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Occupational Health Programs Manual – Chapter 12

Indoor Environmental Quality w/Change 2 (9/30/2015)

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Change Record

Revision	Effective Date	Expiration Date	GRC25, Change Request #	Description
I	4/17/2012	4/17/2017	292	Added current responsible SHED points of contact, updated references to reflect the most current editions, added verification to the requirements section.
Change 1	4/14/2014	4/17/2017	N/A	Administrative change to add front cover and change history log to comply with NPR 1400.1, added "The GRC shall follow the requirements of NPR 1800.1C" in Section 4.0 Policy.
Change 2	9/30/2015	4/17/2017	N/A	Administrative change to remove hyperlinks.

***Include all information for each revision. Do not remove old revision data. Add new rows to table when space runs out by pressing the tab key in the last row, far right column.*

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Chapter 12—Indoor Environmental Quality

NOTE: The current version of this chapter is maintained and approved by the Safety and Health Division (SHeD). The last revision date of this chapter was April 2012. The current version is located on the Glenn Research Center intranet within the BMS Library. Approved by: Chief of Safety and Health Division.

1.0 PURPOSE

This chapter establishes procedures and practices for the Indoor Environmental Quality (IEQ) program at the Glenn Research Center (GRC) and Plum Brook Station (PBS).

The objective of the IEQ program is to provide healthful indoor environments through proper facility design, operation, and maintenance. The program also provides a mechanism for resolving concerns about IEQ.

Please note that policies regarding the safe use of and regulatory requirements for hazardous chemicals (e.g. lead, cadmium, chromium VI, asbestos, and carcinogens) are covered in other chapters of this manual.

2.0 APPLICABILITY

The provisions of this document are applicable to SHeD personnel as well as other NASA Glenn Research Center persons responsible for the implementation of SHeD program chapters.

3.0 BACKGROUND

Good IEQ is important to ensure a healthy and productive work environment. IEQ is affected by a variety of factors, including building design, occupancy loading, and the work being performed. IEQ issues are commonly associated with nonindustrial, non-laboratory office buildings where typical office operations (use of copy machines, laser printers, and retail chemical products), building products (carpets, furniture, draperies, etc.), or smoking, combined with improperly designed, used, or maintained heating, ventilation and air conditioning (HVAC) systems may create an irritating or unhealthful environment.

The variety of work performed at GRC poses special concerns for IEQ. Few buildings are dedicated office-only space. Instead, it is common to have office space co-located in buildings with research laboratories or shop areas. IEQ is also affected by maintenance and renovation activities in Center facilities. As a result, unusual odors may indicate a loss of contaminant control in laboratory or shop operations or poorly controlled construction and maintenance activities.

As a result of employee concerns over chemical hazards, complaints of unusual odors in the workplace are the most common IEQ issue at the Center. These complaints receive a high level of attention and response.

Combustion exhaust products from various facilities are another contributor to poor IEQ at the Center. Stack heights are limited at the Center because of its proximity to Cleveland Hopkins Airport so that combustion exhaust is released near the ground and may enter air intakes of nearby buildings, resulting in a strong odor of jet exhaust indoors. Exhaust from motor vehicles idling near building fresh air intakes is another source of combustion products.

4.0 POLICY

It is GRC policy to provide a healthful indoor environment that complies with Federal, State, and local regulations and applicable national consensus standards. This policy will be implemented through proper design, operation, and maintenance of building systems.

Good IEQ will also be implemented through compliance with GSA Bulletin FPMR D-245, which prohibits the smoking of tobacco products in all interior space and in any outdoor areas in front of air intake ducts. The GRC shall follow the requirement of NPR 1800.1C.

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5.0 RESPONSIBILITIES

- SHed Industrial Hygienist (IH) and IEQ Program Lead shall provide guidance on the requirements of Federal, State, and local ventilation regulations as well as on standard industry guidelines
- provide technical guidance and support on minimizing the impact of construction, renovation, and maintenance activities on indoor air quality
- serve as the focal point for receiving and investigating IEQ complaints at GRC facilities
- conduct IEQ surveys as necessary to evaluate IEQ hazards
- recommend corrective actions to resolve IEQ problems
- provide building managers with information gained from investigations
- maintain a log of IEQ complaints
- advocate for funding of projects to correct high-priority problems
- serve as SHed's member to the clean team to address Center-wide IEQ issues requiring coordination between the Facilities Division (FD), the Logistics and Technical Information Division (LTID), and SHed
- refer employees to Medical Services for evaluation if warranted
- serve as the focal point for receiving and investigating IEQ complaints at PBS facilities
- maintain records in accordance with Section 7.0
- maintain the GRC Thermal Comfort Guidelines (see Appendix B)

