Chapter 296-828 WAC
HAZARDOUS CHEMICALS IN LABORATORIES

WAC

296-828-100 Scope.
296-828-200 Using hazardous chemicals in laboratories.
296-828-20005 Chemical hygiene plan.
296-828-20010 Exposure evaluation.
296-828-20015 Training.
296-828-20020 Labeling and safety data sheets (SDSs).
296-828-20025 Chemicals produced in laboratories.
296-828-20030 Medical evaluations.
296-828-300 Definitions.

WAC 296-828-100 Scope. This chapter applies to the laboratory use of hazardous chemicals. To determine if this chapter applies to your workplace, use Table 1.

Table 1
Chapter Application

Are "Hazardous Chemicals" used?

Definition:
Hazardous chemicals are any chemicals that have been shown (in at least one scientific study) to cause acute or chronic health effects in exposed employees. 296-901 WAC contains information that can be used to determine if a chemical is considered hazardous for this rule

YES → Are the hazardous chemicals used in "laboratory scale operations"?

NO → *If any one of your answers brought you here, the Laboratory Standard **does not apply**, but other WISHA rules still apply*

Are the hazardous chemicals used in "laboratory scale operations"?

Note:
Laboratory scale operations use containers that have been designed to be easily and safely handled by one person for reactions, transfers and other handling of the hazardous chemicals.

Laboratory scale operations **are not**

- Capable of producing commercial quantities of materials
- Part of a production process or simulate a production process
- Part of a quality control process that directs how a process operates.
- A simulation of a production process such as a pilot plant

YES → Are multiple chemicals or multiple procedures used?

NO → *If any one of your answers brought you here, the Laboratory Standard **does not apply**, but other WISHA rules still apply*

Are multiple chemicals or multiple procedures used?

YES → Are protective practices or protective equipment generally available for employee protection?

NO → *If any one of your answers brought you here, the Laboratory Standard **does not apply**, but other WISHA rules still apply*

Are protective practices or protective equipment generally available for employee protection?
Note:
Protective practices and equipment are those procedures, practices, or equipment accepted by laboratory health and safety experts as effective at controlling employee exposures to hazardous chemicals. For example laboratory fume hoods, chemical splash goggles, protective gloves, etc.
OR
Those practices, procedures or equipment the employer can show are effective at controlling employee exposures to hazardous chemicals.

YES → If your answers brought you here, the Laboratory Standard **applies** to your workplace.

NO → *If any one of your answers brought you here, the Laboratory Standard **does not apply**, but other WISHA rules still apply*

IMPORTANT:

• When your laboratory operation is covered by this chapter, and you use any of the substances in Table 2, the following applies with the exception of formaldehyde use in histology, pathology, and anatomy laboratories. In histology, pathology, and anatomy laboratories you must follow the requirements in chapter 296-856 WAC, Formaldehyde. This chapter applies to all other formaldehyde laboratory uses as defined in Table 1:

– The exposure limits and any requirement protecting employees from skin and eye contact in the rules listed in Table 2 will still apply.

– Where the action level (or where no action level exists, the permissible exposure limit) is exceeded for a substance listed in Table 2, the exposure evaluation and medical surveillance requirements in the substance rule will still apply.

– You are not required to meet other requirements of the substance rule.

• To get the permissible exposure limits (PELs) for hazardous chemicals used in your laboratory, see chapter 296-841 WAC, Airborne contaminants.

