

## CHAPTER 5

# EXHAUST SYSTEMS

### User note:

**About this chapter:** Chapter 5 addresses exhaust systems for, among others, kitchens, laboratories, processes, garages, hazardous systems, clothes dryers and smoke control systems. Many provisions are linked to the International Fire Code®. Exhaust systems mitigate health and fire hazards by removing and diluting contaminants in buildings. Exhaust system discharge location is also addressed as an important concern.

### SECTION 501 GENERAL

**501.1 Scope.** This chapter shall govern the design, construction and installation of mechanical exhaust systems, including exhaust systems serving clothes dryers and cooking *appliances*; hazardous exhaust systems; dust, stock and refuse conveyor systems; subslab soil exhaust systems; smoke control systems; energy recovery ventilation systems and other systems specified in Section 502.

**501.2 Independent system required.** Single or combined mechanical exhaust systems for environmental air shall be independent of all other exhaust systems. Dryer, domestic kitchen and hazardous exhaust shall be independent of all other systems. Type I exhaust systems shall be independent of all other exhaust systems except as provided in Section 506.3.5. Single or combined Type II exhaust systems for food-processing operations shall be independent of all other exhaust systems. Commercial kitchen exhaust systems shall be constructed in accordance with Sections 506 through 509.

**[S] 501.3 Exhaust discharge.** The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a public nuisance and not less than the distances specified in Section 501.3.1. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic or crawl space, or be directed onto walkways.

#### Exceptions:

1. Whole-house ventilation-type attic fans shall be permitted to discharge into the attic space of *dwelling units* having private attics.
2. Commercial cooking recirculating systems are not required to discharge outdoors if the kitchen area has an exhaust system that is vented to the outside. Ventilation shall be provided in accordance with Chapter 4.
3. Where installed in accordance with the manufacturer's instructions and where mechanical or *natural ventilation* is otherwise provided in accordance with Chapter 4, *listed* and *labeled* domestic ductless range hoods shall not be required to discharge to the outdoors.

**[W][S] 501.3.1 Location of exhaust outlets.** The termination point of exhaust outlets and ducts discharging to the outdoors shall be located with the following minimum distances:

1. For ducts conveying explosive or flammable vapors, fumes or dusts: 30 feet (9144 mm) from property lines; 10 feet (3048 mm) from operable openings into ~~((buildings))~~ the building; 6 feet (1829 mm) from exterior walls and roofs; 30 feet (9144 mm) from combustible walls and operable openings into ~~((buildings that))~~ the building which are in the direction of the exhaust discharge; 10 feet (3048 mm) above adjoining grade.

**Interpretation:** Item 1 includes carpentry shop exhaust, industrial chemical lab, paint shop and sandblasting exhaust systems. For *clearances* and encroachments in the public right-of-way, see Section 304.13.

2. For other product-conveying outlets: 10 feet (3048 mm) from the property lines; 3 feet (914 mm) from exterior walls and roofs; 10 feet (3048 mm) from operable openings into buildings; 10 feet (3048 mm) above adjoining grade.

**Interpretation:** Item 2 includes central vacuum systems, dry cleaner, photo lab, school chemical lab, nail salon, dryer exhaust over 250° *source capture system* exhaust and *combustion engine* exhaust.

- [W]** 3. For all *environmental air* exhaust other than enclosed parking garage and transformer vault exhaust: 3 feet (914 mm) from property lines, ~~((3))~~ 3 feet (914 mm) from operable openings into buildings for all *occupancies* other than Group U; and 10 feet (3048 mm) from mechanical air intakes. Such exhaust shall not be considered hazardous or

noxious. Separation is not required between intake air openings and ~~((living space exhaust))~~ environmental air other than kitchen exhaust openings of ((an individual)) the same dwelling unit or sleeping unit where an approved factory-built intake/exhaust combination termination fitting is used to separate the air streams in accordance with the manufacturer's instructions.

