

**FINAL STATEMENT OF REASONS
FOR
PROPOSED BUILDING STANDARDS
OF THE
OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT

REGARDING THE CALIFORNIA MECHANICAL CODE
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 4**

The Administrative Procedure Act requires that every agency shall maintain a file of each rulemaking that shall be deemed to be the record for that rulemaking proceeding. The rulemaking file shall include a final statement of reasons. The Final Statement of Reasons shall be available to the public upon request when rulemaking action is being undertaken. The following are the reasons for proposing this particular rulemaking action:

UPDATES TO THE INITIAL STATEMENT OF REASONS

The Office of Statewide Health Planning and Development (OSHPD) is proposing to amend the 2016 California Mechanical Code (CMC) to provide clarification and consistency within the code.

Specific amendments are as follows:

Section 319.1.3 – This provision is amended to change the reference for interior temperature and humidity design parameters from existing Table 320.0 to new Table 4-A as revised in this intervening code cycle. This works in conjunction with additional amendments listed in this document. This amendment also eliminates the reference for ambient weather design data, which is addressed in additional amendments as listed in this Initial Statement of Reasons. Note that several of the provisions listed below carry out the action of eliminating Table 320.0, placing the names of the sensitive spaces in text format (with a new Section 322.0), and relocating the temperature and humidity requirements for those sensitive spaces into a new version of Table 4-A. Relocated information is not changed.

Section 320.1.1 – This provision is amended to change the reference for interior temperature and humidity design parameters from existing Table 320.0 to new Table 4-A as revised in this intervening code cycle. Relocated information is not changed.

Section 320.1.2 – This provision is amended to specify a specific ambient design parameter for heating systems as the American Society of Heating, Refrigerating, and Air Conditioning Engineer's, Inc. (ASHRAE) "Heating DB 99.6%" as it is listed in *ASHRAE Handbook-Fundamentals*. It also removes from this section the reference of an interior heating temperature range for non-critical spaces. This data is addressed in Table 4-A as the table is modified in this intervening code cycle. The inclusion of the specific heating dry bulb temperature is to set a common, established industry design parameter.

Section 320.1.3 – This provision is amended to eliminate the 0.4% summer design dry bulb temperature as shown in *ASHRAE Handbook-Fundamentals* as the single cooling design parameter. In place of this, the provision adds a reference to 0.4% columns of four annual Design Conditions titled Cooling, Evaporation, Dehumidification, and Enthalpy as listed in *ASHRAE Handbook-Fundamentals*. This establishes a better, more effective ambient design guideline as there are climates in California where designing to only dry bulb temperature can result in a system that is undersized due to humidity loads on days with dry bulb temperatures lower than the 0.4% dry bulb.

Section 320.3.1 – This provision is amended to change the reference for interior temperature and humidity design parameters from existing Table 320.0 to new Table 4-A as revised in this intervening code cycle, for outpatient facilities and licensed clinics.

Section 320.4 – This new provision adds HVAC requirements for telecommunications service entrance, technology equipment, and technology distribution rooms in support of revisions to Title 24, Part 2, California Building Code. Previously, the CMC did not address these areas. The requirements added serve as a minimum regarding the routing of unrelated mechanical equipment, and HVAC environmental requirements. This new section references ASHRAE’s *Thermal Guidelines for Data Processing Environment* as it is a widely accepted guideline for these requirements.

Section 320.5 – This new provision adds a requirement for security diffusers, grilles and registers for HVAC systems serving areas that provide services for psychiatric patients. This is done to improve the safety of such patients in terms of suicide and self-injurious behavior.

Section 321.1 – This provision is amended to change the reference for interior temperature and humidity design parameters from existing Table 320.0 to new Table 4-A as revised in this intervening code cycle. This provision also references the newly-proposed Section 322.0 where the sensitive areas are identified.

Section 321.2 – This provision is amended to change the reference for interior temperature and humidity design parameters from existing Table 320.0 to new Table 4-A as revised in this intervening code cycle, for outpatient facilities and licensed clinics. This provision also references a newly-proposed Section 322.0.

Section 321.3 – This provision removes the reference to Table 320.0 and replaces the reference with one to Section 322.0, which is the new location for the names of the spaces as listed in Table 320.0.

Section 322.0 – This provision lists the names of the sensitive areas from Table 320.0, placing them in paragraph format. This also adds the name of “hybrid operating room” to the line listing operating room, in coordination with Title 24, Part 2, California Building Code. “Hybrid operating room” shares the same requirements as operating room. Relocated information is not changed.

Section 322.1 – This provision simply takes the footnotes from the existing Table 320.0 placing them in paragraph format. This also adds a reference to the new Table 4-A to help the reader understand where the information is located and clarify how it is used. Relocated information is not changed.

Table 320 – This provision eliminates the structure of Table 320.0, relocating the information in it as specified in above provisions. Relocated information is not changed.

Section 402.1 – This new provision adopts *ASHRAE 170* as a standard for ventilation. This provision specifies that the version of *ASHRAE 170* that is adopted is established as the version published in the *Guidelines for Design and Construction of Hospitals and Outpatient Facilities* (2014 edition).

Several sections of ASHRAE are not adopted and those are specified in this provision. They are not adopted because it was found that the requirements are better met in Title 24, Part 4, California Mechanical Code.

These following items in new Section 402.1 are not adopted:

1. *ASHRAE 170*, Section 6.1.2.1. This section addresses essential services, which is covered elsewhere in Title 24.
2. *ASHRAE 170*, Section 6.3.2 Exhaust Discharges. This section allows for reduced clearances between more hazardous discharges like those from airborne infection isolation rooms verses what is allowed in Title 24, Part 4, California Mechanical Code.
3. *ASHRAE 170*, Table 6.4 Minimum Filter Efficiencies. The filtration requirements in this table are less stringent than those in Title 24, Part 4, California Mechanical Code for protective environment rooms, laboratories, operating rooms, and inpatient care spaces.
4. *ASHRAE 170*, Sections 6.4 through 6.4.4 Filtration. The filtration requirements in this section are less thorough than those in Title 24, Part 4, California Mechanical Code.

5. *ASHRAE 170*, Section 6.9 Insulation and Duct Lining. This section does not have space-specific requirements that Title 24, Part 4, California Mechanical Code has.
7. *ASHRAE 170*, Section 7.2.1a through e not adopted. The differential pressure alarm requirement in *ASHRAE 170* does not require an audio component. The pressure relationship requirements in *ASHRAE 170* do not specify air flow differentials as does Title 24, Part 4, California Mechanical Code.
8. *ASHRAE 170*, Section 7.2.2a through c, and e not adopted. The differential pressure alarm requirement in *ASHRAE 170* does not require an audio component. The pressure relationship requirements in *ASHRAE 170* do not specify air flow differentials as Title 24, Part 4, California Mechanical Code does.
9. *ASHRAE 170*, Section 7.2.3 Combination Airborne Infectious Isolation/Protective Environment (AII/PE) Rooms. Title 24, Part 2, California Building Code does not allow these rooms.

These following items in new Section 402.1 are altered:

6. *ASHRAE 170*, Section 7.1a. A reference to Table 7.1 in *ASHRAE 170* is changed to “Table 4-A” to alert the reader of the proper table in Part 4, California Mechanical Code.
10. *ASHRAE 170*, Section 7.3.1 Wound Intensive-Care Units (Burn Units). A reference to Table 7.1 in *ASHRAE 170* is changed to “Table 4-A” to alert the reader of the proper table in Part 4, California Mechanical Code.
11. *ASHRAE 170*, Section 7.4.1 Operating Rooms (Class B and C), Operating/Surgical Cystoscopic Rooms, and Caesarean Delivery Rooms. The Section in *ASHRAE 170* is changed to remove the exception that allows for high return grilles. High return grilles does not meet the infection control requirement that air flow from clean to less clean in these spaces.

Section 407.2.3 – This provision is being repealed to eliminate requirements on relief air discharge as those are covered in *ASHRAE 170*.

Section 407.3.2 – This provision is being repealed to eliminate the requirements regarding changing pressure drop across air filters as that is covered in *ASHRAE 170*. The related exception is also being repealed.

Table 4-A (Existing) – The current structure of this table is removed. The area designations that are not duplicated in *ASHRAE* Table 7.1 and their related values for Air Balance Relationship to Adjacent Areas, Minimum Air Changes if 100% O.S.A, Conditioned Air not 100% O.S.A., and All Air Exhausted Directly to Outdoors are retained for inclusion into the revised version of Table 4-A. The retained area designations and values are not changed. Some of the footnotes cover material that is already addressed in the footnotes of *ASHRAE* Table 7.1. Those footnotes are deleted from CMC. Footnotes 4, 5, 6, and 8 have information that is retained for inclusion into the revised version of Table 4-A.

