ALASKA LEGISLATURE COMMITTEE FILES 1983 - 1984 8672
2582 HLC HB 508 - HB 509

Bill No. House Bill 508

Date January 26, 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 The 1979 code presently in effect for the State of Alaska is therefore outdated and will not be reprinted by the International Association of Plumbing and Mechanical Officials.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:

Jan Robinson

POSITION PAPER/Department of Labor

United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada

Organized of journeymen and apprentices who have jurisdiction over every branch of the plumbing and pipe fitting industry

LOCAL NO. 375 STREET ADDRESS 3568 Geraghty Street

CITY, STATE, ZIP Fairbanks, Alaska 99701

SUBJECT MATTER Proposed Substitute for HB 508 DATE January 26, 1984

The Honorable Niilo Koponen
House of Representatives
State Capitol
Pouch V
Juneau, Alaska 99811 (Mail Stop 3100)

Dwight Perkins
245 Marine Way #7
Juneau, Alaska 99801

Dear Niilo and Dwight:

I am enclosing the proposed substitute for HB 508 which has been drafted in legislative form by Art Robson, our house counsel. I am sending a copy of this letter to our legislative friends so that they will know what is occurring.

After Senator Vic Fischer advised us of the pendency of this bill, Art got together with Dwight Perkins to see what had been done elsewhere. They extracted the modifications which were made by the municipality of Anchorage and those are the modifications made in the proposed substitute bill. This may not be exactly the way we would have done it, but with Anchorage already having thoroughly debated the matter and adopted the new Uniform Plumbing Code in this form, we feel the interests of uniformity require that we all go together so that the State adopts it in the same form. Adoption in this form will take care of all our concerns and fears.

I understand there is a possibility that Rick Eliason will introduce this form in the senate so that it can proceed in both houses simultaneously.

We back this substitute one hundred percent and we hope that our legislative friends will do likewise. I hope to be in Juneau personally later on in the session to get together with everyone on

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

My thanks for all your help.

Sincerely yours,

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

CLM

Enclosure

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

WHAT THIS BRIEF IS

This brief is an exploration of the issues which underly the use of plastic pipe in construction, as well as the reasoning behind the State code which limits its use to certain type building projects.

ISSUES ADDRESSED

The use of plastic pipe, whether "P.B.", "P.V.C.", or asbestos cement pressure piping, presents the following problems:

1. Durability;
2. Thaw ability in Arctic regions;
3. Fire hazards (both combustibility and gases released upon combustion);
4. Use of the water system as the electrical "ground";
5. Permeability; and
6. Worker safety.

BACKGROUND

The International Association of Plumbing and Mechanical Officials is an organization composed of representatives of building inspection departments for governmental bodies. It meets in the United States in annual convention and on every third year, it adopts a "Uniform Plumbing Code". Up until 1982, all such codes had expressly forbidden the use of asbestos cement pressure piping and limited the use of P.B. and P.V.C. piping to residential construction not in excess of two stories.

In 1982, the International Association of Plumbing and Mechanical Officials adopted a plumbing code which permitted the use of P.B. pipe in hot water supply, of P.B. and P.V.C. pipe in cold water supply, and of P.B., P.V.C., and asbestos cement pressure piping in venting and drainage. A brief synopsis of the adoption and lobbying efforts will be found in the California Legislature's summary of a case by the California Department of Consumer Affairs and others against the International Association.

This is marked Exhibit "A" and attached hereto. Forthwith upon procuring this adoption, there was introduced in Alaska and the other 49 of the United States, legislation to change the State adopted building codes to the newly adopted 1982 "Uniform Plumbing Code". In Alaska, this was Senate Bill 214, which did not pass and which was supported by Shell Oil to the tune of $75,000 during the last session in Juneau. It would have amended AS 18.60.705 and AS 18.60.740(1) to adopt the 1982 "Uniform Plumbing Code".

The salient portion of this background history is that the State Legislature has considered and not adopted the plastic pipe standards. The proponents (manufacturers of plastic pipe) have consistently made the point that plastic pipe costs less than metal pipe to purchase and is cheaper to install than metal pipe. These points have made the contractors eager to bid and construct jobs using plastic pipe, thereby being able to underbid those contractors who stick with the State building codes.

A DISCUSSION OF THE ISSUES

I.

DURABILITY

The most obvious difference between plastic and metal pipe is durability. Some of Alaska is earthquake prone and hence durability can be quite important. In construction of large residential buildings and commercial buildings, the increased usage makes durability important. This issue has the advantage of being self evident. Cast iron, malleable iron, or copper piping and its qualities are apparent to all, and a comparison with the qualities of plastic, particularly in temperature extremes such as experienced in Fairbanks, needs no further amplification.

II.

THAW ABILITY IN ARCTIC REGIONS

This issue is also one which needs little amplification. Fairbanks is exposed to cold temperatures. Cold temperatures

sometimes cause pipes to freeze. The common methods of thawing pipes are (a) the use of propane torches, (b) the use of steam, and (c) the use of clamp on electrical generators. None of these can be used on plastic pipe. In any installation where the freezing of a pipe represents a danger to either a considerable investment or a large number of people, the ability to thaw is important.

III.

THE EFFECTS OF FIRE

The "Uniform Building Code" from 1979 and all prior codes permitted plastic pipe only where "combustible construction is allowed". The 1982 code makes no such restriction. The problems in this area are twofold. First, plastic pipe will burn. In burning, the plastic pipes makes itself useless as a pipe and hence terminates the water supply which is often necessary to fight a fire. Additionally, the burning of the pipe generates gases. These are further discussed under the issue of permeability and worker safety. They range from carcinogens to known toxic substances and each such gas requires a material safety data sheet. These sheets reveal the individual problems with each such gas.

