



NEBB 2020 Update Disciplines-Services-Our Environment

December 2020

ASHRAE NW Arkansas

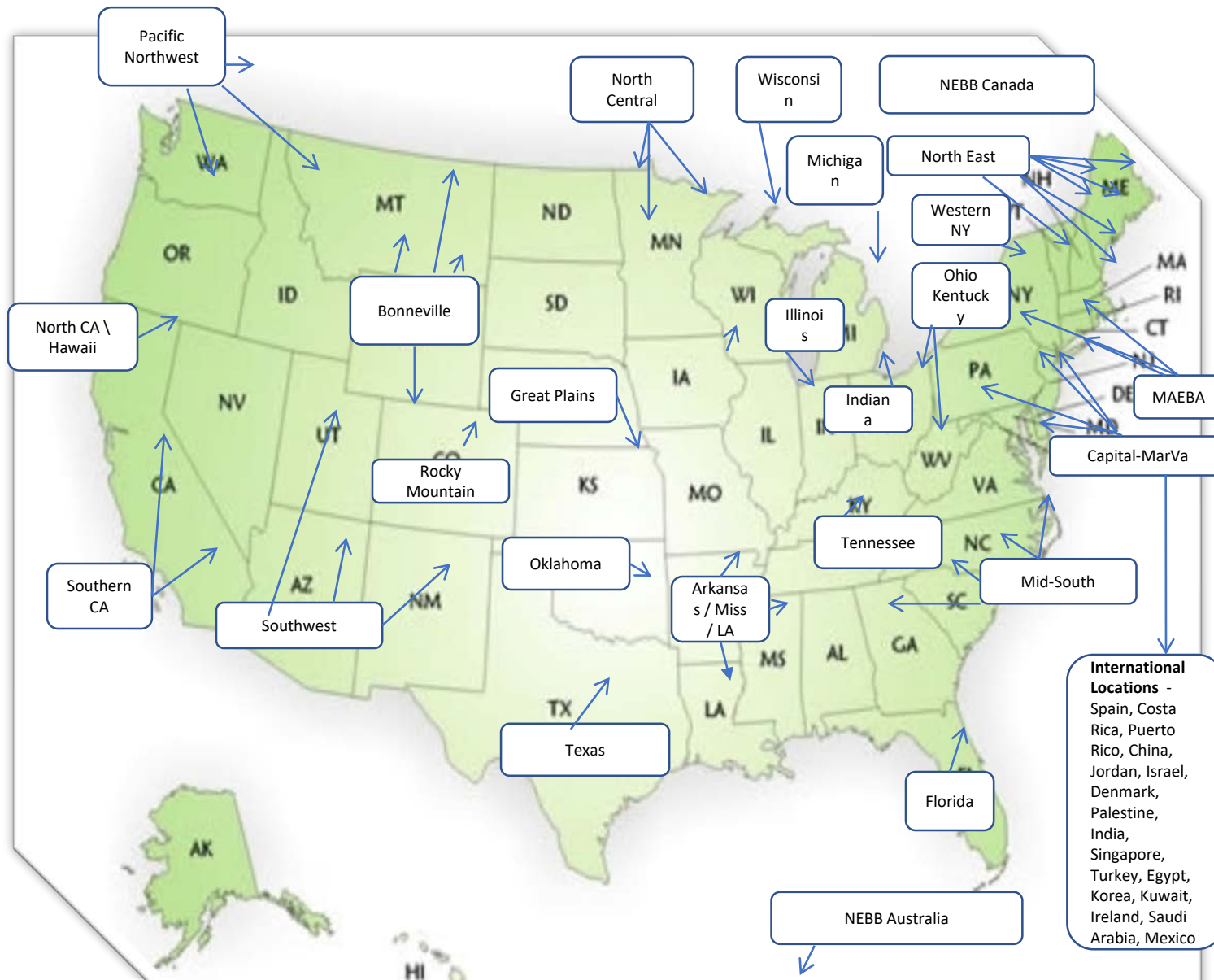


Overview

- NEBB National & Local
- Commissioning
- TAB Test-Adjust-Balance
- Safety Cabinets (Fume Hoods)
- Clean Rooms
- Building Envelope
- COVID



