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Roy T. Gottesman
Executive Director

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Sherry M. Galt

TO: The Vinyl Institute Legal Committee
The Vinyl Institute Technical Subcommittee
on Fire Sciences

RE: Modern Trends in Fire Litigation Paper

The attached paper by Will Kemp, Esq., was recently sent to me by Dr. Joseph B. Zicherman, President of IFP Technical Services, Inc., a code consultant to the Vinyl Institute.

According to Joe Zicherman, Will Kemp is an attorney who tends to work on the plaintiff's side in fire cases stemming from the MGM fire. This paper provides Mr. Kemp's opinions with regard to product liability litigation in future years and may be of interest to you.

I think you will particularly find section V dealing on trends with regard to PVC toxicity cases of interest.

Sincerely,

RTG/bg
enc.

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MODERN TRENDS IN FIRE LITIGATION

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I. INTRODUCTION

In 1980, 87 people died in the MGM Grand Hotel fire in Las Vegas. 26 died in the Stouffer's Inn fire in 1980. In 1981, 8 died in the Las Vegas Hilton fire. In 1986, 97 victims died in the San Juan Dupont Plaza fire in Puerto Rico. In 1990, 87 died in the Happyland Social Club fire. Complex lawsuits followed or are now following all of these tragedies. This paper focuses on the involvement of manufactured products, i.e., furnishings and interior finish materials in these suits and suggests eight (8) different modern trends in future fire litigation involving products:

1. Increase in Overall Fire Litigation Involving Product Defendants;
2. Decrease in Public Assembly Fire Litigation Because of Increasing Use of Sprinklers;
3. Increase in Fire Litigation Involving Single Family Homes and Small Occupancies;
4. Decrease in PVC Wallcovering Flammability Cases;
5. Slight Decrease in PVC Toxicity Cases;
6. Large Increase in HCN Toxicity Cases--Foam, Laminate and Nylon
7. Slight Increase in Furniture Flammability Cases;
8. Slight Increase in Mattress Flammability Cases;

II. INCREASE IN OVERALL FIRE LITIGATION INVOLVING PRODUCTS

There are basically three (3) different categories of Defendants in a fire case. First, the building owner. Second, the Defendants that provided services to the owner. Examples of service Defendants would be the architects, engineers, contractors and subcontractors that designed or built the structure, the alarm company, the elevator company or the insurance inspection entities. The third type of Defendants are the product Defendants. These are the companies that manufactured or distributed a certain type of

product. Basically, the product Defendants are the companies that made or provided the interior finish materials or the furnishings.

Statistics from major fire cases indicate that the more aggressively the building owner or the plaintiffs pursue the product Defendants, the less money in terms of percentage of settlement that the building owner will have to pay. Because of this potential to shift a significant portion of the liability to product Defendants, economics suggests that there will be an increase in the involvement of product manufacturers in the future.

An analysis of the sources of revenues to compensate victims in the major fire cases indicates that an aggressive pursuit of product Defendants may shift tens of millions of dollars of liability from the building owner to other Defendants. In general, the percentage of total liability of an owner can be decreased from 70% to 50%. For example, in the MGM Fire litigation, the total settlement paid to Plaintiffs was approximately \$202 Million.¹ In MGM, the owner and the subrogation insurer actively pursued product Defendants. The amount paid by the MGM building owner in settlement (after adjusting for the present value of installment payments) was \$99 Million. In other words, the owner in the MGM case paid approximately 49% of the total settlement. The service and product Defendants paid the balance.

In the Las Vegas Hilton Hotel Fire case, the total settlement was \$23.3 Million. The hotel owner paid \$16,500,000 in settlement. This totals 70% of the total settlement. Because the subrogation insurance carrier of the hotel owner was involved in bankruptcy proceedings and could not afford to fund aggressive products litigation, the product defendants in the Hilton case were not aggressively pursued.

