This report summarizes my experience as Miami University’s Interim Director of the Environmental Health & Safety Offices (EHSO) which I used to satisfy the professional experience requirements for a Master of Environmental Science degree from Miami’s Institute for the Environment and Sustainability. As Interim Director of EHSO, I managed the offices through a time of aggressive change. This included a change in EHSO reporting lines, a transition of Risk Management functions to another department and relocating the EHSO. I was also responsible for addressing union safety concerns at Labor-Management Committee meetings and the hiring of a new employee. Two major projects that I worked on were developing and implementing a “Restricted Access” Standard Operating Procedure for construction and maintenance workers that entered laboratory spaces and the installation of an Emergency Responder Radio Coverage System in campus structures that had deficient radio reception.
MIAMI UNIVERSITY INTERNSHIP AS INTERIM DIRECTOR
ENVIRONMENTAL HEALTH & SAFETY OFFICES

An Internship Report

Submitted to the
Faculty of Miami University
in partial fulfillment of
the requirements for the degree of
Master of Environmental Science

by

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Oxford, Ohio

2016

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This Internship Report titled

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ENVIRONMENTAL HEALTH & SAFETY OFFICES

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and

Institute for the Environment & Sustainability

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I would first like to thank my committee members, Suzanne Zazycki, Annie-Laurie Blair, and Peter Salzarulo for their time, support, and thoughtful comments throughout my report-writing process. Special appreciation goes to my advisor Suzanne Zazycki for her encouragement and guidance during my journey through the IES program. I would also like to thank my former supervisor, Dennis Fleetwood, for the encouragement and flexibility he offered during my time in the IES program.
Section 1: Introduction

During my graduate studies with Miami University’s Institute for the Environment and Sustainability (IES) I continued to work full time for Miami’s Environmental Health and Safety Offices (EHSO) where I serve as the University’s Certified Industrial Hygienist and Radiation Safety Officer. In August 2015, I was promoted to Interim Director of the EHSO through the end of 2016. To fulfill my Masters of Environmental Science degree I am required to complete an internship, practicum, or thesis. Due to the recent changes in my job responsibilities, I chose to use my continuing experience as Interim Director of the EHSO to fulfill my internship requirement for the professional experience.

This experience allowed me to develop valuable skills managing a group of health and safety professionals at a directorship level, and also allowed me to apply the knowledge and experience I acquired through my graduate work with IES. Some of the courses that were especially helpful were those that I took for my area of concentration, Personnel and Process Management, including Employment Law, Labor Relations & Conflict Management, Compensation Management, and Quality Management Systems. These courses helped me better understand the role and responsibilities of serving in a management position and gave me practical skills that I applied daily.

1.1 EHSO Organizational Structure

The EHSO at Miami University are broadly composed of four functional groups that include fire safety, occupational safety, radiation safety, and environmental programs. They provide services for the Oxford, Middletown, and Hamilton campuses as well as the Voice of America facility. The EHSO are housed within the University’s office of Finance and Business Services (Figure 1).
The fire safety group consists of the University Fire Marshal and two Fire Safety Specialists. They are responsible for ensuring that Miami meets the requirements of the Ohio Fire Code and OSHA regulations adopted by the state of Ohio Fire Marshal’s Office. The fire safety staff focus on three key issues; fire prevention, life safety, and emergency planning.

The occupational safety group consists of a Facilities Safety Coordinator and an Industrial Hygienist. Occupational safety and industrial hygiene provide services that include worksite evaluations, monitoring, training, and consultation in support of OSHA regulations adopted by the State of Ohio. This group is responsible for the detection, evaluation, and monitoring of...
chemical, physical, and biological hazards present in the workplace. An educational component develops and conducts health and safety training in support of numerous campus functions.

The radiation safety group consists of a Radiation Safety Officer and Radiation Safety Technician. The group manages the Radiation Safety Program that is designed to comply with Ohio Department of Health and Nuclear Regulatory Commission regulations. The program protects workers, students, the general public, and the environment from the detrimental effects of radioactive materials and radiation generating equipment.

The environmental programs group consists of the Environmental Programs Manager. The group provides assistance with permit applications, and guidance regarding compliance with local, state and federal environmental regulations. Two major areas of responsibility include maintaining compliance with the University’s Title V Air Permit, and the responsible collection and disposal of chemical and hazardous waste.

The EHSO was originally created in 1982 as the Academic Safety Office to address safety in Miami’s laboratories and art studios. In 1988 the Office was renamed the EHSO under

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>The Academic Safety Office (ASO) was created.</td>
</tr>
<tr>
<td>1988</td>
<td>The ASO was redefined to establish the Environmental Health and Safety Office (EHSO) under Finance and Business Affairs and given campus-wide responsibility for environmental, health, and safety issues.</td>
</tr>
<tr>
<td>1991</td>
<td>The Radiation Safety Office was transferred to EHSO.</td>
</tr>
<tr>
<td>1995</td>
<td>The State of Ohio adopted OSHA regulations. EHSO was tasked to address compliance activities for over 100 new regulatory standards.</td>
</tr>
<tr>
<td>2000</td>
<td>EHSO expanded environmental management responsibilities to include all EPA-related compliance activities.</td>
</tr>
<tr>
<td>2012</td>
<td>EHSO became responsible for Risk Management and Insurance. The name changed to Environmental Safety and Risk Management (ES&amp;RM) to better reflect the range of services provided by the department.</td>
</tr>
<tr>
<td>2015</td>
<td>Responsibility for Risk Management, Insurance, and Emergency Preparedness are moved out of ES&amp;RM. The name is changed to Environmental Health &amp; Safety Offices (EHSO) to reflect the change in responsibility. Reporting lines are changed from the Senior Associate Vice President of Business &amp; Finance &amp; Treasurer to the Associate Vice President of Physical Facilities. Offices are moved from Hughes Hall to Cole Service Building.</td>
</tr>
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Figure 2: The EHSO chronology of development from inception in 1982 to the current state.
Finance and Business Affairs and given campus-wide responsibility for environmental, health, and safety issues. The offices have undergone other name changes throughout the years and responsibilities have been added and removed (Figure 2).

1.2 Work Responsibilities Prior to Term as Interim Director

During my role as Interim Director of the EHSO I continued to serve as the University’s Radiation Safety Officer, with the responsibility of managing all aspects of the Radiation Safety Program with assistance from a full time Radiation Safety Technician. The program includes:

- Conducting radiation safety training
- Performing quarterly laboratory inspections
- Managing radioactive waste disposal
- Calibrating radiation survey meters
- Monitoring workers dose to radiation
- Shipping and receiving radioactive materials

The primary goal of the program is to ensure that radioactive materials and radiation generating equipment found in Miami’s laboratories are used safely, and that exposures are kept to a minimum. To achieve this, the philosophy of “ALARA” is promoted to radiation users throughout campus. ALARA is an acronym that stands for As Low As Reasonably Achievable (OAC 3701:1-38-01(A)(15)). It promotes the use of time, distance and shielding to keep exposures to radiation workers as low as possible, while still allowing for its beneficial use. Time that radioactive materials are actually in use at Miami is minimized by first conducting practice experiments without the material. This allows the researcher to work out problems with the experiment ahead of time; thereby minimizing the time the experiment will take when using radioactive material. Increasing the users distance from the materials by using mechanical methods such as forceps or tongs to manipulate the material also minimizes exposures. Finally, shielding may be used to block much of the radiation that might otherwise expose the worker. Acrylic sheets commonly referred to as “plexiglass” as well as lead are commonly used on campus for this purpose.