IV.

"GROUNDING"

Most modern construction involves electricity. Electricity presents the problem of short circuits. Almost all communications that use electricity require additional grounding. Traditionally, this grounding is done through the water system in a building. In a plastic pipes water system, there is no readily available ground. If the water has sufficient mineral content and if the grounds are inserted through the pipe, adequate grounding may occur. Otherwise, the defense against electrical accidents and fires is worthless in a plastic piped building.

V.

PERMEABILITY

The issue of permeability involves petroleum products, pesticides, and kitchen, bath and workshop chemicals. This is explored at great length in the summary of the California Department of Consumer Affairs lawsuit attached as Exhibit "A" and the documents for Subcommittee #1 on Health and Welfare Oversight Hearing on Plastic Pipe of the California Legislature; these being attached hereto and marked Exhibit "B". Suffice it to say, the chemical dangers here involve 1, 2 Dichloropropane; 1, 1, 1 Trichloroethane; Trichloroethylene; 1, 1 Dichloroethane; 1, 1 Dichloroethylene; Ethyloxirane; Benzene; Methylpyrole; Butane; Toluene; Xylenes; Trimethylbenzenes; Tetramethylbenzenes; Ethylbenzene; Chloroform; and Lindane. The safety and health issue here is self evident.

VI.

WORKER SAFETY

The reason for the interest of the amicus curiae in this action flows from the exposure of members of the union to the hazardous materials involved in assembling the plastic pipe.

Assemblage in small construction quantities such as residential housing, etc., do not normally bring an experienced installer beyond the dangerously toxic levels of exposure to the Benzene, Chloroform and kindred "glue". On larger projects, the time spent on this assemblage puts workers beyond the safe limit of such exposure and in effect forces him to "sniff glue". Because the damage from these chemicals is permanent and irreversible, the United Association and its members strenuously object to the current state of the art process for assembling plastic pipe.

ALASKA STATE LEGISLATURE
HOUSE OF REPRESENTATIVES
RESEARCH AGENCY

Pouch V, State Capitol
Juneau, Alaska 99811
(907) 465-3991

January 27, 1984

MEMORANDUM

TO: Representative John Cowdery, Chairman
House Labor and Commerce Committee

FROM: Susan Brody, Director SEB

RE: Adoption of Uniform Plumbing Code, 1982 Version
Research Request 84-18

Ken Johnson of your staff requested information about adoption of the 1982 version of the Uniform Plumbing Code. Specifically, he asked us to survey selected municipalities in the state to find out if they had adopted the 1982 version of the code, with or without amendments. He was particularly interested in sections 4,5 and 10 of the code. Ken also asked us to find out which other western states have adopted the 1982 version of the code.

Adoption of the Code in Alaska

Within the time available to complete this request, we were able to survey the following seven municipalities: Anchorage, Bethel, Fairbanks, Juneau, Kenai, Ketchikan and Sitka. Our findings are summarized below.

Anchorage has adopted the 1982 version of the Uniform Plumbing Code. However, a number of amendments were made when it was adopted, including changes to the following sections: 401(a), 503(a), 506(b), 506(f), 1003(k), 1004(a), 1004(e), and 1007(e). In addition, two new sections were added--1010 and 1011. Some of the sections noted above deal specifically with the use of ABS, PVC and PB pipe.

Bethel has not adopted the Uniform Plumbing Code. According to planning director Tony Stigall, the city has a study underway currently to consider the possible adoption of a number of codes, including the plumbing code.

Fairbanks is currently in the process of adopting the 1982 version of the code; a hearing is scheduled before the city council in February. Amendments are being considered to sections 1002(d), 1004(a), 1007(e) and 1008(e).

Juneau has adopted the 1982 version of the Uniform Plumbing Code with amendments to the following provisions in sections 4,5 and 10: 401(a), 506(a), 506(c), 506(f), 1004(a), and 1007(e). See Attachment A for a copy of Juneau's amendments.

Kenai adopted the 1982 version of the Uniform Plumbing Code in March of 1983; apparently no changes were made to sections 4,5 and 10.

Ketchikan has not yet adopted the 1982 version of the code. According to Steve Elenberger, the building inspector, the city is waiting for the State to adopt the 1982 version before they proceed with adoption.

Sitka has adopted the 1982 version of the code. The code was adopted in its entirety with no amendments.

Adoption of the Code in Other Western States

I was not able to obtain a comprehensive listing of all other states which have adopted the 1982 version of the Uniform Plumbing Code. I called a number of sources which only had incomplete or out-of-date information. However, Tom Higham with the International Association of Plumbing and Mechanical Officials, informed me that, to the best of his knowledge, the following western states have adopted the 1982 version: California, Colorado, Hawaii, Idaho, Montana, New Mexico and Utah. He also mentioned that Oregon is currently in the process of adopting the code.

Mr. Higham pointed out that not all states choose to adopt the Uniform Plumbing Code at the state level. Instead, they leave adoption to local county and city governments. For example, Arizona and Wyoming are two western states which take this approach.

* * * * *

I am sorry I was unable to provide more complete information. I hope this information is useful to the committee.

Attachment A
City of Juneau, Uniform Plumbing Code Amendments.

this section, subject only to the following enumerated additions, deletions and changes:

(1) Delete Section 103.

(2) Delete Chapters 2, 5 and 6.

(3) Delete Section 910.