NEBB CHAPTERS



NEBB'S CERTIFICATIONS

Building Enclosure Testing (BET) • CP • Firm	Technical Building Systems Commissioning (BSC) • CT • CP • Firm	Cleanroom Performance Testing (CPT) • CT • CP • Firm	Commissioning Process Professional (CxPP) • CP	Fume Hood Testing (FHT) • CP • Firm
Technical Retro-Commissioning of Existing Buildings (RCx) • CP • Firm	Sound Measurement (SM) • CP • CT • Firm	Testing, Adjusting and Balancing (TAB) • CP • CT • Firm	Vibration Measurement (VM) • CP • CT • Firm	

NEBB ARKANSAS CHAPTER FIRMS

- Airetech Corp. Little Rock – Springdale-Tulsa (TAB-CX-S&V-FPT)
- Cromwell Energy Services - Little Rock (Cx)
- Environmental Technical Services-Greenwood (TAB)
- Es2-Arkansas Inc. – Bryant (TAB, CX, RCX, CR, FH, BET)
- Harrison Energy Partners-Little Rock-Springdale-Tulsa-OKC(TAB)
- Pro Building Solutions – Springdale (TAB)
- Powers of Arkansas- (TAB-CX)
- TL Services-Van Buren-Edgewater, Fl (TAB, CX)
- TME Inc. Little Rock-Fayetteville (CX)
- Wade Company-Little Rock (TAB)

Mississippi Firms

- Air Balance Professionals-Ecru (TAB)
- Sanders Engineering – Jackson (Cx)



NEBB ARKANSAS ACTIVITIES

- Certified Technician Training
 - Annual seminars with national attendance
 - Nationally Recognized programs and instructors



NEBB ARKANSAS ACTIVITIES

- Annual Continuing Education Seminars
 - 6 hours PDH
 - Co-sponsored by ASHRAE
- Walmart Commissioning Seminars
 - Conducted two four-day commissioning seminar for all Walmart mechanical PMs nationwide
 - Included a full home study course with grading



WHAT IS COMMISSIONING?

- Systematic process led by a Commissioning Agent (CxA) ensuring all building systems perform interactively according to the design intent and the owner's operational needs.
 - Third party verification of performance
 - Energy optimization balanced with occupant comfort
 - Design reviews for maintainability
 - Assistance with EUI targets
 - Review of conformance with standards/regulations
 - Construction observation and installation verification
 - Functional performance testing
 - Owner training



COMMISSIONING GOALS

- Fully-functional, efficient, and maintainable facility
- Reduce change orders / RFI's
- Ensure envelope integrity
- Maximize envelope efficiency
- Coordinate component constructability
- Verify trade responsibility
- Reduce contractor call-backs
- Avoid costly repairs
- Educate O&M staff on building equipment
- Improve component and systems life cycle



COMMISSIONING IS NOT

- Design engineering
- Test and balance
- Construction administration
- Code enforcement
- Equipment start-up
- Only a documentation effort



COMMISSION TO AVOID ...



TAB DEFINITION

Testing,
Adjusting and
Balancing (TAB)

- **TESTING** is the use of specialized and calibrated instruments to measure temperatures, pressures, rotational speeds, electrical characteristics, velocities, and air and water quantities for an evaluation of equipment and system performance.
- **ADJUSTING** is the final setting of balancing devices such as dampers and valves, adjusting fan speeds and pump impeller sizes, in addition to [automatic control](#) devices such as thermostats and pressure controllers to achieve maximum specified system performance and efficiency during normal operation.
- **BALANCING** is the methodical regulation of system fluid flows (air or water) through the use of acceptable procedures to achieve the desired or specified airflow or water flow.



TAB RATIONALE

“The TAB phase of any healthcare facility construction or renovation is intended to verify that all HVAC water- and air-flows and pressures meet the design intent and equipment manufacturer's operating requirements and owners requirements.

It is rare to find an HVAC system of any size that will perform completely satisfactorily without the benefit of final adjustments. This is why it is considered a "best practice" for the designer to specify that TAB work be part of the overall HVAC system installation.”



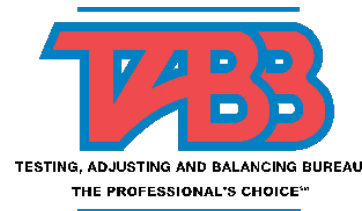
DOES TAB SPEC MATTER? YES!