Table 4-A (Revised) – This table is a combination of ventilation, design temperature, and design relative humidity requirements that exist in *ASHRAE 170* Table 7.1, combined with the data that is already in CMC Tables 4-A and Section 320.0. This relocated information is not changed. The space “Nurse station” was added to the table to coordinate with the terminology of Title 24, Part 2, California Building Code. No ventilation, design temperature, or design relative humidity requirements were added. In footnote “f” the reference to Table 325.0 is changed to Section 322.0 to direct the reader to the new location. Information in footnotes 4, 5, 6, and 8 from the existing Table 4-A was retained for inclusion into the footnotes brought in from *ASHRAE* Table 7.1. Footnote “z” was added to express that *ASHRAE* has granted permission to OSHPD to use the data from *ASHRAE 170* Table 7.1. The only change in any requirement that occurs in the integration of these two tables is that the 10 total air changes for morgues and autopsy rooms is increased to 12 in order to meet the national standard of *ASHRAE 170*.

Table 4-B – This provision is amended to add psychiatric care to the requirement for MERV 8, single-bank filtration for general acute care hospitals, acute psychiatric hospitals, outpatient facilities, and licensed

clinics. This matches industry practice and this space was added to address the new revisions to Part 2 of Title 24.

MANDATE ON LOCAL AGENCIES OR SCHOOL DISTRICTS

The Office of Statewide Health Planning and Development has determined that the proposed regulatory action would not impose a mandate on local agencies or school districts.

OBJECTIONS OR RECOMMENDATIONS MADE REGARDING THE PROPOSED REGULATION(S)

OSHPD RECEIVED THE FOLLOWING COMMENTS DURING THE 45-DAY COMMENT PERIOD OF MARCH 17, 2017 THROUGH MAY 1, 2017:

COMMENT #1

Commenter: Regina Boyle – generally representing nonprofit primary care clinics

Comment regarding Section 402.1.3 Ventilation in Health Care Facilities & Table 4-A:

The commenter expresses general dissatisfaction with the rule-making process and the evolution of the California Building Standards Codes since 1991. The recommendation is to pull the proposed language for further study identifying non-compliance with no specific criterion under Health and Safety Code Section 18930(a). The commenter requests that primary care clinics be specifically excluded from the application of the proposed language due to related cost impacts.

OSHPD Response to Comment #1:

The focus of this proposal is to adopt the national standard (ASHRAE 170) which has recently been adopted as the health facility ventilation standard into model mechanical code. California Mechanical Code (CMC) Tables 320 and 4-A have historically been based on ASHRAE 170 Table 7.1. The proposed Express Terms provide graphic alignment of CMC Tables 320, 4-A, with model code (ASHRAE 170 Table 7.1), including the accompanying footnotes. No changes in the previously adopted OSHPD amendments have been made; they are brought forward and integrated into the model code referenced document format. Previously adopted requirements for the clinic facility type referenced remain the same. Since the national standards are continually updated, Section 402.1.3 ties reference to ASHRAE 170 to a specific edition and set of addenda to not conflict with previously adopted OSHPD amendments.

COMMENT #2

Commenter: Roger Carter – representing tk1sc

Comment (multiple items):

1. *The requirements in Title 24, Part 4, Section 320.1.1 for all humidifiers to use dry steam (prohibit adiabatic humidifiers) are more restrictive than any found in ASHRAE-170. There is no reason stated in ISOR for the more limiting requirement. The recent ASHRAE addendum to allow adiabatic humidifiers is not addressed.*
2. The requirements in Title 24, Part 4, Section 320.1.2 for heating systems to be based on 0.4% weather data are not found in ASHRAE-170. The ISOR does not give a reason for stipulating a more stringent requirement. This requirement is similar to a requirement in a previous version of the CA code, but the reference has been changed.

OSHPD Response to Comment #2, Item 2:

ASHRAE-170 does not address ambient design conditions. This change reflects input from prior comments received from industry and is being proposed to ensure that CMC guidance stays current with industry practice. The suggested revisions clarify the requirements for the owner, design engineer,

contractor, commissioning team and the enforcing agency at what Climatic Design Conditions the HVAC system should be designed, constructed, commissioned and be expected to maintain the room conditions. The prior commenter posited, “suggested revisions could also avoid potential owner/design/construction/enforcing agency disputes and associated costly meetings, costly change orders, costly construction delay and litigation cost.” This does not constitute a more stringent requirement.

Additionally, as noted in the “forward” of the specified referenced printing of ASHRAE 170 - 2013, through Addendum ae, as published with “Guidelines for Design and Construction of Hospitals and Outpatient Facilities,” 2014 edition, published by the Facility Guidelines Institute (FGI):

“ANSI/ASHRAE/ASHE Standard 170, Ventilation of Health Care Facilities, is one of a family of documents that offers guidance, regulation, and mandates to designers of health care facilities. It is first and foremost a mandatory minimum requirement and, as such, may not always offer the state-of-the-art best practice for health care ventilation design. Other publications, such as the ASHRAE HVAC Design Manual for Hospitals and Clinics, 2nd Edition, complement the standard, providing additional depth and detail for the designer. In addition, the health care designer must refer to any design requirements from the appropriate jurisdiction that has authority. Many jurisdictions use or refer to Guidelines for Design and Construction of Health Care Facilities, published by the Facility Guidelines Institute (FGI). Where practical, the committee was cognizant of these other documents in the development of this standard.

Ventilation design for health care spaces is a combination of tasks that leads to a set of documents used in construction. One such task requires medical planners to develop departmental programs of spaces. These programs include space names that suggest the use for which the space is intended, and health care ventilation designers depend upon these names to determine the ventilation parameters for their designs. This standard provides these ventilation parameters.

Ventilation systems and designs for health care facilities are intended to provide a comfortable environment for patients, health care workers, and visitors while diluting, capturing and exhausting airborne contaminants including potentially infectious airborne agents such as M. tuberculosis. Without high-quality ventilation in health care facilities, patients, health care workers, and visitors can become exposed to contaminants through normal respiration of particles in the air. Poorly ventilated health care facilities may increase the concentration of airborne contaminants including fungi or mold, which may cause allergic responses in even healthy workers and occupants. Some patients are profoundly immunosuppressed for prolonged periods and, if exposed, are highly susceptible to infection from fungi. For such patients, fungal spores become invasive pathogens and lead to high rates of severe morbidity and mortality. For all these reasons, and considering the various occupancies and patient populations, great care must be taken in the design of health care ventilation systems.”

3. The requirements in Title 24, Part 4, Section 320.1.3 for cooling systems based on 0.4% weather data are not found in ASHRAE-170. The ISOR does not give a reason for stipulating a more stringent requirement. This requirement is similar to a requirement in a previous version of the CA code, but the reference has been changed.

OSHPD Response Comment #2, Item 3:

ASHRAE-170 does not address ambient design conditions. This change reflects input from prior comments received from industry and is being proposed to ensure that CMC guidance stays current with industry practice. The prior commenter posited, “suggested revisions could also avoid potential owner/design/construction/enforcing agency disputes and associated costly meetings, costly change orders, costly construction delay and litigation cost.” This does not constitute a more stringent requirement. This does not constitute a more stringent requirement.

Additionally, as noted in the “forward” of the specified referenced printing of ASHRAE 170 - 2013, through Addendum ae, as published with “Guidelines for Design and Construction of Hospitals and Outpatient Facilities,” 2014 edition, published by the Facility Guidelines Institute (FGI):

“ANSI/ASHRAE/ASHE Standard 170, Ventilation of Health Care Facilities, is one of a family of documents that offers guidance, regulation, and mandates to designers of health care facilities. It is first and foremost a mandatory minimum requirement and, as such, may not always offer the state-of-the-art best practice for health care ventilation design. Other publications, such as the ASHRAE HVAC Design Manual for Hospitals and Clinics, 2nd Edition, complement the standard, providing additional depth and detail for the designer. In addition, the health care designer must refer to any design requirements from the appropriate jurisdiction that has authority. Many jurisdictions use or refer to Guidelines for Design and Construction of Health Care Facilities, published by the Facility Guidelines Institute (FGI). Where practical, the committee was cognizant of these other documents in the development of this standard.

Ventilation design for health care spaces is a combination of tasks that leads to a set of documents used in construction. One such task requires medical planners to develop departmental programs of spaces. These programs include space names that suggest the use for which the space is intended, and health care ventilation designers depend upon these names to determine the ventilation parameters for their designs. This standard provides these ventilation parameters.

Ventilation systems and designs for health care facilities are intended to provide a comfortable environment for patients, health care workers, and visitors while diluting, capturing and exhausting airborne contaminants including potentially infectious airborne agents such as M. tuberculosis. Without high-quality ventilation in health care facilities, patients, health care workers, and visitors can become exposed to contaminants through normal respiration of particles in the air. Poorly ventilated health care facilities may increase the concentration of airborne contaminants including fungi or mold, which may cause allergic responses in even healthy workers and occupants. Some patients are profoundly immunosuppressed for prolonged periods and, if exposed, are highly susceptible to infection from fungi. For such patients, fungal spores become invasive pathogens and lead to high rates of severe morbidity and mortality. For all these reasons, and considering the various occupancies and patient populations, great care must be taken in the design of health care ventilation systems.”

