



# Exposure Control Plan And Hazard Communication

## **POLICY**

Rocky Vista University (RVU) is committed to providing a safe and healthful work environment for all our staff and students. In pursuit of this goal, the following Exposure Control Plan (ECP) is provided to eliminate or minimize occupational exposure to bloodborne pathogens in accordance with OSHA Standard 29 CFR 1910.01030, "Occupational Exposure to Bloodborne Pathogens."

The ECP is a key document to assist RVU in implementing and ensuring compliance with the standard, thereby protecting our employees and students. This ECP includes:

- Determination of employee and student exposure
- Implementation of various methods of exposure control, including:
  - Universal precautions
  - Engineering and work practice controls
  - Personal protective equipment
  - Housekeeping
- Hepatitis B vaccination
- Post-exposure evaluations and follow-up
- Communication of hazards to students/employees and training
- Recordkeeping
- Procedures for evaluating circumstances surrounding exposure incidents

Implementation Methods for these elements of the standard are discussed in the subsequent pages of this ECP.

In addition, RVU follows the requirements under OSHA Standard 29 CFR 1910.1200 in regard to the Hazard Communication Program (HCP) and hazardous chemicals.

**Revised October 2023**

# Part 1: Bloodborne Pathogens and Exposure Control Plan

## PROGRAM ADMINISTRATION

- The Compliance Office is responsible for ensuring implementation of this ECP. The Office will maintain, review and update the ECP at least annually, and whenever necessary to include new or modified tasks and procedures.
  - Senior Compliance Manager: [ldement@rvu.edu](mailto:ldement@rvu.edu)
  - Contact: 720-874-2481
- Those employees and students who are determined to have occupational exposure risk to blood or other potentially infectious materials (OPIM) must comply with the procedures and work practices outlined in this ECP.
- The ECP Administrators will provide and maintain all necessary personal protective equipment (PPE), engineering controls, labels and red bags in labs and designated areas as required by the standard. The ECP Administrators will ensure that adequate supplies of the aforementioned equipment are available in appropriate sizes.
  - ECP Administrators: PCM Department Chair (CO), PCM Dept. Vice Chair (UT), Dept. of Clinical Sciences Chair (MT)
- The Managers and Coordinators of Human Resources on each campus will be responsible for ensuring that all medical actions that may be necessary for bloodborne pathogens exposure are performed and that appropriate health and OSHA records are maintained.
- The Compliance Manager will be responsible for OSHA/HIPAA training, documentation of training and making the written ECP available to employees and students, OSHA and NIOSH representatives.

## EMPLOYEE/STUDENT EXPOSURE DETERMINATION FOR TRAINING

The following are trainings provided by RVU in which employees/students have occupational exposure:

<u>Classification</u>	<u>Training Schedule</u>	<u>Method</u>
<i>Medical Students</i> <ul style="list-style-type: none"> <li>• 1<sup>st</sup> Year</li> <li>• 2<sup>nd</sup> Year</li> <li>• 3<sup>rd</sup> Year</li> <li>• 4<sup>th</sup> Year</li> <li>• PA Program</li> </ul>	<ul style="list-style-type: none"> <li>• Annual</li> <li>• Annual</li> <li>• Annual</li> <li>• Annual</li> </ul>	<ul style="list-style-type: none"> <li>• Notification during orientation of online CITI training</li> <li>• Notification of online CITI training prior to clinical or lab work</li> <li>• Online CITI training prior to rotations</li> <li>• Online CITI training prior to rotations</li> </ul>
<u>Classification</u>	<u>Training Schedule</u>	<u>Method</u>
Faculty and Health Center employees whose official job description or contract includes any time in a clinical setting.	Annual; prior to starting clinical duties	Online CITI training
Any employee whose official job description or contract includes duties with potential exposure to human blood or other potentially infectious materials.	Annual	Live presentation or online CITI training

All other employees	Not Required	
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- **In addition, all employees who may be at risk of exposure to bloodborne pathogens (OPIM) shall be offered a Hepatitis Vaccine series free of charge at the time of employment. (Students arrange for their own Hepatitis B vaccine prior to matriculation.)**

**METHODS OF IMPLEMENTATION AND CONTROL**

Universal Precautions: All employees and students will utilize Universal Precautions at all times. All patients/cadavers must be regarded as potentially infected with blood-borne pathogens.

- All lab and clinical workers should routinely use appropriate barrier precautions to prevent skin and mucous membrane exposure when contact with blood or other body fluids is anticipated. Gloves should be worn for touching blood and body fluids, mucous membranes, or non-intact skin of all patients, for handling items or surfaces soiled with blood or body fluids, and for performing venipuncture and other vascular access procedures. Gloves should be changed after contact with each patient.
- Masks and protective eyewear or face shields should be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth, nose, and eyes. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or other body fluids.
- Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood or other body fluids. Hands should be washed immediately after gloves are removed.
- All health-care workers, students, and faculty should take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures. To prevent needle stick injuries, needles should not be recapped, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. After sharps are used, they should be placed in puncture-resistant containers for disposal; the puncture-resistant containers should be located as close as practical to the use area.
- Pregnant health-care workers are not known to be at greater risk of contracting HIV infection than health-care workers who are not pregnant; however, if a health-care worker develops HIV infection during pregnancy, the infant is at risk of infection resulting from perinatal transmission. Because of this risk, pregnant health-care workers should be especially familiar with and strictly adhere to precautions to minimize the risk of HIV transmission.

Engineering Controls and Work Practices: Engineering controls and work practice controls will be used to prevent or minimize exposure to bloodborne pathogens. The specific engineering controls and work practice controls used are listed below:

- Hand-washing facilities are readily available
- Antiseptic hand cleanser is available throughout the campus
- Contaminated needles and other sharps shall not be recapped, bent or broken
- Puncture-resistant, leak-proof sharps containers are conveniently located
- Never reach into a sharps container
- Eating, drinking, smoking, applying cosmetics or lip balm, or handling contact lenses in exposure work areas is strictly prohibited
- Food and drinks must never be stored where potentially contaminated materials are stored
- All procedures must be done in such a way as to minimize splashing, spraying and spattering

- Mouth pipetting/suctioning of blood or other potentially infectious materials is prohibited
- All containers for storage, transport, shipping or disposal must be clearly labeled

Sharps disposal containers are inspected and maintained or replaced by the Practice Director in the Health Clinic, and the ECP Administrators in the labs every 2 months, or more whenever necessary, to prevent overfilling.

RVU identifies the need for changes in engineering controls and work practices through an annual review of OSHA records and employee interviews. RVU evaluates new products regularly by researching new and innovative engineering controls and work practices. Both front-line workers and management officials are involved in this process by participating in OSHA review discussions. The Senior Compliance Manager is responsible for ensuring that these recommendations are implemented.