19.11.010 PLUMBING CODE ADOPTED AMENDMENTS AND DELETIONS.

For the purpose of regulating the erection, construction, reconstruction, addition, enlargement, conversion, equipment, use and maintenance of all plumbing within and without all buildings and structures or portions thereof within the city and borough, there is adopted by reference as the Plumbing Code of the city and borough, that certain compilation of rules and regulations prepared and published by the International Association of Plumbing and Mechanical Officials, a nationally recognized technical trade organization, which compilation is entitled "Uniform Plumbing Code, 1982 Edition," and five copies each of which have been filed in the office of the clerk of the city and borough or at such places as designated by the clerk, for public use, inspection and examination and which compilation is made a part of this chapter as if fully set forth in this section, subject only to the following enumerated additions, deletions and changes:

(1) Delete Sections 10.1 through 10.4; 10.5(b); 20.1 through 20.3; 20.4(b) and (c); 20.6 through 20.14; and 1303.

(2) In Section 310, add a new subsection (h) reading as follows:

"(h) Galvanized or black steel pipe shall not be used for soil pipe."

(3) In Section 401(a), add new exceptions 3 and 4 reading as follows:

"3. ABS and PVC shall not be used underground where it passes underneath within one (1) foot of building walls or footings unless adequately sleeved with cast iron or ductile iron to a point two (2) feet on each side of the wall or footing.

4. ABS and PVC shall not be used underground where it passes through building walls or footings unles it passes through an opening with a minimum of a two-inch annular space around the pipe which space shall be filled with a waterproof material which will permit the pipe to move within the space without damage."

(4) In Section 506(a) change the phrase "six (6) inches (152.4 mm)" to read "one (1) foot (.3 m)".

(5) In Section 506(c) change the phrase "six (6) inches (152.4 mm)" to read "one (1) foot (.3 m)".

(6) In Section 506, delete the existing subsection (f) and substitute a new subsection (f) reading as follows:

"(f) Vents through the roof shall be a minimum of two (2) inches diameter. The increase in vent size shall be at least six (6) inches below the roofline."

(7) In Section 1004(a), in the second sentence, delete the letters "PB" and delete the entire third sentence reading "PB waterpipe and tubing may be used for hot and cold water distribution systems within a building."

(8) In Section 1007, delete subparagraph (e) and substitute the following:

"(e) Relief valves shall be located inside a building and shall be provided with full sized drain of galvanized steel or harddrawn copper piping and fittings and shall extend from the valve to a point not less than 6 inches or more than 12 inches above the floor. No part of such drain pipe shall be trapped and the terminal end of the pipe shall not be threaded."

(9) In Section 1307(c)(3), delete the first sentence and substitute therefore the following:

"(3) Combustion air requirements for gas and oil burning water heaters shall consist of two openings as described below, with each opening containing not less than one square inch of free area per 5,000 Btu per hour input."

(10) In Section 1307, delete subsection (e), including Table 13-1 and the footnotes thereto, and substitute the following:

"(e) Alternate Methods of Supplying Combustion Air. In lieu of the requirements of Section 1307(c)(3), combustion air supply may be designed in accordance with recognized engineering principals when first approved by the Administrative Authority."

(11) Add a new Section 1326 reading as follows:

"1326 Check Valves. Check valves shall not be installed on any domestic water heater installation unless approved by the Administrative Authority."

(12) Appendices A, B, C, E, G, and H are adopted.

(13) Appendix D is adopted with the following additions: Under Part B add a new section D2.2 reading:

"D2.2 Cleanouts: Cleanouts the same size as the piping shall be installed at the base of all roof leaders."

In Part C, delete the last sentence of Section D3.1 and substitute the following:

"D3.1 Roof drainage rate shall be based on a rainfall of one (1) inch per hour."

19.16.010 ELECTRICAL CODE ADOPTED AMENDMENTS AND DELETIONS.

For the purpose of regulating the construction, reconstruction, addition, enlargement, conversion, equipment, use and maintenance of all electrical wiring and devices within and without all buildings and structures within the city and borough, there is adopted, as the Electrical Code of the city and borough, that certain compilation of rules and regulations prepared and published by the National Fire Protection Association, a nationally recognized technical trade association, which compilation is entitled "National Electrical Code, 1981 Edition," and five copies each of which have been filed in the office of the clerk of the city and borough or in such places as designated by the clerk, for public use, inspection and examination and which compilation is made a part of this chapter as if fully set forth in this section, subject only to the following enumerated additions, changes and deletions:

(1) Add a new Section 90-9 reading as follows:

"PLANS AND SPECIFICATIONS. A set of electrical plans and specifications or a wiring schedule, giving the following information, shall be filed before the issuance of a permit for the installation of electrical wiring intended to supply an anticipated or future load in excess of 200 amperes, single phase, or 150 amperes, three phase. Every plan shall be drawn to scale upon substantial paper and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and showing in detail that it will conform to the provisions of the Electrical Code and all other relevant laws, ordinances, rules and regulations. Specifications for such plans may be either shown thereon or provided separately. The building official may require plans, computations and specifications to be prepared and designed by an engineer licensed by the state to practice as such. The wiring plan or schedule required shall contain the following information:

(a) The type, rating and location of any new service equipment.

SUMMARY

CALIFORNIA DEPARTMENT OF CONSUMER AFFAIRS, FRIENDS OF THE EARTH, CONSUMER FEDERATION OF CALIFORNIA, STATE BUILDING AND CONSTRUCTION TRADES COUNCIL OF CALIFORNIA, AFL-CIO, and AILEEN ADAMS, (PLAINTIFFS)

vs.

INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO). (DEFENDANTS)

Exhibit "A"

I. BACKGROUND ON THE PROBLEM OF PLASTIC PIPES

Recent tests in California have duplicated field and laboratory experiences of water utility districts and environmental health experts that polyvinylchloride (PVC), polyethylene (PE), and polybutylene (PB) water service lines can be and are permeated (infiltrated) by gasoline, petroleum distillates and industrial solvents.

