



Air Pollution Control Division

Small Business Assistance Program

A Guide to Air Emission Requirements for Aluminum Sweat Furnaces

This document provides an overview of the state and federal air emission requirements for an owner or operator of a sweat furnace. Aluminum sweat furnaces are used to recycle scrap aluminum into ingots or blocks. The aluminum scrap is often contaminated with oils, coatings, and flux or other contaminants that can generate highly toxic dioxins and furans when the furnace is operated. Therefore, the EPA has mandated that all aluminum sweat furnaces be regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Secondary Aluminum Production (40 CFR part 63, Subpart RRR). Aluminum sweat furnaces are typically used at salvage yards and metal recycling facilities. An afterburner is typically used to reduce emissions generated from aluminum sweat furnace operations.

Secondary aluminum production facilities may have other sources of dioxin and furans such as aluminum scrap shredders, thermal chip dryers, scrap dryers and delacquering kilns. These sources of air emissions are not covered in this guidance document. If you have questions about other sources of air emissions at secondary aluminum facilities, contact the Small Business Assistance Program (SBAP).

Recovering aluminum from scrap such as beverage cans, foundry returns, auto salvage parts, and dross can release toxins into the air. Eleven heavy metals, several organic compounds (including dioxins, furans, and polycyclic organic matter), and acid gases such as hydrogen chloride and chlorine have been identified in emissions from smelting operations. Health effects associated with exposure to these hazardous air pollutants (HAPs) include cancer, respiratory irritation, and damage to the nervous system.

➤ Air Emission Requirements

Are National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements applicable to my operations?

Yes, if you own or operate a sweat furnace. A *sweat furnace* is a furnace that is used only to reclaim aluminum from scrap metal that contains aluminum and iron. Sweat furnaces reclaim aluminum by heating the scrap enough to melt the aluminum, but not the iron.

In order to comply with the NESHAP (Subpart RRR), the owner/operator of a sweat furnace must either pass a dioxin/furan air emission test or operate and maintain an afterburner that destroys dioxins and furans. Additional record keeping, reporting, and monitoring requirements apply and will be discussed in this guidance document.

➤ **When must I comply with the NESHAP requirements?**

- If your sweat furnace is an existing source, you should have complied with the requirements by March 24, 2003.
- If your sweat furnace is a new source (built after February 11, 1999) or reconstructed* source, you should have complied with the requirements by March 23, 2000 or upon startup.

* Reconstruction means replacement of the components of a sweat furnace such that the fixed capital cost of the new components is greater than 50% of the fixed capital cost required to construct a comparable new sweat furnace.

➤ **Do emissions from sweat furnaces need to be reported or permitted?**

An Air Pollutant Emission Notice (APEN) is a form used to report a facility's emissions. Operators of sweat furnaces are required to submit an APEN to the Air Pollution Control Division if emissions exceed the reporting thresholds presented in Attachment A. If the permitting thresholds are exceeded in Attachment A, the source must obtain a permit from the Air Pollution Control Division (APCD) prior to construction or operation of the unit.

➤ **Submitting an Air Pollutant Emission Notice (APEN):**

The "*General Air Pollutant Emission Notice*", is used to report information about your sweat furnace operations, including the type and amount of material processed, control technology used to reduce sweat furnace emissions, and the resulting emissions. The General APEN form can be downloaded online under Construction Permit Forms and APENs at: www.colorado.gov/cdphe/airpermits

An APEN is valid for five years and must be renewed at least 30 days before it expires. The appropriate APEN fee must be submitted with the APEN form or the form will be returned to you.

You must submit a *revised APEN* to notify 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. Otherwise, the five-year APEN renewal requires you to file only the General APEN form.

➤ Obtaining an Air Permit

The Division will use the information provided in your APEN to determine the terms and conditions of your air permit. Your air permit lists the specific equipment subject to the permit, limits the annual production at the site, and includes recordkeeping and reporting requirements.

In Colorado, Construction Permits are issued in two phases: "Issuance 1" and "Final Approval to Operate".

- Issuance 1 of a permit allows the plant to be constructed and begin operation. The source must self-certify to Issuance 1 of the permit once in operation within 180 days of receiving the first issued permit.
- After the owner certifies that the operation is in compliance with the conditions of Issuance 1 of the permit, the Division issues a "Final Approval to Operate" letter to operate under the conditions of Construction Permit Issuance 1. This letter confirms the completion of the self-certification requirements of that permit. The source is issued an invoice for processing time for this letter, and must pay the invoice within 30 days of receipt. Please note that if the permit processing fee is not paid within 30 days of receipt, you will be in violation of your permit conditions and may result in revocation of the permit.
- If the source modifies an existing permit, the source will be issued Construction Permit Issuance 2 (Issuance number determined by modification sequence). The source may have to self-certify to the new Issuance if required by the permit.

