



DEPARTMENT OF HEALTH & HUMAN SERVICES

PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

FOR US POSTAL SERVICE DELIVERY:

Office of Laboratory Animal Welfare
6700B Rockledge Drive, Suite 2500, MSC 6910
Bethesda, Maryland 20892-6910
Home Page: <http://grants.nih.gov/grants/olaw/olaw.htm>

FOR EXPRESS MAIL:

Office of Laboratory Animal Welfare
6700B Rockledge Drive, Suite 2500
Bethesda, Maryland 20817
Telephone: (301) 496-7163
Facsimile: (301) 402-7065

January 14, 2020

Re: Animal Welfare Assurance
A3445-01 [OLAW Case D]

Dr. Edward Hackett
Vice Provost for Research
Brandeis University
415 South Street, MS 116
Waltham, Massachusetts 02453

Dear Dr. Hackett

The Office of Laboratory Animal Welfare (OLAW) acknowledges receipt of your January 10, 2020 letter reporting an instance of noncompliance with the PHS Policy on Humane Care and Use of Laboratory Animals at the Brandeis University following up on an initial July 23, 2019 notification by telephone.

According to the information provided, this Office understands that Brandeis University determined that instances of noncompliance occurred with respect to: failure of the chillers and HVAC system in the temporary vivarium in the Bassine Building. Animals were housed in this building temporarily, while HVAC renovations were underway in the Foster Biomedical Research Laboratory Building, which was to serve as the permanent location for laboratory animals. The HVAC related issues resulted in the deaths of 39 rats, 4-6 cannibalized hamster pups and a small number of <P7 mouse pups. Primary cause of deaths was an overloaded circuit that was supplying power to portable coolers in the rooms of the animal facility. The report notes that one of the three chillers failed on July 17, 2019. Rising outside temperatures (>90F) increased the load on the remaining chillers and a second chiller failed on July 19th. Alarms to signal rising building temperatures did not function, and staff who should have reported the high temperatures did not do so. A total of 4 portable coolers were used to reduce temperatures, but this resulted in overloading circuits and caused breakers to trip. It was determined that heat stress resulted in animal deaths. Per the preliminary report this incident involved PHS supported activities.

The following corrective actions were instituted by the university:

1. Examination and repair of all chillers.
2. Notification procedures were corrected and updated, and staff was retrained to ensure proper procedures will be followed.
3. The alarm systems that monitor mechanical conditions and building temperatures were investigated (including complete updating of each individual alarm point).
4. Redundant alarms were added to animal care areas.
5. Key parts for the chillers were ordered and stock piled to avoid long lead time when ordering supplies needed quickly.

6. A study was commissioned to analyze the Science Complex cooling system and develop a load-shedding protocol to accommodate loss of cooling capacity.
7. Investigation of other areas of vulnerability and mitigation strategies occurred.
8. The design and procedures of the Foster building benefited from the lessons learned from this event.
9. Staff was retrained in proper procedures to follow when there are irregularities of temperature, humidity or air flow in the animal care facility.

It is noted that the return move is underway and will be completed soon (approx. 10d) and design and operation improvements include:

The installation of a new HVAC system, installation of redundant temperature alarms in all animal rooms (and animal buildings), stocking onsite essential parts of the chilled water system, development of a protocol for shifting chilled water from other buildings for emergency purposes, purchase of an emergency/stand-by generator, and training of staff in the appropriate series of responses to alerts.

Based on the information provided, the Office of Laboratory Animal Welfare (OLAW) is satisfied that appropriate actions have been taken to investigate, correct, and prevent recurrence of the noncompliance. OLAW assumes that the IACUC was informed of these corrective actions and approved the plan that has been implemented.

Your prompt and thorough resolution of this matter is commendable and consistent with the PHS Policy philosophy of monitored self-regulation. We appreciate having been informed of these matters and find no cause for further action by this Office.

