

Air Quality: Permitted and Permit-exempt Emissions Source Requirements

Department: Chemical and General Safety

Program: Air Quality

Owner: Program Manager

Authority: ES&H Manual, Chapter 30, Air Quality¹

SLAC's synthetic minor operating permit (SMOP) specifies the conditions that apply to processes that produce air pollutants. The SMOP specifies a site-wide cap of 95 tons for regulated air pollutants, but many additional restrictions apply, as noted below.

The table on this page summarizes SLAC's site-wide permit caps, and the following tables list permitted and permit-exempt emissions sources, their corresponding limits, and any additional conditions. Sources are listed in the numerical order specified in the SMOP, and gaps in the order represent sources that are either permit-exempt (typically due to the presence of abatement devices) or no longer in service. Permit-exempt emissions sources are listed on the last page. Emissions from any sources not explicitly listed in the SMOP (such as unpermitted, temporary, or portable sources) must also be tracked and accounted for.²

For additional information, particularly on hazardous air pollutants (HAPs) and precursor organic compounds (POCs), see Air Quality: Air Pollutants, SLAC Emissions Sources, and Regulatory Reference.³ For a key to abbreviations, see Air Quality: Acronym List.⁴

1 SLAC Environment, Safety, and Health Manual (SLAC-I-720-0A29Z-001), Chapter 30, "Air Quality", http://www-group.slac.stanford.edu/esh/environment/air_quality/policies.htm

2 For details, see Air Quality: Monthly Hazardous Material Use, Fuel Consumption, and Equipment Operation Forms (SLAC-I-730-0A16J-001), <http://www-group.slac.stanford.edu/esh/forms/>

3 Air Quality: Air Pollutants, SLAC Emissions Sources, and Regulatory Reference (SLAC-I-730-0A16T-001), <http://www-group.slac.stanford.edu/esh/eshmanual/references/airRefPollutants.pdf>

4 Air Quality: Acronym List (SLAC-I-730-0A16V-002), <http://www-group.slac.stanford.edu/esh/eshmanual/references/airListAcronym.pdf>

Air Quality: Permitted and Permit-exempt Emissions Source Requirements

Permitted Emissions Sources (Updated 1 May 2007)

BAAQMD Source No.	SLAC Bldg. No.	Location	Source	Chemical(s) Emitted / Data Quantity Tracked	Primary Limit	Individual Limit(s) and Additional Conditions	Category or Site-wide Limit
Site-wide (Source numbers range: 4 to 81)	All	Site-wide	All	Air pollutants	Limits for each source are itemized below	Unpermitted, temporary or portable sources: 5 tons/yr of any single regulated air pollutant or 400 lbs/yr combined	SMOP 95 tons/year for all regulated air pollutants 23 tons/yr for any combination of hazardous air pollutants (HAPs) 9 tons/yr for any single HAP POCs: 30 tons/yr
S-4	25	Plating Shop	TCA degreaser	TCA	590 gal TCA		
S-5	35	Paint Shop	Paint booth	Paints, coatings, solvents	700 gal paints and coatings 88 gal solvents		
S-21	25	Plating Shop	Sulfuric acid bath (with scrubber)	Sulfuric acid	0.01 mg/dscm of air ⁵		
S-26	26	Machine maintenance area	Cold cleaner (now exempt)	Bio-based solvent cleaning system (new)	60 gal solvent (Limit applies to D-Greeze 500™, which is no longer used)		Unlimited use of bio-based solvent, which has no VOCs
S-34	40	Machine Shop	Cold cleaner (now exempt)	Bio-based solvent cleaning system (new)	10 gal solvent (Limit applies to D-Greeze 500™, which is no longer used)		Unlimited use of bio-based solvent, which has no VOCs

5 0.01 mg/dscm = milligrams per dry standard cubic meter (4.4x10⁻⁶ gr/dscf) of air

Air Quality: Permitted and Permit-exempt Emissions Source Requirements

BAAQMD Source No.	SLAC Bldg. No.	Location	Source	Chemical(s) Emitted / Data Quantity Tracked	Primary Limit	Individual Limit(s) and Additional Conditions	Category or Site-wide Limit
S-36	Vari-ous	Site-wide	Designated distribution points	Methanol, ethanol, isopropanol, TCA, TCE, et al.	140 gal TCA 5 gal TCE (Unlimited: acetone)		1253 gal solvents
S-37	25	Plating Shop	IPA cleaner	Isopropanol	600 gal solvent		
S-52	23	Central Utilities	Main Boiler No. 2 (#201 - west unit)	Natural gas	770,000 therms (Site-wide limit)	Fuel oil operating limit: 500 hrs/yr	
S-53	23	Central Utilities	Main Boiler No. 1 (#200 - east unit)	Natural gas	770,000 therms (Site-wide limit)	Fuel oil operating limit: 500 hrs/yr	
S-54	25	Plating Shop	NZE Degreaser	PCE	50 gal PCE or TCA		
S-55	626	Gas Shack	BaBar Drift Chamber (DCH)	Isobutane	2,300 lbs/yr		15 lbs/day for organics
S-56	626	Gas Shack	BaBar Instrumented Flux Return (IFR) / Resistive Plate Chamber (RPC)	Isobutane (POC) H134a, Fluorinert™	2,500 lbs/yr for isobutane		15 lbs/day of organic compounds from any single operation

