ALASKA LEGISLATURE COMMITTEE FILES 1983 - 1984 8672
2727 SLC HB 508 (FILE 2)
2727

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;

1 of the Administrative Authority no
pply system is evident, special ap-
he vacuum breakers.

tly connected to a sewer connected
d to the inlet side of a trap and shall
cuum breaker installed at least six
aspirator unit. The discharge pipe
designed for free flow and shall
irgap.

Water **Over 160°F (71°C)** shall be of
te at temperatures of one hundred
re without rendering any portion of

nnections shall be protected by an
vice as set forth in subsection (o) of

n cases where it is impractical to
ns on the domestic water line, the
be considered a non-potable water
r outlets shall be connected to the
or back-siphonage from the non-
ic water line shall be prevented by
or by a tank having a pump for
lomestic water inlets to the non-
an approved airgap as required
t is impractical to install tanks, as
ressure type backflow or back-
be installed as follows:

to gravity or a vacuum with the
ssure type vacuum breaker unit or
tion device shall be installed in the

reaker unit shall be installed at a
hes (.3 m) above the highest tank,
the non-potable water. Other ap-
ces shall be installed in a manner
ve Authority, but in no case less
ve the surrounding ground or floor.
ue to steam boilers, pumps, etc.,
e non-potable water line, an ap-
ce shall be installed in the supply
device shall be installed at least
e surrounding ground or floor.
ns of the non-potable water line
d portions shall be properly iden-
to the Administrative Authority.
vater line which may be used for
shall be posted: DANGER —

(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, except 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 purpose other than for potable water systems shall not be used.

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

Exception: Where a grounding system, acceptable to the Administrative 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 installed 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.

Uniform Plumbing Code

CHAPTER 4
DRAINAGE SYSTEMS

Section 401—Materials

(a) Drainage piping shall be cast iron, galvanized steel, galvanized wrought iron, lead, copper, brass, ABS, PVC, extra strength vitrified clay pipe, or other approved materials having a smooth and uniform bore, except that:

(1) No galvanized wrought iron or galvanized steel pipe shall be used underground and shall be kept at least six (6) inches (152.4 mm) above ground.

(2) ABS and PVC DWV piping installations shall be limited to those structures where combustible construction is allowed.

(3) No vitrified clay pipe or fittings shall be used above ground and shall be kept at least twelve (12) inches (.3m) below ground.

(b) Drainage fittings shall be of cast iron, malleable iron, lead, brass, copper, ABS, PVC, vitrified clay, or other approved materials having a smooth interior waterway of the same diameter as the piping served and all such fittings shall conform to the type of pipe used.

(1) Fittings on screwed pipe shall be of the recessed drainage type. Burred ends shall be reamed to the full bore of the pipe.

(2) The threads of drainage fittings shall be tapped so as to allow one fourth (¼) inch per foot (20.3 mm/m) grade.

Section 402—Fixture Unit Equivalents

The unit equivalent of plumbing fixtures shown in Table 4-1 shall be based on the size of the trap required, and the unit equivalent of fixtures and devices not shown in Table 4-1 shall be based on the rated discharge capacity in GPM (gallons per minute) (liters per second) in accordance with Table 4-2.

Maximum trap loadings for sizes up to four (4) inches (101.6 mm) are as follows:

1¼" - (31.8 mm)—1 unit
1½" - (38.1 mm)—3 units
2" - (50.8 mm)—4 units
3" - (76.2 mm)—6 units
4" - (101.6 mm)—8 units

Exception on self-service laundries.

Section 403—Size of Drainage Piping

(a) The minimum sizes of vertical and/or horizontal drainage piping shall be determined from the total of all fixture units connected thereto, and additional, in the case of vertical drainage pipes, in accordance with their length.

(b) Table 4-3 shows the maximum number of fixture units allowed

Max. Lengths (feet) (m) (See Note)	45 13.7	60 18.2	120 36.5	180 54.7	212 64.5	300 91.2	390 118.6	510 155	750 228

[1] Excluding trap arm
[2] Except sinks and urinals
[3] Except six-unit traps or water closets
[4] Only four (4) water closets or six-unit traps allowed on any vertical pipe or stack; and not to exceed three (3) water closets or six-unit traps on any horizontal branch or drain.
[5] Based upon one-fourth (¼) inch per foot (20.9 mm/m) slope. For one-eighth (⅛) inch per foot (10.4 mm/m) slope, multiply horizontal fixture units by a factor of 0.8.

NOTE: The diameter of an individual vent shall not be less than one and one-fourth (1¼) inches (31.8 mm) nor less than one-half (½) the diameter of the drain to which it is connected. Fixture unit load values for drainage and vent piping shall be computed from Tables 4-1 and 4-2. Not to exceed one-third (⅓) of the total permitted length of any vent may be installed in a horizontal position. When vents are increased one (1) pipe size for their entire length, the maximum length limitations specified in this table do not apply.

CHAPTER 5

VENTS AND VENTING

Section 501—Vents Required

Each plumbing fixture trap, except as otherwise provided in this Code, shall be protected against siphonage and back pressure, and air circulation shall be assured throughout all parts of the drainage system by means of vent pipes installed in accordance with the requirements of this chapter and as otherwise required by this Code.

Section 502—Vents Not Required

(a) Where permitted by the Administrative Authority, vent piping may be omitted on an interceptor when such interceptor acts as a primary settling tank and discharges through a horizontal indirect waste pipe into a secondary interceptor. The second interceptor shall be properly trapped and vented.

(b) Traps serving sinks which are part of the equipment of bars, soda fountains and counters, need not be vented when the location and construction of such bars, soda fountains and counters is such as to make it impossible to do so. When such conditions exist, said sinks shall discharge by means of approved indirect waste pipes into a floor sink or other approved type receptor.

Section 503—Materials

(a) Vent pipe shall be cast iron, galvanized steel, galvanized wrought iron, lead, copper, brass, ABS, PVC or other approved materials, except that:

(1) No galvanized wrought iron or galvanized steel pipe shall be used underground and shall be kept at least six (6) inches above ground.

(2) ABS and PVC DWV piping installations shall be limited to those structures where combustible construction is allowed.

(b) Vent fittings shall be cast iron, galvanized malleable iron or galvanized steel, lead, copper, brass, ABS, PVC, or other approved materials, except that no galvanized malleable iron or galvanized steel fittings shall be used underground and shall be kept at least six (6) inches (152.4mm) above ground.

(c) Changes in direction of vent piping shall be made by the appropriate use of approved fittings and no such pipe shall be strained or bent. Burred ends shall be reamed to the full bore of the pipe.

Bill No. House Bill 508

Date May 9, 1984

Title "An Act relating to the Plumbing Code."

Contact: Eileen Plate
465-2700
Bob Bacolas
465-4870

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.

Since the time the 1982 code was adopted by the International Association of Plumbing and Mechanical Officials, a number of water quality, worker safety and fire safety questions have been posed nationally concerning 1982 code provisions which permit the use of plastic pipe (section 401 of chapter 4 dealing with drainage systems and section 1004 of chapter 10 dealing with water distribution). This concern also exists in Alaska, and no doubt will be brought out in the hearings on House Bill No. 508. Although the Department supports adoption of the 1982 code at this time, should it be determined in the course of the hearings that there are compelling reasons to prohibit the use of plastic pipe, we would not have any strong objection to the specific questioned sections being excluded from the State's minimum plumbing standards.

House Bill No. 508 would not have any fiscal impact on the Department of Labor.

APPROVED:

Jim Lobrain

Updated

POSITION PAPER/Department of Labor

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:

Jay S. Robinson

POSITION PAPER/Department of Labor

STATE OF ALASKA 1984 LEGISLATIVE SESSION
FISCAL NOTE

Revision Date:

REQUEST
Bill/Resolution No.: HB 508
Title: "An Act relating to the plumbing code"
Sponsor: Rep. Cowdery/Rep. Liska
Requestor: House Labor/Commerce
Date of Request: January 18, 1984

FISCAL DETAIL
Agency Affected: Labor
Program Category Affected: Public Protection
BRU, Program or Subprogram(s) Affected: Labor Standards & Safety

EXPENDITURES/REVENUES: (Thousands of Dollars)

	FY 84	FY 85	FY 86	FY 87	FY 88	FY 89
OPERATING						
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 SUPPLIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS						
800 MISCELLANEOUS						
TOTAL OPERATING	0	0	0	0	0	0
CAPITAL						
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUND	0	0	0	0	0	0
FEDERAL FUNDS						
OTHER						
TOTAL						

POSITIONS:

FULL-TIME						
PART-TIME						
TEMPORARY						

SOURCE OF FUNDS TO OFFSET FISCAL IMPACT OF BILL:

ANALYSIS: Attach a separate page for analysis

Prepared By: Robert J. Bacolas, Sr. Phone: 465-4870
Division: Labor Standards & Safety Date:

Approved by Commissioner: Jim Robison Date: 1/26/84
Agency: Labor

LEG:A:31
Distribution (by Agency preparing fiscal note):
Legislative Finance
Legislative Sponsor
Requestor
Office of Management and Budget
Impacted Agency(ies)

12/1/83

* SEE ALSO SB 214

PPFA

Plastic Pipe and Fittings Association

999 N. Main Street • Glen Ellyn, IL 60137 • Phone: 312/858-6540

May 12, 1984

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

Reference: House Bill No. 508
An Act relating to the Plumbing Code

Dear Senators;

We thank you for the opportunity to present data to the Government of Alaska in support of expanding the use of plastic piping for plumbing. Regrettably, our presence at your hearing on May 10th was limited by our departure time from Juneau, and this letter is to respond to issues raised by others present at the hearing.

We certainly admit to Mr. Vein's claim that our Association is actively involved in the support of plastic piping all across the United States. The right to free enterprise in construction is subject to proper regulation and PPFA does offer facts to support technological advancements in the field of plumbing. We believe these products go beyond just meeting minimum regulatory powers - States and Cities across the Nation accept plastic piping because they equal or exceed other materials available to the consumer.

This can be supported by our responding to misrepresentations created from the film shown at your Hearing. It is not just the International Association of Plumbing and Mechanical Officials that have studied and rejected that attack. Last year, at the Annual Conference of the International Conference of Building Officials, for four days this film's advocates encouraged all the Building Officials present to enjoy hospitality and view the film. Then, at the Code Change Session, when they were asked to limit the use of plastic piping, the Officials voted overwhelmingly (approximately 140 to 8) to reject the arguments being made by using the film. Why? We believe it is vital to your Committee and to the Government of Alaska to understand why, and believe we can show you how <u>better safety in construction is promoted by better products; in this instance, plastic piping.</u>

PPFA
Plastic Pipe and Fittings Association
999 N. Main Street • Glen Ellyn, IL 60137 • Phone: 312/858-6540

We refer you to Attachment One to this letter. IFT, Inc.'s letter and attachments are on the code change and the film promoted by our opposition, and subsequently considered and rejected by IAPMO and ICBO. Such activities have also been rejected by the other model building and plumbing code bodies.

The actions mentioned above by model code bodies occurred in previous years. As technology changes, the code bodies review and act upon new code changes. Earlier this month, at an ICBO Fire and Life Safety Committee Meeting held in Minneapolis, in the debates to consider amendments affecting penetrations of fire-protective walls and floors by plastic or metal plumbing piping, an Underwriter's Laboratory Representative remarked the codes would be better off with a non-metallic penetration than with a metallic. Your Committee, in the interest of providing safer buildings in Alaska, may wish to hear more about this, as there is test data to support the above remark.

As to the remarks of a representative of a not-for-profit health organization we believe he claimed we misrepresented the NIOSH Health Report from Boston, concerning a positive link to acute symptoms. Our copy submitted to you speaks clearly on the lack of a definite link. As to work exposure, containers for products used in assemblying plastic as well as other plumbing piping carries instructions to workers.

Finally, were surprised by Mr. Vein's remarks about the effects of root cutters on plastic pipe and believe such assaults were put to rest years ago. Please see Attachment Two, a reprint from the August, 1968 issue of the Southern Building magazine.

We thank you for the opportunity to present facts about plastic piping, and ask that you enact usage of the 1982 Uniform Plumbing Code as published.

Sincerely

Jack Lancaster
Field Representative

CC: Richard W. Church
Executive Director, PPFA

New address, 800 Roosevelt Road, Building C, Suite 20

ATTACHMENT ONE

IFT INC.

CONSULTING SERVICES IN MATERIALS PERFORMANCE AND FIRE TECHNOLOGY

September 23, 1983

Mr. Richard Church
Executive Director
Plastic Pipe & Fitting Association
999 N. Main Street
Glen Ellyn, Illinois 60137

RE: IFT 82-45

SUBJECT: Uniform Plumbing Code .
Change #54 - Sect. 401 (a) 2*
64 - Sect. 503*

The code change referenced above is unnecessary. Interpretations of the code have been clear concerning inclusion of combustible components in differing types of construction for many years.** The prescriptive nature of the suggested change goes against the positive trend toward performance based code development and is prejudicial when one considers the nature of combustible materials permitted in Types 1 through 5 Fire Resistive Construction and Type 5 Non-Rated.