Sincerely,

(b) (6)

Jacquelyn T. Tubbs, DVM
Veterinary Medical Officer
Division of Compliance Oversight
Office of Laboratory Animal Welfare

cc: IACUC Contact



Brandeis University

Dr. Brent Morse
Director, Division of Compliance Oversight
Office of Laboratory Animal Welfare
National Institutes of Health
Rockledge 1, Suite 360, MSC 7892
6705 Rockledge Dr.
Bethesda, MD 20892-7982

January 10, 2020

Re: D16-00282

Dear Dr. Morse:

A heat incident at Brandeis University that lasted from July 18 to July 22, 2019 caused the deaths of 39 rats, 4-6 cannibalized hamster pups, and a small number of <P7 mouse pups. The incident occurred in the temporary vivarium in the Bassine Building that was built to house our research animal population during the HVAC renovation of the Foster Biomedical Research Laboratory Building. The proximal cause of the deaths was an overloaded circuit that was supplying power to portable coolers in the rooms of the animal facility. The distal causes were a record heat spell that brought on a cascade of equipment failures, culminating in the animals' deaths. The following outlines what occurred and the changes that have been made to mitigate the risk. Foremost among these measures is the return of the laboratory animals to the newly renovated facility in the Foster Building, which now has enhanced HVAC, backup equipment, and alarm systems that will mitigate the risk of recurrence.

The Incident

Brandeis University has a science complex consisting of 11 closely-positioned buildings that house extensive research and education facilities. All 11 buildings are cooled by a closed-loop chilled water system made up of three chillers.

One of the chillers in the Gerstenzang Building failed on Wednesday, July 17th. The two working chillers were able to maintain cooling in all buildings until Friday, July 19th. Rising outside temperatures to over 90 degrees on that day increased the load on the remaining chillers, and a second chiller failed late Friday night. Through the night and into Saturday (external temperatures reaching 97 degrees), internal building temperatures began to rise throughout the Science Complex, including the Bassine Building, which housed the laboratory animals. Alarms that were supposed to signal the rising temperatures did not function, and staff who should have reported the high temperatures did not do so.

Brandeis faculty and staff worked through the weekend to reduce temperatures in the building and to repair the chillers. Parts for the chillers were unavailable locally and so were ordered from a distant vendor, for expedited delivery. In the interim, parts were cannibalized

Edward J. Hackett, PhD, Vice Provost for Research
Gryzmish Center 2nd Floor, 415 South Street, MS 134 Waltham, MA 02453-2728
Phone 781-736-2131 Fax 781-736-2100 ehackett@brandeis.edu

the one functioning chiller that continued to work throughout the weekend. The 2 portable coolers were unable to reduce temperatures very rapidly, and so late Sunday, additional temporary portable coolers were brought in to accelerate the cooling process. Unfortunately, during Sunday night the coolers overloaded circuits and caused breakers to trip. By the time the failure was detected (only several hours later on Sunday night), the heat stress had caused the animals' deaths.

Corrective Actions

Many corrective actions were taken to prevent future failures. Among the most significant are:

1. Examined and repaired all chillers (\$75,000).
2. Corrected and updated notification procedures, and retraining staff to ensure proper procedures are followed.
3. Comprehensively investigated alarm systems that monitor mechanical conditions and building temperatures, including complete updating of each individual alarm point.
4. Added redundant alarms to the animal care areas (\$15,000).
5. Ordered and stocked key parts for the chillers that have a long supply lead time (\$11,000).
6. Commissioned a study to analyze the entire Science Complex cooling system and developed a load-shedding protocol to accommodate loss of cooling capacity (\$17,800).
7. Investigated other areas of vulnerability and mitigation strategies.
8. Carried the lessons of this event into the design and procedures of the Foster Building (for example, in February we will replace the generator in the Foster Building, at a cost of \$487,000).
9. Staff have been re-trained in proper procedures to follow when there are irregularities of temperature, humidity, or air flow in the animal care facility.