In the Dupont Plaza Hotel Fire litigation, both plaintiffs and the owners aggressively pursued services and product Defendants. In Dupont, the present and former building owner in the case paid approximately \$121 Million. The final recovery in Dupont has yet to be determined because certain product Defendants found liable by the jury are now pursuing an appeal and because more damages trials have been scheduled for February 21, 1991. The settlement judge, however, has reportedly evaluated the entire Plaintiffs' cases at approximately \$240 Million. Based upon an eventual \$240 Million settlement, the present and former owners would be responsible for about FIFTY percent of the total settlement. This is basically identical to the percentage contribution by the owner in the MGM case. In addition, the amount that the hotel owners paid per death was similar in MGM and DUPONT. In MGM the hotel owners share divided by the total deaths was \$1,137,931 and in Dupont Plaza it was \$1,247,422.

Because of the economic benefit in shifting liability to product Defendants, the modern trend should be for the building owner to join as many culpable product defendants as possible regardless of the actions taken by the plaintiffs.

III. MODERN TREND--INCREASING USE OF SPRINKLERS WILL CAUSE DECREASE IN PUBLIC ASSEMBLY FIRE LITIGATION AND APPLICATION OF ACCEPTED FIRE SAFETY STANDARDS TO HOMES WILL CAUSE INCREASE IN SINGLE FAMILY LITIGATION

According to 1984 estimates by furniture manufacturers, only 2% of the hotels in the country were fully sprinklered and only 20% were partially sprinklered.² Since 1984, there has been a large increase in the number of sprinklered facilities. Now, according to a 1988 survey by the hotel and motel association, almost 50% of hotels have sprinklers in public and service areas.³ The National Fire Protection Association has repeatedly stated that multiple-death fires have not occurred in completely sprinklered commercial buildings.⁴ If there are more sprinklered public assembly facilities and sprinklers preclude multi-death fires, fire litigation in such facilities will decline. This trend, however, should not apply to residences because there has been no significant increase in the use of sprinklers in homes or smaller occupancies.

Although we are going to have less fires in public assembly occupancies, it should be noted that because more than 50% of these institutions do not yet have complete sprinkler protection in their public areas, it is likely that there will still be a sizeable number of multi-death public occupancy fires in the next 20 years. In addition, there are relatively few apartments and few office buildings that are fully sprinklered. Regardless, the battle in product liability fire litigation is probably beginning to shift and will continue to shift over to the single family fire and small occupancy fire.

Ironically, there have always been more fire deaths in homes and small occupancies than the big hotel fires but the latter have received more publicity.⁵ However, there has not been as much product litigation in these small cases for a number of reasons that have nothing to do with the relative safety of the products. First, in a small fire death case--say a death involving anywhere between one and five persons, the victims' case is usually handled by an attorney who has no experience in fire litigation. Largely as a result of the ignorance of that attorney, potentially culpable products in that case are not identified and compensable claims are not pursued. Second, in a small fire death case, it is difficult to justify the expense of complex product liability litigation. Sophisticated experts and perhaps testing are necessary to establish liability in products cases and this is prohibitively expensive in a small case given the potential recovery.

IV. PRODUCTS INVOLVED IN FIRE LITIGATION

Liability claims against product defendants are generally based on one or a combination of the following three general theories of liability. First, ignition theories--the product

somehow contributed to the fire ignition. Second, flammability theories--the product is allegedly too flammable for the particular usage. Third, toxicity theories--the product is allegedly too toxic.

In commercial or residential occupancies, there are generally four (4) different types of products that may become involved as target defendants in fire litigation: (1) interior finish materials; (2) furnishings; (3) structural components; and (4) electrical products. Sub-categories and fire cases involving the referenced products are set forth below.