Table 2
WISHA Regulated Hazardous Chemicals

Acrylonitrile
Arsenic (inorganic)
Asbestos
Benzene
Butadiene
Cadmium
Coke ovens
Cotton dust
1, 2-Dibromo-3-chloropropane
Ethylene oxide
Formaldehyde
Lead
Methylene chloride
Methylenedianiline
Vinyl chloride
Ionizing radiation
4-Nitrobiphenyl
Alpha-Naphthylamine
4,4' Methylene bis (2 - chloroaniline)
Methyl chloromethyl ether
3,3'-Dichlorobenzidine (and its salts)
Bis-Chloromethyl ether
Beta-Naphthylamine benzidine
4-Aminodiphenyl
Ethyleneimine
Beta-Propiolactone
2-Acetylaminofluorene
4-Dimethylaminoazobenzene
N-Nitrosodimethylamine

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-828-100, filed 3/18/14, effective 5/1/14. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 10-15-106, § 296-828-100, filed 7/20/10, effective 9/1/10. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-05-062, § 296-828-100, filed 2/20/07, effective 4/1/07; WSR 06-02-060, § 296-828-100, filed 1/3/06, effective 4/1/06.]

WAC 296-828-200 Using hazardous chemicals in laboratories. Your responsibility:

To protect employees from laboratory use of hazardous chemicals.

WAC 296-828-20005
Chemical hygiene plan.
WAC 296-828-20010
Exposure evaluation.
WAC 296-828-20015
Training.
WAC 296-828-20020
Labeling and safety data sheets (SDSs).
WAC 296-828-20025
Chemicals produced in laboratories.
WAC 296-828-20030
Medical evaluations.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-828-200, filed 3/18/14, effective 5/1/14. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 06-02-060, § 296-828-200, filed 1/3/06, effective 4/1/06.]

WAC 296-828-20005 Chemical hygiene plan.

You must:

• Develop and carry out a written chemical hygiene plan (CHP) that will protect your employees from hazardous substances in the laboratory and keep exposure levels below those listed in chapter 296-841 WAC, Airborne contaminants.

• Make sure the written plan is readily available to employees and their representatives.

• Include the following elements in your written CHP:

– The names or job titles of the chemical hygiene officer, other personnel responsible for implementing the CHP, or when appropriate, the members of a chemical hygiene committee.

– Standard operating procedures that provide employee protection when working with hazardous substances.

– Criteria for how you will select and use control measures to reduce employee exposures to hazardous chemicals, especially chemicals known to be extremely hazardous.

– Additional employee protection for select carcinogens, reproductive toxins, and chemicals with high degree of acute toxicity. The following will be considered, when appropriate:

■ The establishment of exposure control areas.

■ Containment devices, such as fume hoods or glove boxes.

■ The safe removal of contaminated waste.

■ Procedures for decontamination.

– Specific measures to make sure fume hoods and other protective equipment provide proper and adequate performance and are properly functioning.

– The circumstances when specific laboratory operation, activity, or procedure requires prior approval from the employer or their designated representative before implementation.

– A description of how you are going to train and inform your employees about laboratory use of hazardous chemicals.

– A description of your provisions for medical consultations and medical examinations.

• Review and evaluate the effectiveness of your written CHP at least annually and update as necessary.

Reference: This publication can provide you with additional information to help you with your written chemical hygiene plan:

National Research Council, Prudent Practices for Disposal of Chemicals from Laboratories, National Academy Press, Washington, DC, 1995.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-05-062, § 296-828-20005, filed 2/20/07, effective 4/1/07; WSR 06-02-060, § 296-828-20005, filed 1/3/06, effective 4/1/06.]

WAC 296-828-20010 Exposure evaluation.

IMPORTANT:

For any of the specific substances listed in Table 2 of the scope of this chapter, you need to follow the exposure evaluation procedures found in the chapters regulating those substances if employee exposure routinely exceeds the AL or PEL. For all other employee exposures follow this section to determine exposure evaluation procedures.

You must:

• Determine if you could have a respiratory hazard as described in chapter 296-841 WAC, Respiratory hazards.

Reference: For additional requirements relating to respiratory hazards, see:

– Chapter 296-841 WAC, Respiratory hazards.

– Chapter 296-842 WAC, Respirators.

– The specific rule for your chemical.

You must:

• Provide written notification of exposure monitoring results to employees represented by your exposure evaluation, within five business days after the results become known to you.

Note:

• You can notify employees either individually or by posting the notification in areas readily accessible to all affected employees.