4. The requirements in Title 24, Part 4, Section 322.0 for specific requirements for "hybrid operating room" spaces are unique to California; they are not found in ASHRAE-170. The ISOR states the new definition is added to the table "to coordinate with the terminology of Title 24, Part 2". However, no technical reason for the added requirement.

OSHPD Response to Comment #2, Item 4:

This is not an added requirement. The ISOR states, “This also adds the name of “hybrid operating room” to the line listing operating room, in coordination with Title 24, Part 2, California Building Code (CBC).” “Hybrid operating room” shares the same requirements as “operating room.” The revision is consistent with existing and revised Table 4-A where the language is carried forward. Hybrid Operating Room is defined in the CBC as:

Section 1224.3 Definitions: “HYBRID OPERATING ROOM. *A room that meets the definition of an operating room and is also equipped to enable diagnostic imaging before, during, and after surgical procedures. Imaging equipment is permanently installed in the room and may include MRI, fixed singleplane and bi-plane tomographic imaging systems, and computed tomographic equipment.*

Note: Use of portable imaging technology does not make an operating room a hybrid operating room.”

and

Section 1224.28.5: “Hybrid operating room(s). Hybrid operating rooms shall comply with the requirements of Section 1224.15 [SURGICAL SERVICE SPACE/Operating Room] and comply with the requirements in this section.”

5. *The requirements in Title 24, Part 4, Section 324.1.2 for capacity of boilers to operate all systems during breakdowns are in excess of those in ASHRAE-170. In ASHRAE-170, this requirement is limited to critical spaces. ASHRAE allows the requirement to be waived in all climates where winter temperatures are >25 degrees (which would apply to much of California). The ISOR does not give a reason for stipulating a more stringent requirement.*
6. *The requirements in Title 24, Part 4, Section 405 which prohibits evaporative cooling in patient areas is not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
7. *The requirements in Title 24, Part 4, Section 407.1.1 for maintaining 25% air in unoccupied periods are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
8. *The requirements in Title 24, Part 4, Section 407.1.2 for all exhaust system fans at the discharge end are only found in ASHRAE-170 for specific rooms. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
9. *The requirements in Title 24, Part 4, Section 407.2.2 for exhaust outlets 10 ft from grade are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
10. *The requirements in Title 24, Part 4, Section 407.3.1 for balance according to AABC, NEBB, or TABB certified procedures are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
11. *The requirements in Title 24, Part 4, Section 407.4.1.1 for low returns are more broadly applied than in ASHRAE-170 This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
12. *The requirements in Title 24, Part 4, Section 407.4.1.3 for corridors are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
13. *The requirements in Title 24, Part 4, Section 407.4.1.4 for spaces above ceilings are only found in ASHRAE-170 for specific rooms (6.7.1). This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
14. *The requirements in Title 24, Part 4, Section 407.4.1.6 for supply and return/exhaust inlets are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*

15. *The requirements in Title 24, Part 4, Section 407.5.1 for prohibiting variable-air-volume in critical areas are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
16. *The requirements in Title 24, Part 4, Section 407.5.1.3 for modulating return or exhaust damper in each zone are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
17. *The requirements in Title 24, Part 4, Section 408.1.1 for filter gauge and alarm light are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
18. *The requirements in Title 24, Part 4, Section 408.1.3 for inspection of filters prior to operation are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
19. *The requirements in Title 24, Part 4, Section 408.1.6 for rigid, non-collapsing type filters in bank No. 2 are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
20. *The requirements in Title 24, Part 4, Section 408.2.3 for agency approval of filters for areas not listed are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
21. *The requirements in Title 24, Part 4, Section 408.2.4 for filters in through-the-wall units and heat pumps are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
22. *The requirements in Title 24, Part 4, Section 408.3.3 for filters in through-the-wall units and heat pumps are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
23. *The requirements in Title 24, Part 4, Section 411.1 for air from dining areas are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
24. *The requirements in Title 24, Part 4, Section 413.1 for odorous rooms exhaust at ten times per hour are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
25. *The requirements in Title 24, Part 4, Section 413.2 for kitchens exhausted at ten air changes per hour are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
26. *The requirements in Title 24, Part 4, Section 414.1 for labeling for exhaust systems are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*

27. *The requirements in Title 24, Part 4, Section 414.1.1 for prohibition of rain caps are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
28. *The requirements in Title 24, Part 4, Section 414.1.2 for HEPA filters on all airborne isolation exhausts are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
29. *The requirements in Title 24, Part 4, Section 414.2 for wall exhausts in airborne isolation rooms are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
30. *The requirements in Title 24, Part 4, Section 415.1 for wall return/exhaust in protective environment rooms are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
31. *The requirements in Title 24, Part 4, Section 416.1 for audible alarm and remote annunciation for room pressure and flow are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
32. *The requirements in Title 24, Part 4, Section 416.4 for acceptance testing of room alarm systems are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
33. *The requirements in Title 24, Part 4, Section 417.0 for balance by an independent agency certified by AABC, NEBB, or TABB are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
34. *The requirements in Title 24, Part 4, Section 418.1 for air changes in ethylene oxide sterilization areas are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
35. *The requirements in Title 24, Part 4, Section 418.2 for dedicated and labeled exhaust systems for ETO sterilizers are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
36. *The requirements in Title 24, Part 4, Section 418.3 for ventilation for aeration units in ETO areas are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
37. *The requirements in Title 24, Part 4, Section 418.5 for gas line hand valves in ETO areas are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
38. *The requirements in Title 24, Part 4, Section 418.5 for audible and visual alarm systems in ETO areas are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*

39. *The requirements in Title 24, Part 4, Section Table 4-A for "Dining room" space minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
40. *The requirements in Title 24, Part 4, Section Table 4-A for "Multipurpose room" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
41. *The requirements in Title 24, Part 4, Section Table 4-A for "Recreation/activity room" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
42. *The requirements in Title 24, Part 4, Section Table 4-A for "Angiography room" space pressure, minimum air changes, and exhaust are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
43. *The requirements in Title 24, Part 4, Section Table 4-A for "Blood bank/tissue storage" space minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
44. *The requirements in Title 24, Part 4, Section Table 4-A for "Dishwashing room" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
45. *The requirements in Title 24, Part 4, Section Table 4-A for "Electroconvulsive therapy procedure room" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
46. *The requirements in Title 24, Part 4, Section Table 4-A for "Negative pressure x-ray room" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
47. *The requirements in Title 24, Part 4, Section Table 4-A for "Waiting area (nuclear medicine)" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
48. *The requirements in Title 24, Part 4, Section Table 4-A for "Waiting area primary care clinic" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
49. *The requirements in Title 24, Part 4, Section Table 4-A for "Administrative" space minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version

of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*

50. *The requirements in Title 24, Part 4, Section Table 4-A for "Blood draws/phlebotomy" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
51. *The requirements in Title 24, Part 4, Section Table 4-A for "Cardiac catheterization lab" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
52. *The requirements in Title 24, Part 4, Section Table 4-A for "CT Scan" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
53. *The requirements in Title 24, Part 4, Section Table 4-A for "Dialysis treatment area" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
54. *The requirements in Title 24, Part 4, Section Table 4-A for "Fast track room" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
55. *The requirements in Title 24, Part 4, Section Table 4-A for "Fluoroscopy room" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
56. *The requirements in Title 24, Part 4, Section Table 4-A for "Gamma camera" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
57. *The requirements in Title 24, Part 4, Section Table 4-A for "Lactation" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
58. The requirements in Title 24, Part 4, Section Table 4-A for "Nurse station" spaces minimum air changes are not found in ASHRAE-170. New definition added to the table "to coordinate with the terminology of T24, P2". No technical reason for the added requirement.

OSHPD Response to Comment #2, Item 58:

Title 24, California Building Code (CBC) lists nurse station under general construction requirements because they are required in all licensed health facilities in a variety of locations. And while the stated purpose is to coordinate all CBC terminology by listing spaces with their associated ventilation requirements in Table 4-A, the table entry "Nurse station" is unnecessary. Proposal of this specific entry is withdrawn.