5.1 Industrial Hygiene Technician/Technical Specialist shall

- conduct field calibration of IEQ sampling equipment
- perform surveys as required: visual, sampling, infrared (IR) imaging
- prepare samples for analysis and forward them to either the in-house or third-party laboratory

5.2 SHed Operations Team, Medical Services shall

- provide medical evaluations of employees experiencing IEQ related symptoms
- notify IEQ Program Lead by phone or e-mail the names of employees who may require exposure evaluation based on clinical findings

5.3 Facilities Division (FD)

5.3.1 Building Managers shall

- notify the IEQ Program Lead when IEQ concerns are brought to their attention
- assist the IEQ Program Lead in conducting IEQ investigations by providing pertinent information on building layout and activities and by providing access to areas within the building
- assist the IEQ Program Lead in distributing information to the building occupants
- assure that corrective action is taken regarding routine maintenance or repairs as they pertain to IEQ
- attend Indoor Environmental Quality Awareness training from System for Administration, Training, Education Resources for NASA (SATERN course number: GRC-4R1632)

5.3.2 Building Mechanical Systems Manager shall

- ensure that building and HVAC system designs and modifications meet the requirements of the American National Standards Institute (ANSI) and the American Society of Heating, Refrigerating and Air-

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Conditioning Engineers (ASHRAE) standards 55 and 62.1, respectively, and do not adversely affect local exhaust ventilation systems.

- ensure that architects and engineers involved in the purchase or modification of local exhaust ventilation systems are trained in ventilation design for contaminant control

5.3.3 Systems Managers shall

- design and implement construction and maintenance projects in a manner that minimize their impact on indoor air quality
- maintain building systems in good working order to reduce the potential for indoor air quality problems
- assist the IEQ Program Lead in identifying and correcting indoor air quality problems
- ensure that construction projects are managed and implemented in a way that will minimize impact on local building occupants (i.e., minimize dust generation, noise, and chemical entrainment in buildings)
- provide pest control services in accordance with the General Services Administration (GSA) publication Integrated Pest Management (IPM) for Buildings
- consider the impact on IEQ in space management activities
- participate on IEQ Clean Team

5.3.4 Water Intrusion Response Team Coordinator shall

- address water damage events as soon as practicable to reduce the possibility of mold growth
- Notify SHed IEQ Program Lead of water damage events as soon as possible (within 8 hours) to ensure an evaluation of the extent of the damage is properly performed and documented.
- oversee mold remediation work as needed to correct facility hazards; this work includes maintenance and larger scale projects

5.4 Construction Contractors shall

- provide, manage, and implement construction projects that minimize impact on local building occupants
- comply with all Occupational Safety & Health Administration (OSHA) regulations as well as with the GRC program

5.5 Logistics and Technical Information Division (LTID), Facility Operations Specialist, COTR shall

- oversee contract housekeeping services that promote employee well-being
- maintains carpets and floors in accordance with best practice measures (Note: Guidelines for carpet maintenance are provided by the Carpet and Rug Institute (CRI) with the exception that frequency of vacuuming may be in accordance with recommendations of the Restoration Industry Association RIA)
- uses safe cleaners in housekeeping tasks
- dry all wetted carpets as soon as possible (24-48 hours) to reduce mold growth
- participates on IEQ clean team
- select carpets, cushions, and adhesives labeled under the CRI indoor air quality (IAQ) testing program and installs carpets in accordance with the CRI with assistance from the FD architectural systems manager, SHed. (Note: carpet should not be installed under water coolers or other areas where chronic moisture promotes the growth of bacteria and fungi (mold).) SHed Management shall
- update and maintain Center smoking policy based on Federal requirements

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5.6 Supervisors (Research, Laboratory, and Shop Areas) shall

- ensure that local exhaust ventilation (LEV) is used and operated in accordance with applicable standard operating procedures (SOPs), safety permits and/or the requirements of the Occupational Health Program Manual (OHPM) Local Exhaust Ventilation chapter to prevent fugitive contaminants from entering the general work space and office areas
- report to the IH any LEV that does not appear to adequately control employee exposure to air contaminants or has been modified in a way that may adversely affect airflow