1. Interior Finish Materials

a. Wallcoverings

1. Paper Wallcovering
2. Fabric Wallcovering (Dupont)
3. PVC Wallcovering (MGM, Hilton and Dupont)
4. Foam Wallcovering (Atlanta)
5. Wall carpet (Hilton and Dupont)
6. Wood/Wood Composite Paneling (Mobile Home cases and Happyland Social Club fire)
7. Laminate or Formica (MGM and Dupont)
8. Plexiglass (picture frames in MGM)
9. Drapery Materials (Hilton and MGM)

b. Paint (MGM and Dupont)

c. Floorcoverings

- a. Nylon carpet (Dupont)
- b. Floor Wax (Dupont)

d. Ceiling Coverings

- a. Ceiling Tile (MGM)
- b. Plastic decorative lighting (MGM)

e. Adhesives

- a. Ceiling (Essex and Duo-Flex in MGM)
- b. Wallcovering (Dupont)

2. Furnishings

- a. Chairs (MGM, Hilton and Dupont)
- b. Sofabeds and Mattresses (Dupont)
- c. Furniture with plastic components (e.g., dressers with laminate)

3. Structural Components

- a. Movable Walls (Airwall in Dupont)

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- b. PVC wiring or conduit (NY Telephone Fire, Beverly Hills and Dupont)
- c. Water Heaters and support mechanisms
- d. Plastic support or decorative items
- e. Ducting (ABS pipe in casino ceiling in MGM)

4. Electrical Products

- a. Electrical Wire and Conduit (MGM)
- b. Compressors, Generators, Motors and Appliances (MGM)

V. MODERN TREND--DECREASE IN PVC WALLCOVERING FLAMMABILITY CASES AND SLIGHT DECREASE IN PVC TOXICITY CASES

The most common wallcovering involved in major fire litigation is PVC wallcovering, probably because of its market dominance. Plaintiffs have alleged that PVC wallcovering is unreasonably dangerous both on a flame spread theories of liability and, more often, on toxicity theories of liability. While the particular fire scenario dictates the specific liability issues in any fire case, the following topics should be considered in general in any PVC related suit.

PVC WALLCOVERING FLAME SPREAD CONSIDERATIONS

PRO-PLAINTIFF

1. Public Perception of PVC
2. Large Surface Volume
3. Ease of Ignition
4. Manufacturing Deviations
5. Tunnel Testing On Fiber-Cement vs. Gypsum

PRO-DEFENDANT

1. Class A Under Tunnel
2. Flammability Improvements
3. Lack of Self-Propagation
4. Commercial Advantages
 - a. Ease of Application
 - b. Wear Resistance

Because of improvements in the flammability of PVC wallcovering and given its wide usage, depending upon the particular type of PVC wallcovering involved and the fire scenario present, the modern trend will probably be for a slight decrease in the number of PVC flammability cases.

PVC WALLCOVERING TOXICITY CONSIDERATIONS

PRO-PLAINTIFF

1. Public Perception of PVC
2. Off-gassing
3. Frequency of HCL Irritation Symptoms
4. Pulmonary Edema Findings
5. Sex Appeal--Burning Acid
6. Soot Transfer Theories⁹
7. Additivity Or Synergy¹⁰

PRO-DEFENDANT

1. No Conclusive HCL Fingerprint
2. Surface Adhesion Studies⁶
3. No Accepted Toxic Levels⁷
4. CO Dominance Theories
5. New HCN Studies⁸
6. No Accepted Toxicity Test
7. Few Regulations

Because of the flammability problems discussed above, future PVC wallcovering cases and fire cases involving PVC products will probably focus heavily on toxicity. The central thesis that PVC toxicity cases are founded upon is the alleged increased toxic risk of PVC smoke compared to wood smoke.¹¹ The near universal acceptance by toxicologists of the proposition that the impact of CO, HCN and HCL is additive or synergistic guarantees that PVC wallcovering will continue to be attacked under toxicity theories. While it has been common practice in fire litigation for product Defendants to blame all inhalation deaths on CO as opposed to HCL or HCN, the increasing body of literature implicating HCN as a primary cause of incapacitation may result in HCL related Defendants and HCN related Defendants focusing on each other as respective causes in future cases.

VI. MODERN TREND--INCREASE IN TOXICITY CASES INVOLVING PRODUCTS RELEASING HCN

There are a number of interior materials that release hydrogen cyanide when they burn. The most common examples are polyurethane foam, laminate and nylon carpets. Some of the common HCN toxicity considerations in major fire litigation are listed below. Again, the particular fire scenario will dictate the specific HCN issue in future fire cases.

