

ALASKA LEGISLATURE COMMITTEE FILES 1983 - 1984 8672

2725 SLC HB 508 (FILE 1)

and independent investigations on the Nevada fire led the State Fire Marshal to conclude: "... plastic pipe may have played a contributing role in... (the) tragic fire... in Las Vegas, and many news accounts describe the precise problems I alluded to in my reports to the (State Housing) Commission." (See Exhibit 1.) The Fire Marshal went on to "strongly recommend" specific research and standards evaluation prior to any approval of plastic pipe for high-rise construction.

II

HEALTH HAZARDS FOR WORKERS

In May 1980, the California Department of Health Services did the first compilation of medical literature and research data on the potential hazards to workers when exposed to the wide variety of toxic chemicals found in plastic pipe and glues. As with the State Fire Marshal, the Health Department's effort was the first major push by an independent governmental agency to fully evaluate heretofore disparate and complex chemical data. Their conclusions (see Exhibit 2) are wide-sweeping and "suggest the possibility of serious and previously unrecognized health effects among workers who install plastic pipe....Consequently, it is not clear that such pipe can be used safely under present conditions."

Unfortunately, but not unexpectedly, the petrochemical industry deliberately misrepresented the major findings of the Health Department, specifically Cal/OSHA. The Plastic Pipe and Fitting Association (PPFA) went to such an extreme in twisting and contorting the facts on plastic pipe that on March 5, 1981, the Deputy Chief for Health of the California State Occupational Safety and Health Administration wrote to the California Housing Commission to correct

the false information. "...The PPFA has inappropriately extracted parts of our overall study, developed misleading statements and made these available to the press." (Exhibit 3.) Dr. Wade continued, "...we carefully identified what is known of the real and potential toxicity of these materials as well as the areas where we have inadequate information." He re-emphasized the importance for "all interested parties" to look at the evidence collected "in total" as presented in the May 1980 report.

The California Health Department in November 1980, publicly testified on the relevance of its May 1980 "Interim Report":

"We think further study is urgently needed about the possibility that some events in and around the construction of pipes, particularly, and the pipes that we have been studying may be associated with increases of cancer in workers, particularly lymphomas.... We also have a long list of adverse effects."

(Reporter's Transcript, Commission on Housing and Community Development Hearing, November 24, 1980, p. 70.)

The health survey of plumbers in California reported, among other things, 54 lymphomas out of approximately 10,000 respondents. This staggeringly high rate of lymphoma drew the specific attention of the USC Medical School where the country's foremost research in lymphoma is being conducted.

In late 1980, Alexandra Levine, M.D., after an analysis of the biological slides and medical records of the first five cases submitted to the medical school,

commented: "It is noteworthy to me that all five of these patients with documented diagnosis of lymphoma have had quite extensive exposure to plastic materials which were used during the course of their work." (Exhibit 4.)

In sum, the medical research conducted by the California Health Department, the Occupational Safety and Health Administration, USC Medical School and others, clearly documents the potential for serious, long-range health problems from worker exposure to plastic pipe and its glues.

III

ENVIRONMENTAL CONTAMINATION

Perhaps the most frightening aspect of the multi-faceted issues with plastic pipe concerns general environmental contamination. The toxic chemicals in plastic pipe and its cement solvents appear to be capable of leaching into the environment and thereby causing unalterable damage to our plants, our aquatic life, and our food chain.

For example, a study done by the California Analytical Laboratories and reviewed by the State Department of Health Services, documents the previously unknown presence of "impurities" in plastic pipe. The impurities include known carcinogens such as chloroform, benzene, DEHP, acrylonitrile, and styrene, as well as other toxic chemicals on the EPA list of priority pollutants. (Exhibit 5.) This poses not simply a human health risk to workers who install plastic pipe, but as discussed in more detail below, to consumers who drink water from plastic pipe. Furthermore, it points to a definite risk to the environment generally from the waste discharge of water flowing through plastic pipes. The subject chemicals will add to the existing load of pollutants known to have serious environmental effects because they display all of the characteristics of such chemicals: they can be accumulated in living organisms

and food chains, and may be widely dispersed in the environment.

Policy makers may find it helpful to reflect on the numerous requests from public interest groups -- consumer groups, environmental coalitions, womens groups, public interest lawyers -- who have called for comprehensive analysis and evaluation of these potential long-range contamination factors before plastic pipe use is allowed to expand.

(Exhibit 6.)

IV

PLASTIC PIPE FOR POTABLE WATER

(Poly Vinyl Chloride [PVC]
and Chlorinated Poly Vinyl Chloride [CPVC])

In the course of its exhaustive research of the scientific literature on plastic pipe, the California Department of Health Services found a previously unheralded article indicating that plastic pipe leaches its solvents into the drinking water. To confirm the potentially incalculable health consequences of this article, the Department of Health Services commissioned the Montgomery Testing Laboratory to conduct the first government sanctioned study to measure the amount of solvents that leached into drinking water from plastic pipe.

The landmark Montgomery test is highly controversial because it simply provides raw test data. Moreover, because the simulated pipe configuration test incorporated an arguably improperly designed pipe "fitting density," experts in the State Department of Health Services estimate the possibility of a 50 percent sampling error. That is, the results of the Montgomery tests may be understated by as much as 50 percent ("Final Report on Potential Health Hazards Associated with the Use of Plastic Pipe in Potable Water System," Department of Health Services, p. 16).

Yet, even with a conservative evaluation of the data, alarming interpretations result. The Department of Health Services stated in their final report:

"With the possible exception of the leaching of the phthalates (DEHP), the principal public health finding of this study is the possibility of excessive amounts of solvents and carbon tetrachloride, chloroform and tetrachlorethene accumulating during the stagnant period between initial installation of plastic pipe and occupation of the dwelling." (Exhibit 7.)

The other conclusions in the final report of the Department of Health Services are tremendously complex and must be viewed in their proper context. For example, extensive "flushing" of the system "may" decrease the risk of abuse from the solvents leaching into the water. However, some of the so-called "volatile organic" chemicals in plastic pipe itself "can accumulate in chlorinated water" notwithstanding the flushing requirement. (See Exhibit 7, p. 35.) One of these chemicals (carbon tetrachloride) was present in the water at 10 times the EPA action level. Other equally dangerous chemicals (chloroform, tetrachloroethylene, DEHP) found at equally high and dramatic levels may not be reduced by flushing. For example, the Department stated:

"Because the possibility exists that some of these elements (carbon tetrachloride, chloroform, and tetrachloroethylene, DEHP) may be coming from the pipes themselves, particularly plasticizers, there is every possibility that they could build up on a longer interim after the initial flushing." (Reporter's Transcript, Commission on Housing and Community Development Public Hearing, November 24, 1980, p. 76.)

So damaging were the findings of the Montgomery tests and the Department of Health Services' evaluation, that the Plastic Pipe and Fitting Association (PPFA) proceeded to initiate a nationwide media strategy to "explain" the results.

In a January 19, 1981, letter from the National Association of Plumbing, Heating, Cooling Contractors (PHCC) to Dr. Marc Lappe', California Department of Health Services, the PHCC Technical Director complained to the California Health Department as to the reliability of the PPFA's explanation that the Health-commissioned tests showed plastic pipe and its glues were safe. The Contractors had received a number of inquiries from their members concerning the trustworthiness of the Plastic Pipe and Fitting Association's news accounts. The Technical Director of the Contractors requested back-up support information from the Plastic Pipe and Fitting Association. The information provided by the plastic pipe industry apparently

was so poorly drafted, with unsigned reports, and missing data, that the Contractors decided to request review from the California Department of Health Services. In asking for Health Department reviews, the Contractors commented: "It is interesting to note how your report is reworded (by PPFA) or interpreted to mean something rather different from what was generated by your organization."

The California Health Department response (Exhibit 8) to the Contractors' request was directly to the point. According to Health, the Plastic Pipe Association's reports were "flawed," "incomplete" and "do not reflect accurately our own interpretation of the findings." The California Health Department reached "totally different conclusions regarding potential risks than did this (unidentified industry group of toxicologists) review committee." The PPFA press release was "factually in error and seriously misleading regarding our findings."

In particular,

1. "PPFA did not submit Table 19 of the Montgomery Study to PHCC which "contained the highest readings on chemicals of concern to us, and substantially changed our analysis of the final results. (Table 19 attached for comparison.)"
2. PPFA's characterization that "solvent levels did not exceed safety values "severely distort(s)"

the actual findings of the (Montgomery) Report." Specifically, the Health Department found that "solvent levels did exceed recommended (safety) values..."

3. Contrary to PPFA assertions that some chemicals found in the Montgomery tests were not found in the pipe but were induced from sloppy laboratory procedures, the Health Department stated "we resolved (that) issue...by repeat testing and concluded that the evidence pointed to the pipes or a combination of pipes and solvents as the source of DEHP and not laboratory artifact."

In a nutshell, the California Health Department found that the Plastic Pipe and Fitting Association had seriously misrepresented the real health and safety dangers with drinking water coming from plastic pipe.

As with the worker safety question, the plastic pipe industry again distorted, misrepresented, and inaccurately quoted California governmental reports on health and safety to the extent that each of these governmental agencies had to specifically correct the record. It is no wonder that the Director of the California Department of Consumer Affairs recommended:

"It would be unwise to decide now to expose Californians in their homes to what may be an extremely serious health hazard." (Exhibit 9.)

POLYBUTYLENE PIPE FOR POTABLE WATER

Since the Montgomery test for plastic pipe drinking water safety was based on the hypothesis that solvents used to cement these plastic pipes leached toxic chemicals into the drinking water, the Department of Health Services did not request a study of polybutylene (PB) as this pipe does not require solvents for installation.

Yet because polybutylene is part of the generic plastic pipe grouping, it may have many of the same additives, stabilizers and plasticizers as PVC, CPVC and ABS.

In early 1981, the California Department of Consumer Affairs petitioned the State Housing Commission requesting the same stringent testing for PB as the Commission mandated for CPVC and PVC. In this context, the California Health Services Department analyzed the first research conducted on PB pipe itself. The results were alarming. (See Exhibit 10.)

In particular, the tests conducted by the California Analytical Laboratories found 50-500 ppm (parts per million) of DEHP (a known animal carcinogen) in the pipe itself. The United States Environmental Protection Agency (EPA), in a document published at the end of 1980 entitled "Priority Review Level 1 - Di-(2-ethylhexyl) Phthalate (DEHP)," recommends "appropriate action(s) under the Toxic Substance

Control Act, section 6 to prevent or reduce the carcinogenic risks from exposures to DEHP." (page 129).* Subsequent tests on other polybutylene pipe used for flexible connections to plumbing fixtures also found DEHP. (Exhibit 12.)

The results were all the more disturbing because the representative of Shell Chemical Company had testified on the public record that polybutylene pipe did not contain DEHP. The combination of Shell's apparent discrepancy in testimony and the data developed by California Analytical Laboratories finding DEHP, led the Department of Health Services to state:

"It is disturbing that the (State Housing) Commission was given such apparently misleading testimony (by Shell), since the potential leaching of this compound (DEHP) if present in the type of polybutylene used for potable water poses a potential health hazard to consumers."
(Exhibit 13.)

The Department of Health Services went on to conclude that "obviously this situation deserves immediate at-

* The same EPA document reviewed the DEHP data from the Montgomery Tests on PVC and CPVC. (The test on PB had not been completed.) This document commented: "These data represent the most reliable data on levels or potential levels in drinking water from DEHP containing plastic pipe." (Exhibit 11.)

tention because of the health risks at stake."

To counter this substantive finding, Shell Chemical Company commissioned a first test to be conducted by Radian Labs of Austin, Texas. (Exhibit 14.) While purporting to show the absence of DEHP or any other toxic chemicals, the company's first test was so flawed as to be of little value. (Exhibit 15.)

At the April 20, 1981 public hearing before the California Housing Commission, the representative from the State Department of Health Services stated unequivocally that the chemical found by the California Analytical Labs was "without question" DEHP. Furthermore, the Health Department spokesperson specifically identified a three-member panel within the Health Department which had reviewed the California Analytical Laboratories Test. This impartial panel found the test to comply with strict EPA testing protocols and to be scientifically valid. The Health Department went on to assert that DEHP was also found, in smaller amounts, in Shell's own tests of the PB pipe conducted by Radian Labs.

Presumably embarrassed by the results of its first test, Shell Chemical Company conducted a second test on its product through the Radian Lab. Unfortunately for the industry, the second test revealed "unknown" chemicals that "have to be evaluated," according to the April 20, 1981

testimony of the Department of Health Services.

In a June 15, 1981 letter, the Department of Health Services expressed "cause for concern" to Shell with the chemicals BHT and alkylbenzene sulphonate, both of which were found in the Radian Lab tests.

"Recent studies have shown that chronic, relatively low level ingestion of BHT can lead to reduced weight gain, increased liver size and raised serum cholesterol in a number of separate animal tests. Other studies have shown reduced litter size following exposure during embryonic development." (Exhibit 16.)

As of this writing, no additional information has been supplied on these chemicals for the Housing Commission's public record.

In conclusion, the Housing Commission agreed with the Department of Health Services, their own Director of the State Department of Housing and Community Development (Exhibit 17), and the Director of the State Department of Consumer Affairs (Exhibit 18) that polybutylene should not be authorized for use until the plastic pipe is thoroughly and impartially studied. (Exhibit 19.)

VI

CONCLUSION

It is now clear that every major California state governmental agency that has an interest in construction, including the State Department of Consumer Affairs, the State Department of Health Services, the State Department of Housing, the State Occupational Safety and Health Administration and the State Commission on Housing and Community Development, all advocate comprehensive analysis and evaluation of plastic pipe through the rigorously scientific and public procedures of the California Environmental Quality Act (CEQA) before any expansion of use is permitted. To do otherwise violates California law:

"An adopting agency cannot avoid compliance with CEQA by adopting a 'model' code by reference where the code contains material that was previously found to be subject to CEQA. To do otherwise would violate both the State Building Standards Law and the California Environmental Quality Act." (Exhibit 20.)

Furthermore, major health, consumer and environmental interest groups, specifically the Sierra Club, the

Consumer Advisory Council, Women For, the Center for Law in the Public Interest, have unanimously called for plastic pipe to be scrutinized for long-range health and environmental contamination before plastic pipe is permitted for widespread use.

PAUL A. TAYLOR, PhD
PRESIDENT

ROBERT L. SODERQUIST, PhD
VICE PRESIDENT

ALLEN W. ...
VICE PRESIDENT

HUBY A. ...
SECRETARY/TREASURER

California Analytical Laboratories, Inc.

401 NORTH 16th STREET
SACRAMENTO, CALIFORNIA 95814
(916) 444-9602

December 31, 1980
Lab No. 12343
Received: 11/17/80

Mr. Raymond Leonardini
Attorney at Law
717 "K" St., Suite 510
Sacramento, CA 95814

Dear Mr. Leonardini:

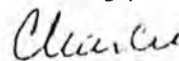
Attached are the results of our GC/MS analysis of two polybutylene pipe samples received at CAL from a representative of the City of Sacramento Public works Department and logged under CAL I.D. 12343.

The method of sample preparation and the GC/MS techniques were essentially the same as those employed for the previous analyses of PVC, ABS and CPVC pipe (refer to CAL report of 12 November, 1980, CAL I.D. 12295 and 12298).

Over fifteen components were identified and their levels in the pipe samples estimated. It must be emphasized that the levels are rough estimates only.

If you have any questions, please do not hesitate to contact me.

Sincerely,



Charles J. Soderquist, PhD
Vice President
Agricultural and Environmental Chemist

CJS/slh

TABLE I

Sample	Compound	GC/MS reference scan no. ^a	Estimated level, ppm (mg/kg)
2343-1	butene	V72	0.1-1.0
	acetone	V92	0.5-5.0
	diethyl ether	V160	0.01-0.1
	methyl cyclopentane	V226	0.1-1.0
	methyl cyclohexane	V324	1-10
	3-methyl hexane	V373	1-10
	3-ethyl-3-methyl pentane	V386	1-10
	heptane	V437	1-10
	5 alkanes (>C ₁₆)	B407, B421, B479 B496, B647	100-1000 total
	butylated hydroxy toluene (BHT)	B533	50-500
	bis (2-ethylhexyl)phthalate (BEHP)	B633	50-500
a C ₁₈ -C ₁₉ alkene	B681	5000-50,000	
2343-2	acetone	V93	0.5-5.0
	diethyl ether	V161	0.05-0.5
	methyl cyclohexane	V325	0.5-5.0
	2,3,3-trimethyl hexane	V38 ^R	0.5-5.0
	10 alkanes (>C ₁₆)	B38 ^R , B407, B420, B478, B488, B507, B540, B549, B596, B646	100-1,000 total

NOTES: ^a V = Volatile Organic fraction, B = Base/Neutral (hexane-extracted) fraction.

OFFICE OF PESTICIDES AND TOXIC SUBSTANCES, U.S. ENVIRONMENTAL
PROTECTION AGENCY

(November 28, 1980)

Addendum

Priority Review Level I - Di-(2-ethylhexyl) Phthalate DEHP

After this assessment was completed, Assessment Division received information from the California Department of Health Services, and from representatives of the Plumbers Union concerning actual and projected levels of DEHP in drinking water resulting from the migration of DEHP from plastic water pipe.

Water pipe made from polyvinyl chloride (PVC) and chlorinated polyvinyl chloride (CPVC) and plasticized with DEHP is in common usage and is rapidly replacing copper pipe in new home construction. While the California studies were primarily concerned with solvents used to join the pipe together, data were developed from conditions simulating use situations that indicated that DEHP may be present at up to 246 ppb in drinking water. Limited evaluations of measured levels in drinking water supplies of new homes were up to 110 ppb. These levels are considerably higher than previously recorded for drinking water and represent a risk of 9.4×10^{-5} and 2.9×10^{-5} respectively.

The DEHP levels reported in these studies varied considerably. Factors such as the physical and chemical properties of the water, dwell time, and analytical methodology frequently lead to discrepancies in reported levels for DEHP. However, these data represent the most reliable data on levels or potentials levels in drinking water from DEHP containing plastic pipe.

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March 18, 1981
Lab Nos. 12752/12754
Received: 3/3/81

Ray Leonardini
717 "K" St., Suite 510
Sacramento, CA 95814

Four pipe and fixture connector samples were received from Mr. John Gorman to be analyzed for organic constituents.

<u>CAL I.D.</u>	<u>Sample Description</u>
12752-1	gray fixture connector, PB2110--QEST-H-PB2100-NSF-PW FDR 11-180°F 100 psi ASTM-D-3309 PAS CERT- (unreadable)-B137.80 1/4 CTS-062 080279
12752-2	gray fixture connector, PB2110-IAPMO UPC PB2110-SDR11-1 BSF-pw 1/4 X 3/8-180°-100 psi-D3309-CSA-CERT
12754-1	gray pipe, PB2110--QEST-H-IAPMO-UOC-PB2110-SDR11-NSF-pw 3/8 X 1/2 180°-100 psi-D-3309-CSA-CERT-B137.8 1/23/77
12754-2	black pipe, PB2110--NSF pw ASTM-D3309 100 psi-(unreadable)-180°F-122 1106C-(unreadable)-1,2" CTS SDR-11 P

Sample Preparation: Samples 12752 and 2-foot lengths of samples 12754 were cleaned with detergent, rinsed with copious amounts of water and air dried. Representative subsamples were obtained by filing with a coarse rasp. Each subsample was rinsed with hexane and portions then placed in clean sample tubes with 5 mL of hexane (-a series) and with benzene (-b series). Identical tubes were filled with the same solvents (both were Nanograde quality) to serve as controls. The samples were held under ambient conditions for five days (for GC/MS) and for an additional five days until selective detector GC analysis was made.