- TAB Spec defines the general requirements, references, related sections.
- Defines commissioning involvement - Refer to the commissioning sections, highlight the responsibilities.
- Important to make the TAB & Cx provider teammates.
- Observation of testing in other sections:
 - Duct Leak Testing
 - Pipe Pressure Testing



TAB SPEC. QUALITY ASSURANCE

- Engage a firm certified by:



- Quality of training and certification process
- Consistency of instrumentation
- Nationally backed quality assurance
- Local reputation / experience



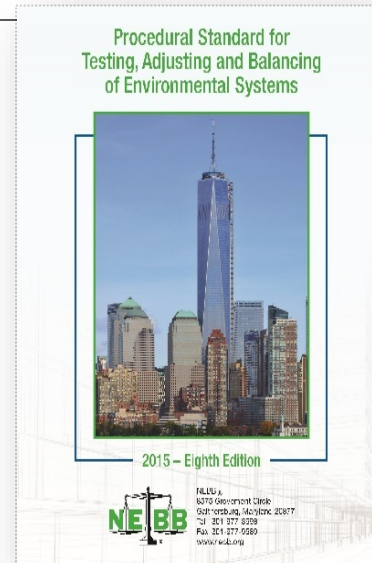
TAB SPEC. QUALITY EXECUTION

- Factors: Deficiencies-Reporting/Correction
 - Correction:
 - Require the deficiency report to include some insights into the issue and suggestions for resolution
 - Require the deficiency report to be noted with the resolution and included in the final report
 - Engage the TAB provider in the resolution
 - ***Team building-empowerment***



TAB SPEC. EXECUTION PROCEDURES

- Perform TAB work compliant with “Procedural Standards” and spec. section.
- Insure that invasive procedures are properly placed, and proper closure is provided. Define who does it.
- Insure equipment is properly marked for the “balanced position”. Damper handles, valve positions, fan speed controls, etc.
- Coordinate with controls and equipment providers for proper access to adjustments. Example: VFDs settings.
- Insure overload settings are properly set, noted and recorded.



WHAT'S IN THE TAB SPEC.-SUMMARY

- Part 1-General:

- Definitions, Industry Standards (AABC, NEBB, ASHRAE)
- Contractor Selection: Who hires!!
- TAB Scope: Discuss special requirements.
- Quality Assurance: Credentials, Standards, Certification.

Discuss the standards!

- Submittals:

- Standard submittal. Background, experience, credentials, instruments, certifications, sample forms.
- Contract Document Examination Report (Design Review) Due 45 days after Notice to Proceed!! Requires MEP review!!
- Site Examination Report. Readiness Check. Good protection for all.
- Certified Report. Must be as per the procedural standards and spec compliant. Knowing what we asked for!!



Building Enclosure Testing (BET)

Building Envelope Commissioning/ Testing .

Procedural Standard for Building Enclosure Testing



NEBB.
8575 Grovemont Circle
Gaithersburg, Maryland 20877
Tel 301-977-3698
Fax 301-977-9589
www.nebb.org