The public health impact can be serious enough to require the removal of an entire underground network of plastic water service lines and may cause serious health consequences for its consumers. Because of the pervasive occurence of toxic chemical spills and soil contamination with residues of pesticides and herbicides, California will need to embark on a comprehensive analysis of the problem. The problem is amplified by the specter of frequently used garden and household products that may permeate these plastic pipe.

Permeation of plastic pipe by toxic chemicals is all the more serious because of the existing threat to water quality by the pipes themselves and the quality of our current water supply. The California Department of Health found that the pipes themselves leach large amounts of chloroform, carbon tetrachloride, DEHP and a host of solvents used to degrease and glue the pipes. If these toxic chemicals are added to the already high level of contamination of many water supplies, then a truly dangerous prospect

for the quality of our potable water systems emerges.

Since 1977, the State of California has reviewed industry requests for unlimited usage of plastic pipe for water distribution. Industry assertions of economic feasibility and product safety were thoroughly and comprehensively reviewed by California Departments of Health, Consumer Affairs, Housing and Community Development, Cal/OSHA, and the State Fire Marshal. The Department of Housing and Community Development(HCD) concluded, after extensive hearings and in consultation with these other state agencies, that there was substantial evidence that unlimited use of plastic pipe may have a significant effect on the environment.

These conclusions were reached because of the threat to workers who breathe the fumes of the glues, and the presence of toxic chemicals (dimethylformamide, tetrahydrofuran, DEHP, carbon tetrachloride, chloroform and many others) in drinking water passed through the pipe, and an equally dramatic conclusion of the State Fire Marshal that plastic pipe is high rise construction may pose an unreasonable fire risk.

Since plastic pipe was found to have a potentially adverse effect on the environment because of its threat to water quality, worker safety, and fire safety, state agencies in California will not allow its expanded use until all scientific and public health questions have been answered. The State Architect has also warned all the design professions and school districts throughout California

of the potential hazards of plastic pipe.

Because the International Association of Plumbing and Mechanical Officials (IAPMO) proceeded with the expanded use of plastic pipe in its 1982 Uniform Plumbing Code, a coalition of state public and private consumer groups, environmental and labor organizations sued IAPMO and forced a notice disclaimer at each location in the Code where plastic pipe is mentioned. The lawsuit is still in progress over complaints that IAPMO misrepresents its product evaluation to the general public.

Outlined below are some of the key issues being pursued in that lawsuit.

II. ISSUES IN LAWSUIT AGAINST IAPMO

Under current law, IAPMO has the authority to prepare a model code know as the Uniform Plumbing Code (UPC). The code is prepared every three years and is forwarded to Housing and Community Development (HCD) for action. HCD may make minor modifications. In the event HCD takes no action, the Model Code lapses into law in one year. The Code is then forwarded to the Building Standards Commission for final approval and publication.

IAPMO's voting membership consists of governmental jurisdictions and building officials of member jurisdictions. The UPC is approved at the IAPMO annual convention after recommendations from IAPMO's code change committee are presented to the members who come to the convention.

IAPMO's other major function is preparation of a Research Directory which lists products by the manufacturer's name. (Such "listings" are used by jurisdictions for substitutions of plumbing materials.) In order for a product to be approved, the manufacturer must submit a sizeable application fee, along with durability and strength tests and show compliance with certain standards, depending on the product.

In the case of plastic pipe products and solvents, the appropriate standard is the National Sanitation Foundation (NSF) Standard 14. One of the main problems with the standard is that it does not test for the leaching of organic chemicals (dimethyl-formamide, tetrahydrofuran, DEHP, carbon tetrachloride, chloro-form, and more) from the plastic pipe products, nor does it test the permeability of the pipe. NSF 14 also does not test for fire safety performance with respect to either the increased fire-spread risks or the toxicity of the smoke.

Finally, NSF 14 is inadequate because plastic pipe does not have a 100% content requirement standard. Thus, each manufacturer varies the formula; only generic varieties of pipe (i.e. CPVC, PVC, ABS) are tested under Standard 14.

After one review of the manufacturer's application by the IAPMO Research Committee, the plastic pipe product is given the IAPMO seal or logo which declares that the product has been tested and meets minimum health and safety requirements.

The product is then listed in the Research Directory. Both the Research Directory and the UPC are heavily relied upon by contractors, builders, inspectors and others in the building and construction trades.

In 1981, IAPMO voted for nearly unlimited use of plastic pipe products for transportation of hot and cold potable water for its 1982 Code. By this time, HCD required, in accordance with the California Environmental Quality Act (CEQA), preparation of an EIR for such expanded use of plastic pipe.

Nevertheless, IAPMO proceeded to distribute its 1982 UPC with apparent approval of plastic piping products for transportation of potable water.

The Department of Consumer Affairs and a host of environmental and consumer groups filed a complaint alleging unfair business practices and negligent misrepresentation (Business and Professional Code sections 17200 and 17500).

The theory of the case is that IAPMO's representations in both the UPC and Research Directory that plastic pipe products are safe are, in fact, gross misrepresentations. IAPMO has no testing facilities or qualified chemists, toxicologists, or epidemiologists on staff. Voting on product approval for the Research Directory and the UPC is limited to voting member of IAPMO. Furthermore, IAPMO has totally ignored the substantial evidence amassed by HCD that substantial adverse impacts are a possibility

and that an EIR would be required before use of such plastic pipe can receive HCD approval.