With regard to the "recent full-scale U.B.S. Standard No.43-1 fire test" referred to in the code change referenced above, a few comments are in order. Although this test was apparently conducted in accordance with U.B.C. Standard No. 43-1 in terms of time-temperature curve, the standard itself in no way controls design or construction detailing of the specimen. In the case of the Goldberg-Plumbers Union fire test, the specimen had several deficiencies in construction which were designed to cause premature failure.

In the way of description, one side of the specimen was framed in 2"x 4" and the other with 2"x 6" lumber. It was said to have been designed to simulate an intermediate story in a multi-story wood frame building with portions of unaffected floors above and below the simulated "fire" floor.

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* Ref: ICBO, 1983. Building Standards Pt. III - Code Change Agenda (July-August 1983) P. 15.

**See attached excerpt from "A Code Official's View of Requirements for Noncombustible Building Materials" by J.E. Bihr in Ignition, Heat Release and Non-Combustibility of Materials, ASTM STP 502. P 3-10 (1972).

POST OFFICE BOX 9087 BERKELEY, CALIFORNIA 94709 (415) 548-3461

ATTACHMENT ONE

ABS plumbing assemblies containing 3" and 4" pipe were preconstructed and inserted in square or rectangular notches (see attached photo) cut in the test wall. Maximum pipe size for the 2"x 4" framed section was 3", with 4" being used on the side framed in 2" x 6". Certain details simulating the multi-story framing (especially the upper story) appeared non-standard as did the notches cut at simulated floor/ceiling interfaces which were not firestopped as required by UBC Section 2516.f.2.D. (attached). Following insertion of piping, a single steel strap was nailed over each notched opening in plates and studs. Notch details can be seen in the attached photo.

The test fixture included neither assemblies of cast iron pipe nor PVC although the code change would affect use of the latter product. Additionally, given the non-standard fire stopping details, as well as the reported ability of back-to-back metallic pipes penetrating fire walls to demonstrate temperatures in excess of those permitted by U.B.C. 43-1 on the back, unexposed face, the test results are of extremely limited value. Additionally, the use of 5/8" gypsum wallboard complicates interpretation of results, inasmuch as the use of this finish material implies one-hour, combustible fire-resistive construction, although the plumbing and notching details are not consistent with this type of construction.

Perhaps most important, installation of plastic pipe without mitigating, fire stopping devices (such as back-packing, use of heat shields, etc.) which have demonstrated successful performance according to the ASTM E-119 standard is <u>against all recommendations</u> of the plastic pipe industry and constitutes a misuse of the product designed to result in misleading test data. Another example of this intended misuse can be seen in the installation of 3" pipe and fittings in a 2"x 4" test wall section. Such fittings have outside diameters in excess of the 3½" lumber dimension and their use is not recommended in walls framed with 2"x 4" lumber for both fire safety and noise reduction reasons. In addition, in practise such use will cause bulges and stresses in the wall board.

These test results are invalid in that they neither simulate properly constructed one-hour F.R. combustible construction nor are represented as type 5 N.R. construction. The use of such test results to support a prescriptive code change is improper and reflects badly on the proponents. Fire performance of plastic pipe should be judged in concert with the accepted performance standards in place in the Uniform Building and Plumbing Codes when considered for use in fire resistive buildings.

For IFT, Inc.

Joseph B. Zicherman, Ph. D.

JBZ:mw

ATTACHMENT ONE

J. E. Bihr [1]

A Code Official's View of Requirements for Noncombustible Building Materials

REFERENCE: Bihr, J. E., "A Code Official's View of Requirements for Noncombustible Building Materials," *Ignition, Heat Release, and Noncombustibility of Materials, ASTM STP 502*, American Society for Testing and Materials, 1972, pp. 3-10.

ABSTRACT: The traditional definition of *noncombustible* has given way to a performance oriented approach. Comparing the various model code treatments, it is apparent that they are leading this trend. The motivation stems from the development of new products such as plastics and composites as well as the ability to significantly change the combustible characteristics of older products such as wood. Potential heat tests appear to be a realistic method of separating material: with respect to levels of combustibility.

KEY WORDS: flammability, burning rate, fire tests, building codes, fire resistant coatings, construction materials, building boards

THE EXCERPT PRESENTED BELOW IS TAKEN FROM PAGES SEVEN AND EIGHT OF THE ARTICLE CITED AND ABSTRACTED ABOVE.

The model codes all classify basic types of construction in a nearly identical manner, contrary to the statements of those who haven't taken the trouble to closely examine them. The higher (more resistive) types require exterior walls of noncombustible construction. Yet, the codes are pragmatically oriented and all accept materials which will not detract from overall performance. The use of building paper, for example, to effect weather resistance has been logical. There is no doubt that buildings must resist the constant effects of weather while still being able to withstand the possibility of a sometime fire. Another code reality is the universal acceptance of interior combustible finishes such as paper or vinyl faced gypsum wallboard, wood paneling, wall paper, and vinyl coverings, all of which are designed to be applied over noncombustible or fire-resistive substrates or both. ICBO has accepted the use of fire-retardant treated wood for the framing within fire-resistive interior walls of Types I and II buildings, the high-rise type of structure characterized by fire-resistive protection of key elements such as the structural frame, bearing walls, and floors. In recommending this, the Code Changes Committee reasoned that general room fires would not penetrate the fire protective membrane until the content fire had reached significant levels. They also recognized the relative contribution of framing to the anticipated fire load in a building.

Wood stud walls and bearing partitions shall not support more than two floors and a roof unless an analysis satisfactory to the building official shows that shrinkage of the wood framing will not have adverse effects upon the structure nor any plumbing, electrical, mechanical systems nor other equipment installed therein due to excessive shrinkage or differential movements caused by shrinkage. The analysis shall also show that the roof drainage system and the foregoing systems or equipment will not be adversely affected or, as an alternate, such systems shall be designed to accommodate the differential shrinkage or movements.

(e) **Floor Framing.** Wood-joisted floors shall be framed and constructed and anchored to supporting wood stud or masonry walls as specified in Chapter 23.

(f) **Fire and Draft Stops.** 1. **General.** In exposed combustible construction, firestopping and draftstopping shall be installed to cut off all concealed draft openings (both vertical and horizontal) and shall form an effective barrier between floors, between a top story and a roof or attic space, and shall subdivide attic spaces, concealed roof spaces and floor-ceiling assemblies. The integrity of all fire and draft stops shall be maintained.

2. **Fire stops, where required.** Firestopping shall be provided in the following locations:

A. In concealed spaces of stud walls and partitions, including furred spaces, at the ceiling and floor levels and at 10-foot intervals along the length of the wall.

EXCEPTION: Fire stops may be omitted at floor and ceiling levels where approved smoke-actuated fire dampers are installed at these levels.

B. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings;

C. In concealed spaces between stair stringers at the top and bottom of the run and between studs along and in line with the run of stairs if the walls under the stairs are unfinished;

D. In openings around vents, pipes, ducts, chimneys, fireplaces and similar openings which afford a passage for fire at ceiling and floor levels, with noncombustible materials.

3. **Fire stop construction.** Except as provided in Item D above, firestopping shall consist of 2 inches nominal lumber or two thicknesses of 1-inch nominal lumber with broken lap joints or one thickness of ½-inch plywood with joints backed by ¼-inch plywood.

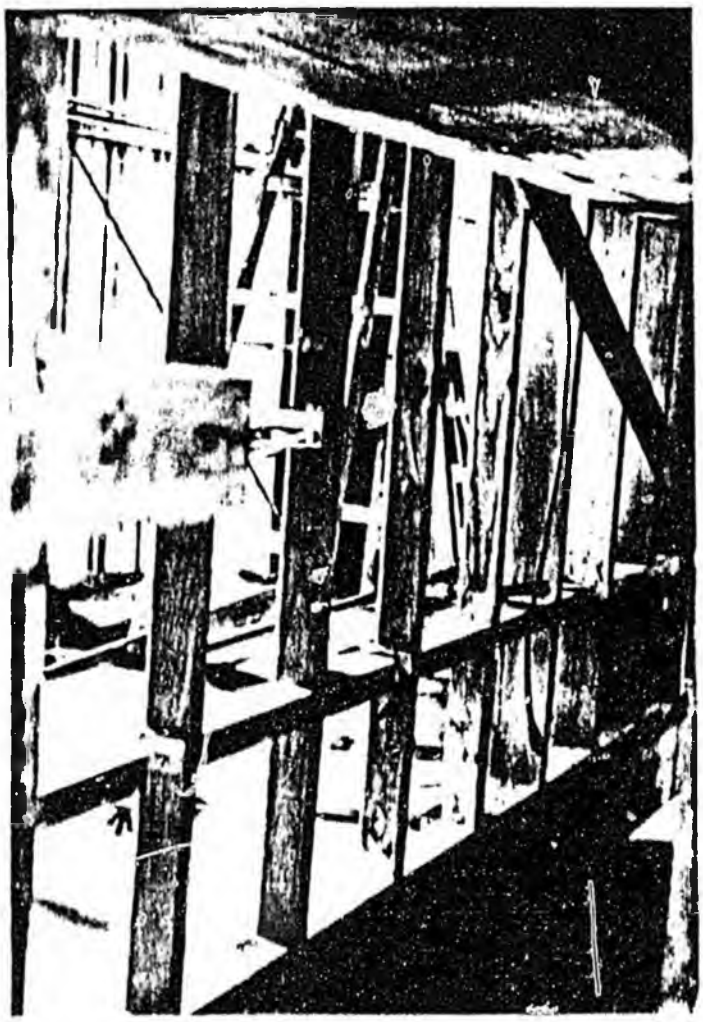
Fire stops may also be of gypsum board, cement asbestos board, mineral wool or other approved materials securely fastened in place.

Walls having parallel or staggered studs for sound transmission control shall have fire stops of mineral wool or other approved nonrigid material.

4. **Draft stops, where required.** Draftstopping shall be provided in the following locations:

A. **Floor-ceiling assemblies.** (i) **Single-family dwellings.** When there is usable space above and below the concealed space of a floor-ceiling assembly in a single-family dwelling, draft stops shall be installed so that the area of the

ATTACHMENT ONE



TEST ASSEMBLY PRIOR TO INSERTION OF PIPE AND INSTALLATION OF WALLBOARD. NOTE NOTCHES (ARROWS) IN SIMULATED FLOOR PLATES WHICH WERE NOT FIRE STOPPED AS REQUIRED BY UBC SECT. 2516.F.2.0

ATTACHMENT TWO

Lafayette (La.) Tests ABS-DWV

Confronted by the conflicting claims of the Plastic Pipe Institute and their competitors the City of Lafayette (La.) decided to resolve the issue by conducting its own tests.

In a joint effort by the City of Lafayette and the Acadian Home Builders Association a bath mock-up was erected and during June subjected to a series of tests equivalent to a "lifetime of use". Mr. Ed Dauphin's report to the Lafayette Plumbing Board follows in its entirety:

Mr. C. C. Hargis, Chairman
Lafayette Plumbing Board
Lafayette, Louisiana 70501

Dear Mr. Hargis:

On or about May 20th, a mock-up of a pier type bathroom was constructed and furnished to the test site by Mr. Harry Hebert of Harry Hebert Homes. Mr. Hebert engaged a licensed plumber to install a typical bath plumbing for drain waste and vent according to Code, using A.B.S. Plastic Pipe bearing the specification, A.B.S., CS-270-65, DWV. The installation included, in addition, a two-inch trap of this material. I personally witnessed the installation. The entire mock-up was allowed to remain exposed to the weather until June 11th, at which time we proceeded with the chemical test.

I secured, from a local janitorial supply house, a complete representation of all chemicals sold by the [illegible] schools and commercial establishments. These chemicals included solvents used to clean porcelain, unstop drains and to dissolve stoppage in sanitary sewers. These various solutions contained Caustic Potash, Sodium Potash, Inhibited Hydrogen Chloride, Sulfuric acid, and Hydrochloric acid. In addition, I purchased, from an A & P Food Store, all of the common household chemicals offered by them for the purpose of cleaning, unstopping and disinfecting drains in homes. They consisted of Lye, Drano, Sani-Flush, etc.

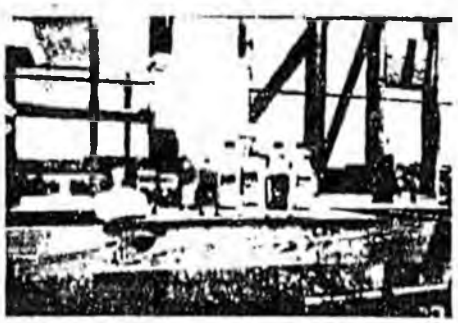
At 1:55 P.M., on June 11th, we proceeded with the chemical test. The following members of the Plumbing Board were present: Mr. C. C. Hargis, Mr. Rene A. Peltier and Mr. A. J. Szabo. Also in attendance was Mr. Harry Hebert and myself. The test consisted of stopping the main drain at the location of the last bend before the exit hole. Again, stopping the main drain just before the second section joining the Plastic "P" Trap and stopping in the flow within the bend of the "P" Trap. Material used for stoppage consisted of cotton batting, boiled in a solution of 50% hoglard and 50% paraffin wax. The open end of the main drain was plugged with a regular plumber's drain plug. The ambient temperature was in the high 80's. We poured into the toilet approximately one quart of water, then added one quart of Drain-Lite.

