

**NISTIR 6242**

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**ANNUAL CONFERENCE ON FIRE RESEARCH**  
**Book of Abstracts**  
**November 2-5, 1998**

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**NIST**

United States Department of Commerce  
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**U.S. Department of Commerce**  
William M. Daley, *Secretary*  
**Technology Administration**  
Gary Bachula, *Acting Under Secretary for Technology*  
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# DETECTION IN DIFFICULT ENVIRONMENTS

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## ABSTRACT

Although the majority of early warning fire detection applications can be covered by photoelectric and ion detectors, these technologies are too sensitive for very dirty, dusty or wet areas. Use of these standard types of fire detectors in harsh environments would result in a high occurrence of nuisance alarms. A "harsh environment detector" needs to provide early detection while eliminating nuisance alarms and the need for frequent maintenance. To do this, these detectors need to be provided with protection from airborne particles such as dust, water mist and insects.

A new, intelligent early warning detector is designed for dusty, dirty, or wet locations such as paper mills, textile plants, subways, or wash-down areas. The detector uses micro-pore filters to remove airborne matter before it reaches the smoke sensor. The air intake flow and aspiration fan are both supervised. By filtering particles such as dust and water mist, this intelligent detector can now be provided as early warning protection in harsh environments where slower responding thermal detectors have typically been used.

Actual "dirty" environment installations will be described and system performances will be documented.

## REFERENCES

1. Dubivsky, P. M. & Bukowski, R. W., False Alarm Study of Smoke Detectors in Department of Veterans Affairs Medical Centers (VAMCS). Technical Report 4077, National Institute of Standards and Technology, Gaithersburg, MD, 1989.