April 11, 2016

To: Dean Van Galen, Chancellor
116 North Hall
University of Wisconsin-River Falls

From: James Graham, Chair
Faculty Senate
University of Wisconsin-River Falls

Re: UWRF Faculty Senate Motion 2015-16/68

The following motion was approved unanimously by the Faculty Senate on April 6, 2016:

1. A motion from the Executive Committee to approve changes to the Chemical Hygiene Plan.

✓ Approved

Disapproved

Dean Van Galen, Chancellor 4/13/16
Chemical Hygiene Plan

UPDATE – March 16, 2016
Chemical Hygiene Plan
UW-River Falls

I. Purpose
A. The purpose of this plan for the University of Wisconsin-River Falls is:
   1. To protect laboratory employees and students from health hazards associated
      with the use of hazardous chemicals in our laboratories; and
   2. To assure that our laboratory employees and students are not exposed to
      substances in excess of the permissible exposure limits (PEL’s) as defined by
      the Occupational Safety and Health Administration (OSHA) and outlined in
      29 CFR 1910.1000, Table Z-1 and adopted by reference per the State of
      Wisconsin Administrative Codes (SPS 332).
   3. To assist our laboratories’ regulatory compliance with the OSHA Laboratory

B. This plan will be available to all employees and students for review, and a copy
   will be located in the following areas:
   1. Chemistry Department Office, 253 Centennial Science Hall
   2. Biology Department Office, 414 Agricultural Science Hall
   3. Plant and Earth Science Office, 324 Agricultural Science Hall
   4. Animal and Food Science Office, 242 Food Science Addition
   5. Risk Management Office, 25 North Hall
   6. Online at:
      http://www.uwrf.edu/Administration/Policy/Administration/Administrative/C
      hemical-Hygiene-Plan.cfm

C. Non-emergency and emergency contact information for individuals responsible
   for elements of this plan are:
   - Dustin Andert (Chemical Hygiene Officer)
     Centennial Science Hall #260
     Chemistry Office: 715-425-3523
     Dustin’s Office: 715-425-4016
     Cell: 651-373-0726
   - Connie Smith (Risk Manager)
     North Hall #25H
     Office: 715-425-3344
     Cell: 651-271-7953

D. This plan will be reviewed at least annually and updated as necessary by the
   Chemical Hygiene Committee.
II. Definitions

Action Level
A concentration designated in 29 CFR part 1910 for a specific substance, calculated as an eight (8)-hour time-weighted average (TWA), which initiates certain required activities such as exposure monitoring and medical surveillance.

Ceiling Limits
An airborne concentration of a toxic substance in the work environment, which should never be exceeded.

Chemical Hygiene Committee
The Chemical Hygiene Committee is responsible for setting campus policy regarding laboratory safety, within the scope of this Chemical Hygiene Plan. The Chemical Hygiene Committee will meet periodically and discuss new Laboratory Safety/Chemical Hygiene issues and any program items that may arise. The Chemical Hygiene Committee will offer comments to the Chemical Hygiene Officer regarding program improvements and suggestions and participate in laboratory safety inspections with other campus representatives. Important responsibilities are to annually review the chemical hygiene plan (or more often if necessary), provide support to the Chemical Hygiene Officer, and communicate results back to the department faculty and staff. Department representatives on the committee will include but are not limited to Biology, Chemistry, Plant and Earth Science, Animal and Food Science and Risk Management.

IDLH - Immediately Dangerous to Life and Health.
An atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

Laboratory - Laboratory means a facility (including general and private research areas) where the "laboratory use of hazardous chemicals" occurs. It is an area where relatively small quantities of hazardous chemicals are used on a non-production basis.

SDS - Material Safety Data Sheet
A material safety data sheet (SDS) is a document containing data regarding the properties of a particular substance. An important component of product stewardship and workplace safety, it is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner, and includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill handling procedures.

PEL – Permissible Exposure Limit
The Permissible Exposure Limit (PEL) is a legal limit in the United States for exposure of an employee to a substance or physical agent. For substances it is usually expressed in parts per million (ppm), or sometimes in milligrams per
cubic meter (mg/m³). Permissible Exposure Limits are established by the Occupational Safety and Health Administration (OSHA).

A PEL may be expressed as a time-weighted average (TWA). A TWA is the average exposure over a specified period of time, usually a nominal eight hours. This means that, for limited periods, a worker may be exposed to concentrations higher than the PEL, so long as the average concentration over eight hours remains lower.

Peroxide Forming Chemical
Peroxide-forming chemicals are a class of compounds that have the ability to form shock-sensitive explosive peroxide crystals. The risk associated with peroxide formation increases if the peroxide crystallizes or becomes concentrated by evaporation or distillation. Factors that affect rate of peroxide formation include exposure to air, light and heat, moisture, and contamination from metals. Peroxide forming chemicals on the UWRF campus have been identified and inventoried by department. A list can be found at the link on the policy web page.

PHS – Particularly Hazardous Substance
PHS’s are, according to OSHA, select carcinogens, reproductive toxins, or substances that have a high degree of acute toxicity. The OSHA requirements for working with PHS’s are more a matter of degree than a clear-cut differentiation from other substances. Risk assessments must always be done. The Laboratory Standard simply requires that higher risk materials be identified and mandates that extra precautions be used, if appropriate. Additional detail regarding PHS’s is included in Appendix D, along with a sample “Prior Approval Form”. UWRF utilizes the list of PHS’s as identified by Duke University. Access to the list can be found at: http://www.safety.duke.edu/OHS/phs.htm. PHS’s on the UWRF campus have been identified and inventoried by department. A list can be found at the following link: A list can be found at the link on the policy web page.

Secondary Container
“Secondary Container” is defined as any container being used beyond the original manufacturer’s bottle that the chemical was shipped in. This may include, but is not limited to:

- Portable or working containers, such as flasks, beakers or small storage bottles in “immediate” use.
- Storage bottles that are created for distribution of smaller amounts of the chemical to students or colleagues.
- Storage bottles that are created for solutions of the original chemical.
- Sample vials or sealable tubes.

