



University of Nevada, Reno  
Research & Innovation

November 21<sup>st</sup>, 2018

Gary L. Borkowski, DVM, MS, DACLAM  
Global Director, AAALAC International  
5205 Chairman's Court, Suite 300  
Frederick, MD 21703

RE: AAALAC File #1104, University of Nevada, Reno – Post-site visit communication

Dear Dr. Borkowski:

We at the University of Nevada, Reno (UNR) are grateful for the time and energy of Drs. Jim Strake and Debra Hickman in performing their thorough and informative evaluations on behalf of AAALAC International for our triennial site visit on Nov. 6-8, 2018. We highly value the AAALAC International mission and methods and we are pleased with the numerous commendations conveyed to us during the exit briefing. Our notes indicate that the site visitors found no mandatory items requiring correction based upon their evaluations of our animal care and use program. The site visitors communicated eight highly useful suggestions for improvement (SFI). Our summary of those SFI recommendations are paraphrased below along with our responses, or planned responses, for each item noted:

1. Continue with our stated plans to perform monitoring for waste (isoflurane) gas anesthesia; with examples given of some CMM procedure rooms and an investigator's lab in [REDACTED]. In the [REDACTED] process review [REDACTED]), the site visitors' discussion with a member of that lab indicated that their opening of the anesthesia induction box outside of the adjacent fume hood and without first flushing the box with the connected oxygen supply line could lead to waste gas exposure among laboratory staff performing that procedure.

**Response:** The UNR EH&S Department owns a portable Fourier Transform Infrared (FTIR) spectrometer that can measure airborne isoflurane in near real-time. This instrument will be used to estimate personnel exposures during their use of isoflurane anesthesia in animals and to measure their peak exposures. The FTIR spectrometer will also be used to help identify any leak points in the isoflurane distribution system. Depending on the procedure being performed, we may also use personnel sampling via either diffusion badges or calibrated air sampling pumps with appropriate collection media, for example, during longer procedures where continuous direct-reading monitoring is not practical. The site visitors reviewed our annual isoflurane anesthesia machine certification documents from VetEquip Inc. dated 09/19/18 - 09/29/18, which demonstrated that no machine failed their leak test. Preliminary results of isoflurane monitoring

via the FTIR equipment is scheduled to occur in December 2018 for three example laboratories (in [REDACTED], in [REDACTED], and in [REDACTED]) that frequently use isoflurane anesthesia for any duration.

2. The [REDACTED] woodrat housing room is under positive pressure relative to the adjacent public corridor, although the woodrats are currently in a quarantine status since they were recently captured. A quarantine status typically warrants that the housing room be negatively pressurized for airborne hazard containment purposes. The practice of keeping that room positively pressured should be re-examined. We then briefly discussed the information provided by Lynn Hampton of UNR Facility Services who said re-balancing of that zone is problematic due to building design considerations. We also commented that our diagnostic tests of all woodrats to date, supported also by the literature, has not substantiated that woodrats are capable of shedding the etiological agent of concern (hantavirus), but this has historically been the cautionary approach at UNR pending additional data.

**Response:** I spoke about this issue with Tom Ksiazek, DVM, Ph.D., who is the *Director of High Containment Laboratory Operations* at the Galveston National Laboratory, UTMB. As a national authority on the topic, Dr. Ksiazek provided us guidance on additional specimens we will collect on incoming shipments to help ascertain whether North American woodrats (principally, *Neotoma lepida*, as used) from the field collection areas could indeed be competent hosts for hantaviruses, given the paucity of literature on that subject. I previously collaborated with Dr. Ksiazek on studies of hantavirus distribution in *Peromyscus* spp. of North Carolina (Journal of Wildlife Diseases, 1996). The hantavirus concern is why that room has to date historically been designated in quarantine status for a 3-week holding and testing period after the arrival of newly captured animals. Dr. Ksiazek concurs that there is scant information to suggest hantavirus shedding concerns exist from *Neotoma* spp. in North America. Nonetheless, we will continue with data collection through the current woodrat project period (n=60 animals) to help contribute to the risk assessment. We are considering installing a BioBubble housing enclosure within [REDACTED] so that all housing of these animals can be consistently maintained under negative pressure throughout the project lifecycle, regardless of any microbial-specific concern in that species. Rebalancing of the [REDACTED] would jeopardize adjacent areas due to design issues, according to UNR Facilities Services HVAC engineers.

3. The site visitors commented that their discussions with a faculty member in [REDACTED] (protocol [REDACTED]) revealed that he used sharp scissors to decapitate snakes for euthanasia rather than a guillotine, as described in his IACUC protocol. The *AVMA Euthanasia Guidelines* specify that equipment used to perform decapitation must be in good working order and should be serviced on a regular basis to ensure sharpness of the blades. The faculty member had no program to describe how he maintained blade sharpness. He should clarify this method of euthanasia in his IACUC protocol and explore options (i.e., a written process) to ensure that blade sharpness is maintained per the *AVMA Guidelines*.

**Response:** The PI submitted an amendment to the referenced protocol for review and approval during today's convened IACUC meeting to clarify that surgical scissors are used for decapitation of garter snakes instead of a guillotine. The mouse or rat type guillotines cannot be safely applied



to these species because snakes lack a pectoral girdle and possess very flexible necks so they cannot be restrained properly. He therefore uses high-quality surgical scissors reserved only for this procedure to ensure they are in good working order. The scissors are checked for sharpness by ease of slicing through a sheet of paper prior to use. The scissors are also checked for notches or burrs prior to use and are hand-sharpened by PI if the blades cannot easily slice a sheet of paper. These changes are intended to comply with the *AVMA Euthanasia Guidelines* on the topic.

4. Euthanasia of cattle, sheep, and hogs at [REDACTED] should be re-examined relative to the *AVMA Guidelines* on the appropriate anatomic site for placement of gunshot or captive bolt devices. The description of the anatomic landmarks described by a WPM staff member who has responsibility for this procedure were not aligned with the AVMA standards, and yet the success of animal euthanasia by using the [REDACTED] landmarks was reported to be at least 99%. The AVMA recommendations on this topic should be reviewed with WPM staff members to ensure the best results, possibly increasing success above 99%.