HCN PRODUCT TOXICITY CONSIDERATIONS

PRO-PLAINTIFF

1. Public Perception of CYANIDE
2. Conclusive HCN Fingerprint
3. Accepted HCN Incapacitation and Lethality Levels
4. No Surface Adhesion Defense
5. HCN Release Concentrations
6. Additivity or Synergy¹²

PRO-DEFENDANT

1. No Observable Sign
2. No Pathological Sign
3. Inadequate Blood Tests
4. Debate About Blood Tests

There is an increasing body of literature supporting HCN as a primary cause of fire deaths.¹³ There is also an increasing tendency for blood tests to focus on the presence or absence of HCN whereas traditionally toxicological data focused solely on CO. A significant amount of data exists regarding HCN incapacitation levels.¹⁴ It has recently been suggested that HCN lethality levels, in conjunction with CO, are extremely low.¹⁵ Defendants have attempted to counter-act the impact of elevated HCN findings by arguing that the HCN readings were the result of blood storage. Because of the increasing recognition of the role of HCN, the modern trend will probably be to focus more intensely on products generating HCN during fires as a potential cause of incapacitation and subsequent death.

VII. MODERN TREND--INCREASE IN FURNITURE FLAMMABILITY CASES WITH FOCUS ON CAL 133 AS SAFE/UNSAFE STANDARD

Furniture flammability has been a hot topic in fire litigation in the last ten (10) years. Generally, the focal point is on a chair or a sofa and the liability theory is one of the following:

1. The chair/sofa did not contain foam with an appropriate fire retardant;
2. The chair/sofa did not contain appropriate inner-liner;
3. The fabric of the chair/sofa was excessively flammable; or
4. A combination of the above.

One criticism of these liability theories has been that they do not focus on the fire performance of the particular furniture piece as a composite.

In the last seven (7) years or so, California Technical Bulletin 133 has become a recognized standard for furniture flammability and is now being implemented outside of California. Model building codes are also beginning to focus on composite performance standards. Because of the benefit of an objective standard, the modern trend--at least in public occupancy fire litigation--should be that Cal 133 or other objective standards will develop into a litmus test. If the furniture in question passes Cal 133, Plaintiffs will have difficulty in a law suit. If it does not pass Cal 133 and, in addition, if it made a significant contribution to the fire spread, the furniture is going to be the subject of a liability claim.

Ironically, the development and acceptance of Cal 133 as a standard may help some Defendants in product cases. Because Cal 133 focuses on the fire performance of the composite, it is more difficult to assign blame to the manufacturer of a particular component part if the liability theory is based upon a composite test standard. In other words, the furniture manufacturer, under a Cal 133 analysis, is more likely to be held liable than the component manufacturer.

VIII. MODERN TREND--SLIGHT INCREASE IN MATTRESS FLAMMABILITY CASES

Ten years ago it was arguable whether or not a significantly more fire retardant mattress could be made that was economically feasible and offered satisfactory performance. Today, there is no debate on this point. Through the use of melamine foams, barriers and certain fabrics, there is no question that major manufacturers can and have produced mattresses that offer significantly greater fire protection. However, these improved mattresses are not being sold on a wide-scale basis either to the hospitality industry or residences. Although certain universities and other institutions (e.g., prisons), are showing admirable initiative in converting to fire resistant mattresses, the widespread usage of traditional mattresses given the

vastly superior alternatives commercially available should result in an increase in mattress flammability cases. This is especially true given the prominent role assigned to mattresses in residential fires by authorities such as the Consumer Products Safety Commission.

IX. CONCLUSION

The increasing use of sprinklers in commercial establishments will ultimately lead to a resulting decrease in fire litigation involving products in multiple death fires in public occupancy assemblies. There is no comparable trend to install sprinklers in residential occupancies and an increase in litigation involving residential fires should result as the product liability issues litigated in the major fires of the last ten (10) years are applied in the residential arena. Toxicity will continue to be a key issue in litigation involving PVC products and will be a new emphasis point for products producing HCN. Furniture flammability litigation will probably increase but become more simplified with the increasing recognition of objective composite standards such as California Technical Bulletin 133. Mattress flammability litigation, especially in residential areas, should increase given the lack of improvements in fire performance of the majority of mattresses now installed compared to technological feasible alternatives.

