Welding compliance, Tier 2: “Corrective action must take place immediately after the failed Method 22 test.”

CORRECTIVE STRATEGIES

If your shop relies on standard HVAC filtration to clean the air and exhaust welding fumes outside, you’re potentially in violation of Rule 6X. Likewise, you are noncompliant if your facility operators simply open the shop doors to release fumes and

dust. Even a dedicated dust and fume collection system may be in violation if it exhausts air outside and is older and/or not properly designed to handle the current processes.

One corrective strategy that offers multiple benefits is the use of a dust and fume collector with high-efficiency cartridge filtration. In fact, the regulation identifies cartridge filtration as an acceptable control device to eliminate visible emissions.

A well-designed cartridge system will properly filter welding fumes and other hazardous contaminants. These systems use self-cleaning mechanisms that pulse dirt off the filters, allowing units to run for extended periods between filter changes.

Moreover, the filtered air can either be re-circulated back into the facility or exhausted outside. If air is exhausted outdoors, the Rule 6X procedures apply. Under Method 22, the EPA requires ongoing annual compliance specific to your operation and based on the date that your facility originally declares compliance. ▶

Processes Impacted by Rule 6x

Dry Abrasive Blasting (3 types)
Dry Grinding
Dry Polishing with Machines
Dry Machining
Spray Painting (2 types)
Welding

NESHAP Rule 6X applies beyond welding to multiple common fabricating processes.

Standard Industrial Classification (SIC) Codes Affected by Rule 6x

3621	Motors and Generators Mfg
3699	Electrical Machinery, Equipment and Supplies
3499	Fabricated Metal Products
3443	Fabricated Plate Work and Boiler Shops
3441	Fabricated Structural Metal Fabrication
3433	Heating Equipment, except Electric
3531	Construction Machinery Mfg
3533	Oil and Gas Field Machinery Mfg
3561	Pumps and Pumping Equipment Mfg
3462	Iron and Steel Forging
3399	Primary Metals Products Mfg
3494	Valves and Pipe Fittings Mfg

This is not a complete list. There are over 200,000 companies in SIC codes 3400, 3500 and 3700. If they are emitting visible smoke, this rule could apply to them as well.

NESHAP Rule 6X applies to metalworking businesses performing a wide range of operations.

If your company recirculates the filtered air instead of exhausting it outside, the EPA NESHAP requirement no longer applies. However, the indoor air must still comply with OSHA permissible exposure limits. The collector may also require safety-monitoring filters (also called after-filters) for added filtration and backup protection. Note that you can eliminate the cost to replace conditioned air by recirculating heated or cooled air back through your facility rather than venting it outdoors, boosting the energy efficiency of your overall operation.

GUARANTEED RESULTS

Before you make the leap and invest in a dedicated air filtration/dust collection system, make sure the supplier is experienced in applying Rule 6X as well as appropriate OSHA and NFPA standards for air quality and fire/explosion protection. In addition, beware of claims of “removing 99.9 percent of contaminants” of a certain particle size.

The problem with these claims is that they aren’t regulated by the EPA and OSHA. Rather, the organizations want proof that emissions are at or below required thresholds. Therefore, ask the filtration manufacturer for a written guarantee of emissions performance stated as grains per cubic foot.

Although Rule 6X has been around for several years now, it’s beneficial to review how it applies to your welding operation, what you should look for in your air and manufacturing environment and the relevant tests you need to conduct. Maintaining control of your facility’s environment with high efficiency dust and fume collectors can greatly reduce or nearly eliminate welding chemicals, especially hazardous air pollutants, resulting in compliance and – more importantly – employee health and well-being. ■

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