A permit describes key areas that an operator needs to address. The permit defines the type of air pollution control measures to be used, limits the annual production at the site, provides guidelines for opacity (how dense the visible emissions are allowed to be), and includes recordkeeping requirements.

✓ 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 APENs must pay annual fees. The Division bills each source subject to an APEN filing fee per ton of criteria pollutants emitted and per ton of non-criteria (hazardous air pollutants) emitted. The Division mails invoices for these fees in May or June of each year (these fees account for the emissions from the previous year's operation). 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 will be assessed at an hourly rate. If the total processing time is anticipated to be more

than 30 hours the Division will contact the applicant in writing and provide an estimate of the projected processing time. The applicant can waive this notice by submitting a letter making this request when the application is submitted.

Current fee information is available online at:

www.colorado.gov/pacific/cdphe/emissions-and-permitting-fees

✓ Air Permit Requirements

The following requirements for aluminum sweat furnaces will typically be included in your air emissions permit:

- Visible emissions from the sweat furnace must not exceed 20% opacity (EPA Method 9) during normal operation of the furnace (Regulation No. 1, Section II.A.1.). If you have questions about opacity, contact the SBAP.
- The sweat furnace operations are subject to the odor requirements of Regulation No. 2; therefore, you must not allow emissions of detectable odors to emanate from the facility causing a nuisance to your neighbors.
- Production records (typically monthly and/or annual) must be maintained at the facility.
- The permit number must be permanently affixed on the sweat furnace for identification purposes.
- Equipment operation and maintenance must be in accordance with the manufacturer's recommendations. A copy of the manufacturer's operating instructions and the operating maintenance and monitoring plan must be maintained at your facility.
- At all times, including periods of start-up, shutdown, and malfunction, the sweat furnace and control equipment must be properly operated and maintained. The rule requires that you develop a Startup, Shutdown, & Malfunction plan (SSM) and an Operating, Maintenance, and Monitoring plan (OM&M plan). These plans can be combined and must be submitted prior to final approval of your air permit.
- The Division recommends that you maintain an operating and maintenance log specifying hours of operation, start-up and charge temperatures, and preventive and corrective maintenance performed on the unit. All records must be readily available for inspection upon request.

➤ Operating Requirements (40 CFR Part 63.1506(h))

Operation of your sweat furnace must comply with the following federal NESHAP requirements:

- Your sweat furnace must be operated and maintained with an afterburner that has a combustion chamber residence time of 0.8 seconds or greater and an operating temperature of 1600 degrees F or greater.
- Performance testing is not required if control mechanisms on the unit are operated and maintained to meet the preceding specifications.
- Your sweat furnace must not discharge emissions in excess of 0.80 nanograms of dioxin/furan Toxic Equivalents (D/F TEQ) per dscm (3.5X10⁻¹⁰ grams per dscf) at 11% oxygen (determined by a performance test or operating parameters as listed above).
- You must maintain a 3-hour block average operating temperature for each afterburner at or above:
 - The average temperature established during the performance test or;
 - 1600 degrees F if a performance test is not conducted and the afterburner meets the specifications above.
- You must operate the afterburner according to an approved OM&M plan and SSM plan.

➤ **Testing Requirements (40 CFR Part 63.1511)**

Owner/operators of aluminum sweat furnaces must submit the results of a visible emissions test, and a performance test before the Division will issue a "Final Approval to Operate" letter.

- All aluminum sweat furnaces must submit the results of a visible emissions test (opacity test) on the furnace stack emissions prior to final approval of the air permit. This test is conducted using USEPA Method 9. A list of certified opacity testing firms is available from the Division or the SBAP.
- Unless you have chosen to meet the design requirements for an afterburner specified in this guidance (40 CFR 63.1505(f)(1)), you must conduct a performance test. If a similar sweat furnace has been tested in Colorado, you may use the results from this performance test to meet your test requirements. The performance test establishes the operating parameters that you will continue to monitor to ensure the ongoing performance of the control device and compliance with the secondary aluminum standard for dioxins and furans. The requirements for conducting a performance test follow:

- At least 60 days before conducting the performance test, you must submit a site-specific test plan to the Division. The test plan must meet the specifications in 40 CFR Part 63.7(c).
- You must conduct the performance test with the furnace operating at the highest production level (greater than 90% of full load). Frequency and test methodology must be conducted as prescribed in 40 CFR Part 63.1511 and 1512 (m).
- You must submit performance test results to the Division along with a copy of the emissions certification from the person who conducted the performance test.
- Submit the report with your notification of compliance status report. If you have questions, contact the Division's stack test coordinator at (303) 692-3100 or the SBAP.
- If you use a control device other than an afterburner, you must apply to the EPA and your State MACT Coordinator for permission to use alternate monitoring parameters. Your OM&M plan must reflect all of the necessary procedures you will use to ensure compliance of the sweat furnace with the emission limitation.