Personal Protective Equipment (PPE): PPE is provided to employees at no cost to them. Students are required to supply their own PPE for use on campus; during off-site clinical education, PPE will be provided by the clinical training site. Training in the use of the appropriate PPE for specific tasks or procedures is provided by the Practice Director in the Health Clinics and by the ECP Administrator at each university campus.

The types of PPE available to employees are as follows:

- Gloves (all sizes)
- Eye goggles
- Face masks

All employees and students using PPE must observe the following precautions:

- Wash hands immediately or as soon as feasible after removing gloves or other PPE.
- Remove PPE after it becomes contaminated and before leaving the work area.
- Used PPE may be disposed of in appropriate containers.
- Wear appropriate gloves when it is reasonably anticipated that there may be hand contact with blood or OPIM, and when handling or touching contaminated items or surfaces; replace gloves if torn, punctured or contaminated, or if their ability to function as a barrier is compromised.
- Utility gloves may be decontaminated for reuse if their integrity is not compromised. Discard utility gloves if they show signs of cracking, peeling, tearing, puncturing or deterioration.
- Never wash or decontaminate disposable gloves for reuse.
- Wear appropriate face and eye protection when splashes, sprays, spatters or droplets of blood or OPIM pose a hazard to the eye, nose or mouth.
- Remove immediately or as soon as feasible any garment contaminated by blood or OPIM in such a way as to avoid contact with the outer surface.

Housekeeping: Regulated waste is placed in containers that are closable, constructed to contain all contents and prevent leakage, appropriately labeled or color-coded, and closed prior to removal to prevent spillage or protrusion of contents during handling.

The procedure for handling sharps disposal containers is:

- Container is properly sealed
- Placed in biohazard transport container
- Off-site contractor picks up as needed

The procedure for handling other regulated waste is:

- Container is properly sealed
- Placed in biohazard transport container
- Off-site contractor picks up as needed

Contaminated sharps are discarded immediately or as soon as possible in containers that are closable, puncture-resistant, leak proof on sides and bottoms, and appropriately labeled or color-coded. Sharps disposal containers are available in the Anatomy Lab and the Health Center.

Broken glassware that may be contaminated is only picked up using mechanical means, such as a broom and dustpan.

Laundry: RVU does not produce, nor does it launder any contaminated articles.

Labels: The following labeling methods are used in this facility:

- Red bags
- Bio-hazard stickers
- Properly labeled with RVU's name and address
- CINTA Co. white bloodborne pathogens cleanup kits

The Practice Director in the Health Clinics and the ECP Administrator at each campus location are responsible for ensuring that warning labels are affixed or red bags are used as required if regulated waste or contaminated equipment is brought into the facility. Employees are to notify the Practice Director or Chairs/Vice Chair if they discover regulated waste containers, refrigerators containing blood or OPIM, contaminated equipments, etc., without proper labels.

## **HEPATITIS B VACCINATION**

The Office of Human Resources offers information to new employees on Hepatitis B vaccinations, addressing safety, benefits, efficacy, methods of administration, and availability. Students are responsible for obtaining their own vaccine prior to matriculation at RVU.

The Hepatitis B vaccination series is available free of charge for employees in the RVU Health Clinic (CO campus) or the Utah Intermountain WorkMed Clinic after initial employee training and within ten days of initial assignment for employees identified in the exposure determination section of this plan. (Check with the HR manager for MT clinic locations.) Vaccination is encouraged unless: 1) documentation exists that the employee has previously received the series; 2) antibody testing reveals that the employee is immune; or 3) medical evaluation shows that vaccination is contraindicated.

However, if an employee declines the vaccination, the employee must sign a declination form. Employees who decline may request and obtain the vaccination at a later date at their own cost. Documentation of refusal of the vaccination is kept in the Human Resources personnel files.

Following the medical evaluation, a copy of the health care professional's written opinion will be obtained and provided to the employee within 15 days of the completion of the evaluation. It will be limited to whether the employee requires the hepatitis vaccine and whether the vaccine was administered.

## **NEEDLE STICKS AND EXPOSURE INCIDENTS**

### **POST-EXPOSURE EVALUATION AND FOLLOW-UP**

Should an exposure incident occur, contact:

- HR Coordinator at each respective campus to file a claim and arrange a Worker's Compensation clinic visit.

An immediately available confidential, medical evaluation and follow-up should be conducted by a Workers' Compensation provider selected by RVU. Following initial first aid, the following activities will be performed:

- Document the routes of exposure and how the exposure occurred.

- Identify and document the source individual (unless RVU can establish that identification is infeasible or prohibited by state or local law).
- Obtain consent and make arrangements to have the source individual tested as soon as possible to determine HIV, HCV, and HBV infectivity; document that the source individual's test results were conveyed to the employee's or student's health care provider.
- If the source individual is already known to be HIV, HCV and/or HBV positive, new testing need not be performed.
- Assure that the exposed employee or student is provided with the source individual's test results and with information about applicable disclosure laws and regulation concerning the identity and infectious status of the source individual.
- After obtaining consent, collect exposed employee's or student's blood as soon as feasible after exposure incident, and test blood for HBV and HIV serological status.
- If the employee or student does not give consent for HIV serological testing during the collection of blood for baseline testing, preserve the baseline blood sample for 90 days; if the exposed employee elects to have the baseline sample tested during this waiting period, perform testing as soon as possible.

#### **ADMINISTRATION OF POST-EXPOSURE EVALUATION AND FOLLOW-UP**

Human Resources ensures that the health care professional evaluating an employee or student after an exposure incident receives the following:

- a description of the employee's job duties or student's activity relevant to the exposure incident
- route(s) of exposure
- circumstances of exposure
- if possible, results of the source individual's blood test
- relevant employee/student medical records, including vaccination status

Traveler's Insurance provides the employee or student with a copy of the evaluating health care professional's written opinion within 15 days after completion of the evaluation.

#### **PROCEDURES FOR EVALUATING THE CIRCUMSTANCES SURROUNDING AN EXPOSURE INCIDENT**

If an injury/exposure occurs, the Exposure Control Plan Administrator and the Compliance Office will review the circumstances of all exposure incidents to determine:

- engineering controls in use at the time
- work practices followed
- a description of the device being used (including type and brand)
- protective equipment or clothing that was used at the time of the exposure incident (gloves, eye shields, etc.)
- location of the incident (O.R., E.R., patient room, laboratories, etc.)
- procedure being performed when the incident occurred
- employee's training
- student's training

The Exposure Control Plan Administrator and the Compliance Office will record all percutaneous injuries from contaminated sharps in the *Sharps Injury Log* and a copy is given to the student's/employee's direct supervisor.

