

AAMA SMOKE VENT TASK GROUP: THE RECORD

By Richard Schulte

The issue of whether the installation of smoke/heat vents is compatible with sprinkler system installations has been a question which has been debated in the fire protection field for over 40 years. The question is why?

It would seem that it would be relatively easy to determine whether or not smoke/heat vents “work” in buildings protected by a sprinkler system. It would also seem that if you were a manufacturer of smoke/heat vents and questions were raised about your product that you would want to address those questions immediately by conducting tests of the product. The only reason that I can think of for not wanting to squarely address the issue is that the manufacturers already know the answer to the question and the answer is that smoke/heat vents don’t really “work” in sprinklered buildings.

How does a manufacturer go on selling a fire protection product that doesn’t actually “work” for decades? First, you get the product mandated by building/fire codes. Then you hire “big name” fire protection consultants to confuse both the facts and the fire service about the product. At least that’s my opinion as to what has been going on with smoke/heat vents for the last quarter of a century or so.

What’s the basis for my opinion that the manufacturers of smoke/heat vents have been manipulating the market for vents? Let’s take a look at some of the major milestones in the historical record of the debate on the use of smoke/heat vents in sprinklered buildings starting with the provisions for high-piled storage contained in the 1979 edition of the Uniform Fire Code and then perhaps you’ll begin to understand the basis for my opinion.

The issue of whether the installation of smoke/heat vents is compatible with sprinkler system installations has been a question which has been debated in the fire protection field for over 40 years. The question is why?

- The 1979 edition of the Uniform Fire Code (UFC) required that a manually-activated mechanical smoke removal system be provided in one-story buildings containing high-piled storage when the building is protected by a sprinkler system. The reason why a mechanical smoke removal system was required, rather than smoke/heat vents, was that there was a concern at the time that the operation (opening) of vents would have an adverse effect on the operation of the sprinkler system.
- Smoke vent manufacturers retained the services of a building code consultant, John G. De-genkolb, in the early 1980's to assist with amending the high-piled storage provisions to allow the installation of smoke/heat vents in buildings protected by a sprinkler system.
- In the middle 1980's, the high-piled storage provisions contained in the UFC were amended to allow the installation of smoke/heat vents in buildings protected by a sprinkler system (despite concerns that the automatic operation (opening) of vents could have an adverse impact on the capability of sprinklers to control a fire).
- In 1994, research conducted by Factory Mutual Research Corporation (FMRC) determined that draft curtains have an adverse impact on sprinkler operation where a fire occurs under or in close proximity to the draft curtains.

Editor's Note: The author represented the Northern California Fire Prevention Officers on the UFC ad hoc committee on high-piled storage in 1982 and was a participant in meetings of this committee where the issue of the use of roof vents in sprinklered buildings was discussed. (The ad hoc committee was chaired by William Tomes, the assistant fire marshal for the San Diego Fire Department at the time.) No documentation was submitted that the operation (opening) of smoke/heat vents would not have an adverse effect on sprinkler system operation by those who favored permitting the use of smoke/heat vents in sprinklered buildings, hence, the author voted against mandating/permitting the use of roof vents in sprinklered buildings based upon this concern.

- In 1998, research sponsored by the National Fire Protection Research Foundation (NFPRF) and conducted at Underwriters Laboratories (UL) determined that the operation of sprinklers will have an adverse impact on the operation (opening) of automatic roof vents.

- In 1999, a code change proposal to delete the provisions which require smoke/ heat vents in buildings protected by a sprinkler system was submitted to the ICC.

- On September 10, 1999, the chairman of the Smoke Vent Task Group (SVTG) issued a memorandum committing to perform additional research on the interaction of sprinklers, smoke/ heat vents and draft curtains. (This research was never conducted.)

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- In October 1999, the code change proposal which would delete the provisions for smoke/heat vents in buildings protected by a sprinkler system was defeated at the code development hearings held in St. Louis. As a result of this action, the first edition of the International Building Code and the International Fire Code, the 2000 edition, mandated the installation of smoke/heat vents in one-story industrial and storage buildings and buildings containing high-piled storage protected by a sprinkler system.
- At the ICC Code Technology Committee (CTC) meeting held in Detroit in late September, 2005, it was proposed that the issue of the use of smoke/heat vents in buildings protected by a sprinkler system be studied as part of the CTC study of the issue of “balanced fire protection”.
- The Smoke Vent Task Group announced a new research project on the interaction of sprinklers, roof vents and draft curtains in the Summer 2006 issue of the AAMA newsletter. The announcement indicated that the new research project would utilize fire modeling, rather than fire testing, and would be conducted by a team from Hughes Associates, Inc. headed by Dr. Craig Beyler.