**Response:** Last week I had a highly productive telephone call on this topic with Lucy Anthenill, DVM, Ph.D., who is the District Veterinary Medical Specialist at the Office of Field Operations for the USDA Food Safety Inspection Service. Her office oversees animal welfare topics for [REDACTED] and all other abattoirs in this region. Dr. Anthenill has long been a colleague of Dr. Jan Shearer who wrote the referenced section on this topic for the 2013 edition of the *AVMA Euthanasia Guidelines* and she therefore knows this issue very well. She said her agency uses an outcomes-based method to assess the knocking of animals in the industry. Having visited the [REDACTED] abattoir multiple times, Dr. Anthenill congratulated us on the successful methods used, as already noted (at least 99%). She expressed no concerns about our methods relative to USDA-FSIS standards and expectations. To make sure between-species differences are very clear, we have already posted the applicable diagrams (Figures 10-12) from the *AVMA Euthanasia Guidelines* in the [REDACTED] knocking area and discussed it with the very few staff who perform that procedure to help assure their technical understanding.

5. The age range for ram lamb castration at [REDACTED] was reported as 2-6 weeks of age, whereas the *Ag Guide* (FASS 2010) states that a common recommendation is for this procedure to be performed when they are between 24 hours and 7 days old, although they also state that recommendations vary. The overall consensus is that it should be done as early in life as possible. Since the breeding of ewes is (hormonally) timed and rationale for performing it on older-aged rams is due to student teaching needs, more options should be considered with IACUC involvement to further enable a younger age of ram lamb castration at [REDACTED].

**Response:** We discussed this issue at length with an appointed committee of three UNR veterinarians (including the AV, the OAR Clinical Vet, and the IACUC Chair), the [REDACTED] Manager, the [REDACTED] Research Tech for the sheep herd, the NAES Assistant Director, and the CABNR faculty member who teaches the UNR's sheep management course. We reviewed the current IACUC approved procedures for lamb castration, which already include the use of NSAID (banamine), and the risk-benefits to the animals by age and method of castration. We also studied the articles referenced in the *Ag Guide* (FASS 2010) on this topic (Lester SJ et al – 1991;



Shutt DA et al – 1988; Wood & Molony-1992) and also by Wood GN et al, *Research in Vet Science* (1991) regarding the behavioral and stress hormone responses of local and systemic anesthesia during surgical castration procedures in lambs. We compared our observations following lamb castration to the descriptions in these publications and confirmed that our procedures do not result in the significant clinical adverse signs, as depicted in those citations. A literature search revealed scant additional scientific data on this topic, and the committee agreed that this topic presents an opportunity for us to perform controlled studies where additional refinements to the procedure could be evaluated at UNR and published in the time ahead, thereby further benefiting the field at large. The committee's findings on this topic were discussed during today's convened meeting of the IACUC, as noted in those meeting minutes.

6. One reviewed protocol ( ) described the methods of sterilizing her surgical instruments and the intracerebroventricular (brain) cannulas to be 75% ethanol, but ethanol is not an acceptable liquid sterilant. Thus, alternative chemicals should be selected for this purpose and the corresponding IACUC protocol should be updated accordingly.

**Response:** The PI has ordered Actril (Medivators, Inc.) cold sterilant, which contains peracetic acid, hydrogen peroxide and acetic acid, for sterilization of her DSI whole body mouse-sized implantable telemeters (DSI – Harvard Bioscience, Inc.) and her intraventricular catheters (Plastics One, Roanoke, VA). She will also use this chemical for sterilization of her surgical instruments prior to use. The manufacturers of these implantable devices were contacted, and Actril was verified to be a suitable product for these purposes. The PI is submitting an amendment to her protocol for review and approval during the 12/19/18 IACUC meeting to describe this change.

7. A visit to the amphibian housing area in ( ) found that bleach footbaths and waste buckets were being used for infection control, with a bleach solution change interval specified as weekly. It is highly likely that the bleach concentration does not remain at the intended concentration when left open to the air over that time period. A *Post Approval Monitoring* of this lab conducted by IACUC representatives on 09/27/18 discussed the issue of the bleach footbaths and wet floor hazards. Thus, the process used by the faculty member for these purposes should be changed as recommended.

**Response:** The PI was provided information from the scientific literature (e.g., Morley PS et al, JAVMA 2005 and the CDC and NASPHV, 2005) regarding the limitations and requirements for bleach footbaths. Due to our additional concerns of slip-fall hazards in that room, she will remove the footbaths entirely and instead rely upon dedicated footwear (disinfected weekly) for her two animal care staff members. All other persons entering the area will use disposable shoe covers. The bleach solution waste buckets will be made fresh prior to each use. The concentration of bleach for these disinfectant solutions and for the animal housing room floor itself is based upon research by MH Becker and B Gratwicke (PLoS ONE, 2017) regarding the concentration and exposure time required to completely kill *Batrachochytrium dendrobatidis*, which is the amphibian fungal disease being studied in that room. She has updated her SOP for these procedures in the corresponding IACUC protocol document.



8. The *Appendix 16* (Lighting Summary) from the program description refers to some rooms (example given of FA rooms) where the room light intensity ranged up to 400 lux. However, the recommendation in the *Guide* (NRC 2011) is that light levels of or about 325 lux measured 1 meter above the floor appear to be satisfactory without causing phototoxicity in albino animals. The actual light levels within the primary cage enclosures should be assessed to assure that they do not exceed the *Guide's* recommendations on this topic.

**Response:** Updated data were obtained to assess the light levels within animal cages across the range (top to bottom) of cage heights within rooms in all campus areas where the measured values had exceeded 325 lux. The updated peak lighting levels are now included in the replacement version for *Appendix 16* (attached), demonstrating that in no instance did the within-cage light levels exceed the maximum 325 lux value, as recommended in the *Guide*.

Again, the opinions and insights of AAALAC site visitors are highly valued and we have responded to each SFI within the timelines indicated above. We hope you find our plans of action to be satisfactory and in accordance with maintaining the best-possible standards of care. Thank you for your efforts on our behalf and do not hesitate to contact me should you desire more information on any of these items or for other matters related to the site visit and the reaccreditation process.

