

Appendix H – List of Chemicals, Materials, & Equipment Requiring EH&S Pre-Approval Prior to Purchase

Purpose

This document establishes a formalized list of chemicals, materials, and equipment that require pre-approval from Cal Poly Humboldt's Environmental Health and Safety (EH&S) office before being purchased through the University's P2P system. **No purchases of these materials may be made through Pro-Card without prior EH&S approval.** The intent is to proactively identify hazardous materials or regulated items that could pose significant risks to health, safety, or environmental compliance.

Objective

The objective of this document is to assist campus purchasers, Principal Investigators (PIs), research staff, laboratory managers, and procurement personnel in determining which items are subject to EH&S review. This pre-approval process ensures that proper authorizations, safety controls, and regulatory compliance are in place prior to acquisition.

Scope

This document applies to all Cal Poly Humboldt departments, colleges, research groups, and auxiliaries that procure chemicals, gases, biologically hazardous materials, radiation-emitting equipment, or safety-sensitive equipment. The list is intended to support:

- Risk reduction for high-hazard substances and equipment
- Compliance with Cal/OSHA, DEA, NRC, and CSU safety policies
- Prevention of regulatory violations, exposures, and unsafe conditions
- Proper licensing, training, labeling, and inventory procedures

Campus departments may submit a request for EH&S review via the Procurement Intake Form on the EH&S website.

Guidelines and Instructions

To request EH&S pre-approval, all purchases must complete the official EH&S Procurement Approval Intake Form, available online on the EH&S website. The form must be submitted and approved prior to ordering any items listed in this document.

Submissions must include:

- An itemized shopping cart or quote
- Current SDS(s) for each chemical or hazardous material
- Vendor contact information
- A description of storage and intended use, if applicable
- Any applicable licenses or permits (e.g., DEA, radioactive materials, etc.)

EH&S will review submissions and issue an approval for reference in campus procurement systems. Incomplete requests or purchases made without EH&S approval may be delayed or denied.

The table below outlines general categories of chemicals, materials, and equipment that require EH&S approval before purchase:

Material Type	Reason for Purchase Control
Cal/OSHA Regulated Carcinogens (see attached list)	Cal/OSHA Title 8 §5198–5220: SOPs, training, designated work area signage, Cal/OSHA notification, air exposure monitoring required.
Highly Toxic Gases (see attached list)	Inhalation hazards, exposure monitoring, release monitoring, alarm systems required
Pyrophoric Materials	Extremely flammable; ignite spontaneously upon exposure to air. Requires inert gas handling, air-free techniques, and lab-specific SOPs
Water-Reactive Materials	May violently react with water or moisture; requires special containment and spill control procedures
Class A Peroxide-Forming Chemicals (Inhibited or Uninhibited)	Includes compounds (e.g. diethyl ether, isopropyl ether, sodium amide) that can form explosive peroxides during storage. Requires tracking or open dates, limited shelf life, routine testing or disposal, and approved SOPs. Pre-approval ensures stabilized sourcing

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Material Type	Reason for Purchase Control
	and appropriate controls for both inhibited and uninhibited forms.
Explosives or Energetic Materials	Must comply with DOT Class 1 regulations and campus safety/security protocols. Pre-approval ensures secure storage, transport, and handling.
DHS Chemicals of Interest (COI)	Regulated by U.S. Department of Homeland Security for security threat potential. Must be reviewed to prevent facility threshold exceedance.
Radioactive Materials (Sealed or Unsealed)	Subject to strict controls under NRC and Radiologic Health Branch regulations. EH&S pre-approval ensures proper licensing, inventory, secure storage, training, signage, and compliance with radiation safety protocols.
Controlled Substances (DEA Schedules I-V, DEA Precursor Chemicals – LIST I, and California-Listed Substances)	Subject to strict federal and state controls. May require DEA registration under individual authorization. EH&S pre-approval ensures proper licensing, secure storage, inventory tracking, restricted access, routine inspections, and compliance with DEA and California DOJ regulations
Select Agents and Toxins	Federally regulated biological agents and toxins. Requires CDC/USDA registration and Institutional Biosafety Committee (IBC) review.
Human Blood or Unfixed Human Tissue	Written Exposure Control Plan (ECP) required, Bloodborne Pathogen training required.
Human or Primate Cell Lines and Other Potentially Infectious Materials (OPIM)	Potential exposure to infectious agents. Requires biosafety assessment and IBC review.
Risk Group 2 or 3 Biohazards	Potentially infectious; Biosafety controls and training required.
Genetically Modified Organisms (GMO: Plant or Animal)	Regulated under NIH Guidelines and may require IBC review. EH&S pre-approval ensures proper containment, housing, disposal, and compliance with NIH, USDA, and AP-HIS requirements to prevent unintended exposure or environmental release
Pesticides, Insecticides, Herbicides	Personal and environmental exposure concerns; EH&S must review intended use.
Equipment (Class 3B/4 Lasers, Drones, Radiation Devices, Emergency Generators,	Safety, permitting, inspection, and compliance with Cal/OSHA, NCUAQMD, and Radiologic

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Material Type	Reason for Purchase Control
Fume Hoods, Biosafety Cabinets, AEDs, Fire Systems, Pressure Vessels)	Health Branch regulations; periodic monitoring required.

