

1. INDOOR ENVIRONMENTAL QUALITY

2.1 PURPOSE

Prevent indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and NSU employees, students and faculty. To inform Contractors of their responsibility when performing renovations and construction at NSU that can create unusual situations and conditions that might impact indoor environmental quality.

2.2 ACTIVITIES IMPACTING AIR QUALITY

Contractors are to minimize the impact of construction-related activities such as the removal or replacement of walls, or the modification or installation of ventilation equipment which can expose the indoor environment to previously isolated environmental contaminants.

Occupants/employees of the areas to be repaired, renovated, or for construction will be temporary relocated prior to commencement of activities which could affect the overall indoor environmental quality. Such activities include but not limited to:

<u>Activity</u>	<u>Contaminant/Physical Agent</u>
Carpeting (replacement)	Volatile organic compounds
Walls (replacement)	Dust, fibers
HVAC (replacement, repair)	Dust, asbestos, mold, fiberglass
Ceiling tiles or other materials	Fiberglass, mold
Sanding and grinding	Dust, fibers and particulates
Roofing	Coal tar pitch volatiles
Flooring, painting	Volatile organic compounds
Welding and cutting	Lead, carbon monoxide, ozone
Demolition	Asbestos
Jack-hammering	Noise, vibration

2.3 RESPONSIBILITIES

The EH&S office at NSU is responsible for coordinating all hazard identifications and industrial hygiene sampling. NSU will conduct air, bulk and wipe sampling as necessary by either using internal resources or consultants selected by the EH&S office.

Prior to any work being conducted, and after workers have been relocated (if appropriate), baseline testing should be conducted by an outside testing consultant.

Prior to and during construction-related activities including repairs, Contractors are required to implement or follow these procedures:

- 1) Whenever possible Contractors must use the least toxic compound to accomplish the project.
- 2) Contractors will keep sources of air contaminants such as exhaust or roofing compounds away from building air intakes.

- 3) Contractors shall not permit their employees to be exposed to air contaminants in excess of established occupational exposure limits.
- 4) Contractors shall utilize engineering controls to minimize the generation of hazardous air contaminants. If engineering controls are not feasible and/or do not adequately control hazardous air contaminants, then Contractors shall utilize administrative controls and PPE to prevent employees from exposures.
- 5) Contractors working in occupied NSU areas shall not expose NSU employees, students or faculty to air contaminants in excess of established occupational exposure limits. NSU reserves the right to specify exposure criteria for NSU staff, students and faculty that could be more stringent than established occupational limits at its discretion based on the affected population, the air contaminant, and the requirements of the project.
- 6) NSU reserves the right to determine independent measurements of the project area and exposures to its employees during the assigned work. NSU reserves the right to stop the assigned project, with no financial penalty to NSU, in the event that exposures in NSU occupied areas are deemed unacceptable. Should this condition arise, Contractors are responsible for creating a safe environment in an expeditious manner.
- 7) At all access points in occupied building areas and the Contractor's work area, critical barriers shall be erected where there is the potential for generation of atmospheric contaminants. NSU reserves the right to request additional critical barriers as needed on a case by case basis.
- 8) Contractors must maintain good housekeeping habits to control dust and construction debris. HEPA filtered vacuum systems shall be used to minimize recirculation of contaminants. To minimize dust, wet methods will be used when appropriate.
- 9) Critical barriers made of polyethylene sheeting shall be used on doors, windows, vents, etc. to isolate specific work sites.
- 10) Contractors and employees are to conduct work activities in a safe manner.
- 11) All debris or sources of standing water are to be removed from work sites as soon as possible.

Once the renovation/construction activity is completed, the following actions should take place prior to occupancy, or as soon as possible:

- 1) Thoroughly clean carpeting and other flooring by vacuuming, steam-cleaning, and/or damp mopping, as appropriate. Steam-cleaning should *not* be done if humidity or moisture problems exist in the area but performed immediately after these humidity and moisture problems are resolved. Damp mopping of hard surfaces should be performed using a commercial grade disinfectant and cleaner.
- 2) A High-Efficiency Particulate Air (HEPA) filter system shall be used during vacuuming operations whenever possible and ensure that it is operating to American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standards, and that temperature and humidity levels are at desired levels:
 - Temperatures should be 68°F to 72°F.
 - Relative humidity levels in the air should be maintained between 30% and 50%.
 - Relative humidity below 30% can cause drying of skin and the respiratory system, while values above 50% can result in accelerated mold growth.

- 3) Remove or address any sources of odor remaining from the renovation/construction activities.

Sources of post-renovation/construction odor can include:

- Elevated humidity with commensurate increase in biological activity (*i.e.*, mold growth).
 - Inadequately cured adhesive products.
 - Open solvent cleaning containers.
 - Uncured paints.
 - Inadequate air flow.
- 4) Ensure all HVAC systems are fully operational, then conduct air/surface closure testing which should be conducted by the same outside consultant who performed the pre-work testing.

2.4 REGULATIONS

OSHA and other regulatory agencies have set the regulations for indoor environmental quality and the permissible exposure limits (PEL's); NSU Industrial Hygiene Plan outlines all the requirements and regulations.

2.5 ACCOUNTABILITY

All contactors will be responsible for complying with the guidelines as described above. Contractors are to communicate to their employees and Subcontractors all the guidelines and relevant information. All work shall be performed in accordance with University policies and procedures as well as all applicable laws and regulations.