The first plug was not secure and we lost the material. We corrected this and repeated the test. As we waited for reactions in one area, we added other solutions and agents in other areas that had been plugged, until all of the various chemicals had been tried.

Please note, in each case where chemicals were introduced into the system, the amounts were from twice to three times as much as recommended by the manufacturers.

Into the two-inch drain, we poured approximately one-half pint of water, then added Lye, Drano, Sani-Flush and Caustic Potash crystals. The reaction was of a violent nature, to the extent that water was boiled out of the top of the drain several inches higher than the top of the drain. The temperature of the section of the trap, containing the solution, was very high, high enough to cause severe burns to the hand and remained in this condition till we left the test site at approximately 2:45 P.M.

Mr. Ed Dauphin, Director of Inspections, placed three stoppages of cotton batting impregnated with hoglard and paraffin wax.



Total tests—household cleaners from super market—professional cleaners from plumbers supply house.

Cleanest bowl in town.

Greater quantities than recommended used.

Tests carefully recorded.

Now, how did they do this?

Reprint from *Southern Building*, August, 1968

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT

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HEALTH HAZARDS ASSOCIATED WITH PLASTIC PIPE

A STATUS REPORT
OF
THE CALIFORNIA PIPE TRADES COUNCIL
OF
THE UNITED ASSOCIATION OF JOURNEYMEN
AND APPRENTICES OF THE PLUMBING AND PIPE FITTING
INDUSTRY OF THE UNITED STATES AND CANADA

PREPARED BY:

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CALIFORNIA PIPE TRADES COUNCIL
SACRAMENTO, CALIFORNIA

Sept. 1981

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EXHIBIT 7. "Discussion and Conclusions," Final Report on Potential Health Hazards Associated With the Use of Plastic Pipe in Potable Water Systems. California Department of Health Services, October 17, 1980.

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EXHIBIT 20. Letter of general counsel for the California Building Standards Commission regarding the relationship between the California Building Standards Law and the California Environmental Quality Act (CEQA). July 21, 1981.

(NOTE: Additional information on these Exhibits may be obtained by contacting the law offices of LEONARDINI & FATHY, 400 Capitol Mall, Suite 221, Sacramento, California, 95814-4480, (916) 441-4405.)

PART ONE: SUMMARY OF HEALTH ISSUES

INTRODUCTION

Thousands of pages have been written on the advantages and disadvantages associated with plastic pipe. The debate normally concerns its effectiveness and usefulness as a new product. Most recently, issues have focused on human health hazards and potential long-range environmental dangers. With this type of dispute the problems surrounding plastic pipe involve a staggering level of scientific abstraction. Public officials and policy makers (usually not scientists by training) oftentimes are faced with a morass of scientific jargon, chemical formulae and mathematical probabilities. Such scientific disputes, if taken out of context, can be an obstacle to the appropriate protection of the health and safety of the general public.

The following paper is a short summary of the main health and environmental issues in the plastic pipe dispute. It includes documents of policy makers, environmental scientists and health officials that comment upon the proper health and safety approach to the issue, all of which documents are part of the Public Record of the California Housing Commission. These documents illustrate that scientific assertions of the petrochemical industry, when analyzed by independent testing agencies, do not overcome the threat of severe safety risks, health risks and environ-

mental contamination that may arise from the use of plastic pipe.

Lastly, this paper documents the extreme peril of relying upon media presentations and press packages of the Plastic Pipe and Fitting Association (PPFA).

The reader should carefully note the serious need for policy decisions with regard to plastic pipe that reflect truly unbiased research and independent analysis.

I

FIRE SAFETY

In early 1980, the California State Fire Marshal, at the specific request of the California Legislature, (ACR 98), analyzed and evaluated every major scientific document on "the potential flammability of plastic pipe and the fire hazards associated with its use." It concluded:

> "In multi- (3 or more) story fire-rated construction, additional in-depth fire testing is necessary to (a) ensure that plastic pipe will not contribute to unusual fire spread; (b) that the toxicity generated by the combustion of plastic pipe will not extend beyond the area of initial exposure in quantities sufficient to prove hazardous." ("Fire Hazards of Plastic Pipe" State Fire Marshal. May 1980.)

The State Fire Marshal was particularly concerned at the time with "through-penetrations" of fire-rated walls by a combustible material and by the loading of plastic pipe, i.e.,"stacking", in high-rise construction.

His concern proved to be prophetic after the tragic fire at the MGM Las Vegas in November 1980. News accounts

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 Californ 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.)

V

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-

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* 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 unequivocably 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.

PART TWO: EXHIBITS

STATE OF CALIFORNIA—STATE AND CONSUMER SERVICES AGENCY EDMUND G. BROWN JR., Governor

STATE FIRE MARSHAL
7171 BOWLING DRIVE, SUITE 800
SACRAMENTO, CALIFORNIA 95823

(916) 322 2370
ATSS 492-2370

March 31, 1981

Myron Moskovitz, Chairman
Commission on Housing and
Community Development
921 Tenth Street
Sacramento, California 95814

Dear Mr. Moskovitz:

I have been informed that the Commission on Housing and Community Development has decided to conduct an Environmental Impact Report (EIR) for ABS and PVC when used for drain and waste piping. I believe that the EIR presents our best opportunity to study many of the fire-related issues I spoke of in my May 1980 paper, "Fire Hazards of Plastic Pipe", and I would strongly recommend that the Commission address fire safety as part of its report. I would further recommend that a study of vent piping be included as well.

As the enclosed articles suggest, plastic pipe may have played a contributing role in last November's tragic fire at the MGM Grand Hotel in Las Vegas, and many news accounts describe the precise problems I alluded to in my reports to the Commission. Further, my office is presently reviewing all available documentation on the fire, and I am reconvening a Task Force to evaluate the whole question of fire safety in high rise buildings. The findings of the EIR would be of great help in that review.

In short, I think we have an excellent opportunity, through the EIR, to look objectively at the fire safety issues raised by the proposed increased use of plastic pipe. I hope you agree.

Sincerely,

PHILIP C. FAVRO
State Fire Marshal

PCF:cog

Enclosure

Report: Hundreds Of Violations Fueled Tragedy At MGM

LAS VEGAS, Nev. (UPI) — Hundreds of building code violations that contributed to the intensity of the MGM Grand Hotel fire have been found by investigators, the Clark County Building Department reported Wednesday.

Eighty-four people died in the blaze that sent killing smoke and gases through the 26-story tower on the Las Vegas strip Nov. 21, forcing about 4,500 guests to flee.

Most of the victims died from smoke inhalation and the Building Department report blamed hotel construction, which did not meet county codes, for the rapid spread of smoke and fire.

"Code violations exist throughout the complex and hundreds contributed adversely to the life safety of the occupants," Building Department Director Robert Weber said in the preliminary report.

The four-page document represented 600 hours of inspections of the hotel and reviews of building plans, Weber said.

The document described structural irregularities that drew smoke up elevator shafts, stairwells and through every floor of the resort.

Holes in air shafts and ducts that lacked fire dampers provided smoke and flames avenues of escape, it said.

The report pinpointed other violations, including improperly ventilated air shafts, holes in corridor fire walls, plastic pipes, and large holes cut into interior stairways.

The design of some hotel safety systems, including exits, emergency lighting and signs, were in violation of county codes, according to the report.

"Sign visibility, illumination and mounting for proper viewing and shortage of directional signs were extensively inadequate," the report said.

Stairways, exits and corridors were improperly constructed and not protected by adequately fire-resistant materials, and the resort lacked smokeproof stairways required for buildings more than 75 feet tall.

MGM Grand spokesman Bill Bray said management would have no comment until they examined the report.

Another report, released by the Clark County Fire Department, said the blaze was caused by a short circuit behind the wall of a serving station near the delicatessen, not in the ceiling of the restaurant as originally believed.

The report said the fire probably burned for two to three hours before it was discovered.

The first employee to notice the flames immediately turned to leave the room and report the blaze, but was knocked to the floor by a back draft, the Fire Department report said.

DECEMBER 25, 1980 THE DALLAS MORNING NEWS

Hundreds of code violations found at MGM Grand

LAS VEGAS, Nev. (UPI) — Hundreds of building code violations that contributed to the intensity of the MGM Grand Hotel fire have been found by investigators, the Clark County Building Department reported Wednesday.

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The report pinpointed other violations, including improperly ventilated air shafts, holes in corridor firewalls, plastic pipes, and large holes cut into interior stairways.

The building department report also said the design of some hotel safety systems, including exits, emergency lighting and signs, were in violation of county codes.

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The first employee to notice the flames immediately turned to leave the room and report the blaze, but was knocked to the floor by a backdraft, the fire department report said.

The employee grabbed a fire hose and tried to extinguish the blaze, but he was knocked to the floor by a second backdraft, and remained unconscious for two or three minutes, the report said.

LOS ANGELES TIMES DECEMBER 21, 1980

A Fire Dissected: What Caused MGM Grand Blaze

LAS VEGAS—It was a splashy production, worthy of its movie-maker parent, Metro-Goldwyn-Mayer—literally dripping in glitter and glamor and sparkle.

No expense was spared to offer the finest decorations, the richest appointments, the ultimate in opulence in the 26-story hotel-casino—the largest in the world when it opened in 1973.

But like a Hollywood movie set, everything at the MGM Grand Hotel was not what it seemed to be. The ornate polished wood trim was not all wood, the gleaming marble not all marble, the imported crystal chandeliers not all crystal. Many items, in fact, were flammable plastic.

The casino was so loaded with synthetics and structural quirks that it produced the most intense fire many investigators said they had ever encountered. It was, one fire official said, "a torch waiting to go off."

On the morning of Nov. 21, it did.

What began as a minor fire near the kitchen area became a 1,500-degree inferno. Within minutes, virtually everything in the 50,000-square-foot casino was consumed. Smoke and toxic fumes surged into the adjoining high-rise hotel, turning rooms, corridors, elevators and stairwells into gas chambers.

Eighty-four persons died. It was the second deadliest hotel fire in U.S. history. And, along with a rapidly spreading blaze that killed 26 persons in a New York hotel conference center two weeks later, the Las Vegas fire raised disturbing questions about a patchwork regulatory system intended to ensure fire safety.

When fire raced through the MGM Grand Hotel in Las Vegas a month ago today, it left behind piles of ashes, rubble and questions. In this special report, Times Staff Writers Bob Secter, Gaylord Shaw and Ronald L. Soble examine how the second-worst hotel fire in U.S. history occurred in a building that had been certified as safe.

Owners of the MGM Grand said the hotel was designed and built to comply with all building codes and fire regulations in force in 1973. On-site building inspectors said construction work met the codes, and fire inspectors said they discovered no major problems before the disaster.

How, then, did fire and smoke spread so rapidly through a structure certified as safe?

Since the fire one month ago today, Times reporters have examined thousands of pages of documents and interviewed scores of witnesses, fire experts, public officials and hotel employees. The inquiry found that:

—Half to three-fourths of the casino's furnishings and decorative trim was made of plastic or other synthetics, one investigator estimated. These petroleum-based substances burned so intensely that temperatures within the casino were roughly three times greater than the volcanic heat that scorched the slopes of Mt. St. Helens last spring.

—Although such high-occupancy buildings are supposed to be designed to retard the spread of fire and smoke, the design of the MGM Grand appears to have aided the spread of flames and allowed smoke to billow uncontrollably throughout the hotel.

—Sprinklers protected some restaurants, show rooms and the hotel's shopping arcade—and halted the fire there—but did not extend a few extra feet into the delicatessen, where the fire started, or into the casino, where it expanded.

—No fire-resistant barriers to contain the flames were installed in the casino's cavernous attic, which was crisscrossed by flammable plastic plumbing and wiring. The barriers would have made it harder to use the attic as an "eye in the sky" to spy on casino cheaters and would have dammed up part of the hotel's heating and air-conditioning system.

—Several investigators said that (1) the air-conditioning system did not have a sensor, which they interpreted the building code as requiring, to shut it down automatically and thus avoid the spread of smoke; (2) vents atop elevator shafts and stairwells appeared to be inadequate; (3) a vertical ventilation shaft in the core of the hotel helped carry smoke into corridors, and (4) louvers above guest room doors allowed smoke from the.

Please see MGM, Page 3

Continued from First Page

corridors to enter the rooms.

—Construction of the building was rushed. It opened 18 months after groundbreaking, a remarkable feat for a structure containing 2½ million square feet. In the "fast-track" construction process, some corners were cut as dozens of subcontractors drew their own designs and selected their own construction methods. The reason for the hurry, said the president of the supervising construction firm, was "so you can make money sooner."

—On-site inspectors for the county building department did not report design or construction problems that figured in the disaster. The department's director—who resigned in 1978 during a grand jury investigation of irregularities in construction of other hotel-casinos—took no action on a fire official's suggestion that sprinklers be required throughout the MGM Grand. The director repeatedly sparred with fire officials over trying to pressure other hotel-casinos into upgrading their fire safety equipment.

—County fire marshals found a host of safety discrepancies in the MGM's kitchens this year, but failed to follow through fully on their investigation. Only three inspectors are assigned to police 29 hotel-casinos on the Strip. At MGM Grand they missed what fire officials characterized as serious code violations.