One of the more common functions of the Radiation Safety Office is to conduct surveys for radioactive contamination. The two types of instruments used at Miami are liquid scintillation counters and Geiger-Mueller counters. Liquid scintillation counters (Figure 3) are large
stationary instruments that are used to test a sample for removable contamination. The process involves wiping the suspect surface with a Q-tip or filter pad. The sample is then placed into a translucent vile and filled with scintillation fluid. The scintillation fluid contains a solute known as scintillators that are suspended in a water-soluble solvent. If contamination is present it will interact with the scintillators to produce light. Once the sample is loaded into the scintillation counter the instrument is able to detect the light emitted from the sample and determine the level of contamination that is present.

Geiger-Muller counters (Figure 4) are hand held portable instruments that use a sensing element to detect the radiation and an electronics box to process and display the results. While both instruments are valuable tools to detect radiation, the advantage of the Geiger-Mueller counter is that it gives you instantaneous results and can be used to detect both fixed and removable contamination. The disadvantage is that it is not capable of registering isotopes with very low energy. The advantage of the liquid scintillation counter is that it is very efficient at detecting low energy isotopes. The disadvantage is that it cannot be used to detect fixed contamination. For these reasons both instruments are typically employed to determine if contamination is present.

Figure 3: Scintillation counter with three vials in rack to be analyzed.

Figure 4: Geiger-Muller counter with pancake sensing probe.
In addition to my radiation safety responsibilities I also continued to manage occupational safety programs as the University’s Industrial Hygienist. This included direct responsibility for many of the programs that are implemented throughout campus. These programs include:

- Asbestos Operations & Maintenance Program – To protect workers from exposure to asbestos-containing building materials during maintenance and custodial activities.
- Bloodborne Pathogen Program – To protect employees from acquiring diseases associated exposure to human blood such as administering First Aid and cleaning up blood spills after an accident.
- Injury/Illness program – To track and report serious injuries through the Public Employee Risk Reduction Program.
- Laboratory Safety Program – To protect students and employees from common chemical, biological, and physical hazards found in the laboratory.

Prior to becoming Interim Director I also managed the activities of the Facilities Safety Coordinator. As the name implies, the position focuses primarily on safety issues within the Physical Facilities Department. I was responsible for developing and updating standard operating procedures for safety as well as the management of safety programs. Some of these programs include:

- Hearing Conservation Program – To protect workers from hearing loss associated with occupational noise exposure.
- Respiratory Protection Program – To protect workers from airborne concentrations of hazardous air pollutants.
- Lockout-Tagout Program – To protect workers from becoming injured due to the unexpected start-up of hazardous energy sources.
- Confined Space Entry Program – To protect workers from entering confined spaces when hazardous atmospheres may be present such as entering a sanitary sewer system for maintenance.

Conducting indoor air quality investigations are also a routine part of my job. Although requests occasionally come from occupants in academic buildings, students or the parents of students living in dormitories initiate the majority of investigations. These investigations are typically requested due to concerns of potential mold exposure, and often result in consultations with the concerned student or parent following the investigation.
1.3 Responsibilities as Interim Director EHSO

During my tenure as Interim Director, I had considerably more managerial responsibility, as well as additional involvement in projects outside the scope of my role as Certified Industrial Hygienist and RSO. Chapter 2 will explain some of the main managerial tasks that I engaged in as Interim Director. Chapter 3 will explain a Laboratory “Restricted Access” Standard Operating Procedure that I was responsible for developing and implementing. Chapter 4 outlines an Emergency Responder Radio Reception project that I lead during the initial phase of scoping the project. Chapter 5 provides a reflection on my position as Interim Director of EHSO as well as my training during the Master of Environmental Science program.
Section 2: General Managerial Tasks as Interim Director EHSO

Serving as Interim Director was a challenging position as my job responsibilities changed significantly during that time. One of the most significant changes was the number of meetings that I was routinely expected to attend and the number of group projects that I was asked to participate. Meetings included monthly senior staff meetings within Finance & Business Services, monthly staff meetings within Physical Facilities Department, and weekly meetings with direct support staff. I was a project participant in updating Miami’s Pandemic Flu Plan, as well as the University’s Emergency Response Plan. In addition to these demands on my time, I managed the EHSO through a period of aggressive change that presented challenges as well as opportunities. This allowed me to directly apply many of the skills and knowledge gained during my Area of Concentration classes and other experiences I had been refining up to this year.

2.1 Change in EHSO Reporting Lines

One of the more challenging changes that occurred during my tenure was the change made to the organizational reporting structure. As a business unit, the EHSO belongs to the larger group of supporting organizations that collectively make up Finance & Business Services. Some of these groups include the University Police, Physical Facilities Department, and Housing Dining Recreational & Business Services. All of these groups report to the Senior Vice President of Finance & Business Services. The EHSO reporting lines were changed from being a direct report to the Senior Vice President of Finance & Business Services to reporting to the Associate Vice President of Facilities Planning & Operations.

Although these reporting changes did not change the overall function of the EHSO, it did have an impact on how we as a group accomplished our work. Under the new reporting structure the EHSO became more integrated within the Physical Facilities Department (PFD). One

<table>
<thead>
<tr>
<th>Lean Definition:</th>
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<td>“A strategic and methodical approach to stream line processes while being highly considerate of the individuals completing the work. Ultimately, Lean’s purpose is the relentless pursuit to eliminate waste. Another way to look at Lean is continuous improvement.”</td>
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<tr>
<td>Source: <a href="https://miamioh.edu/about-miami/leadership/finance-business/lean/terminology/index.html">https://miamioh.edu/about-miami/leadership/finance-business/lean/terminology/index.html</a></td>
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example of this was a Lean project that was formed to explore the pooling of administrative services (see text box for Lean definition). The project reviewed administrative responsibilities of four Administrative Assistants in PFD, and one part-time Administrative Assistant in the EHSO. The goal was to determine if there were administrative services that could be shared within the two organizations. No definitive conclusions have been reached from the project, but there is a desire within the PFD management structure to have all Administrative Assistants housed in one location. This also aligns with decision of the Associate Vice President of Facilities Planning & Operations to have the EHSO offices moved from Hughes Hall to PFD’s base of operations in Cole Service Building (CSB).

