Urban mass fires are relatively infrequent events which have historically resulted in immense losses of life and property. Mass fires often have occurred as the result of natural disasters or warfare. The development of nuclear weapons has increased the likelihood of urban mass fires due to the high level of thermal radiation generated by a nuclear detonation.

There are a large number of wind-fire interactions which are important in the initiation, development, and spread of these large fires. Dramatic examples include the extremely high winds and fire whirls which are often generated by such fires. Other effects such as wind-aided fire spread, fire brand spotting, and the effects of the atmospheric turbulent boundary layer can contribute significantly to the growth and behavior of mass fires.

In this review characteristics of the two types of mass fire - fire storm and conflagration - are discussed. Brief histories of urban mass fire and research efforts on this topic are given. Models which have been developed to predict the initation, development, spread, and behavior of mass fires following the detonation of a nuclear device in an urban environment are summarized.

The current understanding of the fire process which are belived to control mass fire behavior are reviewed. Particular emphasis is placed on the wind-fire interactions mentioned in the last paragraph. This discussion forms the basis for an analysis of the effectiveness of existing models for mass fire growth and behavior

It is concluded that the understanding of the important physical processes is incomplete and that models for mass fire development and behavior are likely to be subject to large and uncharacterized errors. The possibility om improving our understanding of the underlying physical and chemical processes utilizing reduced-scale experiments is assessed.