



**WATER & SEWER
RISK MANAGEMENT POOL**



***CHEMICAL HYGIENE
SAFETY PROGRAM***

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The following safety related program is for informational purposes only. The SORT committee hopes that each participating district will look at this program and discuss how it compares to the district's own practices. This program is NOT a complete safety program, but intended as guidelines. There is no guarantee that following a given program will eliminate or substantially reduce the risk of claim or injuries. It is expected that member districts will consider this program and adapt or modify it to fit the district's particular needs and circumstances.

CHEMICAL HYGIENE SAFETY PROGRAM

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CHEMICAL HYGIENE SAFETY PROGRAM

PURPOSE / SCOPE

The purpose of the Chemical Hygiene Program (CHP) is to ensure that all employees who enter and work in any area where the district performs chemical analysis understand the potential hazards and the District's program for protecting them from those hazards to the greatest extent possible and to establish the requirements for working safely in such an environment.

This is intended to be a universal document that describes precautions and procedures that must be followed in all cases. Field management and staff will develop Standard Operating Procedures for work at specific sites and for specific work tasks, which will take into account all safety issues and will define the most effective methods of accomplishing the work objectives safely and efficiently.

All employees are encouraged to actively participate in identifying opportunities for applying engineering controls that would reduce the hazards of performing chemical analysis.

This safety program provides districts with the tools needed to develop a CHP. Districts that perform chemical analysis may be subject to the requirements of WAC 296-839. This regulation addresses the need for a written CHP, training requirements and hazard identification. A plan must be developed for each district based on the chemicals used and hazardous exposures created.

Policy Statement

It is the primary policy of the District to use engineering controls wherever practical to reduce or eliminate the need for employees to be exposed to hazardous chemicals. Where employees must work near or with hazardous chemicals, it is the policy of the District that the employees will comply fully with this Safety Program.

EXEMPTIONS / EXCLUSIONS

This program does not apply if:

- The hazardous chemicals used are not listed in WAC 296-828 table 2.
- Work area uses of hazardous chemicals, which provide no potential for employee exposure.

Examples:

- Procedures using chemically impregnated test media such as dip-and-read tests where a reagent strip is dipped into the specimen to be tested and the results are interpreted by comparing the color reaction to a color chart supplied by the manufacturer of the test strip.
- Commercially prepared kits such as those used in chlorine test kits in which all of the reagents needed to conduct the test are contained in the kit.

HAZARD ANALYSIS

Hazard Description

Chemicals present two kinds of hazards:

- Physical Hazards – sudden events such as fires, explosions and violent chemical reactions, which can be prevented by handling, using and storing chemicals properly.
- Health Hazards – illnesses, diseases and some kinds of injuries that may transpire when employees are exposed to unsafe levels of a substance and which can be prevented by controlling exposure. Health hazards can be acute or chronic.

Hazard Evaluation

Hazards can be at lift stations, well sites, treatment plants and sampling points. Anywhere the employee may be performing chemical tests. The hazard can also be in the areas of storage of the districts chemicals.

Methods of Evaluation

Hazards are evaluated by using the Material Safety Data Sheets (MSDS). Other information can be collected for use in determining the hazards of chemicals located at the district.

Exposure Determination

Initial monitoring: the employer must measure the employee's exposure to any substance regulated by a standard that requires monitoring. If there is reason to believe that exposure level for that substance routinely, exceed the action level (AL) or in the absence of an AL, the permissible exposure limit (PEL).

Periodic monitoring: If the initial monitoring discloses employee exposure over the AL or PEL, the employer must immediately comply with the exposure monitoring provisions of WAC 296-828-20030.

RESPONSIBILITIES

District

Monitoring results of any chemical must be reported to employees within 5 working days after the receipt of results. Notification to the employee of these results must be in writing (hand written or E-mail) either individually or by posting results in an appropriate location that is accessible to all affected employees. For additional requirements, refer to WAC 296-802.

The CHP must be readily available to employees, employee representatives and upon request to the director of the department of labor and industries.

Review and evaluate the effectiveness of the CHP at least annually and update it as necessary.

Provide employees with information and training to ensure that they are apprised of the hazards of chemicals present in their work area.

The CHP standards must be readily available to employees and their representatives.

Program Name

Ensure that labels on incoming containers of hazardous chemicals are not removed or defaced.

Establish and maintain for each employee an accurate record of any measurements taken to monitor employee exposures and any medical consultation and examinations including tests or written opinions required. Such records must be kept, transferred and made available upon any requests.