2.2 Office Relocation

To make room for our offices within CSB, PFD chose to relocate another unit, the Operations Center, and to renovate the space to accommodate our group. The footprint of the new space was considerably smaller than the area we were leaving, requiring me to critically evaluate the ESHO operations and needs. My critical analysis and discussion with PFD resulted in permission to keep the RS Office in Hughes Hall. The RS Office routinely receives shipments of radioactive material that requires the use of the liquid scintillation counter to properly screen for contamination. Since several academic departments also share this expensive piece of equipment, it was easy present the case that it was more efficient to keep the infrastructure of the RS Office in place. I was able to maintain the current suite of three offices that support the program and use them as part-time offices. Although the entire staff would be moving to CSB, the main functions of receiving and storing radioactive material would continue to be conducted in Hughes Hall.

Another concern in moving the offices was ensuring all of my staff had their own office at our new location within CSB. My six full-time direct reports all had their own offices at our location in Hughes, and I felt to maintain morale and foster a professional environment it was important to continue that practice. Although the initial renovation plans of our new space showed several of my employees sharing offices, I was successful in reconfiguring the new space to support individual offices, and I was also able to modestly increase the footprint of our new space.
Preparing to move the offices also presented some challenges due to the space limitations of our new location. The EHSO had been located in the same area since it was formed in 1982. During that period the office accumulated an enormous amount of old equipment and files. Equipment that was no longer useful was disposed or recycled and files that had no regulatory retention requirement or value were shredded. Even with these housekeeping measures we continued to possess more files and equipment than our new space could accommodate. As a result, I was able to justify keeping one additional office suite in Hughes Hall for the storage of these materials.

2.3 Labor-Management Committee

Another change that occurred during my job was the level of participation by the EHSO in Labor-Management Committee meetings. On July 1, 2016 the University signed a new three-year labor agreement with the American Federation of State, County and Municipal Employees, Ohio Council #8, Local Union 209, AFL-CIO. The new agreement included the following language requiring the formation of a Safety Committee within the Labor-Management Committee.

The University and the Union shall form a Labor-Management and Safety Committee which will be responsible for developing partnering strategies and establishing programs that will lead to cooperative and collaborative labor-management relations. The Labor-Management and Safety Committee shall meet to discuss issues and concerns important to the employees and the University on the last Wednesday of every calendar month unless mutually agreed upon. A standing agenda item for each meeting shall be the safety concerns of the Union and/or University. Meetings may be scheduled on a different frequency by mutual consent, but no fewer than two (2) times during each contract year….

Although the EHSO had occasionally addressed safety concerns raised by the Union, this was the first time that safety was contractually made part of the bargaining unit. As a result, I attended all Labor-Management Committee meetings due to a significant increase in the number of safety issues brought forth by the Union. Fortunately, one of the management classes I took for my area of concentration (Labor Relations and Conflict Management) helped prepare me for the challenge. Prior to taking the class I had no formal knowledge or direct experience working with Unions. The class gave me a better understanding of the history and purpose of unions as
well as the mechanics of how they operate. It was very instrumental in providing me a foundation for understanding the negotiating process and the techniques and tools that can be employed. It taught me that conflict between labor and management is unavoidable, and it is the job of the union to give employees a voice. This was helpful in trying to resolve concerns brought forth by the union. Instead of approaching concerns with a winner take all approach; I intentionally sought out solutions that would result in mutual-gains. The class also taught me the importance of making the other party clearly state their position or concern before discussing possible solutions. This was very valuable in that it helps to focus energies on their specific problem without unknowingly introducing additional concerns.

2.4 Employee Hiring

Another challenge I encountered during my tenure was the replacement of an employee. In April 2016, one of my offices’ Fire Safety Specialists resigned to accept a full time position with a Fire Department. His departure presented me with two challenges. The first was managing the Fire Safety group with fewer employees, and the second was going through the process of hiring a replacement. Fortunately I had previous experience interviewing perspective employees, but I had never been responsible for the entire hiring process. After contacting Miami’s Human Resources Department I learned that the University no longer had a job description for the position I was trying to fill. Since the position reported to the University Fire Marshal I worked closely with him to develop the job description and salary range and continued to involve him throughout the hiring process. This consisted of screening potential applicants, conducting phone interviews with prospective candidates, and conducting in person interviews with the three final candidates. I was finally able to fill the position in late August of this year. During the six-month vacancy I used my Radiation Safety Technician to assist the Fire Safety Group. This allowed the office to maintain the fire safety commitments and also added value to the office by having an employee cross train to acquire additional skills.

2.5 Risk Management Functions

Another significant change in the EHSO during my tenure as Interim Director was that the risk management responsibilities were moved out of the EHSO. These had consisted of overseeing the property and casualty insurance and the Emergency Management Plan. The property
insurance covers damage to all University owned properties, while the casualty insurance mainly covers liability of employees for negligence. Responsibility for the insurance program was moved to the newly formed Department of Risk Management. During the transition I continued to offer assistance and support for insurance claims. Responsibility for the Emergency Management Plan was dispersed among the individual groups within Finance & Business Services. I was tasked with researching University employee training requirements recommended by the National Incident Management System. I was also responsible for establishing contacts with the American Red Cross and Butler County Emergency Management Agency to determine what resources would be available to the University in the event of an emergency.
Section 3: Project Example 1: Laboratory “Restricted Access” SOP

Developing a Standard Operating Procedure (SOP) for “Restricted Access” to laboratories (Appendix A) is one of the major projects I was tasked with completing as Interim Director of EHSO. The need for the SOP arose during the renovation of Shideler Hall, which housed the laboratories for the Geology Department. As with most renovations, occupants were permitted to move into the building while contractors were continuing to finalize work. This led to several situations where contractors entered laboratory spaces without the permission from the Principle Investigator (PI) responsible for the space. In one instance a contractor used an expensive piece of equipment as a stepladder. In another case the contractor moved chemicals around the laboratory without the PI’s knowledge. These actions, along with several other similar occurrences, led the Geology Department to request a formal process be developed for contractors to access laboratories.

I was directly responsible for guiding the development and implementation of the SOP, from initial input from a working group at the start, to posting signage when implementation was complete. The SOP restricted access to PFD employees, contractors, and other university technicians that perform work in these areas. Developing the SOP required the input from various stakeholders including PFD, Information Technology Services, and numerous academic departments. One of the goals in developing the SOP was to keep it as simple as possible. SOP’s that are too complicated or too restrictive tend to be ignored. The SOP also needed to be integrated in PFD’s current work order system that is used to track and communicate work throughout campus.

3.1 Stakeholders

To help develop the “Restricted Access” SOP, we found it crucial to determine which stakeholders were involved. We found there were both internal and external stakeholders. Internal stakeholders are those responsible for implementing the SOP and are broken down into the two major groups of IT Services and PFD. The listing below further breaks down the specific groups within PFD responsible for implementing and following the SOP:

- Project managers
- Building Services
- Planner/Schedulers
- Trade shops
- Contractors
- Operations Center
External stakeholders are customers of the SOP and represent the owners, managers, and users of the laboratory spaces. These customers consisted of the College of Arts & Science, College of Engineering & Computing, Animal Care Facility, and the Hefner Museum. The listing below shows the various departments associated with these stakeholders:

- **College of Arts & Sciences**
  - Department of Chemistry & Biochemistry
  - Department of Biology
  - Department of Microbiology
  - Department of Psychology
  - Department of Geology
  - Department of Anthropology
- **College of Engineering & Computing**
  - Department of Chemical, Paper, and Biomedical Engineering
  - Department of Computer Science and Software Engineering
  - Department of Electrical and Computer Engineering
  - Department of Mechanical and Manufacturing Engineering
- **Animal Care Facility**
- **Hefner Museum**

### 3.2 Working Groups

To address the laboratory access concern, we formed a working group consisting of stakeholders representing Miami’s Physical Facilities Department (PFD), the buildings Academic Department, and EHSO. Representatives from PFD included the Associate Vice President, Senior Director of Operations, project managers, and planner schedulers. Representatives from the academic departments included the Associate Dean of Arts & Sciences, the Chair of the Geology Department, and Geology Department faculty, and staff. I served as the representative for EHSO.

