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President  
January 25, 1985

MEMORANDUM TO: Mr. John Rupp  
Covington & Burling

FROM: Philip S. Schaenman and Alexandra Rex *PSH*

SUBJECT: Latest Drop in Cigarette-Related Fires and Fire Deaths  
(1983 Data and Trends)

#### HIGHLIGHTS

1. Fires related to careless smoking declined significantly from 1982 to 1983, continuing a trend over at least the last six years. Fire deaths related to careless smoking also continued a significant downward trend. These findings are based on our analysis of National Fire Incident Reporting System 1983 data which recently became available.

CPSC's independent analysis based on the same data agrees with our findings.

2. Both we and CPSC think that the Fire Administration made a gross error in its press release of November 2, which stated that 2,100 people died in 1983 as a result of careless cigarette smoking. That number implied a 20 percent increase from 1982 to 1983. None of the journals have yet reprinted the news release, but it may happen next month. The CPSC staff have agreed to introduce the correct estimates in the Cigarette Safety Act's Technical Study Group and to urge the Fire Administration to contact the major fire journals to stop publication of the wrong number.
3. Upholstered furniture continues to be the item first ignited in over half of the residential fire deaths involving careless smoking, but only one-quarter of the residential fires involving careless smoking.

#### DETAILS

Source of Data -- The 1983 data tapes from the National Fire Incident Reporting System are still in the process of being made available to the public through the National Technical Information Center. FEMA had them for several months but had not released them. I was able to borrow a copy of the tapes and undertake an analysis in parallel with CPSC's doing the same. (CPSC obtained the tapes very late also, after repeated requests to the U.S. Fire Administration.)

There are 760,939 fires in the data base for 1983, about one-third of all fires reported to fire departments. This is the largest sample of fires ever available in the United States, which increases the validity of the results. There are also somewhat fewer fires where the cause is reported to NFIRS as "unknown." This also gives more credibility to the results; however, 26 percent of fire deaths are reported as "cause unknown" -- far too many to be comfortable statistically.

Our analysis is summarized below. Further analysis may be necessary as the Cigarette Safety Study proceeds, or as new issues arise.

The results for 1982-1983 are based on TriData analyses paralleling the Fire Administration analyses of 1979-1981.

Comparison with CPSC -- We have been able to compare the Consumer Product Safety Commission's analysis with our analysis, and they track quite well, though their numbers tend to be slightly higher. The main reason for their being higher is that they include all fires in which a cigarette was reported as providing the "heat of ignition," including arson fires and "children playing" fires, whereas we include just the fires that are attributed to "careless smoking." The difference is small.

The source of the CPSC data for the years through 1982 is Attachment 9 to the Report of the International Association of Fire Chiefs Ad Hoc Committee on Fire Safe Cigarettes, February, 1984. This was supplemented by personal communications from Bea Harwood, CPSC for 1983 data.

The method we use is consistent with that used by the National Fire Data Center of the U.S. Fire Administration in previous years. That is, the Fire Administration did not agree with the CPSC approach exactly. CPSC as a matter of policy looks at the number of fires where a particular product was involved in the ignition sequence, regardless of whether the cause was arson or children playing, rather than limiting themselves to carelessness in the use of a product or a failure of the product. Also, CPSC includes firefighter deaths in addition to civilian deaths in its totals and we do not. A "fire safe" cigarette is unlikely to stop any arson because an arsonist can find another ignition source quite easily. A "fire-safe" cigarette might arguably reduce the fires started by children playing, but the numbers are small.

Both CPSC and TriData used NFPA estimates of total fire deaths from all causes for 1982 and 1983 because the Fire Administration discontinued its own estimates after I left (1981). This makes 1982 and 1983 appear somewhat lower than they might have otherwise, because the NFPA estimates were less complete than the USFA estimates by about 10 percent. Nevertheless, the overall downward trend is clear; and the estimates of smoking-related fire deaths as a percentage of total fire deaths is based solely on NFIRS and therefore independent of these problems.

## Residential Fire Deaths

The data from NFIRS shows the following:

	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Percent of residential fire deaths related to "careless smoking" (TriData)	36.6%	31.4%	35%	31.5%	29.9%
Percent of residential fire deaths with smoking material ignitions (CPSC)	41%	36%	38%	34.6%	32.6%

The data shows that the percentage of the problem related to careless smoking continues to decline.

These percentages can be multiplied by annual estimates of the total number of residential fire deaths (from NFPA surveys of fire department data) to yield the numbers of fire deaths related to careless smoking:

	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>2 Yr. Change</u>	<u>3 Yr. Change</u>	<u>5 Yr. Change</u>
Number of residential fire deaths related to careless smoking (TriData)	2269	1894	1939	1555	1441	-7%	-26%	-36%
Number of residential fire deaths with smoking material ignitions (CPSC)	2370	1980	2130	1730	1580	-9%	-26%	-33%

The CPSC deaths include 10-20 firefighter deaths. But note that we both agree on the magnitude of the downward changes, and also the approxi-

mate magnitude of the problem. CPSC shows a somewhat sharper decrease over the last two years than we do! Both of us show a drop in the problem by one-third over the latest five years! Even if the NFPA estimates for 1982 and 1983 were 10 percent higher as probably would have been obtained by the old USFA method, the drop still would be 30 percent over five years.

