Appendix 5e:

Metal Processing Facilities

Introduction

During the Community Steering Committee (CSC) meetings, the co-leads helped lead discussions to identify air quality concerns and actions for this Community Emissions Reduction Plan (CERP). One of the concerns raised by the South Los Angeles (SLA) CSC is metal processing facilities, in particular the health effects from emissions of criteria air pollutants, toxic air contaminants (TACs), and strong odors. This appendix provides additional supporting information for Chapter 5e: Metal Processing Facilities, including an overview of applicable facilities, emissions, and regulatory efforts. The overview of regulatory efforts includes a summary of regulatory authority, air monitoring, compliance and enforcement, and incentive efforts in addressing emissions from and exposure to metal processing facilities.

Community Impacts from Metal Processing Facilities

There are about 70 metal processing facilities[1] within the SLA community that operate under South Coast AQMD rules and regulations. Metal processing facilities in SLA conduct various metal operations such as heating, heat treating, melting, plating, machining, forging, grinding, and recycling. Most metal recyclers and metal scrap yards do not have equipment that require air quality permits, but may still be subject to some South Coast AQMD rules such as Rule 403[2] for control of fugitive dust emissions. See **Figure A5e-1** for examples of operations at metal processing facilities. Additionally, Appendix 4: Enforcement Overview and History provides more information on the categories of facilities related to this air quality priority.

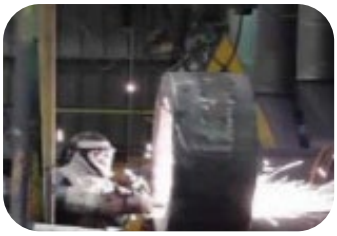
[1] The total number of facilities applicable to this air quality priority was arrived at using multiple sources, such as permit type, technical specialty (TS) number, and NAICS codes. TS refers to the internal code South Coast AQMD inspectors use to determine the appropriate inspection team. Please refer to Appendix 4: Enforcement Overview and History for more information on South Coast AQMD inspection teams.

[2] South Coast AQMD, Rule 403 – Fugitive Dust, http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf

Figure A5e-1: Examples of Metal Processing Activities

Metal Melting

Metal Plating



Metal Grinding

Metal Recycling

Metal Forging

Metal Heat Treating

In Chapter 4: Enforcement Overview and History, staff provided an overview of the distribution of types of metals facilities within SLA, based on North American Industry Classification System (NAICS) codes. This distribution is provided again below in **Figure A5e-2** with descriptions of each NAICS code in **Table A5e-1**.[3]

[3] The NAICS designation is not provided by South Coast AQMD. Rather, the NAICS designation is provided by the owner or operator within the permit application submitted to South Coast AQMD for any applicable equipment.

Figure A5e-2: Distribution of Metals Facility Types within SLA1

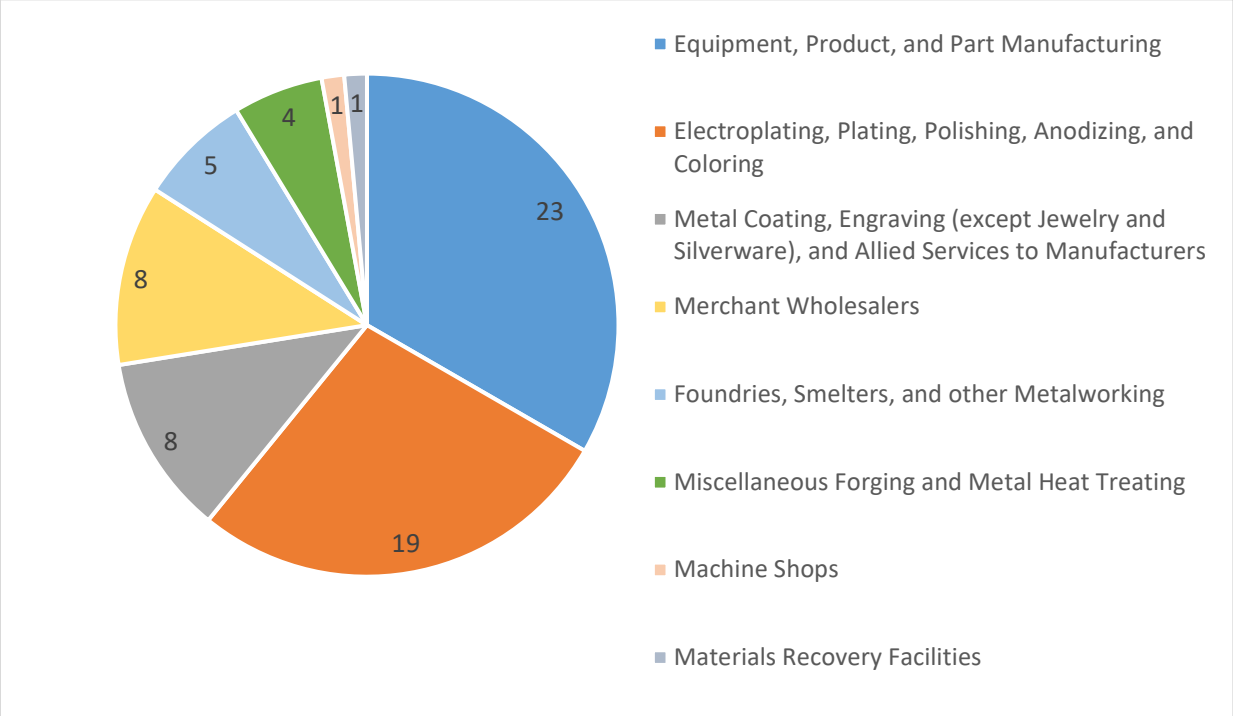


Table A5e-1: NAICS Descriptions and Number of Facilities for SLA Metals Facility Types[4]

