February 6, 2014

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

From: David P. Rainville, Chair
       Faculty Senate
       University of Wisconsin-River Falls

Re: UWRF Faculty Senate Motion 2013-14/48

At the February 5, 2014 meeting of the University of Wisconsin-River Falls Faculty Senate, motion 2013-14/48 was passed and is effective immediately. The motion is forwarded to you for your action.

A motion from the Executive Committee to approve the new (revised from an earlier plan) UWRF Chemical Hygiene Plan. The Plan is attached as well as an explanation of the changes from the earlier document.

Approved

Disapproved

Dean Van Galen, Chancellor

Date
Chemical Hygiene Plan

Final – August 29, 2013
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
   6. Online at http://www.uwrf.edu/risk/policies.htm

C. 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
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.
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.
   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.

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
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.
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
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. 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.

iii. 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.

iv. 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.

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

vi. 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.

vii. 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.
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.
APPENDIX A – Standard Laboratory Operating Procedures

I. 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.
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
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: ____________________________
• 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.
contact the owner and determine if the item should be autoclaved and discarded in a biohazard container.

○ 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 UWRF Public Safety Director upon discovery.
## 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 Rubber</td>
<td>Incidental</td>
<td>Good for solvents, oils, greases, and some acids and bases. Clear indication of tears and breaks. Good alternative for those with latex allergies</td>
<td>Oils, greases, acids, caustics, aliphatic solvents</td>
<td>Aromatic solvents, many ketones, esters, many chlorinated solvents</td>
</tr>
<tr>
<td>Butyl</td>
<td>Synthetic Rubber</td>
<td>Extended</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</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>
</tbody>
</table>
| PVC     | Poly-Vinyl Chloride| Specific use   | Good for acids, bases, oils, fats, peroxides, and amines. Good resistance to abrasions.                                                                                                                                 | Strong acids and bases, salts, other aqueous solutions, alcohols, glycol ethers  | Aliphatic, aromatic and chlorinated solvents, aldehydes, ketones, }
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.
Summary of Changes to Chemical Hygiene Plan- Fall 2013

Section I. Purpose

In Subsection A, Part 2, reference to Wisconsin Safety and Building Administrative Codes Comm 32.35 was deleted as it became obsolete effective 2011.

Section II. Definitions

Reference to units of measure for noise under PEL was deleted as it does not pertain to a chemical hygiene plan. The definition for a PEL changed from “is” to “may be” a time-weighted average. Definition for chemicals immediately dangerous to life and health added.

Definitions for Immediately Dangerous to Life and Health (IDLH), Secondary Container, and Particularly Hazardous Substance (PHS) were added and the Threshold Limit Value (TLV) definition was expanded to include part of WI SPS 332.

Section III. Basic Rules, Procedures, and Responsibilities

In Subsection B, Dustin Andert, Chemistry Laboratory Manager, is designated as acting campus Chemical Hygiene Officer rather than the Chemistry Department Chair.

The ability of instructors to suspend laboratory operations was expanded and now includes suspension due to general safety measures judged to be inadequate in Subsection D, Part 4.

Part I, Subsection F, has been reworded to assign responsibility within each department to the Department Chair for communicating with employees/faculty regarding the chemical hygiene rules and ensuring compliance.

Under laboratory manager responsibilities, familiarization with hazardous waste management policy and references to pertinent statutes 29 CFR 1910.1450 and 29 CFR 1910.1200 were added.

Subsection G was amended to note that as an employer and under Wisconsin SPS 332, the Laboratory Standard is incorporated.

Section IV. Control Measures to Reduce Exposures to Hazardous Chemicals

In Subsection A, Comm 32.35 was replaced with the current Wisconsin Administrative Code.