ASTM E2813-12

Standard Practice for Building Enclosure Commissioning

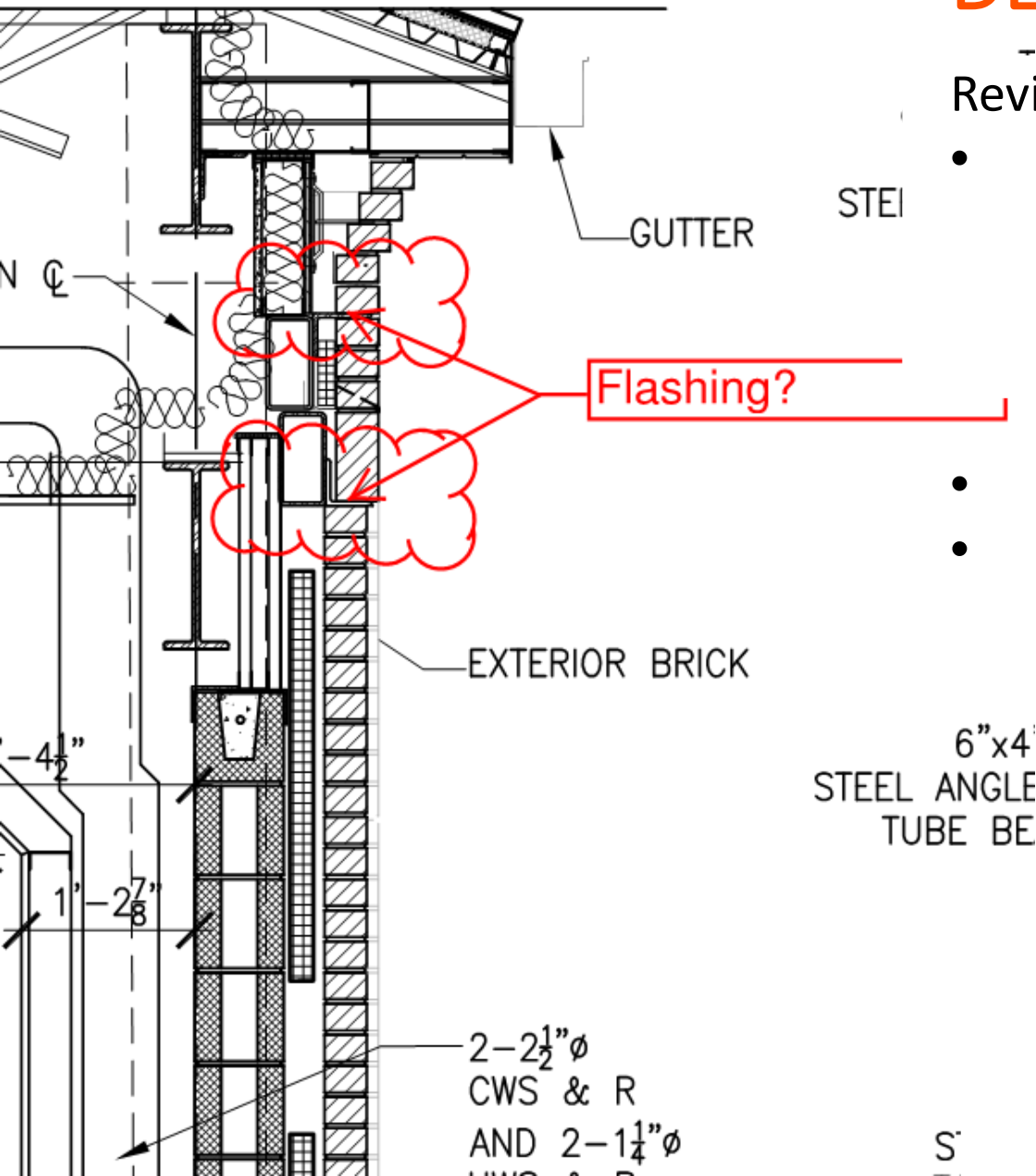


“BECx is a process that begins with the establishment of the (OPR) and endeavors to ensure that the exterior enclosure ... meet or exceed the expectations of the Owner ... A **fundamental understanding** of ... **ASHRAE Guideline 0** and **NIBS Guideline 3** is recommended for optimal use and application of this practice.”

DESIGN REVIEWS

Review For:

- Integrity and Continuity of:
 - Air Barrier
 - Vapor Barrier
 - Thermal Resistance Plane
 - Moisture Resistance Plane
- Constructability
- Other OPR items
 - Design engineering
 - Test and balance
 - Construction administration
 - Code enforcement
 - Equipment start-up
 - Only a documentation effort





