



National Jewish Health[®]

Science Transforming Life[®]

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Purpose

To measure lighting levels within a vivarium that utilizes the Animal Care Systems, Inc. OptiMICE[®] rack and compare to other caging (static microisolator cages on racks). Baseline light levels inside the animal holding room was also collected for comparison.

Procedure/Method

Measurements were taken with a standard photography-grade lux meter (Extech Instruments - 401025 – Digital) . The meter was placed inside each cage, the cage was closed and docked into its rack system, and two measurements were taken, one with the sensor at the front of the cage and one with the sensor in the center/rear of the cage. All measurements had the sensor centrally located between the left and right cage walls. Each cage type was tested at three different positions within its rack system, one near the top, one approximately 1 meter off the ground, and one near the bottom. For the OptiMICE[®] racks, in addition to testing each cage at the three vertical positions, two rotary positions were also selected, one of which placed the testing cage in the center of one of the four sides of the rack and the other, behind an upright support column.

Also included in the examination of each cage type was the baseline illuminance level outside the cage in the animal holding room, near the rack, measured at roughly one meter above the floor.

All illuminance measurements are represented in lux.

Test environment (cage or room)	Room Illuminance Near Caging	Top of Rack		1 Meter Off Floor		Bottom of Rack	
		Front of Cage	Center of Cage	Front of Cage	Center of Cage	Front of Cage	Center of Cage
OptiMICE: Centered Side	373	328	22	274	8.6	175	5.4
OptiMICE: Behind Support	373	38	6.5	161	15	95	6.5
Other caging system	373	118	62	54	6.5	36	4.3

Conclusions

Since illuminance levels within a room can vary considerably based on small variables, a vivarium characteristic of the industry was selected as the location for the analysis (National Jewish Health, Biological Resource Center, Denver, CO). Within an animal holding room illuminated to recommendations set forth by “Guide for Care and Use of Laboratory Animals, 8th Ed.”, illuminance was the strongest in cages on the top level of their respective racks. Measured centrally inside each cage, OptiMICE caging permitted light levels as high as 22 lux on the top rack level, and a rack system from a different manufacturer experienced 62 lux from its top level. As expected, measurements taken at positions below the top level of the rack were significantly lower. Based off our findings that cage-central illuminance levels represent a fraction of the room illuminance, one can safely assume any such OptiMICE caging situated in a room illuminated to industry recommendations would expose its animals to light levels far below the 325-lux upper limit indicated in “Guide for Care and Use of Laboratory Animals, 8th Ed.”.