Metals Facility Type	Applicable NAICS Code(s)	NAICS Industry Title	Number of Facilities in SLA	NAICS Industry Description
Equipment, Product, and Part Manufacturing	332312	Fabricated Structural Metal Manufacturing	4	Facilities primarily engaged in fabricating structural metal products, such as assemblies of concrete reinforcing bars and fabricated bar joists.
	337215	Showcase, Partition, Shelving, and Locker Manufacturing	3	Facilities primarily engaged in manufacturing wood and non-wood office and store fixtures, shelving, lockers, frames, partitions, and related fabricated products of wood and non-wood materials, including plastics laminated fixture tops. The products are made on a stock or custom basis and may be assembled or unassembled (i.e., knockdown). Includes facilities

[4] United States Census Bureau, North American Industry Classification System, https://www.census.gov/naics/

Metals Facility Type	Applicable NAICS Code(s)	NAICS Industry Title	Number of Facilities in SLA	NAICS Industry Description
				exclusively making furniture parts (e.g., frames).
	332323	Ornamental and Architectural Metal Work Manufacturing	2	Facilities primarily engaged in manufacturing ornamental and architectural metal work, such as staircases, metal open steel flooring, fire escapes, railings, and scaffolding.
	336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	2	Facilities primarily engaged in 1) manufacturing aircraft parts or auxiliary equipment (except engines and aircraft fluid power subassemblies) and/or 2) developing and making prototypes of aircraft parts and auxiliary equipment. Auxiliary equipment includes such items as crop dusting apparatus, armament racks, inflight refueling equipment, and external fuel tanks.
	333991	Power-Driven Handtool Manufacturing	1	Facilities primarily engaged in manufacturing power-driven (e.g., battery, corded, pneumatic) handtools, such as drills, screwguns, circular saws, chain saws, staplers, and nailers.
	332313	Plate Work Manufacturing	1	Facilities primarily engaged in manufacturing fabricated metal plate work by cutting, punching, bending, shaping, and welding purchased metal plate.
	33299	All Other Fabricated Metal Product Manufacturing	1	Facilities primarily engaged in manufacturing fabricated metal products (except forgings and stampings, cutlery and handtools, architectural and structural metals, boilers, tanks, shipping containers, hardware, spring and wire products, machine shop products, turned products, screws, nuts and bolts, metal valves, ball and roller bearings, ammunition, small arms and other ordnances and accessories, and fabricated pipes and pipe fittings).
	3363	Motor Vehicle Parts Manufacturing	1	Facilities primarily engaged in manufacturing and/or rebuilding motor vehicle parts and accessories (except

Metals Facility Type	Applicable NAICS Code(s)	NAICS Industry Title	Number of Facilities in SLA	NAICS Industry Description
				motor vehicle gasoline engines and engine parts, motor vehicle electrical and electronic equipment, motor vehicle steering and suspension components, motor vehicle brake systems, motor vehicle transmissions and power train parts, motor vehicle seating and interior trim, and motor vehicle stampings).
	333517	Machine Tool Manufacturing	1	Facilities primarily engaged in 1) manufacturing metal cutting machine tools (except handtools) and/or 2) manufacturing metal forming machine tools (except handtools), such as punching, sheering, bending, forming, pressing, forging and die-casting machines.
	332117	Powder Metallurgy Part Manufacturing	1	Facilities primarily engaged in manufacturing powder metallurgy products using any of the various powder metallurgy processing techniques, such as pressing and sintering or metal injection molding. Includes facilities that generally make a wide range of parts on a job or order basis.
	332912	Fluid Power Valve and Hose Fitting Manufacturing	1	Facilities primarily engaged in manufacturing fluid power valves and hose fittings.
	332618	Other Fabricated Wire Product Manufacturing	1	Facilities primarily engaged in manufacturing fabricated wire products (except springs) made from purchased wire.
	337124	Metal Household Furniture Manufacturing	1	Facilities primarily engaged in manufacturing metal household-type furniture and freestanding cabinets. The furniture may be made on a stock or custom basis and may be assembled or unassembled (i.e., knockdown).
	333249	Other Industrial Machinery Manufacturing	1	Facilities primarily engaged in manufacturing industrial machinery (except agricultural and farm-type; construction and mining machinery;

Metals Facility Type	Applicable NAICS Code(s)	NAICS Industry Title	Number of Facilities in SLA	NAICS Industry Description
				food manufacturing-type machinery; semiconductor making machinery; sawmill, woodworking, and paper making machinery; and printing machinery and equipment).
	333515	Cutting Tool and Machine Tool Accessory Manufacturing	1	Facilities primarily engaged in manufacturing accessories and attachments for metal cutting and metal forming machine tools.
	332919	Other Metal Valve and Pipe Fitting Manufacturing	1	Facilities primarily engaged in manufacturing metal valves (except industrial valves, fluid power valves, fluid power hose fittings, and plumbing fixture fittings and trim).
Electroplating, Plating, Polishing, Anodizing, and Coloring	332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	19	Facilities primarily engaged in electroplating, plating, anodizing, coloring, buffing, polishing, cleaning, and sandblasting metals and metal products for the trade. Includes facilities that perform these processes on other materials, such as plastics, in addition to metals.
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	8	Facilities primarily engaged in one or more of the following: 1) enameling, lacquering, and varnishing metals and metal products; 2) hot dip galvanizing metals and metal products; 3) engraving, chasing, or etching metals and metal products (except jewelry; personal goods carried on or about the person, such as compacts and cigarette cases; precious metal products (except precious plated flatware and other plated ware); and printing plates); 4) powder coating metals and metal products; and 5) providing other metal surfacing services for the trade. Includes facilities that perform these processes on other materials, such as plastics, in addition to metals.
Merchant Wholesalers	423830	Industrial Machinery and Equipment	3	Facilities primarily engaged in the merchant wholesale distribution of specialized machinery, equipment, and