Type test: EN ISO 14175 versus **ASHRAE** 110-1995



**Fume Hood Testing
(FHT)**

Type test: EN ISO 14175 versus ASHRAE 110-1995



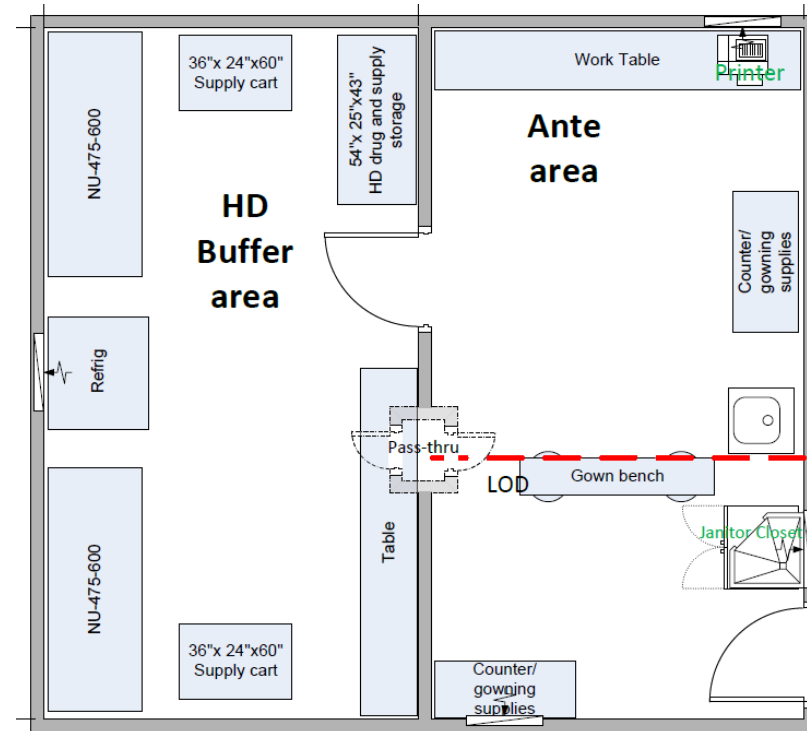
CLEANROOM TESTING

Cleanroom
Performance
Testing (CPT)

- Quantity:
 - Turbulently: dilute--air volume (supply and extract)
 - Unidirectional: remove --air velocity
- Direction (flow direction):
 - from clean area to less-clean areas to minimize the movement of contaminated air.
- Quality:
 - the air will not add significantly to the contamination within the room
- Distribution inside cleanroom
 - the air movement has no areas with high concentrations of contamination.

HAZARDOUS DRUG (HD) APPLICATIONS

- Hazardous drugs shall be stored separately from other inventory in a manner to prevent contamination and personnel exposure.
- **Minimum of 12 ACPH**
- Negative pressure
- The ISO class 5 BSC or CACI shall be placed in an ISO class 7 room that is physically separated, e.g., a different room from other preparation areas, and optimally has no less than **0.01 inches water column (w.c.) negative pressure** to adjacent rooms.
- HD Buffer rooms housing CACIs must meet the minimum **0.01" w.c. negative pressure and 12 ACPH** requirements.