Analysis I--GC/MS. Just prior to analysis by gas-chromatography mass-spectrometry (GC/MS), a 1.0 mL aliquot of the extract was removed and spiked with D-10 anthracene as an internal standard. A 5 µL portion was then injected and processed per the EPA Priority Pollutant (B/N fraction) protocol. Compounds were identified by computer searches of an EPA library, and quantities were estimated by comparison to the known amount of D-10 anthracene added.

Only the hexane extracts (-a series) were analyzed by GC/MS. The hexane blank was clean.

Ray Leonardini
Lab Nos. 12752/12754
March 18, 1981
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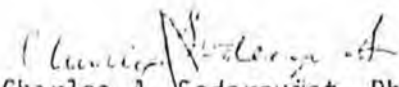
II. Specific-detector GC. Sample extracts were examined by electron-capture gas chromatography (ECD-GC) and thermionic-specific gas chromatography (TSD-GC); these detectors are generally selective for halogenated and nitrogen and/or phosphorus organics, respectively, although ECD-GC is suitable for the determination of phthalate ester plasticizers.

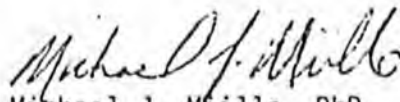
Results: The GC/MS analyses indicated that all four samples were qualitatively similar in that a series of C₂₁-C₃₁ hydrocarbons was present in each; their total concentration was estimated to be in the 500-2,500 ppm (mg/Kg) range. Butylated hydroxytoluene (BHT) was present in each sample at the 10-50 ppm level. Bis (ethylhexyl) phthalate (DEHP) was also found at varying levels in each sample as indicated in Table I.

The TSD-GC analyses indicated that no nitrogen or phosphorus containing organic compounds, which were amenable to GC analysis, were present above 10 ppm.

The ECD-GC analyses indicated that DEHP was present in all samples. Identification and quantitation was based on co-chromatography with an authentic DEHP reference standard. Results are summarized in Table I.

Results of Table I should be considered as minimum values since the efficiency of extraction with either solvent is not known and is probably less than 100%.


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Vice President
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Michael J. Mille, PhD
Director of GC/MS Services

CJS/slh

Ray Leonardini
Lab Nos. 12752/12754
March 18, 1981
page 3

TABLE I

<u>Sample</u>	<u>Extractant</u>	<u>ppm DEHP found (mq/Ka)</u>	
		<u>by ECD-GC</u>	<u>by GC/MS</u>
12752-1a	Hexane	4.0	4.5
-1b	Benzene	5.0	n.m.
-2a	Hexane	0.8	0.6
-2b	Benzene	0.7	n.m.
12754-1a	Hexane	>20	32
-1b	Benzene	>20	n.m.
-2a	Hexane	1.8	2.1
-2b	Benzene	1.4	n.m.

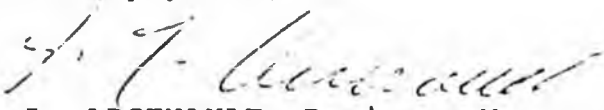
n.m. = not measured

The Honorable Niilo Koponen
Dwight Perkins
Page 2
January 26, 1984

this, the natural gas pipeline proposals, and other matters that effect the work life of our members.

My thanks for all your help.

Sincerely yours,


J. L. ARSENAULT, Business Manager
Financial Secretary - Treasurer
U.A. Local 375

CLM

Enclosure

c.c. The Honorable Don Bennett
The Honorable Richard Eliason
The Honorable Bettye Fahrenkamp
The Honorable Vic Fischer
The Honorable Joe Josephson
The Honorable Jay Kerttula
The Honorable H. Pappy Moss
The Honorable Pat Rodey
The Honorable Bob Bettisworth
The Honorable Don Clocksin
The Honorable Mike Davis
The Honorable Jim Duncan
The Honorable Walt Furnace
The Honorable Ronald L. Larson
The Honorable Hugh Malone
The Honorable Mike M. Miller
The Honorable Mike W. Miller
The Honorable John Ringstad
The Honorable Richard Shultz
The Honorable Mike Szymanski

IN THE HOUSE

BY COWDERY AND LISKA

SUBSTITUTE FOR

HOUSE BILL NO. 508

IN THE LEGISLATURE OF THE STATE OF ALASKA

THIRTEENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to the plumbing code."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 18.60.705 is amended to read:

Sec. 18.60.705. PLUMBING CODE.~ The Department of Labor shall adopt, as the official minimum plumbing code for the state, the Uniform Plumbing Code, 1982 [1979] edition, adopted at the 52nd [49TH] Annual Conference, October 1981 [SEPTEMBER, 1978], International Association of Plumbing and Mechanical Officials, chs. 1 - 13 and appendices, useful tables, and installation standards, but excluding Part I, Administration, pages 1a - 6a, all of Subsection (c) and its exception, as well as the second and third sentences of Part (a) of Section 1004, Chapter 10, Page 75, and subject to AS 18.60.710 - 18.60.740. The following amendments to said code shall be adopted:

- In Chapter 4, Page 37, Section 401(a) and (b), shall be amended by deletion of the words "extra strength vitrified clay pipe" and "vitrified clay".

- In Chapter 4, Page 37, Section 401(a), subparagraphs number (1), (2) and (3), shall be deleted and will be replaced by the following words:

"1. No galvanized wrought iron or galvanized steel pipe or ABS or PBC shall be used under ground, but all such pipe shall be kept at least six inches above ground.

2. ABS or PBC installations shall be limited to residential construction not over 25 feet in stack height. ABS and PBC shall be no less than Schedule 40 iron pipe size standard steel pipe thickness. ABS or PBC shall not penetrate any one hour wall unless it is sleeved with a minimum of 20 gauge metal for a distance of six inches beyond the wall or changed to Schedule 40 galvanized DWV copper or cast iron pipe to a metal trap connection."

- In Chapter 5, Page 45, Section 503(a), subsection number (2), shall be deleted and replaced with the following words:

"2. ABS or PBC installations shall be limited to residential construction not over 25 feet in stack height. ABS and PBC shall be no less than Schedule 40 iron pipe size standard steel pipe thickness. ABS or PBC shall not penetrate and one hour wall unless it is sleeved with a minimum of 20 gauge metal for a distance of six inches

beyond the wall or changed to Schedule 40 galvanized DWV
copper or cast iron pipe to a metal trap connection."

* Sec. 2. AS 18.60.740(1) is amended to read:

(1) "code" means the Uniform Plumbing Code, 1982 [1979] edition, adopted at the 52nd [49TH] Annual Conference, October 1981 [SEPTEMBER 1978], International Association of Plumbing and Mechanical Officials as modified by AS 18.60.705;

Bill No. Senate Bill 214

Date April 12, 1983

Title "An Act relating to the Plumbing Code."

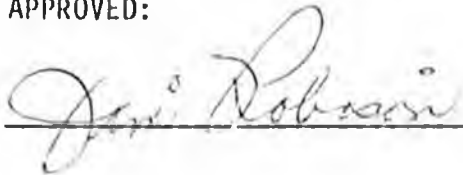
Contact: Judy Knight
465-2700
Bob Bacolas

Every three years, the International Association of Plumbing and Mechanical Officials revises its minimum standards for the installation of plumbing to incorporate technological advances. The 1982 code described in this bill is the most recent effort in this regard. The 1979 code presently in effect for the State of Alaska is therefore outdated and will not be reprinted by the International Association of Plumbing and Mechanical Officials.

Adoption of the 1982 Uniform Plumbing Code would bring Alaska's minimum standards into conformity with those commonly accepted and used by industry across the nation. The latest edition of the Uniform Plumbing Code is also commonly adopted by political subdivisions in the state as the minimum standards enforced under their building inspection programs.

The Department of Labor support passage of this bill. It would not have any fiscal impact.

APPROVED:



Jerry Robinson

1982 Uniform Plumbing Code
Significant Changes

Section 108 allows for a larger grease interception to serve one or more fixtures. Section 203(d) states that copper tubing used for water service shall have a weight of not less than Type L.

Table 4-3, footnote #4. Evidence indicates that a three-inch horizontal waste will effectively handle discharge from three water closets; thus the code change, so that only four water closets or six unit traps are allowed on any vertical stack, and not to exceed three water closets or six unit traps on any horizontal branch or drain.

Section 601 changes will not allow cold storage rooms, refrigerators, cooling counters, etc. designed to hold food or drink, or sinks for washing or preparation of food, to be directly connected to a waste or vent pipe. All drains shall discharge through an air gap into a open drain or approved receptor.

Section 1004 is one of the major changes, and allows Poly Butylene (PB) water pipes to be used for hot and cold water distribution tubing systems, using inserts for connectors. It also inserts language to assure that when metal pipe is used as a building ground, it will be replaced by metal pipe when repairs are made to these pipes.

Also adopted were insulation standards for cold water service and yard piping. These standards were for Poly Vinyl Chloride (PVC), asbestos cement pressure piping and Poly Butylene (PB).

Those groups most affected by this change will be plumbers, contractors, local governments and state agencies.

APR 27 1983

P. Fischer

FAIRBANKS CENTRAL LABOR COUNCIL

A. F. of L. - C. I. O.

FAIRBANKS, ALASKA

(907) 479-6281

April 22, 1983

Senator Don Bennett
Pouch V
Juneau, Alaska 99811
(Mail Stop 3100)


Re: Senate Bill 214

Dear Don :

The Fairbanks Central Labor Council has unanimously adopted the resolution opposing Senate Bill 214. The gravamen of the bill is to delete the 1975 Uniform Plumbing Code as the official minimum plumbing code for the state. The bill replaces the 1979 edition with a 1982 edition. The 1982 edition was the product of a tremendous amount of lobbying and as a result, it is totally permissive. This means there are almost no standards. Plumbing work done by union plumbing contractors and union men has always been a guarantee of a good functional job. If we reduce to the standards of the 1982 version of the code, every kind of get rich quick short cut will be codified and everyone will have to drop to those standards to meet the competition. The result will be non-thawable pipes, leaks, and tremendous dissatisfaction with the plumbing industry.

For the benefit of the public, who needs the protection, and the plumbing industry, that must maintain its reputation, please vote against SB 214.

Sincerely,


ARTHUR LYLE ROBSON, Secretary-Treasurer
Fairbanks Central Labor Council

ALR:CLM

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SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES

MARIE SHIBUYA-SNELL, DIRECTOR OF THE
CALIFORNIA DEPARTMENT OF CONSUMER
AFFAIRS, FRIENDS OF THE EARTH,
CONSUMER FEDERATION OF CALIFORNIA,
STATE BUILDING AND CONSTRUCTION TRADES
COUNCIL OF CALIFORNIA, AND AILEEN ADAMS,

Plaintiffs,

vs.

INTERNATIONAL ASSOCIATION OF PLUMBING
AND MECHANICAL OFFICIALS, a California
corporation, and DOES I through XX,

Defendants.

CASE NO. C 395 294
JUDGMENT EXTENDING
AND MODIFYING
INJUNCTION

The above-captioned matter was duly and regularly called for trial on December 12, 1983, in Department 32 of the Superior Court, the Honorable Jack A. Crickard, Judge Presiding. Roger Dickinson, Esq., appeared on behalf of plaintiff Marie Shibuya-Snell, Director of the California Department of Consumer Affairs ("Director"); Michael H. Remy, Esq., and Tina A. Thomas, Esq., appeared on behalf of plaintiff California State Building and Construction Trades Council, AFL-CIO ("Union Council"); and Geoffrey Cowan, Esq.,

1 entered an appearance on December 12, 1983, behalf of
2 plaintiffs Consumer Federation of California, Friends of the
3 Earth and Aileen Adams.

4 John F. McKenna, Jr., Esq., appeared on behalf of
5 defendant International Association of Plumbing and Mechanical
6 Officials ("IAPMO").

7 The matter was heard on December 12, 13, 14, 15, 16, 20
8 and 21, 1983. Evidence, both oral and written, was submitted
9 by all parties, and the matter was duly submitted.

10 IT IS NOW ORDERED, ADJUDGED AND DECREED:

11 1. Upon the authority of Code of Civil Procedure
12 Section 526 Subdivision (1), the existing preliminary
13 injunction, granted upon the application of plaintiff
14 Director's predecessor in office, is partially modified and
15 continued in force as the permanent order of this Court.

16 2. Pursuant thereto, Defendant IAPMO, its agents,
17 officers, employees, and representatives, and all persons
18 acting in concert or participating with IAPMO are hereby
19 permanently enjoined from disseminating, directly or
20 indirectly, to any individual or organization in California,
21 the 1982 Edition of the Uniform Plumbing Code ("UPC") or the
22 IAPMO Directory of Plumbing Research Recommendations
23 ("Research Directory"), without including a warning notice.
24 The warning notice required to be included shall appear in no
25 less than 10-point bold type and shall state as follows:

26 NOTICE: An Environmental Impact Report is now
27 being prepared in California to determine whether
28 the use of CPVC, PVC, or PB plastic pipe for trans-
ing potable water poses a danger to public health
or the environment. At the time of this printing
of the 1982 Edition of the Uniform Plumbing Code,

1 and this update of IAPMO's Directory of Plumbing
2 Research Recommendations, the State of California does
3 not permit any expansion of the use of such pipe, in
4 applications permitted by the Uniform Plumbing Code,
5 beyond those applications permitted in the 1979 Edition
6 of the Uniform Plumbing Code.

7 For information on California restrictions, contact
8 the State Housing Law Section of the California
9 Housing and Community Development Department.

10 Immediately below the notice, in the same size or smaller
11 type, the following statement may appear, at the option of
12 IAPMO:

13 (This notice is inserted herein pursuant to a court
14 Order in the case of CALIFORNIA DEPARTMENT OF CONS-
15 SUMER AFFAIRS v. INTERNATIONAL ASSOCIATION OF PLUMB-
16 ING AND MECHANICAL OFFICIALS, Los Angeles Superior
17 Court No. C-395294.)

18 The notice shall not contain, include, or be accompanied
19 by any other information or materials.

20 3. The notice shall be affixed

21 (a) To the inside cover of each copy of the
22 UPC affected by this Order, and

23 (b) Upon the reverse side of the division
24 page entitled "Water Systems and Related Items"

25 (No. 5, of each copy the Research Directory,

26 (c) By suitable adhesive material along the
27 notice's top and bottom borders, in a manner cal-
28 culated to ensure that the accidental removal of
the notice does not occur.

4. The foregoing orders shall take effect 30 days after
entry of this Judgment, and the foregoing orders shall
automatically terminate, both as to the UPC and the Research
Directory, upon the date the 1982 Edition of the UPC is
superceded by the publication of the 1985 Edition of the UPC.

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5. All relief sought by plaintiffs, other than the relief granted to plaintiff Director by the foregoing orders, is denied.

6. Each party shall bear their own court costs.

DATED: _____

JACK A. CRICKARD
JUDGE OF THE SUPERIOR COURT

re - Plumbing Code
for Mr. Koponen

from
April 1984
"Technology
Review"
(pub by Mass. Institute
of Technology -

SMOKE TOXICOLOGY
A SPECIAL REPORT

Where There's Smoke, There's Ire

IN the early morning of March 6, 1982, fire broke out in room 404 of the Westchase Hilton Hotel in Houston. The presumed culprit: a carelessly placed cigarette. Local fire officials described it as a "simple room fire," and the deputy fire chief reported that extinguishing the blaze was a "fairly straightforward" operation. The room's occupants escaped unharmed. But ten other guests on the same floor died in their rooms from smoke inhalation.

Smoke—not flames—has for many years been recognized as the primary killer in fires. Of the roughly 7,500 fire fatalities in the United States each year, smoke kills more than 80 percent. Traditionally, nearly all smoke-inhalation deaths have been summarily attributed to carbon monoxide, a toxic gas produced during the combustion of essentially everything that burns. However, researchers from the

As synthetics increasingly replace natural materials in buildings, angry debate swirls around whether this heightens the danger of fires and whether anything can—or should—be done.

BY LINDA GARMON

Foundation for Fire Safety pieced together a different picture of the Westchase fire.

According to Merritt Birky, director of research at the foundation during the investigation, blood samples taken from the victims did show elevated levels of carbon monoxide, but they were not high enough to be the direct or sole cause of death. On the other hand, all the victims had elevated levels of hydrogen cyanide in their blood, and two had levels high enough to be lethal. The victims also had sustained severe respiratory damage, suggesting exposure to hydrogen-chloride gas.

These poisonous gases were generated by the combustion of synthetic materials in the room, says Birky. The foundation's tests indicated that the hydrogen cyanide came from polyurethane carpet padding, nylon carpet and blankets, and a polyurethane cushion on an upholstered chair.

PHOTO: TONI ROSENTHAL, FOUR BY FIVE

*Smoke—
not flames—is the primary
killer in fires, and toxic gases generated
when synthetic materials burn
may be making smoke
even more deadly.*

The hydrogen chloride came from a polyvinyl-chloride wall covering. Birky says the study concluded that deadly gases from the burning synthetics "contributed to most, if not all," of the deaths.

Representatives of synthetics manufacturers have assailed Birky's conclusions. For example, John Lawrence of the Society of the Plastics Industry says, "There were a lot of synthetic materials in the room where the fire occurred, but there were a lot of burnable nonplastics, too." He notes that the Houston medical examiner listed inhalation of carbon monoxide and soot as the cause of death of every victim except for the people in one room, who had lethal levels of hydrogen cyanide in their blood. Even then, Lawrence says that blood-cyanide measurements are often suspect because the body itself produces some hydrogen cyanide. "We feel that plastics, where properly used, do not present any increased hazard," he concludes.

Clash of Interests

The dispute over the Westchase Hilton tragedy is part of a larger, long-standing, and heated controversy in fire safety. There is no question that use of synthetics in buildings is rapidly increasing. "We live in a synthetic world," says Birky, where plastics and other synthetic materials have become commonplace in furnishings. Perhaps less visible is the growing role of synthetics in construction. In the mid-1960s, plastics represented only 2 percent of total building materials. By 1981, they had captured 10 percent of that market, according to Predicasts, a Cleveland market-research firm. And trends suggest that use of plastics may grow even more during the rest of the decade.

Has this shift heightened the danger of fires? Should the use of plastics and other synthetics somehow be regulated based on the toxicity of the smoke generated when they burn? Are laboratory tests well-enough developed to compare the smoke toxicities of various products, and to become the basis for selecting—and perhaps restricting—the use of furnishing and construction materials?

Answers to these questions have proved elusive, partly because combustion toxicology is a complex science, but also because huge economic stakes are involved and the issues have been clouded by corporate maneuverings and rhetoric. The most vociferous charges have been ex-

changed between the Society of the Plastics Industry (SPI), a trade association, and Allied Tube & Conduit Corp., which produces steel conduits used to contain and protect electrical wiring. Such conduits, along with pipes used in plumbing and to carry gas, have been one of the fastest growth areas for plastics in the U.S. construction industry.

