1. For the conditions of the example calculations in this paper (typical of a large fire in a multi story building), incipient incapacitation of people trapped above the neutral plane due to CO from a fire below the neutral plane was calculated to occur after an exposure of about a 30 minutes to 2 hours.

   Time to incipient incapacitation depends on the concentration of CO in building shafts, temperatures of gases in building shafts, outside temperature, and leakage areas throughout the building. The theoretical hazard analysis presented in this paper can be used in conjunction with an engineering evaluation of the evacuation capacity of a building to help determine if a smoke control system would be of value for a particular building.
2. For the fires of this experimental series, the zoned smoke control system effectively maintained positive pressurization around the fire floor.
3. The apporach to minimum pressure differences in the ASHRAE smoke control manual and NFPA 92 A is based on the tacit assumption of a constant mass flow rate into the zone where the fire is located. To evaluate this assumption, a model was developed of mass flow in the smoke zone. Agreement between experimental results and calculations based on the model were good. The following two items are based on this model.
4. Expansion of gases in the smoke zone can reduce the pressure differences at the boundaries of the smoke zone. As a fire develops, gases on the fire floor are heated and expand. The increased volume of gases due to expansion flowed out of the fire floor with the rest of the gases exhausted by the fan.

   Accordingly, the mass flow rate into the fire floor is decreased by the same amount. The decrease in flow into the fire floor is accompanied by a decrease in pressure difference across the boundaries of the fire floor. Equation (17) can be used to design systems so that the pressurization decrease due to expansion is small. An alternative approach is to allow some smoke leakage from the smoke zone for a short period of time.
5. High-temperature gases going through a smoke control exhaust fan can result in a significant loss of system pressurization. Equation (18) can be used to evaluate this effect.
6. Delays before smoke control activation should be of short duration for unsprinklered fires. In test 7, smoke leakage during the four-minute delay resulted in relatively high levels of CO and CO and CO^2 many floors away from the fire.
7. With few exceptions, smoke bombs should not be used for acceptance tests. These exceptions include testing for smoke feedback into supply air and location leakage paths in construction. Chemical smoke is so different from smoke due to a flaming fire that persons observing a smoke bomb test can develop a false sense of security.
8. The hydrostatic equation (equation (1)) is appropriate for defining pressures for zoned smoke control applications and probably most fire modeling applications.
9. Control wiring needs to be protected from fire damage. During test 12, the smoke control fans stopped due to fire damage to the control wiring. Obviously, this caution can be extended to the total control system, the electrical power sypply system, and any other items that are needed for the smoke control system to operate.