Very sincerely,



Benjamin J. Weigler, DVM, MPH, Ph.D., DACLAM, DACVPM  
Director & Attending Veterinarian - Office of Animal Resources  
University of Nevada, Reno  
1664 N. Virginia St., MS 340  
Reno, NV 89557  
Tel. (775) 784-4874  
Email: [bweigler@unr.edu](mailto:bweigler@unr.edu)

CC: Mridul Gautam, Ph.D. – VP for Research & Innovation (Institutional Official)  
[REDACTED] – Associate VP, Research Administration  
Mike Teglas, DVM, Ph.D. – IACUC Chair  
[REDACTED] – IACUC Administrator  
[REDACTED] – AAALAC Council Member  
[REDACTED] – AAALAC Ad Hoc Consultant

**ATTACHMENT:** Replacement page for Appendix 16

## **Benjamin J Weigler**

---

**From:** Benjamin J Weigler  
**Sent:** Thursday, December 20, 2018 3:00 PM  
**To:** [REDACTED]; Gary Borkowski; [accredit@aaalac.org](mailto:accredit@aaalac.org)  
**Cc:** Mridul Gautam; [REDACTED]; Mike Teglas; [REDACTED]  
**Subject:** File #001104 PSVC#2

Dear Drs. [REDACTED] and Borkowski:

This additional post-site visit correspondence is to provide you further updates regarding our responses for two of the SFIs conveyed to us during the exit briefing on 11/08/18. Please see below.

### **SFI #1 regarding waste anesthetic gas (WAG) monitoring**

The UNR EH&S Department took multiple peak readings for WAG during ongoing operative procedures in laboratory mice on 12/13/18 and 12/17/18 using their Gasmet DX4040 FTIR equipment described in my previous PSVC of 11/21/18. The preliminary measurements included the VetEquip precision vaporizers and the Kent Scientific SomnoSuite low flow delivery system while mice were maintained at a surgical plane via masks and with WAG scavenge via charcoal filters. None of the readings thus far are beyond expectations, and we will continue with the monitoring while considering best-possible options for maximizing scavenge in the areas of use. On 12/06/18 I joined EH&S industrial hygienists in a meeting with the described faculty member's lab (room [REDACTED]) to provide them retraining in the proper methods of WAG flushing from the induction box and scavenging via their ducted fume hood. They appreciated this educational exchange.

### **SFI #2 regarding the room pressurization of [REDACTED] (woodrats)**

We met again with the UNR Facilities Services HVAC engineers along with the Reno-area company HVAC engineers who had installed that system back in 2008. Together, we have found an air balancing strategy and we have submitted UNR work order #19MNC01159 to have the system adjusted in the upcoming days. I will provide you a replacement page for Appendix 11 to document for your records that we have achieved the negative room pressurization for [REDACTED] once that work is completed.

Please feel welcome to contact me any time if you require further clarifications on these items. My sincere thanks and wishes for a Happy Holidays to you all.

Ben

---

**From:** Benjamin J Weigler  
**Sent:** Wednesday, November 21, 2018 4:56 PM  
**To:** [REDACTED]; 'Gary Borkowski' <[gborkowski@AAALAC.org](mailto:gborkowski@AAALAC.org)>; 'accredit@aaalac.org' <[accredit@aaalac.org](mailto:accredit@aaalac.org)>  
**Cc:** Mridul Gautam <[mgautam@unr.edu](mailto:mgautam@unr.edu)>; [REDACTED] Mike Teglas <[mteglas@cabnr.unr.edu](mailto:mteglas@cabnr.unr.edu)>; [REDACTED]  
**Subject:** File #001104 PSVC

Dear Drs. [REDACTED], and Borkowski:

Please find attached my post-site visit correspondence letter, along with a replacement version of Appendix 16, regarding our 2018 Program Description for the AAALAC International re-accreditation of the University of Nevada, Reno. Our recent site visit was an extremely useful and enjoyable experience and we thank you again for the time and energy it required. I would be pleased to provide you clarifications on any item described in these attachments upon request. Very sincerely,



Ben

---

**Benjamin J. Weigler, DVM, MPH, Ph.D., DACLAM, DACVPM**  
**Director & Attending Veterinarian - Animal Resources**  
**Adjunct Professor – Dept. Agriculture, Nutrition & Veterinary Sciences**  
**1664 N. Virginia Street / MS 340**  
**Reno, NV 89557**

Office (775) 682-6570  
FAX (775) 784-4201  
Email: [bweigler@unr.edu](mailto:bweigler@unr.edu)  
Website: [www.unr.edu/animal-resources](http://www.unr.edu/animal-resources)



**University of Nevada, Reno**  
**Research & Innovation**

The information contained in this communication may be confidential and is intended only for the use of the intended recipient(s). If the reader of this message is not the intended recipient(s), you are hereby notified that any dissemination, distribution, or copying of this communication, or any of its contents, is strictly prohibited and may violate applicable law, including the Electronic Communications Privacy Act. If you have received this communication in error, please return it to the sender immediately and delete any copy of it from your computer system.

## Appendix 11 : Heating, Ventilation and Air Conditioning (HVAC) System Summary

Room No.	Specific Use	Temperature Set-Point (F)	Electronic / Emergency Monitoring of	Alert/Alarm Temp Ranges (F)	Humidity Control	Relative Pressure	Air Exchange (per	Date Verified / Measured
	ANTE-ROOM/STORAGE	70	Y	68-76	Y	N	10.9	Dec-18
	MOUSE HOUSING	70	Y	68-76	Y	P	16.7	Dec-18
	PROCEDURE	70	Y	68-76	Y	P	15.6	Dec-18
	WOODRAT HOUSING	72	Y	68-76	Y	N	11.5	Dec-18
	STORAGE	72	Y	68-76	Y	Neutral	9.5	Jul-18
	PROCEDURE	72	Y	68-76	Y	Neutral	9.5	Jul-18
	BIRD HOUSING	72	Y	Forthcoming	Y	P	10.0	Jul-18
	ANTE-ROOM/STORAGE	70	Y	62-78	Y	N	18.0	Jul-18
	AMPHIBIAN HOUSING	70	Y	62-78	Y	N	9.4	Jul-18
	REPTILES/AMPHBIANS	72	Y	62-78	Y	N	2.9	Jul-18
	COLD-ADAPTED AMPHIBIANS	62	Y	62-78	Y	N	3.2	Jul-18
	REPTILES/AMPHBIANS	72	Y	62-78	Y	N	4.6	Jul-18
	REPTILES/AMPHBIANS	81	Y	62-78	Y	N	2.1	Jul-18



**From:** Anne Davidson  
**To:** Benjamin J Weigler  
**Cc:** Mridul Gautam; [REDACTED] Mike Teglas; [REDACTED]  
**Subject:** RE: File #001104 PSVC#2  
**Date:** Friday, December 21, 2018 7:50:12 AM

---

Dear Dr. Weigler,

Thank you for forwarding this additional Post Site Visit Communication to the AAALAC International office. To confirm, this Information will be included for review and consideration by the Council on Accreditation.