During group discussions we identified a need to develop a standard procedure for how maintenance and construction personnel entered laboratories – not just in Shideler – but throughout campus. Although certain laboratories on campus had restrictions for entry, no Standard Operating Procedure (SOP) for entering restricted areas was in place, and no standard way to evaluate laboratories for restricted access had been developed.
Our working group established two basic criteria for determining if a laboratory should be considered for “Restricted Access.” The first criterion considered was the safety of the workers who entered the labs. There were two levels considered for employee safety: 1) labs with common hazards and 2) labs with unique hazards. Nearly all laboratories have common hazards that include the potential for exposure to chemicals, biological agents, and electrical hazards from equipment. Based on the knowledge and experience of the group, we determined that all workers should be trained on basic laboratory procedures in how to perform work safely in this environment. For laboratories with unique hazards the workers would need additional information from the lab owner to safely perform work. Labs with unique hazards would be used to differentiate a lab that only contained common hazards and make the space a candidate for “restricted access.”

The second criterion considered was the protection of the lab space from the work that maintenance or construction workers needed to perform. Many laboratories have sensitive equipment or experiments that workers may disturb, and often the workers are unaware of the damage they may be causing. These two criteria were used as the basis for developing the following purpose and scope of the SOP:

**Purpose and Scope of SOP for {labs with unique hazards}:** Some laboratories on campus have unique hazards and/or sensitive equipment/experiments. The purpose of this procedure is to protect maintenance employees, custodial staff and contractors from these unique hazards and ensure that sensitive equipment/experiments are not damaged. This SOP applies to preventative and routine work in all laboratories and areas that have been posted as “Restricted Access.”

### 3.3 Communicating “Restricted Access” Locations

The two major departments responsible for conducting work in the laboratories are PFD and IT Services. One of the more challenging aspects of developing the SOP was in determining the many different ways in which work occurring in the laboratories was assigned and tracked. PFD uses a facilities maintenance and asset management system called TMA to track assigned work through a work order system while IT Services uses a separate management system to track its work. Both systems are capable of placing “Lock-Out” statements on work orders generated for
specific locations. The “Lock-Out” statement can be customized for each location to convey specific information such as the reason a location is being locked out, and contact information for the owner of the space. Anytime a work order is generated for a specific space with a “Lock-Out” the statement will appear somewhere on the work order. All workers within IT Services system can view this information in IT’s system, however not everyone within PFD can view the information within the TMA system. For this reason I worked with PFD’s sign shop to develop signs (Figure 5) to ensure that workers entering the area were made aware of the “restricted access.” In addition to notifying workers of the “restricted access,” the signs also contained a sleeve at the bottom to allow users to update contact information for the space.

3.4 Evaluation Form

In addition to the SOP, the working group discussed the need to develop an evaluation form to help determine which spaces are appropriate for a “Restricted Access” designation. The form would be used to conduct initial laboratory evaluations and annually thereafter. The laboratory point of contact directly in charge of the space being evaluated would fill out the form. The Department Director or Chair was made responsible for distributing the form to the laboratory points of contact and collection of the completed form. The completed forms were then forwarded to the EHSO. If the space was under “Restricted Access” consideration due to unique hazards, the forms would be evaluated by EHSO. If it was under consideration due to sensitive equipment or experiments, the space would be evaluated by the EHSO in consultation with the Department Director or Chair and Physical Facilities Senior Director of Operations. I was responsible for developing the evaluation form with feedback from the various academic groups in which the questionnaire would be used. This required me to consider existing programs that already limited access to laboratories. One of these programs was the Radiation Safety Program.
Radiological hazards at Miami fall into the two broad categories of Radiation Generating Equipment (RGE) and Radioactive Materials (RAM). RGE is equipment that when energized has the ability to produce X-rays. This includes analytical devices such as X-ray diffractometers and cabinet radiography. RAM includes radioisotopes that are used in research laboratories. Common isotopes include phosphorus 32 and iodine 125. These isotopes are commonly used in biochemistry and molecular biology as tracers to better understand metabolic pathways. The University’s Radiation Safety Committee is responsible for overseeing the use of RGE and RAM and ensuring that work areas are properly marked.

Miami’s Radioactive Material License is issued by the Ohio Department of Health and describes how the University will maintain compliance with state regulations. The license requires that all RAM users conduct work under a protocol approved by the Radiation Safety Committee. As part of the approval process I evaluate the type of isotopes, the activity of the isotopes, frequency of use, and the type of procedures that are to be performed in the laboratory. As the RSO, I make a recommendation to the committee as to the type of signage required at the entrance to the laboratory during the approval process. The majority of labs are posted with signage stating “RADIOACTIVE MATERIAL USED IN THIS ROOM.” This is the lowest level of security and is meant to convey that one or more specific areas within the room are labeled and used as controlled areas. Access to these types of laboratories is not restricted, however anyone using RAM is required by Miami’s license to be trained as a radiation worker. Laboratories with a higher risk of exposure are posted with signage stating “Caution Radioactive Materials.” This signage is used to convey that the entire laboratory is designated as a controlled area. The door to these labs is required to be locked at all times and only individuals that have been trained as radiation workers are allowed to enter the spaces unescorted.

Laboratories that use RGEs are required to be posted with a “CAUTION RADIATION AREA” sign (Ohio Administrative Code 3701:1-38-15). These are controlled areas where radiation levels could expose individuals to 5 millirem at 30 cm in any one-hour period. For comparison, a passenger on a commercial airline flight across the United States is exposed to approximately 1 millirem per hour due to cosmic radiation (Health Physics Society 2016). All RGEs have visual
indicators to show when they are energized and emitting X-rays. The X-rays are produced within a closed cabinet that is equipped with interlocks to shut the system down if the cabinet is breached (Figure 6).

During normal operation the level of radiation outside the cabinet is indistinguishable from background. However, if the interlock failed, or the operator intentionally by-passed the interlock, there is a potential for radiation exposure above background. Therefore, the radiation signage is required to be posted.

Another program at Miami that limits access to a laboratory is the University’s Biological Safety Program. The control of hazardous biological agents at Miami University is the responsibility of the Institutional Biosafety Committee (IBC). The IBC is charged with using the Biosafety in Microbiological and Biomedical Laboratories (BMBL) to oversee the use of biological agents (U.S. Department of Health and Human Services, et al, 2009). The BMBL is an advisory document that was developed by the National Institute of Health (NIH) and Center for Disease Control (CDC). Often referred to as the NIH and CDC Guidelines, the BMBL has become the cornerstone of biosafety practice and policy in the United States. Although the document is advisory in nature, compliance with many of the recommendations is now mandatory through legislation and regulation (U.S. Department of Health and Human Services, et al, 2009).