Metals Facility Type	Applicable NAICS Code(s)	NAICS Industry Title	Number of Facilities in SLA	NAICS Industry Description
		Merchant Wholesalers		related parts generally used in manufacturing, oil well, and warehousing activities.
	423510	Metal Service Centers and Other Metal Merchant Wholesalers	3	Facilities primarily engaged in the merchant wholesale distribution of products of the primary metals industries. Service centers maintain inventory and may perform functions, such as sawing, shearing, bending, leveling, cleaning, or edging, on a custom basis as part of sales transactions.
	423930	Recyclable Material Merchant Wholesalers	2	Facilities primarily engaged in the merchant wholesale distribution of automotive scrap, industrial scrap, and other recyclable materials. Includes facilities that are auto wreckers primarily engaged in dismantling motor vehicles for the purpose of wholesaling scrap.
Foundries, Smelters, and Other Metalworking	331491	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	2	Facilities primarily engaged in 1) rolling, drawing, or extruding shapes (e.g., bar, plate, sheet, strip, tube) from purchased nonferrous metals and/or 2) recovering nonferrous metals from scrap and rolling, drawing, and/or extruding shapes (e.g., bar, plate, sheet, strip, tube) in integrated mills.
	331513	Steel Foundries (except Investment)	1	Facilities primarily engaged in manufacturing steel castings (except steel investment castings). Includes facilities that purchase steel made in other facilities.
	331314	Secondary Smelting and Alloying of Aluminum	1	Facilities primarily engaged in 1) recovering aluminum and aluminum alloys from scrap and/or dross (i.e., secondary smelting) and making billet or ingot (except by rolling) and/or 2) manufacturing alloys, powder, paste, or flake from purchased aluminum.
	331529	Other Nonferrous Metal	1	Facilities primarily engaged in pouring molten nonferrous metals (except aluminum) into molds to manufacture

Metals Facility Type	Applicable NAICS Code(s)	NAICS Industry Title	Number of Facilities in SLA	NAICS Industry Description
		Foundries (except Die-Casting)		nonferrous castings (except nonferrous die-castings and aluminum castings). Includes facilities in this industry purchase nonferrous metals, such as copper, nickel, lead, and zinc, made in other facilities.
Miscellaneous Forging and Metal Heat Treating	332112	Nonferrous Forging	2	Facilities primarily engaged in manufacturing nonferrous forgings from purchased nonferrous metals by hammering mill shapes. Includes facilities making nonferrous forgings and further manufacturing (e.g., machining, assembling) a specific manufactured product is classified in the industry of the finished product. Nonferrous forging facilities may perform surface finishing operations, such as cleaning and deburring, on the forgings they manufacture.
	332811	Metal Heat Treating	2	Facilities primarily engaged in heat treating, such as annealing, tempering, and brazing, and cryogenically treating metals and metal products for the trade.
Machine Shops	33271	Machine Shops	1	Facilities known as machine shops primarily engaged in machining metal and plastic parts and parts of other composite materials on a job or order basis. Generally, machine shop jobs are low volume using machine tools, such as lathes (including computer numerically controlled); automatic screw machines; and machines for boring, grinding, milling, and additive manufacturing.
Materials Recovery Facilities	562920	Materials Recovery Facilities	1	Facilities primarily engaged in 1) operating facilities for separating and sorting recyclable materials from nonhazardous waste streams (i.e., garbage) and/or 2) operating facilities where commingled recyclable materials, such as paper, plastics, used beverage cans, and metals, are sorted into distinct categories.
		Total	**69**	

Emissions from Metal Processing Facilities

Emissions information for metal processing facilities in SLA is available in Chapter 2d: Emissions and Source Attribution Analysis and Appendix 2d: Source Attribution. Emissions from metal processing operations primarily come from two sources:

1. the point source (e.g., metal melting furnace, electroplating tank, billet grinder) and
2. fugitive metal particulate emissions.

In general, fugitive metal particulate emissions are any emissions not captured in a pollution control device, and if not properly controlled, fugitive metal particulate emissions can accumulate on surfaces in and around the facility, and has the potential to become airborne. Fugitive metal particulate emissions can be generated from crushing, grinding, plating, and handling of materials.

Metal TACs of concern include arsenic, cadmium, hexavalent chromium, lead, and nickel. **Table A5e-2** provides the California Office of Environmental Health Hazard Assessment (OEHHA) carcinogenic classifications of these metals and designations for the organs they target. These carcinogenic values were developed by OEHHA under the Toxic Air Contaminant Program mandated by AB 1807.[5] The program is implemented in conjunction with the California Air Resources Board (CARB) and requires OEHHA to evaluate health risk from exposure to TACs. OEHHA released the public and peer-reviewed Air Toxics Hot Spots Program Risk Assessment Guidelines[6] focused on noncancer risk, cancer risk, and exposure assessment. The methodologies contained in the Guidelines seek to develop more representative estimates of the potential risk of exposure based on hazard identification, exposure assessment, dose-response assessment, and risk characterization. Substances proposed for identification as a TAC by CARB and OEHHA are subsequently evaluated by the Scientific Review Panel[7] by considering underlying scientific data such as clinical data from experimental studies in animals and acute exposure in humans as well as by exposure and health assessment reports prepared by CARB and OEHHA. Some metal particulates with carcinogenic health effects have multiple pathways of entering the body which elevates the health risks compared to other TACs, underscoring the importance that operations with TAC metal particulate emissions be well controlled.