STEL - Short Term Exposure Limit
A Short Term Exposure Limit (STEL) is one that addresses the average exposure over a 15 minute period of maximum exposure during a single work shift.
A Ceiling Limit is one that may not be exceeded, and is applied to irritants and other materials that have immediate effects.

**TLV – Threshold Limit Value**
The Threshold Limit Value (TLV) of a chemical substance is a level to which it is believed a worker can be exposed day after day for a working lifetime without adverse health effects. Strictly speaking, TLV is a reserved term of the American Conference of Governmental Industrial Hygienists (ACGIH). TLVs are published annually by the ACGIH.

There may be some substances that do not have an exposure limit specified in the OSHA standards. For those substances, exposure limits shall comply with the recommendations of the ACGIH.

Although TLV levels are often recommended, OSHA will sometimes use TLV values to set the PEL. Employees should strive for exposure limits of the lesser of the TLV or PEL.

**III. Basic Rules, Procedures, and Responsibilities**
A. Specific standard operating procedures for UWRF laboratories are available in Appendix A.

B. Dustin Andert, Chemistry Laboratory Manager, will act as the campus **Chemical Hygiene Officer** (CHO) and have the responsibility to see that this Chemical Hygiene Plan is implemented, followed and maintained. The Chemical Hygiene Officer, in consultation with the appropriate Department Chair, shall have the authority to suspend laboratory operations - in part, or in the whole - if deficiencies in laboratory procedures or equipment pose a significant threat to the safety of the faculty, employees, or students.

If suspension of laboratory operations is necessary, a written report will be filed with the Provost, the Risk Management Officer, and the Department Chair within 24 hours. A copy of the report with a written description of remedial actions taken to allow resumption of operations will be available in the Provost and Department Chair offices.

In addition the CHO will have the following responsibilities:
1. Participate in the annual review and update of the Chemical Hygiene Plan.
2. Assure maintenance of records of:
   a. laboratory inspections
   b. air monitoring
   c. medical consultation
   d. accident/incident reports
3. Provide examining physician necessary information when a medical consultation is required.
C. Each affected department will designate a **Chemical Hygiene Representative** who has primary departmental responsibility for the implementation and maintenance of this plan in his or her department. Along with the Chemical Hygiene Officer, the department representatives will form the membership of the Chemical Hygiene Committee and will meet at least annually to review the plan and address any updates or concerns. The Risk Management Officer will call the meetings and facilitate discussion/actions.

D. **Laboratory instructors and Research Supervisors** have the responsibility to maintain safe standard operating procedures and maintain or revise the procedures as necessary or needed. In addition, instructors/supervisors have the following responsibilities:
   1. Provide student and/or assistant training as described in the Chemical Hygiene Plan. Documentation of student and/or assistant training will be maintained by the instructor/supervisor.
   2. Report malfunction of safety equipment to the Chemical Hygiene Officer.
   3. Promptly file an accident/incident report with the Chemical Hygiene Officer if an accident or spill should occur.
   4. Suspend laboratory operations if ventilation or other laboratory safety measures are judged to be inadequate for the procedure being conducted.
   5. Arrange for disposal of “legacy chemicals” that are no longer needed for research. Legacy chemicals include but are not limited to commercial chemicals specifically brought in for a particular research project or synthetic compounds that are created during research.

E. The **Risk Management Officer** has the responsibility to:
   1. Facilitate an annual review and update of the Chemical Hygiene Plan. (More often if necessary.)
   2. Conduct annual lab inspections and send results to the Chemical Hygiene Officer.
   3. Conduct air quality monitoring in laboratories when requested. Results of air quality monitoring will be sent to the Chemical Hygiene Officer.
   4. Provide training if requested.
   5. Assist in proper disposal of hazardous waste.

F. **Laboratory Managers** (or chemical hygiene representative in departments that have no lab manager) are responsible for chemical hygiene in the laboratory. They must ensure that:
   1. Communication occurs with the Department Chair in order to assure Employees/Faculty know and follow the chemical hygiene rules.
   2. PPE and other protective equipment is available and in working order.
   3. Appropriate information and training have been provided, including all PPE training.
   4. Requests for information or action are satisfied promptly.
The responsibilities of laboratory managers also include:

1. Provide regular, formal chemical hygiene inspections of their facilities and equipment;
2. Be familiar with OSHA 1910.1450 (Lab Standard); 1910.1200 (Hazard Communication Standard); and the University policy on hazardous waste management and other pertinent documents as they are necessary. Conduct each operation in accordance with UWRF chemical hygiene procedures and for developing good personal chemical hygiene habits.
3. Maintain teaching laboratory and stock room chemical inventories. This inventory will be updated annually.
4. Maintain inventories using safe storage methods. Detail on safe storage for chemicals is available through the Center for Disease Control at the following link: http://www.cdc.gov/ChemicalStorageGuidelines.htm
5. Ensure that all containers are correctly labeled.
6. Maintain SDS files on all chemicals in the inventory.
7. Appropriately dispose of hazardous wastes generated in the laboratories.
8. Conduct weekly eyewash station flushes in their department.

G. While students are not specifically covered under the provisions of the OSHA Laboratory Standard, Wisconsin SPS 332 incorporates the Laboratory Standard “to all places of employment and public buildings of a public employer” in the state of Wisconsin. Students must be made aware of chemical health and safety hazards in classroom situations and be provided with information and equipment to protect themselves from those hazards. Departments will provide student training at the beginning of each course in which hazardous chemicals are used. Specific safety instructions should be provided at the beginning of each class period.

H. Facilities maintenance personnel will conduct regular fume hood inspections and oversee the annual maintenance of eyewash stations and laboratory safety showers. They are also responsible for coordinating annual fire extinguisher inspections.

