REGION-3

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NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45226

HAZARD EVALUATION AND TECHNICAL ASSISTANCE
REPORT NO. TA 77-46

NIOSH Facilities
Rockville, Maryland
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Study Requested By:
Annual Industrial Hygiene Inspection Requirements
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I. SUMMARY

An industrial hygiene survey was performed at the NIOSH facilities in Rockville, Maryland, on November 9, 1977. Desk top illumination levels were measured in areas where complaints had been received or where there seemed to be inadequate lighting. Noise levels were measured in the Xerox® room where there was potential for employee overexposure. Employees were questioned as to whether or not they felt a problem existed with ventilation, noise or lighting. A few employees complained of inadequate lighting over their desks and others complained that their rooms were uncomfortable (stuffy, hot, etc.).

It is concluded that some work areas do need more lighting and recommendations are presented to effect better lighting conditions. The dissatisfaction expressed toward temperature can be attributed to individual preferences regarding feelings of comfort.

II. INTRODUCTION

The Occupational Safety and Health Program requires that an industrial hygiene inspection of all NIOSH facilities be performed annually. Pursuant to a memorandum dated April 14, 1977, from the NIOSH Safety Officer, arrangements were made to perform the inspection. Due to the relocation of the Rockville facilities and budgetary constraints, the survey was not performed until November 9, 1977.

III. EVALUATION

A. Process Description

The approximately 200 NIOSH employees in Rockville are administrative and clerical personnel and occupy one wing and part of the front on the eighth floor of the Parklawn (HEW) Building. The facilities are still in the finishing touches of rearrangement so many of the problems encountered may be rectified at the completion of the move. There is a room which contains four Xerox® machines and is potentially a source of noise exposure. However, no employee indicated any problems with either noise or chemical exposure in this area.

B. Environmental Evaluation

A walk-through survey was conducted in each room allocated to NIOSH. The administrative officer for the Rockville facilities accompanied the industrial hygienists and pointed out areas from which she had received complaints in the past. These areas were noted for evaluation. Employees were questioned about working conditions.

1. Desk Top Illumination

Measurements of desk top illumination were taken with a Weston Electric Corporation light level meter and compared to the existing lighting criteria established by the Government Services Administration (GSA) and the Recommendations of the Illuminating Engineering Society.

2. Ventilation

Since there were no complaints of odors or anything of a similar nature no ventilation measurements were taken.

3. Noise Levels

The noise levels in the Xerox® room were evaluated with a General Radio Company Model 1565-B sound level meter. Measurements were taken on the A scale, slow response.

4. Psychrometer Readings

Dry level and wet bulb temperatures were obtained with a Bendix Psychrometer. Relative Humidity readings were determined with the charts accompanying the instrument.

IV. EVALUATION CRITERIA

A. Illumination

There are two criteria which can be used to evaluate lighting requirements: 1) American Standard Practice for Office Lighting developed by the Illuminating Engineering Society[1] and 2) the GSA Guidelines as set forth by the President. The first criteria is based on health effects of inadequate lighting and the second is based on energy considerations. In this instance, since we are concerned with worker safety and health, we will use the IES criteria of 70-100 foot-candles for desk top lighting. This range of 70-100 foot-candles is considered adequate for most people involved in reading or transcribing handwriting to regular office work involving filing, mail sorting, and reading good reproductions. The GSA current restriction allows not more than 50 foot-candles at desk top level.

B. Noise

The NIOSH criteria document "Occupational Exposure to Noise" (Pub. 1972)[2] recommends that employee exposure not exceed 85 decibels (dB) for an 8-hour period when measured on the A scale at slow response (dBA-slow).

V. RESULTS AND RECOMMENDATIONS

The noise measurements obtained in the Xerox® room indicated a level of 70 dBA measured 4 feet from one machine and 66 dBA in the middle of the room approximately equidistant from each machine. The four machines were essentially the same models and so can be expected to create an equal amount of noise. Therefore, if the noise levels in dBA of the four machines are added, the resultant noise level is 79 dBA, which is below

the recommended criteria. Even if all four machines were operating at once, it is expected that overexposure of employees to noise would not occur. Also, no employee's work requires him to be in the Xerox® room for 8 hours a day.

The desk top illumination levels obtained are presented in Table I. Values ranged from 12 to 45 foot candles. Values were well below the IES requirements and also below the GSA restrictions. However, the fact that they are, in most cases, one half the specification may be the reason for the complaints.

The psychrometer readings taken at various locations throughout the NIOSH facility indicated an average dry bulb temperature of 77°F, average wet bulb of 67°F and average relative humidity 57%. According to the revised ASHRAE comfort chart[3] this combination of factors fall within the range most people consider comfortable. Feelings of comfort are relative and one person's feelings of comfort may differ from another's. Factors affecting comfort include type and weight of clothing worn, amount of activity engaged in and ambient air movement.

The following recommendations are in order:

1. The employee's desk can be moved to a different location in the room to take advantage of existing light fixtures. More bulbs should be installed when needed in existing fixtures to increase lighting. In some cases where there are not enough fixtures in the room, more fixtures should be added or individual desk lamps should be supplied.

2. Flickering bulbs indicating a faulty switch or loose bulb should be repaired.

3. As stated previously, individual preferences for temperature and humidity vary. Since the Parklawn building houses so many employees, the levels of temperature and humidity are maintained so that the maximum number of employees are comfortable. Adjustment of the building's theromstats to suit a few individuals is not warranted. The employee can alleviate his uncomfortableness by wearing light weight clothing and layering them; thereby, enabling him to remove or replace articles of clothing as he feels warm or cold.

4. The ventilation ducts, both intake and exhaust, should receive regular cleaning and maintenance. The industrial hygienists noted that many vents were dirty. This visible accumulation of dirt may be indicative of the entire system and can cause more rapid wear of the system and a loss of efficiency. Also, some vents were closed off or blocked with cardboard. The cardboard should be removed.

5. In one case in which there was a complaint of stuffiness, there was obviously not enough makeup air in the room for the intake vent to work properly. This was the cashier's room in which it is required that the doors remain closed and locked. The only avenue for makeup air is the money exchange opening at the window (an area approximately 12" wide and 2" high). In order to relieve the casher when working in the room, a small fan should be installed or an exhaust vent installed.

REFERENCES

1. "American Standard Practice for Office Lighting." Illuminating Engineering Society Handbook, Illuminating Engineering Society, 4th Ed. 1966.

2. Criteria for a Recommended Standard . . "Occupational Exposure to Noise", (1972) NIOSH Publication No. HSM 73-11001.

3. ASHRAE Guide and Data Book, Fundamentals and Equipment for 1965 and 1966. American Society of Heating Refrigerating and Air-Conditioning Engineers, Inc. 1966. pg. 113.

Table I

Illumination Data
NIOSH Facilities
Rockville, Maryland

November 2, 1977

Worker Identification By Room Number	Area Measured	Foot-Candles
8-21	primary desk in middle of office	23
	secondary desk along wall	19
8-15	primary desk	20
8-11	primary desk	30
	xerox® room (middle of room)	22
8-05	work table in middle of room	25
	phone desk	24
8-35	primary desk	18
8-35	primary desk	12
8-33	primary desk	45
8-47	primary desk	18
	desk by windows	23
	conference table	29