Medical evaluations must be provided at reasonable times and places and at no cost to employees, including travel costs and wages associated with any time spent obtaining the medical evaluation.

Designated Person or Safety Program Coordinator

Perform training when necessary.

Verify that all records are current and are being kept.

Managers

Assure that employees are following this program.

Employees

Any employee unsure of a procedure or operation must immediately review the procedure or operation with their immediate supervisor or designated person

Apply personal hygiene practices.

GUIDELINES/RULES

A written CHP must be:

- Capable of protecting employees from health hazards associated with hazardous chemicals in that work area.
- Capable of keeping exposures below the limits specified in WAC 296-62 Part H Air Contaminants – Table 1 LIMITS FOR AIR CONTAMINANTS

The CHP must include each of the following elements and must indicate specific measures that the employer will take to ensure employee protection:

- Standard operating procedures for safety and health considerations to be followed when work involves the use of hazardous chemicals.
- Criteria that the employer will use to determine and implement control measures to reduce employee exposure to hazardous chemicals including engineering controls, the use of personal protective equipment and hygiene practices. Particular attention must be given to the selection of control measures for chemicals that are known to be extremely hazardous.
- A requirement that fume hoods, glove boxes and other protective equipment are functioning properly and specific measures that must be taken to ensure proper and adequate performance of such equipment.
- Provisions for employee information and training.
- The circumstances under which a particular operation, procedure or activity must be required prior approval from the employer or the employer's designee before implementation.

Before a medical consultation or medical examination is performed the employer must provide the Licensed Health Care Professional (LHCP) the following information:

- Name of the hazardous chemicals the employee may have been exposed to.
- Any signs or symptoms of exposure to the employee.
- A description of the conditions under which the exposure transpired.
- The exposure monitoring results for the condition if available. The employer shall obtain the LHCP's written opinion that recommends for any 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 medical information unrelated to occupational exposures, return it to the LHCP and obtain a revised version without the additional medical information. More information can be obtained at WAC 296-802.
- Names or job titles of personnel responsible for implementation of the CHP including the assignment of a chemical hygiene officer and establishment of a chemical hygiene committee if needed.
- Provisions for additional employee protection for work with particularly hazardous substances. These include "select carcinogens," reproductive toxins and substances that have a high degree of acute toxicity.

Specific consideration must be given to the following provisions that must be included where appropriate.

- Establishment of a designated area.
- Procedures for safe removal of contaminated waste.
- Decontamination procedures

The following provisions must apply to chemical substances produced in the work area:

- The employer must determine if it is a hazardous chemical. If the chemical is determined to be hazardous, the employer must provide appropriate training as required under WAC 296-828-20025.
- If the chemical produced is a byproduct whose composition is not known, the employer must assume that the substance is hazardous and must implement a CHP.
- If the chemical substance is produced for another user outside of the work area, the employer must comply with the hazard communication standard (WAC 296-839) including the requirements for preparation of material safety data sheets and labeling.

If employee's exposure to any substances in table 2 (WAC 296-828-100) routinely exceeds the AL or PEL. Medical evaluations must be available when:

- An employee develops signs or symptoms associated with hazardous substance 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.

Program Name

Applicable SOPs

- Properly store the chemical when it is not in use.
- Properly disposal of chemical waste.
- Use proper methods of transporting chemicals.
- Be aware of appropriate procedures for emergencies, including first aid, evacuation routes and spill cleanup procedures.
- Avoid working alone on chemicals known to be hazardous.
- Individuals who are not properly trained in hazardous chemicals must not be allowed in close proximity of the chemicals without being supervised and monitored.
- Avoid inhalation of chemicals. Do not "sniff" to test chemicals.
- Do not use mouth suction to pipette anything. Proper equipment must be used at all times.
- Do not bring food (including gum and candy), beverages, tobacco or cosmetic products into chemicals storage or use areas. Eating, drinking and applying cosmetics are allowed in designated areas only.
- Wash well with soap and water before leaving the work area or touching your hands or fingers to your face area. If possible or necessary change cloths.
- Carefully inspect all protective equipment before use. Do not use defective equipment.
- Eye protection in the form of chemical-resistant goggles must be worn at all times in the work area. If an employee wears prescription glasses, goggles must be worn over the glasses.
- Consult with an optometrist before wearing contacts in the work area around chemicals.
- When working with corrosive, toxic, allergenic or sensitizing chemicals, rough or sharp-edged objects, very hot or cold materials, gloves made of material known to be protective for hazard must be worn.
- Low-heeled shoes with fully covered uppers must be worn at all times in the work area when around the chemicals. Shoes or sandals with open toes must not be worn.
- Long pants and garments with long sleeves must be worn when working with or around chemicals.
- Long hair must be held in place behind the head.
- Caution must be taken when wearing loose clothing not to inadvertently allow cuffs, sleeves or other materials to knock over or absorb chemicals.
- A full body length rubber, plastic or neoprene apron appropriate for the chemical being handled must be worn.
- A proper respirator must be worn whenever exposure by inhalation is likely to exceed the AL or PEL and a fume hood is not accessible. Remove all PPE before leaving the work area.
- All work areas, especially bench tops, must be kept clear of clutter. Lack of good housekeeping reduces work efficiency and may result in accidents.
- Access to emergency equipment, showers, eyewashes, fire extinguisher, exits and circuit breakers must never be blocked or obstructed.
- Chemical containers must be regularly monitored for proper labeling and container integrity. Labels that are fading, falling off or deteriorating must be promptly replaced.
- Segregate all chemicals in storage according to hazard class.