[5] CARB, AB 1807 – Toxics Air Contaminant Identification and Control, https://ww2.arb.ca.gov/resources/documents/ab-1807-toxics-air-contaminant-identification-and-control#:~:text=The%20Toxic%20Air%20Contaminant%20Identification%20and%20Control%20Act,risk%20identification%2C%20and%202%29%20risk%20management.%20Risk%20Identification

[6] OEHHA, Notice of Adoption of Air Toxics Hot Spots Program Guidance Manual, https://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0

[7] CARB, Scientific Review Panel on Toxic Air Contaminants, https://ww2.arb.ca.gov/resources/documents/scientific-review-panel-toxic-air-contaminants

Table A5e-2: Potential Health Impacts of Metals

Metal	U.S. EPA Carcinogenic Classification[8]	OEHHA Chronic Exposure Routes and Target Organs[9]
Arsenic	Carcinogenic to Humans	• Inhalation and Oral: Development; cardiovascular system; nervous system; respiratory system; skin
Cadmium	Likely to be Carcinogenic to Humans	• Inhalation: Kidney; respiratory system • Oral: Kidney
Hexavalent Chromium	Carcinogenic to Humans	• Inhalation: Respiratory system • Oral: Hematologic system
Lead	Likely to be Carcinogenic to Humans	• Inhalation and Oral: Cardiovascular system; kidney; reproductive system; nervous system[10,11]
Nickel	Carcinogenic to Humans	• Inhalation: Respiratory system; hematologic system • Oral: Development

Arsenic and cadmium may be found as contaminants in pure metals and their alloys, such as aluminum and aluminum alloys, carbon steel, brass, bronze, and some chromium non-ferrous alloys. Chronic arsenic exposure is associated with respiratory cancer when inhaled and skin cancer when orally ingested.[12] Shorter arsenic inhalation exposure can lead to decreased intellectual function in children.[13] Chronic inhalation or oral exposure to cadmium leads to a build-up of cadmium in the kidneys that can cause kidney disease. Other effects from chronic exposure of humans to cadmium in air are effects on the lung, including bronchiolitis and emphysema. [14]

Chromium and nickel are commonly added to metals to provide qualities such as corrosion resistance or strength. When chromium-containing metals (e.g., stainless steel, alloy steels, superalloys) undergo high-temperature processes such as melting, forging, or heat treating, the chromium in the metal can oxidize to form hexavalent chromium. Hexavalent chromium is also released from mists generated from the deposition of chromium onto a surface during

[8] U.S. EPA, Risk Assessment for Carcinogenic Effects, https://www.epa.gov/fera/risk-assessment-carcinogenic-effects

[9] OEHHA, Acute, 8-hour and Chronic Reference Exposure Level (REL) Summary, https://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary

[10] OEHHA, Public Health Goals for Chemicals in Drinking Water – Lead, https://oehha.ca.gov/media/downloads/water/chemicals/phg/leadfinalphg042409.pdf

[11] OEHHA, Appendix A: Hot Spots Unit Risk and Cancer Potency Values, Updated October 2020, https://oehha.ca.gov/media/downloads/crnr/appendixa.pdf

[12] OEHHA, Technical Support Document for Cancer Potency Factors – Appendix B, https://oehha.ca.gov/media/downloads/crnr/appendixb.pdf

[13] OEHHA, Technical Support Document for Noncancer RELs – Appendix D, https://oehha.ca.gov/media/downloads/crnr/appendixd1final.pdf

[14] U.S. EPA, Cadmium Compounds, https://www.epa.gov/sites/default/files/2016-09/documents/cadmium-compounds.pdf

electroplating or using chromic acid to increase the natural oxide layer of a metal surface during anodizing. Chronic exposure to hexavalent chromium can result in increased risk of lung cancer through inhalation and can cause stomach cancer through oral ingestion.[8] Non-cancer health effects of being exposed to hexavalent chromium at high levels over time can cause or worsen health conditions such as irritation of the nose, throat, and lungs; allergic symptoms (wheezing, shortness of breath); and nasal sores and perforation of the membrane separating the nostrils (for example, at very high air levels in workplaces).[15] Chronic nickel inhalation can increase risk for lung and nasal sinus cancers.[8] Acute (1-hour) inhalation of nickel can suppress the immune system.[16] Oral ingestion of nickel can also lead to reproductive and developmental toxicities.[8]

Lead is classified as a "criteria pollutant" under the federal Clean Air Act. Lead does not degrade, therefore previous uses of lead and its releases into the ambient air result in high concentration of lead that persist in the environment. Lead-containing materials include lead alloys, brass, bronze, lead-oxide, and lead-acid batteries. Lead exposure can occur directly through inhalation, or indirectly by ingestion of lead-contaminated food, water, or other materials including dust and soil. Chronic impacts from lead exposure include nervous and reproductive system disorders, neurological and respiratory damage, cognitive and behavior changes, and hypertension.[17] Lead has not been adequately shown to be carcinogenic in humans, but has been shown in animal studies to cause kidney tumors following oral exposure.[8]

Regulatory Efforts

Ongoing Efforts

South Coast AQMD's efforts to address this air quality priority in the SLA community include regulations, permits with enforceable conditions and emissions limits, air monitoring, and enforcement activities to identify, characterize, and address metals emissions. In addition, there are a number of ongoing incentive opportunities for early deployment of cleaner technology, equipment, control equipment, and mobile sources.

Regulatory Authority

State and Federal Actions

Several state and federal rules apply to sources of pollution from metal processing facilities within this community. **Table A5e-3** summarizes state and federal programs to address toxic metal air pollutant emissions.

