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Uncovering the cause of a research problem

Javier Colón was the senior manager of the Great Eastern University laboratory animal facility. For as long as he could remember, the air conditioning unit in the animal facility had made enough noise to require people to raise their voices to be heard. Nevertheless, it worked well otherwise, and the entire animal facility enjoyed full AAALAC accreditation. There had never been any faculty complaints about the noise until Shirley Steadman, a noted immunologist, arrived and initiated her studies on the genetic basis of resistance to lymphocytic choriomeningitis virus and other diseases. In her previous work at another institution, she had routinely used two strains of mice with differing susceptibilities to infection with the virus, but at Great Eastern, those differences were not detectable. After reexamining her methodology and the quality of her supplies, confirming the genotype of the animals she bred and evaluating her technicians' techniques, she surmised that the mice were being stressed by the air conditioner noise and that the stress was masking the difference in susceptibilities between the two strains.

Steadman complained to Colón about the noise, and although Colón was apologetic, he told Steadman that the problem was not the air conditioner itself but rather the supports for the unit and the way in which the building transmitted sounds. He explained that the building was old and that the school had recently re-braced the air conditioning unit and installed sound attenuation equipment. The noise from the unit was less now than it ever had been and, he said, no other investigators had ever complained. In addition, AAALAC, at its triennial site visits, had never indicated it was even a minor problem. Colón said there was nothing he could do.

Unsatisfied with Colón's explanation, Steadman re-studied the literature on stress in rodents and read the applicable federal guidelines and regulations about stress in animals. She then went to the IACUC and made a strong complaint that the school and IACUC were condoning unnecessary stress in animals in violation of applicable federal regulations and guidelines. The IACUC went into executive session and decided that because no other

investigators, including immunologists, had ever said that the air conditioning noise was a stressor; because the facility was AAALAC accredited; and because there were no other obvious indications of animal stress, Steadman should not blithely assume that the background noise from the air conditioning unit was the cause of her problems. The committee said that it was up to Steadman to prove her hypothesis and that the air conditioner noise would not become an issue for the IACUC and animal facility unless that happened. The IACUC also agreed to work with Steadman to try to find a resolution to her research problem, including the approval of appropriately designed pilot studies, but the job of finding an answer to the dilemma was essentially placed on Steadman's shoulders.

What is your opinion? Are Colón's explanations and the IACUC's actions appropriate and sufficient? Or is it the responsibility of Great Eastern University, not Shirley Steadman, to uncover the cause of her research problem? How would your IACUC approach this situation?

RESPONSE

On institution's shoulders

Chrystal L. Redding, MS, RLATG & Thomas M. Greene, BS, RLAT

Exposure to sounds greater than 85 dB may have unwanted effects on research, and according to federal regulation, such exposure is above the allowable limit¹. It would seem that sound levels have not been measured by the university or AAALAC, even though the facility has AAALAC accreditation. If sound levels are in fact greater than 85 dB, we feel that the IACUC and the university should be ultimately responsible for correcting this problem.

Steadman has investigated the literature and re-evaluated her procedures and supplies and feels strongly that her experiments are compromised by the stress caused by the exposure of her animals to noise and possible vibrations. The IACUC and facility manager should not only comply with federal regulations regarding use of animals in research or education, but should also support investigators in accomplishing their research goals successfully. Sound levels should be measured during a 24-h period in order to characterize the sound profile of the rodent room. Even if sound levels are below the allowable levels, they could still be high enough to cause stress in animals. Environmental noises can alter endocrine,

reproductive and cardiovascular function². Additionally, noise can disturb sleep cycles and mask normal communication between animals².

It is our opinion that Colón and the Great Eastern IACUC should take extra steps to help Steadman. If equipment and funding are available, then the facility could seek new ways to reduce potential noise-related stress, such as sound-proofing experimental and holding rooms or even relocating Steadman's mice to an area farther away from the air conditioning unit in question. These steps are necessary for both animal well-being and scientific validity.

1. Institute for Laboratory Animal Research. *Guide for the Care and Use of Laboratory Animals*