Foster Facility

Lessons learned from this incident have been carried forward into the design and operation of the Foster Biomedical Research Facility, which is the laboratory animals' permanent location. The return move is underway now and will be complete in about 10 days. The design and operation improvements include:

1. Foster now has a new HVAC system, purchased and installed at a cost of \$8.4M. Among the specific steps taken to avert further catastrophes are:
 2. Redundant room temperature alarms have been installed in all animal rooms. Some 300 specific points are set for remote alarm notification, monitoring temperature, humidity, and air flow. A redundant temperature alarm has been installed in all animal buildings. Both alarm systems alert several key personnel in animal care, facilities, and campus safety (and the campus safety headquarters is within 100 meters of Foster).
 3. Added redundancy to the chilled water system by stocking onsite essential parts that

are hard to get, and by developing a protocol for shifting chilled water from other buildings to Foster in case of a temperature emergency.

4. Purchased and will soon install (February 2020) a new emergency/stand-by generator.
5. Trained staff in the appropriate series of responses to alerts.

We deeply regret the loss of life occasioned by this cascade of failures, mechanical and human, and will strive to avoid any such catastrophe in the future.

Sincerely

(b) (6)

(b) (6)

Edward J. Hackett
Institutional Official &
Vice Provost for Research

Tubbs, Jai (NIH/OD) [E]

From: OLAW Division of Compliance Oversight (NIH/OD)
Sent: Tuesday, January 7, 2020 12:35 PM
To: Edward Hackett
Cc: OLAW Division of Compliance Oversight (NIH/OD); iacuc@brandeis.edu
Subject: RE: Follow up on report of noncompliance from July 2019

Understood and thank you for the speedy reply!

J Tubbs

From: Edward Hackett <ehackett@brandeis.edu>
Sent: Tuesday, January 7, 2020 12:32 PM
To: Tubbs, Jai (NIH/OD) [E] <jacquelyn.tubbs@nih.gov>
Cc: OLAW Division of Compliance Oversight (NIH/OD) <olawdco@od.nih.gov>; iacuc@brandeis.edu
Subject: Re: Follow up on report of noncompliance from July 2019

Dear Jai,

Thanks very much for the reminder. We have been circulating a draft report and will send it to you in a day or two.

Best wishes for the new year,

Ed

Institutional Official

Edward J. Hackett
Vice Provost for Research
Professor, Heller School for Social Policy and Management
Editor, Science, Technology & Human Values
Brandeis University
415 South St -- MS 134
Waltham, MA 02453
tel: (b) (6)
fax:

On Tue, Jan 7, 2020 at 12:21 PM Tubbs, Jai (NIH/OD) [E] <jacquelyn.tubbs@nih.gov> wrote:

Good afternoon,

I am following up on the report of noncompliance made via telephone on 07/23/2019. OLAW has no record of receiving further communication regarding this issue. We will need an interim or final report very soon.

Kind Regards,

Jacquelyn Tubbs, DVM, DACLAM

Veterinary Medical Officer

Office of Laboratory Animal Welfare

National Institutes of Health

Please note that this message and any of its attachments are intended for the named recipient(s) only and may contain confidential, protected or privileged information that should not be distributed to unauthorized individuals. If you have received this message in error, please contact the sender.



Initial Report of Noncompliance

By: awDate: 7/23/19Time: 1:30

Name of Person reporting: Ed Hackert IO
 Telephone #: (b) (6)
 Fax #: (b) (6)
 Email: (b) (6)

Name of Institution: Brandeis U
 Assurance number: A3445

Did incident involve PHS funded activity? Yes
 Funding component: _____
 Was funding component contacted (if necessary): _____

What happened?

HVAC failed, Chillers failed, used portable systems + initially worked but got overwhelmed

Species involved: Rat, mice, hamster

Personnel involved: _____

Dates and times: _____

Animal deaths: 40 rats

Projected plan and schedule for correction/prevention (if known): _____

Will see what preventive measures can be taken
add backup capacity

Projected submission to OLAW of final report from Institutional Official: _____

OFFICE USE ONLY

Case # _____