[15] OEHHA, Health Effects of Hexavalent Chromium, https://oehha.ca.gov/media/downloads/faqs/hexchromiumairfact111616.pdf

[16] OEHHA, Nickel Reference Exposure Levels, https://oehha.ca.gov/media/downloads/crnr/032312nirelfinal.pdf

[17] Agency for Toxic Substances and Disease Registry, Physiological Effects – Lead Toxicity, https://www.atsdr.cdc.gov/csem/leadtoxicity/physiological_effects.html

Table A5e-3: State and Federal Programs to Address Toxic Metal Air Pollutant Emissions

Program	Purpose
CARB's Airborne Toxic Control Measures (ATCM)[18]	• A statewide air emission control program to reduce air emissions from mobile and stationary sources, including measures that address processes that emit metals (e.g., hexavalent chromium[19] and cadmium)

Assembly Bill 2588 (AB 2588) – Air Toxics Hot Spots Program[20]	• A statewide program that addresses air toxics pollution from certain facilities by:
	  ○ Collecting air toxics emissions information
	  ○ Identifying facilities that have local impacts
	  ○ Providing public information about air toxics impacts from facilities
	• Reducing significant air toxics risks from facilities

United States Environmental Protection Agency (U.S. EPA) Title V[21]	• A federal law that requires major sources of air pollutants, and certain other sources, to:
	  ○ Obtain an operating permit
	  ○ Operate in compliance with the permit
	  ○ Certify at least annually their compliance with permit requirements

U.S. EPA Superfund Program[22]	• A federal program that is responsible for:
	  ○ Environmental cleanups of some of the most contaminated land
	  ○ Responding to environmental emergencies, oil spills, and natural disasters

DTSC Brownfields Program[23]	• DTSC provides regulatory oversight for the evaluation and cleanup of brownfields • Brownfields are properties that are contaminated and are underutilized due to perceived remediation cost and liability concerns

Additionally, several other state and federal agencies are responsible for regulating, monitoring, or ensuring employee safety from exposure to hazards such as toxic metal air pollutants. The United States Department of Labor's Occupational Safety and Health Administration (OSHA)

[18] CARB, Airborne Toxic Control Measures, https://ww2.arb.ca.gov/resources/documents/airborne-toxic-control-measures
[19] CARB, Chrome Plating ATCM, https://ww2.arb.ca.gov/our-work/programs/chrome-plating-atcm
[20] South Coast AQMD, Air Toxics "Hot Spots" Program (AB 2588), https://www.aqmd.gov/home/rules-compliance/compliance/toxic-hot-spots-ab-2588
[21] South Coast AQMD, Title V, http://www.aqmd.gov/home/permits/title-v
[22] U.S. EPA, Superfund, https://www.epa.gov/superfund
[23] DTSC, Brownfields, https://dtsc.ca.gov/brownfields/

ensures that employees work in a safe and healthful environment by setting and enforcing standards, and by providing training, outreach, education, and assistance.[24] The California Department of Toxic Substances Control (DTSC) protects people and the environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of safer products.[25] Additionally, DTSC's Toxicity Criteria for Human Health Risk Assessment Regulation[26] adopts certain toxicity criteria for all human health risk assessments, screening levels, and remediation goals. OEHHA protects and enhances the health of Californians and the state's environment through scientific evaluations that inform, support, and guide regulatory and other actions.[27] OEHHA reviews and updates chemicals listed on Proposition 65,[28] which requires businesses to provide warnings to consumers about exposures to chemicals that are released into the environment and can cause cancer, birth defects, or other reproductive harm.

South Coast AQMD

South Coast AQMD has a suite of rules that are designed to reduce metal particulate emissions. Rules 1401[29] and 1401.1[30] address the permit review and reduction of TAC emissions from new or modified pollution sources. Rule 1401 establishes health risk thresholds for new or modified permitted equipment or processes that emit TACs. Compliance with Rule 1401 is assessed during the permit evaluation process. Rule 1401.1 establishes risk requirements for new and relocated facilities near schools. Rule 1402[31] implements various aspects of the Assembly Bill 2588 – Air Toxics Hot Spots Program and includes public notification and risk reduction requirements for facilities that are above a specified health risk threshold. Additionally, South Coast AQMD has rules that control air pollution from metal processing facilities. Typically, South Coast AQMD requires metal processing facilities to meet point source emissions standards to ensure emissions from the source or process meets specific standards that are health protective, and reduce the likelihood of fugitive metal particulate emissions from becoming airborne.

South Coast AQMD metal processing rules generally use three key control elements to address metal TACs:

1. pollution collection and control devices,

[24] OSHA, About OSHA, https://www.osha.gov/aboutosha
[25] DTSC, About DTSC, https://dtsc.ca.gov/who-we-are/
[26] DTSC, Toxicity Criteria for Human Health Risk Assessment Regulation, https://dtsc.ca.gov/regs/toxicity-criteria-for-human-health-risk-assessment/
[27] OEHHA, About, https://oehha.ca.gov/about
[28] OEHHA, Proposition 65, https://oehha.ca.gov/proposition-65
[29] South Coast AQMD, Rule 1401 – New Source Review of Toxic Air Contaminants, http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1402/par-1401-ph.pdf?sfvrsn=6
[30] South Coast AQMD, Rule 1401.1 – Requirements for New and Relocated Facilities Near Schools, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1401-1.pdf
[31] South Coast AQMD, Rule 1402 – Control of Toxic Air Contaminants from Existing Sources, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1402.pdf

2. housekeeping and/or best management practices, and
3. building enclosures.