IV. Control Measures to Reduce Exposures to Hazardous Chemicals

A. For laboratory uses of hazardous substances, departments must ensure that laboratory employees' exposures to such substances do not exceed the PEL requirements of 29 CFR 1910.1000, July 1, 1992 as specified in the State of Wisconsin Administrative Code SPS 332.

B. If it is impossible to eliminate the hazard, exposure to hazardous materials should be minimized to the greatest extent feasible by use of other controls. These controls include the following:
   - Restricting access and signage
   - Adequate ventilation
   - Use of personal protection equipment (PPE)
   - Labels on hazardous materials
• Procurement, Storage and Handling
• Additional Safety Equipment

1. Restricting Access and Signage
   a) Facilities placarded with any of the following or similar warning signs are to be regarded as restricted access areas:
      • CAUTION - BIOHAZARD
      • CAUTION - CARCINOGENS, REPRODUCTIVE TOXINS, OR OTHER EXTREMELY TOXIC CHEMICALS
      • CAUTION – HIGH MAGNETIC FIELD
      • CAUTION - LASER
      • CAUTION - RADIOACTIVE MATERIAL
      • CAUTION - RADIATION AREA
      • CAUTION - X-RAY
   Such areas are not to be entered except by authorized users of the facility and those having permission from authorized users. Children are never permitted in restricted access areas per UWRF Administrative Policy AP-01-117.

   b) Custodians are permitted to enter restricted areas to perform routine tasks; however, custodians should not touch containers of chemicals (including waste) or other research equipment or materials. Custodians will receive training on hazards in the area as well as procedures for reporting non-emergency concerns and procedures for emergency events.

   c) Appropriate signage will be placed on laboratory doors/entryways, in laboratory areas, and in chemical storage areas. Signage will include:
      1) Emergency Response Procedures
      2) Emergency Phone Number (911)
      3) Name and phone number of person(s) responsible for the lab or storage area.
      4) Notification of any particular potential hazards such as oxidizer, flammable, ionizing radiation, etc.

2. Adequate Ventilation
   a) Adequate ventilation is essential for maintaining safe levels of exposure. It is the responsibility of the instructor or laboratory manager to discontinue laboratory operations if ventilation is judged to be inadequate for any reason, such as equipment breakdown, unusual odors, or accidental spillage.

   b) Fume hoods will be used for all operations which have the potential to produce gases, vapors or fumes exceeding the PEL or TLV as defined in IV. A. Fume hoods shall not be used as chemical storage areas. Storing materials in fume hoods reduces their efficiency, and could lead to
inadvertent mixing of incompatible chemicals. Where such use is necessary, it shall be designated as storage area, not for operations and will be posted as such.

c) Fume hoods will be inspected at a minimum of once a year by maintenance personnel. Copies of fume hood inspections will be kept on file as a part of the preventive maintenance database in Facilities Management. Warnings will be posted and repairs made as needed and as soon as possible.

d) Air quality monitoring will be performed if faculty or lab managers report a condition which might lead to excessive exposure levels. Risk Management will coordinate monitoring. The results of monitoring will be kept by Risk Management for the duration of affected employees employment plus 30 years. The Chemical Hygiene Officer will communicate air quality testing results to the Department Chair within 15 days of receipt of the results. The Department Chair will communicate with department personnel as appropriate.

3. Use of Personal Protection Equipment (PPE)
   a) Personal protection involves the use of protective clothing to protect various parts of the body. Eye and face injuries are prevented by the use of the following:
      • safety glasses with side shields for dust and flying object hazards
      • splash-proof goggles for chemical splash, spray and mist hazards
      • full-face and neck shields for head and neck protection from various hazards

      Splash-proof goggles provide superior protection against dust, flying objects, and splash, spray and mist hazards. They should be the first choice for primary eye protection.

      Cover all unprotected skin surfaces. Do not wear open-toe shoes, sandals, shorts, etc. in a chemical laboratory.

      When there is a chance of skin contact with a substance which has a hazard of acute dermal toxicity, skin corrosion, irritation, sensitization, mutagenicity, carcinogenicity, or reproductive toxicity, or which exhibits target organ systemic toxicity which might result from skin exposure, then impervious protective equipment must be utilized as appropriate to prevent skin contamination. Examples include:

      • protective gloves
        (vinyl, nitrile)
      • rubberized suits
      • rubber boots
      • special protective equipment

      Protective garments are not equally effective for every hazardous chemical. Some chemicals will "break through" the garment in a very
short time; therefore, garment selection is based on the specific chemical utilized.

For questions or reference needs, the UW System has excellent reference materials to refer to when making effective PPE choices. https://www.wisconsin.edu/ehs/osh/ppe/

b) Respirators may only be worn when engineering controls cannot keep exposure to chemicals below PELs. Employees may not wear a respirator until they have completed required elements of the UWRF Respiratory Protection Program. Risk Management has oversight for this program and can be contacted for additional information.

4. Labels on Hazardous Material
   a) Vendors have the primary responsibility in labeling containers of hazardous chemicals. Labels on incoming containers of hazardous chemicals should not be removed or defaced. However, UWRF is responsible for labeling secondary containers. To maintain a basic level of safety, UWRF requires that all chemicals in hazardous material areas be clearly labeled. This even applies to commonplace materials (e.g., water) when they are used in hazardous materials areas.
      i. Labels should be checked regularly to assure they have not become defaced with use. Protective tape can be applied over the label to help protect it when necessary.
      ii. If “unknowns” are used in the laboratory for educational purposes they must be labeled with an identifier that can be cross referenced with proper names of the chemical or substance.

b) Waste containers shall have the contents, accumulation start date, and generators name and department listed on its label in addition to the words "Hazardous Waste." Additional information which will aid in proper waste disposal should also be included on the label if known such as “Hazardous Waste – acid” or “Hazardous Waste – solvent”.