Cal/OSHA Regulated Carcinogens

This table lists substances classified by Cal/OSHA as regulated carcinogens under Title 8, CCR 5198 – 5220. These chemicals are subject to stringent requirements including written SOPs, designated work areas, medical surveillance, air and surface exposure monitoring, labeling, signage, and training. Pre-approval is mandatory prior to purchase, possession, or use to ensure that administrative, engineering, and procedural controls are in place. The list reflects regulatory definitions and includes substances with acute and chronic cancer-causing properties.

#	Chemical	CAS	Title 8 CCR Regulation
1	1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	§5212
2	1,3-Butadiene	106-99-0	§5201
3	2-Acetylaminofluorene	53-96-3	§5209
4	3,3'-Dichlorobenzidine (and its salts)	91-94-1	§5209
5	4,4-Methylenebis (2-Chloroaniline)	101-14-4	§5215
6	4-Aminodiphenyl	92-67-1	§5209
7	4-Dimethylaminoazobenzene	60-11-7	§5209
8	4-Nitrobiphenyl	92-93-3	§5209
9	Acrylonitrile	107-13-1	§5213
10	alpha-Naphthylamine	91-59-8	§5209
11	Asbestos	77536-68-6	§5208
12	Benzene	71-43-2	§5218
13	Benzidine (and its salts)	92-87-5	§5209
14	Beryllium	7440-41-7	§5205
15	beta-Naphthylamine	91-59-8	§5209
16	beta-Propiolactone	57-57-8	§5209
17	bis-Chloromethyl ether	542-88-1	§5209
18	Cadmium	543-90-8	§5207
19	Chromium (VI)	7440-47-3	§5206
20	Coke Oven Emissions	n/a	§5211
21	Ethylene Dibromide (EDB)	106-93-4	§5219
22	Ethylene Oxide	75-21-8	§5220
23	Ethyleneimine	151-56-4	§5209
24	Formaldehyde	50-00-0	§5217
25	Inorganic Arsenic	7440-38-2	§5214
26	Inorganic Lead compounds	7439-92-1	§5198

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#	Chemical	CAS	Title 8 CCR Regulation
27	Lead	7439-92-1	§5198
28	Methyl chloromethyl ether	107-630-2	§5209
29	Methylene chloride	75-09-2	§5202 and 40 CFR Part 751
30	Methylenedianiline	101-77-9	§5200
31	N-Nitrosodimethylamine	62-75-9	§5209
32	Non-Asbestiform Tremolite, Anthophyllite, or Actinolite	--	§5208.1
33	Respirable Crystalline Silica	--	§5204
34	Vinyl Chloride	75-01-4	§5210

Highly Toxic Gases Table

This table identifies gases classified as “Highly Toxic” due to their extreme health hazard potential via inhalation. Use of these materials may require specialized local exhaust ventilation, gas cabinets, alarmed gas detection systems, remote shutoff, interlocks, and emergency response protocols. These gases may also trigger facility design or fire code requirements. EH&S pre-approval is required to assess physical location, storage capacity, and operational controls prior to purchase or delivery. Any compressed gas classified by NFPA, DOT, or GHS as “Toxic” or “Highly Toxic” should be considered subject to this requirement.

#	Chemical	CAS	Reason	Formula
1	Arsenic pentafluoride	7784-36-3	Highly Toxic Gas	AsF ₅
2	Arsine	7784-42-1	Highly Toxic Gas	AsH ₃
3	Bis(trifluoromethyl)peroxide	927-84-4	Highly Toxic Gas	C ₂ F ₆ O ₂
4	Boron tribromide	10294-33-4	Highly Toxic Gas	BBr ₃
5	Boron trichloride	10294-34-5	Highly Toxic Gas	BCl ₃
6	Boron trifluoride	71217637	Highly Toxic Gas	BF ₃
7	Bromine chloride	13863-41-7	Highly Toxic Gas	BrCl
8	Bromomethane	74-83-9	Highly Toxic Gas	CH ₃ Br
9	Carbon monoxide	630-08-0	Highly Toxic Gas	CO