Against this backdrop, an increasing number of toxicologists, legislators, and fire-safety officials has begun to sort through the tough regulatory and scientific issues. Indeed, the smoke-toxicity debate—which really gained steam during the widely publicized string of hotel fires starting with the Las Vegas MGM Grand Hotel disaster in 1980—has reached white-hot intensity.

Spurring the latest round is a report urging New York State to require manufacturers of building and furnishing materials to use a standard laboratory test to identify the poisonous gases generated when their products burn. The report, prepared by Arthur D. Little, a consulting firm based in Cambridge, Mass., recommends that such information on toxicity be filed in a central data bank. The New York Legislature, following the 1980 fire at Stouffer's Inn in Harrison, N.Y., which claimed 26 lives, had asked ADL to examine the feasibility of regulating smoke toxicity.

The fate of this proposal is still uncertain. New York Secretary of State Gail S. Shaffer is expected to recommend that the state establish a pilot program requiring manufacturers of mattresses, furniture, and interior finishings such as wall covering to test their products and submit the results to a data bank. However, she is expected to exclude construction materials.

Should New York adopt even this limited program—which is considered likely—it would be a landmark in fire-safety regulation. Of course, construction methods and materials are already subject to numerous other fire-safety-related regulations. A multitude of building-code provisions calls for fire alarm systems, fire doors, fire escapes, fire extinguishers, and exit corridors. And the Consumer Product Safety Commission has set mandatory flammability standards for mattresses and carpets and voluntary standards for upholstered furniture. But precious few codes, standards, or laws specifically address smoke toxicity.

One emerging code involves plastic con-

duit—a tube, composed mostly of polyvinyl chloride, or PVC, that is used to enclose electrical wiring. Because it is more flexible and easier to install, plastic conduit offers an attractive alternative to its metal counterpart in certain construction situations. But concern over the risk of smoke toxicity prompted the National Fire Protection Association to take action. The 1984 National Electric Code—a model code published every three years by the association, which local jurisdictions can choose to adopt—recommends that PVC conduits be permitted only in structures no taller than three stories. Some cities have already taken other steps. For example, New York City spent \$2 million in 1982 to replace with metal some of the PVC conduits in the subway system.

Other regulations related to smoke toxicity include general proscriptions in several states and local jurisdictions to the effect that building materials cannot release combustion products more toxic than those of wood. But these laws, written years before scientists began developing standard laboratory tests of smoke toxicity, go largely unenforced. However, about a half-dozen states are now taking a hard look at just how toxicity testing might be used to regulate a broad spectrum of products. What New York decides to do with the ADL report could set the stage for these other states to act.

Report Gets Mixed Reviews

The ADL study evaluated the dozen or so published methods for testing the toxicity of combustion products, including one that Birky helped develop when he was at the National Bureau of Standards (NBS). The study, led by Rosalind C. Anderson, concluded that the most useful test is one developed by Yves Alarie and Anderson when she was at the University of Pittsburgh. Anderson said she sees no conflict of interest in recommending a test that she helped design; she also helped design the NBS toxicity test that was rejected.

In the Pittsburgh test, mice in a special chamber are exposed to smoke from burning materials. This method determines what's called an LC₅₀—the amount of material that produces a "lethal concentration" of smoke noxious enough to kill 50 percent of the animals exposed for 30 minutes. (Anderson says a shorter period wouldn't address most fire situations because people are waiting to be rescued,

U.S. fire deaths are declining (graph, opposite page) plastics industry officials say this means synthetics can't be making fires more dangerous. But other claim that improved fire-fighting methods are greater cause of decline. And smoke detectors that installed in homes are approved by synthetics. They also cite a 1977 report that 100% of fire burn hospitals and 100% of hospital deaths were from fire.

In the Westchase Hilton fire (opposite, right) researchers found that the victims were exposed to toxic hydrogen chloride and hydrogen cyanide, as well as synthetic room burnables. Building materials such as plastic pipes (opposite, lower left) can also generate deadly fumes.



and a longer period would probably kill all the mice.) The lower the LC_{50} value, the more toxic the material. According to the Pittsburgh test, the LC_{50} of Douglas fir, for example, is 31 grams, while that of wire coated with polytetrafluoroethylene (Teflon) is 3 grams.

The ADI report recommends that manufacturers submit LC_{50} data on their products to a state agency, where the information would be accessible to architects, engineers, and the public. Anderson says the ADI study ruled out, for the time being, other regulatory uses of the data, such as bans on specific materials and requirements for product labeling.

Reviews of the report have been mixed. Firefighters and fire-safety officials have generally approved, though some say they would have preferred ADI to voice stronger recommendations, such as the use of LC_{50} data to ban specific products. Critics, on the other hand, have charged that a smoke-toxicity data bank would be worthless. "The problem here is that the kind of data collected will be of no value in saving lives," said G.R. Munger, president of the Society of the Plastics Industry, in his comments to the New York Legislature. Simple, small-scale toxicity tests are not representative of the complex hazards of real fires, he said.

In fact, Munger and others claim that such tests could sometimes lead builders

to select products that ignite more easily or whose flames spread faster as a trade-off against their lower combustion toxicity. For example, PVC has largely replaced cotton as an insulating material for electrical wires, in part because its higher ignition temperature makes it less likely to burn. "We think that's an example of increased fire safety from using plastics," says SPI's Lawrence. He also points out that many fires are caused by electrical short circuits, which often result from improperly grounded metal conduits. And while burning PVC plumbing has been implicated—controversially—in some of the 83 deaths in the MGM Grand fire, he points out that a short in a metal conduit started the fire. Thus, even if tests show gross differences in smoke toxicity, the results should be interpreted with caution since other flammability properties are involved in assessing hazard.

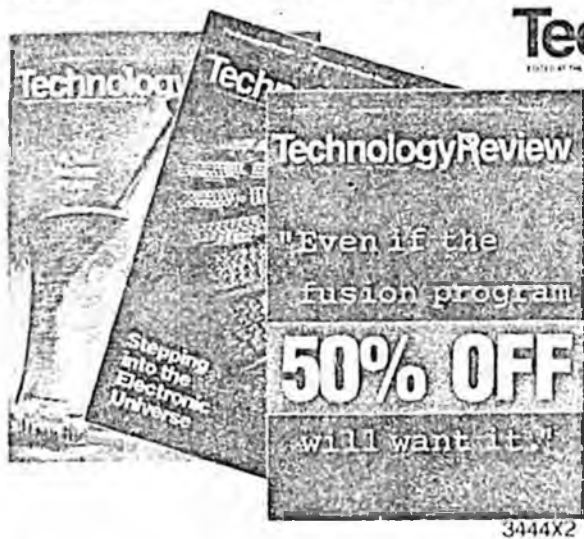
Barbara C. Levin of the NBS Center for Fire Research agrees that an LC_{50} data bank is unnecessary. In her comments to the New York State Legislature, she stated that "a toxicity test alone does not constitute toxic hazard assessment." She noted that NBS is now developing a computerized method for assessing the hazards of combustion that takes into account a product's rate of heat release, ignitability, and other fire-related characteristics as well as smoke toxicity. The method is ex-

pected to be ready in about five years.

ADI's Anderson counters that, while more research will undoubtedly improve assessment techniques, the fact that most fire victims are being killed by smoke means we shouldn't sit idly by until a hazard index is developed. And there is another pressing issue. "As melodramatic as it sounds, firefighters are out there watching their colleagues being hurt and even die," she says. She cites a study by the National Fire Protection Association that found that firefighters say that fires are getting harder to fight. Fires burn faster and hotter, and smoke develops more rapidly and is thicker and more irritating to the respiratory tract. "There appears to be an increase in firefighter casualties from smoke inhalation," the association concluded. "The smoke in today's fires . . . may be producing increased risk of inhalation injury to firefighters as well as to building occupants."

SPI officials maintain that there is only anecdotal evidence to support the contention that fires are now more threatening because of smoke from burning plastics. They point to two SPI-supported studies—one reported in March 1979 by the Harvard School of Public Health and the other in May 1981 by the Southwest Research Institute—that show high levels of carbon monoxide to be the most hazardous air contaminant detected by gas-sampling

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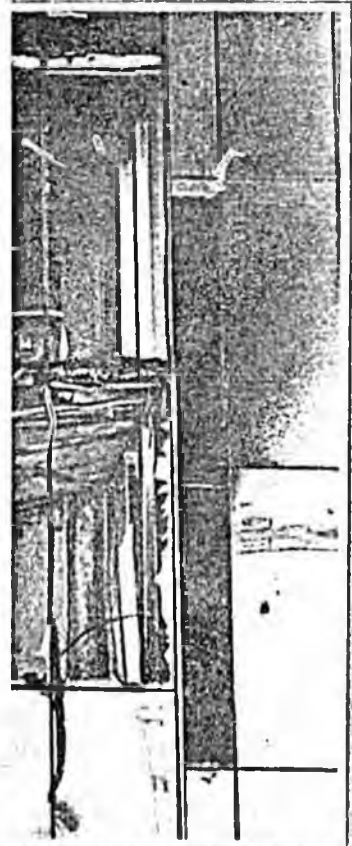
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equipment worn by firefighters.

However, Birky says the SPI-supported studies are not only limited; they also do not explain why postfire investigations have turned up sublethal doses of carbon monoxide in victims' blood. Such doses were found not only in the Westchase fire, he says, but also in the MGM Grand disaster, where half of the 83 people who died at the scene were found to have sublethal carbon-monoxide levels. He acknowledges that such an effect has been uncovered in only a few instances, "not because it doesn't occur, but because the follow-up toxicological studies on the victims have not been thorough enough to demonstrate this factor." (Birky has left the Foundation for Fire Safety, located in Rosslyn, Va., to start a fire-toxicology consulting service in Boonsboro, Md.)

Charges and Countercharges

Calling this the most important question in fire safety, the foundation last year embarked on a national study to pinpoint which toxic gases are causing deaths by smoke inhalation. "We have developed a post-mortem protocol," says Thomas Casey, former executive director and now a consultant to the foundation, "and we are working with paramedics, medical examiners, and fire services to ensure that more complete autopsies are performed on

fire victims. For example, we specify that blood samples be drawn within three hours of the fire and that they be properly stored and handled." Thirteen cities, including Seattle, Miami, Denver, and Dallas, are already participating in the study. Thus far, the foundation has collected data on 60 fire victims, but plans to gather data on 250 before drawing conclusions.

SPI officials are already skeptical of the study. They point out that the foundation is largely funded by the Allied Tube & Conduit Corp. and other members of the metal industry. These firms, according to an SPI statement, have "embarked on a 'fear and smear' campaign against plastic products in order to win back [their] position in the marketplace." John Lison, vice-president and general counsel for Allied, counters such charges: "Instead of developing safe products, the giant plastics industry has used its extensive public-relations apparatus to attempt to turn what is a very vital question of public safety . . . into a seemingly commercial battle between two industries."

"There's no doubt that this is a commercial fight," says Gordon Vickery, president of the foundation and former head of the U.S. Fire Administration. "I do not offer one ounce of apology for the funding of the foundation by the Allied Tube & Conduit Corp. We invite, as we have in the past, the plastics industry to support

us in like manner."

The impact of commercial interests can also be seen in recent actions of the National Institute of Building Sciences (NIBS), created by Congress in 1974 to unify and improve the heterogeneous network of U.S. building codes. When the rash of hotel fires brought burning plastics under close scrutiny, NIBS officials felt pressured to address this issue. In June 1982, they formed a 12-member task force to consider whether the results of laboratory tests of combustion toxicity, such as the NBS and Pittsburgh methods, should be incorporated into building codes. For example, a code could forbid the use of products judged by one of those tests to be more toxic than wood, unless those products are accompanied by early-detection fire-protection systems such as smoke detectors and sprinklers. Wayne Ellis, manager of industry standards for the H.B. Fuller Co., which makes synthetic adhesives, sealants, and coatings used in building construction, was named chairman. The task force also included SPI's Munger, two DuPont officials, and representatives from Dow Chemical, Rohm & Haas, and Armstrong World Industries. Only one member—James R. Bell of the National Fire Protection Association—was not affiliated with a corporation, trade association, or the government.

Later that summer, the task force hosted

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a meeting and invited people holding points of view at odds with those of the synthetics industry, but the group did not include these people on the agenda of speakers. "The only speaker designated to explain the 'state-of-the-art' in toxicity testing methodology," says an Allied spokesperson, "was Gordon Hartzell of the Southwest Research Institute. Significantly, the SRI study that formed the basis of Hartzell's remarks and conclusions was commissioned and paid for by none other than the Society of the Plastics Industry." Thus, it came as no surprise, says the Allied representative, that Hartzell described available tests as "primitive" and insufficiently developed for regular use.

Ultimately, in an official report released last May, NBS recommended against setting building codes based on smoke toxicity. Part of its reasoning was that such codes would not include interior furnishings. But Anderson counters that while it is tempting to think of furnishings as the more significant hazard, "fires do start in the basement, attic, or storage area and travel between the walls, burning only structural elements." She also says the distinction between structural and furnishing fires "has never been addressed on a percentage basis; nobody has measured it."

More importantly, however, the NBS report concluded that laboratory tests of combustion products are inadequate and should not yet be used to compare the smoke toxicities of any materials. But this is "ridiculous," says Eugene Rider of the United States Testing Co., in Hoboken, N.J. "Take the NBS protocol: years of research and millions of dollars went into it," he says, adding that the quality of research behind that test exceeds that upon which most flammability tests are based.

Money—and Lawsuits—May Talk

Still, a group of state legislators is concerned with the cost of *not* taking action. This group, called the National Task Force on Firegas Toxicity, is composed of lawmakers from California, Illinois, Indiana, Ohio, Maryland, and Michigan. While the group believes the benefit of regulating smoke toxicity could ultimately be measured in lives saved, it recently focused on a "cost of not regulating" that is infinitely easier to gauge: lawsuits. Injuries and deaths from smoke inhalation are posing "a whole new series of product-liability questions," says Ohio Sen. Charles Butts. "This seems to be happening with the law-

suits stemming from the MGM fire; plastics companies have been brought into the lawsuits and may bear a liability even though they weren't responsible for how the fire started."

The task force, which has conducted several hearings on the smoke-toxicity issue, will issue a final report this year that "may very well have recommendations for legislation," Butts says. Like the ADI report to New York State, this one will probably call for establishing a data-gathering agency for combustion toxicity. "We need to have some kind of data bank; we need to use some kind of testing mechanism," Butts says. "Now, 'specifiers' [architects, engineers, buildings owners, and so on] have no information on which to base their decisions. They are making decisions that may be allowing buildings to become more dangerous, and that may be leaving themselves vulnerable to lawsuits." Butts also says that insurance companies, fearing "their clients will find themselves in a toxicity lawsuit," may soon become involved in the smoke-toxicity debate. This, he envisions, would provide a powerful impetus to the movement to establish procedures for testing the combustion toxicity of building and furnishing materials.

That's the best-case scenario, ADI's Anderson says. For a worst-case scenario, she draws parallels to the asbestos story. Information on the health effects of asbestos "had been there for years," she says. "Unfortunately, some of the people who were in positions to make decisions and change policy had only fragments of that information. That's the type of situation some people are saying is developing as we bring new products into buildings. There is the fear that we are stacking the indoor environment with materials that, if we could only see all the combustion-toxicity data available, would be deemed unacceptable in terms of fire safety."

Says Anderson: "I'm not suggesting we ban products—we don't have enough data yet to take this regulatory route. And product labeling is good for only about 30 seconds; once you have the wallpaper up, you've forgotten what's on the label. But if we had a centrally located combustion-toxicity data bank, we could start drawing useful conclusions."

LINDA GARMON is chemistry editor of Science News. She is now a fellow in the Vannoy Bush Fellowships in the Public Understanding of Technology and Science at M.I.T.

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**International Association of
Plumbing and Mechanical Officials**

**UNIFORM
PLUMBING
CODE**

1982
EDITION

Adopted at the Fifty-Second Annual Conference

OCTOBER, 1981

**INTERNATIONAL ASSOCIATION OF PLUMBING
AND MECHANICAL OFFICIALS**

(A Non-Profit Organization)

UNIFORM PLUMBING CODE

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able water line which may be used for
poses shall be posted: DANGER —

WATER DISTRIBUTION

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(p) Vacuum breakers shall be located outside any enclosure or
hooded area containing fumes that are toxic or poisonous.

Section 1004—Materials

(a) Water pipe and fittings shall be of brass, copper, cast iron,
galvanized malleable iron, galvanized wrought iron; galvanized steel,
lead or other approved materials. Asbestos-cement, PB, PE, or PVC
water pipe manufactured to recognized standards may be used for
cold water distribution systems outside a building. PB water pipe and
tubing may be used for hot and cold water distribution systems
within a building. All materials used in the water supply system, ex-
cept valves and similar devices shall be of a like material, except
where otherwise approved by the Administrative Authority.

(b) Cast iron fittings up to and including two (2) inches (50.8 mm) in
size, when used in connection with potable water piping shall be
galvanized.

(c) All malleable iron water fittings shall be galvanized.

(d) Piping and tubing which has previously been used for any pur-
pose other than for potable water systems shall not be used.

(e) Approved plastic materials may be used in water service pip-
ing, provided that where metal water service piping is used for elec-
trical grounding purposes, replacement piping therefore shall be of
like materials.

Exception: Where a grounding system, acceptable to the Ad-
ministrative Authority is installed, inspected and approved, metallic
pipe may be replaced with non-metallic pipe.

Section 1005—Valves

(a) Valves up to and including two (2) inches (50.8 mm) in size shall
be brass or other approved material. Sizes over two (2) inches (50.8
mm) may have cast iron or brass bodies. Each gate valve shall be a
full-way type with working parts of non-corrosive material.

(b) A fullway valve controlling all outlets shall be installed on the
discharge side of each water meter and on each unmetered water
supply. Water piping supplying more than one building on any one
premises shall be equipped with a separate fullway valve to each
building, so arranged that the water supply can be turned on or off to
any individual or separate building; provided however, that supply
piping to a single family residence and building accessory thereto,
may be controlled on one valve. Such shut-off valves shall be readily
accessible at all times. A fullway valve shall be installed on the
discharge piping from water supply tanks at or near the tank. A
fullway valve shall be installed on the cold water supply pipe to each
water heater at or near the water heater. A fullway valve shall be in-
stalled for each apartment or dwelling of more than one (1) family. In
lieu of the main supply shut-off in each apartment, individual shut-off
valves may be provided at each fixture.

(c) All valves used to control two (2) or more openings shall be
fullway gate valves or other approved valves designed and approved
for the service intended.

OWEN MARINE CORP.

BOX 2586
HOMER, AK 99603
HOMER 235-7691
SEWARD 224-3542

March 27, 1987

Senator Richard I. Ellison

Chairman

Senate Labor & Commerce Committee

Room 4

Seward, AK 99811

Dear Senator Ellison,

This letter will hopefully entice your timely assistance in the solution of a problem that has arisen during the construction of our new building. We are faced with a dilemma that could cost us needless economic hardship and serve no useful purpose in the process.