Kindest regards,

**Anne Davidson**  
Sr. Program Assistant, Operations  
AAALAC International  
5205 Chairmans Court, Suite 300  
Frederick, MD 21703  
tel: 301.696.9626 | fax: 301.696.9627  
[adavidson@aaalac.org](mailto:adavidson@aaalac.org) | [www.aaalac.org](http://www.aaalac.org)

This message and its attachments may contain information subject to professional confidentiality, and can only be used by the person or entity who is the intended recipient of the email. Its reproduction or distribution without the express permission of AAALAC International is not allowed. If you are not the intended recipient, please delete it and notify the sender. According to the privacy principles on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, we remind you that personal data may be stored in a file owned by AAALAC International for the intended use of communication with our associates, and that you have the option of exercising rights of data access, rectification, cancellation, and opposition at: [accredit@aaalac.org](mailto:accredit@aaalac.org)

---

**From:** Benjamin J Weigler [mailto:bweigler@unr.edu]  
**Sent:** Thursday, December 20, 2018 6:00 PM  
**To:** [REDACTED]; Gary Borkowski <gborkowski@AAALAC.org>; AAALAC International <accredit@AAALAC.org>  
**Cc:** Mridul Gautam <mgautam@unr.edu>; [REDACTED]; Mike Teglas <mteglas@cabnr.unr.edu>; [REDACTED]  
**Subject:** File #001104 PSVC#2

Dear Drs. [REDACTED] and Borkowski:

This additional post-site visit correspondence is to provide you further updates regarding our responses for two of the SFIs conveyed to us during the exit briefing on 11/08/18. Please see below.

**SFI #1 regarding waste anesthetic gas (WAG) monitoring**

The UNR EH&S Department took multiple peak readings for WAG during ongoing operative procedures in laboratory mice on 12/13/18 and 12/17/18 using their Gasmeter DX4040 FTIR equipment described in my previous PSVC of 11/21/18. The preliminary measurements included the VetEquip precision vaporizers and the Kent Scientific SomnoSuite low flow delivery system while mice were maintained at a surgical plane via masks and with WAG scavenge via charcoal filters. None of the readings thus far are beyond expectations, and we will continue with the monitoring while considering best-possible options for maximizing scavenge in the areas of use. On 12/06/18 I joined EH&S industrial hygienists in a meeting with the described faculty member's lab (room [REDACTED]) to provide them retraining in the proper methods of WAG flushing from the induction box and scavenging via their ducted fume hood. They appreciated this educational exchange.

**SFI #2 regarding the room pressurization of [REDACTED] (woodrats)**

We met again with the UNR Facilities Services HVAC engineers along with the Reno-area company HVAC engineers who had installed that system back in 2008. Together, we have found an air balancing strategy and we have submitted UNR work order #19MNC01159 to have the system adjusted in the upcoming days. I will provide you a replacement page for Appendix 11 to document for your records that we have achieved the negative room pressurization for [REDACTED] once that work is completed.

Please feel welcome to contact me any time if you require further clarifications on these items. My sincere thanks and wishes for a Happy Holidays to you all.

Ben

---

**From:** Benjamin J Weigler

**Sent:** Wednesday, November 21, 2018 4:56 PM

**To:** [REDACTED]; 'Gary Borkowski'; 'accredit@aaalac.org'

**Cc:** Mridul Gautam; [REDACTED]; Mike Teglas; [REDACTED]

**Subject:** File #001104 PSVC

Dear Drs. [REDACTED], and Borkowski:

Please find attached my post-site visit correspondence letter, along with a replacement version of Appendix 16, regarding our 2018 Program Description for the AAALAC International re-accreditation of the University of Nevada, Reno. Our recent site visit was an extremely useful and enjoyable experience and we thank you again for the time and energy it required. I would be pleased to provide you clarifications on any item described in these attachments upon request. Very sincerely,

Ben

---

*Benjamin J. Weigler, DVM, MPH, Ph.D., DACLAM, DACVPM  
Director & Attending Veterinarian - Animal Resources*



*Adjunct Professor – Dept. Agriculture, Nutrition & Veterinary Sciences*  
1664 N. Virginia Street / MS 340  
Reno, NV 89557

Office (775) 682-6570

FAX (775) 784-4201

Email: [bweigler@unr.edu](mailto:bweigler@unr.edu)

Website: [www.unr.edu/animal-resources](http://www.unr.edu/animal-resources)



**University of Nevada, Reno**  
**Research & Innovation**

The information contained in this communication may be confidential and is intended only for the use of the intended recipient(s). If the reader of this message is not the intended recipient(s), you are hereby notified that any dissemination, distribution, or copying of this communication, or any of its contents, is strictly prohibited and may violate applicable law, including the Electronic Communications Privacy Act. If you have received this communication in error, please return it to the sender immediately and delete any copy of it from your computer system.

From: [REDACTED]  
To: Benjamin J Weigler  
Cc: [REDACTED]  
Subject: Isoflurane Monitoring Results  
Date: Thursday, December 27, 2018 2:47:29 PM

---

Ben,

[REDACTED] and I performed preliminary air monitoring of isoflurane concentrations during animal (mice) surgery on 12/13/18 in [REDACTED] and on 12/17/18 in [REDACTED]. In both cases, a Gasmet DX4040 FTIR gas analyzer was used to measure airborne concentrations of isoflurane. The results of the air monitoring are below.