5.7 Employees (Research, Laboratory, and Shop Areas) shall

- operate LEV in accordance with this chapter and OHPM Chapter 7, Local Exhaust Ventilation
- report to supervisor any LEV that does not appear to adequately control employee exposure to air contaminants or has been modified in a way that may adversely affect airflow
- complete IAQ questionnaire provided by IEQ Program Lead when needed

5.8 Supervisors (Office Areas) shall

- be familiar with the requirements of this chapter and ensure their employees comply with them
- support the IEQ program as it relates to the needs of their employees
- ensure that office refrigerators are maintained free of spoiled food
- support the IEQ Program Lead in identifying areas of concern
- consider employee sensitivities with respect to office housing decisions. (e.g., employee with reported cat allergy or asthma sharing space with animal owner)

5.9 Employees (Office Areas) shall

- comply with all aspects of the program
- notify the Building Manager and IEQ Program Lead with IEQ concerns
- support the IH in identifying areas of concern
- maintain all house plants adequately so dead foliage does not accumulate; do not overwater plants as this may damage other materials and become a source for mold growth
- if possible, keep office doors open to allow for better cross ventilation
- make office areas accessible for the cleaning staff so routine vacuuming can be performed
- report source of new and on-going water damage to walls, ceilings, carpeting, and so on to the Building Manager and IEQ Program Lead
- maintain offices, refrigerators, and microwave ovens free from spoiled food and in a sanitary condition
- reduce office clutter so as to allow for cleaning

5.10 Clean Team shall

Provide recommendations to improving systems as an advisory team for the purpose of creating healthy workplaces.

6.0 REQUIREMENTS

- Construction and maintenance activities in occupied buildings must be planned and managed to minimize the release of dust, vapors, fumes, and other air contaminants to protect workers and building occupants. See OSHA Technical Manual Section III, Chapter 2 (V)(B)(2)(h).

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- Proper carpet maintenance, regular vacuuming using a vacuum equipped with high-efficiency filters, and deep cleaning every 12 to 18 months or manufacturer’s recommendation are required to increase the life of a carpet and help ensure that carpets do not become a source of dust, mold, bacteria, and other indoor air contaminants. Selection of low-emission carpets, cushions, and adhesives is required to minimize indoor air quality problems with new carpet installations.
- Integrated pest management techniques are more effective in controlling insects and rodents and also reducing indoor air quality problems created during pesticide applications. See EPM Chapter 21 on Pest Control.
- Parked vehicles are not allowed to remain running unless it is necessary to carry out a task. If vehicles must remain running, locate the vehicle so the exhaust does not become entrained into the building.
- Supply air vents or return air grills must not be obstructed. Blocking these units can cause the HVAC system to become unbalanced or can adversely affect the ventilation of a neighboring office. Furniture, boxes or other materials stored near supply vents or return grills will affect airflow.
- Access panels to window fan coil units should not be blocked. Blocking access panels with heavy furniture prevents proper preventive maintenance, such as changing filters and cleaning the unit.
- Partitions and modular furniture can obstruct airflow and lead to temperature extremes, especially in areas where window fan coil units are used. Select modular furniture that is as short as possible and allows airflow underneath.
- Keep windows closed. Opening windows will adversely impact the ventilation system, causing it to overcompensate to keep up with the temperature demands. This overcompensation will lead to even greater temperature extremes in the room. Allowing unconditioned air into the room may also increase the humidity that in turn can contribute to microbial growth or sinus irritation. Temperature adjustments for rooms should be accomplished by using the thermostat in the room, controlling the fan speed, and closing drapes or blinds. Opening windows also allows unfiltered air into the building. This means much of the dusts, pollen, and spores that normally get filtered will be brought into the building. These can adversely affect sensitive individuals. If you think your HVAC system is not working properly, contact maintenance.
- Comply with the GRC smoking policy. When smoking outside, do not smoke near air intake systems or near doors where the smoke can easily become entrained into the building. (GSA Bulletin FPMR D–245)
- Clean up personal water spills promptly and report water leaks right away. Water creates a hospitable environment for the growth of mold and bacteria. Call maintenance to fix any water leaks and call housekeeping to have water damaged material dried immediately. Water damaged material should be thoroughly dried within 24 hours, if possible, to reduce a need for more intensive cleaning.
- Maintain plants properly. It is possible for microbes to grow in the soil and on the leaves of plants. Water spills can also provide an adequate environment for growing mold or bacteria. Plants should not be placed on top of window fan coil units. When leaves fall into the unit they can block the condensate drain line and cause the unit to overflow. They can also emit odors as they rot and can provide a good environment for microbial growth. The leaves also affect the ability of the unit to perform as designed.
- Dispose of garbage promptly and properly.
- Store food properly. Food attracts pests and when some foods are left unrefrigerated, they can spoil and generate unpleasant odors. Never store perishable foods in desks or on shelves. Refrigerators should be cleaned on a regular basis to prevent odors. Keep kitchens and dining areas clean and sanitized to prevent pests. If food is spilled in microwave ovens, clean it up promptly.
- Ensure housekeeping personnel have access to rooms so they can properly maintain carpets.
- Notify the Building Manager and IEQ Program Lead immediately if an IEQ problem is suspected.