Last December 15, we began construction of a new facility to house our business, Owen Marine Corp. All the labor made work and been done prior to freeze-up, so we could take advantage of the slow winter morass to build. The building permit was applied for and granted through the city of Homer, with our proposed project meeting all the city requirements. The project was designed, and has been built, in accordance with all the latest national building codes.

On February 25, we were visited by a State Plumbing Inspector from the Anchorage office of the Department of Labor. The inspector stated that he was responding to a telephone complaint of illegal plumbing installations being made in some commercial building projects in Homer. We are quite sure of the origin of the complaint, and the motivation for it. Let it suffice to say that it was not the result of a concerned citizen acting in behalf of the public's best interest. It seems that the public interest was the inspector's mission, it seems strange that we have no verification of an inspection being performed on the construction of our very public facility here: the expansion of the South Peninsula hospital, which also qualifies as the largest construction project currently underway in Homer. The inspector did, however, manage to visit three small commercial building sites in the area and issue at least two citations for 1979 plumbing code violations.

We were cited for being in violation of section 401 of the Uniform Plumbing Code. As you can see on the enclosed copy of the citation, the single violation is " See #01, ABS plastic pipe not allowed in commercial building. Remove and replace with Code material."

Apparently, this is a legitimate violation of the 1979 edition of the Uniform Plumbing Code, the edition which the State of Alaska is currently enforcing. It is however, in direct conflict with the new 1982 Code, which is the standard we used in plumbing the building. The out-dated 1979 Code is still being enforced simply because the State Legislature has not adopted the 1982 edition of the Code. House Bill # 508, dealing with the replacement of the '79 edition with that of 1982, is presently sitting in your committee awaiting action.

The City of Homer adopted this 1982 edition of the Uniform Plumbing Code over a year ago. The plumbing in our building was done in full compliance with this edition, not realizing we were in violation of State statutes as described above. Had we been aware of this fact, we could have very easily conformed to the 1979 edition when the plumbing was roughed in.

Since the inception of this project, we have extended every effort to insure that the materials and workmanship in our building would meet or exceed the latest standards set by the National Uniform Building Code, National Electrical Code, and Uniform Plumbing Code. After all, with the substantial investment we are making in this project, it would be "penny wise and pound foolish" to do anything less.

It seems absolutely ludicrous to us that we should be required now, to forego the tremendous cost and time loss that would be necessary to abrogate this violation, when adoption of the new Code is so near. I ask you, what possible needs would be served by this action?

Several other commercial buildings in our area have been completed using ABS plumbing materials. They were completed without any inspection at all, and are apparently perfectly legal now because they simply were not inspected before completion. Is this the way our State statutes are intended to be enforced? As I understand them, both the State and Federal Constitutions guarantee, if not demand, equal and uniform enforcement of all statutes with regard to the citizenry they serve. Random inspections that can be prompted by nothing more than perhaps a vindictive telephone call, hardly qualify as "equal and uniform enforcement".

The scheduled completion date for this project is April 15. However, as long as this situation remains unresolved, we face the very real possibility of losing the long term financing that has already been secured, which is subject to the construction complying with all current building codes. At the very least, we could incur tremendous expense in interim interest costs alone, should any delay occur due to this situation. Either set of circumstances would seriously jeopardize not only this project, but the future of our business and the financial security of the people involved in it.

As stated previously, we are not the only business here that stands to suffer as a result of this misguided action. Kachemak Bowl, a long standing local bowling alley, was also cited for using ABS pipe in their new building. They were instructed, as we were, that all ABS pipe had to be removed and replaced with code material. In both of our cases, walls, floors, and ceilings would have to be torn out just to get to the subject plumbing. The ABS piping would then have to be removed and new "1979 Code material" would have to be installed in its place. All of this would then be followed by the reconstruction of the torn out walls, floors, and ceilings. This would be a substantial task that would be very, very costly in both time and money.

Immediate action by your committee regarding the adoption of the 1982 Uniform Plumbing Code would render these violations moot. It is imperative the current Legislature address this problem during this session, as any delay in passage of this statute could very possibly cause extreme and unnecessary financial hardship for two businesses and their owners.

Trusting this request will be honored, I remain,

Sincerely,



Daniel C. Owen
President

cc: Senator Don Collins
Senator Paul Fischer
Representative Milo Fritz
Representative Hugh Kalone
Mayor Eric Cooper
Homer City Council
Mitch Gravel



STATE OF ALASKA

EC/PL INSPECTION REPORT

PAGE 1 / 1

DEPARTMENT OF LABOR - MECHANICAL INSPECTION
 Pouch 7-020 3301 Eagle Street, Suite 301
 Anchorage, Alaska 99510 (907) 264-2447

INSPECTION DATE
2/16/84

CONTRACTOR NAME CONTRACTOR MAILING ADDRESS CONTRACTOR CITY STATE ZIP	JOB/LOCATION ADDRESS OR LEGAL DESCRIPTION CITY
<i>Owen Marine</i> <i>P.O. Box 2586</i> <i>Homer, Alaska 99602</i>	<i>Owen Marina</i>

construction new <input checked="" type="checkbox"/> alteration <input type="checkbox"/> residential <input type="checkbox"/> commercial <input checked="" type="checkbox"/> other <input type="checkbox"/>	electrical temporary <input type="checkbox"/> service <input type="checkbox"/> rough-in <input type="checkbox"/> final <input type="checkbox"/> partial <input type="checkbox"/>	plumbing underground <input type="checkbox"/> rough-in <input checked="" type="checkbox"/> final <input type="checkbox"/> gas <input type="checkbox"/>	
--	---	--	--

E Jrny E Resid E Lrnr E Line E Mnt
 P Jrny J Restr P Lrnr

item #	code reference	VIOLATIONS	abatement date	acty code
1	Sec 401	<i>IPBS Plastic not allowed in Commercial Building</i> <i>Remove and Replace with Nat. material</i>		

NAME and TITLE TO WHOM REQUIREMENTS WERE EXPLAINED _____

NAME OF PERSON REQUESTING INSPECTION _____

SIGNATURE OF INSPECTOR
James S. Borch

Alaska law requires that satisfactory arrangements be made to correct the above violation(s) prior to the applicable abatement date(s).

Direct inquiries to: _____

Shell Chemical Company

A Division of Shell Oil Company



June 6, 1983

P.O. Box 7637
Stockton, CA 95207

Senator Paul Fisher
Pouch V
Juneau, Alaska 99811

ATTENTION: Elieen Glenn
Administrative Assistant

Dear Ms. Glenn:

I am writing this letter at the suggestion of C. Chuck Dummann of du Alaska Company, Inc. Chuck has informed me that Senator Fisher has introduced Bill #SB-214 that is of great interest to Shell Chemical Company.

The Bill would adopt the 1982 Uniform Plumbing Code as the required Code for the State. Currently the State operates under the 1979 version. While there are several minor changes between 1979 and 1982, there is a major change of importance to us. This change appears in Section 1004. It incorporates the use of polybutylene as an approved plumbing pipe along with the more traditional materials such as copper and galvanized pipe.

For your general information I am enclosing a selection of literature on the subject of polybutylene. As you can see, it is a versatile material capable of performing in many severe conditions.

In addition to these proven performance characteristics there are several reasons particular to the State of Alaska that make the passing of Bill #SB-214 important:

1. The mobile home industry has for years used polybutylene. We estimate over 80 percent of all mobile homes are plumbed with polybutylene. The manufactured housing industry outside of Alaska has a distinct cost advantage over the Alaska based manufacturer. The Alaska builder does not have the advantage of polybutylene's low cost.
2. The low installed cost of polybutylene puts the Alaska builder at a disadvantage to a major portion of the remainder of the United States. Mobile home and manufactured housing builders in other states have the advantage of using polybutylene. This puts the Alaska builder in an uncompetitive situation.

June 6, 1983

3. In addition to polybutylene's advantages in plumbing application, its use is rapidly growing in fire sprinklers. Polybutylene is now listed by Factory Mutual. Approval of polybutylene in plumbing application would greatly assist its development in the fire sprinkler installation.
4. Given the Alaska climate, polybutylene has a special feature of being freeze resistant. Simply put, properly installed polybutylene will not rupture as will conventional material when frozen.

Thank you for your effort thus far. Polybutylene is a proven material around the United States and around the world and belongs as a material available to the people of Alaska.

I am ready to come to Juneau to testify or speak to anyone on the subject if it would be helpful.

I hope that Senator Fisher will make every effort possible to move this Bill forward.

Very truly yours,

M. J. O'Brien

M. J. O'Brien
Regional Sales Manager
Polybutylene Department

MJO/ja

Enclosures

cc: Chuck Dumann
Gordon Evans
Ely, Guess and Rudd
Juneau, Alaska

999 EAST TUDOR ROAD
ANCHORAGE, ALASKA 99503
' (907)563-3004 TELEX: 090-25-297

P.O. BOX 128 NORTHGATE STATION
SEATTLE, WASHINGTON 98125
(206) 284-5531 TELEX: 32-1041

du Alaska Company

Manufacturers
Representatives

May 12, 1983

Senator Richard Eliason
Pouch V
Juneau, Alaska 99811

Dear Senator,

I had the pleasure today of talking to Sheila Peterson in your office in behalf of Senator Paul Fischer's Bill #214 to upgrade the Alaskan State plumbing code to agree with the 1982 edition of the IATMO Code.

I hope you can see your way clear to schedule hearings on this bill. One of the products which would be allowed would be Polybutylene Pipe for water service.

This pipe is not new to Alaska. Every trailer or modular home shipped into Alaska is plumbed with this product because it stands vibration extremely well and because if the unit freezes, no damage will occur from bursting pipe, yet because of our outdated code, local Trailer Manufacturers like Husky must use older and more expensive pipe. Owners who remodel or work on their units, must to be legal, use a different material. In actual fact they ignore the law.

In Fairbanks, Sitka, Palmer and Bethel, wide use is being made of this pipe wither under local code or illegally. It is just too good a product to ignore if there is any chance the building will freeze up. Imagine how much money is spent replacing water damaged walls from freeze burst copper pipe.

I have personally appeared before the Anchorage Borough Plumbing Board and have heard members of plumbing associations object to this product. My personal feeling is that the professional plumber tends to move slowly on any new product but since the Anchorage market is covered by the Greater Anchorage Borough Mechanical Board, their area will not be effected by the state code anyway.

There have been some people who have objected to any plastic on the basis that its use may cause cancer. I have never personally seen any laboratory test or medical opinion that bears this out. I know I eat off a plastic covered table, brush my teeth with a plastic toothbrush and drink Coke out of a plastic bottle poured into a plastic glass. I can't see how in the face of this, anyone can be concerned if the water for my scotch mixer comes out of a plastic pipe!

The other health problem has been told to me by the Anchorage Health Department personnel who say that galvanized pipe that is installed a long time rusts so bad inside that even repeated chlorination does not always kill the bacterial contamination. Polybutylene never corrodes, is always smooth and like new. I'd certainly prefer to get my water from it than some of these rusty iron pipes.

Our state achieves considerable revenue from the sale of petroleum, there has even been talk of a state supported Petro Chemical Plant. In view of this fact, is it now in the states interest to encourage the products of those Petro Chemical Plants instead of banning their use?

I'd like to come to Juneau for a hearing on this and I know others in Alaska who would also. If you would like people who are using this product in Alaska to contact you, I'll be delighted to ask them.

Best Regards,



C. Dummann

CD/bjs

WITNESS:
C. Chuck Dummann
Manufactures Representative
Dualaska Company, Inc.
999 E. Tudor Road
Anchorage, Alaska 99504

hlc 0131840 DOCUMENT= 1 OF 2 PAGE = 4 OF 12

563-3004

Position Statement: In favor of HB 508

WITNESS:

Martin J. O'Brien
Marketing Specialist
Shell Chemical
Stockton, California

Position Statement: In favor of HB 508

WITNESS:

Tom Higham
Executive Director
International Association of Plumbers and Mechanical Officials
Los Angeles, California

Position Statement: In favor of HB 508

PREVIOUS ACTION

HB 239

First Reading - 3/4/84

Committee Referrals - L&C, Resources, Finance
and Rules

See HLC Committee report on page 2412 of 1984
House Journal

hlc 0131840 DOCUMENT= 1 OF 2 PAGE = 5 OF 12

HB 508

HB 239 was referred to the Resources Committee

First Reading - 1/12/84

Committee Referrals - L&C and Rules

No previous action in L&C

HB 220

First Reading 1/10/84

Committee Referrals - L&C, Finance and Rules

No previous action in L&C

ACTION NARRATIVE

TAPE# 89, Side 1

Recording

Number 0000

Chairman Cowdery called the meeting to order.

The Committee took up discussion on HB 239.

Number 0013

Rep. Wendte moved to pass HB 239 out of the
committee. Being there was no objective the
bill was passed out of the committee.

Number 0024

The committee took up discussion on HB 508.

Number 0062

Rep. Liska, co-sponsor, stated that the
pre-wired housing (pre-wired in plastic) now has
to be replumbed with copper.

Number 0106

Dwight Perkins, representing the Plumbers & Pipe

hlc 0131840 DOCUMENT= 1 OF 2 PAGE = 6 OF 12

Fitters Union spoke in opposition of HB 508; he
sited the following problems with plastic pipe:
durability, thaw ability in Arctic regions, fire
hazards (both combustibility and gases released
upon combustion), use of the water system as the
electrical "ground", permeability, and worker
safety.

Number 0185

Rep. Koponen arrived.

Number 0216

Mr. Perkins concluded his testimony with
questions and answers from the committee.

Number 0229

Vernon Akins, as an observer, stated that
plastic pipe outside a building does have
advantages.

Tape #89, Side B
Recording
Number 0041

(not monoxide) when it burns.

Rep. Wendte asked about the controversy relating to the fire hazard and the MGM fire which the jury has not ruled on yet. Mr. O'Brien said the

hlc 0131840 DOCUMENT#

1 OF 2 PAGE = 10 OF 12

Number 0182

building code may have been violated. The committee continues discussion on HB 508.

Number 0200

Rep. Wendte asked if the 82 Code addressed fire wall protection. It was stated that the fire wall protection is up to the local building code.

Number 0299

Rep. Furnace asked Mr. O'Brien how plastic pipe is thawed. Mr. O'Brien said that either a probe is placed in the line or a probe with a hot water source would work. He also noted that metal pipe would burst if frozen and plastic would not.

Number 0388

Committee continued discussion on HR 508. Tim Higham comes before the committee to testify on behalf of the 82 Plumbing Code. Mr Higham explained the code that he wrote.

Number 0400

Chairman Cowdery asked Mr. Higham if this is as much a political issue as it is a workers safety issue. Mr. Higham answered that yes it is. Chairman Cowdery stated that the code should be

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1 OF 2 PAGE = 11 OF 12

Number 0425

adopted and noted that Sitka has adopted the code, Ketchikan is waiting for the state code to be adopted before acting, Bethel has adopted the code, Juneau and Anchorage have adopted with amendments and Fairbanks is considering amendments. Chairman Cowdery feels that it should be up the individual areas to make their appropriate amendments.

Number 0493

Bob Landan Comes before the committee to testify on behalf of Commissioner Robinson in support of HB 508. He stated that the 82 Code is minimal and it is needed to bring the standards up to date. The national codes are updated every three years by the International Association of Plumbers and Mechanical Officials.

Number 0542

Chuck Dumann comes before the committee in support of HB 508. He stated that Polybutalyene is not new to the state and is a big safety factor especially relating to freezing. Rep. Cowdery asked Mr. Dumann what the savings

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1 OF 2 PAGE = 12 OF 12

Number 0558

would be if Polybutalyene was used instead of metal. The answer was approximately a 50% savings.

Number 0571

Rep. Ringstad moved to hold the bill until the next mornings meeting.

Number 0587

Rep. Furnace moved to pass out of committee.

Number 0590

The committee decided to hold the bill until the next morning's meeting.

Chairman Cowdery adjourned the meeting at 9:55 a.m.

END OF DOCUMENT

hlc 0201840 DOCUMENT#

2 OF 2 PAGE = 1 OF 7

OWEN MARINE CORP.

BOX 2586
HOMER, AK 99603
HOMER 235-7691
SEWARD 224-3542

March 27, 1984

Senator Richard I. Eliason
Chairman
Senate Labor & Commerce Committee
Pouch V
Juneau, Ak. 99811

Dear Senator Eliason,

This letter will hopefully enlist your timely assistance in the solution of a problem that has arisen during the construction of our new building. We are faced with a dilemma that could cost us needless economic hardship and serve no useful purpose in the process.

Last December 15, we began construction of a new facility to house our business, Owen Marine Corp. All the below grade work had been done prior to freeze-up, so we could take advantage of the slow winter months to build. The building permit was applied for and granted through the City of Homer, with our proposed project meeting all the city requirements. The project was designed, and has been built, in accordance with all the latest national building codes.

On February 15, we were visited by a State Plumbing Inspector from the Anchorage office of the Department of Labor. The inspector stated that he was responding to a telephone complaint of illegal plumbing installations being made in some commercial building projects in Homer. We are quite sure of the origin of the complaint, and the motivation for it. Let it suffice to say that it was not the result of a concerned citizen acting in behalf of the public's best interest. If serving the public interest was the inspector's mission, it seems strange that we have no verification of an inspection being performed on the construction of one very public facility here: the expansion of the South Peninsula Hospital, which also qualifies as the largest construction project currently underway in Homer. The inspector did, however, manage to visit three small commercial building sites in the area and issue at least two citations for 1979 Plumbing Code violations.

We were cited for being in violation of section 401 of the Uniform Plumbing Code. As you can see on the enclosed copy of the citation, the single violation is "See 401, ABS plastic pipe not allowed in commercial building. Remove and replace with Code material."

Apparently, this is a legitimate violation of the 1979 edition of the Uniform Plumbing Code, the edition which the State of Alaska is currently enforcing. It is however, in direct conflict with the new 1982 Code, which is the standard we used in plumbing the building. The outdated 1979 Code is still being enforced simply because the State Legislature has not adopted the 1982 edition of the Code. House Bill # 502, dealing with the replacement of the '79 edition with that of 1982, is presently sitting in your committee awaiting action.

The City of Homer adopted this 1982 edition of the Uniform Plumbing Code over a year ago. The plumbing in our building was done in full compliance with this edition, not realizing we were in violation of State statutes as described above. Had we been aware of this fact, we could have very easily conformed to the 1979 edition when the plumbing was roughed in.

Since the inception of this project, we have extended every effort to insure that the materials and workmanship in our building would meet or exceed the latest standards set by the National Uniform Building Code, National Electrical Code, and Uniform Plumbing Code. After all, with the substantial investment we are making in this project, it would be "penny wise and pound foolish" to do anything less.

It seems absolutely ludicrous to us that we should be required now, to forego the tremendous cost and time loss that would be necessary to abrogate this violation, when adoption of the new Code is so near. I ask you, what possible needs would be served by this action?

Several other commercial buildings in our area have been completed using ABS plumbing materials. They were completed without any inspection at all, and are apparently perfectly legal now because they simply were not inspected before completion. Is this the way our State statutes are intended to be enforced? As I understand them, both the State and Federal Constitutions guarantee, if not demand, equal and uniform enforcement of all statutes with regard to the citizenry they serve. Random inspections that can be evaded by nothing more than perhaps a vindictive telephone call, hardly qualify as "equal and uniform enforcement".