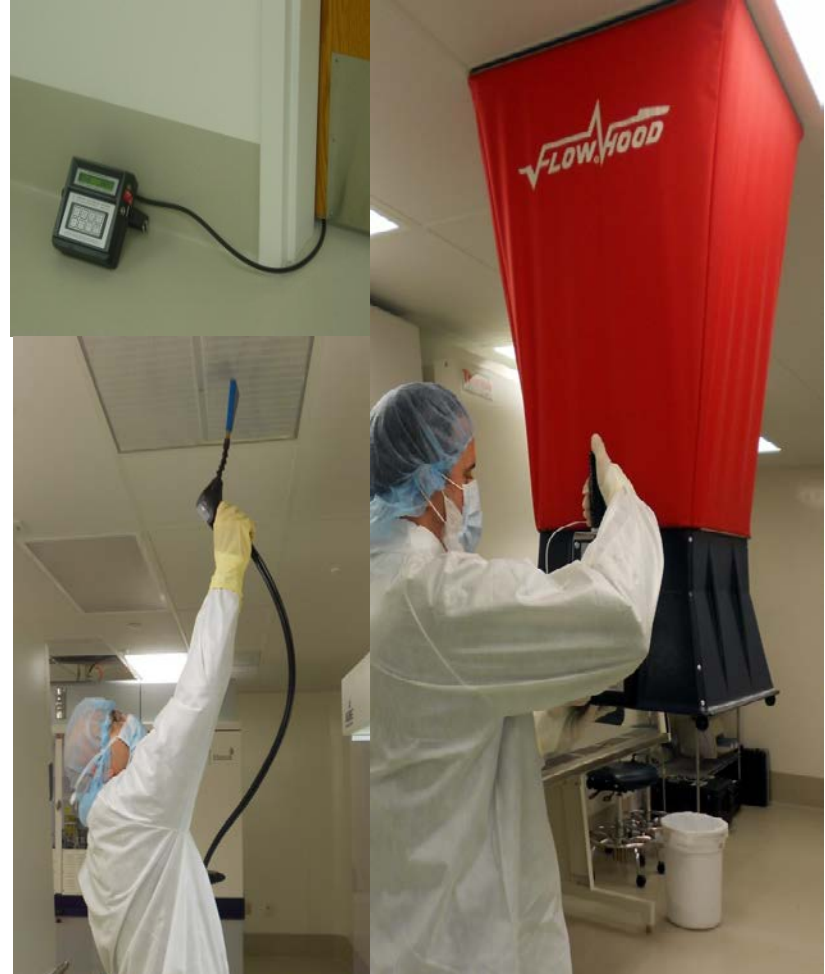


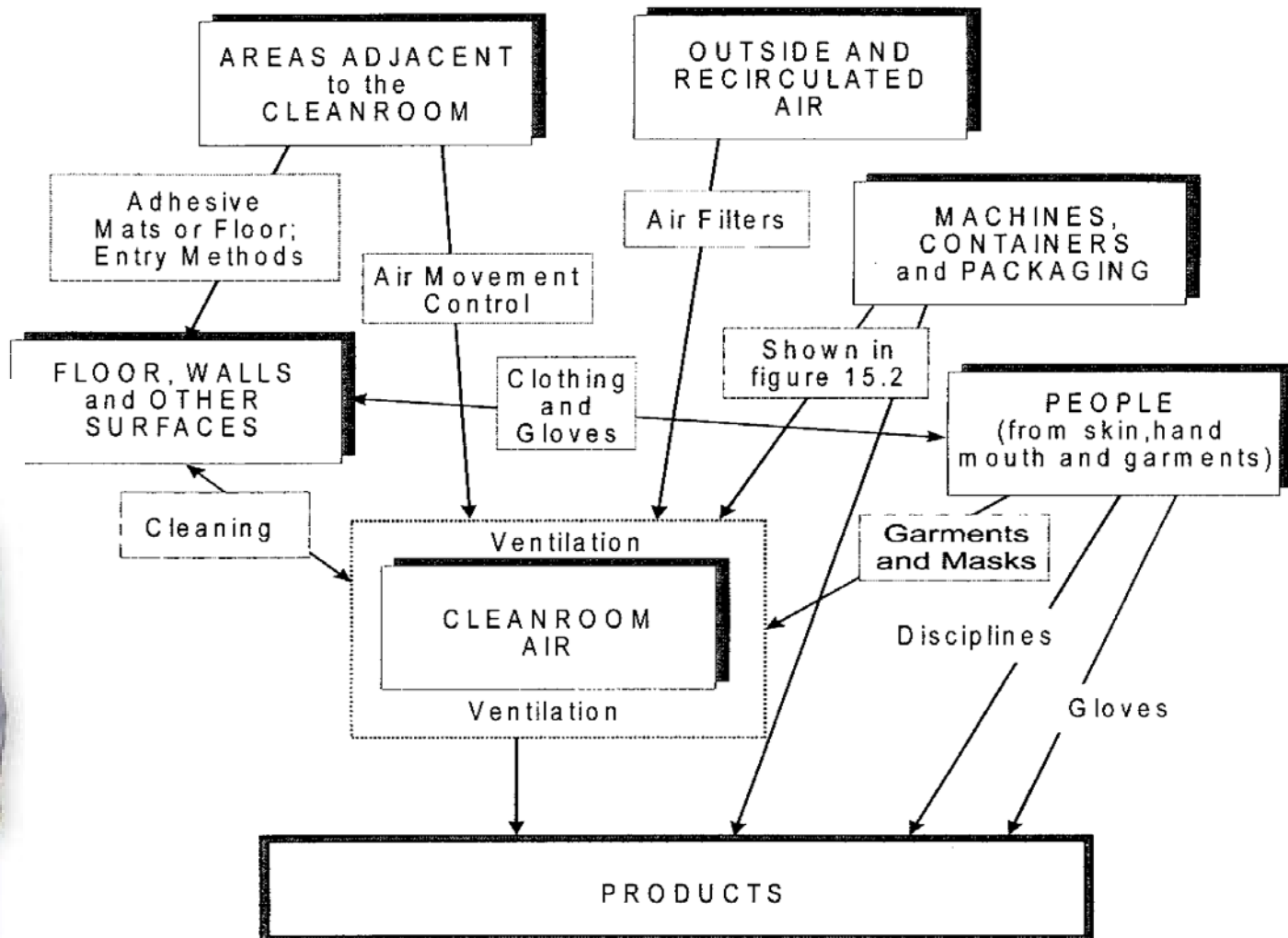
SECONDARY ENGINEERING CERTIFICATION

NSF certification for BSC

CAG-003-2006: CETA Certification Guide for Sterile Compounding Facilities

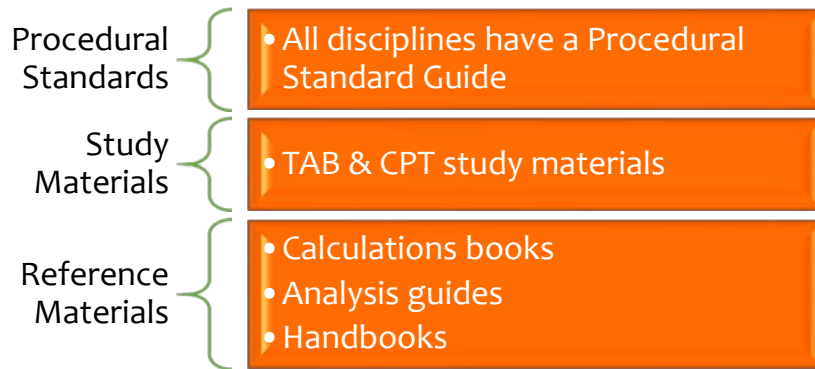
- Airflow testing
- Airflow smoke pattern test
- HEPA Filter Installation Leak Test
- Particle Count Survey
- Optional tests
 - Light, sound, temperature, humidity