- At the ICC CTC meeting held in Kansas City in mid-October 2006, the CTC voted to form a Roof Vent Study Group. The CTC appointed Carl Baldassarra to chair the Study Group and appointed Rick Thornberry and Richard Schulte as members of the Group. Dr. Craig Beyler was also appointed as an alternate to Rick Thornberry. Thornberry and Beyler were representatives of the Smoke Vent Task Group.

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- At a meeting of the Balanced Fire Protection Study Group held at the Orange County Fire Authority headquarters in early January, 2007, Rick Thornberry announced that the Smoke Vent Task Group would conduct fire tests on the “ganged” operation of smoke/heat vents in an aircraft hanger scheduled for demolition on the Marine Corps base in Orange County, California. The Orange County Fire Authority requested that the fire testing program also include tests with individually-activated smoke/heat vents. (Once again, the research work was not conducted. The reason for not conducting the research cited was a lack of agreement with the United States Navy on the use of the hangar.)
- The Roof Vent Study Group started its work in late January 2007. The Study Group’s work quickly bogged down.
- At the CTC meeting held in Atlanta in March 2007, a request was made to disband the Roof Vent Study Group and substitute a debate on the issue before the CTC as a means of advancing the work on this issue.
- At the CTC meeting held in Cincinnati in June 2007, the CTC voted to hold a debate on the issue of the use of smoke/heat vents in sprinklered buildings. Dr. Craig Beyler and Richard Schulte were designated to make these presentations.
- Hughes Associates, Inc. released its study on the concept of the “ganged” operation of smoke/heat vents on February 18, 2008.

- Code change proposal F197-07/08 which proposed to amend the smoke/heat provisions contained in the International Building Code to allow the concept of the “ganged” operation of smoke/heat vents was disapproved at the code development hearings held in Palm Springs in February 2008.
- The debate on the issue of the use of vents in buildings protected by a sprinkler system was held at the CTC meeting in Baltimore in late May 2008. Dr. Beyler’s presentation concentrated on the concept of the “ganged” operation of roof vents. Questions regarding the “validation” of the Fire Dynamics Simulator for purposes utilized by Hughes Associates, Inc. were raised. The discussion of the roof vent issue was carried over to the next meeting of the CTC.
- The discussion of the smoke/heat vent issue was continued at the CTC meeting in Chicago in mid-November 2008. The question of the “validation” of the Fire Dynamics Simulator was raised once again. After lengthy discussion, the CTC decided that the Roof Vent Study Group should be reconstituted and that additional members of the CTC should be added to the group. The CTC further directed that the Study Group draft a code change proposal addressing the use of roof vents and that the code change proposal should be based upon NFPA 204.
- In January/February 2009, the Roof Vent Study Group drafted a code change proposal which referenced NFPA 204 for the installation of smoke/heat vents in buildings which are not protected by a sprinkler system. Since the latest published edition of NFPA 204, the 2007 edition, does not contain any mandatory provisions for the installation of smoke/heat vents in buildings protected by a sprinkler system, the Study Group proposed that buildings protected by a sprinkler system be provided with a manually-activated mechanical smoke removal system.
- The minutes of a Smoke Vent Task Group teleconference held on March 24, 2009 indicated that Dr. Craig Beyler would not defend his assertion that the Fire Dynamics Simulator has been “validated” for the purposes used in the research work done by Hughes Associates, Inc. Given this, the research work done by Hughes Associates, Inc. was characterized as “worthless” by the Smoke Vent Task Group.

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- At the CTC meeting held in Birmingham in April 2009, the CTC voted to endorse the concept of eliminating the requirement for the use of smoke/heat vents in buildings protected by a sprinkler system. Given that there were questions regarding the specifications for the mechanical smoke removal system, the CTC also decided to continue discussions on the proposal. During the discussions at this meeting, William Koffel of Koffel Associates stated that smoke/heat vents “work” in buildings protected by a sprinkler system.
- At the annual meeting of the National Fire Protection Association (NFPA) in June 2009, the NFPA membership approved a proposal to include provisions which address the installation of smoke/ heat vents in the 2010 edition of the sprinkler system installation standard, NFPA 13. The provisions require that automatic vents have an operating mechanism with a temperature rating one temperature classification higher than the temperature classification of the sprinklers or that the vents only be manually-operable.