—Some hotel employees said they never received training on what to do in case of fire, and investigators said no printed fire instructions were given to guests or posted in rooms. The hotel's fire alarm never sounded before it was destroyed by the fire. To screen out false alarms, one investigator said, the system was set up so that it would not ring immediately.

Possible Code Violations

Since the fire, dozens of lawsuits seeking hundreds of millions of dollars in damages have been filed against MGM, and local prosecutors have been studying whether charges should be filed. Clark County Dist. Atty. Robert J. Miller said his office would decide within a few weeks whether to pursue criminal or civil actions. "We're looking into possible code violations," he said, specifically mentioning "holes in walls" in stairwells.

The prosecutor was referring to the post-fire discovery, reported by Clark County Fire Chief Roy L. Parrish and other investigators, of five openings that had been cut in stairwell walls. Under the building codes, such openings are prohibited because those walls are supposed to be built to resist fire for at least two hours.

"There were many, many code violations," said a high-ranking investigator after touring the building. "Some were serious and some were not so serious."

Among other potential violations cited by investigators were a lack of roof hatches for interior stairwells, inadequate firewalls between kitchen and casino areas, use of the wrong type of gypsum board to line an exitway near the casino, improper attachment of a sprinkler in one stairwell and too few exits for the huge casino.

Investigators said it is difficult to trace responsibility for the possible code violations or for the design features and construction problems that have been identified as contributing to the disaster. This is because of numerous building changes that have taken place in the seven years since the hotel opened and because the "fast-track" construction method meant scores of subcontractors shared major responsibility for construction details.

The hotel's chief executive officer, Fred Benninger, declined a request for an interview. The chief architect, Martin Stern Jr. of Beverly Hills, and the project architect, Joel Bergman, also declined to discuss their work. Because official investigations are continuing, fire officials also are guarded in what they say about the MGM blaze. But Chief Parrish told The Times:

"It was a textbook fire that, given the right circumstances and conditions—which existed in this particular building—caused the rapid spread. . . .

"What I mean is, a textbook fire could be set up under laboratory conditions to do that, or it could mean it does not necessarily have to be a laboratory situation. It's something that we know that under the right conditions could happen. And it did."

Same Building Code Involved

Parrish said the same circumstances exist in other buildings "in other cities—it's a fact."

Indeed, experts say the same basic building code in effect in Clark County at the time the MGM Grand was constructed also was in effect in hundreds of other local jurisdictions across the country.

While there are no uniform federal standards for construction—it is a process which, like licensing automobiles, is left to state and local authorities—an estimated 18,000 jurisdictions have adopted much of the language in one of the four model building codes written by regional or national organizations.

In some cases, local officials set tougher standards than those outlined in the model codes. This has happened in Los Angeles where, for example, sprinklers are required in all new buildings over three stories and where many existing high-rise buildings have had to install basic fire safety features.

But, the sponsors of the model codes acknowledge, the most serious problems come in the enforcement of the standards. "No code is worth a plugged nickel if it isn't enforced, and that's what's happening in too many places," one official said.

The two recent major hotel fires brought orders from the governors of both New York and Nevada for a re-examination of the adequacy of their states' codes. Clark County is moving to require all existing hotel casinos to install sprinklers—as is now required in new construction—but many experts doubt there will be significant changes elsewhere.

Gordon Vickery, head of the U.S.

Fire Administration, said a federally imposed system of building standards is unlikely. "I don't think with the current political climate that it's in the cards," he said.

Vickery said there are more than 12,000 hotel and motel fires a year, causing $90 million damage and claiming an average of 160 lives. "We usually lose people by ones and twos," he said, "and the public doesn't pay much attention until disasters like these come along."

The Las Vegas tragedy apparently began in one short stretch of the 1,895 miles of wiring—equal to the distance from Las Vegas to Detroit—which was installed throughout the complex. Investigators theorize that the wiring in the delicatessen, which was closed at the time, overheated and began arcing, and that for some reason circuit breakers did not shut off the current. Unnoticed, heat began building up from the small, smoldering fire in the wall and ceiling cavity.

Looked for Fire Extinguishers

Shortly after 7 a.m., Jack Kenigson, a retired Redwood City, Calif., car dealer, entered the coffee shop and ordered breakfast. Before his food arrived, several waitresses rushed from the kitchen yelling: "Get the hell out!" Kenigson said he fled just in front of a "tremendous cloud of black smoke . . . (and) a big ball of flame."

Dave Beshoar and Kurt Schleuter also fled the coffee shop. But the two members of the Western Springs, Ill., firefighting force did not just run for the exits. They scurried up and down a nearby hallway looking for fire extinguishers. Finally, as the fire got too intense, they ran toward an open emergency door.

"I was looking back toward the casino floor," recalled Beshoar later. "There were employees still out there and other guards carrying drop (cash) boxes were running out the door. Suddenly there was a loud click, like a circuit breaker cutting out, and the lights went out in the casino. All of a sudden the heat started pouring out like a blast furnace. You could see the flames rolling out of the deli at the ceiling level toward the casino. That's when we left."

Preliminary Findings Discussed

The casino's ruins still were smoldering when the first of what would become an army of investigators arrived. Vickery's U.S. Fire Administration recruited a 12-man team of experts to supplement local and state probers. Then several dozen other investigators—many considered among the nation's top authorities in reconstructing the cause and spread of fires—spent days inspecting the hotel and casino after being retained by lawyers in behalf of fire victims.

The experts are awaiting the results of chemical and other sophisticated tests on materials they collected at the scene, but a number of them discussed their preliminary findings on a not-for-attribution basis.

They all agreed that the fire started in the deli area and smoldered for hours before breaking into the casino. Once that happened, according to one expert's reconstruction, the flames quickly reached a 40-foot-long plastic awning stretching above the Parisian Bar. That awning, he said, "burned like gasoline."

The casino's red-painted ceiling tiles, witnesses reported, also seemed to burn vigorously. One investigator said the tiles were a combustible type of fiberboard, and another said they were "unrated"—meaning they had not been classified for fire resistance.

Also spurring the fire spread was the ceiling's decorative trim. The trim looked like ornately carved, highly polished wood, but several investigators said it actually was rigid polyurethane, a cellular plastic commonly known as urethane.

Urethane Used Widely

(Urethane has come into widespread use in the last two decades—not only in construction as trim and insulation but, in its flexible form, as a soft padding used in furniture and mattresses. The substance is a major concern of fire officials because some formulations burn hotter than wood and twice as fast, melting and flowing as a flaming liquid and generating dense smoke and toxic gases. Although its flammability problems were becoming well known to architects and builders in the early 1970s, building codes placed no restrictions on its use as decorative trim when the MGM Grand was constructed.)

At the same time flames were beginning to sweep along the casino's ceiling, investigators said, fire also was spreading in the attic-like area between the casino ceiling and the roof. There, catwalks, television cameras and two-way mirrors had been installed so security personnel could monitor the gamblers below. And there also, according to several sources, a network of pipes had been suspended from metal hangers to drain rain water from the casino's nearly flat roof. Two 12-inch pipes apparently extended almost the full length of the casino attic, intersected by a series of 4-inch pipes. Like the trim on the other side of the ceiling, these pipes were plastic.

Pipes Released Smoke, Gas

More precisely, investigators said the pipes were of a formulation known as ABS, an abbreviation for acrylonitrile-butadiene-styrene. When such pipe burns, according to a National Science Foundation report published last year, "it releases relatively large quantities of smoke and gases . . . it provides heat for increasing the intensity of the fire . . . it may provide a path for flame spread along its surfaces and . . . it may leave open holes at wall or ceiling penetrations . . . (which) could provide a route for passage of hot flame and gases between rooms."

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One nationally recognized fire expert said such plastic pipe above a ceiling could "spread the flames like a rain of fire."

Every official and private investigator interviewed by The Times said there was no evidence that any "fire stops" had been built in the attic space, which covered an area nearly 500 feet long, more than 100 feet wide and at least 12 feet high. Fire stops are partitions of fire-resistant materials, such as gypsum wallboard, which are designed to slow the spread of fire.

Fire Stops Not Required

But they apparently were not required by building codes at the time the MGM Grand was built, and court documents indicate that—rather than install sheet-metal ducts—the designers decided to rely on the cavity between the ceiling and the roof as a huge "plenum" to recirculate air for heating and air conditioning.

If fire stops had been erected, the attic could not have been used to convey air. And it would have been more difficult to use the space for the security catwalks, the plumbing pipes and the extensive network of electrical and communications cables—most believed to have been insulated with polyvinyl chloride (PVC), another plastic that in some formulations emits toxic fumes when exposed to fire.

Thus, flammable plastics lined both sides of the casino ceiling. Missing from the ceiling, though, were the small, inconspicuous sprinkler heads that could have doused the fire before it became a major conflagration.

Parts of Complex Had Sprinklers

Parts of the MGM Grand complex did have sprinklers—the small membership-only casino set aside for high rollers on the 26th floor; the stage areas of the show rooms where big name entertainers performed; the arcade where expensive shops beckoned conventioneers and tourists; even the Barrymore Room, a restaurant that adjoined the deli area where the fire started.

One veteran fire investigator was appalled when he discovered that sprinklers stopped a few feet from the fire's origin. "If they had spent a few hundred dollars to extend the piping for sprinklers, they would have put it out in the first five minutes," he said.

Hotel officials said at a news conference two days after the fire that they had met or exceeded sprinkler requirements in the building code when the hotel-casino was constructed.

In early 1980, when the corporation began work on renovation of parts of the first floor of the existing building and construction of an addition, the architect made clear that he had no intention of adding sprinklers to the casino.

In a letter last Feb. 25 to the county building department, Fred D. Anderson of Stern architectural firm said construction would be sprinklered but that "remodeled areas on the first floor . . . will remain as they are . . ."

"By copy of this letter to Chief (Fire Marshal) Jim Barrett, I am requesting that he acknowledge that there is no legal requirement to separate or add fire sprinklers to the existing facilities," Anderson concluded, underlining the word "legal."

But at least one expert instrumental in drafting the building code adopted by Clark County three years before the MGM Grand opened said it was his intention that fire sprinklers be required for casinos.

John G. Degenkolb of Glendale, a retired Los Angeles fire official who now is a fire protection engineer and

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MGM: More Died of Smoke Inhalation Than of Burns

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consultant, in 1969 drafted an amendment to the uniform building code requiring sprinklers in exhibition halls and similar areas with more than 12,000 square feet of floor space. The revised code was adopted by the International Conference of Building Officials that year—and by Clark County in 1970.

Casino Not Referred to in Code

The word "casino" was not specifically used in the revised code, and the district attorney's office recently ruled that the 1970 code did not mandate casino sprinklers. Nonetheless, Degenkolb said "I know what I meant when I wrote it. My firm recollection is that we intended it to apply to casinos. As far as I'm concerned it was completely understood that a casino over 12,000 square feet should be sprinklered."

Whatever the understanding of national building code authors, the MGM Grand casino was not sprinklered at breakfast time Nov. 21 when flames broke out of the restaurant area and spread unchecked through the gambling palace.

The blaze reached the "flashover" stage—the point where a fire begins to feed on its own gases and expands explosively—just as the first firefighters arrived from a station directly across the street from the hotel. One firefighter said he was confronted by "a huge fireball" and another said flames were spreading "like a blowtorch." By several accounts, it took from one to three minutes for the entire casino—an area half again as large as a football field—to become totally involved in the fire.

Urethane foam padding in furniture, felt table tops and expanses of flocked wallpaper all "contributed to the intense fire," one official's report said. Another investigator estimated that 50% to 75% of the furniture, fixtures and other materials in the casino were synthetic, many of which burn readily.

Out of the 84 persons who perished, only eight died of burns in the casino or the hotel's first floor. One woman jumped to her death, and all the others died of smoke inhalation, most of them in rooms, corridors or stairwells on the upper floors of the hotel.

It is the rapid spread of lethal smoke that most disturbs some investigators, who since the fire have sought clues to why and how it happened.

Shaft Supplied Air to Corridors

Two investigators said they found that at least one of the 12-inch plastic drain pipes in the ceiling was routed near a ventilation shaft located behind the elevator bank adjoining the casino. They said this led them to believe that as the pipe burned and melted, it spread toxic fumes into the shaft, which extended vertically to the top floor.

The shaft, they said, apparently was designed to supply air to corridors in the three wings of the T-shaped high-rise. From the corridor, air was drawn into guest rooms through louvers above each door, they added. While these louvers were equipped with devices intended to snap them shut in the presence of fire, they were not activated by smoke alone—meaning that they remained open and provided a ready conduit for smoke to move from the hallways to the guest rooms.

The high-rise elevator shafts themselves also were cited as conduits for smoke by Emmet D. Condon, deputy chief of the San Francisco Fire Department, in a report he made Dec. 8 after inspecting the hotel.

Some Pipe Chases Improperly Sealed

The shafts, he wrote in the document obtained by The Times, acted "as conduits from the casino area charging the upper floors with smoke . . . . The eight high-rise elevators serving the upper floors had a three-eighths inch gap around the doors which amount to an area over four square feet on each floor through which toxic smoke and gases penetrated. . . ."

In addition, Condon reported, "some vertical pipe chases (for plumbing and electrical conduits) had not been properly sealed where they penetrated floors" and thus allowed smoke to rise in the building.