5. Procurement, Storage and Handling
   a) Before a substance is received, information on proper handling, storage, and disposal should be known to those who will be involved in its use. No container should be accepted without an adequate identifying label. The package should also be inspected for leaks or damage. The SDS file should be checked to see if there is a current document on file. If there is not, follow up with the manufacturer/distributor needs to occur in order to get the most up-to-date version of the SDS.
b) Stockrooms and storerooms will be organized so that hazardous substances are segregated and stored in secondary containment where appropriate. Stored chemicals should be examined periodically (at least annually) for replacement, deterioration, and container integrity.

c) Amounts of chemicals stored should be as small as practical. Storage on bench tops and in hoods is not advised. Exposure to heat and sunlight should be avoided. Periodic inventories should be conducted, with unneeded items being appropriately disposed of or returned to the stock room.

d) When chemicals are hand carried, individuals are required to follow the UWRF policy entitled “Transporting Chemicals and other Hazardous Items Safely on the UWRF Campus” (See Appendix B).

6. Additional Safety Equipment
a) Fire Extinguishers - Facilities Management coordinates annual fire extinguisher inspections. All faculty/staff are required to maintain clear access and visibility of fire extinguishers.

b) Eye Wash Stations - Eye wash stations and emergency showers shall be available in areas where the eyes or body of a person may be exposed to injurious materials. Eye wash and emergency showers shall be in an accessible location that requires no more than 10 seconds to reach and shall be identified with highly visible signage per American National Standards Institute (ANSI) Z358.1-2014. Eye wash stations shall be flushed weekly for at least 3 minutes by designated department personnel who will also be responsible for documenting the effort. Emergency showers shall be checked by Facilities staff with maintenance documented within the preventative maintenance online system. Employees will be instructed on the location and proper use of eye wash and emergency showers.

c) Fire Blankets - Fire blankets are available in selected labs where potential for fires exists due to use of solvents and other flammables.

7. Operations, Procedures or Activities Requiring Prior Approval
The university requires that each faculty member or research Principal Investigator review all operations involving laboratory use of hazardous chemicals. Whenever possible the hazard should be eliminated or substitution of a hazardous chemical or procedure with a substance or process with lower inherent risk should be undertaken. Additionally, control measures commensurate with the risk must be implemented. Control measures include engineering controls (such as fume hoods, glove boxes, intrinsically safe hot plates, etc.), administrative controls (such as policies against working alone or other laboratory policies), and personal protective equipment (gloves, eye protection, respirators, etc.).
Prior approval will be obtained from the Department Chair or their representative for laboratory activities which present specific, foreseeable hazards to employees and students. Such activities include off-hours work, sole occupancy of building, PHS operations and unattended operations.

a) Unattended Operations -- Procedures carried out continuously or overnight must be planned carefully to avoid hazards from mishaps such as utility failure or failure of cooling water supplies. Arrangements for routine inspections should be made, and in all cases, laboratory lights should be left on and appropriate signs posted warning of the operation.

b) Working Alone -- It is prudent to avoid working in the laboratory alone. Under normal conditions, arrangements should be made between individuals working in separate laboratories outside of working hours to cross check periodically. Experiments known to be particularly hazardous should never be undertaken by a worker alone in the laboratory. Guidance documents for working alone can be found on the UW System website at: https://www.wisconsin.edu/ehs/osh/working-alone/

c) The responsibility for approval of the acquisition and use of PHS’s rests with the laboratory supervisor in consultation with the Department Chair.

i. Permission to purchase and use these chemicals will be obtained in advance from the Department Chair. Consultation with the CHO regarding procedures to address all precautions as outlined in this plan are prudent and highly recommended before permission is granted.

ii. Standard Operating Procedures (SOP’s) for PHS’s will be written in advance of working with the chemical. A fillable form for SOP’s can be found at the link on the policy web page.

iii. Quantities of these chemicals used or stored in the laboratory and chemical storage areas should be minimized, as should their concentrations in solution or mixtures. Work with carcinogens, reproductive toxins and acutely toxic chemicals should be performed within a functioning fume hood, ventilated glove box, sealed system, or other system designed to minimize exposure to these substances. These protective devices as well as essential personal protective equipment must be researched, purchased and in place in advance of or at the same time as the arrival of the chemical. Compressed gas cylinders that contain PHS’s,
such as arsine and nitrogen dioxide, should be kept in ventilated gas cabinets.

iv. Each laboratory utilizing these substances must designate an area for this purpose and sign or mark this area with an appropriate hazard warning. The designated area may be an entire laboratory, an area of the laboratory, or a device such as a fume hood or glove box. The designated area should be marked with a sign stating "DANGER, specific agent, AUTHORIZED PERSONNEL ONLY" or comparable warning sign.

v. Detection equipment may be required in laboratories where acutely toxic gases or volatile liquids are used. See Appendix D for a discussion of acute toxicity.

vi. All wastes contaminated with these substances should be collected and disposed of promptly as outlined in the Hazardous Waste Management Plan.

vii. Treatment of waste products to lessen or eliminate their toxicity as part of the experimental protocol is encouraged as a way of minimizing health hazards and the amount of waste, only if such treatment can be performed safely.

viii. The designated working area shall be thoroughly decontaminated and cleaned at regular intervals determined by the laboratory supervisor. The interval may be as short as one day or as long as six months depending upon the frequency of usage and level of hazard.

ix. Special precautions to avoid release and exposure to PHS’s must be utilized.

x. Emergency response planning for releases or spills should be prepared by the laboratory supervisor and included in the training of the laboratory workers and others who may be affected in the building.

V. Safety Data Sheets (SDS’s)

Safety Data Sheets are available online at http://www.uwrf.edu/RiskManagement/MaterialSafetyDataSheet.cfm
VI. Medical Program

A. Departments must provide all employees who work with hazardous chemicals an opportunity to receive medical attention, including any follow-up examinations which the examining physician determines to be necessary, under the following circumstances:

1. Whenever an employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the laboratory, the employee must be provided an opportunity to receive an appropriate examination.