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ENDNOTES

1. In Re MGM Grand Hotel Fire Litigation, 570 F.Supp. 913 (D.Nev. 1983).

2. A 1984 Shelby Williams Inter-Office Correspondence provides as follows:

Only 2% of the hotels in the United States are totally sprinklered and only 20% of the hotels in the country have some sprinklers. Furthermore, 80% of the hotels which will be in use in the year 2000 are built and in use today. These facts point out the great importance that designers and specifiers must place on flame retardant furnishings. Admittedly, new hotels will have sprinklers and some smoke detection systems, but existing structures simply do not have these and it could be as long as 25 years before we see all public spaces in our country either replaced or upgraded.

3. A June 30, 1988 report compiled by The American Hotel and Motel Association entitled "Fire Protection In the Lodging Industry" provides that 49.4 percent of independents and 48.4 percent of the largest chains have public and service areas with sprinklers, that 41.3 percent of independents and 48.6 percent of the largest chains had sprinklered guest rooms and that only 33.4 percent of independents and 42.4 percent of the largest chains had sprinklered corridors. A majority of multi-death fires involve initial ignition in public areas (e.g., MGM, Stouffers, Las Vegas Hilton, Dupont Plaza and Happyland Social Club) for the simple reason that guest room fires rarely spread beyond the room of origin. Therefore, the sprinkler percentage in public and service areas is probably the most significant figure in terms of evaluating multi-death fire protection. Unfortunately, the American Hotel and Motel Association survey probably over-states the percentage of sprinklers in public and service areas by failing to discriminate between public assembly areas and restaurants or kitchens in that response category. In addition, the survey relied upon mass mail response with encouragement from larger participant members. This statistical compiling technique would likely overstate total percentage of sprinklers. Taking the difference between corridor sprinklers and percentages and public and service area percentages and averaging yields a sprinkler percentage of 37.35 for independents and 45.5 for the largest chains. This percentage probably slightly overstates the percentage of hotels in the United States with adequate sprinkler protection in their public areas but is still a dramatic improvement.

4. The NFPA Investigative Report On The Dupont Plaza Hotel Fire, p. 38, provides that "[t]he NFPA has no record of a multiple-death fire in a completely sprinklered building of this occupancy type where the system was properly operating, except in an explosion or flash fire."

5. NFPA statistics for 1985 multiple-death fires provide that there were 723 fire deaths in one and two-family dwellings, 134 fire deaths in apartments, tenements and flats, 9 fire deaths in rooming and lodging houses, 15 fire deaths in hotels, motels and inns and 5 fire deaths in home hotels. M.H. Curtis, P.R. LeBlanc, Analysis of Multiple-Death Fires in the United States During 1985, Fire Journal (July, 1986). 1986 is similar. M.H. Curtis, P.R. LeBlanc, Who Died -- And Why -- In Multiple-Death Fires in 1986, Fire Journal (July, 1987) (stating that the "vast majority of multiple-death fires every year occur in the home, and 1986 was no exception.").

6. Beitel, J.J., Bertelo, C.A., Carroll, W.F., Gardner, R.O., Grand, A.F., Hirschler, M.M. and Smith, G.F., Hydrogen Chloride Transport and Decay in a Large Apparatus I., Decomposition of Poly (Vinyl Chloride) Wire Insulation in a Plenum by Current Overload, J. Fire Sci., 4 (1986).