59. *The requirements in Title 24, Part 4, Section Table 4-A for "Observation/seclusion room" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a

previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*

60. *The requirements in Title 24, Part 4, Section Table 4-A for "Patient holding preparation" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
61. *The requirements in Title 24, Part 4, Section Table 4-A for "Pediatric play area" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
62. *The requirements in Title 24, Part 4, Section Table 4-A for "Semi-restricted corridor" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
63. *The requirements in Title 24, Part 4, Section Table 4-A for "Special purpose room (SNF & ICF only)" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
64. *The requirements in Title 24, Part 4, Section Table 4-A for "Speech therapy/audiology room" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
65. *The requirements in Title 24, Part 4, Section Table 4-A for "Staff sleep rooms" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
66. *The requirements in Title 24, Part 4, Section Table 4-A for "Ultrasound room" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
67. *The requirements in Title 24, Part 4, Section Table 4-A for "Unsterile supply" spaces minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
68. *The requirements in Title 24, Part 4, Section Table 4-A for "Infusion room" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
69. *The requirements in Title 24, Part 4, Section Table 4-A for "Interventional imaging procedure room" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*

70. *The requirements in Title 24, Part 4, Section Table 4-A for "IV Pre. Room" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
71. *The requirements in Title 24, Part 4, Section Table 4-A for "Shower room" space pressure and minimum air changes are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
72. *The requirements in Title 24, Part 4, Section Table 4-A for not less than 25 cfm differential for pressure are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
73. *The requirements in Title 24, Part 4, Section Table 4-A for pressurization of anterooms for isolation and PE rooms are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
74. *The requirements in Title 24, Part 4, Section Table 4-B for three filter banks for protective environment rooms are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
75. *The requirements in Title 24, Part 4, Section Table 4-B for two filter banks in laboratories are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
76. *The requirements in Title 24, Part 4, Section Table 4-B for two filter banks in procedure rooms (Class A surgery) are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
77. *The requirements in Title 24, Part 4, Section Table 4-B for filter bank # 3 (HEPA) in orthopedic operating rooms are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*

OSHPD Response to Comment #2 items marked with an asterisk(*):

* OSHPD does not adopt and has not proposed to adopt ASHRAE 170 ventilation standards for health facilities in its entirety. OSHPD's amendments to Table 4-A add, remove or change specific room names for alignment with the existing Title 22, California Code of Regulations; Title 24, California Building Code terminology; national standards of FGI Guidelines; and ASHRAE 170. For comments annotated with an asterisk (*) there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

Additionally, as noted in the "forward" of the specified referenced printing of ASHRAE 170 - 2013, through Addendum ae, as published with "Guidelines for Design and Construction of Hospitals and Outpatient Facilities," 2014 edition, published by the Facility Guidelines Institute (FGI):

"ANSI/ASHRAE/ASHE Standard 170, Ventilation of Health Care Facilities, is one of a family of documents that offers guidance, regulation, and mandates to designers of health care facilities. It is first and foremost a mandatory minimum requirement and, as such, may not always offer the

state-of-the-art best practice for health care ventilation design. Other publications, such as the ASHRAE HVAC Design Manual for Hospitals and Clinics, 2nd Edition, complement the standard, providing additional depth and detail for the designer. In addition, the health care designer must refer to any design requirements from the appropriate jurisdiction that has authority. Many jurisdictions use or refer to Guidelines for Design and Construction of Health Care Facilities, published by the Facility Guidelines Institute (FGI). Where practical, the committee was cognizant of these other documents in the development of this standard.

Ventilation design for health care spaces is a combination of tasks that leads to a set of documents used in construction. One such task requires medical planners to develop departmental programs of spaces. These programs include space names that suggest the use for which the space is intended, and health care ventilation designers depend upon these names to determine the ventilation parameters for their designs. This standard provides these ventilation parameters.

Ventilation systems and designs for health care facilities are intended to provide a comfortable environment for patients, health care workers, and visitors while diluting, capturing and exhausting airborne contaminants including potentially infectious airborne agents such as M. tuberculosis. Without high-quality ventilation in health care facilities, patients, health care workers, and visitors can become exposed to contaminants through normal respiration of particles in the air. Poorly ventilated health care facilities may increase the concentration of airborne contaminants including fungi or mold, which may cause allergic responses in even healthy workers and occupants. Some patients are profoundly immunosuppressed for prolonged periods and, if exposed, are highly susceptible to infection from fungi. For such patients, fungal spores become invasive pathogens and lead to high rates of severe morbidity and mortality. For all these reasons, and considering the various occupancies and patient populations, great care must be taken in the design of health care ventilation systems.”

COMMENT #3

Commenter: Wayne Bader – representing Sutter Health

Comment:

We applaud the intention to move California Mechanical Code closer to ASHRAE 170. We urge OSHPD to fully adopt ASHRAE 170 or to remove requirements that are more restrictive than ASHRAE 170.

OSHPD Response to Comment #3:

As noted in the Initial Statement of Reasons in reference to Section 402.1, portions of ASHRAE 170 are not adopted because it was found that the requirements are better met [addressed] in Title 24, Part 4, California Mechanical Code with existing amendments which have been brought forward and integrated into the ASHRAE 170 format. ASHRAE 170 does not allow for a reduction of total air changes per hour if a 100% outside air system is utilized. Repeal of this longstanding California amendment without further study and the associated impacts to California health facilities is premature.

Additionally, as noted in the “forward” of the specified referenced printing of ASHRAE 170 - 2013, through Addendum ae, as published with “Guidelines for Design and Construction of Hospitals and Outpatient Facilities,” 2014 edition, published by the Facility Guidelines Institute (FGI):

“ANSI/ASHRAE/ASHE Standard 170, Ventilation of Health Care Facilities, is one of a family of documents that offers guidance, regulation, and mandates to designers of health care facilities. It is first and foremost a mandatory minimum requirement and, as such, may not always offer the state-of-the-art best practice for health care ventilation design. Other publications, such as the ASHRAE HVAC Design Manual for Hospitals and Clinics, 2nd Edition, complement the standard, providing additional depth and detail for the designer. In addition, the health care designer must refer to any design requirements from the appropriate jurisdiction that has authority. Many jurisdictions use or refer to Guidelines for Design and Construction of Health Care Facilities,

published by the Facility Guidelines Institute (FGI). Where practical, the committee was cognizant of these other documents in the development of this standard.

Ventilation design for health care spaces is a combination of tasks that leads to a set of documents used in construction. One such task requires medical planners to develop departmental programs of spaces. These programs include space names that suggest the use for which the space is intended, and health care ventilation designers depend upon these names to determine the ventilation parameters for their designs. This standard provides these ventilation parameters.

Ventilation systems and designs for health care facilities are intended to provide a comfortable environment for patients, health care workers, and visitors while diluting, capturing and exhausting airborne contaminants including potentially infectious airborne agents such as M. tuberculosis. Without high-quality ventilation in health care facilities, patients, health care workers, and visitors can become exposed to contaminants through normal respiration of particles in the air. Poorly ventilated health care facilities may increase the concentration of airborne contaminants including fungi or mold, which may cause allergic responses in even healthy workers and occupants. Some patients are profoundly immunosuppressed for prolonged periods and, if exposed, are highly susceptible to infection from fungi. For such patients, fungal spores become invasive pathogens and lead to high rates of severe morbidity and mortality. For all these reasons, and considering the various occupancies and patient populations, great care must be taken in the design of health care ventilation systems.”

COMMENT #4

Commenter: David Summers - representing Glumac

Comment (multiple items):

1. CMC 407.4.1.4 prohibits all ceiling air plenums, which is unnecessarily restrictive. For example, an OSHPD 3 speech therapy clinic or similar clinic that is serving non-critical patient types and functions must have ducted return. This requirement is not found in ASHRAE 170 and creates an undue burden and cost on healthcare facilities. The CBSC should evaluate the various OSHPD 1, 2, 3, and 4 building types and functions under its jurisdiction and justify which ones warrant a deviation from ASHRAE 170. This requirement is the single most costly and unnecessary burden on healthcare facilities in the current mechanical code.

OSHPD Response to Comment #4, Item 1:

This particular change was proposed in prior rulemaking efforts regarding OSHPD 3, which were determined to be subject to provisions of the California Environmental Quality Act (CEQA). To date, the CEQA process is not completed.

2. *CMC Table 4-A includes air change requirements for several spaces that exceed the requirements of ASHRAE 170. The following areas are of particular concern*:
 - *CMC air change requirements for non-patient spaces, such as administrative areas, staff sleep rooms, nurse stations, semi-restricted corridor, dishwashing rooms, unsterile supply, etc.*
 - *CMC air change requirements for non-critical spaces, such as multipurpose rooms, dining rooms, recreation rooms, special-purpose room (SNF & ICF), etc.*
 - *CMC air change requirements for patient spaces that are not used by infectious or immune-compromised individuals, such as lactation room, ultrasound room, speech therapy / audiology room, etc.*

OSHPD Response to Comment #4, Item 2 marked with an asterisk(*):

* OSHPD does not adopt and has not proposed to adopt ASHRAE 170 ventilation standards for health facilities in its entirety. OSHPD's amendments to Table 4-A add, remove or change specific room names for alignment with the existing Title 22, California Code of Regulations; Title 24, California Building Code terminology; national standards of FGI Guidelines; and ASHRAE 170. For comments annotated with an asterisk (*) there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

Additionally, as noted in the "forward" of the specified referenced printing of ASHRAE 170 - 2013, through Addendum ae, as published with "Guidelines for Design and Construction of Hospitals and Outpatient Facilities," 2014 edition, published by the Facility Guidelines Institute (FGI):

"ANSI/ASHRAE/ASHE Standard 170, Ventilation of Health Care Facilities, is one of a family of documents that offers guidance, regulation, and mandates to designers of health care facilities. It is first and foremost a mandatory minimum requirement and, as such, may not always offer the state-of-the-art best practice for health care ventilation design. Other publications, such as the ASHRAE HVAC Design Manual for Hospitals and Clinics, 2nd Edition, complement the standard, providing additional depth and detail for the designer. In addition, the health care designer must refer to any design requirements from the appropriate jurisdiction that has authority. Many jurisdictions use or refer to Guidelines for Design and Construction of Health Care Facilities, published by the Facility Guidelines Institute (FGI). Where practical, the committee was cognizant of these other documents in the development of this standard.