2. Where exposure monitoring reveals an exposure level routinely above the action level (or in the absence of an action level, the PEL) for an OSHA regulated substance for which there are exposure monitoring and medical surveillance requirements, medical surveillance shall be established for the affected employee as prescribed by the particular standard.

3. Whenever an event takes place in the work area such as a spill, leak, explosion or other occurrence resulting in the likelihood of a hazardous exposure, the affected employee shall be provided an opportunity for a medical consultation. Such consultations shall be for the purpose of determining the need for a medical examination.

All medical examinations and consultations must be performed by or under the direct supervision of a licensed physician and must be provided without cost to the employee, without loss of pay and at a reasonable time and place.

B. The Chemical Hygiene Officer shall provide the examining physician the following information:
   a. Identity of the hazardous chemical to which the employee may have been exposed,
   b. A description of the conditions of exposure including exposure date if available,
   c. A description of the signs and symptoms of exposure, if any, that the employee is experiencing, and
   d. A copy of the relevant SDS.

C. The employer shall request a written opinion from the physician including:
   a. Recommendations for future medical follow-up,
   b. Results of examination and associated tests,
   c. Any medical condition revealed which may place the employee at increased risk as the result of chemical exposure, and
   d. A statement that the employee has been informed by the physician of the results of the examination or consultation and told of any medical conditions that may require additional examination or treatment.
   e. The material returned by the physician shall not include specific findings and/or diagnoses which are unrelated to occupational exposure.
D. The Chemical Hygiene Officer has the responsibility to work with Human Resources to maintain a file concerning any events and resultant medical examinations or consultations.

VII. Hazardous Waste Spills and Disposal
All spills and waste generated in campus laboratories must be managed in accordance with policies found in the UWRF Hazardous Waste Management Program.

VIII. Employee and Student Training
Laboratory employees, student laboratory assistants, other university affected employees shall receive appropriate training on this policy.
Training sessions will be documented and kept on file by the department.
Employees must have completed standard Hazard Communication training prior to attending Laboratory Safety Training.

Training will include the following, where applicable:
1. Information and training on the hazards of the chemicals present in the labs.
3. The contents, availability, and location of the written UWRF Chemical Hygiene Plan.
4. Information concerning the OSHA 1910.1000, July 1, 1992 edition permissible exposure limits including discussion of the meaning of all terms, significance of exposure, and location of copies of the exposure limits.
5. Signs and symptoms associated with exposure to applicable hazardous chemicals (usually on SDS).
6. Location of reference materials including Safety Data Sheets for chemicals in the laboratories.
7. Methods and observations that may be used to detect the presence or release of a hazardous chemical (such as monitoring conducted by the employer, visual appearance or odor of hazardous chemicals, odor thresholds, etc.)
8. Information concerning the physical and health hazards of the chemicals in laboratory work areas.
9. Information about the storage, use, and disposal of hazardous and non-hazardous chemicals in the work area.
10. The measures employees can take to protect themselves from chemical hazards; including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, engineering controls, standard operating procedures, and personal protective equipment.
11. Other information as deemed necessary.
Campus staff from other work departments must be informed by the responsible department of any special hazards to which they might be exposed while working temporarily in the laboratory. This must be coordinated in combination with Facilities Maintenance and the Department. Staff performing routine cleaning in labs must also be informed by the department of any unusual hazards.

IX. Contractor Information
Contractors working in labs are to be provided information by the University as to hazards specific to each of their work areas. Facilities Maintenance will inform the department Chair of any contractor work scheduled in a lab. The department Chair will inform the CHO when such work is to be performed. The CHO or designee will then arrange for temporary removal of the hazardous items or work with the Risk Management Officer to schedule the necessary site-specific training or information as necessary to the contractor in coordination with Facilities Maintenance.

APPENDIX A – Standard Laboratory Operating Procedures
1. Accidents and Spills
A. Eye Contact: Promptly flush eyes with water for a prolonged period (15 minutes) and seek medical attention.
B. Ingestion: Follow directions on Safety Data Sheet (SDS)
C. Skin Contact: Promptly flush the affected area with water and remove contaminated clothing. If a symptom persists after washing, seek medical attention. Use safety shower if necessary.
D. Clean-Up: Promptly clean up spills, using appropriate protective apparel and equipment and proper disposal.
E. Report all incidents

II. Avoidance of Routine Exposure
   A. Put items back where they belong after each use.
   B. Use appropriate personal protective equipment.
   C. Do not smell or taste chemicals except as directed by instructor. Vent apparatus which may discharge toxic chemicals (vacuum pumps, distillation columns, etc.) into local exhaust devices.
   D. Inspect gloves and test glove boxes before use.

III. Choice of Chemicals: Use only those chemicals for which the quality of the available ventilation system is appropriate.

IV. Eating and drinking etc.: Do not eat, drink, chew gum or apply cosmetics in areas where laboratory chemicals are present; wash hands before conducting these activities after leaving the lab.

V. Equipment and Glassware:
   A. Handle and store laboratory glassware with care to avoid damage. Do not use damaged glassware.
   B. Use extra care with Dewar flasks and other evacuated glass apparatus; shield or wrap them to contain chemicals and fragments should implosion occur. Use equipment only for its designed purpose.
   C. Compressed gas tanks: Handle with care. Do not move without protective cap. Secure tank at all times.

VI. Exiting: Wash areas of exposed skin well before leaving the laboratory.

VII. Horseplay: Avoid practical jokes or other behavior which might confuse startle or distract another worker.

VIII. Mouth Suction: Do not use mouth suction for pipetting or starting a siphon.

IX. Personal Apparel: Confine long hair and loose clothing. Wear shoes at all times in the laboratory and when required by the lab instructor, do not wear sandals or perforated shoes.