• Posted notifications may need information that allows affected employees to determine which monitoring results apply to them.

• Notification may be:

– In any written form, such as hand-written or e-mail.

– Limited to the required information, such as exposure monitoring results.

Reference:

• For additional requirements relating to employee exposure records, go to chapter 296-802 WAC, Employee medical and exposure records.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-828-20010, filed 1/24/07, effective 4/1/07; WSR 06-02-060, § 296-828-20010, filed 1/3/06, effective 4/1/06.]

WAC 296-828-20015 Training.

You must:

• Inform employees about the presence of hazardous chemicals at the following times:

– At the time of initial assignment to a work area where hazardous chemicals are present.

– Prior to situations involving a new exposure to hazardous chemicals.

• Train employees on all of the following:

– Methods and observations for detecting the presence or release of hazardous substances. Examples of these methods and observations may include:

■ Monitoring conducted by you.

■ Continuous monitoring devices.

■ Visual appearance or odor of hazardous chemicals when being released.

– The physical and health hazards of chemicals in the work area.

– The procedures and measures employees can use to protect themselves from hazardous substances. Examples of these include:

■ Appropriate work practices.

■ Emergency procedures.

■ Personal protective equipment.

• Provide refresher training to fit your needs.

• Provide information to employees on all of the following:

– The contents of this chapter and where to find a copy.

– Permissible exposure limits found in chapter 296-841 WAC, Respiratory hazards.

– Any recommended exposure levels for compounds without an exposure limit in the WISHA rules. Examples include:

■ The PELs found in the National Institute for Occupational Safety and Health (NIOSH) NIOSH Pocket Guide to Chemical Hazards 2004; or

■ The American Conference of Governmental Industrial Hygienists (ACGIH®) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), 7th Ed.

– Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory.

– Where to find a copy of:

■ Your chemical hygiene plan.

■ Safety data sheets (SDSs), including those received from the chemical suppliers.

■ Reference material on the hazards, safe handling, storage, and disposal of hazardous chemicals found in the laboratory.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-828-20015, filed 3/18/14, effective 5/1/14. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-828-20015, filed 1/24/07, effective 4/1/07; WSR 06-02-060, § 296-828-20015, filed 1/3/06, effective 4/1/06.]

WAC 296-828-20020 Labeling and safety data sheets (SDSs).

You must:

• Make sure labels on incoming containers are not removed or defaced.

• Keep and make available to employees any SDS received with an incoming container of hazardous chemicals.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-828-20020, filed 3/18/14, effective 5/1/14. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 06-02-060, § 296-828-20020, filed 1/3/06, effective 4/1/06.]

WAC 296-828-20025 Chemicals produced in laboratories.

You must:

Follow Table 3 for chemical substances produced in your laboratory.

Table 3
Lab Produced Chemical Substance Requirements

If	Then
The chemical is a hazardous chemical	Follow all appropriate requirements of this chapter
A chemical by-product is produced and its composition is unknown	Assume it is a hazardous chemical AND Follow your chemical hygiene plan to protect employees
You produce chemicals in your laboratory for users outside the laboratory	Follow WAC 296-901-14014, Safety data sheets and WAC 296-901-14012, Labels and other forms of warning

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-828-20025, filed 3/18/14, effective 5/1/14. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 06-02-060, § 296-828-20025, filed 1/3/06, effective 4/1/06.]

WAC 296-828-20030 Medical evaluations.

IMPORTANT:

For any of the specific substances listed in Table 2 of the scope of this chapter, you need to follow the medical evaluation procedures found in the chapters regulating those substances if employee exposure routinely exceeds the AL or PEL. For all other employee exposures follow this section to determine medical evaluation procedures.

You must:

(1) Make medical evaluations available when:

• An employee develops signs or symptoms associated with a hazardous substance from laboratory exposure.

• Any emergency situation that could cause a hazardous exposure, such as a spill, leak, or explosion, occurs.