Ventilation design for health care spaces is a combination of tasks that leads to a set of documents used in construction. One such task requires medical planners to develop departmental programs of spaces. These programs include space names that suggest the use for which the space is intended, and health care ventilation designers depend upon these names to determine the ventilation parameters for their designs. This standard provides these ventilation parameters.

Ventilation systems and designs for health care facilities are intended to provide a comfortable environment for patients, health care workers, and visitors while diluting, capturing and exhausting airborne contaminants including potentially infectious airborne agents such as M. tuberculosis. Without high-quality ventilation in health care facilities, patients, health care workers, and visitors can become exposed to contaminants through normal respiration of particles in the air. Poorly ventilated health care facilities may increase the concentration of airborne contaminants including fungi or mold, which may cause allergic responses in even healthy workers and occupants. Some patients are profoundly immunosuppressed for prolonged periods and, if exposed, are highly susceptible to infection from fungi. For such patients, fungal spores become invasive pathogens and lead to high rates of severe morbidity and mortality. For all these reasons, and considering the various occupancies and patient populations, great care must be taken in the design of health care ventilation systems."

3. *Patient care areas in non-critical facilities are regulated by CMC Table 4-A. For example, an exam room in an OSHPD 3 speech therapy clinic must meet the same air change requirement as an OSHPD 1 hospital exam room. The CBSC should evaluate the various OSHPD 1, 2, 3, and 4 building types and functions under its jurisdiction and justify which ones require regulation of air change rates.*

OSHPD Response to Comment #4, Item 3 marked with an asterisk(*):

* For comments annotated with an asterisk(*) there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

4. *CMC 413.2 includes a requirement for kitchens to be exhausted at 10 air changes per hour which appears arbitrary. Kitchen hood exhaust rates are determined by CMC Chapter 5, and kitchen areas without hoods should not require additional exhaust rates.*

OSHPD Response to Comment #4, Item 4 marked with an asterisk(*):

* For comments annotated with an asterisk(*) there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

5. *CMC Table 4-B includes filtration requirements that exceed the requirements of ASHRAE 170. Of particular concern is the CMC requirement for 3 filter banks. Sound engineering practice would allow 2 filter banks, with the 2nd filter meeting the highest level of filtration required.*

OSHPD Response to Comment #4, Item 5 marked with an asterisk(*):

* For comments annotated with an asterisk(*) there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

6. *CMC 407.1.1 requires that unoccupied areas maintain 25% airflow, which is not found in ASHRAE 170.*

OSHPD Response to Comment #4, Item 6 marked with an asterisk(*):

* For comments annotated with an asterisk(*) there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

7. *CMC 414.2 and 415.1 requires low level exhaust / return in All and PE isolation rooms, which is not found in ASHRAE 170. In particular, the PE room requirement does not seem to have any engineering justification.*

OSHPD Response to Comment #4, Item 7 marked with an asterisk(*):

* For comments annotated with an asterisk(*) there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

COMMENT #5

Commenter: Travis English - representing Kaiser Permanente

Comment (multiple items):

1. *The requirements for non-clinical or non-patient spaces in Title 24, Part 4, Section Table 4-A for "Administrative", "Dining room", "Dishwashing room", "Multipurpose room", "Recreation/activity room", "Nurse station", and "Pediatric play area" spaces minimum air changes are not found in ASHRAE-170. These requirements are carried forward from the previous CA code. However, the ISOR does not give a reason for stipulating more stringent requirements. Air in non-clinical spaces is a major opportunity for energy savings in California.*
2. *The requirements in Title 24, Part 4, Section Table 4-A for "Blood draw/phlebotomy", "Blood bank/tissue storage", "CT Scan", "Dialysis treatment area", "Fast track room", "Gamma camera", "Lactation", "Observation/seclusion room", "Patient holding preparation", "Semi-restricted corridor", "Special purpose room (SNF & ICF only)", "Speech therapy/audiology room", "Staff sleep rooms", "Ultrasound room", and "Unsterile supply" spaces minimum air changes are not found in ASHRAE-170. These requirements are carried forward from the previous CA code. However, the ISOR does not give a reason for stipulating more stringent requirements. These represent significant opportunity for energy savings.*
3. *The requirements in Title 24, Part 4, Section Table 4-A for "Waiting area primary care clinic", "Waiting area (nuclear medicine)", "Negative pressure x-ray room", "Angiography room", "Electroconvulsive therapy procedure room", "Cardiac catheterization lab", "Fluoroscopy room",

"Infusion room", "Interventional imaging procedure room", "IV Pre. Room", and "Shower room" to meet space pressure and minimum air changes are not found in ASHRAE-170. These requirements are carried forward from the previous CA code. However, the ISOR does not give a reason for stipulating more stringent requirements. These represent significant opportunity for energy savings.*

4. *The requirements in Title 24, Part 4, Section Table 4-B for two filter banks in procedure rooms (Class A surgery), two filter banks in laboratories, and three filter banks for protective environment rooms, and filter bank # 3 (HEPA) in orthopedic operating rooms are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating more stringent requirements. California hospitals incur increased capital, operating, and energy costs associated with these filter sections.*
5. *The requirements in Title 24, Part 4, Section 407.5.1.3 for modulating return or exhaust damper in each zone and Section 407.5.1 for prohibiting variable-air-volume in critical areas are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement. These restrictions on VAV systems impose a vast energy cost on California hospitals.*
6. *The requirements in Title 24, Part 4, Section 320.1.1 for all humidifiers to use dry steam (prohibit adiabatic humidifiers) are more restrictive ASHRAE-170. There is no reason stated in ISOR for the more limiting requirement. The recent ASHRAE addendum to allow adiabatic humidifiers is not addressed. New humidifier technologies could benefit California. In much of the state, the demand for humidification is very light.*
7. The requirements in Title 24, Part 4, Table 4A for specific requirements for "hybrid operating room" spaces are unique to California; they are not found in ASHRAE-170. The ISOR states the new definition is added to the table "to coordinate with the terminology of Title 24, Part 2". However, no technical reason for the added requirement. This is a new space type, where not enough precedent exists to impose a standard. Room sizes vary quite a bit.

OSHPD Response to Comment #5, Item 7

This is not an added requirement. The ISOR states, "This also adds the name of "hybrid operating room" to the line listing operating room, in coordination with Title 24, Part 2, California Building Code (CBC)." "Hybrid operating room" shares the same requirements as "operating room." The revision is consistent with existing and revised Table 4-A where the language is carried forward. Hybrid Operating Room is defined in the CBC as:

Section 1224.3 Definitions: *"HYBRID OPERATING ROOM. A room that meets the definition of an operating room and is also equipped to enable diagnostic imaging before, during, and after surgical procedures. Imaging equipment is permanently installed in the room and may include MRI, fixed singleplane and bi-plane tomographic imaging systems, and computed tomographic equipment.*

Note: *Use of portable imaging technology does not make an operating room a hybrid operating room."*

and

Section 1224.28.5: *"Hybrid operating room(s). Hybrid operating rooms shall comply with the requirements of Section 1224.15 [SURGICAL SERVICE SPACE/Operating Room] and comply with the requirements in this section."*

8. *The requirements in Title 24, Part 4, Section 319.1.2 for capacity of boilers to operate all systems during breakdowns are in excess of those in ASHRAE-170. In ASHRAE-170, this requirement is limited to critical spaces. ASHRAE allows the requirement to be waived in all climates where winter temperatures are >25 degrees (which would apply to much of California). The ISOR does not give a

reason for stipulating a more stringent requirement. It seems unlikely that much of California, where temperatures are milder than much of the country, would need a stricter regulation on heating.*