Pollution control devices (e.g., baghouses, high efficiency particulate air (HEPA) filters, cyclones, wet scrubbers) are equipment that are designed to reduce or eliminate the release of pollutants into the environment. See **Figure A5e-3** for examples of pollution control devices. A pollution control device's effectiveness is based on its collection efficiency and control efficiency. Collection efficiency is how well the pollution control device collects emissions. Control efficiency is how well the pollution control device reduces emissions. Collection and control efficiencies of a pollution control device can be determined through source testing and periodic monitoring can ensure proper maintenance and operation of pollution control devices. Recent South Coast AQMD metal processing rules have adopted mass emission standards or concentration limits at the outlet or exhaust of the pollution control device. These standards are based on the maximum achievability of a specific technology or a desired control efficiency, and ensure emissions from the source or a process meet a specific standard that is health protective.

Figure A5e-3: Examples of Pollution Control Devices

Indoor Baghouse

Outdoor Baghouse

Baghouse with HEPA Filter System

Housekeeping practices and enclosures minimize the accumulation of fugitive metal particulate emissions; these fugitive metal particulate emissions can be tracked out via foot or vehicular traffic and become airborne impacting the surrounding community. Housekeeping practices (e.g., periodic cleaning, storage of dust-forming materials) removes emissions resulting from metal processing operations before they can become fugitive metal particulate emissions. Enclosures (e.g., automatic doors, installation of overlapping plastic strip curtains, vestibules, airlock systems) minimize any cross-drafts that can carry fugitive metal particulate emissions out of the building and ensure cross-drafts are not interfering with the collection efficiency of pollution control devices. See **Figure A5e-4** for examples of housekeeping practices and enclosures. Fugitive metal particulate emissions are often difficult to quantify due to a lack of accepted emission estimation methods.

Figure A5e-4: Examples of Housekeeping Practices and Enclosures

Wet Cleaning Methods (e.g. wet wash, wet mop, damp cloth, low pressure spray)

Dry-Wet Vacuum Sweeper

Cross-Draft Minimization Using Overlapping Strip Curtains

As fugitive metal particulate emissions are difficult to quantify, many South Coast AQMD regulations addressing toxic metal emissions from industrial facilities (e.g., South Coast AQMD Rule 1407.1[32] and Rule 1420.1[33]) include requirements to reduce fugitive metal particulate emissions from these facilities. Best management practices include housekeeping provisions to minimize fugitive metal particulate emissions from becoming airborne, collection efficiency requirements to ensure the pollution control device has the appropriate design and operating parameters to collect emissions, and enclosures to contain fugitive metal particulate emissions. For example, during the rule development process for Rule 1420.1 for lead-acid battery recycling facilities, it was seen that fugitive metal particulate emissions were a contributing factor to ambient lead concentration. Feasibility studies found that emission controls greater than 99 percent reductions would not be expected to further reduce ambient lead concentrations. Thus,

[32] South Coast AQMD, Rule 1407.1 – Control of Toxic Air Contaminant Emissions from Chromium Alloy Melting Operations, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1407-1.pdf

[33] South Coast AQMD, Rule 1420.1 – Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Recycling Facilities, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1420-1.pdf

Rule 1420.1 contains comprehensive housekeeping and enclosure provisions to address fugitive metal particulate emissions as do the other lead rules, Rule 1420[34] and Rule 1420.2.[35] The non-lead metal melting companion rule, Rule 1407,[36] also focuses on addressing fugitive metal particulate emissions of arsenic, cadmium, and nickel.

Additionally, toxic metal emissions from metal recyclers and metal scrap yards near sensitive receptors were highlighted as concerns by the community. Most metal recyclers and metal scrap yards do not have equipment subject to South Coast AQMD permits but could still be subject to some South Coast AQMD rules such as Rules 403.[37] Rule 403 focuses on controlling particulate emissions from fugitive dust sources through dust control measures. Rule 403 requires that no dust emissions be visible beyond the property line, dust generated from moving vehicles on the site not exceed 20 percent opacity, site-contributed ambient PM10 (particulate matter with a diameter of 10 microns or less) concentrations measured at the fence line of the property not exceed 50 micrograms per cubic meter, and any track-out of dirt or materials not extend beyond 25 feet from the site. These facilities may be the source of public complaints even though they do not have South Coast AQMD permits; when such complaints are received, these locations will be investigated.

Table A5e-4 and **Table A5e-5** summarize South Coast AQMD's rules to address toxic metal air pollutants from metal processing facilities, some of these rules may be applicable to SLA metal processing facilities.[38] Additionally, South Coast AQMD's Rule 402[39] and Rule 403 are general rules that can be applied to metal processing facilities. Rule 402 prohibits the release of air contaminants in quantities that harm public health or causes public endangerment.

Table A5e-4: South Coast AQMD Rules to Address Toxic Metal Air Pollutants

Rule	Source Category	Toxic Metal Air Pollutant	Purpose	Applicability	General Provisions
1401[29]	All new, relocated, and modified sources	TACs as listed by OEHHA	• Specifies limits for maximum individual cancer risk, cancer burden, and noncancer acute and chronic hazard index	• Applications for new, relocated, and modified permit units	• Denial of permit to construct a new, relocated, or modified permit unit if emissions of any TAC would cause an increase in maximum individual cancer

[34] South Coast AQMD, Rule 1420 – Emissions Standard for Lead, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1420.pdf

[35] South Coast AQMD, Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/Rule-1420-2rev.pdf

[36] South Coast AQMD, Rule 1407 – Control of Emissions of Arsenic, Cadmium, and Nickel from Non-Chromium Metal Melting Operations, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1407.pdf

[37] South Coast AQMD, Rule 403 – Fugitive Dust, http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf

[38] All facilities within South Coast AQMD's jurisdiction that have the potential to emit air pollutants through equipment operation or use of regulated products may be subject to a number of South Coast AQMD rules. For more information related to the entire suite of South Coast AQMD rules, please refer to: http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book.