X. Personal Protection:
A. Wear appropriate eye protection.
B. Wear appropriate gloves when the potential for contact with toxic materials exists per the Glove Selection Chart (Appendix C); inspect the gloves before each use, wash them before removal, and replace them periodically.
C. Use any other protective and emergency apparel and equipment as appropriate.
D. Remove laboratory coats immediately on significant contamination.

XI. Planning: Seek information and advice about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new operation. This includes reading the Material Safety Data Sheet for substances to be used.

XII. Use of Hood
A. Use the fume hood for operations which might result in release of toxic vapors or dust. As a rule of thumb, use a hood or other local ventilation device when working with any appreciably volatile substances with a PEL (Permissible Exposure Limit) of less than 50 ppm.
B. Confirm adequate hood performance before use. Keep materials stored in hoods to a minimum and do not allow them to block vents or air flow.
C. Leave the hood on when it is not in active use if toxic substances are stored in it or if it is uncertain whether adequate general laboratory ventilation will be maintained when it is off.

XIII. Vigilance: Be alert to unsafe conditions and see that they are corrected when detected.

XIV. Waste Disposal
A. Deposit chemical waste in appropriately labeled receptacles and follow all other waste disposal procedures of the Chemical Hygiene Plan.
B. Follow the UWRF Hazardous Waste Management Program for information on correct disposal of hazardous waste.

XV. Working Alone: The following policy has been adopted for all persons using UWRF laboratory facilities:
A. No one (including faculty/staff) may work alone if activities involve use or manipulation of hazardous materials or if hazardous conditions exist (e.g. high pressure, high voltage, and vacuum systems). "Working alone" means working out of sight or sound communications with another person for more than 15 minutes at a stretch. Situations where there is danger of explosion, implosion or exposure to UV, X-ray or high voltage require a notice posted on door if left unattended.
B. Undergraduate students in scheduled courses must be supervised at all times. Students may not work out of hours for any scheduled course unless specific permission is granted by the faculty person supervising the lab
and students will not be doing any manipulations using hazardous chemicals and hazardous conditions do not exist. Supervising faculty/staff person must submit a list of students, course number, location, and dates to Public Safety in order for students to have permission to have access to areas. This list must be submitted at the beginning of each semester. If a written list is not submitted, students will only have access through the supervising faculty/staff.

C. Student researchers (both graduate and undergraduate students) may never work alone if working with hazardous chemicals or if hazardous conditions exist. Ultimately it is the responsibility of the Department Chair to ensure safe supervision of undergraduate and graduate researchers. The UW System has published guidelines for this in a document entitled Guidelines for Students Working Alone Safely”. The website link is: http://www.uwsa.edu/oslp/safety/UWSYSOSH2006-01.pdf

The following is a list of standard operating procedures which could be made available to students either as a part of the laboratory manual or during student training.

STANDARD OPERATING PROCEDURES FOR STUDENTS
1. Do not eat, drink, chew gum or apply cosmetics in areas where laboratory chemicals are present; wash hands before conducting these activities after leaving the lab.

2. Personal protective equipment should be used at the direction of the laboratory instructor. This equipment includes safety glasses or goggles (inform instructor of the use of contact lenses), gloves when working with certain corrosives and organic solvents and laboratory aprons.

3. Wear sensible clothing. The laboratory instructor will provide direction regarding loose fitting clothing and open sandals or open footwear.

4. Long hair must be confined to prevent exposure to open flames, moving equipment, hazardous chemicals or other types of hazards as identified by the instructor.

5. No unauthorized experimentation is allowed. Do not change written laboratory procedures without permission of the instructor.

6. Students may not work in the laboratory without an instructor present. (Exceptions may be made depending on the course.)

7. Students are not allowed to work in instructional laboratories outside of regularly scheduled hours without permission from the instructor.

8. Students should know locations of all available safety equipment. This includes eye wash stations, safety showers, fire extinguishers, fire blanket and first aid supplies.

9. Pipetting by mouth is not allowed. Never place anything in the mouth except as directed by instructor while in the laboratory. Smell chemicals only by wafting a small amount of vapor toward the nose with the hand.

10. Keep lab bench clear of book bags and outer clothing. These should be placed in areas provided. Students are responsible for maintaining a safe and clean work area.

11. Laboratory fume hoods should be used for all operations which have the potential to release fumes, gases or volatile solvent vapors in excess of recommended exposure levels. Follow written laboratory procedures and the laboratory instructor's directions. Notify the instructor if you think the fume hood is not functioning properly.

12. Read lab procedures before entering the laboratory. Do not proceed with an experiment if you do not understand the procedure. All chemical names and identities should be carefully double-checked prior to any use. Check labeling before using a chemical so that potential hazards are known.

13. Report all injuries, no matter how minor, to the laboratory instructor. The instructor will give guidance on any appropriate treatment which may be needed or call Security if necessary.

14. Proper disposal of laboratory waste is essential. Do not dispose of any chemical down sewer/sink without approval from the instructor. Do not throw chemicals in regular trash as there is a potential for chemical incompatibility and exposure risks for custodians. Use appropriate waste containers when provided.

15. Clean up spills promptly. If you should break a mercury thermometer, notify the instructor so that the mercury is promptly recovered. If you have questions on spill clean-up, ask your instructor.
16. Only students registered for the class are allowed into the laboratory.
17. Students should clean work area and wash hands thoroughly before leaving the laboratory.

I have read and I understand the above standard operating procedures. I understand that it is my responsibility to follow the above procedures and I agree to follow these procedures.

Date: _____________ Signature: ___________________________________________
The University of Wisconsin-River Falls places safety as a high priority on campus. Transporting hazardous materials requires caution due to the potential for accidental release and personal exposure. Using the same care and caution that is used in experimental procedures during the transport will reduce the potential for risk to the transporter, others, and the environment.