The OSHA General Duty Clause requires that employers provide a workplace that is free from recognized hazards that cause death or serious harm (29 U.S.C. § 654, 5(a)1). These are recognized hazards that the employer knew or should have known existed in the workplace. From the BMLB Risk Group Table, Risk Group 3 and 4 agents are ones that can cause serious
infections and/or are potentially lethal (Table 1) (U.S. Department of Health and Human Services, et al, 2009). Some Risk Group 2 agents will also meet this criteria (Rabies virus, Escherichia coli 01577, Neisseria meningitidis), thus employers already have a legal obligation to protect those handling biohazards. When combined with the OSHA Bloodborne Pathogens Standard (29 CFR 1910.1030), which requires protection for workers exposed to human blood, tissues, body fluids, and other human materials, the legal requirement is to protect workers in research and clinical laboratory settings.

Table 1: Classification of Infectious Microorganisms by Risk Group (Source: U.S. Department of Health and Human Services, et al, 2009)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Group 1</td>
<td>Agents not associated with disease in healthy adult humans.</td>
<td>(No or low individual and community risk) A microorganism unlikely to cause human or animal disease.</td>
</tr>
<tr>
<td>Risk Group 2</td>
<td>Agents associated with human disease that is rarely serious and for which preventive or therapeutic interventions are often available.</td>
<td>(Moderate individual risk; low community risk) A pathogen that can cause human or animal disease but is unlikely to be a serious hazard to laboratory workers, the community, livestock or the environment. Laboratory exposures may cause serious infection, but effective treatment and preventive measures are available and the risk of spread of infection is limited.</td>
</tr>
<tr>
<td>Risk Group 3</td>
<td>Agents associated with serious or lethal human disease for which preventive or therapeutic interventions may be available (high individual risk but low community risk).</td>
<td>(High individual risk; low community risk) A pathogen that usually causes serious human or animal disease but does not ordinarily spread from one infected individual to another. Effective treatment and preventive measures are available.</td>
</tr>
<tr>
<td>Risk Group 4</td>
<td>Agents likely to cause serious or lethal human disease for which preventive or therapeutic interventions are not usually available (high individual risk and high community risk).</td>
<td>(High individual and community risk) A pathogen that usually causes serious human or animal disease and can be readily transmitted from one individual to another, directly or indirectly. Effective treatment and preventive measures are not usually available.</td>
</tr>
</tbody>
</table>
The BMLB sets recommended biosafety levels ranging from one (BLS-1) to four (BSL-4) with one being the least hazardous and four being the most hazardous. Currently, Miami University does not have the infrastructure to conduct research requiring BSL-3 or BSL-4 facilities. The BMLB provides recommendations for how to manage agents that fall within each of these BSLs. The recommendations include standard practices for handling each agent, as well as primary barriers that one should incorporate as safety equipment that one should provide to protect employees (Table 2) (U.S. Department of Health and Human Services, et al, 2009).

Table 2: Partial Summary of Recommended Biosafety Levels for Infectious Agents (Source: U.S. Department of Health and Human Services, et al, 2009)

<table>
<thead>
<tr>
<th>BSL</th>
<th>Agents</th>
<th>Practices</th>
<th>Primary Barriers and Safety Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not known to consistently cause diseases in healthy adults</td>
<td>Standard microbiological practices</td>
<td>No primary barriers required. PPE: laboratory coats and gloves; eye, face protection, as needed</td>
</tr>
</tbody>
</table>
| 2   | Agents associated with human disease  
Routes of transmission include percutaneous injury, ingestion, mucous membrane exposure | BSL-1 practice plus:  
Limited access  
Biohazard warning signs  
“Sharps” precautions  
Biosafety manual defining any needed waste decontamination or medical surveillance policies | Primary barriers:  
BSCs or other physical containment devices used for all manipulations of agents that cause splashes or aerosols of infectious materials  
PPE: Laboratory coats, gloves, face and eye protection, as needed |
| 3   | Indigenous or exotic agents that may cause serious or potentially lethal disease through the inhalation route of exposure | BSL-2 practice plus:  
Controlled access  
Decontamination of all waste  
Decontamination of laboratory clothing before laundering | Primary barriers:  
BSCs or other physical containment devices used for all open manipulations of agents  
PPE: Protective laboratory clothing, gloves, face, eye and respiratory protection, as needed |
| 4   | Dangerous/exotic agents which post high individual risk of aerosol-transmitted laboratory infections that are frequently fatal, for which there are no vaccines or treatments  
Agents with a close or identical antigenic relationship to an agent requiring BSL-4 until data are available to redesignate the level  
Related agents with unknown risk of transmission | BSL-3 practices plus:  
Clothing change before entering  
Shower on exit  
All material decontaminated on exit from facility | Primary barriers:  
All procedures conducted in Class III BSCs or Class I or II BSCs in combination with full-body, air-supplied, positive pressure suit |

Principle investigators that will be conducting research involving biohazardous materials that require BSL-2 facilities are required to submit a protocol to the IBC for approval (Appendix B). Question 8 on the protocol application asks:
8. Locations of Biohazardous Materials (explicit location and security procedures required; have the spaces been approved by ESRM/IBC for use?)
   Where will materials be stored and how will they be secured?
   Where will research activities take place?
   What are the procedures for transporting materials from place to place?

The PI has the responsibility to limit access to the laboratory to those who have been authorized to enter. Key lock or electronic access controls can be utilized to meet this requirement. When biohazards are used in a research or work location, a biohazard or equivalent sign must be posted to alert all of the potential hazards within the room prior to entry. The lab door sign must reflect the "Biosafety Level" and all the entry and work requirements. The door sign must include the universal biohazard symbol (Figure 7) and include the word "Biohazard" (29 CFR 1910.145).

The door sign should note if any immunizations are required, what PPE must be worn for entry, and other restrictions, such as populations that may be at increased risk of exposure. Emergency contact information (names and phone numbers) for the PI, lab manager, and emergency response officials must also be located on the sign.

3.5 Implementation Schedule

Prior to beginning evaluations an implementation schedule was developed (Figure 8) and sent out to all stakeholders.