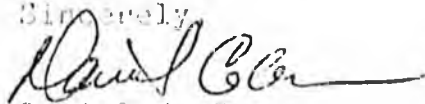
The scheduled completion date for this project is April 15. However, as long as this situation remains unresolved, we face the very real possibility of losing the long term financing that has already been secured, which is subject to the construction complying with all current building codes. At the very least, we could incur tremendous expense in interim interest costs alone, should any delay occur due to this situation. Either set of circumstances would seriously jeopardize not only this project, but the future of our business and the financial security of the people involved in it.

As stated previously, we are not the only business here that stands to suffer as a result of this misguided action. Kachemak Bowl, a long standing local bowling alley, was also sited for using ABS pipe in their new building. They were instructed, as we were, that "all ABS pipe had to be removed and replaced with code material". In both of our cases, walls, floors, and ceilings would have to be torn out just to get to the subject plumbing. The ABS piping would then have to be removed and new "1979 Code material" would have to be installed in its place. All of this would then be followed by the reconstruction of the torn out walls, floors, and ceilings. This would be a monumental task that would be very, very costly in both time and money.

Immediate action by your committee regarding the adoption of the 1982 Uniform Plumbing Code would render these violations mute. It is imperative the current Legislature address this problem during this session, as any delay in passage of this statute could very possibly cause extreme and unnecessary financial hardship for two businesses and their owners.

Trusting this request will be honored, I remain,

Sincerely,



Daniel C. Owen
President

cc: Senator Don Gilman
Senator Paul Fischer
Representative Milo Frits
Representative Hugh Wilson
Mayor Eric DeGor
Homer City Council
Mitar Sevel



STATE OF ALASKA

EC/PL INSPECTION REPORT

PAGE 1 1 1

DEPARTMENT OF LABOR - MECHANICAL INSPECTION
 Pouch 7-020 3301 Eagle Street, Suite 301
 Anchorage, Alaska 99510 (907) 264-2447

INSPECTION DATE
2/16/84

CONTRACTOR NAME CONTRACTOR MAILING ADDRESS CONTRACTOR CITY STATE ZIP	JOB/LOCATION ADDRESS OR LEGAL DESCRIPTION CITY
<i>Owen Marine</i> <i>P.O. Box 2586</i> <i>Homer, Alaska 99602</i>	<i>Owen Marina</i>

construction	electrical	plumbing	
new <input checked="" type="checkbox"/>	temporary _____	underground _____	
alteration _____	service _____	rough-in <input checked="" type="checkbox"/>	
residential _____	rough-in _____	final _____	
commercial <input checked="" type="checkbox"/>	final _____	gas _____	
other _____	partial _____		

E Jrny _____ E Resid _____ E Lnr _____ E Line _____ E Mnt _____
 P Jrny _____ J Restr _____ P Lnr _____

item #	code reference	VIOLATIONS	abatement date	acty code
1	Sec 401	<i>PPS Plastic not allowed in Commercial Buildings</i> <i>Remove and Replace with Code material</i>		

NAME and TITLE TO WHOM REQUIREMENTS WERE EXPLAINED _____

NAME OF PERSON REQUESTING INSPECTION _____

SIGNATURE OF INSPECTOR _____

[Handwritten Signature]

Direct inquiries to: _____

Alaska law requires that satisfactory arrangements be made to correct the above violation(s) prior to the applicable abatement date(s).

P.M. 1
MAR 31 1983

V CEQA SUMMARY

This chapter covers various information not presented earlier but required by the California Environmental Quality Act (CEQA) for Environmental Impact Reports. As this document is a preliminary environmental review, this section has not been fully developed. When the draft and final versions of the EIR are proposed, it is likely to expand and some of the findings will undoubtedly change or at least be stated more confidently.

A. Significant Unavoidable Environmental Impacts

For this preliminary environmental review of a very subtle and complex proposal, SRI chose to describe our current overall conclusions about the proposed plumbing code changes and our reasons for them, without making definitive findings of significance except where they were clearcut.

First, we discovered nothing to suggest that the issues discussed earlier as the prime ones are insignificant or that other issues are dominant. The only new issue of potential significance that surfaced was the permeation of buried plastic pipe by contaminants in soil and the resulting possible public health impacts. Although the possibility that such effects could occur from permeation of water supply lines from the meter to the house is plausible, any potential problem would also occur--probably in much greater proportion--from the public water distribution system. This problem should be re-examined when better understood and if found significant should influence state policies with respect to plastic use in both public and residential systems. With

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MAR 31 9 22 AM '83

adequate education of building inspectors on the permeation issue, improper installation of plastic water service in contaminated soils should be rare.

As to public health impacts from chemicals leaching from water pipe into potable water, we find that significant impacts are possible but unproven, both for plastic pipes--especially the chlorinated varieties--and for metal ones, specifically copper systems. If the upper ranges of possible concentrations of leachates are regularly reached, the cumulative risks to public health may be high enough to be of concern by typical standards of acceptable risk, for example, a lifetime cancer risk of one in a million. The chemicals of concern are lead from the solder in copper pipes, possibly leading to neurologic disorders, and carbon tetrachloride, perchloroethylene, and trichloroethylene from plastic (especially PVC and CPVC) pipes, possibly resulting in cancer.

Two major considerations limit the significance of the findings. First, the status of information about long-term levels of leachates is exceedingly flimsy. Reasonable further testing could resolve at least part of the uncertainty (see Section VI). Second, the risk assessment procedure is moderately conservative. If risks still appear to be of concern after concentrations are better known, more attention would need to be devoted to assuring that the assessment procedure took into account detailed properties of the chemical. Finally, thorough initial flushing would effectively mitigate the effects of the rapidly leaching materials, especially the solvents used with plastic pipe. Overall, current information does not establish an environmental preference between copper and plastic pipe, with neither clearly likely to cause a great number of deaths or serious illnesses.

For worker safety and health, a similar situation exists. Both lead from solder fumes in installing copper pipe and solvents from installing ABS, PVC, and CPVC pipe could be hazardous if plumbers have high exposures by inhalation; dermal absorption could also be significant in the case of solvents. The diseases of concern for solder fumes are related to the lead exposure and are neurologic. The solvents may also cause nerve damage, and

they may be involved in liver damage or reproductive problems as well. However, they are not implicated in cancer unless benzene is more common than thought. Unless the NIOSH report about to be released resolves the range of exposures satisfactorily, further testing would be useful before completing the EIR. Safety issues generally favor plastic over metal, which appears to lead to more burns (hot solder and especially flux) and strains and contusions (from heavier metal pipes). PB (like PE, although its uses are not proposed for change) poses little if any worker safety and health concern. Use of gloves, other protective equipment, ventilation, and simple care will significantly reduce any potential hazards from either plastic or metal pipe, but these practices have not achieved widespread acceptance among plumbers.

Fire safety is a very real concern with plastic DWV pipe; ABS is combustible, and PVC and CPVC will at least soften and slump in lines. If these plastics are installed as direct substitutes for metal, as they already are in non-fire-rated residences, they will degrade the fire resistance of structures. The gaskets in no-hub cast iron will also fail in fires and cause the pipe to fall, leaving fire passages. But the proposed code changes apply to fire-rated, fire-resistive construction that could retain its fire rating if appropriate installation procedures are developed and enforced. In such conditions, no degradation of fire resistance would occur. This issue thus turns on enforcement, not science. The potable water pipes, kept cooler by the water inside and of much lower mass, are not a significant fire safety issue.

As with fire safety, smoke toxicity is an issue in which plastic can only be less environmentally acceptable than metal. However, whether the difference is significant is less certain. Both ABS, which seems likely to contribute the majority of pipe mass in California, and the polyolefins PB and PE produce combustion products that are not highly toxic; few if any additional fatalities or serious injuries would be likely from their combustion. PVC and CPVC both produce significant quantities of hydrogen chloride vapor in fire environments, and this corrosive material could, under certain circumstances, make a difference in the probability of human

survival in lines. The frequency of such occurrences is clouded by lack of a generally accepted test for smoke toxicity. This problem is currently being addressed both by the State of California Department of Industrial Relations and by the State of New York. We believe DHCD should pay close attention to results from those studies, but does not need to delay a decision solely on those grounds.

No other significant adverse impacts are likely to result from the expanded use of plastic plumbing pipe if relatively simple mitigation measures are taken. Plastic drain pipes may be slightly noisier than cast iron pipe. See the following section (V-B) for further elaboration.

Overall, the SRI study team sees little evidence that expanded use of plastic plumbing pipe would cause significantly greater environmental problems than the materials it would replace. Unfortunately, lack of evidence is not the same as lack of hazard. We believe it is especially important to gather more information on leaching of chemicals from both plastic and metal pipe systems into potable water and on the exposures of plumbers to material from plastic (ABS, PVC, CPVC) and metal (copper) plumbing systems.

Table V-1 summarizes our present assessment of our relative environmental concern about pipe systems. There we show our relative degrees of concern for different materials for each of the major areas of impacts. A high rating does not necessarily mean an impact that is significant in the sense of CEQA, but does mean that the material rated seems to us more likely to be environmentally harmful than other materials on that dimension. For example, the chlorinated plastics clearly are of highest concern for smoke toxicity, but may not pose any significantly higher impacts in the proposed new DWY uses (fire-resistive construction).

Table 7-1

RELATIVE DEGREE OF CONCERN REGARDING
POTENTIAL ENVIRONMENTAL IMPACTS*

Impact Area	Potable Water				Drain, Waste, and Vent			
	Plastic		Metal		Plastic		Metal	
	PR/PE	PVC/CPVC	Copper	Galv. Steel	ABS	PVC/CPVC	Copper/Gal. Steel	Cast Iron
Public Health	3	4	3	3	0	0	0	0
Worker Safety	1	2	4	2	2	2	3+	4
Worker Health	0	3	4	2	4	4	3+	4
Fire Safety	3	2	0	0	5	4	0	4
Smoke Toxicity	1	3	0	0	2	5	0	4
Other Impacts	0	0	0	0	1	1	0	4

Key: 0 - No concern
 1 - Considerably less concern than average
 2 - Less concern than average
 3 - About average concern
 4 - More concern than average
 5 - Considerably more concern than average

Note: High relative concern does not necessarily imply high absolute concern; significance of ratings depends on mitigation measures taken.

*More for copper, less for galvanized.

B. Insignificant Effects

The following environmental effects of expanded uses for plastic plumbing pipe may occur but are probably insignificant by any reasonable interpretation of CEQA:

- . Plastic pipe systems may fail slightly more frequently than metal systems until a body of experience with installation errors has accumulated.
- . Plastic pipe will consume slightly more petroleum than metal pipe, but slightly less energy overall.
- . Plastic pipe will contribute a slightly different load of pollutants to public waste water treatment systems, but the direction of impact, let alone its magnitude, is uncertain.
- . Plastic DWV pipe will be slightly noisier than metal systems if installed so as to contact wall surfaces; this may be more significant than otherwise in the multifamily, fire-rated construction that is affected in the DWV code changes.
- . Plastic DWV pipe could be damaged by pipe cleaning equipment, but because of its resistance to corrosion, the frequency of such cleaning should be low.
- . Plastic pipe will slightly decrease the life-cycle cost of plumbing and therefore of housing, but not enough to change demand patterns or growth.
- . Small shifts in employment from metal pipe manufacturing to plastic pipe manufacturing will occur.
- . A small reduction in the work of plumbers will occur, mostly as a result of repair and renovation work by do-it-yourselfers.

C. Effects of Alternative Actions

In addition to the proposed project, e.g., the proposed change to the 1982 Uniform Plumbing Code (UPC) allowing certain new uses of plastic plumbing pipe as described in the Project Description, this environmental review has examined the potential effects of alternatives to the proposed project on the quality of the natural and human environment. The eventual EIR will consider alternatives as well as the project itself to provide a

baseline for evaluating the significance of the impacts and to provide possible alternative courses of action should the proposed project create significant adverse impacts that cannot be successfully mitigated. With this goal in mind, the alternatives we have selected for analysis are no changes to the state code, partial approval of plastic pipe use, and complete rejection of all plastic pipe (that is, reversal of earlier provisions allowing certain uses of plastic pipe).

Under the no-action alternative, there would be no changes in the state code regarding the use of plastic plumbing pipe. All currently approved uses for plastic pipe would continue to be permitted and no new uses of plastic pipe would be allowed. None of the impacts attributable to the use of plastic pipe in expanded applications would be observed; any public health and worker safety and health effects of currently allowed plastic and metal piping systems would persist.

The partial approval alternative would amend the state code to permit certain new uses of plastic pipe, but not all of the new uses proposed under the project. Counting cold and hot water supply in a given application as one new use, the proposed project would change the code to permit 11 new uses of plastic pipe (i.e., 1 new use for ABS pipe, 3 for PB pipe, 1 for PVC pipe, and 6 for CPVC pipe). Considering all the possible combinations of these uses, over 2,000 partial approval alternatives are possible.

Our analyses of the environmental consequences of the proposed project have guided our selection of the subset of the partial approval alternatives to be considered in the EIR. That is, we define the partial approval alternative(s) to permit those new uses of plastic plumbing pipe that are least likely to have significant adverse effects on the quality of the natural and human environment. At present, the only partial alternative that seems reasonably certain to meet this requirement is to allow PB for hot and cold water supply both outside buildings and inside buildings that are not fire-rated or within the fire-resistive construction of fire-rated buildings. No other new uses of plastic pipe would be allowed. Parenthetically, there seems little reason to prohibit PB in exposed

Locations of fire-rated buildings, as well as the penetrations of fire-resistant construction are designed to maintain the rating of that construction. The state of information on the impacts of this alternative is generally the same as on those of the metal water pipe currently allowed for these two uses. Although PB will certainly burn and metal will not, the additional risk of fire spread appears minimal, as does that of smoke toxicity. Leachates from PB have not been shown to be risk-free, but neither have those from copper or galvanized steel. Of the two plastic alternatives, PB is somewhat less likely to be a public health hazard than CPVC, although the relative ratings of PB, CPVC, copper, and galvanized steel will not be clear without further testing (see Section VI). PB is clearly a preferred material, from the worker safety and health viewpoint, compared both with metal systems and with plastics that require cementing.

Under the option of disallowing currently allowed uses of plastic pipe, any impacts of these materials would disappear and those of metal systems reappear. The possibility of permeation of water supply piping by organic contaminants would decrease to the extent that PVC and PE supply lines would be replaced by metal with impermeable joints (but even metal pipe joints can be permeable). Leachates from PVC and PB would be replaced by those from copper, with no clear impact, positive or negative, on public health. The metal pipes would be somewhat more likely to corrode in soil than plastic (galvanized steel is not recommended for buried supply lines). Only small changes in worker safety and health would result from the changes in water supply piping.

Any water impacts of disallowing current uses of plastic pipe would be associated with the widespread use of ABS (and less widespread use of PVC) in DWV applications. Fire load and fire spread would be reduced in nonfire-rated construction. It is probable that few fatalities or little property damage would be avoided by this action, but both are possible benefits. Smoke toxins would also decrease somewhat, especially if PVC were replaced. The decrease in plumbers' exposures to solvent cements would be offset by increased work-related injuries from working with cast iron and, to some extent, with soldered joints in copper DWV. Whether the net effect

on worker safety and health would be positive or negative is difficult to predict, given the current lack of information on plumbers' exposures.

Finally, the alternative that would disallow current uses of plastic would transfer some profits and jobs from the plastics to the metal pipe industries. Since large quantities of DWV are involved, these impacts would probably be greater than those for the prime project alternative of allowing expanded uses of plastic pipe. Houses could become more expensive, depending on the prices of cast iron and copper, but probably not enough to significantly affect the demand for housing.

In summary, the alternative of approving only the expanded uses of PB appears to pose fewer environmental risks than does the full proposed project given the state of current information. Because metal systems also pose some unique risks and may be comparable to plastic systems in other risk areas, we are not prepared to say that the no-project alternative or the alternative that would disallow current uses of plastic are environmentally preferable to the partial approval alternative, or even to the full proposed project.

D. Cumulative and Long-Term Implications

Increased use of plastic plumbing pipe can contribute to cumulative environmental impacts in two ways.

First, the sum of the environmental impacts of plastic pipe could be significant even when no one individual impact is deemed significant. In the case of plastic pipe, the most plausible example is for the various leachates that could each contribute to public health impacts. For example, no one leachate might reach the level of 10^{-6} lifetime risk for cancer, but the cumulative risk of all leachates acting together might exceed that level. Given the current uncertainties about the public health impacts, especially those concerning the long-term levels of leachates in drinking water, we are unable to determine whether the cumulative impact is

significant. A similar situation is found with worker health impacts, where the risk of one solvent might be insignificant, but that of two or more could be significant. For fire safety, the cumulative impact of all the proposed new uses for plastic pipe are likely to be dominated by the new DWV uses; the contribution of PB pipe is likely to be negligible. The same is true of smoke toxicity, except that the combined effect of HCl, CO, and other toxicants could be significant even when the effects of any one alone were not.

A second issue of cumulative impact is the question of whether the expanded use of plastic water pipe would add to the impacts of other similar actions and in total create a significant effect even though the use of plastic water pipe is not itself significant. We can consider two levels of cumulative impacts:

- . Cumulative impact of expanded and existing use of plastic plumbing pipe.
- . Contribution of plastic plumbing pipe to total use of plastic products.

As has been made clear earlier, the expanded uses of plastic pipe are in many ways rather small in comparison to existing approved use of plastic pipe. Most new California houses are already being plumbed with ABS DWV if they are not fire-rated; the addition of 10% (by weight) more plastic pipe as PB or (less likely) CPVC water pipe will be of little consequence for fire safety, especially as water piping is less sensitive. The increase for plastic pipe in fire-rated construction, of course, is total since no plastic is being used now; however, if ways of maintaining the rating are developed as required by code, little fire safety impact would be expected. Similarly, the cementing of plastic potable water pipe is probably much less of a problem for workers than the cementing of already approved ABS DWV. Thus, the greatest issue of cumulative impact involves public health impacts, in which plastic in residences can add to plastic in public utility distribution systems. We have no way of estimating the relative contribution of each to the total hazard, as the source of contaminants

found in the water supply (control) during leaching tests is not known. We doubt that the combined effects of distribution and residential piping would be significant if neither one alone were, but we cannot rule out that possibility. Similarly, permeation of plastic distribution pipes by toxic substances is more likely than it is for residential piping systems, but the significance of either, in terms of an overall risk assessment, will not be clear for a long time.

With regard to plastics in total, the expanded uses of plastic pipe will be a relatively small contribution in most respects. Plastics are by now endemic in our society. Most of the contaminants of PVC and CPVC that could be public health hazards will be ingested in much greater quantities from other PVC products such as food containers or, in the case of some of the chlorinated methanes, simply from waste products reaching the raw water supply. Those from PB and PE are similar to those from PE food contact materials. If plasticizers do contaminate plastic pipe, they will still do so at much lower levels than they do in any number of plasticized products to which people are regularly exposed, such as flexible vinyl upholstery (where they would yield inhalation rather than ingestion exposures). But equally clearly, plastic pipe does contribute to the total load of plastic-related hazards in California--for example, to the total of all combustible plastics in residences. The hazards from the total use of plastics are undoubtedly appreciable, even though nearly impossible to estimate. Whether or not they are greater or less than the hazards of the materials they replace is perhaps even more difficult to state. About all that can be said is that plastic pipe is not an unusually prominent or special case among plastics in general.