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6.0 The SHed verification requirements for this section will include review of construction health and safety plans (HASP's) and building inspection reports for issues pertaining to indoor environmental quality. SHed verification will also include IEQ Program Lead participation in Clean Team and project planning meetings.

7.0 RECORDS

Maintained by SHed

- Log of IEQ complaints*
- IEQ e-mail reports including laboratory report, if any*
- IEQ instrument calibration records*
- Chain of custody for external laboratory samples *
- IEQ questionnaires, if used*

Items above marked with an asterisk () shall be maintained for at least 30 years.

Training Records

Building Manager training records for Indoor Environmental Quality Awareness training (SATERN course number: GRC-4R1632) are maintained in System for Administration, Training, Education Resources for NASA.

8.0 REFERENCES

Document number	Document name
ACGIH	The American Conference of Governmental Industrial Hygienists: Bioaerosols: Assessment and Control, 2007 edition
AIHA	American Industrial Hygiene Association: Field Guide for the Determination of Biological Contaminants in Environmental Samples, Fairfax, VA, 2005
ANSI/ASHRAE Std. 55-2010	American Society of Heating, Refrigerating and Air-Conditioning Engineers: Thermal Environmental Conditions for Human Occupancy
ANSI/ASHRAE Std. 62.1-2010	American Society of Heating, Refrigerating and Air-Conditioning Engineers: Ventilation for Acceptable Indoor Air Quality
CCA 82-2004	Canadian Construction Association: Mould Guidelines for Canadian Construction Industry, Standard Construction Document CCA 82-2004, Ottawa, Ontario, CCA, 2004
CRI	Carpet and Rug Institute: Commercial Carpet Maintenance Manual.
CRI	Carpet and Rug Institute: Carpet Maintenance Guidelines for Commercial Applications, 2004
CRI 104 - 2002	Carpet and Rug Institute: Standard for Installation of Commercial Carpet, CRI 104-2002
CRI 105 - 2002	Carpet and Rug Institute: Standard Industry Reference Guide for Installation of Residential Textile Floor Covering Materials, CRI 105-2002
CRI	Carpet and Rug Institute: Floor Covering Maintenance for School Facilities
EPA	Environmental Protection Agency: Indoor Air Quality

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EPM Chapter 21	Environmental Programs Manual: Pest Control
GRC Thermal Comfort Guidelines	NASA Glenn Research Center: GRC Thermal Comfort Guidelines, Appendix B, July 2009
GSA	General Services Administration: Integrated Pest Management (IPM) for Buildings: Desk Guide for Facilities Managers
GSA	General Services Administration: Integrated Pest Management Program Contract Guide Specification
GSA Bulletin FPMR D-245	General Services Administration: Protecting Federal Employees and the Public from Exposure to Tobacco Smoke in the Federal Workplace, Federal Register Document 62 FR 54461, October 20, 1997
NPR 1800.1	NASA Procedural Requirements, NASA Occupational Health Program Procedures
NIOSH	National Institute of Occupational Safety and Health (NIOSH): NIOSH Safety and Health Topic: Asphalt fumes
OHPM Chapter 7	Occupational Health Program Manual: Local Exhaust Ventilation
OSHA	Occupational Safety and Health Administration: Indoor Air Quality (proposed rule filed April 4, 1994), Federal Register Document 94-7619
OSHA	Occupational Safety and Health Administration: OSHA Technical Manual, Section III, Chapter 2, Indoor Air Quality Investigation, January 20, 1999
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association (SMACNA): IAQ Guidelines for Occupied Buildings under Construction
State of MN Rule 5205.0110	State of Minnesota: Indoor Workroom Ventilation and Temperature, June 11, 2008