<table>
<thead>
<tr>
<th>Start Date</th>
<th>Building</th>
<th>Impacted Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 3rd</td>
<td>Psychology Building</td>
<td>Animal Care Facility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Psychology Department</td>
</tr>
<tr>
<td>October 17th</td>
<td>Upham Hall</td>
<td>Electron Microscope Facility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Department of Anthropology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heffner Museum</td>
</tr>
<tr>
<td>October 31st</td>
<td>Shideler Hall</td>
<td>Department of Geology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Department of Geography</td>
</tr>
<tr>
<td>November 14th</td>
<td>Pearson Hall</td>
<td>Department of Microbiology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Department of Biology</td>
</tr>
<tr>
<td>November 28th</td>
<td>Hughes Hall/Brill</td>
<td>Department of Chemistry &amp; Biochemistry</td>
</tr>
<tr>
<td>January 2nd</td>
<td>Benton Hall/Engineering Building</td>
<td>College of Engineering &amp; Computing</td>
</tr>
<tr>
<td>January 16th</td>
<td>Kreger Hall</td>
<td>Department of Physics</td>
</tr>
</tbody>
</table>

Figure 8: SOP implementation schedule allowing for two weeks per building.
The schedule was formed to take a phased approach to implementing the SOP so that adjustments could be made as lessons of implementation were learned. For example, one clarification that was made during the implementation process was to only require laboratories that contain unique hazards to complete the forms. Since these unique hazards pose a risk to workers entering the space it was critical that they be evaluated to ensure worker safety. Laboratories with sensitive equipment or experiments could fill out the form on a voluntary basis since this would not have an impact on worker safety.

Developing and implementing the SOP continues to be a learning experience as additional buildings are evaluated. It is meant to be a living document that can be re-evaluated and changed as new circumstances and information become evident. Taking a phased approach to implementing the SOP has allowed us to use each building as a pilot study. Through this process we are able to continuously improve both the SOP and evaluation form, as well as how it is implemented. Signage has currently been posted in three buildings where evaluations are complete, and we continue to move forward evaluating laboratory spaces in the remaining buildings.
Section 4: Project Example 2: Emergency Responder Radio Reception

Another project that I became fully engaged with while serving as Interim Director was the installation of an Emergency Responder Radio Coverage System (ERRCS) in areas that have been determined to have a deficient radio signal. Fire and police departments use 800 MHz radios to communicate on their own frequency. Occasionally there are locations in new and existing building structures on campus where the signal is too weak to provide effective communication. These areas are required to have an ERRCS system installed to ensure radio coverage is sufficient. Effective wide-spread radio coverage is necessary to ensure that emergency personnel can be reached in a variety of situations. This includes responding to building fires, environmental contamination hazards, health emergencies, and safety threats.

4.1 Regulatory Drivers

Testing conducted by the Oxford Fire Department identified multiple buildings and structures on the Oxford campus that require the installation of an ERRCS to meet current code requirements. In 2009 an update was made to the International Fire Code/International Building Code requiring radio coverage for emergency personnel. In 2011 the state of Ohio adopted changes that were made to the International Building Code and International Fire Code to improve areas of poor radio coverage for emergency personnel. These changes to the Ohio Building and Fire Codes require new and renovated buildings to be tested for emergency responder radio reception and to have deficient areas corrected. The Ohio Building Code Section 915 requires the following: “Emergency responder radio coverage shall be provided in all new buildings in accordance with Section 510 of the fire code.” The Ohio Fire Code Section 510 outlines these requirements for testing the coverage areas as well as the requirements for minimum signal strength into and out of the building.

State facilities in Ohio are required to follow a process for the construction and renovation of buildings (OBC Chapter 4101:1-1 § 101.2).

- The state building owner is required to submit construction documents (OBC Ch 4101:1-1 § 106.1) to the Ohio Department of Commerce, Division of Industrial Compliance for approval (OBC Ch 4101:1-1 § 105.1).
• Once the plans are received they are reviewed by the plans examiner (OBC Ch 4101:1-1 § 107.4).

• After the plans have been approved a “certificate of plan approval” is issued to the building owner (OBC 4101:1-1 § 105.5). This certificate serves as the owners building permit and allows construction to begin.

• After the construction or renovation project is complete it requires a series of inspections before a final occupancy permit is issued (OBC Ch 4101:1-1 §111.1). Plumbing, electrical and structural systems are inspected through the Ohio Division of Industrial Compliance, which also approved the building plans. Fire inspections are conducted by the State Fire Marshalls Office.

There are sometimes discrepancies between the two state agencies responsible for implementing an ERRCS: 1) Division of Industrial Compliance for approving the Plans, and 2) State Fire Marshalls Office responsible for final inspection. Where these discrepancies exist the Oxford Fire Chief has the ultimate decision making authority (Ohio Fire Code Ch 1301:7-7, §104). The Oxford Fire Chief along with the Butler County Sheriff’s Office was the main driver for installation of the ERRCS.

4.2 Basic ERRCSs

There are two basic types of systems that can be installed to amplify the radio signal within a building or structure. Both systems require the installation of a Distributed Antenna System (DAS) to distribute the signal into and out of the building. Both systems also amplify the signal using a Bi-Directional Amplifier (BDA). A BDA system is an in-building communication system that brings wireless signals into a structure from outside, amplifies those signals with a signal booster, and then evenly distributes the amplified signals throughout a structure through a DAS. A stand alone BDA is generally used if the signal needs to be amplified in one location and is installed in the area where the signal is to be amplified. It distributes the signal using coaxial cable (Figure 9). If the signal needs to be amplified in multiple locations a “Head End” is installed with the BDA. The Head End is installed in a remote location and networked to multiple locations using dedicated fiber optic cable.
I was charged with determining the feasibility of installing a BDA system in each building versus installing a Head End system that could support multiple buildings. This included engaging with stakeholders such as project managers overseeing construction of campus buildings, subject matter experts in IT Services, as well as off campus experts. Following several group discussions, a consensus was formed that a Head End installation that could serve multiple locations was the most feasible approach to correcting areas with radio deficient

4.3 Feasibility/Funding

Figure 9: Basic ERRCS system with BDA using coaxial cables to distribute the signal through a single building. To distribute the signal to multiple buildings a “Head End” is installed with the BDA and dedicated fiber optic cables distribute the signal.

Source: (National Public Safety Telecommunications Council, 2007)
reception. To more thoroughly study the solution, an engineering firm (Heapy Engineering) was contracted to design a study for the installation of an ERRCS on the Oxford campus.

Heapy Engineering Inc. provided professional engineering, construction administration, and field observation services regarding the design of the ERRCS. The design work included preparation of contract documents and construction drawings that totaled $47,000.00. One of my duties was to work with Miami’s Risk Manager to secure funding for the engineering costs through the Inter-University Council-Insurance Consortium (IUC-IC). The IUC-IC was formed as an ad-hoc committee of the Inter-University Council of Ohio in 1998 to coordinate the purchase of property and liability insurance for Ohio’s four year public universities and freestanding medical colleges. As a member of the IUC-IC, Miami University is given access to “Loss Control” funds. The information below was taken from the Loss Control Funds Request Form and outlines the basic criteria for requesting funds.

**LOSS CONTROL FUNDING CRITERIA**

Each fiscal year each IUC-IC Member Institution is allocated $10,000 to be utilized for “loss control purposes” of benefit to the institution individually as well as the IUC-IC overall membership. By definition, loss control is a broad based risk management technique that seeks to reduce the possibility a loss will occur and/or reduce the severity of those losses that do occur. Thus, “loss control purposes” may involve a wide array of initiatives related to products, services, training expenses, etc. that benefit the individual Member and/or the IUC-IC.