CEQA also requires an assessment of whether long-term environmental costs will be incurred as a result of short-term economic or other benefits. Certainly, any public health impacts of plastic pipe that do occur will probably be delayed for decades, as will some of the worker health or smoke toxicity impacts. However, for the purpose of determining the environmental consequences of the expanded uses of plastic pipe, those

should be counted as current impacts, and not discounted in comparison with current benefits. We believe that, when it is viewed from this perspective, this CEQA issue is irrelevant to the decision at hand.

E. Significant Irreversible Changes

CEQA also requires an assessment of environmental changes or consumption of resources that would be permanent and irreversible. For example, the mining of a mountain is an essentially irreversible impact, whereas most air pollutants and their impacts would disappear once the source of pollution is removed.

In the case of the expanded use of plastic plumbing pipe, there would be a small permanent commitment of petroleum resources (but not other energy sources) to the manufacture of the pipe constituents. Total energy resources would be conserved to a slight degree. If any deaths occurred as a result of diseases caused by leachates or occupational exposures, or from fire or smoke toxicity, they would also be irreversible. If plastic pipe were later disapproved, the occurrence of new fatalities would gradually disappear. Some of the leachates from plastic pipe are mutagens and some mutations can be heritable. Thus, it is possible that a heritable--and more likely than not adverse--mutation could persist in the population as a result of drinking from plastic water pipes. Neither the specifics of the leachates in water from plastic pipe nor the overall state of the art of genetic risk assessment allows an evaluation of this possibility at present. If the impacts of plastic pipe eventually were judged unacceptable, it is possible that the metal pipe industry would have declined by that time to the point at which it would prove difficult to revive, but that possibility is also extremely speculative. Overall, we believe that the reversibility of the impacts is not as important an issue to resolve as the magnitude and significance of current impacts.

F. Growth-Inducing Impacts

California's population is projected to increase from the 1980 total of 23.8 million people to 25.0 million by 1985 and to 27.9 million by 1990 (California Department of Finance, 1981). The proposed code change is not likely to significantly affect this forecast population growth for the following reasons. First, the reduction in the cost of housing construction that would result from use of the newly permitted plastics in place of currently approved masonry materials is so small that it would have virtually no effect on the sales price or rent of dwelling units in the state. Therefore, there will be no change in the demand for housing and consequently no additional in-migration of residents who would be attracted by a drop in the price of housing. Second, the plumbing material substitutions that are likely to result from the proposed code change would not significantly affect employment opportunities in the state and so would not affect the in-migration and out-migration forecasts. Nor would either housing prices or employment opportunities significantly affect shifts in population from one part of California to another.

LEGISLATIVE PROPOSAL ANALYSIS

Subject of Proposed Bill:

"Adoption of 1982 Uniform Plumbing Code"

Background Information:

Every third year, the International Association of Plumbing and Mechanical Officials adopts a revised plumbing code incorporating advances and improvements in technology. During the Twelfth Legislature, the department did not propose legislation to adopt the 1982 version of the Uniform Plumbing Code because there were conflicts between the Uniform Plumbing Code and the Uniform Building Code. The Department of Public Safety (Fire Marshall's Office) will propose legislation to adopt the most recent edition of the Uniform Building Code which is consistent with the 1982 Uniform Plumbing Code.

Summary:

The most noticeable changes in the plumbing code are as follows:

Section 108 allows for a larger grease interception to serve one or more fixtures. Section 203(d) states that copper tubing used for water service shall have a weight of not less than Type L.

Table 4-3, footnote #4. Evidence indicates that a three-inch horizontal waste will effectively handle discharge from three water closets; thus the code change, so that only four water closets or six unit traps are allowed on any vertical stack, and not to exceed three water closets or six unit traps on any horizontal branch or drain.

Section 601 changes will not allow cold storage rooms, refrigerators, cooling counters, etc. designed to hold food or drink, or sinks for washing or preparation of food, to be directly connected to a waste or vent pipe. All drains shall discharge through an air gap into a open drain or approved receptor.

Section 1004 is one of the major changes, and allows Poly Butylene (PB) water pipes to be used for hot and cold water distribution tubing systems, using inserts for connectors. It also inserts language to assure that when metal pipe is used as a building ground, it will be replaced by metal pipe when repairs are made to these pipes.

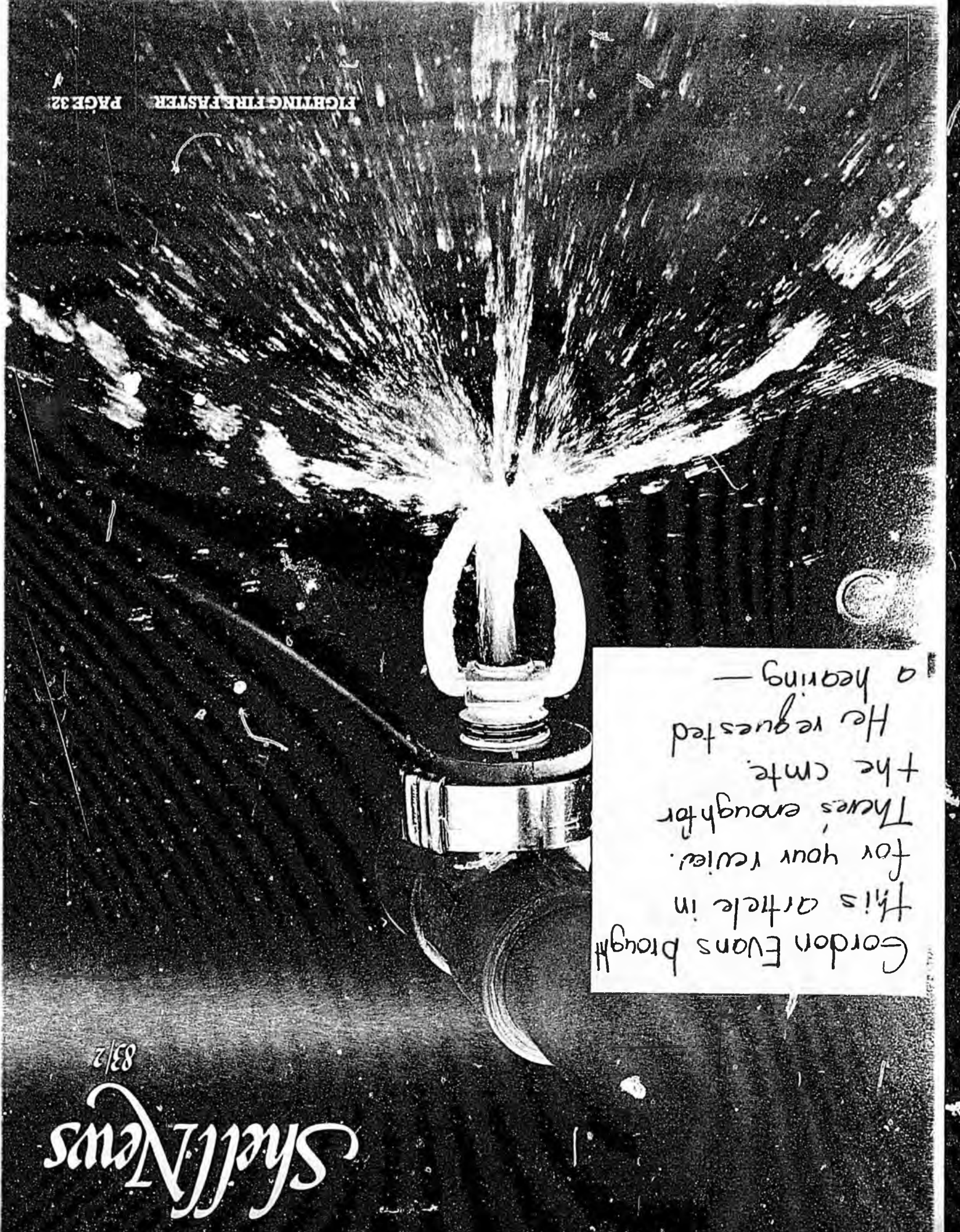
Also adopted were insulation standards for cold water service and yard piping. These standards were for Poly Vinyl Chloride (PVC), asbestos cement pressure piping and Poly Butylene (PB).

Those groups most affected by this change will be plumbers, contractors, local governments and state agencies issuing building permits.

Estimated Fiscal Impact: (FY '83 - FY '87)

To the state: -0-

To others: -0-

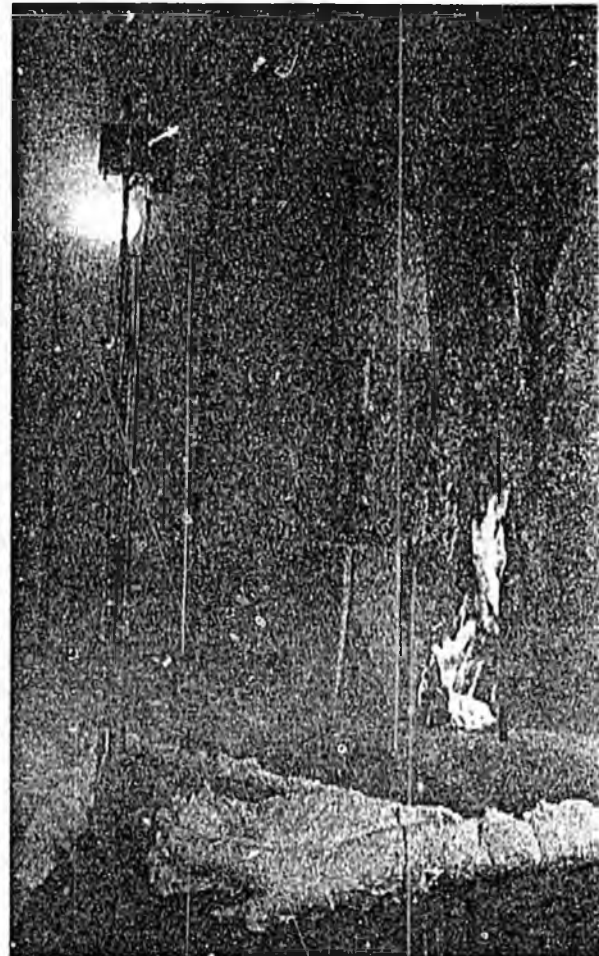


Gordon Evans brought
this article in
for your review.
There's enough for
the cmte.
He requested
a hearing —

QUENCH, DOUSE, STIFLE AND KNOCK DOWN!

Recent disastrous hotel fires are slowly awakening Americans to the fact that the United States has the highest fire death rate of any industrialized country. But a "new generation" fire fighting tool — a quick response sprinkler head together with a piping system made of economical Shell polybutylene — has shown that it can knock down most common fires in minutes, and virtually eliminate fire hazards in the places where we live and work

Story by JAMES A. COX



Some 200 fire officials from all over the United States — “a who’s who of fire service in the country,” according to one newspaper account — gathered at the Holiday Hotel in Fort Lauderdale, Florida, for a three-day session last fall. The get-together was neither a fun-filled miniconvention nor a traditional firemen’s ball, yet it did contain elements of a hot time in the old town tonight. For the fire fighters had congregated in Florida for the sole purpose of putting the torch to the old hotel to see just how fast a “new generation” of fire safety equipment could douse the flames. And what they saw holds the promise of fantastic gains in fire safety in the near future, not only for hotels, condominiums and other high-rise buildings, but for private homes, as well.

The concept behind these latest anti-fire tools — automatic fire

sprinklers — is not new. Sprinklers have been used for years with varying degrees of success. They have not been widely used, however, because of the high cost of the equipment and installation. And this explains the smiles that creased the faces of the country’s top-rung firemen during the Fort Lauderdale tests as they watched flames sizzle and die under the attack of the new system — sprinkler heads that react to fire at least five times faster than currently available models, and a flexible piping system made of Shell Chemical’s DURAFLEX™ polybutylene resins that can cut installation costs by up to 40 percent.

“Only people in the fire community are in a position to fully appreciate the significance of this breakthrough,” says Tony Schroer, Shell Chemical Polybutylene Sales Development manager.

“Unfortunately, fire safety has a relatively low profile in the United States — it just doesn’t get much play. You can see the effects of that in the fact that we have the highest fire death rate of any of the industrialized countries.” He goes on to cite some additional shocking statistics:

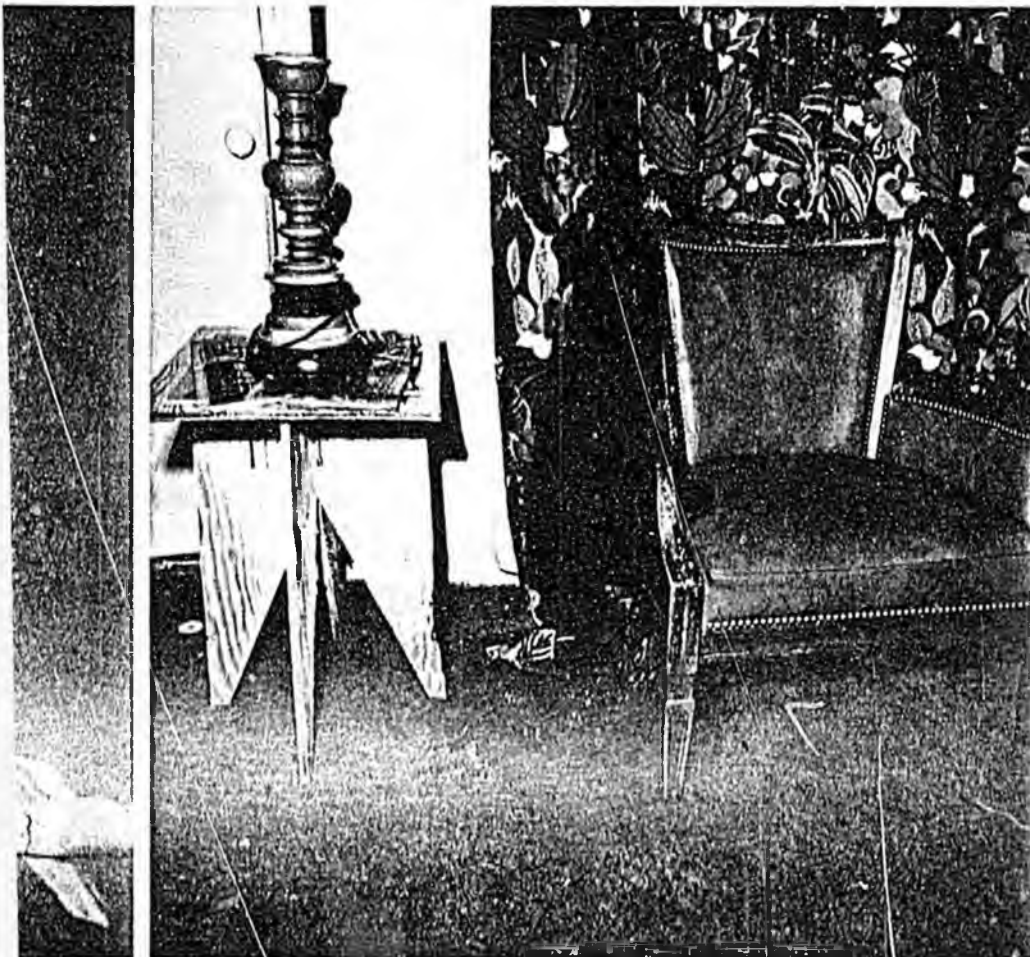
- There are 2.7 million fires across the nation each year, snuffing out more than 8,000 lives and causing property losses in excess of \$5 billion.

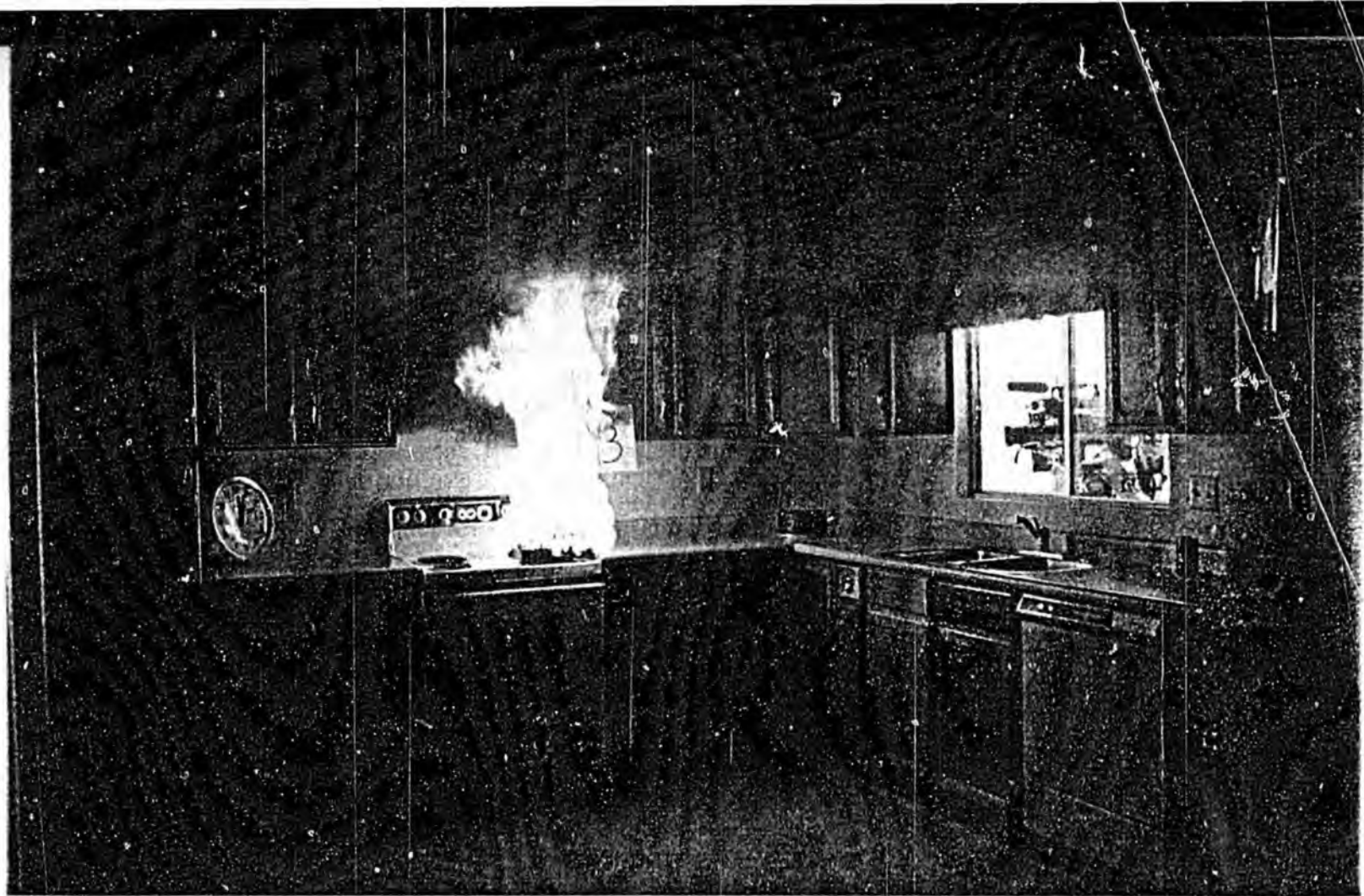
- In the time it takes to read this article, one American will die and 22 others will be seriously injured as a result of fires in private residences and hotels/motels.