[39] South Coast AQMD, Rule 402 – Nuisance, http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-402.pdf

Rule	Source Category	Toxic Metal Air Pollutant	Purpose	Applicability	General Provisions
			from new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants		risk and burden, and exceedance of hazard index over a certain level as required in this rule occurs
1402[31]	Existing sources	TACs as listed by OEHHA	• Reduce health risk associated with emissions of TACs from existing sources	• Any facility notified by Executive Officer to prepare an Air Toxics Inventory Report, Health Risk Assessment, or Risk Reduction Plan or is subject to the Hot Spots Act (AB 2588)[20]	• Inventory and emissions reporting • Public notification, if applicable • Risk reduction, if applicable
1407[36]	Non-chromium metal melting	Arsenic, Cadmium, and Nickel	• Reduce arsenic, cadmium, and nickel emissions from non-chromium metal melting operations	• Smelters • Foundries • Die-casters • Coating (galvanizing and tinning) • Misc. processes: dip soldering, brazing, aluminum powder production	• Arsenic, cadmium, and nickel point source emission limits • Emissions source testing • Building enclosure • Housekeeping • Parameter monitoring
1407.1[32]	Chromium alloy melting	Arsenic, Cadmium, Hexavalent Chromium, and Nickel	• Reduce arsenic, cadmium, hexavalent chromium, and nickel emissions from chromium-containing metal melting operations	• Smelters • Foundries • Die-casters • Mills • Misc. processes: casting material removal, metal grinding and cutting, metal finishing	• Hexavalent chromium point source emission limits based on distance to nearest sensitive receptor • Arsenic and cadmium content limits for non-iron metals • Emissions source testing • Building enclosure • Housekeeping • Parameter monitoring
1420[34]	Metal melting or lead processing	Lead	• Reduce lead emissions from non-vehicle sources • Reduce exposure to lead • Continue to meet the National Ambient Air Quality Standard for lead	• Lead smelters • Foundries • Lead-acid battery manufacturers and recyclers • Lead platers • Metal alloy producers processing lead-containing materials	• Lead point source emission limit • Ambient lead concentration limit • Emissions source testing • Building enclosure • Housekeeping
1420.2[35]	Metal melting	Lead	• Reduce emissions and ambient air concentrations of lead from metal melting facilities	• Facilities melting more than 100 tons per year of lead	• Lead point source emission limit • Ambient lead concentration limit • Emissions source testing • Building enclosure

Rule	Source Category	Toxic Metal Air Pollutant	Purpose	Applicability	General Provisions
			• Reduce exposure to lead • Ensure attainment and maintenance of the National Ambient Air Quality Standard for Lead		• Housekeeping
1426[40]	Metal finishing	Cadmium, Hexavalent Chromium, Lead, and Nickel	• Reduce emissions of cadmium, hexavalent chromium, lead, and nickel from metal finishing facilities	• Cadmium, chromium, copper, lead, and nickel electroplating • Chromic acid anodizing	• Building enclosure • Chemical storage conditions • Housekeeping, recordkeeping, and reporting
1430[41]	Metal forging	Cadmium, Hexavalent Chromium, and Nickel	• Reduce air toxic emissions, particulate matter emissions, and odors from metal grinding and metal cutting operations from metal forging facilities	• Metal forging facilities with metal grinding or cutting	• Point source standard • Emissions source testing • Building enclosure • Permanent total enclosure, vented pollution controls for facilities close to sensitive receptors • Housekeeping • Odor contingency measures
1469[42]	Electroplating and anodizing	Hexavalent Chromium	• Reduce hexavalent chromium emissions from chromium electroplating and chromic acid anodizing operations (e.g., chrome plating shops)	• Chromium electroplating and chromic acid anodizing and associated operations	• Hexavalent chromium point source standards • Emissions source testing • Building enclosure • Housekeeping • Best Management Practices
1469.1[43]	Chrome spraying	Hexavalent Chromium	• Reduce hexavalent chromium from spray coating operations	• Spray operations for coatings containing hexavalent chromium	• Hexavalent chromium point source standards • Spray booth conditions • Building enclosure • Housekeeping • Cleaning frequencies
1480[44]	Metal processing	Metal TACs	• Require an owner or operator of a facility that is designated by	• Facilities with emissions of metal TACs where	• Process to require a facility to conduct monitoring and sampling of metal TACs

[40] South Coast AQMD, Rule 1426 – Emissions from Metal Finishing Operations, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1426.pdf
[41] South Coast AQMD, Rule 1430 – Control of Emissions from Metal Grinding Operations at Metal Forging Facilities, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1430.pdf
[42] South Coast AQMD, Rule 1469 – Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1469.pdf
[43] South Coast AQMD, Rule 1469.1 – Spraying Operations Using Coatings Containing Chromium, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1469-1.pdf
[44] South Coast AQMD, Rule 1480 – Ambient Monitoring and Sampling of Metal Toxic Air Contaminants, http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1480.pdf

Rule	Source Category	Toxic Metal Air Pollutant	Purpose	Applicability	General Provisions
			the Executive Officer as a Metal Toxic Air Contaminant Monitoring Facility to conduct monitoring and sampling (i.e., ambient monitoring)	investigative monitoring and sampling actions are occurring	• Requirements if facility is required to conduct monitoring and sampling • Process for facility to cease monitoring and sampling

*Metal TACs rules at: http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/regulation-xiv

Table A5e-5: Relevant Rules for Toxic Metal Air Pollutants in Development or Amendment Process**

