DEPARTMENT OF HEALTH & HUMAN SERVICES

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FOR US POSTAL SERVICE DELIVERY:
Office of Laboratory Animal Welfare
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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) 480-3387

DATE: November 1, 2021

TO: Michael M. Gottesman, M.D.
Deputy Director for Intramural Research, NIH

FROM: Director
Division of Compliance Oversight, OLAW

SUBJECT: Animal Welfare Investigation (NICHD # 25-21) – Animal Welfare Assurance A4149-01 [Case 15U]

The Office of Laboratory Animal Welfare (OLAW) acknowledges receipt of your October 21, 2021 memo regarding an incident of noncompliance with the PHS Policy on Humane Care and Use of Laboratory Animals at the National Institute for Child Health and Human Development. According to the information provided, OLAW understands that on July 22, 2021, many dead fish were found in one of three water systems. Based on the physical appearance of the affected animals and on the accumulation of air bubbles in the tanks gas bubble disease was diagnosed. The bio-filter air-bubbler was located abnormally close to the pump intakes. In total this incident was associated with deaths of 103 Cavefish.

Corrective and preventive actions included immediately shutting off the system until dissolved O2 levels returned to normal and moving the air-bubbler to a proper position. It was later determined that it was appropriate to replace the air bubbler with submersible pumps to agitate the biofilter.
Since the oxygen alarms did not alert staff, new SOPs for the methods and frequency of monitor recalibration have been developed and the alarm thresholds have been lowered. It is understood that the ACUC also looked at other potential actions regarding the facility design, cross-training of staff, and a review of alarm patterns.

The action taken to resolve the issue and prevent recurrence was appropriate and accepted by OLAW. We also compliment the NICHD ACUC for a thorough review of possible root causes of the incident. We appreciate being informed of this matter and find no cause for further action by this office.

Sincerely,

Brent C. Morse -S

Digitally signed by Brent C. Morse -S
Date: 2021.11.01 07:58:54 -04'00'

Brent C. Morse, DVM, DACLAM
Director
Division of Compliance Oversight
Office of Laboratory Animal Welfare

cc: Dr. Stephen Denny
Dr. Richard Wyatt
Dr. Karl Pfeifer, Chair, NICHD ACUC

A4149 - 154

DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

National Institutes of Health
Bethesda, Maryland 20892
www.nih.gov

October 21, 2021

TO: Brent C. Morse, D.V.M.
Director, Division of Compliance Oversight
Office of Laboratory Animal Welfare

FROM: Deputy Director for Intramural Research, NIH

SUBJECT: Animal Welfare Investigations - Assurance D16-00602 (NICHD 25-21)

This correspondence conveys the results of an animal incident investigation by the NIH National Institute of Child Health and Human Development (NICHD) in accordance with Assurance D16-00602 and PHS Policy IV.F.3. The animal incident involved a mechanical failure leading to unsafe levels of dissolved oxygen in some fish tanks. The incident contributed to the death of 103 research fish on an ACUC-approved animal study.

The event was first reported to the NIH Office of Animal Care and Use by the NICHD ACUC Chairman on July 29, 2021.

Please contact me or Dr. Stephen Denny, Director, Office of Animal Care and Use, if additional information or clarifications are required.

Michael M. Gottesman -S
Digitally signed by Michael M. Gottesman -S
Date: 2021.10.21 21:23:50 -04'00'

Michael M. Gottesman, M.D.

Attachment

cc: Dr. Wyatt
Dr. Pfeifer
Dr. Denny

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

National Institutes of Health
Eunice Kennedy Shriver National
Institute of Child Health and
Human Development
Bethesda, Maryland 20892

To: Dr. Michael Gottesman
Deputy Director for Intramural Research

From: Karl Pfeifer
Chair, NICHD ACUC

Karl E. Pfeifer -S

Digitally signed by Karl E. Pfeifer -S
Date: 2021.10.20 16:06:03 -04'00'

Date October 5, 2021

Subject: Gas Bubble Disease in Cavefish Aquaria

Incident

On Tuesday 7/22/21, shortly after arriving to the room (around 9:30 am) the animal care staff tech noticed many dead fish in one of the three water systems. The tech shut down the water system at 9:41 so tanks became static and notified the Contract Project Manager (CPM) and the facility veterinarian. The CPM arrived in the facility at 9:51 and based on the physical appearance of the affected animals and on the accumulation of air bubbles in the tanks, the manager quickly diagnosed gas bubble disease The CPM also noted that the bio-filter air-bubbler was located abnormally close to the pump intakes.

The CPM reported the diagnoses to the NICHD Facility Manager and together they developed a plan to return the system to normal. This plan was approved by the facility veterinarian. The air bubbler was replaced to an appropriate position while the system was allowed to off-gas into a normal range. Water flow was restored to all tanks at 11:40 am.