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#	Chemical	CAS	Reason	Formula
10	Chlorine	7782-50-5	Highly Toxic Gas	Cl ₂
11	Chlorine pentafluoride	13637-63-3	Highly Toxic Gas	ClF ₅
12	Chlorine trifluoride	7790-91-2	Highly Toxic Gas	ClF ₃
13	Chloropicrin	76-06-2	Highly Toxic Gas	CCl ₃ NO ₂
14	Cyanogen	460-19-5	Highly Toxic Gas	C ₂ N ₂
15	Cyanogen chloride	506-77-4	Highly Toxic Gas	CNCl
16	Diazomethane	334-88-3	Highly Toxic Gas	CH ₂ N ₂
17	Diborane	19287-45-7	Highly Toxic Gas	B ₂ H ₆
18	Dichloroacetylene	7572-29-4	Highly Toxic Gas	C ₂ CCl ₂
19	Dichlorosilane	4109-96-0	Highly Toxic Gas	H ₂ CL ₂ Si
20	Fluorine	7782-41-4	Highly Toxic Gas	F ₂
21	Formaldehyde (anhydrous)	50-00-0	Highly Toxic Gas	CH ₂ O
22	Germane	7782-65-2	Highly Toxic Gas	GeH ₄
23	Hexaethyl tetraphosphate	757-58-4	Highly Toxic Gas	(C ₂ H ₅ O) ₆ P ₄
24	Hydrogen azide	7782-79-8	Highly Toxic Gas	HN ₃
25	Hydrogen cyanide	74-90-8	Highly Toxic Gas	HCN
26	Hydrogen selenide	71517783	Highly Toxic Gas	H ₂ Se
27	Hydrogen sulfide	61417783	Highly Toxic Gas	H ₂ S
28	Hydrogen telluride	91717783	Highly Toxic Gas	H ₂ Te
29	Nickel tetracarbonyl	13463-39-3	Highly Toxic Gas	Ni(CO) ₄
30	Nitrogen dioxide	10102-44-0	Highly Toxic Gas	NO ₂

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#	Chemical	CAS	Reason	Formula
31	Osmium tetroxide	20816-12-0	Highly Toxic Gas	OsO ₄
32	Oxygen difluoride	7783-41-7	Highly Toxic Gas	OF ₂
33	Perchloryl fluoride	7616-94-6	Highly Toxic Gas	ClFO ₃
34	Perfluoroisobutylene	382-21-8	Highly Toxic Gas	C ₄ F ₈
35	Phosgene	75-44-5	Highly Toxic Gas	COCl ₂
36	Phosphine	7803-51-2	Highly Toxic Gas	PH ₃
37	Phosphorous pentafluoride	7647-19-0	Highly Toxic Gas	PF ₅
38	Selenium hexafluoride	7783-61-1	Highly Toxic Gas	SeF ₆
39	Silicon tetrachloride	10026-04-7	Highly Toxic Gas	SiCl ₄
40	Silicon tetrafluoride	7783-61-1	Highly Toxic Gas	SiF ₄
41	Stibine	7803-52-3	Highly Toxic Gas	H ₂ Sb
42	Disulfur decafluoride	5714-22-7	Highly Toxic Gas	S ₂ F ₁₀
43	Sulfur tetrafluoride	7783-60-0	Highly Toxic Gas	SF ₄
44	Tellurium hexafluoride	7783-80-4	Highly Toxic Gas	TeF ₆
45	Tetraethyl pyrophosphate	107-49-3	Highly Toxic Gas	C ₈ H ₂₀ O ₇ P ₂
46	Tetraethyl dithiopyrophosphate	3689-24-5	Highly Toxic Gas	C ₈ H ₂₀ O ₅ P ₂ S ₂
47	Trifluoroacetyl chloride	354-32-5	Highly Toxic Gas	C ₂ ClF ₃ O
48	Tungsten hexafluoride	7783-82-6	Highly Toxic Gas	WF ₆

List of Equipment Requiring EH&S Approval Prior to Purchase Table

The equipment listed below poses potential safety, regulatory, or environmental risks that warrant EH&S involvement prior to procurement. This includes items that require installation permits, safety certifications, or regulatory reporting, as well as equipment that introduces hazards like high voltage, radiation, chemical exposure, or exhaust emissions.

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EH&S or Campus Resilience and Response pre-approval helps ensure proper siting, code compliance, permitting, inspection scheduling, and user training are addressed before purchase is finalized.

Equipment Type	Reason for Listing
AEDs	Periodic inspection required; location must be mapped in campus inventory
Air Pollution Abatement Equipment	Requires NCUAQMD Authority to Construct and Permit to operate; annual fees apply
Biosafety Cabinets	Cal/OSHA requires annual certification to ensure effectiveness
Chemical Fume Hoods	Cal/OSHA requires annual certification to ensure effectiveness
Class 3B and Class 4 Lasers	Laser safety training, PPE, and engineering controls are required
Deluge showers and eyewash stations	Monthly functional testing and documentation required under Cal/OSHA
Drones	Requires Campus Resilience and Response approval to ensure compliance with federal mandates
Emergency generators (≥50 HP)	Requires NCUAQMD Authority to Construct and Permit to operate; annual reporting required
Exhaust scrubbers or emission control systems	May trigger air district permitting (NCUAQMD), requires location and emissions review
Fire Extinguishers	Cal/OSHA requires monthly, annual, 6-year, and 12-year inspections; location must be documented
Fire Suppression Systems	Must be mapped and undergo scheduled inspection and maintenance
First Aid Kits	Requires EH&S approval to ensure compliance with regulatory requirements for medications
Ionizing Radiation-Producing Equipment (e.g., X-ray units, XRF/XRD systems, irradiators, CT scanners)	Requires registration with Radiologic Health Branch; may require radiation area monitoring
Narcan	Require EH&S approval to ensure compliance with regulatory requirements
Pressure vessels or high-pressure systems	May require Cal/OSHA permits-to-operate and certified inspections; including autoclaves, boilers, air receivers.