9. *The requirements in Title 24, Part 4, Section 407.1.1 for maintaining 25% air in unoccupied periods are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement. The national standard does not specify a minimum, which allows more turn-down. Modern VAV systems can be designed to turn down to 10% or less.*
10. *The requirements in Title 24, Part 4, Section 407.1.2 for all exhaust system fans at the discharge end are only found in ASHRAE-170 for specific rooms. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement. Ceiling mounted fans, while not ideal, are not a safety issue in all but a few cases.*
11. *The requirements in Title 24, Part 4, Section 407.2.2 for exhaust outlets 10 ft from grade are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement. The variance from the national standard doesn't likely add any value.*
12. *The requirements in Title 24, Part 4, Section 407.3.1 and 417.0 for balance by and according to AABC, NEBB, or TABB certified procedures are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement. This requirement add a significant regulatory burden to project delivery in California.*
13. *The requirements in Title 24, Part 4, Section 407.4.1.1 for low returns are more broadly applied than in ASHRAE-170 This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement. The variance from the national standard doesn't likely add any value.*
14. *The requirements in Title 24, Part 4, Section 407.4.1.3 for corridors are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement. The origin of this requirement is a topic of much storied debate. However, we know of no other state that requires it.*
15. *The requirements in Title 24, Part 4, Section 407.4.1.4 for spaces above ceilings and are only found in ASHRAE-170 for specific rooms (6.7.1). This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement. This is a cost-savings opportunity for California hospital builders already available in the rest of the country.*
16. *The requirements in Title 24, Part 4, Section 408.1.1 for filter gauge and alarm light, Section 408.1.3 for inspection of filters prior to operation, Section 408.1.6 for rigid, non-collapsing type filters in bank No. 2, Section 408.2.3 for agency approval of filters for areas not listed, and Section 408.2.4 for filters in through-the-wall units and heat pumps are not found in ASHRAE-170. These requirements are carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirements. California hospitals incur increased capital, operating, and energy costs associated with these filter sections.*
17. *The requirements in Title 24, Part 4, Section 413.2 for kitchens exhausted at ten air changes per hour, Section 413.1 for odorous rooms exhaust at ten times per hour , and Section 411.1 for air from dining areas are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent

requirement. These requirements are somewhat outdated and excessive, and do not take into account modern kitchen ventilation technology.*

18. *The requirements in Title 24, Part 4, Section 414.1 for labeling for exhaust systems, Section 414.1.1 for prohibition of rain caps, Section 414.1.2 for HEPA filters, and Section 414.2 for wall exhausts at all airborne isolation exhausts are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement. These requirements increase capital cost and cost of ongoing regulatory compliance.*
19. *The requirements in Title 24, Part 4, Section 415.1 for wall return/exhaust, Section 416.1 for audible alarm and remote annunciation, and Section 416.4 for acceptance testing of room alarm systems in protective environment rooms are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement. These requirements increase capital cost and cost of ongoing regulatory compliance.*
20. *The requirements in Title 24, Part 4, Section 418.1 for air changes in ethylene oxide sterilization areas are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
21. *The requirements in Title 24, Part 4, Section 418.2 for dedicated and labeled exhaust systems, Section 418.3 for ventilation for aeration units, Section 418.5 for gas line hand valves, and Section 418.5 for audible and visual alarm systems in ETO areas are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
22. *The requirements in Title 24, Part 4, Section Table 4-A for not less than 25 cfm differential for pressure are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
23. *The requirements in Title 24, Part 4, Section Table 4-A for pressurization of anterooms for isolation and PE rooms are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*
24. The requirements in Title 24, Part 4, Section 320.1.3 for cooling systems based on 0.4% weather data are not found in ASHRAE-170. The ISOR does not give a reason for stipulating a more stringent requirement. This requirement is similar to a requirement in a previous version of the CA code, but the reference has been changed.

OSHPD Response to Comment #5, Item 24:

ASHRAE-170 does not address ambient design conditions. This change reflects input from prior comments received from industry and is being proposed to ensure that CMC guidance stays current with industry practice. The suggested revisions clarify the requirements for the owner, design engineer, contractor, commissioning team and the enforcing agency at what Climatic Design Conditions the HVAC system should be designed, constructed, commissioned and be expected to maintain the room conditions. The prior commenter posited, “suggested revisions could also avoid potential owner/design/construction/enforcing agency disputes and associated costly meetings, costly change orders, costly construction delay and litigation cost.” This does not constitute a more stringent requirement.

Additionally, as noted in the “forward” of the specified referenced printing of ASHRAE 170 - 2013, through Addendum ae, as published with “Guidelines for Design and Construction of Hospitals and Outpatient Facilities,” 2014 edition, published by the Facility Guidelines Institute (FGI):

“ANSI/ASHRAE/ASHE Standard 170, Ventilation of Health Care Facilities, is one of a family of documents that offers guidance, regulation, and mandates to designers of health care facilities. It is first and foremost a mandatory minimum requirement and, as such, may not always offer the state-of-the-art best practice for health care ventilation design. Other publications, such as the ASHRAE HVAC Design Manual for Hospitals and Clinics, 2nd Edition, complement the standard, providing additional depth and detail for the designer. In addition, the health care designer must refer to any design requirements from the appropriate jurisdiction that has authority. Many jurisdictions use or refer to Guidelines for Design and Construction of Health Care Facilities, published by the Facility Guidelines Institute (FGI). Where practical, the committee was cognizant of these other documents in the development of this standard.”

Ventilation design for health care spaces is a combination of tasks that leads to a set of documents used in construction. One such task requires medical planners to develop departmental programs of spaces. These programs include space names that suggest the use for which the space is intended, and health care ventilation designers depend upon these names to determine the ventilation parameters for their designs. This standard provides these ventilation parameters.

Ventilation systems and designs for health care facilities are intended to provide a comfortable environment for patients, health care workers, and visitors while diluting, capturing and exhausting airborne contaminants including potentially infectious airborne agents such as M. tuberculosis. Without high-quality ventilation in health care facilities, patients, health care workers, and visitors can become exposed to contaminants through normal respiration of particles in the air. Poorly ventilated health care facilities may increase the concentration of airborne contaminants including fungi or mold, which may cause allergic responses in even healthy workers and occupants. Some patients are profoundly immunosuppressed for prolonged periods and, if exposed, are highly susceptible to infection from fungi. For such patients, fungal spores become invasive pathogens and lead to high rates of severe morbidity and mortality. For all these reasons, and considering the various occupancies and patient populations, great care must be taken in the design of health care ventilation systems.”

25. *The requirements in Title 24, Part 4, are not found in ASHRAE-170. This requirement is carried forward from a previous version of the CA code. However, the ISOR does not give a reason for stipulating a more stringent requirement.*

OSHPD Response to Comment #5 items marked with an asterisk(*):

* OSHPD does not adopt and has not proposed to adopt ASHRAE 170 ventilation standards for health facilities in its entirety. OSHPD’s amendments to Table 4-A add, remove or change specific room names for alignment with the existing Title 22, California Code of Regulations; Title 24, California Building Code terminology; national standards of FGI Guidelines; and ASHRAE 170. For comments annotated with an asterisk (*) there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

Additionally, as noted in the “forward” of the specified referenced printing of ASHRAE 170 - 2013, through Addendum ae, as published with “Guidelines for Design and Construction of Hospitals and Outpatient Facilities,” 2014 edition, published by the Facility Guidelines Institute (FGI):

“ANSI/ASHRAE/ASHE Standard 170, Ventilation of Health Care Facilities, is one of a family of documents that offers guidance, regulation, and mandates to designers of health care facilities. It is first and foremost a mandatory minimum requirement and, as such, may not always offer the

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Ventilation design for health care spaces is a combination of tasks that leads to a set of documents used in construction. One such task requires medical planners to develop departmental programs of spaces. These programs include space names that suggest the use for which the space is intended, and health care ventilation designers depend upon these names to determine the ventilation parameters for their designs. This standard provides these ventilation parameters.

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COMMENT #6

Commenter: William Scrantom - representing Arup

Comment (multiple items):

1. *Title 24, Part 4, Section 320.1.1 requires all humidifiers to use dry steam and prohibits adiabatic humidifiers. This is more restrictive than ASHRAE-170 without rationale. The recent ASHRAE addendum to allow adiabatic humidifiers is not addressed.*
2. Title 24, Part 4, Section 320.1.2 & 3 requires heating and cooling systems to be based on 0.4% weather data. This in excess of ASHRAE-170 without rationale.

OSHPD Response to Comment #6, Item 2:

ASHRAE-170 does not address ambient design conditions. This change reflects input from prior comments received from industry and is being proposed to ensure that CMC guidance stays current with industry practice. The suggested revisions clarify the requirements for the owner, design engineer, contractor, commissioning team and the enforcing agency at what Climatic Design Conditions the HVAC system should be designed, constructed, commissioned and be expected to maintain the room conditions. The prior commenter posited, “suggested revisions could also avoid potential owner/design/construction/enforcing agency disputes and associated costly meetings, costly change orders, costly construction delay and litigation cost.” This does not constitute a more stringent requirement.

Additionally, as noted in the “forward” of the specified referenced printing of ASHRAE 170 - 2013, through Addendum ae, as published with “Guidelines for Design and Construction of Hospitals and Outpatient Facilities,” 2014 edition, published by the Facility Guidelines Institute (FGI):

“ANSI/ASHRAE/ASHE Standard 170, Ventilation of Health Care Facilities, is one of a family of documents that offers guidance, regulation, and mandates to designers of health care facilities. It is first and foremost a mandatory minimum requirement and, as such, may not always offer the state-of-the-art best practice for health care ventilation design. Other publications, such as the ASHRAE HVAC Design Manual for Hospitals and Clinics, 2nd Edition, complement the standard, providing additional depth and detail for the designer. In addition, the health care designer must refer to any design requirements from the appropriate jurisdiction that has authority. Many jurisdictions use or refer to Guidelines for Design and Construction of Health Care Facilities, published by the Facility Guidelines Institute (FGI). Where practical, the committee was cognizant of these other documents in the development of this standard.