#### **EMPLOYEE / STUDENT TRAINING**

All employees/students who have the risk of occupational exposure to bloodborne pathogens receive initial and annual training conducted by an online vendor arranged by the Senior Compliance Manager. Also, all employees/students who have the risk of occupational exposure to bloodborne pathogens receive training on the epidemiology, symptoms, and

transmission of bloodborne pathogen diseases. In addition, the training program covers, at a minimum, the following elements:

- a copy and explanation of the OSHA bloodborne pathogen standard
- an explanation of methods to recognize tasks and other activities that may involve exposure to blood and OPIM, including what constitutes an exposure incident
- an explanation of the use and limitations of engineering controls, work practices, and PPE
- an explanation of the types, uses, location, removal, handling, decontamination, and disposal of PPE
- an explanation of the basis for PPE selection
- information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, and the benefits of being vaccinated
- information on the appropriate actions to take and persons to contact in an emergency involving blood or OPIM
- an explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available

Training information for the online CITI Program vendor is available through the [Compliance Office](#).

## **RECORDKEEPING**

### **Training Records**

Training records are completed for each employee/student upon completion of training. These documents will be kept for at least three years in the Compliance Office. (3<sup>rd</sup> and 4<sup>th</sup> year student training records are maintained in both the Office of Clinical Education and the Compliance Office.)

The training records include:

- the dates of the training sessions
- the contents or a summary of the training sessions
- the names and qualifications of persons conducting the training
- the names and job titles of all persons attending the training sessions

Employee/student training records are provided upon request to the employee/student or the employee's/student's authorized representative within 15 working days. Such requests should be addressed to the [Senior Compliance Manager](#).

### **Medical Records**

Medical records are maintained for each employee/student with occupational exposure in accordance with 29 CFR 1910.1020, "Access to Employee/Student Exposure and Medical Records."

[Human Resources](#) is responsible for maintenance of the required medical records. These confidential records are kept in the Human Resource Office for at least the duration of employment/enrolled student exposure plus 3 years.

Employee or student medical records are provided upon request of the employee or student or to anyone having written consent of the employee/student within 15 working days. Such requests should be sent to:

- [The Department of Human Resources](#)

### **Sharps Injury Log**

In addition to the 29 CFR 1904 OSHA Recordkeeping Requirements, all percutaneous injuries from contaminated sharps are also recorded in a Sharps Injury Log maintained by the Exposure Control Plan Administrator. All incidences must include at least:

- date of the injury
- type and brand of the device involved (syringe, suture needle)
- department or work area where the incident occurred
- explanation of how the incident occurred.

This log is also maintained by Human Resources and the Compliance Office and reviewed as part of the annual program evaluation. It is maintained for at least five years following the end of the calendar year. If a copy is requested by anyone, it must have any personal identifiers removed from the report. A copy should be sent annually to both the Office of Human Resources and the Office of Compliance.

## Sharps Injury Log

### Rocky Vista University Employees or Students

Date	Case - Report #	Name of Injured Party	Type/Brand of Device	Work area where injury occurred	Description of incident

29 CFR 1910.1030, OSHA’s Bloodborne Pathogens Standard, in paragraph (h)(5), requires an employer to establish and maintain a Sharps Injury Log for recording all percutaneous injuries in a facility occurring from contaminated sharps. The purpose of the Log is to aid in the evaluation of devices being used in healthcare and other facilities and to identify problem devices or procedures requiring additional attention or review. This log must be kept in addition to the injury and illness log required by 29 CFR 1904. The Sharps Injury Log should include all sharps injuries occurring in a calendar year. The log must be retained for five years following the end of the year to which it relates. The Log must be kept in a manner that preserves the confidentiality of the affected employee or student.



## Part 2. HAZARD COMMUNICATION

The following Hazard Communication Program is based on the requirements of the OSHA Hazard Communications Standard, 29 CFR 1910. 1200.

### HAZARD COMMUNICATION PROGRAM

#### 1. University Policy

To ensure that information about the dangers of all hazardous chemicals used by Rocky Vista University is known by all affected employees and students, the following hazardous information program has been established. Under this program, you will be informed of the contents of the OSHA Hazard Communications Standard, the hazardous properties of chemicals with which you work, safe handling procedures and measures to take to protect yourself from these chemicals.

This program applies to all work operations at our university where you may be exposed to hazardous chemicals under normal working conditions, clinical or laboratory practice, or during an emergency situation. All applicable work units of this university will participate in the Hazard Communication Program. Copies of the Hazard Communication Program are available from the Exposure Control Plan Administrator for review by any interested employee.

#### 2. Container Labeling

The ECP Administrator will verify that all containers received for use will be clearly labeled as to the contents, note the appropriate hazard warning, and list the manufacturer's name and address. He/she will ensure that all secondary containers are labeled with either an extra copy of the original manufacturer's label or with labels marked with the identity and the appropriate hazard warning.

He/she will review the appropriate labeling procedures every 6 months and will update labels as required.

#### 3. Material Safety Data Sheets (MSDSs)

The Material Safety Data Supervisor (must be identified by the ECP Administrator) is responsible for establishing and monitoring the university MSDS program. He/she will ensure that procedures are developed to obtain the necessary MSDSs and will review incoming MSDSs for new or significant health and safety information. He/she will see that any new information is communicated to affected employees. The procedure below will be followed when an MSDS is not received at the time of initial shipment:

- The originator will be contacted immediately by the Material Safety Data Supervisor or the ECP Administrator to obtain MSDS information.

Copies of MSDSs for all hazardous chemicals to which employees are exposed or are potentially exposed will be kept in the Anatomy Lab and by the Material Safety Data Supervisor.

MSDSs will be readily available to all employees during each work shift. If an MSDS is not available, contact the ECP Administrator.

MSDSs will be readily available to employees in each work area using the following format:

- Paper copies in a clearly identified three-ring binder

When revised MSDSs are received, the following procedures will be followed to replace old MSDSs:

- The Material Safety Data Supervisor or the ECP Administrator will replace the old MSDSs.

#### 4. Employee/Student Training and Information

The Material Data Safety Supervisor and the ECP Administrator are responsible for the Hazard Communication Program and will ensure that all program elements are carried out.