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APPENDIX A.—DEFINITIONS AND ACRONYMS

Adaptive comfort standard (ACS)

American National Standards Institute (ANSI).—Oversees the creation, promulgation, and use of thousands of norms and guidelines that directly impact business in nearly every sector from acoustical devices to construction equipment, from dairy and livestock production to energy distribution, and many more; is also actively engaged in accrediting programs that assess conformance standards, including globally recognized cross-sector programs, such as International Standards Organization (ISO) 9000 (quality) and ISO 14000 (environmental) management systems

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).—An international organization that was founded in 1894 and has 51,000 members; fulfills its mission of advancing heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world through research, standards writing, publishing, and continuing education

Restoration Industry Association (RIA).—Formerly the Association of Specialists in Cleaning and Restoration (ASCR); the oldest and largest nonprofit, professional trade association dedicated to providing industry leadership, supporting science, and promoting best practices in the cleaning and restoration industry

Canadian Construction Association (CCA).—Founded in Ottawa in 1918 to keep members on the leading edge of industry practices with communications, promotion and information, professional guidance and industry directories, research and analysis

Carpet and Rug Institute (CRI).—Science-based source for facts on carpet and rugs; a nonprofit trade association representing the manufacturers of more than 95 percent of all carpet made in the United States, as well as their suppliers and service providers

Certified industrial hygienist (CIH).—Industrial hygienist certified by the American Board of Industrial Hygiene (ABIH) for meeting the minimum requirements for education and experience, and through examination has demonstrated a minimum level of knowledge in the following subject matter areas: air sampling and instrumentation; analytical chemistry; basic science; biohazards; biostatistics and epidemiology; community exposure; engineering controls/ventilation; ergonomics; health risk analysis and hazard communication; management; noise; non-engineering controls; radiation (ionizing and non-ionizing); thermal stressors; toxicology; and work environments and industrial processes

Environmental Protection Agency (EPA).—Federal agency established in 1970 and charged with protecting human health and the environment; develops and enforces environmental regulations, performs environmental research, and provides financial support for state and educational research on the environment

Exposure evaluation.—A subset of an indoor environmental quality survey; a workplace survey for hazardous materials and contaminants potentially affecting the indoor air quality; conducted by an industrial hygienist or an industrial hygiene technician. Air monitoring may be conducted by an industrial hygienist, industrial hygiene technician, or safety and health specialist under the direction of an industrial hygienist.

Federal Register (FR).—The official journal of the U.S. Federal Government since March 14, 1936; contains most routine publications and public notices of government agencies and is published daily except for holidays

General Services Administration (GSA).—Central management agency that sets Federal policy for procurement and real property management and information resources management

Heating, ventilation and air conditioning (HVAC).—Term generally used to describe a building's comfort system. In older buildings, heating, ventilation, and air conditioning may be separate, but usually these services are integrated into a single system that conditions air which is distributed through ductwork.

Industrial hygienist.—Professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards and environmental issues

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Indoor air quality (IAQ).—Acceptable indoor air quality defined by ASHRAE as air in which there are no known contaminants at harmful concentrations as determined by cognizant authorities and air in which 80 percent or more people exposed do not express dissatisfaction

Indoor environmental quality (IEQ).—Encompasses all aspects of the indoor setting, including air quality, ventilation, thermal comfort, lighting, and noise

Infrared (IR) imaging.—Used to rapidly identify differences in temperature by measuring thermal energy emitted from the object being viewed (e.g., wet objects that are drying are typically cooler, or bluer, than dry objects because of the cooling effect of evaporation)

Local exhaust ventilation (LEV).— Type of ventilation that removes contaminated air directly at its source and helps to reduce worker exposure to airborne materials more effectively than general ventilation because it does not allow the material to enter the work environment

NASA Procedural Requirements (NPR).—Establish procedural requirements for conducting audits, reviews, and assessments to verify compliance with the NASA Safety and Mission Assurance (SMA) process

National Institute of Occupational Safety and Health (NIOSH).—An agency of the Health and Human Services Department and was founded in 1970 as part of the Occupational Safety and Health Act; is tasked to provide national leadership to prevent work-related illness, injury, disability, and death by gathering information, conducting scientific research, and translating the knowledge gained into products and services, and to make recommendations to OSHA for new or revised safety and health standards