As a result of the multitude of potential uses for these funds, and the need to assure that they are being used efficiently, the following two limitations have been established:

- Funds cannot be used for capital building improvements unless improvements are in direct response to a recommendation from the on-site loss control services provided to the IUC-IC Member.
- Funds cannot be used to fund off-site professional development expenses, for example professional registrations, licensing, certification, and/or continuing education related to the professional designations.

I submitted the following summary along with the contract agreement to our Risk Manager for a request of Loss Control funds.
During this project I am continuing to work with a wide variety of stakeholders with different interests. The problem solving skills I learned during my academic work have helped me to maintain focus on the central issue while considering different alternatives to solving the problem. It has also given me an appreciation for effective communication when working with a diverse group to solve large technical problems.
Section 5: IES Reflection

One of the advantages of working full time during my journey through the IES Master of Environmental Science program was the ability to continually apply much of the knowledge and experience gained in the program to my work environment. One skill that was particularly useful was gaining a better understanding of the problem solving process. Prior to entering the IES program I had spent most of my career solving problems without really thinking about how I was solving the problem. Learning and applying the problem solving process helped me to develop a more structured approach to problem solving and made me more effective at reaching sound solutions. This was especially useful during my tenure as Interim Director as I found the number of problems and their level of complexity increase significantly.

Prior to my job as Interim Director, most of the projects that I participated in involved working with groups that had similar technical backgrounds such as engineers, architects and project managers. The IES program taught me the importance of stakeholder involvement and effective communication and gave me the opportunity to practice these skills. The work that I conducted on my Professional Service Project forced me to consider and work with a wide variety of stakeholders with diverse backgrounds. I gained a better understanding and appreciation for the difficulties and value that engaging with diverse groups can bring to a project. This was very helpful in my job where I frequently found myself working on larger multi-disciplinary projects that were outside of my traditional comfort zone.

The classes I took for my area of concentration in Personnel and Process Management gave me crucial knowledge in areas such as labor law, conflict management, and compensation management. These classes helped me to better understand how and why many of the University’s general policies and procedures are developed. It also helped me to more effectively communicate with human resources to resolve personnel issues and concerns that routinely occur in the work environment. The knowledge and experience I gained through the IES program helped prepare me for the challenges I encountered through my time as Interim Director.
References


Ohio Administrative Code 3701:1-38-01(A)(15) ALARA.

Ohio Administrative Code 3701:1-38-15 Control of exposure from external sources in high and very high radiation areas.


Ohio Building Code, Rule 4101:1-1 Administration.

Ohio Fire Code, Rule 1301:7-7-05 Fire Service Features, Paragraph J, Section 510 Emergency Responder Radio Coverage.

Ohio Fire Code Chapter 1301:7-7, Section 104 General Authority and Responsibility.


Appendix A

STANDARD OPERATING PROCEDURE #429

SUBJECT: Laboratory “Restricted Access”

Attachment: Restricted Access Evaluation Form

Purpose and Scope: Some laboratories on campus have unique hazards and/or sensitive equipment/experiments. The purpose of this procedure is to protect maintenance employees, custodial staff and contractors from these unique hazards and ensure that sensitive equipment/experiments are not damaged. This SOP applies to preventative and routine work in all laboratories and areas that have been posted as “Restricted Access”.

Definitions:

- **Restricted Access.** Access to the space must be authorized by a Laboratory Point of Contact due to unique hazards and/or sensitive equipment/experiments.

- **Laboratory Point of Contact.** Person that has the authority to grant entry into a “Restricted Access” space and can effectively communicate to an entrant the unique hazards and/or sensitive equipment/experiments that are present.

- **Urgent Work.** Work orders that have been elevated in status to be initiated/completed within a 24-hour period.

Policy: No routine work will be performed in laboratories that have been identified and posted to have special hazards and/or sensitive equipment/experiments without authorization from the responsible Department’s designated Laboratory Point of Contact.

Procedure: Laboratories to be evaluated for “Restricted Access” are to be reviewed by the Department responsible for the space using the provided “Restricted Access Evaluation Form”. Forms will be reviewed by the Department Director/Chair responsible for the space, Physical Facilities’ Sr. Director of Operations, and the Director of Environmental Health & Safety.

Areas deemed appropriate for “Restricted Access” will be posted:

ATTENTION
RESTRICTED ACCESS
INCLUDING PFD, CONTRACTORS,
AND OTHER UNIVERSITY TECHNICIANS
Contacts below are authorized to grant entry

The Department that controls the space is responsible for identifying a minimum of three Laboratory Points of Contact that can be available during normal business hours as well as evenings and weekends. They are also responsible for posting this information in a sleeve provided below the sign and updating PFD’s Operations Center during an extended leave of absence or change in Laboratory Point(s) of Contact.

All work orders generated for a restricted space will include a “Lock-Out” statement that includes restricted access information and the Laboratory Points of Contact.

Responsible Person: Jeff Johnson, EHS

Note: Revised by
All routine work including urgent work requires authorization by a Laboratory Point of Contact prior to entry into the space. The Laboratory Point of Contact will be notified a minimum of 24-hours in advance of work taking place.

In the event of an emergency (e.g. broken water pipe) an effort will be made to notify a Laboratory Point of Contact. However, entry may be necessary without authorization if a contact is unavailable. Workers anticipated to respond to emergency work in restricted areas will receive additional training on laboratory hazards.

A review of the space will be conducted annually to verify that "Restricted Access" designation continues to be appropriate.

Cody Powell
Associate Vice President - Facilities
Restricted Access Evaluation Form

This form is to be used to help evaluate a space to determine if “Restricted Access” is appropriate. A response of “yes” on evaluation questions may require additional inquiry to make a determination.

Department Directors/Chairs will need to provide at least three Laboratory Points of Contact for areas deemed “Restricted Access” that can be reached during normal business hours as well as evenings and weekends.

Building ____________________________
Room # ____________________________

Laboratory Points of Contact:

1. Name ____________________________ 2. Name ____________________________
   Phone # ____________________________ Phone # ____________________________

3. Name ____________________________ 4. Name ____________________________
   Phone # ____________________________ Phone # ____________________________

Is special clothing required to protect the lab or to protect contents in the lab (e.g. gown, booties, or surgical mask)?

No

Yes,
If yes, what type of clothing is required? ________________________________________
________________________________________________________________________
________________________________________________________________________

Is special Personal Protective Equipment beyond eye and hand protection required to enter the lab?

☐ No

☐ Yes,
If yes, what type of equipment is required? _____________________________________
________________________________________________________________________
________________________________________________________________________
Is recombinant DNA or BSL-2 pathogens used in the laboratory?
No
Yes If yes, provide the IBC approved protocol number: ________________________

Does the protocol require restricted access per Section II, question 8.
No
Yes If yes, where will materials be stored and how will they be secured?

Are animals used or housed in the space?
☐ No
☐ Yes If yes, what type of animals and how are they used or housed?

Does the space contain critical or sensitive equipment?
No
Yes If yes, what is the equipment and how is it stored or secured?

Does the space contain hazardous equipment?
No
Yes If yes, what is the equipment and how is it stored or secured?