Everyone who works with or is potentially exposed to hazardous chemicals will receive initial training on the hazard communication standard and this plan before starting work. Each new employee/student will attend a health and safety orientation that includes the following information and training:

- An overview of the OSHA hazard communication standard
- The hazardous chemicals present at his/her work area
- The physical and health risks of the hazardous chemicals
- Symptoms of overexposure
- How to determine the presence or release of hazardous chemicals in the work area
- How to reduce or prevent exposure to hazardous chemicals through use of control procedures, work practices and personal protective equipment
- Steps the university has taken to reduce or prevent exposure to hazardous chemicals
- Procedures to follow if employees/students are overexposed to hazardous chemicals
- How to read labels and MSDSs to obtain hazard information
- Location of the MSDS file and written Hazard Communication Program

Prior to introducing a new chemical hazard into any section of this university, each employee in that section will be given information and training as outlined above for the new chemical hazard. The training format will be as follows:

- Live, in person presentation or online training

#### 5. Hazardous Non-routine Tasks

Periodically, employees/students are required to perform non-routine tasks that are hazardous. Examples of non-routine tasks are: confined space entry, device cleaning, and or disposal of chemical containing vessels. Prior to starting work on such projects, each affected employee/student will be given information by the ECP Administrator about the hazardous chemicals he or she may encounter during such activity. This information will include specific chemical hazards, protective and safety measures the employee/student should use, and steps the university is taking to reduce the hazards, including ventilation, respirators, the presence of another employee/student (buddy systems), and emergency procedures.

#### 6. Informing Other Employers/Contractors

It is the responsibility of the ECP Administrator to provide other employers and contractors with information about hazardous chemicals that their employees may be exposed to on a job site and suggested precautions for employees. It is also his/her responsibility to obtain information about hazardous chemicals used by other employers to which employees of this university may be exposed.

Other employers and contractors will be provided with MSDSs for hazardous chemicals generated by this university's operations in the following manner:

- Provided with a copy of the MSDSs
- Provided access to RVU's ECP and Chemical Hygiene Plan

Also, other employers will be informed of the hazard labels used by the university. If symbolic or numerical labeling systems are used, the other employees will be provided with information to understand the labels used for hazardous chemicals for which their employees may have exposure.

## **7. List of Hazardous Chemicals**

A list of all known hazardous chemicals used by our employees and students may be obtained from the Material Safety Data Supervisor. This list includes the name of the chemical, the manufacturer, the work area in which the chemical is used, dates of use, and quantity used. Further information on each chemical may be obtained from the MSDSs, located in the Anatomy Lab or from the Material Safety Data Supervisor.

When new chemicals are received, this list is updated (including date the chemicals were introduced) within 30 days. To ensure any new chemical is added in a timely manner, the following procedures shall be followed:

- The ECP Administrator or the Material Data Safety Supervisor will keep an inventory of chemicals used, orders, and those disposed of.
- The Office of Compliance will receive an update of the list, and the Chemical Hygiene Plan as necessary.

APPENDIX A

**This form must be returned to Human Resources by the employee if declined or by the clinic if consenting.**

**Employee Consent or Decline for Hepatitis B Vaccination**

Name: \_\_\_\_\_

Department: \_\_\_\_\_

I understand that as part of my job, I may become exposed to blood or other potentially infectious items or materials that put me at risk for acquiring the Hepatitis B virus (HBV). Therefore, at no charge to myself, I have been offered the Hepatitis B vaccine, which is intended to render me immune to the HBV. At least three separate intramuscular injections are necessary to produce

the desired immunity (sometimes additional injections are necessary to reach immunity), and all three doses are necessary in order for the vaccine to be effective, After the initial dose is given, repeat doses are given one month and six months later. There is a strong likelihood the vaccine will be successful if I receive all three doses, but there is a potential that even when administered properly the vaccine will not result in the desired immunity, such that there is a chance I may become infected with HBV even if I complete the full series.

All medicines may cause side effects, but most recipients of the vaccine have few or no side effects. The most commonly reported side effects include diarrhea, dizziness, fatigue, a general feeling of discomfort, headache, irritability, loss of appetite, mild fever or sore throat, nausea, pain, swelling, or redness at the injection site, runny nose, tiredness, weakness. In rare cases, more severe side effects may occur, including rash, hives, itching, difficulty breathing, tightness in the chest, swelling of the mouth, face, lips, or tongue, unusual hoarseness, fainting, fast or irregular heartbeat, red, swollen, blistered, or peeling skin, severe or persistent dizziness, unusual bruising or bleeding. In case of such reactions, seek immediate medical care or attention.

If the vaccine does not lead to the desired immunity (because I do not complete the three-dose series, or I choose not to receive supplemental injections if the first series does not develop immunity), or if I choose not to receive the vaccine at this time, I understand that I will need post-exposure treatment if I have direct contact with blood, other body fluids, or other potentially infected items, in order to address potential exposure concerns.

I have read and understand the above information and wish to receive the hepatitis B vaccine series (three doses). I have no known sensitivity to yeast and I am unaware of any reason why the vaccine may cause me harm or lead to an adverse reaction.

**I DECLINE:**

I have read and understand the information above. I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with the hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future, I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with Hepatitis B vaccine, I can receive the vaccination series at no charge to me.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name (Printed)

Signature

Date

**APPENDIX B**

**Sharps Injury Log**

**Rocky Vista University and Rocky Vista Health Clinic**

Date	Person Injured	Case - Report #	Type of Device	Work area where injury occurred	Description of incident

29 CFR 1910.1030, OSHA's Bloodborne Pathogens Standard, in paragraph (h)(5), requires an employer to establish and maintain a Sharps Injury Log for recording all percutaneous injuries in a facility occurring from contaminated sharps. The purpose of the Log is to aid in the evaluation of devices being used in healthcare and other facilities and to identify problem devices or procedures requiring additional attention or review. This log must be kept in addition to the injury and illness log required by 29 CFR 1904. The Sharps Injury Log should include all sharps injuries occurring in a calendar year. The log must be retained for five years following the end of the year to which it relates. The Log must be kept in a manner that preserves the confidentiality of the affected employee.

## APPENDIX C

### New Student/Employee Orientation Fact Sheet (p. 1 of 2)

#### PREVENTING THE SPREAD OF BLOODBORNE PATHOGENS

Bloodborne pathogens, such as bacteria and viruses, are present in blood and body fluids and can cause disease in humans. The bloodborne pathogens of primary concern are hepatitis B, hepatitis C and HIV. These and other bloodborne pathogens are spread primarily through:

- Direct contact. Infected blood or body fluid from one person enters another person's body at a correct entry site, such as infected blood splashing in the eye.
- Indirect contact. A person's skin touches an object that contains the blood or body fluid of an infected person, such as picking up soiled dressings contaminated with an infected person's blood or body fluid.
- Respiratory droplet transmission. A person inhales droplets from an infected person, such as through a cough or sneeze.
- Vector-borne transmission. A person's skin is penetrated by an infectious source, such as an insect bite.

Follow standard precautions to help prevent the spread of bloodborne pathogens and other diseases whenever there is a risk of exposure to blood or other body fluids. These precautions require that all blood and other body fluids be treated as if they are infectious.