[REDACTED]  
Breathing zone of surgeon: 8 – 10 ppm initially; 1 – 5 ppm (with most 1 – 2 ppm) approximately 15 – 20 minutes later.  
Near nose cone on animal (~2" away): 8 – 9 ppm initially; 1 – 3 ppm approximately 15 – 20 minutes later.  
Middle of room: < 0.5 ppm, then dropped to ~ 0.1 ppm)

Animal and nose cone were undraped and fully exposed.  
Researchers indicated that the maximum duration for isoflurane use is 6 – 7 hours.

#### Nellor

Breathing zone of surgeon: < 0.4 ppm (typically 0.2 – 0.3 ppm or less).  
Near nose cone on animal (~2" away): < 2 ppm.  
Middle of room: < 0.1 ppm

Animal and nose cone were draped and not freely open.  
Researchers indicated that the maximum duration for isoflurane use is 2 hours.

I believe that the above data shows that there is high variability in isoflurane concentrations during a particular surgery and between physical locations in the surgery room. Variations are also likely between different surgeries and surgery rooms.

#### Discussion

There is no established occupational exposure limit for isoflurane in the U.S. In 1977, NIOSH recommended an exposure limit for halogenated waste anesthetic gases of 2 ppm over a 1 hour exposure time. Although many institutions use the NIOSH limit of 2 ppm, isoflurane was not considered by NIOSH since it was not in clinical use in 1977. Isoflurane and its structural isomer, enflurane, have different structures, potencies, and are metabolized differently than the agents that were considered by NIOSH; therefore, many people do not consider the NIOSH recommended exposure limit to be applicable to isoflurane and enflurane.

Several European countries have established exposure limits for isoflurane, ranging from 2 ppm in Norway to 50 ppm in England. More directly related to the U.S., ACGIH has established a threshold limit value of 75 ppm for enflurane.

Tufts University has a [written policy](#) on the use and control of isoflurane, and they decided to use the threshold limit value of 75 ppm that was set for enflurane, with an action limit of



20 ppm at which exposures should be controlled. Tufts arrived at these limits based on the fact that isoflurane and enflurane are structural isomers that are metabolized similarly, although enflurane is metabolized about 10X more readily than is enflurane, and therefore, it is more toxic to the liver.

#### Observations and Recommendations

1. A exposure limit for use at UNR has not yet established. I am not aware of any reports that the exposures listed above of 10 ppm or less have produced typical symptoms of acute isoflurane overexposure, which include headache and dizziness. A maximum exposure of 10 ppm as an 8-hour time-weighted average therefore appears to be a safe interim exposure limit. If exposed personnel report any adverse symptoms or effects, prompt action will need to be taken to reduce exposures.
2. Although a maximum exposure to isoflurane of 10 ppm is suggested, it is recommend that exposures be kept as low as reasonably achievable. Whenever it is reasonable to do so, isoflurane should be used in a chemical fume hood or ducted biosafety cabinet, or with a task exhaust placed as close as possible (within inches) to the animal/nose cone during administration of isoflurane. For example, in [REDACTED] a task exhaust can be easily set up by attaching ducting to the existing exhaust thimble located in the ceiling.
- 3.. Isoflurane passive scavenging units should continue to be used; however, our monitoring showed isoflurane concentrations of up to 14 ppm at the exit of the scavenging unit. These units may help reduce isoflurane concentrations in the surgery room but they are limited in their ability to capture isoflurane emissions.
4. Personal sampling should be considered on a case-by-case basis for surgeries that involve exposure to isoflurane that exceed a few hours, such as in [REDACTED]. Personal sampling may be able to be performed with the use of passive sampling badges; however, I would need to confirm that these badges provide a sufficiently low limit of detection. If not, active sampling using personal air sampling pumps would have to be used.

We can discuss future plans in more detail, but in the meantime, please let me know if you have questions.

Regards,

[REDACTED]

---

[REDACTED]  
EH&S Assistant Director, Laboratory Safety  
Environmental Health and Safety Dept., MS 328  
University of Nevada, Reno  
775-327-5196 (office)  
775-843-2113 (cell)

**From:** [Benjamin J Weigler](#)  
**To:** [REDACTED]; "[Gary Borkowski](#)"; "[accredit@aaalac.org](mailto:accredit@aaalac.org)"  
**Cc:** [Mridul Gautam](#); [REDACTED]; "[Mike Teglas](#)"; [REDACTED]  
**Subject:** File #001104 PSVC#3  
**Date:** Thursday, January 03, 2019 3:36:00 PM  
**Attachments:** [Isoflurane Monitoring Results.pdf](#)  
[File #001104 - Appendix 11 pg 2 - Updated 01 03 19.pdf](#)  
[18794 - UNR Fleischman \[REDACTED\] ISO Adjustment TAB Report.pdf](#)

---

Dear Drs. [REDACTED] and Borkowski:

This email provides you my final PSVC subsequent to our AAALAC International site on Nov. 6-8, 2018. I'm sending it to verify for your records that we now have some very good isoflurane waste gas anesthesia measurements from two rodent surgery room locations per the attached report of 12/27/18 (SFI #1), and also to wrap-up the topic of HVAC pressurization for the [REDACTED] woodrat housing room (SFI #2). A replacement page for Appendix 11 of our PD is attached along with a copy of the report from the HVAC test and balance company so that AAALAC Council will have the current data when our program is discussed later this month. We found the SFIs to be highly valuable to our program and this correspondence is sent to further underscore our diligence in follow-up. Please let me know if I can answer any questions about the attached material. Sincere thanks,

Ben

---

*Benjamin J. Weigler, DVM, MPH, Ph.D., DACLAM, DACVPM  
Director & Attending Veterinarian - Animal Resources  
Adjunct Professor - Dept. Agriculture, Nutrition & Veterinary Sciences  
1664 N. Virginia Street / MS 340  
Reno, NV 89557*

Office (775) 682-6570  
FAX (775) 784-4201  
Email: [bweigler@unr.edu](mailto:bweigler@unr.edu)  
Website: [www.unr.edu/animal-resources](http://www.unr.edu/animal-resources)



University of Nevada, Reno  
**Research & Innovation**

The information contained in this communication may be confidential and is intended only for the use of the intended recipient(s). If the reader of this message is not the intended recipient(s), you are hereby notified that any dissemination, distribution, or copying of this communication, or any of its contents, is strictly prohibited and may violate applicable law, including the Electronic Communications Privacy Act. If you have received this communication in error, please return it to the sender immediately and delete any copy of it from your computer system.



