



## Hazard Reduction & Recovery Center

1989 - 2019

#HRRC30for30

“Diffusion of Emergency Warning: Comparing Empirical & Simulation Results.”

Rogers & Sorensen. 1991.

Under the Emergency Planning and Community Right to Know Act, communities are required to make emergency response plans for fixed-site facilities that store hazardous chemicals. A critical part of that planning is the method of warning the public in the event of having to do so. The success level of a warning system is very important as officials consider emergency warning systems to alert the public to potential danger in areas surrounding hazardous facilities. These systems must be effective for desired outcomes.

### Findings

The purpose of this paper is to present the results of an analysis on the timing of warning system information distribution, including the alert of the public and delivery of a warning message. Warning systems that include those based on telephone and radio-alert are least dependent on the contagion process. The paper finds that siren-based systems are highly dependent on contagion because people are not likely to understand what's expected of them and media-based systems are moderately dependent on contagion. The combination of either telephone ring-down or tone-alert radio warning systems with sirens provides the most effective warning system when there's a fast beginning of the hazard (e.g., 6 meters/second), close proximity, or both. The paper finds that telephone ring-down systems also provide similar coverage at approximately 30-minutes of public warning time.

### Implications

The diffusion of emergency warnings is similar to the diffusion of other types of information or communication, it just occurs over a shorter time period. Each warning system provides different degrees of information about the proper action to protect oneself from harm, or to reduce the potential for harm. Single technology systems, for example, has adequate warning effectiveness when available warning time extends up to an hour. It's because of this that the broadcast represents the dependence of each system on alerting and contagion. Some citizens don't understand the meaning of warning signals regardless of how successful they are, so all emergency warning systems depend on the contagion process.