Does the space contain sensitive or irreplaceable research materials?
No
Yes If yes, how are the materials stored or secured?

Does the space contain radioactive materials or radiation generating equipment?
No
Yes If yes, is restricted access required by the Radiation Safety Program?

Evaluation results: ________________________
**Application for Research or Teaching Involving Biohazardous Materials**

**Biosafety Level of Containment (Risk Group):**  
(Refer to ABSA Database, NIH Guidelines)

<table>
<thead>
<tr>
<th>IBC#</th>
<th>(admin use only)</th>
</tr>
</thead>
</table>

**Section I: Project Data**

<table>
<thead>
<tr>
<th>Date of application:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title:</td>
<td></td>
</tr>
<tr>
<td>Laboratory(ies) (All locations of material/Building and room number):</td>
<td></td>
</tr>
<tr>
<td>Principal Contact (PC):</td>
<td></td>
</tr>
<tr>
<td>Miami UniqueID (public jq)</td>
<td></td>
</tr>
<tr>
<td>Other Personnel (all who will work with the material):</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The principal contact is responsible for all correspondence with the IBC, and for assuring the procedures approved by the IBC are implemented, and for assuring that all personnel associated with the project are adequately trained for the activities in which they will be involved, and for reporting and adverse events or problems to the IBC, the Environmental Health and Safety Office and the Research Compliance Office.

**FUNDING SOURCE:** (Check all that apply and provide company names as necessary)

- [ ] NIH
- [ ] NSF
- [ ] Commercial Company Name:
- [ ] State
- [ ] Departmental
- [ ] Private Foundation/Association Name:
- [ ] Institutional Research Support
- [ ] Other Source:

**PRINCIPAL CONTACT ASSURANCE**

Submission using your MU email account certifies that the Principal Contact understands and accepts the following obligations in this study:

- I recognize that as the PC it is my responsibility to ensure that this research and the actions of all project personnel involved in conducting the study will conform with the IBC approved protocol and the provisions of the NIH Guidelines for Research Involving Recombinant DNA, the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories manual, and the Select Agent Rule (http://www.cdc.gov/od/sap/docs/42cfr73.pdf) where appropriate. I will inform the IBC of any unanticipated biosafety related problems encountered while doing the research.
- I will notify the IBC of any change in an RG-1 protocol.
- I will not initiate any change in an RG-2 or RG-3 protocol without prior IBC approval.
- I will maintain all required research records on file and I recognize that representatives of the IBC are authorized to inspect these records.
• I will maintain all required research records on file and I recognize that representatives of the IBC are authorized to inspect these records.
• I accept responsibility for the safe conduct of the experiments to be conducted and will see that all associated personnel are trained in the safe laboratory practices required for this work.
• I will oversee the development and implementation of standard biosafety operating procedures for the laboratory.
• I understand that IBC approval is valid for 1 year and an annual IBC status report/continuation application is required in order to maintain approved status.
• I understand that failure to comply with all NIH regulations, IBC requirements/policies, and the provisions of the protocol as approved by the IBC may result in suspension or termination of my research project.

For protocols using animals in research:

☐ I will contact Animal Resources facility director to develop standard operating procedures (SOPs) to address relevant operational biocontainment and safety issues for the use of these agents in animals, prior to their introduction into animals.

Principal Contact Assurance:  

email completed application to sullivnh@miamioh.edu  

Date:  

(No paper copies or physical signature are required: submission using your MU email address constitutes your assurance)

Approval is granted by the IBC only by electronic certification. Until you receive a certificate of approval, research or acquisition of biohazardous materials may not commence.
Section II: General Biosafety Information

1. Purpose of the Study.

2. Name of Biohazardous Material to be Utilized and Risk Group (RG) Classification.
   If biologic, what strain?

3. Biosafety Level (BL) of Containment.

4. Material Acquisition: Please describe the source of the material (e.g. vendor, laboratory). Attach any required permits.

5. Safety Practices Summary (please attach explicit standard operating procedures for your lab).

6. Training of personnel: Who will train the personnel that will use or have access to the materials? What training or experience qualifies the trainer to conduct training?

7. Risk for Occupational Exposure.

8. Locations of Biohazardous Materials (explicit location and security procedures required; have the spaces been approved by ESRM/IBC for use?).
   Where will materials be stored and how will they be secured?
   Where will research activities take place?
   What are the procedures for transporting materials from place to place?

9. Fate of materials (e.g. disposal, depletion, contracted waste disposal, etc)

10. Literature Cited

Section III: Animal Use Supplement

1. List each biohazardous/regulated agent identified in Section II.2 which will be introduced on or into live animals.
2. Has this research use of animals received Institutional Animal Care and Use (IACUC) approval?

☐ Yes. IACUC Protocol number Expiration Date:

☐ No. Under IACUC review Date Submitted

3. List each species and provide the specific strain designation of the animals used in these studies.

4. Will recombinant DNA be inserted into a germ line in order to establish a transgenic animal?

☐ No.

☐ Yes.

If yes, what are the anticipated or known immediate/long-term adverse effects or changes in phenotype and/or genotype of such a change on the animal, e.g., early disease onset/resistance, immunodeficiency, etc.?

and

What kind of expression is the rDNA expected to exhibit in the animal? e.g. permanent or transient expression?

5. Are there plans to introduce the agent/s into immune compromised animals such as SCID mice, nude mice, NOD SCID mice or other species or into transgenic animals? Please explain.

6. Indicate the route of administration of the agent.

☐ IV ☐ IP ☐ SQ ☐ IM ☐ ID ☐ Tracheal Intra-cranial ☐ Oral

☐ Intra-medullary ☐ Injection into Bone Marrow ☐ Aerosol ☐ Other: Specify

7. List the animal facility and the area/room number(s) where the animals will be housed and used.

8. Will the biohazardous agent and/or the organism/animal containing the agent present ANY risk of exposure to personnel with animal contact (animals, their bedding or caging) including the animal care staff?

☐ No.

☐ Yes. Answer parts A, B, C, and D.

A. According to the NIH-rDNA Guidelines Appendices G and Q and/or the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories, what Animal Biosafety Level (ABL) will be used to contain the agent/s and the animals? ABL1, ABL2, ABL3. Contact the animal facility staff for assistance in answering this question. Note: Generally, Risk Group 2, replication incompetent adenovirus vectors placed into rats, mice or rabbits will be held at ABL 2 for a minimum period of 72 hours until the passive shedding period is over.
B. What animal sources/routes, e.g., urine, feces, blood, bite scratch, sputum, cough, sneeze, etc., present a potential risk of exposure to personnel with animal contact including the animal care staff?

C. What Personal Protective Equipment (PPE) is required to be worn by personnel with animal contact including the animal care staff to protect them from potential risk of exposure from the animal sources mentioned in part B?

D. What safety practices are/will be in place to protect personnel with animal contact including the animal care staff?

10. Will the animals exposed to the infectious agents/biological toxins be transported within the animal facility or to other areas outside the animal facility?

☐ No.
☐ Yes. Describe how and where the animals will be transported.