The Department of Consumer Affairs immediately requested an injuction from the Los Angeles Superior Court to prohibit IAPMO from distributing the 1982 UPC without a warning of potential hazards. The Superior Court denied the motion, as did the Appellate Court. However, the Supreme Court granted an alternative writ forcing IAPMO to affix a warning to the UPC. That warning reads:

> NOTICE: An Environmental Impact Report is now being prepared in California to determine whether the use of CPVC, PVC, or PB plastic pipe for transporting potable water poses a danger to public health or the environment. At the time of this printing of the 1982 Edition of the Uniform Plumbing Code, the State of California does not permit any expansion in the use of such pipe beyond those applications permitted in the 1979 Edition of the Uniform Plumbing Code.
>
> For information on California restrictions, contact the State Housing Law Section of the California Housing and Community Development Department.

The trial on the underlying merits is now set for December 12, 1983 in Los Angeles Superior Court before the Honorable Judge Jack Crickard. The objectives of the plaintiffs are

best understood in light of the relief requested. Plaintiffs seek to require either IAPMO, or the product manufacturer through a contract with an independent laboratory approved or designated by IAPMO, to test each individual product for health and safety effects. Such health and safety effects should include:

1. toxicological testing of chemicals found in products or to have leached from products;

2. water chemistry testing of appropriate uses of such products;

3. permeation of organic and inorganic substances into potable water from either airborne or groundladen substances;

4. fire safety testing;

5. worker/installer safety assessment;

6. determination of durability to assure adequate service life.

Moreover, all Research Committee meetings should be opened to the public at large. Decisions by the Research Committee should be based on substantial evidence in the record. Findings should be prepared by IAPMO which show that the Research Committee has determined that the product does not create negative health and safety effects. Members of the Research Committee must not be limited to IAPMO members only, but rather must include public members, including but not limited to, those representing environmental and consumer interests. These public members shall

have voting privileges on the Research Committee.

IAPMO plays a critical legislative role and enjoys the economic and legal benefits of such a role. The time has come for them to assume the related burden of public responsibility.

PLASTIC PIPE: A BACKGROUND REPORT

Since the early 1950's plastic pipe has steadily replaced metal piping for plumbing applications. These include: drainage-waste-vent (DWV) piping for interior drain systems; potable water piping from the street main into the building (water service); and interior hot and cold water piping to fixtures (water distribution).

Plastic pipe was introduced in the United States and Europe over 30 years ago. It is widely used in England, Canada, Australia, Japan and Germany. It now distributes potable water into 35 percent of the nation's households and businesses. Plastic pipe is used in 55 percent of the nation's drain, waste and vent (DWV) systems and a full 95 percent of the irrigation systems.

A number of U.S. cities have installed plastic instead of metal pipe for their water service systems. Most federal housing program projects use plastic pipe. Most hospitals and laboratories must use plastic pipe to deliver high purity water.

There are many reasons for preferring plastic over traditional metal piping for these plumbing applications:

1. <u>It is more cost effective</u>. Both the short-term installation costs of plastic pipe and its longer term costs associated with its longevity are lower than metal pipe in most circumstances.

Losses to the water works industry in the United States due to underground corrosion of metal pipes are in excess of $150 million annually.

In Los Angeles County, homes built between July 1973 and April 1976 began to experience leaks in the galvanized steel plumbing systems shortly after the pipe had been installed. In Santa Clara County, newly-installed copper plumbing systems began to fail immediately upon installation.

Plastic pipe does not corrode under normal use situations.

The staff of the California Department of Housing and Community Development did its own economic analysis of the costs of plastic versus metal piping installations in typical California homes and found substantial savings using plastic piping.

In 1984, if metal pipe was used exclusively, the cost of installing plumbing for all new homes in California would be $118 million higher than for plastic pipe. The figure, estimated by the Plastic Pipe and Fittings Association on housing projections from the UCLA Economic Forecast Group, jumps to between $127 and $136 million in 1985.

2. Plastic pipe is energy efficient. It is lighter than metal. In 1977, the two billion pounds of plastic pipe used in construction that year compared with 17.5 billion pounds of the equivalent amount of metal pipe which was manufactured. The energy required for plastic pipe was 84 trillion BTUs, versus 408 trillion to produce the equivalent amount of metal pipe. The savings equated to 56 million barrels of crude oil. In 1978, the savings doubled.

3. Plastic pipe protects water users from known hazards associated with the use of metal pipe. Plastic pipes made from a variety of plastics are relatively impervious to various corrosive materials including water and chemicals dissolved in it. Potential health hazards associated with heavy metals which may be leached from metal piping or their joining systems are well-known and documented.

The Federal Safe Drinking Act provided for the U.S. Environmental Protection Agency to establish standards for toxic substances in drinking water. All states must meet these minimum requirements in enforcing their own safe drinking water regulations.

The plastic pipe industry is the only piping industry which submits its products to independent third party certification processes based exactly on the Federal drinking water regulations.

News

The Vinyl Institute

Contact: Nora Jacobs
(216) 447-7887

FOR IMMEDIATE RELEASE

PIPE GASKETS POSE HEALTH THREAT, STUDY SAYS

SACRAMENTO, California, October 19, 1983 -- Pipe gaskets, not pipe materials, are the primary points through which contaminants leach into drinking water, according to test results presented today to the California Assembly by plastics industry representative Alan J. Olson. Moreover, he warned, attempts to restrict the use of certain pipe materials in the hope of solving this problem mask the real issue - the threat to public health caused by transporting drinking water through contaminated soil.

Members of the California Pipe Trades Union recently have claimed that plastic pipe poses a potential threat to public health because it allows ground contaminates to leach through it to drinking water. Olson, a scientist for B.F. Goodrich Chemical Group, appeared before the Ways and Means subcommittee on health and welfare to present the results of an industry-sponsored study which refutes those claims.