Air Quality: Permitted and Permit-exempt Emissions Source Requirements

BAAQMD Source No.	SLAC Bldg. No.	Location	Source	Chemical(s) Emitted / Data Quantity Tracked	Primary Limit	Individual Limit(s) and Additional Conditions	Category or Site-wide Limit
S-57	38	MFPF	Sludge dryer (including scrubber)	Sludge Copper (Cu) Hexavalent Chromium (Cr+6) Nickel (Ni) Natural gas	71 tons/yr sludge 463 lbs Cu 0.0014 lbs Cr+6 0.75 lbs Ni 770,000 therms (site-wide limit)		
S-58	6	Cryogenics / SSRL	TCE "Chili Pot" Solvent Tank	TCE	5 gal/yr TCE (BAAQMD limit)	150 kg/m2/month (NESHAP limit)	
S-59	31	Building-wide	Solvent cleaning operations	Ethanol (no TCA or acetone currently in use)	90 gal ethanol	100 gal TCA	
S-60	25	Plating Shop	Ultrasonic cleaner	Isopropanol Acetone Ethanol Methanol	100 gal isopropanol 100 gal acetone 100 gal ethanol 100 gal methanol		
S-61	25	Plating Shop	Dynasolve™ Degreaser	Methylene chloride (primary ingredient in Dynasolve)	10 gal Dynasolve		
S-62	Various	Site-wide	Epoxies and adhesives	Epoxies and adhesives	Unlimited: acetone		1183 gal epoxies and adhesives 395 gal aerosol epoxies and adhesives
S-63	Various	Site-wide	Paints and coatings	Paints and coatings	Unlimited: acetone		1132 gal paints and coatings 323 gal aerosol paints and coatings

Air Quality: Permitted and Permit-exempt Emissions Source Requirements

BAAQMD Source No.	SLAC Bldg. No.	Location	Source	Chemical(s) Emitted / Data Quantity Tracked	Primary Limit	Individual Limit(s) and Additional Conditions	Category or Site-wide Limit
S-64	81	West of B-35	Gas Dispensing Facility (GDF)	Unleaded gasoline Biodiesel 20	Max. purchased or dispensed per 12-month period: 60,000 gal gasoline 95,000 gal Biodiesel 20		
S-65	18	North side	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-66	756	North of B-750	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-67	505	Research Yard (E of B-104)	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-68	7	Main Control Center	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-70	686	IR-8 Mechanical Pad	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-71	23	East pad on North side	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	

Air Quality: Permitted and Permit-exempt Emissions Source Requirements

BAAQMD Source No.	SLAC Bldg. No.	Location	Source	Chemical(s) Emitted / Data Quantity Tracked	Primary Limit	Individual Limit(s) and Additional Conditions	Category or Site-wide Limit
S-72	23	West pad on North side	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-73	18	North side	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-74	706	IR-10 (West of B-137)	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-75	18	North side	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-71	23	East pad on North side	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-72	23	West pad on North side	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-73	18	North side	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	
S-74	706	IR-10 (West of B-137)	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/yr	Monthly use logs are required	

Air Quality: Permitted and Permit-exempt Emissions Source Requirements

BAAQMD Source No.	SLAC Bldg. No.	Location	Source	Chemical(s) Emitted / Data Quantity Tracked	Primary Limit	Individual Limit(s) and Additional Conditions	Category or Site-wide Limit
S-75	18	North side	Generator	Biodiesel 20	Operating limit for non-emergency use is 20 hrs/y	Monthly use logs are required	
S-76	81	Outside SE corner	Oil/water separator	Wastewater throughflow	2000 gal/day		
S-77	15	Power Conversion	Soil vapor extraction system (initial installation ; replaced by S-80, below)	VOCs (various)	Emissions limits (lbs/day): 0.018 Benzene 0.0066 Vinyl chloride 0.49 Methylene chloride 0.082 PCE 0.25 TCE 0.3 1,1-DCA 0.024 1,2-DCA 0.012 Carbon tetrachloride 0.066 1,4-dioxane		See S-80: Unabated emissions meet individual VOC permit limits
S-79	750	Collider Hall	Limited Streamer Tube Testing	Isobutane	700 lbs per 12-month period Flow rate limit: 19,936 liters/day		Emissions limits: 1,749 lbs per 12-month period 5 lbs/day organics