Sources and routes of particle and microbial contamination in a cleanroom along with preventative measures

NEBB BOOKSTORE



- Refer to nebb.org/order_form for more details on all publications
- Purchase through your Certelligence Portal
- Questions – please contact Emily Demmons (Emily@nebb.org)



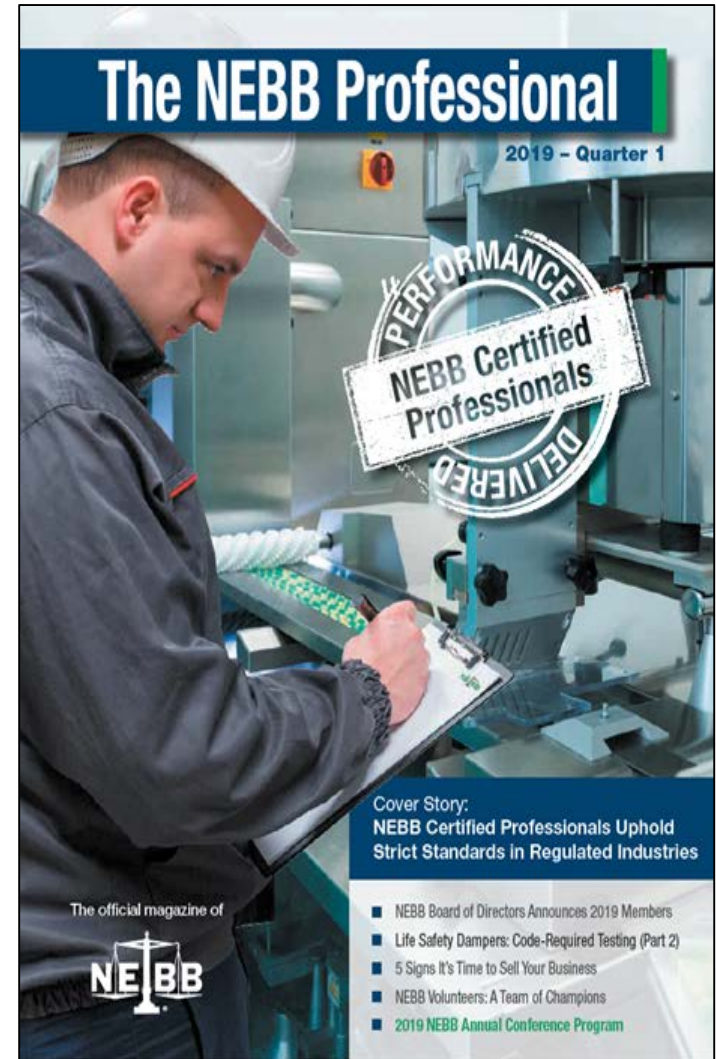
NEBB PROFESSIONAL MAGAZINE

The NEBB Professional is the official quarterly magazine of NEBB.