The following guidelines have been established for transporting toxic, flammable, reactive, or corrosive chemicals on campus. Individual departments or building safety committees may want to add more stringent requirements for transportation of these materials within campus buildings.

These guidelines do not apply to radioactive materials or to chemicals packaged for household use. For information on transporting radioactive materials, call the Risk Management Officer at 425-3344.

**Guidelines**

- **Potentially Hazardous Chemicals**
  - Prior to transporting the material, the individual performing the transport must be familiar with the material’s hazards so they can protect themselves and know what to do in the event of a release or spill. The Material Safety Data Sheet (SDS) for the material is a good source of information to review before the transport. Materials that are unstable, explosive, or extremely or acutely hazardous should not be moved without first contacting the Risk Management Officer at 425-3344 or University Police at 425-3133 if the Risk Management Officer is unavailable.
  - Hazardous materials must be attended at all times while being transported.
  - Appropriate personal protective equipment (PPE) must be worn during the transport. Examples of appropriate PPE include but are not limited to safety goggles, face shields, lab coats, and impermeable gloves. Again, the SDS for the material is a good source of information to review to determine PPE.
  - Use secondary containment to transport the material so the item itself is not being carried by hand. Acceptable secondary containers include plastic bottle carriers with closed tops and handles or liquid-tight carts with lips on all four sides. Contact the department lab manager or the Risk Management Officer for answers to questions about secondary containment.
  - Do not transport non-compatible materials in the same secondary container or in any way that might allow the materials to combine or react.
  - Use sturdy carts for transporting multiple, large, or heavy containers. Assure the secondary container is a good fit for the cart.
- Label all primary containers appropriately by including the material's name and any associated hazards (e.g., "Acetone Caution-flammable"). Secondary containers must also be labeled with the same information. Once the secondary container has been used for its intended purpose, it needs to be promptly returned to the department that provided it.
- If the material has to be moved between floors, it is preferable to use a freight elevator to assure distance is maintained from others. If a passenger elevator must be used, care should be taken to use it during a time where there is minimal traffic or work with others who are waiting to allow the transporter to travel alone. Stairs should be used only if elevators are not available.
- Hazardous materials must not be transported in passenger vehicles.
- Transport cryogens only in approved storage vessels (e.g., Dewar flasks with pressure relief mechanisms). Use appropriate PPE including eye protection in the form of a face shield or goggles, heavy gloves, heavy apron, and closed-toed shoes.
- Once the material has been transported and there is no additional concern for safety, the transporter must remove the PPE and clean or dispose of it properly and wash hands.

- Biohazardous Materials

Safe biohazardous material transport is required to prevent spills and accidental exposure. Examples of biohazardous materials include:
- Cultures and stock of infectious agents and associated biologicals including culture from medical, pathological, research and teaching laboratories; waste from the production of biologicals; discarded live and attenuated vaccines; and culture dishes and devices used to transfer, inoculate and mix cultures.
- Blood and blood products. Waste consisting of human blood, human blood products (includes serum, plasma, etc.) and items contaminated by free-flowing human blood.
- Pathological waste. All pathological waste and all waste that are human tissues, organs, body parts (including teeth), or body fluids.
- Sharps. Used hypodermic needles, syringes, scalpel blades, Pasteur pipettes, transfer pipettes, transfer pipette tips, scalpel blades, razor blades, blood vials, needles attached to tubing, needles used with sutures, culture dishes regardless of presence or absence of infectious materials, broken glass and similar devices likely to be contaminated with organisms that are pathogenic to healthy humans.
o Animal waste with known infectious agents. All infected animal carcasses, body parts, potentially contaminated bedding, and related wastes. Isolation waste.

o Biological waste and discarded materials contaminated with blood, excretions, exudates, or secretions of humans or animals that are isolated to protect others from highly communicable diseases, or isolated animals infected with highly communicable diseases.

Safe transport includes the following:

o Biohazardous materials must be attended at all times while being transported.

o Appropriate personal protective equipment (PPE) must be worn during the transport. Minimally, impermeable gloves should be worn but other examples of appropriate PPE include but are not limited to safety goggles, face shields, and lab coats depending upon the size and scope of the material.

o Place the biohazardous material in a primary specimen container secured with a tight-fitting cap, Parafilm, or tape.

o Place the primary container (blood tubes, agar plates, flasks, test tubes, for example) in a secondary container with absorbent towels to cushion the primary container and absorb liquids in the event of a leak or spill. Acceptable secondary containers include plastic or metal devices with a lid or a plastic cap.

o The secondary container must be labeled with a biohazard symbol and each primary container should be labeled with its contents. The secondary container should be a dedicated transport vessel.

o Biohazardous material being hand-carried and transported on foot from one building to another on campus must be packaged as indicated above.

o When the package reaches its destination, make sure it isn’t damaged. Open it carefully with protective gloves and eyewear. Use of the biological safety cabinet may be necessary depending upon the type of specimen being transported. First open the outer packaging and remove the secondary container. Because the primary container may have leaked, before opening the secondary container, wipe it down with an appropriate disinfectant. If the primary container has leaked, contact the owner and determine if the item should be autoclaved and discarded in a biohazard container.

o Once the biohazardous material has been transported and there is no additional concern for safety, the transporter must remove the PPE and clean or dispose of it properly and wash hands.
• Controlled Substances

Due to the potential for diversion and abuse, items identified by the United States Department of Justice Drug Enforcement Agency (DEA) as controlled substances are subject to extensive licensing, registration, storage, security, use, disposal, and inventorying requirements. License holders must document the receipt of Controlled Substances once they are ordered and continue to document use until the time they are disposed of properly.

When transporting controlled substances within or between campus departments, a chain of custody must be maintained. If the controlled substance is not hand delivered by the license holder to another authorized individual, a Chain of Custody Form must be completed. When a Chain of Custody Form is used, the controlled substance must be placed in a secondary container with tamper evident tape securing the package.