Standard precautions include maintaining personal hygiene and using personal protective equipment (PPE), engineering controls, work practice controls, and proper equipment cleaning and spill cleanup procedures.

#### TO PREVENT INFECTION, FOLLOW THESE GUIDELINES:

- Avoid contact with blood and other body fluids.
- Use CPR breathing barriers, such as resuscitation masks, when giving ventilations (rescue breaths).
- Wear disposable gloves whenever providing care, particularly if you may come into contact with blood or body fluids. Also wear protective coverings, such as a mask, eyewear and a gown, if blood or other body fluids can splash.
- Cover any cuts, scrapes or sores and remove jewelry, including rings, before wearing disposable gloves.
- Change gloves before providing care to a different victim.
- Remove disposable gloves without contacting the soiled part of the gloves and dispose of them in a proper container.
- Thoroughly wash your hands and other areas immediately after providing care. Use alcohol-based hand sanitizer where hand-washing facilities are not available if your hands are not visibly soiled. When practical, wash your hands before providing care.

(p. 2 of 2)

**TO REDUCE THE RISK OF EXPOSURE, FOLLOW THESE ENGINEERING AND WORK**

**PRACTICE CONTROLS:**

- Use biohazard bags to dispose of contaminated materials, such as used gloves and bandages. Place all soiled clothing in marked plastic bags for disposal or cleaning. Biohazard warning labels are required on any container holding contaminated materials.
- Use sharps disposal containers to place sharps items, such as needles.
- Clean and disinfect all equipment and work surfaces soiled by blood or body fluids.
  - Scrub soiled boots, leather shoes and other leather goods, such as belts, with soap, a brush and hot water. If worn, wash and dry uniforms according to the manufacturer's instructions.

**IF YOU ARE EXPOSED, TAKE THE FOLLOWING STEPS IMMEDIATELY:**

- Stop the activity
- Wash / flush the affected area(s)
- Immediately report the incident to a clinical instructor or supervisor
- Seek medical attention from the RVU Health Clinic
- Complete necessary reports provided by the clinical instructor or the RVU Health Clinic
- The Dean is available for guidance in obtaining medical evaluation, treatment and follow-up

## APPENDIX D

### Standard Operating Procedure (SOP) for Cleanup of Small Blood Spills

Follow these procedures for cleaning up spills of blood and blood products. The same procedures can be used for cleaning up other body fluids.

#### STEP 1: REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Prior to beginning the cleanup, don a pair of rubber, latex, PVC or similar type gloves.

For small blood spills no other PPE should be required.

#### STEP 2: SPILL KIT EQUIPMENT

The following items may be needed in handling the spill:

- 10% bleach solution (or Lysol, virex or other EPA reg. Tuberculocidal)
- gloves
- clear plastic bags
- biohazard labels
- leak-proof sharps containers
- brush & dustpan, or tongs or forceps for picking up sharps
- disinfectant wipes

#### STEP 3: SPILL DECONTAMINATION PROCEDURES

Cover the spill area with a paper towel and then pour freshly mixed 10% bleach and water solution. Allow solution to soak into the contaminated material for 10 minutes. Work from the outside edges of the spill inward when applying the bleach solution.

Any glass, needles, or other sharp objects that may puncture the skin will not be picked up by hand. Only mechanical means such as a brush and dustpan, tongs, or forceps are allowed.

Wipe up bleached material with paper towels or absorbent pads. It may be necessary to use a scrub brush to remove the material if it impacted a hard porous surface such as concrete. If nonporous surfaces, such as a carpet have been contaminated, an outside vendor may be needed to clean the area.

#### STEP 3: DISPOSAL

Place bleached material, gloves and other disposable materials into a labeled biohazard bag and place into either another labeled biohazard bag or container. Ensure lids are firmly sealed on all waste containers when spill cleanup is complete.

#### STEP 4: DECONTAMINATE RE-USEABLE EQUIPMENT

Decontaminate with the bleach solution all potentially contaminated re-useable tools or protective equipment used in the cleanup. This includes dustpans, brooms, forceps, buckets, etc. Anything that cannot be effectively cleaned (bleach solution must be able to make contact with all surfaces) must be disposed as waste. After the contaminated area has been cleaned, use fresh water to remove bleach residue from all surfaces.

#### STEP 5: WASH YOUR HANDS

If hand-washing facilities are not available at the job site use disinfectant wipes and then wash your hands as soon as possible.

#### BIOHAZARD EXPOSURE



If you believe you were exposed (skin puncture or splash to eyes or mucous membranes) to biohazard material that had not been decontaminated with the bleach solution follow these recommended steps:

- Skin exposure: Vigorously wash affected skin with plenty of soap and water while removing contaminated clothing and shoes.
- Eye exposure: Wash eyes for at least 10 minutes with copious amounts of water, lifting the upper and lower eyelids occasionally.
- Seek follow-up medical attention by contacting the RVU Health Clinic.

APPENDIX E:

**Exposure Incident Report**

**Rocky Vista University**

Date of Incident \_\_\_\_\_

Name of Exposed Individual \_\_\_\_\_

Location of Incident \_\_\_\_\_

Description of Incident \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Disposition of Individual(s) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name of Person Writing Report \_\_\_\_\_

Signature of Person Writing Report \_\_\_\_\_

Date of Report \_\_\_\_\_

## Eight Vital Hazard Pictograms

The recently-adopted Globally Harmonized System of Classification and Labeling of Chemicals relies on eight core pictograms which are listed below.



**Health Hazard:** This pictogram indicates a substance that presents a health hazard when inhaled, has high carcinogenicity or mutagenicity, and/or directly damages one or more organs.



**Flame:** The flame pictogram indicates a substance that is flammable. This includes common flammable substances such as gasoline, but also includes liquids and solids that burst into flame when in contact with air and water, and mixtures with the potential to self-heat and spontaneously ignite.



**Exclamation Point:** That exclamation point is designed to get your attention quickly, because it indicates a hazard that is acutely toxic. Acutely toxic substances cause damage quickly, can be absorbed in numerous ways (including respiration and skin contact), and can cause damage to eyes, skin, and internal organs with even minute exposure.



**Gas Cylinder:** This pictogram indicates that gas under pressure. This includes compressed gases, liquified gases, and gases that have been dissolved.



**Corrosion:** Exactly what the name would suggest, this pictogram indicates substances that corrode metal or flesh. Needless to say, these substances can cause serious eye damage.



**Exploding Bomb:** The exploding bomb pictogram commonly indicates explosives, but it also includes substances and mixtures that are self-reactive, which can react explosively to even the most minor of physical shocks, or even a slight increase in air pressure.