April 1, 2019

Benjamin J. Weigler, D.V.M., M.P.H., Ph.D.  
Director and Attending Veterinarian  
Office of Animal Resources  
University of Nevada, Reno

1664 North Virginia Street/MS 340  
Reno, NV 89557-8955

Dear Dr. Weigler:

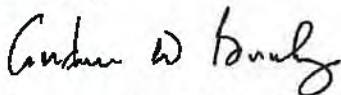
The AAALAC International Council on Accreditation has reviewed the report of the recent site visit to the University of Nevada, Reno, Nevada. The Council commends you and the staff for providing and maintaining an excellent program of laboratory animal care and use. Especially noteworthy were the strong institutional support, evidenced by the involvement of the Institutional Official, facility upgrades to include the installation of a roof over the cattle handling area at the [REDACTED], and the investment in personnel resources in support of the animal research program; the extremely knowledgeable, collegial and engaged staff; the well maintained and clean facilities; the comprehensive occupational health and safety program; the active and engaged Institutional Animal Care and Use Committee (IACUC); and the commitment of the institution to the implementation of the 3R's, evidenced in part by the sharing of tissues between investigators. The Council is pleased to inform you that the program conforms with AAALAC International standards as set forth by the *Guide for the Care and Use of Laboratory Animals*, NRC 2011 and the *Guide for the Care and Use of Agricultural Animals in Research and Teaching*, FASS 2010. Therefore, **FULL ACCREDITATION** shall continue.

Council acknowledges receipt of the correspondence dated January 3, 2019 and December 20, and November 21, 2018 detailing actions taken relative to concerns expressed by the site visitors during the exit briefing. Specifically, the items addressed satisfactorily included: assessing personnel exposure to isoflurane; re-evaluating quarantine procedures for incoming wild rodents and considering utilization of alternative housing methods; clarifying euthanasia methods on a protocol and ensuring the sharpness of scissors used for euthanasia; reviewing the anatomic landmarks used with the penetrating captive bolt gun; evaluating lamb castration procedures; ensuring surgical instruments and supplies are appropriately sterilized; revising biocontainment procedures in the amphibian housing area; and obtaining updated light intensity data.

Council has no further recommendations to offer for improvement of the animal care and use program at this time. We look forward to following your program activities and wish you continued success.

AAALAC International requires an Annual Report detailing changes made during the year in accredited units. In the interim, AAALAC International expects to be apprised in a timely manner of significant programmatic changes or concerns should they occur. Please note that, at your request, AAALAC International will provide your institution with a separate letter simply verifying that your animal care and use program is accredited. Should you also wish to distribute an electronic copy of this letter to program staff, a Portable Document Format (pdf) version will be sent upon request.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew W. Grady".

Andrew W. Grady, D.V.M., M.S.  
President, Council on Accreditation

AWG:cma  
001104

cc: Mridul Gautam, Ph.D., Vice President of Research and Innovation

tel: 301.696.9626  
fax: 301.696.9627

accred@aaalac.org  
www.aaalac.org

## Accredited Unit Annual Report

**Report Year: 2018**

**Accredited Unit: University of Nevada, Reno**

**Parent Organization: University of Nevada, Reno**

**Unit Number: 001104**

**Date Completed:  
January 10, 2019**

### Unit Reporting Period

From (MM/YY): 01/18

To (MM/YY): 12/18

Please submit following the end of the unit reporting period.

Units are encouraged to submit Annual Reports in accord with the unit's reporting period, (i.e., calendar or fiscal year, or USDA reporting period). If you change your reporting period, please be sure that there are no gaps from previous report.

In sections 1-4, please make corrections to reflect current contact information. In sections 5-16, enter the information for your Unit's reporting period.

### 1. AAALAC International Unit Contact

Label	Current Information	Changed Information
Name	Benjamin J. Weigler, D.V.M., M.P.H., Ph.D.	
Job Title	Director and Attending Veterinarian	
Department	Office of Animal Resources	
Organization	University of Nevada, Reno	
Address		
Street Address Line 1		
Street Address Line 2	1664 North Virginia Street/MS 340	
City	Reno	
State/Province	NV	
Zip Code	89557-8955	
Country		
Telephone	775/784-4874	
Fax	775/784-4201	
Email	bweigler@unr.edu	

### 2. Responsible Institutional Official

Label	Current Information	Changed Information
-------	---------------------	---------------------





Name Mridul Gautam, Ph.D.  
 Job Title Vice President of Research and Innovation  
 Department  
 Organization University of Nevada, Reno  
 Address  
 Street Address Line 1 1664 North Virginia Street, MS 0403  
 Street Address Line 2  
 City Reno  
 State/Province NV  
 Zip Code 89557  
 Country  
 Telephone 775/327-2363  
 Fax 775/327-2362  
 Email mgautam@unr.edu

### 3. Attending Veterinarian

Label	Current Information	Changed Information
Name	Benjamin J. Weigler, D.V.M., M.P.H., Ph.D.	
Job Title	Director and Attending Veterinarian	
Department	Office of Animal Resources	
Organization	University of Nevada, Reno	
Address		
Street Address Line 1		
Street Address Line 2	1664 North Virginia Street/MS 340	
City	Reno	
State/Province	NV	
Zip Code	89557-8955	
Country		
Telephone	775/784-4874	
Fax	775/784-4201	
Email	bweigler@unr.edu	

**4. IACUC/ACC/EC (if applicable) Chairperson**

Label	Current Information	Changed Information
Name	Mike Teglas, D.V.M., Ph.D.	
Job Title	Associate Professor	
Department	Agriculture, Nutrition & Veterinary Sciences	
Organization	University of Nevada, Reno	
Address		
Street Address Line 1	1664 North Virginia Street	
Street Address Line 2	MS-202	
City	Reno	
State/Province	NV	
Zip Code	89557	
Country		
Telephone	775-784-1002	
Fax	775-784-1375	
Email	mteglas@cabnr.unr.edu	

**5. Please verify the information provided regarding the physical areas supporting your animal care and use program. If this information differs from what was provided in your most recent Program Description or last annual report (whichever is most current), please note and explain:**

Label	Current Information	Change to Information
Number of buildings	8	
Outdoor pens/pastures	11950	
Total square footage	92500	
Number of sites	4	5

**6. Note addition or deletion of animal rooms, laboratories, units, or buildings:**

The [redacted] satellite housing facility for laboratory mice has been removed from the program of care and those animals are now located in the centralized [redacted] vivarium. An existing building at the [redacted] campus farm has been remodeled to enable the housing and use of dairy calves in computer monitored animal nutrition studies.