Thefts, suspect thefts, unauthorized uses, or other losses of any Controlled Substance must be reported immediately to the departmental chair and to the University Police Chief upon discovery.

Chain of Custody for Controlled Substances at UW-River Falls for Scientific Research

<table>
<thead>
<tr>
<th>Controlled Substance:</th>
<th>DEA License Holder:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Current Location:</th>
<th>Destination:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date</th>
<th>Time</th>
<th>Location and Condition of</th>
</tr>
</thead>
</table>

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APPENDIX C - Glove Selection Chart

<table>
<thead>
<tr>
<th>Gloves</th>
<th>Material</th>
<th>Usage</th>
<th>Comments</th>
<th>Recommended for</th>
<th>Not recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrile</td>
<td>Synthetic</td>
<td>Incidental</td>
<td>Good for</td>
<td>Oils, greases,</td>
<td>Aromatic</td>
</tr>
</tbody>
</table>

A COPY OF THIS FORM SHALL REMAIN IN THE POSSESSION OF THE RESPONSIBLE INDIVIDUAL CURRENTLY IN POSSESSION OF THE CONTROLLED SUBSTANCE. ONCE COMPLETE, RETURN TO DEA LICENSE HOLDER FOR FILING.
<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Contact</th>
<th>Solvents, Oils, Greases, and Some Acids and Bases. Clear Indication of Tears and Breaks. Good Alternative for Those with Latex Allergies</th>
<th>Acids, Caustics, Aliphatic Solvents</th>
<th>Solvents, Many Ketones, Esters, Many Chlorinated Solvents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl</td>
<td>Synthetic Rubber</td>
<td>Extended contact</td>
<td>Good for ketones and esters. Poor for gasoline and aliphatic, aromatic, and halogenated hydrocarbons</td>
<td>Aldehydes, ketones, esters, glycol ethers, polar organic solvents</td>
<td>Aliphatic, aromatic and chlorinated solvents</td>
</tr>
<tr>
<td>Neoprene</td>
<td>Synthetic Rubber</td>
<td>Extended contact</td>
<td>Good for acids, bases, alcohols, fuels, peroxides, hydrocarbons, and phenols. Poor for halogenated and aromatic hydrocarbons</td>
<td>Oxidizing acids, bases, alcohols, oils, fats, aniline, phenol, glycol ethers</td>
<td>Chlorinated solvents</td>
</tr>
<tr>
<td>PVA</td>
<td>Poly-Vinyl Alcohol</td>
<td>Specific use</td>
<td>Good for aromatic and chlorinated solvents. Poor for water-based solutions</td>
<td>A wide range of aliphatic, aromatic and chlorinated solvents, ketones (except acetone), esters, ethers</td>
<td>Acids, alcohols, bases, water</td>
</tr>
<tr>
<td>PVC</td>
<td>Poly-Vinyl Chloride</td>
<td>Specific use</td>
<td>Good for acids, bases, oils, fats, peroxides, and amines. Good resistance to abrasions. Poor for most organic solvents</td>
<td>Strong acids and bases, salts, other aqueous solutions, alcohols, glycol ethers</td>
<td>Aliphatic, aromatic and chlorinated solvents, aldehydes, ketones, nitrocompunds</td>
</tr>
<tr>
<td>Viton</td>
<td>Fluoroelastomer</td>
<td>Extended use</td>
<td>Good for chlorinated and aromatic solvents. Good resistance</td>
<td>Aromatic, aliphatic and chlorinated solvents, and</td>
<td>Some ketones, esters, amines</td>
</tr>
<tr>
<td>Material</td>
<td>Type</td>
<td>Characteristics</td>
<td>Solvents</td>
<td>Other Considerations</td>
<td></td>
</tr>
<tr>
<td>----------</td>
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<td>---------------------------------------------------------------------------------</td>
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<td>-------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Silver Shield</td>
<td>Laminate</td>
<td>Good for biological and water-based materials. Poor for organic solvents. Little chemical protection. Can puncture holes. Can cause or trigger latex allergies.</td>
<td>Wide range of solvents, acids and bases</td>
<td>Oils, greases and organics (certain hand lotions on hands inserted into gloves will cause loss of integrity)</td>
<td></td>
</tr>
<tr>
<td>Latex</td>
<td>Natural Rubber</td>
<td>Incidental Contact Good for biological and water-based materials. Poor for organic solvents. Little chemical protection. Can puncture holes. Can cause or trigger latex allergies.</td>
<td>Weak acids, Weak bases, alcohols, aqueous solutions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Appendix D: EPCRA and DHS Laboratory Inventory Requirements**

UWRF is subject to two key regulations which require it to have knowledge of chemical inventories. The Emergency Planning and Community Right-to Know Act (EPCRA) requires the university to report quantities above specified thresholds for listed chemicals to state and local emergency planners. The Department of Homeland Security (DHS) also
has created a list of Chemicals of Interest (COI) based on threat criteria such as sabotage, theft, and release. All chemical facilities in the U.S. must report any COIs maintained above the screening threshold quantities (STQs). In order to remain compliant the university requires that laboratory inventories of the specific chemicals (listed in the tables below) be maintained. Since most laboratories work with low quantities of material the lists have been truncated to include only those chemicals which have a low reporting threshold. Chemical spills involving chemicals on the EPCRA list should be reported to UWRF Risk Management since specific reporting requirements may apply.

Laboratory staff should consult the complete EPA List of Lists (at http://www.epa.gov/oem/tools.htm#lol) and the complete DHS COI list (at http://www.safetec.net/resources/dhs-chemicals-of-interest/) when working with unusually large amounts of a hazardous chemical to determine whether the chemical should be included on their inventory. Contact Risk Management for any questions on inventory requirements.

Appendix E. - Standard Operating Procedures for Particularly Hazardous Substances

Fillable form can be found at the following link: Link Pending