The following guidelines must be followed for procedures involving acids and bases:

- Never pour water into acid. Slowly add the acid to the water and stir.
- Open containers slowly and carefully, wearing protective equipment to guard hands, face and body.
- Never mix acid wastes with other materials such as solvents, metal contaminated solutions, etc. Non-contaminated acid wastes can be easily disposed by neutralization. Never dispose of acids or bases in the sanitary sewer system (i.e., down the drain) until neutralized (pH 5.5-8.5). Neutralization should be conducted in a fume hood. Then the solution poured slowly down the drain with large amounts of water.

Required PPE

Gloves

Eye protection

Aprons

Fume hoods

Respirators (in very hazardous chemical presence)

Prevention Actions

Ventilation is normally designed to provide eight air changes per hour. Exposure monitoring must be performed when there is reason to believe that exposures are more than the AL or the PEL.

Work areas where chemicals are used must have large quantities of supplies and equipment to deal with spills. These supplies must include neutralizing agents (such as sodium carbonate or sodium bisulfate) and absorbents (such as vermiculite and sand). Paper towels and sponges may be used as absorbent type cleanup aids, although this must be done cautiously. For example, paper towels used to clean up a spilled oxidizer may later ignite.

EMERGENCY PROCEDURES

If a spill occurs:

- Attend to anyone who may be hurt or contaminated if it can be accomplished without endangering yourself.
- If flammable materials are spilled, de-energize electrical/gas devices.
- Call 911 if the spill is large or is of a very hazardous in nature.
- Ensure the fume hood is on. Open windows or doors where possible to increase exhaust ventilation.
- Secure cleanup supplies or appropriate spill kit. Neutralize acids and bases, if possible.
- Control the spread of the spill. Refer to MSDS on disposal and cleanup. Use absorbent materials from the spill's outer edges towards the center.
- Use scooping devices to collect and cleanup residues and place in a plastic bucket or other appropriate container.
- Properly dispose of the waste as hazardous waste.
- Decontaminate the area and affective equipment.
- Document what happen, why and what was learned. Such documentation can be used to avoid similar instances in the future. Remember that major incidents are usually preceded by numerous near misses.

Program Name

First Aid Awareness and Actions

Use basic first aid skills and spill procedures.

FORMS USED

N/A

TRAINING

Chemical hygiene information and training must be provided at the time of an employee's initial assignment to a work area where hazardous chemicals are present and prior to assignments involving new exposure situations. The employer must determine the frequency of refresher information and training.

Required Materials

Employee Training

Employee training must include:

- The contents of the WAC standards.
- The location and availability of the employer's CHP.
- The permissible exposure limits for WISHA regulated substances (WAC 296-841) or recommended exposure limits for other hazardous chemicals where there is no applicable WISHA standard.
- The physical and health hazards as well as the signs and symptoms associated with exposures to hazardous chemicals used in the work area.
- The location and availability of known reference material on the hazards, safe handling, storage and disposal of hazardous chemicals found in the work area including, but not limited to, material safety data sheets received from the chemical supplier.
- Methods and observations that may be used to detect the presence or release of a hazardous chemical.
- The measures employees can take to protect themselves from these hazards. Including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures and personal protective equipment.
- The applicable details of the employer's written CHP.