• A medical provider recommends a follow-up evaluation.

• Exposure monitoring for any of the substances found in Table 2 reveals exposures routinely over the action level (AL) or in the absence of an AL the permissible exposure level (PEL).

(2) Make sure medical evaluations are provided at reasonable times and places, and at no cost to employees.

Note: This includes travel costs and wages associated with any time spent obtaining the medical evaluation.

You must:

• Provide the LHCP the following information before the medical evaluation is performed:

– The name of the hazardous chemicals the employee may have been exposed to.

– Any signs or symptoms of exposure the employee has.

– A description of the conditions under which the exposure occurred.

– The exposure monitoring results for the conditions, if available.

• Obtain the LHCP's written opinion for each medical evaluation that includes the following:

– Recommendations for medical follow-up.

– Any medical conditions found that would increase the employee's risk for impairment from exposure to a hazardous chemical.

– A statement that the employee has been informed of exposure-related medical results and conditions that require further examination or treatment.

– A written opinion that does not contain any medical information unrelated to the employee's occupational exposures.

■ If the written opinion contains any medical information unrelated to occupational exposures, return it to the LHCP and obtain a revised version without the additional medical information.

Reference: • For additional requirements relating to employee medical records, go to chapter 296-802 WAC, Employee medical and exposure records.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-828-20030, filed 1/24/07, effective 4/1/07; WSR 06-02-060, § 296-828-20030, filed 1/3/06, effective 4/1/06.]

WAC 296-828-300 Definitions.

Action level

An airborne concentration of a hazardous substance that is calculated as an 8-hour time-weighted average, and initiates certain requirements to be followed such as exposure monitoring or medical surveillance.

Carcinogens see "select carcinogen"

Chemical hygiene officer

An employee designated by the employer who is qualified by training or experience to provide technical guidance in the development and implementation of the chemical hygiene plan. This definition is not intended to place limitations on the designated employee's position description or job classification within the employer's organization.

Chemical hygiene plan

A written program developed and implemented by the employer that establishes procedures, equipment, personal protective equipment, and work practices to protect employees from the health hazards of the chemicals used in the laboratory.

Container

Any container, except for pipes or piping systems that contains a hazardous substance. For example it can be any of the following:

• Barrel.

• Bottle.

• Can.
• Cylinder.
• Drum.
• Reaction vessel.
• Storage tank.

Day

Any part of a calendar day.

Designated representative

Any one of the following:

• Any individual or organization to which an employee gives written authorization.

• A recognized or certified collective bargaining agent without regard to written employee authorization.

• The legal representative of a deceased or legally incapacitated employee.

Emergency

Any event that could or does result in the unexpected, significant release of a hazardous substance. Examples of emergencies include equipment failure, container rupture, or control equipment failure.

Exposure

The contact an employee has with a hazardous substance, whether or not protection is provided by respirators or other personal protective equipment (PPE). Exposure can occur through various routes of entry such as inhalation, ingestion, skin contact, or skin absorption.

Hazardous chemical

Means any chemical which is classified as health hazard or simple asphyxiant in accordance with the Hazard Communication Standard, WAC 296-901-140.

Health hazard

Means a chemical that is classified as posing one of the following hazardous effects: Explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid, or gas); self-reactive; pyrophoric (gas, liquid, or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; in contact with water emits flammable gas; or combustible dust. The criteria for determining whether a chemical is classified as a physical hazard are in Appendix B of the Hazard Communication Standard, WAC 296-901-14024 and 296-901-14006 (definitions of "combustible dust" and "pyrophoric gas").

Laboratory

A facility where the "laboratory use of hazardous substances" takes place. A workplace where relatively small amounts of hazardous substances are used on a nonproduction basis.

Laboratory-type hood

A device located in a laboratory, enclosure on five sides with a moveable sash or fixed partial enclosed on the remaining side; constructed and maintained to draw air from the laboratory and to prevent or minimize the escape of air contaminants into the laboratory; and allows chemical manipulations to be conducted in the enclosure without insertion of any portion of the employee's body other than hands and arms.