**Flame Over Circle:** This pictogram represents gases or liquids that oxidize, or lose electrons. This seems like a minor concern compared to, say, explosives, but the oxidization process can completely transform a substance. Hydrogen gas, for instance, quickly becomes water when oxidized -- that's great news for thirsty people, but bad news for anyone hoping to use that hydrogen for its many industrial purposes.



**Skull and Crossbones:** The skull and crossbones pictogram serves as a warning against substances that are acutely toxic. These are substances that can cause significant damage with very limited exposure, such as a single dose absorbed orally or through the skin. Effects of acutely toxic substances range from skin lesions, to respiratory difficulties, all the way up to death.

**By Standard Number**

1910.1048 App A - Substance technical guidelines for formalin

Part Number: 1910  
Part Number Title: Occupational Safety and Health Standards  
Subpart: 1910 Subpart Z  
Subpart Title: Toxic and Hazardous Substances  
Standard Number: [1910.1048 App A](#)  
Title: Substance technical guidelines for formalin  
GPO Source: [e-CFR](#)

The following Substance Technical Guideline for Formalin provides information on uninhibited formalin solution (37 percent formaldehyde, no methanol stabilizer). It is designed to inform employees at the production level of their rights and duties under the formaldehyde standard whether their job title defines them as workers or supervisors. Much of the information provided is general; however, some information is specific for formalin. When employee exposure to formaldehyde is from resins capable of releasing formaldehyde, the resin itself and other impurities or decomposition products may also be toxic, and employers should include this information as well when informing employees of the hazards associated with the materials they handle. The precise hazards associated with exposure to formaldehyde depend both on the form (solid, liquid, or gas) of the material and the concentration of formaldehyde present. For example, 37-50 percent solutions of formaldehyde present a much greater hazard to the skin and eyes from spills or splashes than solutions containing less than 1 percent formaldehyde. Individual Substance Technical Guidelines used by the employer for training employees should be modified to properly give information on the material actually being used.

**Substance Identification**

Chemical Name: Formaldehyde  
Chemical Family: Aldehyde  
Chemical Formula: HCHO  
Molecular Weight: 30.03  
Chemical Abstracts Service Number (CAS Number): 50-00-0

Synonyms: Formalin; Formic Aldehyde; Paraform; Formol; Formalin (Methanol-free); Fyde; Formalith; Methanal; Methyl Aldehyde; Methylene Glycol; Methylene Oxide; Tetraoxymethalene; Oxomethane; Oxymethylene

**Components and Contaminants**

Percent: 37.0 Formaldehyde  
Percent: 63.0 Water

(Note.-Inhibited solutions contain methanol.)

Other Contaminants: Formic acid (alcohol free) Exposure Limits:

OSHA TWA-1 ppm  
OSHA STEL-2 ppm

**Physical Data**

Description: Colorless liquid, pungent odor

**Boiling point:** 214 deg. F (101 deg. C)  
**Specific Gravity:** 1.08 (H<sub>2</sub>O=1 at 20 deg. C)  
**pH:** 2.8-4.0  
**Solubility in Water:** Miscible  
**Solvent Solubility:** Soluble in alcohol and acetone  
**Vapor Density:** 1.04 (Air=1 at 20 deg. C)  
**Odor Threshold:** 0.8-1 ppm

### **Fire and Explosion Hazard**

Moderate fire and explosion hazard when exposed to heat or flame.

The flash point of 37 percent formaldehyde solutions is above normal room temperature, but the explosion range is very wide, from 7 to 73 percent by volume in air.

Reaction of formaldehyde with nitrogen dioxide, nitromethane, perchloric acid and aniline, or peroxyformic acid yields explosive compounds.

**Flash Point:** 185 deg. F (85 deg. C) closed cup  
**Lower Explosion Limit:** 7 percent  
**Upper Explosion Limit:** 73 percent  
**Autoignition Temperature:** 806 deg. F (430 deg. C)  
**Flammability (OSHA):** Category 4 flammable liquid

**Extinguishing Media:** Use dry chemical, "alcohol foam", carbon dioxide, or water in flooding amounts as fog. Solid streams may not be effective. Cool fire-exposed containers with water from side until well after fire is out.

Use of water spray to flush spills can also dilute the spill to produce nonflammable mixtures. Water runoff, however, should be contained for treatment.

**National Fire Protection Association Section 325M Designation:**

**Health: 2-Materials hazardous to health, but areas may be entered with full-faced mask self-contained breathing apparatus which provides eye protection.**

**Flammability: 2-Materials which must be moderately heated before ignition will occur. Water spray may be used to extinguish the fire because the material can be cooled below its flash point.**

**Reactivity: D-Materials which (in themselves) are normally stable even under fire exposure conditions and which are not reactive with water. Normal fire fighting procedures may be used.**

### **Reactivity**

**Stability:** Formaldehyde solutions may self-polymerize to form paraformaldehyde which precipitates.

**Incompatibility (Materials to Avoid):** Strong oxidizing agents, caustics, strong alkalies, isocyanates, anhydrides, oxides, and inorganic acids. Formaldehyde reacts with hydrochloric acid to form the potent carcinogen, bis-chloromethyl ether. Formaldehyde reacts with nitrogen dioxide, nitromethane, perchloric acid and aniline, or peroxyformic acid to yield explosive compounds. A violent reaction occurs when formaldehyde is mixed with strong oxidizers.

**Hazardous Combustion or Decomposition Products:** Oxygen from the air can oxidize formaldehyde to formic acid, especially when heated. Formic acid is corrosive.

### **Health Hazard Data**

## Acute Effects of Exposure

**Ingestion (Swallowing):** Liquids containing 10 to 40 percent formaldehyde cause severe irritation and inflammation of the mouth, throat, and stomach. Severe stomach pains will follow ingestion with possible loss of consciousness and death. Ingestion of dilute formaldehyde solutions (0.03-0.04 percent) may cause discomfort in the stomach and pharynx.

**Inhalation (Breathing):** Formaldehyde is highly irritating to the upper respiratory tract and eyes. Concentrations of 0.5 to 2.0 ppm may irritate the eyes, nose, and throat of some individuals. Concentrations of 3 to 5 ppm also cause tearing of the eyes and are intolerable to some persons. Concentrations of 10 to 20 ppm cause difficulty in breathing, burning of the nose and throat, cough, and heavy tearing of the eyes, and 25 to 30 ppm causes severe respiratory tract injury leading to pulmonary edema and pneumonitis. A concentration of 100 ppm is immediately dangerous to life and health. Deaths from accidental exposure to high concentrations of formaldehyde have been reported.

**Skin (Dermal):** Formalin is a severe skin irritant and a sensitizer. Contact with formalin causes white discoloration, smarting, drying, cracking, and scaling. Prolonged and repeated contact can cause numbness and a hardening or tanning of the skin. Previously exposed persons may react to future exposure with an allergic eczematous dermatitis or hives.