**7. The Council on Accreditation notes that there is no obligation for institutions to make program changes based on suggestions for improvement identified during a site visit and described in the subsequent letter from Council. However, if your institution implemented program modifications in response to those suggestions, you may take this opportunity to summarize the actions taken:**



The HVAC for the [REDACTED] woodrat housing room was re-balanced to be negatively pressurized, as described in our PSVC dated 01/03/19. The infection control process for staff entry/exit in the [REDACTED] amphibian housing area was modified to eliminate footbaths, as detailed in our PSVC dated 11/21/18. The PSVC dated 12/21/18 provided an update regarding the waste isoflurane gas monitoring; the preliminary report provided by the EH&S department regarding their findings was included in the PSVC dated 01/01/19. Our letter from AAALAC Council subsequent to our 11/06/18-11/08/18 site visit regarding these SFI's is still forthcoming to us pending your January meeting.

**8. State and describe changes in organizational structure of the program:**

As detailed in our triennial program description dated 07/30/18, the forms and processes used in our occupational health and safety program for animal workers have been changed and a medical safety officer (a certified healthcare safety professional) has been hired by the UNR EH&S office with assigned responsibilities for managing the workflow for persons enrolled in that program. This individual works in close collaboration with the IO's office, the IACUC, and the Animal Resources office to ensure the timely and proactive risk-based assessments and medical care of personnel via the contracted occupational health provider (Specialty Health, Reno, NV).

**9. Were any research, testing, or teaching protocols suspended during this reporting period for animal welfare related reasons?**

No

If yes, provide details regarding suspension(s):

Not applicable.

**10. AAALAC's Rules of Accreditation (Section 2.f) require accredited units to promptly report adverse events relating to their animal care and use programs, including investigations by national oversight bodies (e.g., USDA, OLAW, Home Office, CCAC) and other serious incidents or concerns that negatively impact animal well-being. *If you were unaware of this requirement and have not previously reported the incident(s):***

**a) Were any major problems identified or deficiencies noted by animal welfare oversight authorities/bodies/agencies during this reporting period?**

No

If yes, provide explanatory documentation:

Not applicable.

**b) Did you self-identify any serious deviations from your institutional animal care and use program requirements or policies?**

No

If yes, provide details of the deviations:

Not applicable.

**11. Using the drop-down menu to select the animal species, please enter the approximate annual usage for the above stated reporting period (for U.S. units, USDA Annual Report figures may be used for regulated species):**

**a)**

Animal Type	Annual Animal Usage	Other Description
Rats	900	
Rabbits	3	
Other	60	Woodrats



Guinea Pigs	100
Fish	500
Birds	208
Amphibians	400
Swine	160
Sheep	200
Reptiles	200
Cattle	1400
Mice	25000

**12. List key personnel changes since last reporting period:**

Name/Degree	Position	Year of Addition	Year of Deletion
[REDACTED]	IACUC Member (Alternate)	2018	
[REDACTED]	IACUC Member	2018	
[REDACTED]	IACUC Member (Alternate)	2018	
[REDACTED]	Med School Safety Officer	2018	
[REDACTED]	Admin Assistant	2018	
[REDACTED]	Admin Assistant		2018
[REDACTED]	IACUC Member (Alternate)		2018
[REDACTED]	IACUC Member (Alternate)		2018

**13. Would you like your unit name to appear on AAALAC International's listing of accredited units in the AAALAC International Directory and on the AAALAC International website?**

Yes

**14. Please describe your experiences with the service you received from AAALAC International this year (e.g., site visit, office contacts, etc.). Any suggestions you might have for improving our service are welcome.**

Our experience with the AAALAC site visitors during our November 2018 re-accreditation site visit was extremely positive and informative. We consistently find the AAALAC International office staff to be extraordinarily helpful.

**15. Please identify any special expertise you would like to have on your next site visit team.**

Familiarity with land-grant institutes hosting a blend of biomedical, agricultural, general biology, and wildlife research.

**16. Any additional information (to include changes in the name of the accredited unit or parent organization):**

Vertebrate animals used in field research studies are not reflected in the above animal census numbers.



## Benjamin J Weigler

---

**From:** Benjamin J Weigler  
**Sent:** Wednesday, October 16, 2019 2:47 PM  
**To:** Gary Borkowski  
**Cc:** Mridul Gautam; [REDACTED]; mteglas@cabnr.unr.edu; [REDACTED]  
**Subject:** Letter of Findings  
**Attachments:** File #001104 - Correspondence 10.16.19.pdf

Dear Dr. Borkowski – please find attached a detailed description of a very recent self-identified event within our animal use program which we are reporting to you promptly. I am available to answer any questions about it, and as noted in the letter you will receive additional follow-up information within our forthcoming Annual Report. Best regards always,

Ben

---

*Benjamin J. Weigler, DVM, MPH, Ph.D., DACLAM, DACVPM  
Director & Attending Veterinarian - Animal Resources  
Adjunct Professor – Dept. Agriculture, Nutrition & Veterinary Sciences  
1664 N. Virginia Street / MS 340  
Reno, NV 89557*

Office (775) 682-6570  
FAX (775) 784-4201  
Email: [bweigler@unr.edu](mailto:bweigler@unr.edu)  
Website: [www.unr.edu/animal-resources](http://www.unr.edu/animal-resources)



University of Nevada, Reno  
**Research & Innovation**

The information contained in this communication may be confidential and is intended only for the use of the intended recipient(s). If the reader of this message is not the intended recipient(s), you are hereby notified that any dissemination, distribution, or copying of this communication, or any of its contents, is strictly prohibited and may violate applicable law, including the Electronic Communications Privacy Act. If you have received this communication in error, please return it to the sender immediately and delete any copy of it from your computer system.