➤ **Afterburner Monitoring Requirements (40 CFR Part 63.1510(g))**

- You must install, calibrate, maintain, and operate a device to continuously monitor and record the operating temperature of the afterburner.
- The temperature-monitoring device must be installed at the exit of the combustion zone of the afterburner.
- The monitoring system must record the temperature in 15-minute block averages and determine, and record the average temperature for each 3-hour block period.
- The recorder response range must include zero and 1.5 times the average temperature established in the performance test or the 1600 degrees if no performance test is conducted (0-2400 degrees F).
- You must conduct an inspection of the afterburner at least once a year and record the results. At a minimum, an inspection must include:
 - Inspection of all burners, pilot assemblies, and pilot sensing devices for proper operation and clean pilot sensor;
 - Inspection for proper adjustment of combustion air;

- Inspection of internal structures (e.g., baffles) to ensure structural integrity;
- Inspection of dampers, fans, and blowers for proper operation;
- Inspection for proper sealing;
- Inspection of motors for proper operation;
- Inspection of combustion chamber refractory lining (clean and replace lining as necessary);
- Inspection of afterburner shell for corrosion and/or hot spots;
- Documentation, for the burn cycle that follows the inspection, that the afterburner is operating properly and any necessary adjustments have been made; and
- Verification that the equipment is maintained in good operating condition.
- Following an equipment inspection, all necessary repairs must be completed in accordance with the requirements of the OM&M plan.

➤ **OM&M and SSM Plan Requirements (40 CFR Part 63.1510(b) and 1516(a))**

- You must prepare and implement a written OM&M plan. You must submit the plan to the Division for review when you submit the Notification of Compliance Status Report (as outlined below) prior to final approval of your air permit (40 CFR Part 63.1515(b)). Any subsequent changes to the plan must be submitted to the Division for review and approval.
- Your business must comply with the provisions of the OM&M plan and the plan must contain the following:
 - Process and control device parameters;
 - A monitoring schedule;
 - Procedures for proper operation and maintenance of each unit and control device;
 - Calibration and certification of accuracy of each monitoring device at least once every 6 months, according to the manufacturer's recommendations;

- Procedures for annual inspection of the afterburner;
- Corrective actions to be taken when operating or control device parameters deviate from normal operations and reporting requirements and;
- A maintenance schedule for each furnace and control device that is consistent with the manufacturer's recommendations.
- Your business must prepare and implement a written SMM plan in addition to the OM&M plan.
 - The SMM plan outlines what procedures you will follow in equipment start up, shut down, and in the event of equipment malfunction.
 - The SMM plan can be combined with the OM&M plan. You must submit the plan to the Division for review when you submit the Notification of Compliance Status Report prior to final approval of your air permit.

➤ **Notifications and Reports (40 CFR Part 63.1515 and 1516)**

- An Initial Notification must be submitted as soon as practicable before startup. There is not an official form for notice of start-up at this time. EPA has examples posted online.
- A Notification of intent to conduct a performance test must be submitted at least 60 days before you are scheduled to conduct the test. (This requirement does not apply to you if your sweat furnace is equipped with an afterburner that has a design residence time of 0.8 seconds or greater and an operating temperature of 1600 deg. F or greater).
- A Site-specific Test Plan must be submitted at least 60 days before the performance test, if required. The plan must be submitted to the Division. You must not conduct a performance test until the Division has approved your test plan.
- A Notification of intent to conduct an opacity or visible emissions test must be submitted at least 60 days before you are scheduled to conduct the test.
- A Notification of Compliance Status Report must be submitted within 60 days after your compliance date. The following items must be submitted with the Notification of Compliance Status Report:
 - A complete performance test report, if required;
 - Your approved site-specific test plan, if required;
 - Your approved OM&M plan;