Air Quality: Permitted and Permit-exempt Emissions Source Requirements

BAAQMD Source No.	SLAC Bldg. No.	Location	Source	Chemical(s) Emitted / Data Quantity Tracked	Primary Limit	Individual Limit(s) and Additional Conditions	Category or Site-wide Limit
S-80	15	Power Conversion	Soil Vapor Extraction System (DVE)	VOCs (various)	Emissions limits (lbs/day): 0.018 Benzene 0.0066 Vinyl chloride 0.082 PCE 0.49 Methylene chloride 0.25 TCE 0.3 1,1-DCA 0.024 1,2-DCA 0.012 Carbon tetrachloride 0.066 1,4-dioxane		Unabated emissions meet individual VOC permit limits
S-81	15	Power Conversion	Ground-water extraction system	VOCs	Emissions limits (lbs/day): 0.017 Benzene 0.0065 Vinyl chloride 0.082 PCE 0.49 Methylene chloride 0.25 TCE 0.3 1,1-DCA 0.024 Ethylene chloride	Total VOCs 10 lbs/day	Unabated emissions from S-80 currently meet individual VOC permit limits Groundwater inflow limit: 14,400 gal/day
S-32100	Various	HVAC systems site-wide	Fugitive Freons™	R-11, R-12, R-22, et al.	Exempt, but recordkeeping is required		None

Air Quality: Permitted and Permit-exempt Emissions Source Requirements

Permit-exempt Emissions Sources (Updated 1 May 2007)

BAAQMD Source No.	SLAC Bldg. No.	Location	Permit-exempt Source	Chemical(s) Emitted or Data Quantity Tracked	Inspection Requirements ⁶
S-10	35	Carpenter Shop	Woodworking Ops / abatement device	Particulates ⁷	
S-11	29	Metal Stores Saw	Metalworking Ops / abatement device	Particulates ⁴	
S-13	25	Grinding Room	Metalworking Ops / abatement device	Particulates ⁴	
S-14	123	Klystron Shop	Sandblasting / abatement device	Particulates ⁴	
S-16	123	Klystron Shop	Sandblasting / abatement device	Particulates ⁴	
S-17	24	Controls Dept	Metal Grinding Ops / abatement device	Particulates ⁴	
S-40	37	Boiler (formerly S-6)	Above-ground diesel fuel tank (3,700 gal)	Biodiesel 20	Inspect once every six months to verify exempt status. Check that <ul style="list-style-type: none"> ▪ Operations have not changed significantly ▪ Systems are properly maintained ▪ All abatement measures continue to function
S-41	23	Central Utilities	Above-ground diesel fuel tank (10,000 gal)	Biodiesel 20	
S-42	7	Main Control Center	Above-ground diesel fuel tank (500 gal)	Biodiesel 20	
S-43	505	East of B-104	Above-ground diesel fuel tank (500 gal)	Biodiesel 20	
S-44	82	Fire Station	Above-ground diesel fuel tank (500 gal)	Biodiesel 20	
S-45	112	Master Substation	Above-ground diesel fuel tank (2,000 gal)	Biodiesel 20	
S-46	44	Klystron Test Lab	Bench top spray painting	Aerosol paints	
S-49	25	Cyanide Room	Wet scrubber for cyanide room	Cyanides	
S-50	120	SSRL	Sandblast booth at Machine Shop	Particulates ⁴	
S-51	25	Light Fabrication	Small parts blast cab (PC17285)	Particulates ⁴	
S-78	26	Welding Shop	Plasma-arc cutting torch with DCS	Cr+6 emissions	
---	750	North of CEH	Above-ground diesel - to generator S-66 (250 gal)	Biodiesel 20	
---	750	SLD/NE of CEH	Above-ground diesel - to compressor (55 gal)	Biodiesel 20	
---	Various	Site-wide	Above-ground diesel - mobile refueling (250 gal)	Biodiesel 20	

6 For an inspection form template, see Air Quality: Emissions Source Inspection Form (SLAC-I-730-0A16J-002), <http://www-group.slac.stanford.edu/esh/forms/>

7 The site-wide limit for particulate emissions is 8,000 lbs/yr as PM10. If abrasive blasting unit emissions are abated by a dust collector, use an emission factor of 0.26 lbs/ton (PM10) of abrasive material. If unabated, use a factor of 26 lbs/ton. All SLAC units are currently abated.