**Interpretation:** For the purposes of this section, "lot line" includes any property line separating one lot from another lot, but does not include any property line separating a lot from a public street or alley right-of-way.

**Exceptions:**

1. The separation between an air intake and exhaust outlet on a single listed package HVAC unit.
2. Exhaust from environmental air systems other than garages may be discharged into an open parking garage.
3. Except for Group I occupancies, where ventilation system design circumstances require building HVAC air to be relieved, such as during economizer operation, such air may be relieved into an open or enclosed parking garage within the same building.
4. Exhaust outlets serving structures in flood hazard areas shall be installed at or above the elevation required by Section 1612 of the *International Building Code* for utilities and attendant equipment.
5. For enclosed parking garage, loading dock, and motor vehicle repair garage exhaust system outlets: Exhaust ventilation openings and duct terminations shall be located not less than 10 feet (3048 mm) from property lines which separate one lot from another; 10 feet from operable openings into buildings and mechanical air intakes; and 3 feet (914 mm) horizontally from, 10 feet above, or 10 feet below adjoining finished walking surfaces other than alleys. Exhaust outlets extending to the roof shall extend 3 feet (914 mm) above the roof surface.
- [W][S] 6. For transformer vault exhaust system outlets: Exhaust ventilation openings and duct terminations, subject to the requirements of *Seattle Electrical Code* Section 450.45, shall be located not less than 10 feet (3048 mm) from:
  - 6.1. Fire escapes;
  - 6.2. Required means of egress at the exterior of the building;
  - 6.3. Elements of the exit discharge;
  - 6.4. Exterior combustible materials;
  - 6.5. Openings that are not protected in accordance with IBC Section 705.8;
  - 6.6. Property lines which separate one lot from another other than a public way;
  - 6.7. Operable openings and mechanical intakes; and
  - 6.8. Above or below any walking surface.

Exhaust outlets shall be located on the exterior of the building.

**Note:** See Seattle City Light Standard 751 Section 9 Ventilation and Seattle Building Code Section 430 for additional requirements.

- [W] 7. For elevator machinery rooms in enclosed or open parking garages: Exhaust outlets may discharge air directly into the parking garage.
- ((5)) 8. For specific systems, see the following sections:
- ((5.1)) 8.1. Clothes dryer exhaust, Section 504.4.
  - ((5.2)) 8.2. Kitchen hoods and other kitchen exhaust equipment, Sections 506.3.13, 506.4 and 506.5.((5.3)) 8.3. Dust, stock and refuse conveying systems, Section 511.2.
  - ((5.4)) 8.4. Subslab soil exhaust systems, Section 512.4.
  - ((5.5)) 8.5. Smoke control systems, Section 513.10.3.
  - ((5.6)) 8.6. Refrigerant discharge, Section 1105.7.
  - ((5.7)) 8.7. Machinery room discharge, Section 1105.6.1.
  - 8.8 Natural ventilation and mechanical exhaust discharge for A2L and B2L refrigerant piping shafts, Sections 1105.7 and 1109.4.2.
  - 8.9. Mechanical exhaust discharge for A2, B2, A3, and B3 refrigerant piping shafts, Sections 1105.7 and 1109.4.2.

**Note:** Seattle Land Use Code (Municipal Code Title 23) requires that the venting of odors, vapors, smoke, cinders, dust, gas and fumes shall be at least 10 feet (3048 mm) above finished sidewalk grade, and directed away as much as possible from residential uses within 50 feet (15 240 mm) of the vent in some locations.

**501.3.2 Exhaust opening protection.** Exhaust openings that terminate outdoors shall be protected with corrosion-resistant screens, louvers or grilles. Openings in screens, louvers and grilles shall be sized not less than 1/4 inch (6.4 mm) and not larger than 1/2 inch (12.7 mm). Openings shall be protected against local weather conditions. Louvers that protect exhaust