Ventilation design for health care spaces is a combination of tasks that leads to a set of documents used in construction. One such task requires medical planners to develop departmental programs of spaces. These programs include space names that suggest the use for which the space is intended, and health care ventilation designers depend upon these names to determine the ventilation parameters for their designs. This standard provides these ventilation parameters.

Ventilation systems and designs for health care facilities are intended to provide a comfortable environment for patients, health care workers, and visitors while diluting, capturing and exhausting airborne contaminants including potentially infectious airborne agents such as M. tuberculosis. Without high-quality ventilation in health care facilities, patients, health care workers, and visitors can become exposed to contaminants through normal respiration of particles in the air. Poorly ventilated health care facilities may increase the concentration of airborne contaminants including fungi or mold, which may cause allergic responses in even healthy workers and occupants. Some patients are profoundly immunosuppressed for prolonged periods and, if exposed, are highly susceptible to infection from fungi. For such patients, fungal spores become invasive pathogens and lead to high rates of severe morbidity and mortality. For all these reasons, and considering the various occupancies and patient populations, great care must be taken in the design of health care ventilation systems.”

3. *Title 24, Part 4, Section 324.1.2 requires capacity of boilers to operate all systems during breakdowns without opportunity for load shedding non-critical spaces which is excess of the requirements in ASHRAE-170 without rationale.*
4. *Title 24, Part 4, Section 407. 1. 1 requires maintaining 25% air volume during unoccupied periods which is in excess of ASHRA E-170 without rationale.*
5. *Title 24, Part 4, Section 407.4.1.3 establishes requirements for corridors not identified in ASHRAE-170 without rationale.*
6. *Title 24, Part 4, Section 407.5 establishes where variable-air-volume can and cannot be applied as well as prescriptive requirements of how it must be designed, none of which are found in ASHRAE-170 and without rationale.*
7. *Title 24, Part 4, Section 408.2.4 requires filters in through-the-wall units, fan coil units, heat pumps and inferred as applicable to active chilled beams. This is in excess of ASHRAE-170 without rationale. ASHRAE 170 Addendum h specifically addresses condensation as the driver for such filtration requirement and this is not addressed.*
8. *Title 24, Part 4, Section 413.2 requires kitchens be exhausted at 10 air changes per hour which is not required in ASHRAE-170. No rationale is provided as to why more stringent requirements are being applied.*

9. *Title 24, Part 4, Section Table 4-A requires Dining rooms, Multi-purpose rooms, and numerous other non-clinical spaces to have specific (elevated) minimum air changes not established in ASHRAE-170 and without rationale.*
10. *Title 24, Part 4, Section Table 4-A establishes space pressure and minimum air changes requirements for IV Prep Rooms which are not found in ASHRAE-170. Furthermore there is no mention of USP-797/800 requirements.*
11. *Title 24, Part 4, Section Table 4-B requires multiple filter banks for numerous space types when this is not established in ASHRAE-170. And again no rationale is provided.*

OSHPD Response to Comment #6 items marked with an asterisk(*):

* OSHPD does not adopt and has not proposed to adopt ASHRAE 170 ventilation standards for health facilities in its entirety. OSHPD's amendments to Table 4-A add, remove or change specific room names for alignment with the existing Title 22, California Code of Regulations; Title 24, California Building Code terminology; national standards of FGI Guidelines; and ASHRAE 170. For comments annotated with an asterisk (*) there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

Additionally, as noted in the "forward" of the specified referenced printing of ASHRAE 170 - 2013, through Addendum ae, as published with "Guidelines for Design and Construction of Hospitals and Outpatient Facilities," 2014 edition, published by the Facility Guidelines Institute (FGI):

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Ventilation design for health care spaces is a combination of tasks that leads to a set of documents used in construction. One such task requires medical planners to develop departmental programs of spaces. These programs include space names that suggest the use for which the space is intended, and health care ventilation designers depend upon these names to determine the ventilation parameters for their designs. This standard provides these ventilation parameters.

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COMMENT #7

Commenter: David Thomsen, P.E. - representing Providence St. Joseph Health

Comment:

*Providence does not support a partial adoption of ANSI/ASHE/ASHRAE Standard 170 as described in the Notice of Proposed Action. Of particular concern is the new administrative burden for CBSC to manage the "continuous maintenance" under which ANSI/ASHE/ASHRAE Standard 170 exists, resulting in further confusion for the designer and operators.

However, we encourage the commission to adopt ANSI/ASHE/ASHRAE Standard 170 in its entirety, as it would offer cost, energy, flexibility, and operational benefits to California hospitals. It will also minimize confusion for the designers and operators.

For some years, California's requirements for HVAC in hospitals have been substantially more restrictive than national standards. Despite California's standing at the forefront of energy efficiency, designers and operators are not able to adopt well established energy saving principles in California's hospitals without significant administrative burdens, if at all. As such, California hospitals are not always able to adopt national best practices and costs for both construction and operation rise. Further, Health and Safety Code Section 18930(a)(7)(a) requires the use of a national published standard, unless it " ... does not adequately address the goals of the state agency". *Given* the vast majority of states have adopted FGI Guidelines, which incorporates ANSI/ASHE/ASHRAE Standard 170, a partial adoption would be in conflict with that provision of the code.

Therefore, we urge California to abandon the Proposed Action and instead *move* forward with adopting ANSI/ASHE/ASHRAE Standard 170 in its entirety.*

OSHPD Response to Comment #7:

* OSHPD does not adopt and has not proposed to adopt ASHRAE 170 ventilation standards for health facilities in its entirety. OSHPD's amendments to Table 4-A add, remove or change specific room names for alignment with the existing Title 22, California Code of Regulations; Title 24, California Building Code terminology; national standards of FGI Guidelines; and ASHRAE 170. For comments annotated with an asterisk (*) there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

Additionally, as noted in the "forward" of the specified referenced printing of ASHRAE 170 - 2013, through Addendum ae, as published with "Guidelines for Design and Construction of Hospitals and Outpatient Facilities," 2014 edition, published by the Facility Guidelines Institute (FGI):

"ANSI/ASHRAE/ASHE Standard 170, Ventilation of Health Care Facilities, is one of a family of documents that offers guidance, regulation, and mandates to designers of health care facilities. It is first and foremost a mandatory minimum requirement and, as such, may not always offer the state-of-the-art best practice for health care ventilation design. Other publications, such as the ASHRAE HVAC Design Manual for Hospitals and Clinics, 2nd Edition, complement the standard, providing additional depth and detail for the designer. In addition, the health care designer must refer to any design requirements from the appropriate jurisdiction that has authority. Many jurisdictions use or refer to Guidelines for Design and Construction of Health Care Facilities, published by the Facility Guidelines Institute (FGI). Where practical, the committee was cognizant of these other documents in the development of this standard.

Ventilation design for health care spaces is a combination of tasks that leads to a set of documents used in construction. One such task requires medical planners to develop departmental programs of spaces. These programs include space names that suggest the use for which the space is intended, and health care ventilation designers depend upon these names to determine the ventilation parameters for their designs. This standard provides these ventilation parameters.

Ventilation systems and designs for health care facilities are intended to provide a comfortable environment for patients, health care workers, and visitors while diluting, capturing and exhausting airborne contaminants including potentially infectious airborne agents such as M. tuberculosis. Without high-quality ventilation in health care facilities, patients, health care workers, and visitors can become exposed to contaminants through normal respiration of particles in the air. Poorly ventilated health care facilities may increase the concentration of airborne contaminants including fungi or mold, which may cause allergic responses in even healthy workers and occupants. Some patients are profoundly immunosuppressed for prolonged periods and, if exposed, are highly susceptible to infection from fungi. For such patients, fungal spores become invasive pathogens and lead to high rates of severe morbidity and mortality. For all these reasons, and considering the various occupancies and patient populations, great care must be taken in the design of health care ventilation systems.”

COMMENT #8

Commenter: Walt Vernon - representing Mazetti

Comment:

In my view, and that of my engineers, the requirements of ASHRAE 170 are a whole, and not a collection of independent, discrete elements. And, unlike seismic or other considerations, there is no particular reason that California healthcare has different risks than healthcare in other parts of the country or the world. Therefore, it makes no sense to take some requirements from one set, and a different set of requirements from another set. It would be preferable to adopt ASHRAE 170 in toto, and without technical modification. Or, I suppose, to adopt none of it. We recommend that OSHPD and the state of California adopt ASHRAE 170 in its entirety.