- According to statistics gathered by the Federal Emergency Management Agency, hotel/motel fires are much more common than most of us realize, since only the spectacular ones rate widespread news coverage. But the odds are that one out of every four hotel/motel properties will have a fire each year, which adds up to at least 1,000 fires a month. In 1981, for example, hotels and motels reported 12,200 fires (many go unreported), which resulted in death for 165 people, injury for 550 others and \$77 million in property damage.

“These grim statistics are going to change for the better,” says Schroer, “because our perceptions about fire protection are beginning to change. There are very few structures in which fire sprinkler systems are required today. But in many areas of the country, the fire protection community is working to implement sprinklers as widely and as quickly as possible. In fact, some towns and cities are now mandating fire sprinkler systems in all new construction, both residential and industrial. San Clemente was

Fort Lauderdale tests including sampling for toxic gases and checks of temperatures at varying heights in hotel room.





Electric range was turned to maximum heat which ignited cooking oil in pan during the sprinkler system tests in Scottsdale, Arizona.

among the first to go this way. Because of California's Proposition 13, there was a drastic cutback in the amount of funds available for building new fire stations. But the city was growing, and so was the demand for fire protection services. So city and fire department officials worked out a compromise — with mandated sprinkling, the firemen didn't have to respond to a fire within two or three minutes, because water already was being put on the blaze. And thus the city didn't have to build new stations and buy a lot of expensive new equipment."

Government and fire officials in a number of other municipalities are considering or fostering similar ordinances. But in California wider use has been delayed by legal complications resulting from attempts by various plumber's groups to get all plastic plumbing thrown out of the state code.

"It's really a labor problem,"

says Schroer. "Because of its flexibility, polybutylene pipe goes in quickly and easily. It's used in 80 percent of the mobile homes and virtually 100 percent of the recreational vehicles produced here because of that flexibility. Its use in hot-and-cold water systems goes back more than a decade, it serves a huge underfloor heating market in Europe, and it is now being integrated into solar applications. All this pleases consumers, of course, because it cuts costs. But the groups that are selling labor on the market, like the plumbers' union, are against it. They're using every tactic they can — they're suing in the courts, they're calling in political favors, they're making unfounded claims about toxicity and smoke hazards. It's basically an irresponsible attack, aimed at frightening the public. It's part of the battle going on all over the country — a classical economic confrontation between new products and meth-

ods, like plastic pipe and fittings, and the old and entrenched — the metal pipe manufacturers and the plumbers in alliance."

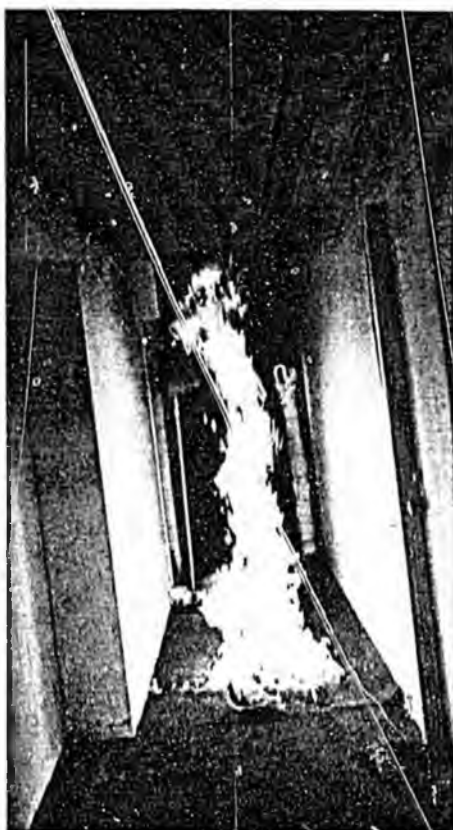
Schroer has no doubts about the eventual winner of the plastics-metals face-off in California, although he deplores the misinformation and "scare tactics" being used by the opposition. In the meantime, elsewhere in the country, the application of pipe made from Duralflex polybutylene to fire sprinkler systems is generating great interest and excitement. "The subject is still brand new," he says. "It really started when the U.S. Fire Administration was set up as a section of the Federal Emergency Management Agency to address the problem of fire in this country — especially the very high number of deaths by fire. It began a program to design a residential sprinkler system, and in its studies, quickly learned that the available sprinkler heads went off so slowly

that an unsurvivable atmosphere developed in a burning room before the sprinkler came on. Although those sprinkler systems would save the house, the people would die."

As a result of research sponsored by the Fire Administration, a new sprinkler head was developed (first by Grinnell Fire Protection Systems and then by Central Sprinklers Corporation) that responds at least five times as fast as existing commercial heads. Moreover, it has resolved a long-standing too-much/too-little snag, being sensitive enough to extinguish flames before lethal toxic fumes build up, yet not so sensitive as to be triggered by heat or smoke from stoves or cigarettes.

The Fire Administration then turned its attention to economics. "For the system to be used," Schroer points out, "they also had to get its total installed cost down. The traditional method, using black iron pipe and threaded joints and fittings, was just too expensive — people wouldn't be able to afford to put it in. That's when they started looking at plastic pipe and discovered Duralflex polybutylene. Our forte is being able to reduce installation costs, because polybutylene pipe, being flexible, is particularly easy to work with. Even in one-inch tubing, which is what you'd use in most residential sprinkler systems, you can snake it through walls and tight spaces like a wire; you don't have to use fittings every time you turn a corner; you don't have to do any threading — just crimp rings or heat seals that fuse pipe and fitting; and you can prefab sections outside the house and snake them in, quickly and inexpensively. So that's how we got involved with the Fire Administration and began working with them on test programs around the country."

Some of the first tests were conducted at San Clemente, where a primary goal, according to Fire Chief Ron Coleman, was to limit and control fires before they reach the flashover point. Flashover

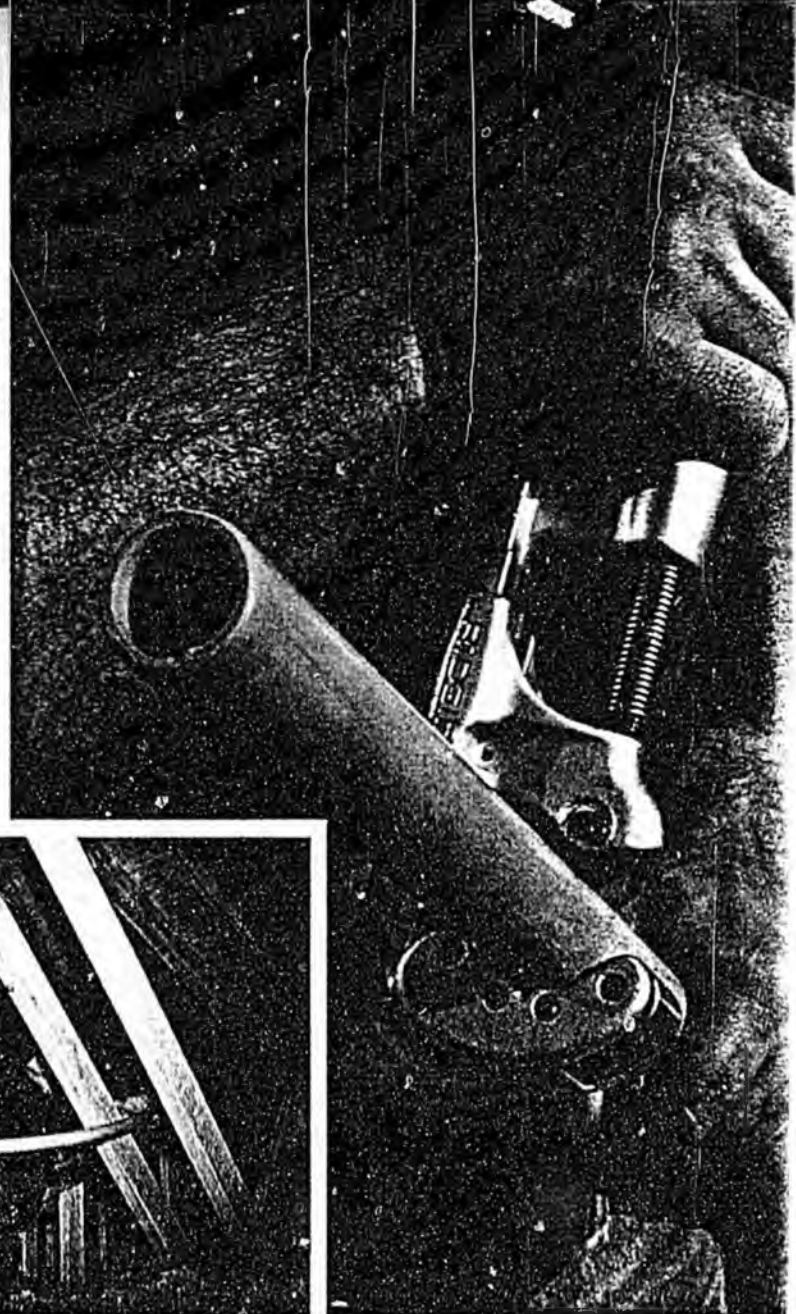
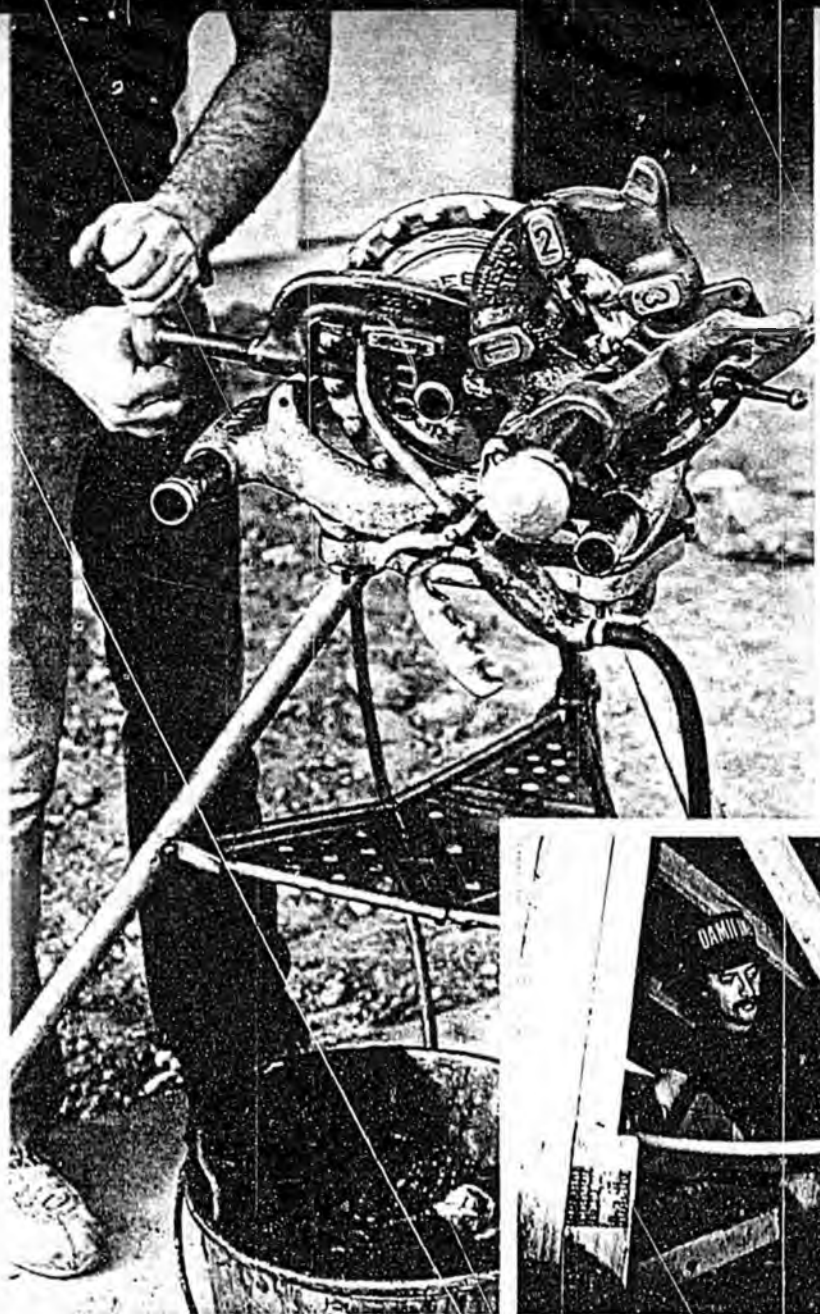


Mineral spirits were torched in Florida hotel hall to see how sprinkler would react to arson. It doused fire quickly.

occurs when an area becomes superheated (800°-1000°F.) and the oxygen in the air suddenly explodes in a fireball. Flashover is lethal to anyone in the vicinity and can involve an entire building in a matter of minutes. Controlling this dangerous condition was particularly important in developing a sprinkler system for residential use because homes and apartments have smaller rooms and lower ceilings than industrial and commercial structures, conditions that enable temperatures and toxic gases to soar to lethal levels more quickly. And the critical moment can arrive in a hurry, for studies show that temperatures usually double between the fourth and fifth minutes of a fire.

In the San Clemente tests, fire officials installed a polybutylene sprinkler system in an abandoned house that was scheduled for demolition, then set three fires inside and in the garage, using common household furnishings and materials. In each case, the sprinkler system responded rapidly, and proved that sprinklers will control most household fires in less than three minutes. Additional studies showed that the sprinklers prevented eye-height temperatures and carbon monoxide gas from reaching lethal levels, providing adequate amounts of oxygen to remain to keep the air breathable. In fact, the sprinklers knocked down a bedroom fire fast enough to save the life of a person sleeping right next to the flames.

Says Schroer: "The fire community recognizes that, if they are able to get sprinkler systems into the places where people live, they're going to reduce the number of fire deaths dramatically and do the public a significant service. They're also going to reduce the demand for fire equipment, and make their own lives a great deal safer. So they have been trying to promote the use of sprinklers, and in many areas have established a series of trade-offs. In multihousing building construction, for example, a lot of



Iron pipe, l, requires much machine work. Plastic pipe, r, is easily cut, heat-fused together. Inset: How nicely the plastic pipe bends.

the expense goes into fire-containment procedures. Fire-rated structures are compartmentalized, for instance, with doors and walls and ceilings that will resist a fire breakthrough for a given period of time. All this adds considerably to the cost of building an apartment house or condo. So in places like Cobb County in Georgia, fire officials are saying to builders, 'Look, if you'll put in a fire-sprinkling system, we'll allow you to reduce the fire rating on the walls, ceilings and doors, because you're not going to need it.' The reasoning there, of course, is that the system will be

putting water on any fire that starts, and the room won't have to hold the blaze for an hour before it breaks through. The fire will be out in a matter of minutes."

Such trade-offs are beneficial to everyone, Schroer maintains. For residents, a sprinklered apartment is much safer than one that is merely fire-rated. And if a builder uses the new heads and polybutylene pipe, the trade-offs could mean that installation will cost him little or nothing. "In fact," says Schroer, "he might even save himself a little money — and that's the magic message

for builders. We're giving him a good selling point for his product, too, without any cost to him — and that's like a free lunch."

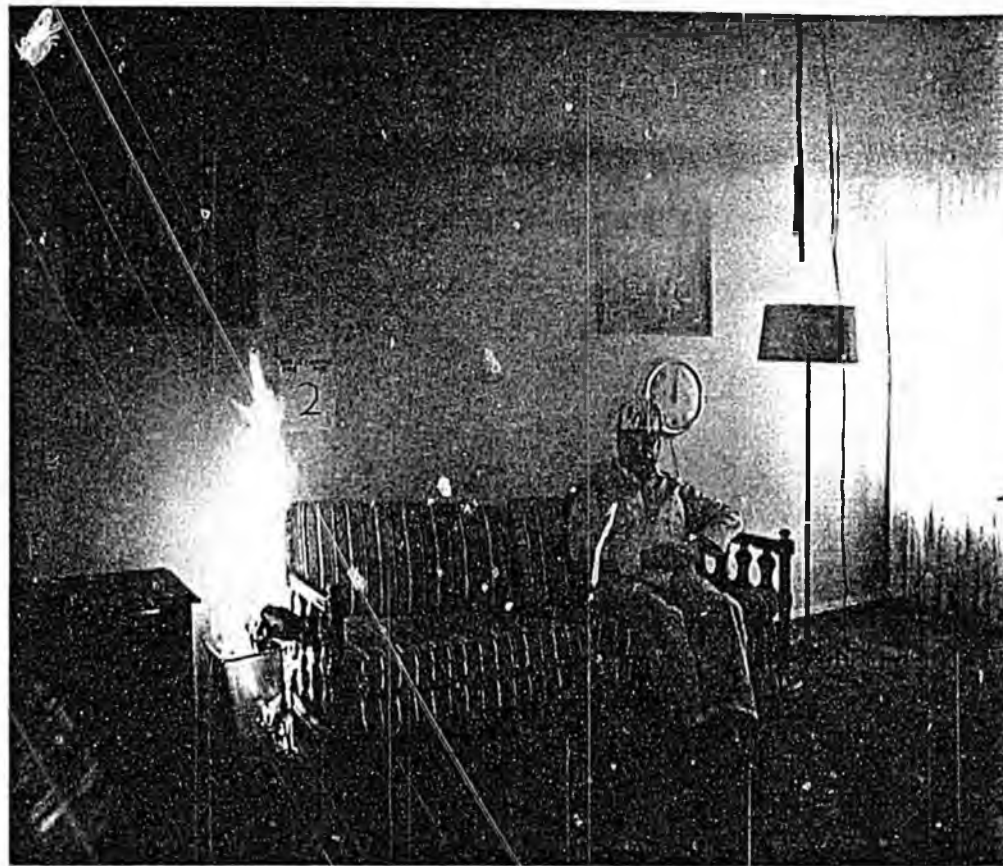
The response in Cobb County has been enthusiastic — more than 750 units committed to be "sprinklered" through September 1982, and more to come. "I would say that in the next six to eight years, 75 percent of new residences of all types in Cobb County will have sprinklers," says David Hilton, the county fire chief.

By and large, however, according to Schroer, the biggest market for the new generation of fast

response sprinkler systems in the near future will be in the multihousing and hotel/motel field. This is due to the trade-off factor — in single-family housing there just isn't that much to trade. But if Congress would enact tax credits and if insurance companies would give premium discounts for sprinklering, there would be a financial incentive for homeowners to invest in the system, not only in new home construction but also in retrofitting older homes, a task for which flexible Duraflex pipe is ideally suited.