-more-

The study, conducted by the Battelle Memorial Institute, one of the world's largest private research organizations, reveals that the gaskets used to join sections of underground water distribution systems can fail when exposed to gasoline spills or to chemicals such as those found in landfills or dump sites. A threat to public health exists, Olson explained, when water distribution systems are routed through such areas.

The Battelle tests involved constructing gasketed piping systems out of three commonly used materials -- ductile iron, asbestos cement and plastic -- and exposing them to solvent-saturated soil conditions for six weeks. Pipes of the same materials, but without joints, were exposed to identical conditions. After six weeks exposure, solvents had permeated the gasketed pipes in all but one test situation while ungasketed pipe showed slower permeation or no permeation.

"While these results clearly exonerate the integrity of the piping materials involved in this study, they underscore the urgency of addressing an issue of great potential concern," Olson said. "The effect of soil contamination on drinking water is something which the State of California now must examine from a fresh perspective. As these results indicate, merely replacing one piping material with another is not the solution. Under the worst conditions, all types

of pipe systems can be contaminated through gasketed joints.

The Battelle study was commissioned by The Vinyl Institute, a trade organization of material suppliers to the pipe industry.

Environment Di. :torate

To: [illegible]
Seminar on Hazardous Waste
"Problem" Sites

ENV/WMP/80.Sem.15

English only

(4)

EXPERT SEMINAR

ON HAZARDOUS WASTE 'PROBLEM' SITES

Case of Lekkerkerk

(Contribution by Mr. Strybis)

The attached paper is submitted for consideration at the expert seminar on hazardous waste "problem" sites, OECD, Paris, November 3-7, 1980.

It has been specially prepared by Mr. Stybis, Netherlands.

Lekkerkerk

One of the most serious cases of soil pollution in the Netherlands is the case of Lekkerkerk.

Lekkerkerk is a village north east of Rotterdam on the river Lek in a reclaimed coastal swamp area. Around 1970 for the expansion of this village the ditches in the expansion area west of the village were not filled up with crushed peat, straw and saw dust, as usually is done for building purp in marshy polders, but for financial reasons with the building and demolition wastes. Among these, chemical wastes and waste oil were dumped illegally, partly in drums (of which more than a thousand have been found until now) and probably partly unpacked. Soon after the houses on this "ground" were built and inhabited complaints arose about bad smells in the houses, while at a number of places gas and water tubes in the ground were so badly affected by polluted grondwater that they broke.

After the fainting of two workmen in a pit dug for inspection of gas pipes an investigation was started in 1978. From this resulted that soil and grou water in this new part of the village were badly polluted by aromatic hydrocarbons, mainly xylene, toluene and ethylbenzene (solvents widely usec in the paintindustry) that, as later appeared, floated as a film on a layer of oily waste material on the groundwater.

Because of the low permeability of the peat soil and because of the fact that Lekkerkerk lies in an area behind the dike of the river Lek where the groundwater wells up, the pollution had not spread laterally nor vertically to the subsoil. But when in april 1980 further investigations showed that not only the atmosphere inside the houses contained relatively high concentrations of aromatic hydrocarbons by evaporation from the soil, but that these polluting compounds also penetrated through the network of PVC and PCE tubes in the ground for the distribution of drinkin water as a result of which the quality of this water could not be guarante any longer, in the interest of public health it was decided that at the shortest possible notice all pollutions should be removed. This cleaning operation is now in progress and reached the world press for because of th some 800 inhabitants had to be evacuated from their 270 homes for abou six to nine months.

The operation is complicated by the fact that for social and financial reasons the aim is to save the 270 houses that are built on piles, some of concrete, others of wood.

The following works have been carried out or are still to be carried out.

1. All pavements, trees and other vegetation, street lights, garages, tubes and cables in the ground have been removed and if polluted have been destroyed. Only the houses were left standing.

2. The canal around the concerning part of the village was dammed off from the surrounding surface waters to prevent possible spreading of pollutions during the operation. By steel barrages the subsoil of the quarter was divided into five compartments to reduce spreading of pollutions from uncleaned territory into cleaned territory and to reduce the quantities of groundwater that have to be pumped away during the operation.

3. The groundwater level in the compartments was lowered by pumping for the time of the operation to a level just under the pollutions so that work can be done under dry conditions, which makes grading and concentrating easier. Well from the river Lek is ooposed by a number of deep well pumping stations.

4. All polluted materials deposited on the original surface and in the ditches are removed and transported to a combustion installation for domestic and chemical wastes at Rotterdam to be burned. All polluted water thas is pumped out of the compartments is led to a temporary purification installation on the spot, where it is purified and finally led through active carbon filters before it is drained into the river Lek. Saturated active carbon sludges and chemicals separated from the water are burnt at the combustion installation in Rotterdam.

5. Underneath the houses the removal of soil and polluting substances is done by special drilling and dragging machines that can work horizontally. To prevent leaning to one side of the houses work is done two opposite sides at the same time. Houses on wooden piles are kept up straight by temporary steel constructions for additional support while work underneath them is going on.

6. After removal of all wastes and polluted soil (estimated on 75.000 tons of which 2.000 drums) the depressions are filled with clean sand, for which was chosen "flugsand" to prevent differential setting of the ground afterwards. Flugsand is a light vulcanic sand from the Eifel are.

in Germany, which has about the same volumeweight under water saturated conditions as peat. Next clean topsoil is brought up. After that the infrastructure of the quarter can be reestablished and the groundwater is raised to its original level again.