OSHPD Response to Comment #8:

OSHPD continues to evaluate the option of a total adoption of ASHRAE 170. However, as noted, we are not adopting it in total for this intervening code cycle. Rather than total adoption in this cycle, we are proposing an integration of existing Part 4 language with that of ASHRAE 170. A facet of this approach is the reducing California amendments to existing California code. Adopting ASHRAE 170 and repealing the current amendments entirely would require more research and supporting documentation than we have accumulated thus far. It should be noted that we have referenced the ASHRAE 170 - 2013, through Addendum ae, as published with “Guidelines for Design and Construction of Hospitals and Outpatient Facilities,” 2014 edition (published by the Facility Guidelines Institute) for adoption, versus adoption of the continuous maintenance standard. This in part allows for progressive changes to the ASHRAE 170 document via addenda to be assessed for California application through the California Building Standards code adoption process.

COMMENT #9

Commenter: Matthew Ebejer - representing Capital Engineering

Comment:

Reviewing the proposed revisions to the CMC it appears that the revisions align mostly with the ASHRAE standard where those requirements are more stringent than the current CMC. Seems that where ASHRAE 170 standard is less stringent the previous CMC remains unchanged. The more stringent requirements of the CMC are not founded in engineering practice and evidence based design.

Through time, the California Mechanical Code, Table 4A has evolved so that the room names match those indicated in the California Building Code. This leads to a simple correlation between room names and ventilation requirements. ASHRAE 170 standard however provides ventilation rates based on a general function and not a specific room name. ASHRAE 170 standard aligns with FGI and NFPA. I feel that CBSC needs to review this, as it could result in confusion with plan reviewers and field inspectors and result in added costs and project delays.

The CMC however does offer advantages over ASHRAE 170 that should be considered. For many years now, the CMC Table 4A has allowed for a reduction of total air change rates for systems providing 100% outdoor air. ASHRAE 170 does not allow the reduction in total air change rate and in fact it has been proposed and ASHRAE has refused to accept this modification. This reduction in total ventilation rate has at times provided substantial energy savings and saved on construction costs as it eliminates a ducted system. Though the current proposal indicates this being maintained, the committee should consider maintaining this throughout the following editions.

There are many additional areas where CMC and ASHRAE 170 standard differ. I strongly encourage the CBSC to further examine the differences between CMC and ASHRAE 170, so that CMC may align more closely with the nationally recognized ASHRAE standard. Moving toward the recognized national standards will also help reign in the out of control construction costs associated with CMC requirements.

OSHPD Response to Comment #9:

OSHPD continues to evaluate the option of a total adoption of ASHRAE 170. However, as noted, we are not adopting it in total for this intervening code cycle. Rather than total adoption in this cycle, we are proposing an integration of existing Part 4 language with that of ASHRAE 170. A facet of this approach is the reduction California amendments to the existing mechanical code. Adopting ASHRAE 170 and repealing the current amendments entirely would require more research and supporting documentation than we have accumulated thus far. It should be noted that we have referenced the ASHRAE 170 - 2013, through Addendum ae, as published with "Guidelines for Design and Construction of Hospitals and Outpatient Facilities," 2014 edition (published by the Facility Guidelines Institute) for adoption, versus adoption of the continuous maintenance standard. This in part allows for progressive changes to the ASHRAE 170 document via addenda to be assessed for California application through the California Building Standards code adoption process.

COMMENT #10

Commenter: Richard Lyons - representing University of California San Diego

Comment:

Add the following to 407.5 Variable Air Volume:

*407.5.1.4 Variable air volume boxes for return or exhaust air shall not be required for all nonsensitive area designations listed in Table 4-A having an "NR" (no requirement for continuous directional control) rated air balance relationship to adjacent areas.**

OSHPD Response to Comment #10 item marked with an asterisk(*):

For comments annotated with an asterisk() there are no new amendments proposed in this rulemaking; therefore the comments are considered to be outside of this rulemaking process.

COMMENT #11

Commenter: Shlomo Rosenfeld – no affiliation indicated

Comment (multiple items):

In the spirit of Note # 6, the following suggestions to revise CMC Table 4-A attempt to clarify the proposed building standard in such a way that it is not unnecessarily ambiguous or vague. See the complete Table 4-A and added Note 'aa' are in part 2 of this attachment. Summary and explanations are below:

1. Suggestion for consistent requirements on Column Titled 'Minimum Total ach if 100% O.A.': Where Column 'Minimum Outdoor ach' specify NR, in some cases Column Titled 'Minimum Total ach if 100% O.A.' specify NR and in some cases a number of ach. To be consistent, this suggestion recommends to use NR in Column Titled 'Minimum Total ach if 100% O.A.' for all cases where Column 'Minimum Outdoor ach' specifies NR.

2. Suggestion to add note 'aa' to clarify the NR requirements in Column Titled '*Minimum Total ach if 100% O.A.*': Where Column Titled '*Minimum Total ach if 100% O.A.*' specifies NR requirement, it refers to the outdoor ach requirements. However, the total ach requirement for the space intended to be the same as specified in column 'Minimum Total ach'. This note clarifies the current ambiguous situation in Table 4-A.
3. Suggestion to specify 2 ach in column 'Minimum Outdoor ach' for Nurse Station in lieu of the NR requirement: A Nurse Station is an occupied space of work. The intent of CMC Chapter 4 is to specify minimum outdoor air for occupied spaces. For example, CMC Table 4-A specifies 2 ach in column 'Minimum Outdoor ach' for Administration space. Nurse Station should have same 2 ach specified in column 'Minimum Outdoor ach' for Administration space.
4. Suggestion for consistent requirements for Protective environment room in Columns Titled 'Minimum Total ach if 100% O.A.' and 'Minimum Total ach': For Protective environment room column 'Minimum Total ach' specifies 12 ach and column 'Minimum Total ach if 100% O.A.' specifies 15 ach. There is no reason to require more ach when the HVAC system provides 100% O.A.*
5. Suggestions for few typos corrections.

OSHPD Response to Comment #11:

In the new integrated table 4-A, Minimum Outdoor ach appears as the second column in the table. Relying on model code, ASHRAE 170, the required minimum outdoor ach is stipulated as the same whether or not the system is utilizing 100% outside air. Suggested changes 1 (specify NR) and 2 (add note 'aa') result is the same requirement as a straightforward application of the integrated Table 4-A as presented in the rulemaking. As a result, the listing of an additional footnote to the current list of 26 is not the preferred option.

The table entry "*Nurses station*", in suggested change 3, is unnecessary. Proposal of this specific entry is withdrawn.

In regard to suggested change 4, as noted in the Initial Statement of Reasons in reference to Section 402.1 portions of ASHRAE 170 are not adopted because it was found that the requirements are better met [addressed] in Title 24, Part 4, California Mechanical Code with existing amendments which have been brought forward and integrated into the ASHRAE 170 format. ASHRAE 170 does not allow for a reduction of total air changes per hour if a 100% outside air system is utilized. Repeal of this longstanding California amendment without further study and the associated impacts to California health facilities is premature. The divergence in this instance requires further study in order to determine either that the minimum ASHRAE is too low or that the previously adopted total for 100% O. A. systems is too high.

COMMENT #12

Commenter: Shlomo Rosenfeld – no affiliation indicated

Comment:

The heading over the third and fourth columns existing in the current CMC Table 4-A was omitted and is not shown as deleted.

Insert the heading over the third and fourth columns and revise 'O.S.A.' to 'O.A.' as shown.

OSHPD Response to Comment #12:

In the new integrated table 4-A, Minimum Outdoor ach appears as the second column in the table. Relying on model code, ASHRAE 170, the required minimum outdoor ach is stipulated as the same whether or not the system is utilizing 100% outside air.

COMMENT #13

Commenter: Cheri Hummel – representing California Hospital Association (CHA)

Comment regarding Psychiatric Hospital Services code changes for Title 24, Parts 1, 2, 3, 4 & 5:

Ms. Cheri Hummel, representing the CHA, writes in support of OSHPD's proposed building standards (i.e. for the California Administrative Code, California Building Code, California Electrical Code, California Mechanical Code and California Plumbing Code) applicable to psychiatric hospital services space. The commenter maintains that the proposed standards are in conformance with the national standards and the Facilities Guidelines Institute and if adopted, will provide safe and protective environments for patients and staff and result in reduced healthcare costs. CHA recommends that the California Building Standards Commission adopt these standards.

OSHPD Response to Comment #13:

OSHPD appreciates the expressed interest and support of the CHA for adoption of OSHPD's proposed code changes to Title 24, Parts 1, 2, 3, 4 & 5 as they apply to psychiatric hospital services space.

DETERMINATION OF ALTERNATIVES CONSIDERED AND EFFECT ON PRIVATE PERSONS

OSHPD has determined that no alternative would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective and less burdensome to affected private persons than the adopted regulation. The proposed regulations are technical modifications that will provide clarification and consistency within the code.

REJECTED PROPOSED ALTERNATIVE THAT WOULD LESSEN THE ADVERSE ECONOMIC IMPACT ON SMALL BUSINESSES

OSHPD has determined that the proposed regulations will not have an adverse economic impact on small businesses. The proposed regulations are editorial and minor technical modifications that will provide clarification and consistency within the code.