Manifolding Exhaust Systems

General fume hood exhausts may be manifolded together. Perchloric/hot acid and other hoods exhausting highly reactive, incompatible or highly toxic materials shall not be manifolded; they shall be exhausted directly to the outside. Hoods requiring HEPA filtration or other special exhaust cleaning shall have a dedicated exhaust system. Radioisotope hoods may be manifolded with nonradioisotope hoods at the discretion of the Radiation Safety Officer.

Exhaust streams that may contain flammable or explosive vapors at concentrations above the Lower Explosion Limit as well as those that might form explosive compounds (i.e., perchloric acid hood exhaust) shall not be connected to a centralized exhaust system. If any exhaust stream may contain greater than 20% of the lower flammable limit of a flammable/combustible vapor or dust, sprinklers may be required.

8CCR 5154.1
ANSI Z9.5 5.3.2.3

Unless all individual exhausts connected to the centralized exhaust system can be completely stopped without creating a hazardous situation, provision shall be made for continuous maintenance of adequate negative static pressure (suction) in all parts of the system.

This requirement could be satisfied by one or both of the following provisions:

- Emergency backup power should be provided to all exhaust fans and the associated control system.

ANSI Z9.5 5.3.2.4

For systems with multiple hoods and exhaust fans, adequate redundancy shall be built into the design. This shall be done by either providing 75% capacity with the largest exhaust fan out of service; or providing a redundant fan equal to the capacity of the largest unit.
Neither fire dampers nor fire sprinklers shall be installed in chemical hood exhaust system manifolds.

Studies of actual exhaust systems have demonstrated that the spray cone produced by sprinkler heads can actually act as a damper and reduce or prevent airflow in the duct past the sprinkler head. Like a fire damper, this may produce a lack of flow at one or more laboratory chemical hoods at the moment when it is needed most.

ANSI Z9.5 5.3.2.9 and 5.3.2.10