Two of the six stairways "had holes cut through the walls in five places that permitted the passage of smoke and toxic gases to upper floors," he wrote, and the bottom five floors of one stairwell were lined with a wallboard that was not rated as adequate for fire protection.

The three stairways in the interior of the building also had no access to the roof and "extremely limited" ventilation at the top, Condon's report said.

"The recirculating air-conditioning system was also carrying smoke into guest rooms" because it was not turned off when the fire began, he said.

Although the fire itself was confined to the casino and the second floor of one of the hotel's three 26-story wings, "the heat of the smoke and gases that traveled from the casino area up through the hotel was of such intensity that sprinklers in a small casino on the top floor" turned on automatically, Condon wrote.

A Building in a Hurry

From its conception, the MGM Grand was a building in a hurry. Even though it was, at the time, the largest hotel ever constructed, the 2,100-room facility threw its doors open to the public less than 16 months after the first piece of structural steel was laid in place.

So fast and furious was the pace of construction that the work started long before the plans were complete. There was no firm budget for the project until three months before opening day, according to court testimony of Benninger, the MGM chairman.

In a 1979 trial of a lawsuit filed by MGM against one of the project's subcontractors, Benninger testified that the Dec. 5, 1973, MGM Grand opening was nearly seven months ahead of the original premiere date.

At times 1,000 persons were working for the project's nearly 100 subcontractors. Such a massive work force was designed to speed the building to completion, but it also appeared to create confusion.

Court testimony indicated that workers were tripping

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over each other. One subcontractor complained that he had to keep six to eight men working full time just moving his construction materials around so they would not be in the way of other workers. The same subcontractor also contended that pressure to finish the building was so great that his crews assigned to erect the outside shell of the building often were hampered by work already done on the interior—the reverse of the normal construction process.

The reason behind the harried pace was simple—money.

As Benninger acknowledged in a 1977 deposition, all the "subs" were pressured to finish quickly. "Why?" he was asked. "Well," he replied, ". . . the carrying costs of construction are horrendous, so therefore, you want to finish as soon as possible."

Stuart J. Mason, president of the construction firm that supervised the entire project, put it even more succinctly in his deposition in the same case. Asked why it was important for the MGM to open on schedule, Mason replied: "So you can make money sooner."

Profit 1st Full Year

And make money the hotel did. In 1974, the first full year of operation for the MGM Grand, it turned a net, after-tax profit of $6.5 million. For the year that ended last Aug. 31, the Las Vegas MGM Grand and its sister, the MGM Grand in Reno, tallied an after-tax profit of $33.9 million.

Everything about the MGM project implied speed—even the name of the construction process, "fast-tracking."

In fast-tracking, the building starts going up before the plans have been made final. In fact, the definitive building plans are drawn not by the architect or builder, but by many of the subcontractors.

As Mason explained in court testimony, the architect in a fast-track project draws up a set of general plans and specifications for what he wants accomplished and then leaves it up to subcontractors to decide exactly how to do it.

Subcontractors Get End Result

"What we basically give them is the end result of the criteria that we want," explained Mason, president of the Las Vegas-based Taylor Construction Co. "We don't tell them how to get there necessarily. Like on air conditioning we would say, 'We want this room to maintain 75 degrees and the room next to it 72 degrees.' We list all the rooms . . . and it is up to them to design the type of system that is going to achieve what we want."

While the subcontractors' plans were required to be submitted to the chief architect for approval, fast-tracking in a project such as the MGM Grand means that there would be, in effect, dozens of architects designing different parts of the building.

Although Mason declined to discuss the MGM project with The Times "on the advice of my attorney," a source close to the Taylor firm said fast-tracking could help cut six to nine months off the normal construction time for a project of the MGM's magnitude.

Fast-tracking was not unique to the MGM Grand. In court, Mason testified that his company had used it in building several Nevada hotel-casinos, including King's Castle in Lake Tahoe (now called The Hyatt Lake Tahoe), MGM's Reno hotel and the Las Vegas Hilton, originally named the International when it was built in the late 1960s by elusive financier Kirk Kerkorian and Benninger, his right-hand man. Kerkorian, who owns nearly half of all MGM stock, sold the huge International before effectively taking control of MGM.

Mason said his firm was linked up with the same architect, Martin Stern Jr. AIA Architect and Associates of Beverly Hills, in designing the four facilities.

Bergman, 44, Stern's chief deputy on the Las Vegas MGM Grand, no longer works for Stern. He was reached in Atlantic City, N.J., where he is an architect for the Golden Nugget casino that opened Dec. 9. "It's a sensitive issue and I think you know that," he said, referring all questions to Stern.

"I do not want to seem uncooperative," Stern said in a prepared statement read over the telephone by his secretary. "But I believe that it is inappropriate to comment at this time."

MGM Tried to Cut Costs

Appearing opulent, almost extravagant, on the outside, MGM attempted to cut costs and construction time in several ways. For example, it was cheaper to use the huge attic above the casino as a passageway for heated and cooled air rather than to install sheet-metal ducts through the attic to conduct the air. The lack of fire barriers, which could not have been installed in the attic if it was to be used as an air path, helped spread the fire, investigators have said.

Other cost-cutting attempts boomeranged years before the fire. In one instance, MGM hired a California firm called Imperial Glass Co. to build a curtain wall, the glass and metal outer shell of the hotel. The architect's specifications called for structural tests to be conducted on a small mock-up of the wall before the entire structure was erected.

But in an effort to cut costs and speed construction time, MGM and Imperial agreed to eliminate the mock-up, according to records from a lawsuit involving the two firms. After much of the curtain wall was built, it was discovered that it was leaky and not structurally sound, problems that might have been caught early if the originally specified mock-up had been built and tested, testimony in the case indicated.

MGM Fired Company

MGM eventually fired Imperial and hired another firm to repair and complete the work, but it cost the hotel more than twice the original price to get the curtain wall up.

Another attempted cost-cutting move involved the decision to substitute a relatively new exterior wallboard system called Rescon to cover the outside walls of the structure instead of the plaster coating called for in the original design.

In testimony in a lawsuit involving Rescon, MGM Chairman Benninger said he agreed to the switch because he was told the new product was cheaper. However, other testimony indicated that neither Taylor Construction Co., the managing contractor for the entire

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hotel project, nor the subcontractor who was to install the Rescon, ever checked to see whether the material had been used on a high-rise building before. It had not.

Not long after the hotel opened, the Rescon coating started to crack and fell off the building in several places. Again, repairs to the Rescon alone more than doubled the original cost of the job.

Other evidence presented at the Rescon trial showed that MGM managed to chip a few thousand dollars off here and a few thousand there by deleting other construction materials originally called for in the architect's specifications. In one instance, one work change order called for a savings of $3,000 by eliminating one layer of gypsum board from walls on three building stair towers. In case of a fire in a stairwell, extra layers of gypsum board could serve to help delay its spread.

Gypsum board also was deleted from the plenum, or attic, area above the casino, testimony showed. George Morris, who served as project supervisor for Taylor on the MGM, testified that the hotel later suffered from draft problems near some attic areas where the insulating gypsum board would have been.

There were other headaches for MGM management and construction personnel. For example, many of the furnishings were weeks late in arriving or were damaged when they were received. According to one affidavit filed in a lawsuit by an electrical subcontractor against MGM, some of the light fixtures ordered by the hotel were difficult to install because "manufacturers' installation and assembly data were sometimes not available and sometimes not printed in English, being either in Portugese or Italian."

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MGM: 'Fast-Track' Construction Used

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Still, despite all the delays and problems with erecting the outer shell of the building, it managed to open before the big Christmas and New Year's holiday seasons in December—months before the original target date. No matter that the hotel was only partly completed on opening day, with the honored guests finding chunks of plaster adorning the halls and rooms. The pool, theaters, many guest floors and other hotel features were not finished for several months.

During and after construction of major buildings in Las Vegas, problems have plagued the inspection processes. In fact, in a town where everyone gives odds, the odds are currently stacked against any sort of thorough, periodic inspection of the dozens of large hotels that line the Strip, according to one high-level Clark County fire official who asked that his name not be used.

Giving one of those "little cities" the weeks or months a thorough going-over would take is "impossible" for one man, but—given current staffing levels in the department—it is something for which a single inspector is responsible, the official said.

Fire Chief Parrish plans to ask the county commission to let him hire five additional inspectors. But for now, the department will have to make do with its current force of 11 inspectors—including three rookies and only two men who have ever attended a fire-training seminar.

Only three of the 11 inspectors are specifically assigned to do the thorough, floor-by-floor, inspections of the 29 major Strip area hotels and their maze of shops, restaurants, casinos and guest rooms.

Armed with briefcases bulging with code books, tape

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MGM: 29 Hotels Have 3 Inspectors

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measures, flashlights and other tools of the trade—but no formal safety check lists—it takes three weeks, on the average, to walk through a major Strip hotel. It takes another week to compile the report. More follow-up time may be necessary to make certain violations are corrected.

Because the inspection force was stretched so thin, Fire Department officials last year decided to emphasize the inspection of newly built hotels rather than spend the bulk of their time checking existing ones.

"It's easier to make recommendations on new buildings being constructed," one fire official explained. "But once a building is built what can you do (to upgrade it)?"

As a result, in 1980, only 10 of the Strip's 29 major hotels will have received full Fire Department inspections, The Times learned. In those hotels thoroughly checked, 90% of the fire safety code discrepancies were corrected, a department source said.

Only partial checks were done on the other 19 hotels —including the MGM. Kitchens were inspected and guest rooms randomly checked. Show room inspections were just beginning. But the wide-open casinos had not been checked for fire safety violations.

Inspector's Power Limited

Even when uncovering a condition he believes to be unsafe, a fire inspector here has only limited power to force the hotel to fix the problem. Though the inspector works for the Fire Department, it is the Building Department that has the power to crack down on a hotel—either by levying a fine or by hauling its management into court. High-ranking Fire Department sources said that, until two years ago when former Building Director John Pisciotta resigned under the cloud of a grand jury investigation into his conduct in office, the two agencies were locked in frequent battles over how stringently to interpret building and fire code requirements. Pisciotta routinely argued in favor of less stringent code interpretations, the source said.

Even today, in an era of more amicable relations between the two departments, the process of correcting problems can be painfully slow. To get around the bureaucratic roadblock, inspectors sometimes try to bluff hotels into upgrading equipment.

Complaints Outlined

Such was the case last April 28 when David Lovelace, a 34-year-old fire inspector with two years experience, wrote an eight-page letter to Paul Ross, the MGM Grand's general manager, citing dozens of fire safety "discrepancies" in the hotel's kitchens. The problems included out-of-position sprinkler nozzles in the hotel's main kitchen, a large hole in the wall in another kitchen, and, no maximum occupancy signs in several restaurants, including the coffee shop near where the fire is believed to have started. Lovelace also slapped the hotel with a myriad of citations intended to require a significant upgrading of fire protection for cooking equipment.

In a follow-up letter to Ross on June 11, Lovelace declared that only minor violations had been corrected and that only "20% of the original discrepancies have been corrected." The remaining violations, however, "are life safety hazards and must be corrected as soon as possible," he said.

Interviewed recently about the violations, Lovelace said technicalities in the building code would have made it difficult to go to the mat with MGM and force the hotel to make corrections. Because the equipment was certified as proper when it was installed, Lovelace would have had to prove that it had been altered or modified subsequently. To prove that, he would have needed the original installation manuals for the equipment. But he could not obtain them from either the hotel or the manufacturers.

MGM did not buy his bluff. The equipment had not been upgraded by the time the fire broke out, although investigators have not linked faulty kitchen facilities with the blaze.

JOE KENNEDY / Los Angeles Times

Bradford M. Bowker, now retired, was chief on-site inspector during MGM Grand's construction.

Fire officials lament that, more often than not, citations recommending major safety revisions in existing facilities are brushed aside by managers who argue that their hotels fully complied with all code requirements when they were granted occupancy permits by the Building Department and allowed to open for business. Therefore, they should not be made to comply with new, tougher restrictions put into effect after the hotels opened, the managers argue.

The Fire Department has only minimal involvement in inspecting a building as it goes up. The brunt of that job falls to the Department of Building and Zoning, which was under the control of Pisciotta when the MGM Grand was built.

Most building inspectors in Clark County are hired on an ad hoc basis to work on a specific construction job. Though their paychecks come from the Building Department, the department is reimbursed by either the contractor or owner of the building being erected.

8 Inspectors Worked on Hotel

Such was the case on the MGM project, where eight inspectors worked at various times. The chief of the crew was Bradford M. Bowker, a retired Navy rear admiral. At 75 and retired two years from the inspecting business, he is still proud of the work he and the other inspectors did on the MGM Grand.

One of Bowker's subordinates, Jerry F. Hansen, an electrical inspector, said that as far as he could remember everything he checked during construction was up to code.

In fact, said Hansen, who left the department shortly after Pisciotta, the MGM Grand was "on a par" with other hotels built in that period.

Pisciotta, a native New Yorker, resigned in January,

1978, after eight years as building director. He left in the midst of a county grand jury investigation into alleged misconduct in the building and electrical inspections on two new hotels called the El Inca and the Mardi Gras. The grand jury probe was dropped not long after Pisciotta's resignation. That came only days after Clark County Manager Richard Bunker wrote the county counsel that Pisciotta's handling of the two hotel inspections was in itself "sufficient for his discharge."