It is expected that the inhabitants can return to their homes on a new clean subsoil between november 1980 and february 1981. The costs of the whole operation are estimated to be more than 140 million guilders.

Anlab
ANALYTICAL LABORATORY
A DIVISION OF DEWANTE & STOWELL

1914 S STREET, SACRAMENTO, CALIFORNIA 95814 • 916-447-2946

5

PERMEATION OF ORGANIC COMPOUNDS IN PLASTIC PIPE

Anlab
ANALYTICAL LABORATORY
A DIVISION OF DEWANTE & STOWELL

1914 S STREET, SACRAMENTO, CALIFORNIA 95814 • 916 447-2946

September 15, 1983

Mr. Ray Leonardini
555 Capitol Mall, Suite 435
Sacramento, CA 95814

The results of the pipe study are in the report enclosed.

The findings indicate that certain organic chemicals can permeate through plastic pipe under the conditions of the study.

Sincerely,

Tom Ikesaki

TI:et
Encls.

ABSTRACT

Four potable water service pipes were tested for permeability to specific organic compounds. These organic compounds were used in concentrated form in these tests and may not be representative of normal applications. Three series of test designs were used. Successive tests were designed to reduce the possible effect of pipe joints to the inward migration of chemicals through the pipe material.

Three groups of chemicals were tested; chlorinated solvents, pesticides and gasoline in Polybutylene (PB), Polyethylene (PE), Polyvinylchloride (PVC) and Copper (CU) pipes.

Permeation by small molecular weight chlorinated solvents was pronounced for polyolefin pipes (PB & PE), less for PVC. Trace contamination of joined pipe systems (PVC and Copper) was also found. Controls with no joints in pipes showed that PVC but not Copper was permeable to specific molecular weight chemicals.

For systems showing permeation, the rank order of chemicals was related to molecular weight and polarity, with constituents of chlorinated solvents, gasoline (benzene and substituted benzenes) showing the greatest permeation effect in polyolefin and chlorinated pipes, respectively. The rank of pipes according to decreasing permeability is: Polyethylene, Polybutylene, Polyvinylchloride and Copper.

Results indicate the presence of organic chemicals from other sources such as pipe joining and sealing compounds, and a group of chemicals that appear to have been extracted as specific plastic pipes were permeated.

(6)

SOME FREQUENTLY ASKED QUESTIONS CONCERNING PIPE PERMEATION

ANSWERS PREPARED BY THE CALIFORNIA PIPE TRADES COUNCIL

Q. WHAT IS PIPE PERMEATION?

A. Pipe permeation is the phenomena whereby toxic substances seep through pipe material causing the contamination of the drinking water which is carried by those pipes. This occurs most commonly with pipe which is buried in soil.

Q. WHEN WAS PIPE PERMEATION FIRST DISCOVERED?

A. That is hard to answer. Pipe permeation was not widely reported until the Department of Consumer Affairs released test results in December, 1982, which showed that plastic pipe can be permeated by a number of carcinogens. The test was sponsored by the California Pipe Trades Council and was conducted by Anlab, an independent testing laboratory in Sacramento. The investigation leading to that test, however, revealed that the East Bay Municipal Utility District had recognized permeation as early as 1978 and had reported its findings to the Department of Health Services. Further, the president of the Society of the Plastics Industry (a major trade association of plastic resin and plastic product producers) stated, in response to DCA's permeation announcement, that the findings "are not new, since they have been identified long ago . . ."

Q. IS ONLY PLASTIC PIPE PERMEABLE?

A. As far as we know, the only testing for permeation has been conducted with plastic pipe and the only reported instances of pipe permeation have involved plastic pipe (although metal pipes have been used as test control, but were not permeated). We believe, however, that all pipe materials should be tested to make absolutely certain that public health is protected. The Budget Bill item (#4260-001-014) which would have appropriated funds for a permeation study called for the testing of all pipe materials. It was vetoed by the Governor.

Q. WHICH CHEMICALS CAN PERMEATE PLASTIC PIPE?

A. No one knows for sure how many different chemicals can permeate plastic pipe, nor under which conditions the permeation is most likely to occur. Among the toxics discovered to permeate, however, are some known carcinogens and some which are known to cause liver and kidney damage, mobility impairment, birth defects, lung congestion, nausea, and anemia. Until a comprehensive test is conducted, we simply won't know which chemicals permeate at hazardous levels. The Anlab test found the following will

permeate:

1, 2 dichloropropane
1, 1, 1 trichloroethane
trichloroethylene
1, 1 dichloroethane
1, 1 dichloroethylene
Ethyloxirane
Benzene
Methylpyrole
Butane
Toluene
Xylenes
Trimethylbenzenes
Tetramethylbenzenes
Ethylbenzene
Chloroform
Lindane

(An attachment to this series of questions & answers, excerpted from "The Merck Index" shows some of the common uses of these toxic chemicals.)

Q. WHY DID THE GOVERNOR VETO THE PIPE PERMEATION STUDY?

A. In his veto message, the Governor stated, "I am eliminating the $200,000 legislative augmentation for the study of the permeation and infiltration of toxic chemicals into pipe and pipe water mains. I believe it is more appropriate for this study to be funded by the pipe industry."

Q. WHY SHOULDN'T THE INDUSTRY BE REQUIRED TO FUND THE STUDY?

A. We're talking about a potentially serious health hazard which could affect millions of Californians. It requires a thorough and objective examination. Just as statistics can be manipulated, so can test protocols and results. Although the plastics industry acknowledges that they have known of the permeation phenomena for some time, the industry has not been at the forefront of any effort to restrict the use of plastic pipe to safe applications. Further, the president of the Society of the Plastics Industry, while referring to the permeation tests financed by the California Pipe Trades Council, stated, "There should be serious questions about the validity of a report funded by a source opposed to the product it is testing." We concur that privately funded tests may have a credibility problem and we also assert the same logic used by the S.P.I. president should discourage reliance on tests funded by advocates of products. The potential health hazard related to permeation is simply too serious to have its examination and evaluation financed, designed, or conducted by any organization other than one that is thoroughly and unquestionably objective.