**Eye Contact:** Formaldehyde solutions splashed in the eye can cause injuries ranging from transient discomfort to severe, permanent corneal clouding and loss of vision. The severity of the effect depends on the concentration of formaldehyde in the solution and whether or not the eyes are flushed with water immediately after the accident.

**Note.**-The perception of formaldehyde by odor and eye irritation becomes less sensitive with time as one adapts to formaldehyde. This can lead to overexposure if a worker is relying on formaldehyde's warning properties to alert him or her to the potential for exposure.

### Acute Animal Toxicity:

Oral, rats: LD50=800 mg/kg

Oral, mouse: LD50=42 mg/kg

Inhalation, rats: LCLo=250 mg/kg

Inhalation, mouse: LCLo=900 mg/kg

Inhalation, rats: LC50=590 mg/kg

## Chronic Effects of Exposure

**Carcinogenicity:** Formaldehyde has the potential to cause cancer in humans. Repeated and prolonged exposure increases the risk. Various animal experiments have conclusively shown formaldehyde to be a carcinogen in rats. In humans, formaldehyde exposure has been associated with cancers of the lung, nasopharynx and oropharynx, and nasal passages.

**Mutagenicity:** Formaldehyde is genotoxic in several in vitro test systems showing properties of both an initiator and a promoter.

**Toxicity:** Prolonged or repeated exposure to formaldehyde may result in respiratory impairment. Rats exposed to formaldehyde at 2 ppm developed benign nasal tumors and changes of the cell structure in the nose as well as inflamed mucous membranes of the nose. Structural changes in the epithelial cells in the human nose have also been observed. Some persons have developed asthma or bronchitis following exposure to formaldehyde, most often as the result of an accidental spill involving a single exposure to a high concentration of formaldehyde.

## Emergency and First Aid Procedures

**Ingestion (Swallowing):** If the victim is conscious, dilute, inactivate, or absorb the ingested formaldehyde by giving milk, activated charcoal, or water. Any organic material will inactivate formaldehyde. Keep affected person warm and

at rest. Get medical attention immediately. If vomiting occurs, keep head lower than hips.

**Inhalation (Breathing):** Remove the victim from the exposure area to fresh air immediately. Where the formaldehyde concentration may be very high, each rescuer must put on a self-contained breathing apparatus before attempting to remove the victim, and medical personnel should be informed of the formaldehyde exposure immediately. If breathing has stopped, give artificial respiration. Keep the affected person warm and at rest. Qualified first-aid or medical personnel should administer oxygen, if available, and maintain the patient's airways and blood pressure until the victim can be transported to a medical facility. If exposure results in a highly irritated upper respiratory tract and coughing continues for more than 10 minutes, the worker should be hospitalized for observation and treatment.

**Skin Contact:** Remove contaminated clothing (including shoes) immediately. Wash the affected area of your body with soap or mild detergent and large amounts of water until no evidence of the chemical remains (at least 15 to 20 minutes). If there are chemical burns, get first aid to cover the area with sterile, dry dressing, and bandages. Get medical attention if you experience appreciable eye or respiratory irritation.

**Eye Contact:** Wash the eyes immediately with large amounts of water occasionally lifting lower and upper lids, until no evidence of chemical remains (at least 15 to 20 minutes). In case of burns, apply sterile bandages loosely without medication. Get medical attention immediately. If you have experienced appreciable eye irritation from a splash or excessive exposure, you should be referred promptly to an ophthalmologist for evaluation.

### **Emergency Procedures**

**Emergencies:** If you work in an area where a large amount of formaldehyde could be released in an accident or from equipment failure, your employer must develop procedures to be followed in event of an emergency. You should be trained in your specific duties in the event of an emergency, and it is important that you clearly understand these duties. Emergency equipment must be accessible and you should be trained to use any equipment that you might need. Formaldehyde contaminated equipment must be cleaned before reuse.

If a spill of appreciable quantity occurs, leave the area quickly unless you have specific emergency duties. Do not touch spilled material. Designated persons may stop the leak and shut off ignition sources if these procedures can be done without risk. Designated persons should isolate the hazard area and deny entry except for necessary people protected by suitable protective clothing and respirators adequate for the exposure. Use water spray to reduce vapors. Do not smoke, and prohibit all flames or flares in the hazard area.

**Special Firefighting Procedures:** Learn procedures and responsibilities in the event of a fire in your workplace. Become familiar with the appropriate equipment and supplies and their location. In firefighting, withdraw immediately in case of rising sound from venting safety device or any discoloration of storage tank due to fire.

### **Spill, Leak, and Disposal Procedures**

**Occupational Spill:** For small containers, place the leaking container in a well ventilated area. Take up small spills with absorbent material and place the waste into properly labeled containers for later disposal. For larger spills, dike the spill to minimize contamination and facilitate salvage or disposal. You may be able to neutralize the spill with sodium hydroxide or sodium sulfite. Your employer must comply with EPA rules regarding the clean-up of toxic waste and notify state and local authorities, if required. If the spill is greater than 1,000 lb/day, it is reportable under EPA's Superfund legislation.

**Waste Disposal:** Your employer must dispose of waste containing formaldehyde in accordance with applicable local, state, and Federal law and in a manner that minimizes exposure of employees at the site and of the clean-up crew.

### **Monitoring and Measurement Procedures**

**Monitoring Requirements:** If your exposure to formaldehyde exceeds the 0.5 ppm action level or the 2 ppm STEL, your employer must monitor your exposure. Your employer need not measure every exposure if a "high exposure" employee can be identified. This person usually spends the greatest amount of time nearest the process equipment.



If you are a "representative employee", you will be asked to wear a sampling device to collect formaldehyde. This device may be a passive badge, a sorbent tube attached to a pump, or an impinger containing liquid. You should perform your work as usual, but inform the person who is conducting the monitoring of any difficulties you are having wearing the device.

**Evaluation of 8-hour Exposure:** Measurements taken for the purpose of determining time-weighted average (TWA) exposures are best taken with samples covering the full shift. Samples collected must be taken from the employee's breathing zone air.

**Short-term Exposure Evaluation:** If there are tasks that involve brief but intense exposure to formaldehyde, employee exposure must be measured to assure compliance with the STEL. Sample collections are for brief periods, only 15 minutes, but several samples may be needed to identify the peak exposure.

**Monitoring Techniques:** OSHA's only requirement for selecting a method for sampling and analysis is that the methods used accurately evaluate the concentration of formaldehyde in employees' breathing zones. Sampling and analysis may be performed by collection of formaldehyde on liquid or solid sorbents with subsequent chemical analysis. Sampling and analysis may also be performed by passive diffusion monitors and short-term exposure may be measured by instruments such as real-time continuous monitoring systems and portable direct reading instruments.