Financial Role a Target

Documents obtained by The Times indicated that a key target of the grand jury probe was Pisciotta's financial interest and partnership role in companies developing the two casinos.

As Building Department chief, Pisciotta had overall responsibility for approving most phases of the construction process, including making certain all plans and revisions were up to code.

Pisciotta, 44, now a private contractor, refused to answer the questions of Times reporters, but he told the Las Vegas Sun shortly after the Nov. 21 fire that he believed the hotel was "one of the best (construction) jobs I've seen."

"I've got nothing to be ashamed of," he told the Sun. "I have nothing to hide. There was no problem at the MGM."

When he resigned his county post, he declared he had been hounded out of office "for nothing other than political reasons." Two weeks later, he invoked his Fifth Amendment protection against self-incrimination and refused to answer the grand jury's questions.

In the month since the MGM Grand fire, the hotel owner and others—contractors, subcontractors, county officials—have been named in a rash of suits filed on behalf of victims by some of the nation's best-known plaintiff lawyers. These include James L. Fetterly of Minneapolis, who has won several major fire catastrophe cases, Stanley Chesley of Cincinnati, who was a lead attorney in suits stemming from the Beverly Hills, Ky., supper club fire disaster, and Wendell H. Gauthier, a Louisiana lawyer who pressed cases stemming from a rash of grain elevator explosions.

Faced with the litigation, MGM officials told stockholders at the company's annual meeting last week that they would not discuss the "cause and spread of the fire."

But president Alvin Benedict said management "will leave no stone unturned" to reopen the hotel by midsummer. All subcontractors will be required to work on an "expedited schedule," including two 10-hour daily shifts, he said.

Every guest room will be equipped with sprinklers and fire and smoke detection systems, Benedict said in assuring stockholders that the reopened hotel "will be regarded as the safest, as well as the most beautiful resort hotel casino in the world . . . ."

A partial floor plan of the hotel traces spread of the fire from where it started (1) in the Deli. (2) Initial path of flame moved toward Parisian Bar (3) where it caught a plastic awning on fire. (4) The fire then spread rapidly along ceiling of the casino, through ducts and pipes in attic area. Smoke moved into elevators and ventilation shafts (5), and into hotel above. Striping indicates areas with sprinklers.

JOE KELLY / Los Angeles Times

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As Building Department chief, Pisciotta had overall responsibility for approving most phases of the construction process including making certain all plans and revisions were up to code.

Pisciotta, 44, now a private contractor, refused to answer the questions of Times reporters, but he told the Las Vegas Sun shortly after the Nov. 21 fire that he believed the hotel was "one of the best (construction) jobs I've seen."

"I've got nothing to be ashamed of," he told the Sun. "I have nothing to hide. There was no problem at the MGM."

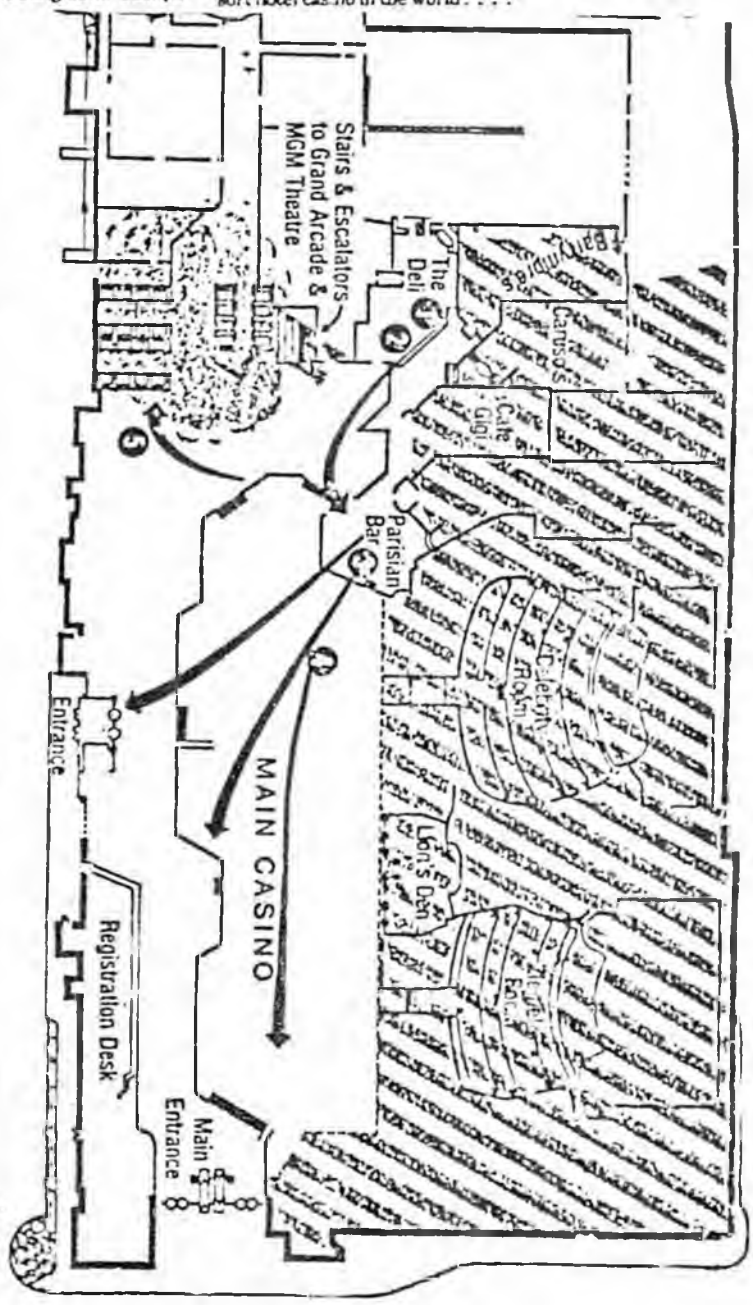
When he resigned his county post, he declared he had been hounded out of office "for nothing other than political reasons." Two weeks later, he invoked his Fifth Amendment protection against self-incrimination and refused to answer the grand jury's questions.

In the month since the MGM Grand fire, the hotel owner and others—contractors, subcontractors, county officials—have been named in a rash of suits filed on behalf of victims by some of the nation's best-known plaintiff lawyers. These include James L. Fetterly of Minneapolis, who has won several major fire catastrophe cases; Stanley Chesley of Cincinnati, who was a lead attorney in suits stemming from the Beverly Hills, Ky., supper club fire disaster, and Wendell H. Gauthier, a Louisiana lawyer who pressed cases stemming from a rash of grain elevator explosions.

Faced with the litigation, MGM officials told stockholders at the company's annual meeting last week that they would not discuss the "cause and spread of the fire."

But president Alvin Benedict said management "will leave no stone unturned" to reopen the hotel by midsummer. All subcontractors will be required to work on an "expedited schedule," including two 10-hour daily shifts, he said.

Every guest room will be equipped with sprinklers and fire and smoke detection systems. Benedict said in assuring stockholders that the reopened hotel "will be regarded as the safest, as well as the most beautiful resort hotel casino in the world. . . ."



A partial floor plan of the hotel traces spread of the fire from where it started (1) in the Deli, (2) initial path of flame moved toward Parisian Bar (3) where it caught a plastic awning on fire. (4) The fire then spread rapidly along ceiling at the casino, through ducts and pipes in attic area. Smoke moved into elevators and ventilation shafts (5), and into hotel above. Striping indicates areas with sprinklers.

BOB ALLEN / Los Angeles Times

HEALTH HAZARDS ASSOCIATED WITH THE USE OF PLASTIC PIPE

Interim Report

Prepared by the

Hazard Alert System

Epidemiologic Studies Laboratory

Department of Health Services

April 29, 1980

1. Summary of Major Findings

The Hazard Alert System of the Department of Health Services has conducted four related studies of possible hazards associated with plastic pipe work:

1) an evaluation of the available literature on the toxicity of the major solvents used by workers in joining plastic pipe;

2) an assessment of the risk posed by plastic pipe work on job sites;

3) a review of the existing epidemiolgical studies of pipefitters; and

4) an analysis of the acceptability and significance of a current UCLA health survey of pipefitters.

Solvents

The available literature indicates that the solvents used in fitting plastic pipe fall into three general categories:

I. those with relatively low human risk, that can be used safely in open or well-ventilated areas with minimal personal (eg. skin) protection;

II. those with moderate risk that may pose potential health problems; and

III. those with high risk that can cause skin damage, organ injury, and may may be associated with cancer or birth defects.

Methyl ethyl ketone (MEK) falls into the first category; tetrahydrofuran (THF) and cyclohexanone in the second; and dimethylformamide (DMF) the third.

Work Sites

Cal/OSHA investigations revealed excessive and near-limit inhalation exposures to MEK in some finishing operations with ABS pipe. Extensive dermal exposure to MEK-containing solvents was also observed, and considered a potentially serious problem since rapid skin absorption of MEK occurs.

Absorption through unprotected hands of THF, cyclohexanone and DMF is also clearly possible since manufacturers' brochures show PVC glues being handled without glove protection. Dermal exposure to these last two solvents in particular is considered a health risk since skin-absorbed cyclohexanone causes cataracts in susceptible animals, and DMF can cause liver damage to workers and birth defects in animals at relatively high doses. Finally, in the case of these studies, several samples of solvent cement were found to be inadequately labelled as to their actual contents.

Epidemiological Studies

A NIOSH-sponsored study measuring cancer mortality among a large number of plumbers and pipefitters has found a significant excess of cancer of the esophagus, lymphatic system, larynx and lung. Confirmation of a trend for excess diagnoses of cancer of the larynx was obtained in an independent study conducted among contemporary California pipefitters by the Department of Health Services' Resource for Cancer Epidemiology. However, adequate tests have not been performed to establish a link between these excessive cancer rates and occupational exposure to a specific causative agent or agents.

Health Survey

Preliminary data from a UCLA pipefitters' health survey indicates that workers report signs of pathology--particularly red or reddish-brown urine--in direct proportion to the number of years that they have worked with plastic pipe. Occurrence of a cluster of kidney disorders that may be related to these signs also appear to be associated with the length of plastic pipe exposure, although these self-reported findings require medical verification and a more appropriately designed study before the results can be considered definitive. Other reported symptoms, notably sinus, skin and

respiratory problems as well as possible excess rates of cataract formation and skin cancer have not yet been adequately evaluated.

In spite of methodological inadequacies, such data 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. Until the full extent of health risks posed by solvent or other plastic pipe-related exposure is resolved, HALTS proposes the following interim steps to minimize undue worker exposure:

1) the Commission should recommend limitations on the use of solvent-cemented pipe that must be installed under conditions of inadequate ventilation;

2) the Commission should consider issuing regulations that limit the use of cyclohexanone and DMF containing glues, so that single-solvent glues, particularly those that use MEK, are used preferentially to combination types; and

3) the Commission should take steps necessary to require manufacturer labeling so that products are accurately identified with regard to contents and the possible health hazards associated with their use.

Because of the risk of increasing exposures to products that may be responsible for adverse health effects among workers, HALTS recommends that no decision be made at the present time that would lead to the expanded use of plastic pipe.

STATE OF CALIFORNIA — EDMUND G. BROWN JR., Governor

DEPARTMENT OF INDUSTRIAL RELATIONS

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

525 GOLDEN GATE AVENUE
SAN FRANCISCO

ADDRESS REPLY TO
P.O. BOX 603
SAN FRANCISCO, CALIF. 94101

192-177-A

March 5, 1981

Date: 3/16/81

CC: Commissioners
Kerin
Reynaga
Smart
King
Johnson
Dryer
Nichols
Sung
File

Myron Moskovitz, Chairman
Commission on Housing and
Community Development
921 - 10th Street
Sacramento, CA 95814

Dear Mr. Moskovitz:

It has come to our attention through press clippings and announcements (attached), subsets of the DIR/DHS joint study on plastic pipe solvents are being taken out of context. It appears that the PPFA has inappropriately extracted parts of our overall study, developed misleading statements and made these available to the press.

The Department would like to re-emphasize the importance of the Commission and all interested parties to look at the evidence collected in total, as presented by the Cal/OSHA-DHS interim report presented to your Commission on May 1, 1980 and as presented at hearings by Dr. Marc Lappe. In that report 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. One of the areas of greatest uncertainty is related to dermal absorption rates and resulting toxicity. As a follow-up to these issues, we are continuing our research in collaboration with the University of California Medical School at San Francisco. Results of these tests should add new evidence in these matters.

This Department will carefully monitor the utilization of information presented by all parties and will be prepared to make public comments as to the appropriate interpretation of our findings.

Sincerely,

RICHARD L. WADE, PH.D., M.P.H.
DEPUTY CHIEF FOR HEALTH

cc: Art Carter, Chief
Don Vial, Director

5 677

Plastic Pipemen Hail Results Of Cal Fume Tests

SAN FRANCISCO — Workplace exposure to the possibly harmful cements used in conjunction with plastic pipe — even under "worst case" conditions — has been found to be well within California's "permissible exposure" levels, declares the Plastic Pipe & Fittings Assn.