Rule	Source Category	Pollutant(s)	Purpose	Applies To
1420[47]	Metal melting or lead processing	Lead and Arsenic	• To update requirements to address arsenic emissions • Additional amendments may be needed to address storage and handling requirements, and revise closure requirements	• Metal alloy producers processing lead and arsenic-containing materials
1420.2[47]	Metal melting facilities	Lead and Arsenic	• To update requirements to address arsenic emissions • Additional amendments may be needed to address monitoring and post closure requirements	• Facilities melting more than 100 tons per year of lead
1426.1[47]	Metal finishing	Hexavalent Chromium	• To reduce hexavalent chromium emissions from heated chromium tanks used at facilities with metal finishing operations that are not subject to Rule 1469[42]	• All metal finishing facilities operating chromium tanks that are not subject to Rule 1469[42]
1435[45]	Metal heat treating	TACs	• To reduce point source and fugitive TACs, including hexavalent chromium, from heat treating process • To include monitoring, reporting, and recordkeeping requirements	• Heat treating facilities
1445[47]	Laser arc cutting	Hexavalent Chromium and other metal TACs	• To reduce hexavalent chromium and other metal TAC particulate emissions from laser arc cutting	• Laser arc cutting facilities
1455[47]	Torch cutting and welding of chromium alloys	Hexavalent Chromium	• To reduce point source and fugitive hexavalent chromium emissions from torch cutting and welding of chromium alloys	• Facilities performing torch cutting and welding of chromium alloys
1460[46]	Metal recycling and shredding	Fugitive Particulate Emissions	• To establish housekeeping and best management practices to minimize fugitive particulate emissions from metal cutting and shredding operations	• Metal recycling and shredding operations
1469[47]	Electroplating and chromic acid anodizing	Hexavalent Chromium	• Amendments may be needed if CARB's Hexavalent Chromium Airborne Toxic Control Measure for Chrome Plating and Chromic Acid Anodizing Operations is revised	• Chromium electroplating and chromic acid anodizing operational facilities

[45] South Coast AQMD, Rule 1435 – Control of Toxic Emissions from Metal Heat Treating Processes, http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1435

[46] South Coast AQMD, Rule 1460 – Control of Particulate Emissions from Metal Recycling and Shredding Operations, http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1460

**On the rule and control measure forecast or under the rule development process as of May 2022[47]

Air Monitoring

South Coast AQMD's efforts to address this air quality priority in the SLA community entail conducting initial air monitoring surveys near facilities of concern identified by the CSC in order to characterize any potential emissions. These surveys will use the mobile monitoring approach to measure metal TACs around the metal processing facilities of interest and in surrounding communities.

If potential sources are identified through mobile monitoring, stationary measurements may also be conducted near the identified facilities to better characterize their emissions. For this purpose, ambient levels of particulate metals may be measured using either continuous measurements or collection of 24-hr time-integrated samples for laboratory analysis, or a combination of both. In case these measurements suggest that any of the operations or other sources at the metal-processing facility of concern have the potential to emit hexavalent chromium, fixed-site monitoring of hexavalent chromium will be conducted through the collection of time-integrated samples followed by laboratory analysis.

Findings from these monitoring efforts will provide information to support CERP actions. When appropriate, follow-up compliance and enforcement actions will also be taken by the South Coast AQMD inspectors to mitigate emissions.

Compliance and Enforcement

South Coast AQMD staff regularly conducts compliance and enforcement activities at metal processing facilities within SLA. These activities fall into two categories:

- Those initiated by South Coast AQMD, such as routine facility inspections or targeted rule inspections.
- Those prompted by outside parties, such as, complaint investigations, facility notifications, and agency referrals.

While there are many reasons to conduct an inspection, air pollution concerns received directly from community members through public complaints are a very important source of information. All complaints received are assigned to an inspector for investigation. The complaint telephone line is handled by a live attendant during business hours (Monday to Friday) or by a standby system during non-business hours. Complainant information is kept confidential, and while anonymous complaints are accepted, providing contact information is crucial for the inspector to be able to gather any relevant information to conduct an effective investigation. **To report complaints, community members can call 1-800-CUT-SMOG (1-800-288-7664) or file an online complaint at https://www.aqmd.gov/home/air-quality/complaints.**

[47] South Coast AQMD includes a Rule and Control Measure Forecast as a standing agenda item at each Governing Board meeting. The May 2022 Rule and Control Measure Forecast is available at: http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2022/2022-may6-019.pdf

Inspections are generally unannounced so that the inspector can observe a facility conducting normal operations. Inspections are conducted to evaluate the overall compliance status of the facility or to focus on specific aspects of an operation to ensure the facility is following a specific rule or regulation. Different types of metal processing facilities maybe required to abide by specific applicable rules; therefore, inspectors will verify compliance with all rules, regulations, and permit conditions that are relevant to a facility.

If a facility is determined to be out of compliance with air pollution rules or regulations or permit conditions, inspectors will take necessary enforcement action to address the non-compliant activity. There are two types of enforcement actions:

1. A Notice to Comply (NC) may be issued for minor violations found during an inspection or to request additional information.
2. A Notice of Violation (NOV) may be issued for violations of rules or permit conditions. NOVs usually result in a penalty.

If a facility cannot immediately comply with air pollution laws, it may seek a variance from a rule requirement or permit condition by filing a petition and appearing before the South Coast AQMD Hearing Board.[48] In cases of ongoing noncompliance, a petition for an Order for Abatement may be brought against the facility, which will seek to require the company to take specific actions or cease operating in violation of South Coast AQMD rules or regulations. These processes serve to ensure that a facility returns to compliance expeditiously while minimizing air quality impacts.

Since metal processing facilities have been identified as a community priority, AB 617 CERP actions include enhanced enforcement efforts intended to address SLA community concerns directly, taking community input into account where appropriate.

Incentives

For information related to incentives, please refer to Appendix 5a: South Coast AQMD Regulatory Program and Ongoing Efforts.

[48] Please see Appendix 4 for more information regarding the South Coast AQMD Hearing Board.