**Notification of Results:** Your employer must inform you of the results of exposure monitoring representative of your job. You may be informed in writing, but posting the results where you have ready access to them constitutes compliance with the standard.

### **Protective Equipment and Clothing**

[Material impervious to formaldehyde is needed if the employee handles formaldehyde solutions of 1 percent or more. Other employees may also require protective clothing or equipment to prevent dermatitis.]

**Respiratory Protection:** Use NIOSH-approved full facepiece negative pressure respirators equipped with approved cartridges or canisters within the use limitations of these devices. (Present restrictions on cartridges and canisters do not permit them to be used for a full workshift.) In all other situations, use positive pressure respirators such as the positive-pressure air purifying respirator or the self-contained breathing apparatus (SCBA). If you use a negative pressure respirator, your employer must provide you with fit testing of the respirator at least once a year.

**Protective Gloves:** Wear protective (impervious) gloves provided by your employer, at no cost, to prevent contact with formalin. Your employer should select these gloves based on the results of permeation testing and in accordance with the ACGIH Guidelines for Selection of Chemical Protective Clothing.

**Eye Protection:** If you might be splashed in the eyes with formalin, it is essential that you wear goggles or some other type of complete protection for the eye. You may also need a face shield if your face is likely to be splashed with formalin, but you must not substitute face shields for eye protection. (This section pertains to formaldehyde solutions of 1 percent or more.)

**Other Protective Equipment:** You must wear protective (impervious) clothing and equipment provided by your employer at no cost to prevent repeated or prolonged contact with formaldehyde liquids. If you are required to change into whole-body chemical protective clothing, your employer must provide a change room for your privacy and for storage of your normal clothing.

If you are splashed with formaldehyde, use the emergency showers and eyewash fountains provided by your employer immediately to prevent serious injury. Report the incident to your supervisor and obtain necessary medical support.

### **Entry Into an IDLH Atmosphere**

Enter areas where the formaldehyde concentration might be 100 ppm or more only with complete body protection including a self-contained breathing apparatus with a full facepiece operated in a positive pressure mode or a supplied air respirator with full facepiece and operated in a positive pressure mode. This equipment is essential to protect your life and health under such extreme conditions.

## Engineering Controls

Ventilation is the most widely applied engineering control method for reducing the concentration of airborne substances in the breathing zones of workers. There are two distinct types of ventilation.

**Local Exhaust:** Local exhaust ventilation is designed to capture airborne contaminants as near to the point of generation as possible. To protect you, the direction of contaminant flow must always be toward the local exhaust system inlet and away from you.

**General (Mechanical):** General dilution ventilation involves continuous introduction of fresh air into the workroom to mix with the contaminated air and lower your breathing zone concentration of formaldehyde. Effectiveness depends on the number of air changes per hour. Where devices emitting formaldehyde are spread out over a large area, general dilution ventilation may be the only practical method of control.

**Work Practices:** Work practices and administrative procedures are an important part of a control system. If you are asked to perform a task in a certain manner to limit your exposure to formaldehyde, it is extremely important that you follow these procedures.

## Medical Surveillance

Medical surveillance helps to protect employees' health. You are encouraged strongly to participate in the medical surveillance program.

Your employer must make a medical surveillance program available at no expense to you and at a reasonable time and place if you are exposed to formaldehyde at concentrations above 0.5 ppm as an 8-hour average or 2 ppm over any 15-minute period. You will be offered medical surveillance at the time of your initial assignment and once a year afterward as long as your exposure is at least 0.5 ppm (TWA) or 2 ppm (STEL). Even if your exposure is below these levels, you should inform your employer if you have signs and symptoms that you suspect, through your training, are related to your formaldehyde exposure because you may need medical surveillance to determine if your health is being impaired by your exposure.

The surveillance plan includes:

- (a) A medical disease questionnaire.
- (b) A physical examination if the physician determines this is necessary.

If you are required to wear a respirator, your employer must offer you a physical examination and a pulmonary function test every year.

The physician must collect all information needed to determine if you are at increased risk from your exposure to formaldehyde. At the physician's discretion, the medical examination may include other tests, such as a chest x-ray, to make this determination.

After a medical examination the physician will provide your employer with a written opinion which includes any special protective measures recommended and any restrictions on your exposure. The physician must inform you of any medical conditions you have which would be aggravated by exposure to formaldehyde.

All records from your medical examinations, including disease surveys, must be retained at your employer's expense.

## Emergencies

If you are exposed to formaldehyde in an emergency and develop signs or symptoms associated with acute toxicity from formaldehyde exposure, your employer must provide you with a medical examination as soon as possible. This medical examination will include all steps necessary to stabilize your health. You may be kept in the hospital for observation if your symptoms are severe to ensure that any delayed effects are recognized and treated.

[71 FR 16673, April 3, 2006; 78 FR 9313, Feb. 8, 2013]

### APPENDIX H

#### Possible Chemicals and Supplies in RVU Labs

ABTS	CAS 30931-67-0		Sigma
Acqua Stain Protein Gel stain	AS001000		Bulldog Bio
Amplex Ultra Red	A36006		Invitrogen
BD Veritor System Reader Casrtridge	8086224		BD
bleach			
chitosan	CAS 9012-76-4		Sigma
Ciprofloxacin	17850-56-f		
CMV ELISA Kit	KA0228		Abnova
D+ Glucose	68270-100g		Sigma
dish soap			
Dream Taq	K1082		Fisher
E-gel Ex 1% Agarose	G401001		Invitrogen
EGTA	CAS 67-42-5		
Gene Elute	G1N10-1KT		Sigma
HEPES	AB06021-00100		American Bio
Lysol			
Lysozyme	L4919-5G		Sigma
Magnesium sulfate heptahydrate	230391		Sigma
NHS-PEG Biotin	1863420		Fisher
Oxalacetic acid	CAS 328-42-7		
Paraffin Type 6			Richard Allan Sciences
PEG 5000	46824	CAS 58320-	

		73-3	
Phosphate buffered saline	806552-1L		Sigma
PLGA 75:25	AP201		PolySciTech
PLGA 90:10	AP210		PolySciTech
Potato Dextrose Agar plates	82-1902		Carolina Biosciences
ProOsteon 500R	Biomet		Biomet
Protease Inhibitor Cocktail	P8340		Sigma
Pure Link	K1820-01		
Ribonuclease A	R6513		Sigma
Sulfo-NHS	CAS 106627-54-7		Fisher
Tris 1M	AB 14044-01100		American Bio
Tris 2M	AB 14116-01100		American Bio
Vancomycin Hydrochloride	CAS 1404-93-9		Gold Bio
Zymo Quick gDNA	D3024		