PPFA says that a special study was conducted by the Cal OSHA Health Targeting Unit and the California Dept. of Health Services. That study, declares PPFA, found that the exposure of plumbers to both fumes and contact with the cement itself appeared to be minimal.

State technicians conducted their measurements in Los Angeles on July 28 and 29, days chosen because of unusually "poor" weather condi-

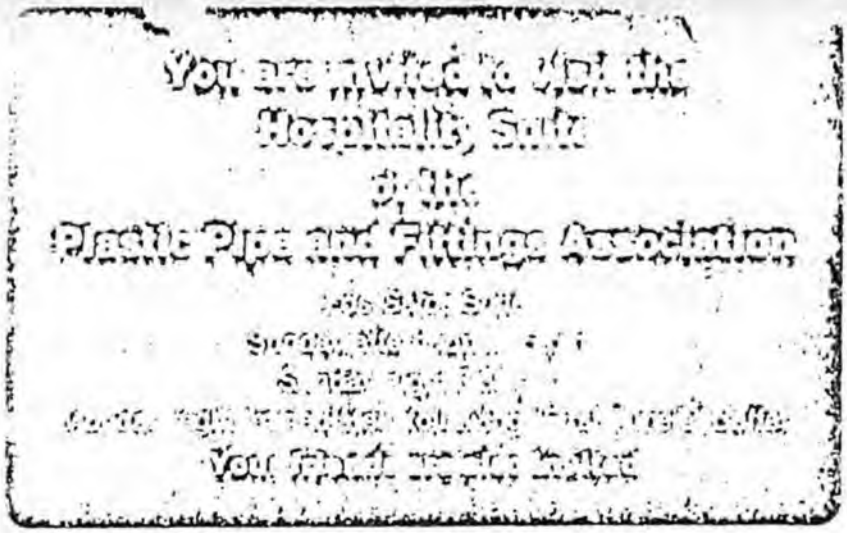
(Cont. Page 4, Col. 5)

tions.

On those days a high pressure system centered itself over Los Angeles giving rise to an average high temperature of 102 degrees accompanied by air quality poor enough to qualify for issuance of a Stage-Two smog alert.

Three different work sites were monitored, each involving workmen pent in, to some degree, with cement fumes. In all cases, according to the report, "inhalation exposure measured was not in excess of Cal/OSHA standards." Dermal exposure was said to be present but difficult to measure while ingestion was found to be "remote."

The "worst case" measurements, argues PPFA, support its contention that solvent cements used to join plastic plumbing elements pose little hazard when properly used. And, in fact, they may constitute less of a threat to plumber health than the smoke and fumes that attend the older methods of joining metal plumbing, adds PPFA.



Some of the many benefits of using plastic pipe and fittings:

Corrosion Resistant: Plastic piping is prescribed in many areas of the country because of its high resistance to aggressive water and soils.

Energy Savings: In 1977, 56 million barrels of oil were saved because of the use of plastic pipe instead of other materials. Additionally, in hot water distribution systems, plastic piping serves as an insulator to reduce heat loss.

Cost Savings: $200 to $1500 can be saved per dwelling, according to the California Housing and Community Development Commission staff, by using plastic pipe and fittings in residential and apartment construction. Comparable savings can be realized for commercial and institutional construction.

Proven Performance: Plastic DWV has been used for 25 years with excellent field performance. Plastic water piping has been used for over 15 years with similar results. Both systems are covered by ASTM specifications and are tested against those standards by a certification program.

What About Solvent Leaching?

Data in a draft report prepared by James M. Montgomery Consulting Engineers for the Department of Health Services show that plastic pipe provides safe transport of potable water. Plastic potable water piping can aid communities in meeting stringent EPA regulations for drinking water.

Fire Problems?

"Use of plastic pipe in non-fire-rated construction, whether in residential, commercial, or industrial occupancies, does *not* present an unusual fire risk," according to the California State Fire Marshall's Office.

Workplace Exposure?

Current "worst-case" studies show no excessive exposure to workers.

Want to Know the Facts?

Stop by the Los Gatos Suite, (600 Building, 3rd floor) Sunday afternoon (3-5 p.m.) or Sunday or Monday night. We look forward to seeing you there.

PPFA

999 N. Main Street
Glen Ellyn, IL 60137
Area Code 312/858-6540

Department of Health Services
Los Angeles County - University of Southern California
Medical Center

BERNARD M. ARLEVATO
Executive Director

SOL BERNSTEIN, M.D.
Medical Director

JOTINE D. O'CONNOR, R.N.
Director, Nursing Services
and Education

Affiliated with
UNIVERSITY OF
SOUTHERN CALIFORNIA

SCHOOL OF MEDICINE
SCHOOL OF DENTISTRY
SCHOOL OF PHARMACY

October 3, 1980

To Whom It May Concern:

I am currently an Assistant Professor of Medicine at Los Angeles County-University of Southern California Medical Center, and am in charge of the Adult Clinical Lymphoma-Leukemia Program at this Institution. In that capacity, I was contacted by Dr. Brian Dolan regarding several cases of lymphoma occurring in patients who have been employed as plumbers in the past.

I have had the opportunity to review the material on five of the patients with whom Dr. Dolan is working. Interestingly, all five patients are confirmed as having malignant lymphoma. Moreover, all patients at this time have the same pathologic type, which is termed small cleaved follicular center cell lymphoma (Lukes-Collins), or poorly differentiated lymphocytic lymphoma (Rappaport). It is noteworthy to me that all five of these patients with documented diagnoses of lymphoma have had quite extensive exposure to plastic materials which were used during the course of their work.

We are currently involved in a large study during which we will obtain all of the pathologic material from all of the patients involved. This material will be reviewed closely by myself, as well as Dr. Lukes and the Hematopathology section at Los Angeles County-USC Medical Center. Our clinical information will also be collected and collated. It is my opinion at this time, that a further study into this problem is warranted, since lymphoma in general is quite infrequent in the population, and since rather significant numbers of patients in this very preliminary study have already been confirmed as truly having malignant lymphoma.

If you have further questions, or require further information, please do not hesitate to call upon me.

Sincerely,

Alexandra Levine

Alexandra M. Levine, M.D.
Assistant Professor of Medicine
Director, Adult Hematologic Neoplasia Service
Lymphoma-Leukemia Program

AML:ras

IMPURITIES DETECTED IN ABS, PVC, AND CPVC PLASTIC PIPE

SAMPLE IDENTIFICATION	COMPOUNDS FOUND
Acrylonitrile-butadiene-styrene (ABS)	
Gable Plastics Spartan Plastics	dichloromethane acrilonitrile methyl cyclopropane benzene tetrachloroethene toluene 4-ethenyl cyclohexene ethyl benzene methylethyl banzene hexane styrene propyl benzene 1-methylethenyl benzene unsaturated alkanes 2,6-bis(1,1-dimethylethyl) -4-methyl phenol heptyl phenol unknown (several)
Polyvinyl Chloride (PVC)	
Pacific Western Extruded Plastics Co.	dichloromethane bromochloromethane trichloroethene toluene bis 2-ethylhexyl phthalate DEHP unknown (many)
Chlorinated Polyvinyl Chloride (CPVC)	
GSR	dichloromethane chloroform hexane tetrachloroethene toluene pentachloroethane hexachloroethane bis 2-ethylhexyl phthalate DEHP alkanes (several) unknown (several)

Source: California Analytical Laboratories, Inc. 11/12/80.

DEPARTMENT OF Consumer Affairs

CONSUMER ADVISORY COUNCIL
1020 N STREET, SACRAMENTO, CALIFORNIA 95814
PHONE: (916) 322-0548

February 11, 1980

Mr. Myron Moskovitz, Chairman
Commission on Housing and
Community Development
921 Tenth Street
Sacramento, CA 95814

Dear Chairman Moskovitz:

The attached resolution by the Consumer Advisory Council is an expression of our concern associated with unlimited use of PVC pipes and the potential threat this brings to the health and safety of California Consumers.

The Council is a 7-member committee appointed by the Governor mandated to make recommendations in the consumer interest. It is the Council's contention that further testing of PVC pipes and the solvents used to join them is warranted. It is in the consumers interest that all feasible avenues of investigation be explored into potential health hazards associated with these products carrying drinking water before regulations for their use are promulgated.

We ask that the attached resolution be formally entered into the record and that all haste be taken on the part of the Commission on Housing and Community Development to join the Consumer Advisory Council in holding hearings to solicit input from consumers as to their views in this issue. Thank you for your attention in this matter.

Sincerely,

Lynn Morris

LYNN MORRIS
Executive Secretary

cc: Donald Turner, Director, Commission on Housing and Community Development
Assemblyman Louis Papan
Alice Lytle, Secretary, State & Consumer Services Agency
Alan Stein, Secretary, Business & Professions Agency
Richard B. Spohn, Director, Department of Consumer Affairs
Ron Gordon, Chief, Division of Consumer Services, DCA
Joanne McNabb, Consumer Liaison Officer, DCA

DEPARTMENT OF Consumer Affairs

CONSUMER ADVISORY COUNCIL
1020 N STREET, SACRAMENTO, CALIFORNIA 95814

WHEREAS the Consumer Advisory Council is mandated by law to study, promote and protect the interests of consumers,

WHEREAS the Consumer Advisory Council is sensitive to the possibility that some products may represent a serious health threat to consumers,

WHEREAS at least one of the principal elements of plastic water pipe and its glues is identified as a human carcinogen by the Occupational Carcinogens Control Act of 1976, Health and Safety Code Section 24200, et seq.

WHEREAS the Department of Health Services has adopted the position that it cannot support the use of PVC pipe until it is shown that solvents used to join PVC pipes do not enter drinking water in amounts significant to health, and

WHEREAS the Commission on Housing and Community Development has pending before it a proposal permitting the unlimited use of plastic pipe in California construction,

BE IT HEREBY RESOLVED that the Consumer Advisory Council :

(1) endorses the passage of ACR 98 (Papan) in order to permit knowledgeable health experts to study potential health risks arising from plastic pipe before its unrestricted use in consumer water systems is approved.

(2) urges the Commission of Housing and Community Development to forego acting on the plastic pipe proposal before it has exhausted all reasonable avenues of medical investigation into potential health threats arising from the unrestricted use of plastic pipe, and

(3) requests the Commission on Housing and Community Development to join with the Consumer Advisory Council in the holding of public hearing to actively solicit the input of consumers as to ther views concerning the wisdom of now permitting the unrestricted use of plastic pipe.

ADOPTED: February 8, 1980
San Diego, CA

SIERRA CLUB

530 Bush Street San Francisco, California 94108 (415) 981-8634

November 21, 1980

Myron Moskovitz, Chairman
Commission on Housing and Community Development
921 Tenth Street
Sacramento, CA 95814

Dear Chairman Moskovitz:

The Sierra Club has had an opportunity to review the recent report from the California Department of Health Services on the use of plastic pipe in potable water systems.

According to the underlying data in that report, toxic chemicals on the Environmental Protection Agency list of priority pollutants appear in water contained in plastic pipe. I am referring in particular to chloroform, carbon tetrachloride and tetrachloroethene. Additionally, a common plasticizer, DEHP, which is now thought to be carcinogenic, appears in water transmitted by plastic pipe. For the protection of human health, it is critically important to remove these substances from drinking water. Undertaking an activity which apparently would add these toxic pollutants to drinking water requires careful and complete environmental justification.

The Sierra Club believes that the material presented to the Commission in the report from the Department of Health Services more than adequately discloses the existence of potential human health hazards and adverse environmental impacts so that an environmental impact report must be prepared.

According to the water quality criteria promulgated by the Environmental Protection Agency under Section 304(a) of the Clean Water Act, extremely minute quantities of these substances can have serious toxic effects on a chronic basis. Given the toxicity of these substances and the difficulty of removing plastic pipe once installed, the Commission is contemplating action which could have a significant and virtually irreversible effect on the environment. Even if the law did not require it, wisdom surely dictates that a full and complete environmental evaluation be made in advance of such a decision.

Very truly yours,

Carl Pope

Carl Pope
Director of California Affairs

cc: Members of the Commission
Tom Johnson

CENTER FOR LAW
IN THE PUBLIC INTEREST
10203 SANTA MONICA BOULEVARD
FIFTH FLOOR
LOS ANGELES, CALIFORNIA 90067
TELEPHONE: (213) 879-5588

November 21, 1980

California Commission on
Housing and Community
Development
921 Tenth Street
Sacramento, CA 95814

Dear Chairman Moscovitz and Members of the Commission:

The Center for Law in the Public Interest urges this Commission not to adopt regulations approving the use of plastic pipe in potable water systems in residential, commercial, and business structures in California without prior preparation of a full environmental impact report ("EIR") as required by the California Environmental Quality Act. (Cal. Pub. Res. Code §§ 21000 et seq., "CEQA.")

CEQA requires that a public agency, before undertaking any discretionary project which is not categorically exempt from CEQA, must conduct an "initial study" to determine whether the proposed project "may have a significant effect on the environment." (Pub. Res. Code § 21080; 14 Cal. Admin. Code § 15080.) In carrying out the "initial study," the public agency must exercise "careful judgment . . . based to the extent possible on scientific and factual data." (14 Cal. Admin. Code § 15081(a).) The agency must consider "both primary or direct and secondary or indirect consequences" of the project. (14 Cal. Admin. Code § 15081.)