In total this incident was associated with deaths of 103 fish.

NICHD Investigation and Response

The ACUC chair was informed by email on 7/22. The Chair followed up with emails on 7/22 and also met with the Facility veterinarian and Facility Manager. By that time, NICHD Research Animal Management Branch (RAMB) had already developed a detailed plan to prevent recurrence. (See below).

The chair informed other committee members in a detailed written report and the incident was discussed at our August 18 meeting. At that meeting, the committee organized a subcommittee to perform a full investigation. This subcommittee consisted of the Chair, a member with expertise in aquatics species, and our non-affiliated/non-scientist member.

The subcommittee performed its work by meeting separately with the veterinarian, the facility manager, research investigators, and outside experts in aquatics husbandry. Both our aquatic species expert and our non-affiliated member inspected the facility.

Here are key findings of our investigation and NICHD plans to prevent recurrence.

This incident was caused by two deficiencies that required (and received) immediate attention.

1. The use of an aerator to agitate the biofilter is unnecessarily risky. To address this concern, RAMB has installed submersible pumps to agitate biofilter without introducing air. RAMB will update the committee in January 2022 on the impact of these reconfigurations.
2. Oxygen alarms did not alert us to the impending problem. Consistent with policies at other research institutes, NICHD uses O2 alarms as a proxy to monitor total dissolved air. We now understand that oxygen monitors "drift" over time and therefore begin to underestimate dissolved O2 (DO2). Based on this information, RAMB has developed new SOPs for the methods and frequency of monitor recalibration. The facility has also altered thresholds so that alarms will be activated by lower DO2 levels. RAMB will update the ACUC in January and in June 2022 on the efficacy of these measures and their impact on alarm activation.

These findings were reported to the full committee at our October 20 meeting. We concluded that these measures are the key changes needed to prevent recurrence, but we also want to briefly comment on other findings and on other long-term considerations.

1. Design of the original system that used aerators to agitate the biofilter: In hindsight, the risk associated with this set-up were evident to everyone. Accordingly, RAMB, contractors, and researchers were each disappointed that they had not changed the set-up sooner. With this in mind, our subcommittee carefully reviewed the process for design and implementation of the Cavefish facility. We saw that this was a thorough process and that plans were reviewed at multiple steps in and by multiple experts. In sum, we did not identify flaws in the process of designing the Cavefish habitat.
2. Immediate response by contract and RAMB staff: We were entirely impressed by the rapid and intelligent response. The facility contained multiple specialists each capable of rapid diagnosis of this problem. However, to ensure we maintain this depth of expertise, we encourage our APD and RAMB to emphasize cross-training of all NICHD facility veterinarians and managers. The committee will communicate the importance of this cross training with our Scientific Director in case any additional resources are required.
3. Subcommittee members noted that the Aquatics Facility staff address hundreds of alarms annually and that dozens of these alarms result in short term shutdowns of water systems. We recommend that RAMB consider whether some sort of tabulation of the alarm patterns might allow staff to identify underlying problems and discuss this with the committee in January 2022. As appropriate, the committee would support the additional resources required to automate this data collection.

Wolff, Axel (NIH/OD) [E]

From: OLAW Division of Compliance Oversight (NIH/OD)
Sent: Friday, October 22, 2021 10:12 AM
To: Denny, Stephen (NIH/OD) [E]
Cc: OLAW Division of Compliance Oversight (NIH/OD)
Subject: RE: D16-00602 NIH Animal Incident Report (NICHD 25-21)

Thank you for this report, Dr. Denny. We will send a response soon.
Axel Wolff

From: Denny, Stephen (NIH/OD) [E] <stephen.denny@nih.gov>
Sent: Friday, October 22, 2021 9:39 AM
To: OLAW Division of Compliance Oversight (NIH/OD) <olawdco@od.nih.gov>
Cc: Smith, Heather (NIH/OD) [E] <heather.smith@nih.gov>
Subject: D16-00602 NIH Animal Incident Report (NICHD 25-21)

Dear OLAW/DCO,

The attached reports from the NIH Institutional Official and the National Institute of Child Health and Human Development ACUC address an animal incident involving a mechanical failure leading to unsafe levels of dissolved oxygen in some fish tanks.

The event was first reported to the NIH Office of Animal Care and Use by the NICHD ACUC Chair on July 29, 2021.

If you have any questions please contact me via email or at the phone number listed below. Thank you, Steve

STEPHEN DENNY, DVM, MS, DACLAM, DACVPM | Director, Office of Animal Care and Use | NIH Bethesda Campus, Building 31/Room B1C37 | Phone: (301) 435-2188 | ***NIH . . . Turning Discovery Into Health*** |