"The insurance industry is proceeding slowly," Schroer says, "but in Scottsdale, Arizona, they're talking about a 20 percent overall premium deduction if you have a sprinkler system in your home. That makes it very attractive, because that's out of the total premium, not just the fire protection portion. If the total premium goes down by that much, you end up with the fire protection component being cut by 80 to 90 percent. And what does that say? That sprinklers virtually eliminate the fire hazard."

The big retrofit market that is already here is in the hotel/motel field, if the Fort Lauderdale tests mean anything. Fire officials at that demonstration sat in a command post equipped with television monitors and sophisticated devices for measuring the heat and toxic gases produced by the fires. Over the three days they watched 10 test fires that were designed to duplicate the most common hotel and resort conflagrations, from a cigarette butt smoldering in a trash bag on a maid's cart . . . to a lighted match dropped in a paper-filled wastebasket in a guest room . . . to arson fires fueled by flammable liquids in both guest rooms and corridors. Response times for the sprinkler heads ranged from six seconds in a guest room arson fire (with the fire extinguished in five minutes) to 14 minutes for a wastebasket fire across the room from the sprinkler head (with the



Sprinkler extinguishes fire before smoke drives man out of room in Scottsdale testing.

fire again knocked down in five minutes).

Schroer brings up an interesting fact that explains why controlling arson fires is of great interest to hotel managements and fire marshals. "It's commonly believed," he says, "that most hotel fires are caused by someone smoking in bed. That's erroneous. We've worked closely with the Marriott Hotel staff in these tests, and their experience is that 75 percent of their fires are caused by arson. Who sets them? Everyone from pyromaniacs to angry former employees, as happened at the Las Vegas Hilton."

A surprising fact, according to Schroer, is that arson fires are usually the easiest to control with a sprinkler system: Somebody torches gasoline or mineral spirits and *wham!* You've got a lot of fire! And then that sprinkler head comes right on and *zap!* There goes your fire.

The Marriott Corporation, one of the sponsors of the Fort Lauderdale tests, has assumed a leadership role in hotel fire protection by at least partially sprinklering all their hotels. "About two-thirds of their hotels are completely sprinklered now," says Schroer, "and their goal is 100 percent in another 18 months. They've just started retrofitting a hotel in Miami with polybutylene, and on the basis of what's been done, their installation costs are expected to be about 30 to 40 percent below what they would have been with black iron pipe. With that kind of savings, we expect to see a momentum build up. Sheraton has inquired, as have Hilton, Holiday Inn and Hyatt, so it's starting. And when you realize that there are some 55,000 hotels in the United States and fewer than two percent of them are sprinklered, you get a feel for the great opportunity that exists." *SN*

Shell Chemical Company

A Division of Shell Oil Company



One Shell Plaza
P.O. Box 2463
Houston, Texas 77001

May 16, 1984

EXPRESS MAIL

Chairmen and Members
Senate Labor and Commerce Committee
State of Alaska
Juneau, Alaska

Dear Sir:

REFERENCE: HOUSE BILL NO. 508, AN ACT RELATING TO THE PLUMBING CODE

I appreciate the opportunity to give testimony to the state Senate of Alaska on house bill No. 508. I was disappointed, however, that testimony extended well beyond the scheduled committee meeting time, so that it became necessary for me to leave before I could address the numerous allegations about the performance of polybutylene piping. This letter is written to address those allegations and show that there are facts that clearly refute the arguments that were made. We would like to see this letter and the substantiating information that is attached entered into the official transcript of the hearing.

In his testimony, Dwight Perkins of the Pipe Trades Council of Alaska raised several general issues in protesting the potential approval of polybutylene pipe. The issues raised by Mr. Perkins and the true facts on those matters are as follows:

Durability of polybutylene pipe - Polybutylene pipe resists virtually all of the actions that destroy metal piping. Polybutylene piping does not rust, rot, or corrode. It resists scale buildup that can plug metal pipes. It is not subject to electrolysis. It resists breakage due to freezing water far better than any metal pipe. It has a wet abrasion resistance superior to metal plumbing pipe (see attached performance report on the use of large diameter polybutylene pipe to replace steel piping in the transport of highly abrasive bottom ash slurries from coal fired power plants). Because of its flexibility, polybutylene pipe should be able to accommodate any movement due to earthquakes much better than metal piping. Indeed, the ability to accommodate movement was one of the primary reasons that polybutylene pipe replaced metal pipe in the mobile home industry. Far from being less durable, the facts clearly show that polybutylene pipe is far superior to metal pipe.

HRA413702

Brought by
Gordon Evans

4:55 Mon

He wants to talk
to you -

Thawability - There are proven methods that can be used to thaw plastic water lines. Because of its excellent high temperature properties, polybutylene pipe can be thawed by either hot water or low pressure steam, applied from either the outside of the pipe or by a flexible probe inside the pipe. As verification of the pipe's ability to tolerate temperatures in excess of 180°F during thawing, I am enclosing test data that shows that, at close to the condensation temperature of steam (210°F rather than 212°F), polybutylene pipe will carry an internal pressure of 150 psi for well over a year - certainly long enough to thaw the pipe.

I believe that it should be pointed out that, once the polybutylene pipe is thawed, the consumer's problems are over. By comparison, the thawing of a frozen metal pipe frequently presents the consumer with the very serious problem of broken, leaking water lines. I have enclosed an article attesting to the substantial benefit realized this past winter by users of polybutylene plumbing pipe.

Fire hazard - In spite of Mr. Perkin's allegations, SRI International, in an Environmental Review Document prepared for the state of California, concluded on page V-3 of the summary that, "The potable water pipes, kept cooler by the water inside and of much lower mass, are not a significant fire safety issue."

Allegations on smoke toxicity are also not borne out by the facts. A document detailing tests done by Dr. Carlos Hilado using a test method patented by NASA concluded that "dry" polybutylene produced less toxic gases than Douglas fir does. Obviously a pipe wet with water as it will be used constitutes even less of a risk.

Electrical grounding - We were surprised that Mr. Perkins would bring this point up as the National Electrical Code cautions against the use of water pipes as electrical grounds.

Permeability - This allegation only relates to buried piping and as such has no bearing on the installation of hot/cold water plumbing pipe in walls of buildings.

Worker safety - This is another curious point for Mr. Perkins to raise. In their objective study, SRI International concluded on page V-8 of their summary that, "PB is clearly a preferred material from the worker safety and health viewpoint compared with both metal systems and with plastics that require cementing."

Mr. Vernon Akin (sp.?) commented on toxicity/health issues, the installation requirements for polybutylene pipe, his opinion that polybutylene pipe will not be less expensive to install than metal pipe systems and thermal expansion/contraction. Again, addressing the facts as they relate to these issues:

Toxicity/health - Every component of polybutylene pipe - the resin itself, the pigments, and the stabilizers - are approved for food contact use up to 180°F (the maximum sustained plumbing temperature) under the Food and Drug Administration regulations. None of the piping materials currently approved by the Alaska code can make that statement. In fact, some of the metal systems currently approved by the state of Alaska are coming under increased scrutiny (see enclosed comments on 50/50 time-lead solder). Far from being a health risk, polybutylene pipe is likely the safest potable water piping material.

Installation requirements - Mr. Akin alleged that the requirements in the code cannot be practiced. The facts are that over 500,000 residences were plumbed with polybutylene piping during this last year to the satisfaction of the local plumbing officials.

Installed costs - We certainly recognize Mr. Akin's right to his own opinion on this matter, but the facts are otherwise. The National Association of Homebuilders Research Foundation documented a 44 percent reduction in plumbing costs. In his report to Congress on February 18, 1982, the Comptroller General of the United States estimated a savings of \$300 per house.

Thermal expansion/contraction - Whereas polybutylene does have a higher coefficient of thermal expansion than metal, it is at least 100 times more flexible. As a result, it can flex to accommodate any thermal expansion or contraction, actually generating fewer concerns than metal systems. In almost 5,000,000 plumbing systems installed with polybutylene pipe in the United States, I am unaware of thermal expansion causing a single problem.

Several comments were also raised about the solvent cements thought to be used with polybutylene. The simple fact is that polybutylene pipe is not joined with solvent cements. The 1982 IAPMO code calls for mechanical joining systems. Referring back to my earlier comments on worker health and safety, these joints are actually safer than metal joints.

Judged by the facts as interpreted by objective, credible third parties, polybutylene pipe is not only equal to the metal pipe currently approved in Alaska, it is decidedly superior. It offers the consumers of the state of Alaska a better, safer material at a lower cost. It offers the tradesman a safer material that is easier to use. The facts as differentiated from the opinions and allegations clearly show that the approval of polybutylene pipe as embodied in the 1982 IAPMO code will pay substantial benefits to all of the citizens of Alaska. I urge you to

Polybutylene plumbing pipe saved thousands of home and apartment owners the cost and inconvenience of broken water pipes during the extremely severe cold spell over the 1983 Christmas holidays.

"It was a major disaster in this area," says Jack Smith of Sundance, Inc., a plumbing contractor in Marietta, GA, where temperatures dropped to near zero and high winds pushed the chill factor to -50°F . "We had 500 to 700 service calls. They came in waves. But only one involved a system piped with polybutylene pipe. All the others involved breaks in copper and galvanized pipe. And we've installed hundreds of polybutylene piped water systems in this area."

The experience with polybutylene pipe during the freeze in Cobb County, GA, has fire and building code inspectors smiling. Cobb County, which is part of the rapidly growing Atlanta metropolitan area, has been a leader in changing building codes to allow the use of polybutylene pipe in hot and cold water plumbing and to authorize cost-saving building code modifications to encourage the installation of residential fire sprinkler systems.

"There were leaking pipes all over town -- and one in an unheated area of a new school may have caused a quarter of a million dollars or more in damages by itself -- but virtually no problems with the residential systems based on polybutylene pipe," says Lt. Jerry W. Grier of the Cobb County Fire Department. "We've got about 9,000 water systems and sprinklers based on polybutylene pipe in the county." Because of the dramatic difference in performance, the Cobb County Fire Department is now considering mandating polybutylene pipe for all sprinkler systems installed in the attic.

"We're very pleased with the performance of polybutylene," says Jim Bechtel, Senior Vice President of Post Properties, Inc., which is one of the largest builders and operators of multi-family dwellings in the Atlanta area. "We have 250 domestic water systems and 148 fire sprinkler systems based on polybutylene pipe in operation. There was only one break involving a system based on polybutylene pipe during the freeze."

"This freeze changed a lot of people's minds about plastic pipe," says Danny R. Gosdin, a field supervisor for Carroll & Boyd, Inc., of Jonesboro, GA, a mechanical contractor for Pulte Homes. "We've installed hundreds of water systems based on polybutylene pipe, and during the freeze we had only one fitting push off from freezing, but virtually no water damage resulted. Yet, the first day after the hard freeze, we had 250 calls, all involving water systems made with copper or galvanized pipe. That makes you think this polybutylene pipe is pretty good stuff."

"Knowing what I know now, I'd pay more to have a water system piped with polybutylene than I would for a system made with metal pipe," says W. T. Anderson, who is director of inspections for Cobb County. In actual practice, polybutylene plumbing systems can be installed less expensively than copper systems, even at today's depressed copper prices.

In Houston, the same cold front dropped temperatures to a record low of 11 degrees on Christmas morning and held the area below freezing for more than 100 hours. According to preliminary estimates, freeze damages were expected to match or exceed damages caused by the wind and flooding from Hurricane Alicia

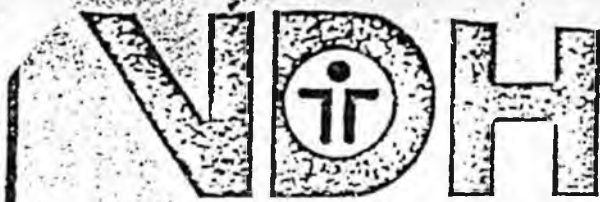
last August. Some 5-10 percent of homes and apartments in the area experienced frozen and broken pipes.

"One apartment complex I repaired had over 180 breaks," says Laurence Klein, a master plumber who specializes in repair and replacement plumbing for large apartment and condominium operators. For several years, Klein has used polybutylene pipe to replace copper and galvanized pipe in water systems and during that time has replaced hundreds of metal water systems in the Houston area with polybutylene pipe.

"I did a good month's work in the week following the freeze, but didn't get a single call involving polybutylene pipe," he said. "The freeze really separated the good from the bad plumbing. Polybutylene isn't giving me very much repair business."

Wood Brothers Homes, one of the larger home builders in the Houston area which switched to polybutylene pipe for its plumbing a little over a year ago, also reported no complaints of breakage or water damage from occupants of some 250 to 300 homes constructed with the high performance plastic pipe.

"Our sales department, because of problems in the past with other plastic pipe, has been uncomfortable about our changing to polybutylene, and felt they were having to sell over it," says Trudy Starkey, who is purchasing agent for Wood Bros. "Since the freeze, that has changed and they now feel that it is a sales point in favor of Wood Bros. Homes."



PUBLIC HEALTH NEWS

Virginia Department of Health
109 Governor Street
Richmond, Virginia 23219

DATE:
RELEASE:

December 16, 1983
IMMEDIATELY

CONTACT: Thomas B. Gray, Assistant Technical
Services Chief, Water Supply Engineering
(804) 786-5566

A health advisory is being issued by state Health Department officials to persons whose home plumbing consists of metallic pipe. State Health Commissioner, Dr. James B. Kenley, is advising persons who live in newly constructed homes (less than two years old) or homes where plumbing has been recently replaced to flush the stagnant water from their taps for 3 minutes before using it for human consumption.

Dr. Kenley said, "Whenever a water tap that has not been used for 6 hours or longer is opened, the initial portion of water may contain dissolved metals in excessive amounts. Flushing a tap for several minutes will remove stagnant water from a house's plumbing and should ensure that water obtained after this maneuver is safe for human consumption."

Recent scientific articles have indicated elevated levels of piping and jointing metals (copper, zinc, lead) in the water after it has been allowed to stand for a period of time. Due to a limited amount of data presently available regarding the extent of this problem in Virginia, Dr. Kenley has established a work group to collaborate with the Department of Housing and Community Development in investigating the occurrence of these corrosion products in stagnant water.

--END--



Solder labeled health threat

By Hugh Robertson
News Leader staff writer

In an investigation with statewide and possibly national implications, an engineering consultant hired by Chesterfield County has concluded that the use of lead-based solder to seal plumbing joints can pose a health threat to owners of new homes.

The investigation was undertaken following complaints this summer by a Brandermill couple, Douglas and Jeanette Corkum, that the water in their new, \$158,000 home at 4018 McTyree's Cove Terrace was bad and they had suffered from vomiting, diarrhea and fatigue since moving into the home in January.

Because of the consultant's findings, the solder problem will be laid before the state Board of Housing and Community Development next month with the suggestion that the use of lead-based solder be prohibited in future construction.

The state board administers the Uniform Statewide Building Code to which home and other construction in Virginia must conform.

Additionally, the Virginia Department of Health plans to undertake a statewide study to determine how much of a health danger, if any, may exist in new homes where the lead-based solder was used.

In the meantime, according to Assistant Health Commissioner Robert B. Stroube, owners of homes less than 2 years old who feel they may have a water safety problem should run their water through faucets "a couple of minutes" before drinking it.

Problems with lead and copper in new home plumbing systems usually are resolved, with the metals flushed out, in about two years, he added.

However, Dr. Stroube cautioned that just how much of a problem exists from use of lead-based solder is unknown at present.

Dr. Stroube also reported that water quality problems may be created by using water with a high acid content, such as is sometimes found in wells. Corrosion may occur, putting copper into the water system, in these cases, he said.

In Chesterfield, County Administrator Richard L. Hedrick also cautioned that "our data right now is rather uncertain" and how much of a problem exists is unknown.

Laboratory testing of the Corkums' water by the state health department disclosed it was highly contaminated by both lead and copper. In one sample, the metal content was 200 times that allowed under federal and state health standards. The tests also showed the county-supplied water was not at fault.

The Corkums' problem then became involved in suits and counter-suits filed by the Corkums and their contractor, Edward J. Buzzell Jr.

On Oct. 27, the county hired the Jordan firm to investigate the situation and recommend what could be done about it.

Last month, the plumbing beneath the Corkums' home was removed and the soldered joints opened and examined.

Additional tests were made by the health department of water which had been allowed to stand for several hours in the joints. Again, high lead and copper content was found.

In a Nov. 10 preliminary report to the county's top building official, Robert S. Hodder, the Jordan firm said, "Several relatively new homes in Chesterfield . . . have been found to have high lead levels in the internal water piping system which are far in excess of the . . . limit." The limit for lead is .05 milligrams per liter.

"Some have levels in the 5 to 6.1 milligrams per liter range," the re-

port said.

"All of the homes involved were relatively new and built by different builders and plumbers" and were in different parts of the county, the Jordan report continued.

The firm also reported that all the houses concerned had copper tubing in which the joints had been sealed by what is called "50-50" solder, which is half tin and half lead. The 50-50 solder is commonly used in home construction, according to building officials.

Additionally, the Jordan firm reported that a "self-cleaning" plumber's flux had been used in each instance. The flux is a liquid which is used in conjunction with solder in sealing pipe joints.

The problem apparently is a far-ranging one, the report continued, because difficulties with water systems where lead solder has been used have been found in Long Island, N.Y.; Carroll County, Md.; Seattle; Portland, Ore.; England; Canada; Scotland and the Netherlands.

"There definitely is a problem associated with the use of 50-50 solder in copper pipe joints which results in lead levels in the water system higher than the federally mandated levels," the report said. "The overwhelming consensus has been in previous problem areas to preclude the further use of lead solder in copper piping."

The report urged that lead-based solder be banned and that solder without lead be required in the future. It also said use of the "self-cleaning" flux should be investigated further.

As did the health department, the report recommended that owners of new homes let their water run for several minutes before drinking it.

"It does appear, however, that the problem dissipates within about (two years) . . . after all the lead in contact with the water has been corroded and flushed through the water system,"

the report also noted.

Neal Barber, deputy director of the state's housing and community department, said the agency's staff would lay the problem before the state board at its Jan. 9 meeting and suggest that a solution would be to prohibit use of the 50-50 solder.

Instead, the code should be revised to require use of "95-5" solder, which is 95 percent tin and 5 percent antimony, Barber said. The antimony contains just .01 percent lead, according to the building code.

Barber said the department has learned the use of lead solder recently has been banned in California and New Jersey.

However, the Virginia building code allows the use of 50-50 solder, and, until it is changed, local building officials have no authority to prohibit use of that type solder.

Barber said that, if the board decides to require use of 95-5 solder, the code-amending process would take about seven months. Various procedures, including the calling of public hearings on the proposal, would have to be followed, Barber said.

In a followup Dec. 5 report to Hodder, the Jordan firm reiterated, "It is apparent that the lead-tin solder was the source of the contamination in the Corkums' piping system."

Once new piping, using 95-5 solder and a different flux, was installed in the home, the problem disappeared, the report said.

"We feel that the recommendations made in our preliminary report are still valid," the followup continued, adding that the state building code should be changed.

"Consideration should be given to testing the water supplies in recently constructed public buildings," where children are present, such as schools, day-care centers and nurseries, where lead solder and copper piping have been, the report also recommended.

"We hope that our reports will help to solve what has apparently been a longstanding problem which no one was aware of until recently," the report concluded.