Have an article idea you want to contribute, send your abstract to communications@nebb.org. We are always looking for:

- Case studies demonstrating the NEBB value
- Technical articles
- Project highlights

Not on our mailing list? – fill out the submission form on our website



NEBB EDUCATION AND TRAINING CENTER

A 3,000- square foot location to conduct seminars and other learning activities.

The second phase includes a hands-on facility including multiple cleanrooms, water rig, air rig, sound and vibration equipment, and more!

Two convenient ways to register for Seminars

1. Visit nebb.org/events and complete the session registration form
2. Sign up through your Certelligence Portal



COVID-19 Overview and Infection Prevention and Control Priorities Healthcare Settings

Outline

Coronavirus Disease 2019 (COVID-19) Transmission Infection Prevention and Control (IPC) for COVID-19



cdc.gov/coronavirus



COVID-19: Transmission

- The primary transmission of COVID-19 is from person to person through respiratory droplets
 - Droplets are released when someone talks, sneezes, or coughs
 - Infectious droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs
- COVID-19 may also be spread if you touch contaminated objects and surfaces
- Recent data suggest transmission by people who are not showing symptoms



COVID-19: Transmission

- Current data do not support long range aerosol transmission of SARS-CoV-2 such as with measles and tuberculosis
- As with many respiratory pathogens, short-range inhalation aerosols is a possibility for COVID-19 transmission
 - Particularly in crowded medical wards and inadequately ventilated spaces
- Certain procedures in health facilities can generate fine aerosols and should be avoided whenever possible.



See WHO Guidance: [Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations](#)



Infection Prevention and Control (IPC) for COVID-19



What is IPC?

- The practice of preventing or stopping the spread of infections during healthcare delivery
 - Hospitals, outpatient clinics, dialysis centers, long-term care facilities, traditional practitioners
- **IPC Goal for COVID-19: To support the maintenance of essential healthcare services by containing and preventing COVID-19 transmission within healthcare facilities to keep patients and healthcare workers healthy and safe**



COVID-19: IPC Priorities

- Rapid identification of suspect cases
 - Screening/triage at initial healthcare facility encounter and rapid implementation of source control
 - Limiting entry of healthcare workers and/or visitors with suspected or confirmed COVID-19
- Immediate isolation and referral for testing
 - Group patients with suspected or confirmed COVID-19 separately
 - Test all suspected patients for COVID-19
- Safe clinical management
 - Immediate identification of inpatients and healthcare workers with suspected COVID-19
- Adherence to IPC practices
 - Appropriate personal protective equipment (PPE) use



COVID-19: Transmission-based precautions

- Use adequately ventilated single rooms (preferable) or dedicated COVID-19 ward rooms with dedicated bathrooms
 - Bathrooms should be cleaned and disinfected twice daily
- Avoid transporting COVID-19 patients out of room unless medically necessary
 - Place a mask on COVID-19 suspected or confirmed patients if transport out of a room is medically necessary
 - Healthcare workers should wear appropriate PPE during transport*
- Designate healthcare workers to care for patients with COVID-19
- Restrict the number of visitors allowed



* [https://www.who.int/publications-detail/rational-use-of-personal-protective-equipment-for-coronavirus-disease-\(covid-19\)-and-considerations-during-severe-shortages](https://www.who.int/publications-detail/rational-use-of-personal-protective-equipment-for-coronavirus-disease-(covid-19)-and-considerations-during-severe-shortages)



Who is at risk at work?

Extremely High Risk:

Healthcare workers treating or caring for coronavirus infected patients.



EMT/ambulance employees transporting infected persons.



Courtesy of ABC Radio National - Australia

High Risk:

Dental workers working on patients known or suspected to be infected with coronavirus.



Who else is at risk at work?

Extremely High Risk:

Healthcare O&M teams servicing and maintaining HVAC systems, Exhaust systems, etc.



Thanks !!

Questions??