Both CPSC and TriData assume that the fire deaths with unknown cause are distributed like the known causes. Since 26 percent of the residential deaths have cause reported as unknown, this assumption affects the results; it is the usual, statistically conservative approach.

### Total Fire Deaths

Usually it is the number of residential fire deaths that is the focus of attention. But since the U.S. Fire Administration press release erroneously reported 1983 "careless cigarette smoking" deaths as 2,100 or "one-third of all fire related deaths," we give our estimates of the totals below:

	<u>1983</u>
Total Fire Deaths from "careless smoking"	1477
Percent of total fire deaths that are from "careless smoking"	25%

Note that the total number of fire deaths from "careless smoking" is only slightly higher than the corresponding figure for residential fire deaths (1,477 vs. 1,441) because there are almost no smoking-related fire deaths in such non-residential places as businesses, vehicles, or outdoors. There are many outdoor fires caused by careless smoking but few lead to fatalities. The only non-residential category where there usually are more than a trivial number of smoking-related fire deaths is institutions such as hospitals and nursing homes, which are not counted as residential in the NFIRS taxonomy of occupancy classes.

The incorrect USFA estimate of smoking-related fire deaths may have come about by multiplying the percent of residential fire deaths from careless smoking by the total number of fire deaths. Thirty-five percent (the published figure for 1981) x 6,000 (the 1983 NFPA estimate) yields 2,100, the number USFA obtained. Or it may be that someone quoted the 1981 numbers (the last ones published), which were 2,100.

## Residential Fires

Based on the annual NFPA fire department survey, there were 641,500 residential fires in 1983. Based on NFIRS, 7.0 percent of these were from "careless smoking." The five year trend looks like this:

	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Percent of residential fires related to "careless smoking" (TriData)	10.6%	9.5%	9.1%	7.6%	7.0%
Percent of residential fires with smoking material ignitions (CPSC)	11.8%	10.5%	9.6%	8.3%	7.6%

If the above percentages are multiplied by the total number of residential fires, we get the following:

Number of residential fires related to careless smoking (TriData)	74,300	68,700	65,000	51,300	44,900
Number of residential fires with smoking material ignitions (CPSC)	84,800	79,400	70,100	56,400	49,000

The above data shows that there was a 12 percent drop in careless smoking fires from 1982 to 1983 according to TriData, and a 13 percent drop according to CPSC. Total residential fires dropped only 5 percent; the careless smoking fires are dropping much more sharply.

OVER THE LATEST FIVE YEAR PERIOD THERE HAS BEEN A 40 PERCENT DROP IN CARELESS SMOKING FIRES, AND A 36 PERCENT DROP IN FIRE DEATHS.

While careless smoking fires and fire deaths are dropping, those associated with heating have been rising. Heating accounts for 37 percent of fires in 1-2 family dwelling versus 5 percent for smoking. In 1979 it was 25 percent versus 8 percent. Those are large, significant shifts. Heating now accounts for 21 percent of fire deaths in 1-2 family dwellings versus 26 percent for careless smoking. Five years ago it was 14 percent versus 35 percent.

For the category of residences with the highest death rate per capita -- mobile homes -- heating has emerged as the leading cause of deaths (26 percent), passing careless smoking (21 percent).

Careless smoking continues as the leading cause of residential fire deaths overall by a wide margin, but it is trending downward while heating and arson are trending upwards.

We do not know for sure why the smoking fires are declining, but two factors are likely contributors:

- the tremendous increase in smoke detector usage, which detects smoldering fires in the earliest stages.
- the increased availability and use of smolder-resistant upholstered furniture and mattresses (CPSC like to point to this because they stimulated voluntary standards.)

It is also possible that increased public fire education efforts are having an effect, but there is no quantitative measure to show that these efforts have truly increased. Since cigarette consumption rose slightly and then fell slightly during the last five years, it cannot be a significant factor in these changes.

### **Upholstered Furniture and Mattresses/Bedding**

Fires involving careless smoking usually have upholstered furniture or mattresses/bedding as the object first ignited. This continues to be the case.

If we consider those fires for which an "object first ignited" was reported by the firefighters, that is, the data entry was not left blank or undetermined, the NFIRS 1983 data shows the following for careless smoking fires and deaths:

<u>Object First Ignited</u>	<u>Fires</u>	<u>Deaths</u>
Upholstered furniture	25%	53%
Mattresses/Bedding	33%	32%
Other	41%	16%

These results are similar to those in the previous 5 years. Upholstered furniture is the most commonly ignited item where deaths occur; they are involved in 53% of the deaths. Mattresses and bedding are second. The two together account for 85 percent of the careless smoking fire deaths.

Fires are different. Upholstered furniture and mattresses/bedding together account for 58 percent of the fires involving smoking materials, but "other items" -- especially trash and rubbish -- are also a major category.

Since the number of fires and fire deaths involving smoking materials are both declining, the absolute numbers of fires in upholstered furniture and bedding are also dropping.

### Conclusion

The fire problem associated with careless smoking has significantly declined over the last five years without altering the product for fire safety.

It is likely that this favorable trend will continue if:

- usage of smoke detectors continues to spread.
- current detectors are maintained (kept in batteries).
- first-generation detectors do not start to fail catastrophically.
- public awareness and public education on fire safety is maintained.
- smolder-resistant upholstered furniture and bedding get used by a wider segment of the population.

Further details on the fire statistics are available upon request. Graphic plots of the five-year trends might be desirable if presentations are made.

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