University of Nevada, Reno

October 16, 2019

Gary L. Borkowski, D.V.M., M.S., DACLAM  
AAALAC International Global Director  
5205 Chairman's Court, Suite 300, Frederick, MD 21703  
Tel. (301) 696-9626 FAX. (301) 696-9627  
Email: [accredit@aaalac.org](mailto:accredit@aaalac.org)

Dear Dr. Borkowski,

This correspondence is regarding a self-identified instance of non-compliance with the *Guide* (NRC, 2011), UNR's institutional policies, and AAALAC standards in a junior faculty member's laboratory which was brought to the attention of the IACUC during its routine semi-annual inspection on October 10, 2019. The research study for this Principal Investigator involves assessing the ecological genomics of behavioral adaptation among urban versus rural house sparrows relating to environmental changes, thus helping to inform urban planning practices with minimum adverse impacts in this context. The faculty member has been guiding her research staff remotely in the recent period while on maternity leave. A small, dedicated housing room for her birds constructed within her laboratory space located in room [REDACTED] on the lower campus (seen by AAALAC site visitors on November 7, 2018) enables separation of the birds from other laboratory activity, with its dedicated air flow, lighting, and insulation. During the IACUC's semi-annual inspection it was evident that a behavioral observation experiment had recently been completed using bird cages positioned adjacent to, but not within, the housing enclosure because of a conflict of its availability due to a different ongoing behavioral study on sparrows. The PI's own research staff are responsible for providing the daily care and health observations for her birds with guidance from me and our Clinical Veterinarian, and these cages are sanitized using a rack washer located elsewhere on campus. Due to her acknowledged administrative error, two of her undergraduate students engaged with this project were not listed on the applicable IACUC protocol and likewise, were not enrolled in the UNR's occupational health and safety program for animal workers. One of these students had also not completed their required CITI program modules for animal use. The study involved 12 days of non-invasive observation of the behavior of four sparrows within their cages, as described in her protocol, followed by relocation of the birds back to the PI's outdoor aviary. No morbidity or mortality of the sparrows nor illness or injury among the research workers was associated with these events. Funding for this project had been provided by the new faculty member's start-up budget and no federal awards were involved.



A subcommittee of four members from the IACUC appointed by its Chair, included the three members who had participated in the semi-annual inspection, convened the following day to discuss their initial findings and to inform the PI of their concerns. Yesterday the subcommittee met with the PI by telephone to gain further information and to summarize the noted non-compliance events. The Institutional Official was also immediately informed. The PI provided her assurance that no further animal care or research work by individuals not listed on her protocols would occur until they had been added to the list of approved personnel and had completed all their required training and occupational health program enrollments. The PI was not aware that housing of these four birds had been done adjacent to the dedicated enclosure by these two individuals within her highly motivated investigative group, and she attributed their absence from her protocol to her administrative oversight while she is at home caring for her child.

The IACUC considers these events to be serious non-compliance oversights by the PI, and details of these findings will be presented to the full committee when it next convenes on October 23, 2019. The faculty member's Department Chair and Dean will also be informed through the Institutional Official. In-person training of the PI and all her lab members will be scheduled to occur shortly, followed by documented assurances to be obtained from the PI on the new processes she will immediately implement to eliminate any potential for recurrence of non-compliance in her animal studies. Un-announced visits to the faculty member's laboratory will be performed by me or the Clinical Veterinarian monthly, with reports of these visits made to the IACUC, as one component of our post-approval monitoring program to help verify her adherence to the study's approved personnel and procedures. The PI greatly regrets these matters and she has been highly cooperative with the IACUC throughout the investigation. The circumstance of her maternity leave combined with the housing and use of the sparrows in a small and investigator-controlled satellite facility clearly contributed to this highly unusual event for our campus-wide programs. Please let me know if additional information is required by AAALAC International. We will provide further updates in our Annual Report to your office.

Very sincerely,



Benjamin J. Weigler, DVM, MPH, Ph.D., DACLAM, DACVPM  
Director & Attending Veterinarian - Animal Resources  
Adjunct Professor - Dept. Agriculture, Veterinary & Rangeland Sciences  
1664 N. Virginia Street / MS 340  
Reno, NV 89557  
Tel. (775) 682-6570  
Email: [bweigler@unr.edu](mailto:bweigler@unr.edu)

CC: IACUC Members  
Mridul Gautam, Ph.D. - Vice President of Research & Innovation (Institutional Official)  
[REDACTED] - Associate VP, Research Administration



## Benjamin J Weigler

---

**From:** AAALAC International <accredit@AAALAC.org>  
**Sent:** Monday, November 04, 2019 8:04 AM  
**To:** Benjamin J Weigler  
**Subject:** Acknowledgment of Institutional Correspondence - Unit# 001104



AAALAC International acknowledges receipt of your communication providing notification of noncompliance at your institution, together with an account of the corrective actions taken.

As you are aware, the Institutional Animal Care and Use Committee (IACUC) has a responsibility for ensuring that animal procedures conducted conform with the approved protocol and institutional policies. The Institutional Official IACUC, veterinary staff and research personnel can effectively work as a team to establish a culture of compliance at the institution that will minimize occurrences of noncompliance. Your communication of this program issue is in accord with AAALAC International's Rules of Accreditation. This information, reflecting an updated status, will be incorporated into your AAALAC International file, which is reviewed periodically by the Council on Accreditation.

Your continuing communication of programmatic changes or concerns as they occur is appreciated. If AAALAC International can be of assistance, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Gary L. Borkowski".

Gary L. Borkowski, D.V.M., M.S.  
Global Director

GLB:blk

As a reminder...

**Report promptly:** unexpected animal deaths • natural disasters • significant animal rights activities • inappropriate euthanasia • allegations • complaints • animal welfare concerns • lack of veterinary care • unit contact changes

**Report on the Annual Report:** protocol violations • protocol noncompliance • protocol suspensions • changes in facility size, location, name, IACUC/Ethics Committee/Animal Care Committee composition changes

This message and its attachments may contain information subject to professional confidentiality, and can only be used by the person or entity who is the intended recipient of the email. Its reproduction or distribution without the express permission of AAALAC International is not allowed. If you are not the intended recipient, please delete it and notify the sender. According to the privacy principles on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, we remind you that personal data may be stored in a file owned by AAALAC International for the intended use of communication with our associates, and that you have the option of exercising rights of data access, rectification, cancellation, and opposition at: [accredit@aaalac.org](mailto:accredit@aaalac.org)