- Your approved SSM plan.
- An Excess Emissions/Summary Report must be submitted every 6 months, within 60 days after the calendar half (e.g., submit by 8/30 and 2/29 for the reporting period). When no excess emissions have occurred, you must submit a report stating that no excess emissions occurred during the reporting period.
- A Semi-Annual SSM Report must be submitted every 6 months to report startup, shutdown, and malfunction events that are consistent with your SSM plan. These reports are due 30 days after the end of each calendar half only when a SSM has occurred (e.g., submit by 7/30 and 1/31 for the reporting period).
- An Annual Compliance Certification/Summary Report must be completed and submitted to the Division only if the aluminum sweat furnace exists on a property determined to be a major source of air pollutants (requires a Title V Operating Permit). The annual report certifies that any period of excess emissions that occurred during the year was reported and all monitoring, recordkeeping, and reporting requirements were met during the year. The report must be completed semi-annually, within 60 days after the calendar half (e.g. by 8/30 and 2/29 for the reporting period).
- You must submit immediate SSM reports to the Division for startup, shutdown, and malfunction events inconsistent with the SSM plan. An initial report must be made within 2 working days of the event (can be reported by telephone) followed by a written report within 7 working days after the event.
- You must submit immediate SSM reports to the Division for malfunctions not listed in the SSM plan that affect the continuous monitoring systems (e.g., temperature monitoring device). The initial report must be made within 24 hours of the event (phone report) followed by a written report within 14 days after the event.
- The Division requires you to submit an Upset Condition* Reporting form as soon as possible, but no later than two (2) hours after the start of the next working day, followed by written notice to the Division explaining the cause of the occurrence and corrective actions to prevent such excess emission in the future. If you are not sure whether a malfunction meets the definition of an upset, it is better to go ahead and submit the form to the Division. If you have questions, contact the SBAP.

* An Upset Condition is an unpredictable failure of process or control equipment that results in the violation of emission control regulations (not due to poor maintenance or improper or careless operations or otherwise preventable through exercise of reasonable care).

☞ Reports should be submitted to the Enforcement Section Supervisor of the Air Pollution Control Division. Reports can be faxed to (303) 782-0278. If you have questions, call (303) 692-3155.

➤ Recordkeeping Requirements (40 CFR Part 63.1517)

You must maintain records as follows:

- You must maintain files that contain all the reports and notifications that are required by the regulation. Files can be maintained electronically.
- You must retain each record for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.
- The most recent 2 years of records must be retained at your facility. The remaining 3 years of records may be retained offsite.
- If you control your emissions with an afterburner, you must maintain:
 - Records of 15-minute block average operating temperature of the afterburner.
 - Records of any period when the average temperature in any 3-hour block period falls below the compliant operating parameter.
 - Descriptions of actions taken to repair the afterburner.
 - Records of annual inspections of the afterburner.
- You must keep the records specified in 40 CFR 63.10(c) if you operate a continuous monitoring system. These include: monitoring measurements, information about malfunctions, and other records.

➤ SMALL BUSINESS ASSISTANCE

The Small Business Assistance Program (SBAP) is available to answer questions you may have regarding environmental issues at your site. The SBAP can help you understand regulations, fill out required forms, calculate your emissions, or provide information by presenting a workshop for your company or for your industry. We are here to help, and our services are always free.

➤ RESOURCES

- ❖ Air Pollution Control Division (APCD): (303) 692-3100
- ❖ Small Business Assistance Program: (303) 692-3175 or 3148
- ❖ Small Business Ombudsman: (303) 692-2135

The EPA has developed guidance for Secondary Aluminum Sweat Furnace operations called "Secondary Aluminum Sweat Furnace Workbook". The workbook is available on EPA's website at www.epa.gov/airtoxics/alum2nd/workbook/sweatfurnace7.pdf

ATTACHMENT A

APEN REPORTING THRESHOLDS		
Pollutant Category	Uncontrolled Actual Emissions	
	Attainment Area	Non-attainment Area
Criteria Pollutants	2 tons per year	1 ton per year
Lead	100 pounds per year	100 pounds per year
Non-Criteria Pollutants ¹	≥ 250 pounds per year of any individual non-criteria reportable pollutant	≥ 250 pounds per year of any individual non-criteria reportable pollutant

AIR PERMITTING THRESHOLDS		
<i>Pollutant Category</i>	Uncontrolled Actual Emissions	
	Attainment Area (tons per year)	Non-attainment Area (tons per year)
PM-10	5	1
Total suspended particulates	10	5
Volatile organic compounds	5	2
Carbon monoxide	10	5
Sulfur dioxide	10	5
Nitrogen oxides	10	5
Lead	200 pounds per year	200 pounds per year
Other criteria pollutants: fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, reduced sulfur compounds.	2	2