7. Some authors have suggested that levels from 1,000 to 2,000 ppm HCL are lethal to humans after a short period of exposure. Y. Henderson, H.W. Haggard, Noxious Gases, p. 126 (1943); Y.C. Alarie, The Toxicity of Smoke From Polymeric Materials During Thermal Decomposition, Annu. Rev. Pharmacol. Toxicol. 25:325-347 (1985). The National Academy of Sciences states that "Air concentrations of HCl below 100 ppm are considered tolerable, whereas concentrations near 1,000 ppm are rapidly fatal in rats." Fire and Smoke, p. 69 (1986). Studies based on baboon experiments, however, suggest much higher lethality levels. H.L. Kaplan, A.F. Grand, W.G. Switzer, D.S. Mitchell, W.R. Rogers, G.E. Hartzell, Effects of Combustion Gases on Escape Performance of the Baboon and the Rat, J. Fire Sci. 3:228-244 (1985); H. Kaplan, A. Anzueto, W.G. Switzer, R.K. Hinderer, Effects of Hydrogen Chloride on Respiratory Response and Pulmonary Function of the Baboon, J. of Toxicology and Environmental Health, 23:473-493 (1988).

8. Y. Alarie, R. Memon and F. Esposito, Role of Hydrogen Cyanide in Human Fire Deaths, published in Fire and Polymers. American Chemical Society Symposium Series 425 (1990); F.M. Esposito, Y. Alarie, Inhalation Toxicity of Carbon Monoxide and Hydrogen Cyanide Gases Released During the Thermal Decomposition of Polymers, J. Fire Sci. 6 (1988) (stating that the "data helps support theories that HCN can cause rapid incapacitation at low blood cyanide concentrations, with eventual accumulation of lethal COBL values in fire victims"); Purser, D.A. and W.D. Woolley, "Biological Studies of Combustion Atmosphere," J. of Fire Sciences, 1:118-144 (1983); see also R.A. Anderson and W.A. Harland, Fire Deaths in the Glasgow area: III. The Role of Hydrogen Cyanide. Med. Sci. Jan, 22 (1982) 35; R.A. Anderson, L. Thomson and W.A. Harland, The Importance of Cyanide and Organic Nitrates in Fire Fatalities, Fire and Materials, 3 (1979) 91.

9. J. Stone, R.N. Hazlett, J.E. Johnson, H.W. Carhart, The Transport of Hydrogen Chloride by Soot From Burning Polyvinyl Chloride, J. Fire and Flammability (1972) (concluding that "loosely

bourne HCL condensed or soot aerosol would gain access to the lower lungs.")

10. G.H. Hartzell, Studies On The Toxicity of Smoke Containing Hydrogen Chloride, published in Fire and Polymers, Americal Chemical Symposium, (1989) ("In the case of mixtures of hydrogen chloride and carbon monoxide, empirical analysis of toxicological data shows that exposure doses leading to lethality of rats may also be additive. . . . Although not confirmed with primates, these studies imply that hydrogen chloride may be much more dangerous than previously thought when in the presence of carbon monoxide or, conversely, carbon monoxide intoxication may be much more serious in the presence of an irritant."); J.C. Norris, S.J. Moore, A.S. Hume, Synergistic Lethality Induced By The Combination of Carbon Monoxide and Cyanide, Toxicology, 40 (1986) 121-129.

11. The National Academy of Sciences states that "wood smoke was one-tenth as potent as smoke from poly(vinyl chloride), and animals recovered from the effects of wood smoke much more rapidly. Fire and Smoke, p. 74 (1986).

12. In addition to the authorities referenced in Footnote 10, see B.C. Levin , M. Paabo, J.L. Gurman, S.E. Harris, Effects of Exposure to Single or Multiple Combinations of the Predominant Toxic Gases and Low Oxygen Atmospheres Produced in Fires, Fundamental and Applied Toxicology 9 (1987).

13. See Footnote 8.

14. D.A. Purser, P. Grimshaw, K.R. Berrill, Intoxication by Cyanide in Fires: A Study in Monkeys Using Polyacrylonitrile, Archives of Environmental Health 39 (1984).

15. Alarie has stated that "the combination of low oxygen and cyanide has been shown to be particularly effective in causing lethality with a blood cyanide level of less than 0.6 mg/L." Y. Alarie, R. Memon and F. Esposito, Role of Hydrogen Cyanide in Human Fire Deaths, published in Fire and Polymers, American Chemical Society Symposium Sciences 425 (1990). A lethality of level of 1.0 mg/L is supported by the literature. Id.