Supervisor Training

N/A

Outline: [x] – hour class

REFERENCES/RESOURCES

PEL's and exposure limits not in the WISHA rules can be found in the National Institute of Occupational Safety and Health (NIOSH) pocket guide to chemical hazards 2004 or the American Conference of Governmental Industrial Hygienist (ACGIH) documentation of the threshold limit values (TLV's) and Biological Exposure Indices (BEI's), 7th edition.

REVISION RECORD

Revision No.	Revision Date	Approval Date	Change
1.0.0	08-09-07		Initial design.
2.0.0	11-09-09		

APPROVALS

Safety Committee Chairperson	Date	General Manager	Date
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DEFINITIONS

Action level – an airborne concentration of a hazardous substance that is calculated as an 8 hour time-weighted average, which initiates certain required activities such as exposure monitoring and medical surveillance.

Chemical hygiene officer – an employee designated by the employer, and who is qualified by training or experience, to provide technical guidance in the development and implementation of the provisions of the CHP. This definition is not intended to place limitations on the position description or job classification that the designated individual must hold within the employer's organizational structure.

Chemical hygiene plan – a written program developed and implemented by the employer that establishes procedures, equipment needed for operations, PPE and work practices to protect employees from the health hazards of the chemicals used in the workplace.

Designated area – an area that may be used for work with select carcinogens, reproductive toxins or substances that have a high degree of acute toxicity. A designated area may be the entire laboratory or a device such as a laboratory hood.

Emergency – any unexpected occurrence such as, but not limited to, equipment failure, ruptures of containers or failure of control equipment which results in an uncontrolled significant release of a hazardous chemical into the workplace.

Employee – an individual employed in a laboratory workplace that may be exposed to hazardous chemicals in the course of their duties.

Program Name

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

Hazardous chemical – a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term “health hazard” includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sanitizers, neurotoxins, agents which act on the hematopoietic systems and agents which damage the lungs, skin, eyes or mucous membranes.

Laboratory – an area where the use of hazardous chemicals occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a no production basis.

Laboratory-type hood – a device located in a laboratory enclosure on five sides with a movable sash or fixed partial enclosed on the remaining side; constructed and maintained to draw air from the laboratory and to prevent or minimize 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.

Laboratory use of hazardous chemicals – handling or use of such chemicals in which all of the following conditions are met:

- Chemical manipulations are carried out on a laboratory scale.
- Multiple chemical procedures or chemicals are used.
- The procedures involved are not part of a production process, nor in any way simulate a production process.
- Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

Licensed Health Care Professional (LHCP) – an individual whose legally permitted scope of practice allows them to provide some or all of the healthcare services required for medical evaluations.

Oxidizer – a chemical other than blasting agent or explosive as defined in WAC 296-52-417, which initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

Permissible exposure limit (PEL) – for laboratory uses of WISHA regulated substances, the employer must assure that laboratory employee’s exposures to such substances do not exceed the permissible exposure limits specified in WAC 296-62-075.

Physical hazard – as used in employer chemical hazard communication, WAC 296-800-170 means a chemical for which there is scientifically valid evidence that it is combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water reactive.

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

Select carcinogen – any substance that meets 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 published by the National Toxicology Program (NTP).
- Listed under Group 1 (“carcinogenic to humans”) in the latest editions of the International Agency for Research on Cancer Monographs (IARC).
- Listed in either Group 2A or 2B by IARC or under 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 inhalation exposure of 6-7 hours per day, 5 days per week, for a significant portion of a lifetime to dosages of less than 10 mg/m³.
 - After repeated skin applications of less than 300 (mg/kg of body weight) per week.
 - After oral dosages of less than 50 mg/kg of body weight per day.

Time weighted average (TWA) – an exposure limit averaged over an 8 hour period that must not be exceeded during an employee’s workday.

Unstable (reactive) – a chemical that is the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self reactive under conditions of shock, pressure, or temperature.

Water reactive – a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

ANNEX

N/A

APPENDIX

Sample Forms

N/A

WAC/RCW

WAC 296-800-170 employee chemical hazard communication introduction
 WAC 296-828-100 scope (table 2)
 WAC 296-828-200 using hazardous chemicals in laboratories
 WAC 296-828-20005 chemical hygiene plan
 WAC 296-828-20010 exposure evaluation
 WAC 296-828-20020 labeling and material safety data sheets (MSDS)
 WAC 296-828-20025 chemicals produced in laboratories
 WAC 296-828-20030 medical evaluations
 WAC 296-828-300 definitions
 WAC 296-841 air borne contaminants