Occupational Safety & Health Administration (OSHA).—Federal agency established in 1970 charged with protecting human health and the environment; develops and enforces environmental regulations, performs environmental research, and provides financial support for State and educational research on the environment

OHPM.—Occupational Health Program Manual

Safe cleaners.—Those that have been reviewed and approved by SHeD for use at the Center (<http://smad-ext.grc.nasa.gov/shed/sustainability/p2/preferable-product.shtml>) (

SHeD.—Safety and Health Division

Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).—Developed and published the Duct Cleanliness for New Construction Guidelines, which is intended to help commercial duct installation contractors, engineers, and building owners achieve a clean, full-performance duct system

Standard operating procedure (SOP).—A document that describes the regularly recurring operations relevant to the quality of the investigation; its purpose is to carry out the operations correctly and in a consistent manner.

SATERN.—System for Administration, Training, Education Resources for NASA

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APPENDIX B.—GLENN RESEARCH CENTER THERMAL COMFORT GUIDELINES: JULY 2009

Purpose

The purpose of these guidelines is to simplify and standardize thermal comfort responses by the Facilities Division (FD) and the Safety and Health Division (SHeD) during heating, ventilation, and air conditioning (HVAC) system malfunctions and unseasonable weather conditions. The guidelines primarily address threshold temperatures for GRC administrative/office areas; they are not intended to address areas that require special indoor design environments, such as computer rooms, clean rooms, and research laboratories.

This discussion focuses on the majority of thermal discomfort complaints. A strict evaluation of what is safe or unsafe for temperature exposure is impossible to ascertain because of the wide variability of both subjective and actual physical responses in individuals.

This document is to be used as a tool by supervisory personnel who may want to seek a professional opinion from a SHeD Industrial Hygienist regarding general area (office and laboratory) maximum/minimum temperatures and possible health effects.

It is assumed that these temperature excursions will be *temporary* (as the system is being repaired or unseasonable weather conditions have persisted) and that all other measures will be taken by FD and the occupants (opening windows, closing blinds, shutting off unused electric equipment, etc.)

General Environmental Temperature Standard

The FD maintains most offices and laboratory areas between 68 and 75 °F. Because of the numerous and wide variety of HVAC systems at the Center, some areas will be able to achieve higher or lower temperatures if desired by the occupants.

For energy conservation, during the off hours (6:00 p.m. to 6:00 a.m.), the setback temperatures of the buildings are allowed to fluctuate between 55 °F (winter) and 80 °F (summer).

Maximum and Minimum Temperature Guidelines

This GRC guideline uses only a dry-bulb temperature as an indicator of potential health hazards. However, the determination of this dry-bulb temperature has taken into account both humidity and air movement. The rationale for the single variable for temperature exposure (i.e., dry-bulb temperature) is to allow occupants to do an initial evaluation. Temperature readings are taken at the thermostat or desk level.

This temperature guideline is consistent with the adaptive comfort standard (ACS) for naturally conditioned spaces in ASHRAE Standard 55–2010 (Thermal Environmental Conditions for Human Occupancy).

Maximum Indoor Temperature Guideline

This guideline recommends that when the dry-bulb temperature of the work environment reaches **88 °F**, consideration be given either to moving the employees to a cooler environment (temporarily or permanently) or providing auxiliary cooling until such time that the temperature has been lowered. This temperature is an indicator of excessive heat that could affect the health or safety of employees. *The responsibility for the interpretation of this guidance rests with supervisory personnel.*

This guideline does not address the thermal discomfort that may be noticeable when working in temperatures lower than 88 °F. Occupants who are heat sensitive or have poor peripheral circulation should contact their supervisor to request temporary relocation to an unaffected work space.

Minimum Indoor Temperature Guideline

This guideline recommends that when the dry-bulb temperature of the work environment reaches the minimum air temperature of **65 °F**, consideration be given either to moving the employees to a warmer environment or providing auxiliary heating until such time that the temperature could be increased. *The responsibility for the interpretation of this guidance rests with supervisory personnel.*

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This guideline does not address thermal discomfort that may be noticeable when working in temperatures above 65 °F. Occupants who are cold sensitive or have poor peripheral circulation should contact their supervisor to request temporary relocation to an unaffected work space.

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