Note: Walk-in hoods with adjustable sashes meet the above definition provided that the sashes are adjusted during use so that the airflow and the exhaust of air contaminants are not compromised and employees do not work inside the enclosure during the release of airborne hazardous substances.

Laboratory scale

Work with substances in which the containers used for reactions, transfers and other handling of the substances are designed to be easily and safely manipulated by one person. "Laboratory scale" **does not** include workplaces producing commercial quantities of materials.

Laboratory use

The handling or use of hazardous substances that includes **all** the following:

– Chemical manipulations conducted on a "laboratory scale."

– Multiple chemical procedures or chemicals are used.

– The procedures are not part of a production process, nor in any way simulate a production process.

– "Protective laboratory practices and equipment" are available and are commonly used to minimize the potential for employee exposures to hazardous substances.

Licensed health care professional (LHCP)

An individual whose legally permitted scope of practice allows him or her to provide some or all of the health care services required for medical evaluations.

Mutagen

Means chemicals that cause permanent changes in the amount or structure of the genetic material in a cell. Chemicals classified as mutagens in accordance with the Hazard Communication Standard, WAC 296-901-140 must be considered mutagens for purposes of this section.

Permissible exposure limits (PELs)

PELs are employee exposures to toxic substances or harmful physical agents that must not be exceeded. PELs are also specified in WISHA rules found in other chapters.

Physical hazard

Means a chemical that is classified as posing one of the following hazardous effects: Explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid, or gas); self-reactive; pyrophoric (gas, liquid, or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; in contact with water emits flammable gas; or combustible dust. The criteria for determining whether a chemical is classified as a physical hazard are in Appendix B of the Hazard Communication Standard, WAC 296-901-14024 and 296-901-14006 (definitions of "combustible dust" and "pyrophoric gas").

Protective laboratory practices and equipment

Laboratory procedures, practices, and equipment accepted by laboratory health and safety experts as effective, that can be shown to be effective, in minimizing the potential for employee exposure to hazardous substances.

Reproductive toxin

Mean chemicals that affect the reproductive capabilities including adverse effects on sexual function and fertility in adult males and females, as well as adverse effects on the development of the offspring. Chemicals classified as reproductive toxins in accordance with the Hazard Communication Standard, WAC 296-901-140 shall be considered reproductive toxins for purposes of this section.

Safety data sheet (SDS)

Written, printed, or electronic information (on paper, microfiche, or on-screen) that informs manufacturers, distributors, employers or employees about a hazardous substance, its hazards, and protective measures as required by safety

data sheet and label preparation, WAC 296-901-14012 and 296-901-14014.

Select carcinogen

Any substance meeting one of the following criteria:

– Regulated by WISHA as a carcinogen.

– Listed in the "known to be carcinogens" category in the latest edition of the Annual Report on Carcinogens by the National Toxicity Program (NTP).

– Listed in Group I (carcinogenic to humans) in the latest editions of the International Agency for Research on Cancer (IARC) Monographs.

– Listed in either group 2A or 2B by IARC **or** in the category "reasonably anticipated to be carcinogens" by the NTP, and causes statistically significant tumor incidence in experimental animals in accordance with any of the following criteria:

■ After an inhalation exposure of six to seven hours a day; five days a week; for a significant portion of a lifetime to dosages of less than 10 mg/m^3; **or**

■ After repeated skin application of less than 300 mg/kg of body weight per week; **or**

■ After oral dosages of less than 50 mg/kg of body weight per day.

Time-weighted average (TWA_8)

An exposure limit averaged over an 8-hour period that must not be exceeded during an employee's workday.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-828-300, filed 3/18/14, effective 5/1/14. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.-050, 49.17.060. WSR 07-03-163, § 296-828-300, filed 1/24/07, effective 4/1/07; WSR 06-02-060, § 296-828-300, filed 1/3/06, effective 4/1/06.]