Only if, as a result of the "initial study," the agency determines that a project clearly "will not have a significant effect on the environment," that "no significant environmental effects would occur" as a result of the project, should the agency prepare a "negative declaration" instead of an EIR. (14 Cal. Admin. Code §§ 15080, 15083.) "[W]henever it can be fairly argued on the basis of substantial evidence that the

project may have a significant effect on the environment," or "there is serious public controversy concerning the environmental effects of a project," an EIR must be prepared. (14 Cal. Admin. Code § 15084.) Examples of effects which would be considered "significant effects on the environment" include where a project would (a) substantially degrade water quality; (b) contaminate a public water supply; (c) create a public health hazard or a potential public health hazard. (14 Cal. Admin. Code §§ 15000 et seq., Appendix G.)

The EIR is the "heart" of CEQA because it ensures that relevant environmental data are considered by the agency prior to its decision to approve the project, before the environmental changes have reached "ecological points of no return." (County of Inyo v. Yorty, 32 Cal.App.3d 795, 810 (1973); No Oil, Inc. v. City of Los Angeles, 13 Cal.3d 68, 84 (1975).) In light of CEQA's legislative intent "to afford the fullest possible protection to the environment" (Friends of Mammoth v. Bd. of Supervisors, 8 Cal.3d 247, 259 (1972)), the California Supreme Court has interpreted Pub. Res. Code § 21151 as imposing a "low threshold requirement for preparation of an EIR." (No Oil, Inc. v. City of Los Angeles, supra at 84.)

A substantial body of scientific evidence has been developed since the Commission first prepared a negative declaration in February, 1978, on the use of plastic pipes. Studies have been done both on the health effects of installation of plastic pipe on the workers who install it, as well as on the health effects on the public caused by the leaching of plastics and solvents into the water system. 1/

1/ See, e.g., three reports prepared on the potential health hazards of use of polyvinyl chloride plastic pipe systems (CPVC and PVC pipe) by the State's Hazard Evaluation System (Feb. 14, 1980; Apr. 29, 1980; and Oct. 17, 1980); May 1980 Fire Marshal report on potential flammability of plastic pipe and fire hazards associated with its use; Preliminary Survey of Chemical Composition, Contamination and Associated Health Hazard of Plastic Pipe for Potable Water Supply, Thomas Reid Associates (Nov. 14, 1980); Plastic Pipes Study, James Montgomery Consulting Engineers, Inc. (Aug. 1980).

Together, the findings of these reports far exceed the "low threshold" for preparation of an EIR. These reports show, at the very least, that there exists "serious public controversy" concerning the health effects of the use of plastic pipe, and, at most, that very serious harmful effects to human health and the environment will result from the unrestricted use of plastic pipe in California. Therefore, the Commission must prepare an EIR on the potential health and environmental effects of unrestricted use of PVC, CPVC, ABS and polybutylene pipe in California before approving such use of plastic pipe.

Respectfully,

Alletta d'A. Belin

Ad'AB:pmk

women for:

continuing volunteer support and action for issues, candidates and legislation of our choice on local, state and national levels

October 20, 1980

Mr. Myron Moskovitz, Chairman
Commission on Housing and Community Development
921 Tenth Street
Sacramento, California 95814

Dear Mr. Moskovitz:

WOMEN FOR:, an organization of over 2,000 people, opposes the unrestricted use of plastic pipe in residential dwellings in California until their use is scientifically proven to be safe.

We are concerned by the results of research at UCLA School of Public Health and by Montgomery testing laboratiories which indicate that solvents and glues used to connect pipe do pose a possible health hazard.

At this time in history when cancer incidence is increasing, when we know that a majority of cancers are caused by exposure to toxins, when the public is already exposed to toxins in food additives, pesticide residue on food, and in our air and water, we can ill afford another possible source of such exposure to be sanctioned by government.

We are an organization of women, most of whom are mothers and so have a special concern for children. Children, especially infants, are more susceptible to the effects of carcinogens than are adults. When you analyze the date on the amounts of solvent that leach into water, please note if the effects on infants and children have been considered.

Please give this entire matter your most thoughtful and cautious consideration. The health and welfare of the citizens of California are at stake.

Sincerely,

Georgia Mercer

Georgia Mercer
Coordinator

8913 West Olympic Boulevard • Beverly Hills • California 90211 • 213 / 657 7411

cc: 10/23 Myron, JACK, Fern, 10/3

(FINAL REPORT ON POTENTIAL HEALTH HAZARDS ASSOCIATED WITH THE USE OF PLASTIC PIPE IN POTABLE WATER SYSTEMS. CALIFORNIA DEPARTMENT OF HEALTH SERVICES, OCTOBER 17, 1980.)

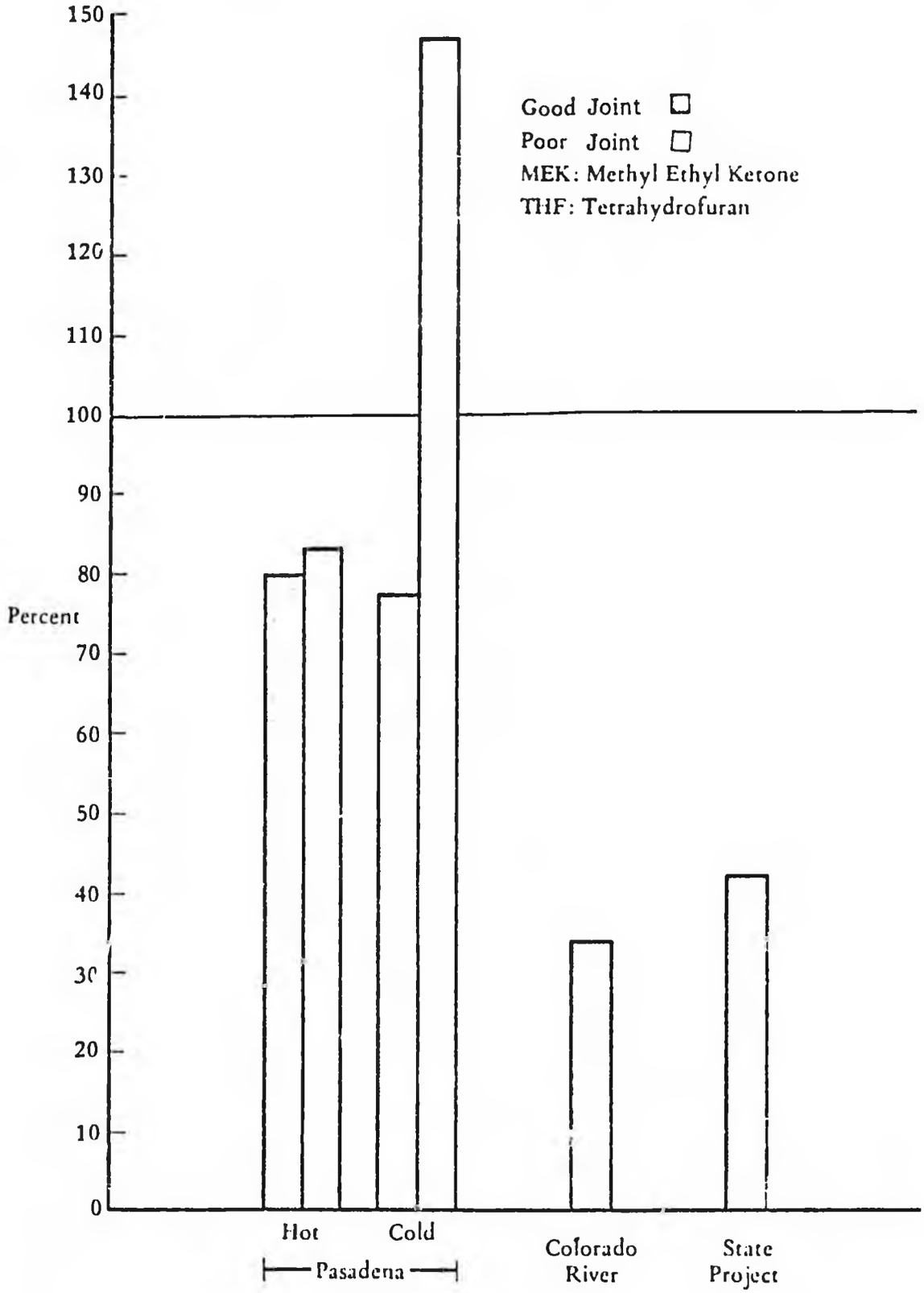
V. DISCUSSION AND CONCLUSIONS

With the possible exception of the leaching of the phthalates, the principal public health finding of this study is the possibility of excessive amounts of solvents and carbon tetracholoride, chloroform and tetrachlorethene accumulating during the stagnant period between initial installation of plastic pipe and occupation of the dwelling. On two occasions, solvents were found in excess of the proscribed amount for short-term

* Data from the National Toxicology Center released on 10-15-80 (after this report was written) establish that the Bis compound (DEHP) is carcinogenic in rats and mice (see Appendix XI for calculations relative to human health consequences).

Chart 3

SOLVENT CONCENTRATIONS IN WATER FROM STATIC TEST SYSTEMS
MEF, THF, and Cyclohexanone Combined for Additive Toxicity,
Expressed as Percent of Proposed Combined STMAC



maximum exposures. As shown on Graph 1, both THF and DMF exceeded the short-term maximum acceptable concentrations suggested by the Hazard Evaluation System. While this finding was present only for poorly jointed pipes (THF) and one outdoor system using Colorado water (DMF), the likelihood exists that the combined toxicity of the potentially neurotoxic solvents could exceed the limits suggested by HES. As shown on Chart 3, (p. 31) the combined concentrations of the major solvents come to within 75 and 80 percent of the suggested STMAC. Assuming a combined fitting density and sampling error of ±50, percent these values might actually be above the suggested STMAC.

The extent of the hazard posed by solvent contaminants may acutally be underestimated by these figures. Calculations for a "worst case" scenario (see Appendix IV) demonstrate the highest likely doses of solvent that might be ingested from stagnant water in newly-plumbed houses. In the "worst case" (ingestion of powdered infant formula prepared with tap water) the suggested STMACs are greatly exceeded by measured values—as much as 20-fold in the case of THF from CPVC pipe with poor joints using cold Pasadena water (see Table 3-2, p. 93). The highest level of DMF (PVC pipe, good joints, Colorado River water), 4.3 mg/L, also exceeds the "worst case" suggested STMAC of 0.2 mg/L by 21-fold, suggesting a substantial potential hazard for infants in newly-plumbed unflushed homes.*

We have reached the following conclusions about solvent toxicity:

1) Within 1-2 days of installation of PVC or CPVC and for up to at least 2 weeks following, a high probability exists for one or more solvents (depending on the primer/solvent cement used) to reach levels in water that might result in adverse health effects when ingested;

* Unpublished data furnished to HES by the Pipe Trades Council regarding freshly installed CPVC pipe at a new hospital in Sacramento (Comm. from California Analytical Laboratory to Ray Leonardini, June 10, 1980) provides further confirmation that stagnant water in freshly installed pipe can exceed the suggested STMACs. These data are presented in Appendix VIII, Table 1 to demonstrate the real-world possibility of the solvent build-up and depletion we have described in laboratory simulations. Since they were not gathered under our supervision they are not presented along with the results we have verified; nor are they taken as evidence of the prevalence of excessive leaching since the conditions under which the samples were taken remain unknown and simultaneous controls were not included in the determination.

2) If adequate flushing of the piping system is performed, substantial re-accumulation of solvent concentrations to potentially toxic levels is unlikely; and

3) Normal water usage is likely to prevent the build-up of toxic levels of any of the major solvents.

The remaining question concerning the solvent contaminants is whether or not consumers are likely to drink water that has been standing in freshly installed pipe. The answer hinges in part on the pre-occupancy activities at a housing site that are likely to tap or bleed water for construction or testing purposes and thus flush the system of rapidly-leached solvents. A substantial amount of water is flushed through new structures by plumbing inspection procedures (Comm. from Norman J. Latter, Director of Standards for the International Association of Plumbing and Mechanical Officials to Mr. Jim Blumenkranz, September 10, 1980). Mr. Latter estimated that each plumbing fixture is filled and drained at least twice during an inspection. As a result, substantially more water (in the order of 200 gallons or so) than was flushed in our laboratory simulation systems may be expected to be flushed through the plumbing systems of an average residential houshold before occupancy (based on a toilet capacity of at least five gallons, and shallow fills of ancillary systems such as bath tubs, sinks, etc.) Additional water is also used during construction for washing up, preparing cement on site, and other activities, though only a single outlet might be turned on, leaving stagnant water in other parts of the system. Various sources estimate the amount of water used in these procedures as 900-1,000 gallons. (A copy of one such communication is attached as Appendix VIa). Nevertheless, we believe that a potential hazard to on-site workers and new occupants remains in any newly constructed dwelling because of variations in "standard" procedures and job-site activities that might otherwise flush the system adequately.

Lastly, we must address the potential problem of compounds that may leach more slowly from the plastic pipe material itself. Two such compounds were detected in the course of this analysis, dibutyl phthalate and bis-(2-ethyl hexyl) phthalate. Unlike the major ingredients of solvent cements, these substances appear to migrate more