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- The CTC submitted the code change proposal addressing smoke/heat vents to the ICC in early June 2009. This proposal was referred to as code change proposal F144-09/10 in the roster of code changes.
- At the code development hearings held in Baltimore in late October 2009, the code change committee approved code change F144-09/10 with amendments. One of the amendments approved is an exception which will permit the installation of smoke/heat vents in lieu of the manually-operated mechanical smoke removal system when the installation of a vent system is specifically approved by the code enforcement authority.
- In January 2010, the Roof Vent Study Group developed Public Comment 2 which requested that code change F144-09/10 be “approved as further amended”. Public Comment 2 deleted a number of amendments approved at the code development hearings in Baltimore, however, left the amendment which would permit smoke/heat vents to be provided in lieu of the mechanical smoke removal system when specifically approved intact.
- In late April 2010, the Joint Fire Service Review Committee voted to support Public Comment 1 which requested approval of the code change F144-09/10 “as submitted”.

- In late April 2010, the Code Technology Committee voted to support Public Comment 2.
- In mid May 2010, the ICC membership voted to “disapprove” code change F144-09/10. It should be noted that approval of any of the public comments submitted required a 2/3's vote in support of the public comment, except for the motion to “disapprove” the proposal.

With just the abbreviated review of the record outlined above, the “wrangling” over the issue is apparent. Of course, there would be no need for any of the “wrangling” if the Smoke Vent Task Group had just done the additional research promised in September 1999. There was really no need for the Smoke Vent Task Group to have retained the services of Dr. Craig Beyler and Messrs. Koffel and Thornberry if the Smoke Vent Task Group had just conducted the testing that this trade association had proposed.

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Fortunately, however, the NFPA 13 committee intervened in the debate and proposed specific provisions addressing the installation of roof vents in sprinklered buildings. These provisions included in the 2010 edition of NFPA 13 undercut even further the arguments made for the installation of roof vents in buildings protected by a sprinkler system, however, that hasn't stopped the consultants retained by the Smoke Vent Task Group and the vent manufacturers from “spinning” the meaning of the NFPA 13 provisions pertaining to vents.

One of the all time classic “spin jobs” in the fire protection field was William Koffel's testimony on code change proposal F144-09/10 at the code development hearings in Baltimore. The following is an excerpt from Koffel's testimony:

“So the 13 committee recognizes that this [referring to roof vents] is a viable technology in sprinklered buildings.”

William Koffel

“ . . . I sit on the NFPA smoke management committee responsible for 204. I’m not representing that committee here. I sit on NFPA 13 discharge criteria committee which is responsible for Chapter 12. I’m not representing that committee.

But I think this committee needs to know that NFPA 13 now allows

vents and draft curtains in buildings protected throughout with a sprinkler system.

In fact, they’ve even gone so far to allow it in a building with ESFR sprinklers, smoke vents that is, if the vents have a certain criteria. That’s in Chapter 12 of the 2010 edition of NFPA 13. So the 13 committee recognizes that this is a viable

technology in sprinklered buildings. 204 has a proposal, or a comment, that is being balloted now that has a new chapter for designing smoke vents in buildings protected with a sprinkler system, so the technology is being addressed by the appropriate NFPA committees.”

“Substantiation: The intent of the [NFPA 13] standard is that roof vents and draft curtains should not be used in conjunction with storage protection.”

Koffel is correct in his assertion that the 2010 edition of NFPA 13 will contain provisions which allow the installation of roof vents in sprinklered buildings, but he twisted the intent of the new NFPA 13 provisions around and attributed a meaning 180° opposite of the actual intent of the provisions. Unfortunately, you can only fool some of the people some of the time, but you can’t fool all of the people all of the time and Koffel got caught trying to fool us and make fools of us with his testimony.

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In summary, both Dr. Craig Beyler and William Koffel got caught trying to fool us-Beyler with his discredited fire modeling research on the “ganged” operation of roof vents concept and Koffel with his testimony on the intent of the NFPA 13 provisions addressing the installation of roof vents.

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As someone famous once said, “A ruse by any other name is still a ruse.” It seems pretty obvious that the Smoke Vent Task Group and its consultants, Beyler, Koffel and Thornberry, have been “blowing smoke” about the use of smoke/heat vents in sprinklered buildings for a long, long time. Meanwhile, we’re all still waiting for the fire tests the Smoke Vent Task Group promised us on September 10, 1999.

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