Q. WAS THE TEST FUNDED BY THE PLUMBERS UNIONS (CALIFORNIA PIPE TRADES COUNCIL) A RELIABLE TEST?

A. The objective of the test was to determine whether or not certain chemicals could permeate plastic pipe. The test did not replicate "real-life" circumstances. It used highly saturated sandy soil in a controlled environment in order to accelerate the results. The test did prove that, under those conditions, plastic pipe is permeable. We know that a much more expensive and sophisticated test, such as the one which the Governor vetoed, is necessary to accurately determine which chemicals will permeate and under which soil conditions the permeation will occur. The plumbers' test was not designed to be the "last word"; its purpose was to provide sufficient evidence of the problem in order to prompt responsible parties (such as the State) to conduct a comprehensive and objective test.

Q. WHO BESIDES THE PLUMBERS UNIONS HAVE HAD EXPERIENCE WITH PERMEATION TESTING?

A. Apparently the East Bay Municipal Utility District conducted some limited testing after their initial discovery of permeation. We have recently learned, also, that testing has been conducted by the American Water Works Service Co. in New Jersey and that the company's results have shown findings similar to our own. None of this testing, however, has been nearly as comprehensive as the one which would have been conducted pursuant to the Budget Bill provisions. Strangely, although the Department of Health Services has jurisdiction over the regulation of public drinking water distribution systems and although the department has been aware of the permeation phenomena at least since 1978, DHS has never shown any interest in permeation testing until now.

Q. HASN'T A PERMEATION TEST BEEN CONDUCTED BY THE CITIZENS FOR SAFE DRINKING WATER?

A. No. The Citizens for Safe Drinking Water did widely report its discovery of lead leaching in copper pipe. The test was conducted at a few locations in Sacramento. The City of Sacramento subsequently tested the same water taps and found no evidence of leaching. The only known member of the Citizens for Safe Drinking Water, by the way, is a public relations representative for the Plastic Pipe & Fitting Association, a trade association which has worked closely with the Society of the Plastics Industry. This front organization has never announced the conduct or the results of any permeation studies.

Q. ASIDE FROM LABORATORY TESTING, WHERE HAS PERMEATION OCCURRED?

A. It may have occurred at the Coyote Hills tract near the McColl hazardous waste site in Fullerton. Further testing needs to be

conducted there to know for certain. The most dramatic permeation episode occurred at Lekkerkerk, a town in the Netherlands. There, 800 inhabitants were evacuated when 270 homes were contaminated by toxics in the soil which permeated plastic pipes and conduit. All other known instances have been in the U.S. The East Bay Municipal Utility District has reported 12 episodes of gasoline permeating PB pipe, two episodes of gasoline permeation of PB pipe have been reported by the Marin Municipal Water District in Corte Madera, one identical episode has been reported by the North Marin County Water District in Novato, Tetrachloroethylene (PCE) has permeated PE pipe in Delaware, gasoline distillates permeated PE pipe in Columbus, Ohio, and gasoline permeated plastic water service lines in Chattanooga. Undoubtedly, there have been a number of other permeation episodes that have gone unrecognized or unreported.

Q. AREN'T THE PLUMBERS SIMPLY OPPOSING PLASTIC PIPE BECAUSE THE INSTALLATION OF PLASTIC PIPE REDUCES LABOR COSTS?

A. The advocates of plastic pipe want you to think that is the reason. Actually, there are minimal economic considerations related to the plastic pipe issue. As you know, SRI International (formerly Stanford Research Institute) is currently producing an environmental impact report (E.I.R.) for the Department of Housing & Community Development which relates to the expanded uses of plastic plumbing pipe. The initial review draft produced by SRI (the final report will not be completed until next year) reports on page IV.F-1 that the proposed expanded use of plastics in home construction would amount to a labor savings of only about $50 per single family residence. The E.I.R. does not include a review of the permeation phenomena, so no accurate costs are available on the labor cost differential between the installation of underground plastic pipe and the installation of alternative materials. However, since plumbing the interior of a house is much more complicated than simply laying pipe in a trench, we can assume that the impact on labor costs -- if subsurface plastic water lines were to be restricted -- would be negligible.

Q. WHY THEN, ARE THE PLUMBERS SO CONCERNED ABOUT PERMEATION?

A. Members of the plumbing trades drink water too. Historically, our membership has been very active in the promotion of technologies to deliver pure water and to provide adequate sanitation. Our initial examination into the plastic pipe issue had been prompted by a fear that the health of plumbers had been severely endangered by the use of adhesives required for the bonding of plastic pipe, just as, 30 years ago, our fear that working with asbestos was causing cancer amongst our membership led to our investigation into the dangers of that material. Our continuing examination of plastic has uncovered the other dangers of the material, i.e., permeation, leaching, and fire toxicity.

Q. HOW COME THE E.I.R. DOES NOT INCLUDE AN EXAMINATION OF THE PERMEATION ISSUE?

A. We think it should. Unfortunately the proponents of the E.I.R. were unaware of the permeation issue when the scope of the study was being determined by the E.I.R. Task Force membership (although at least two of the participants, the Department of Health Services representative and the Society of the Plastics Industry spokesperson, were apparently well aware of the issue but chose not to reveal it) and it was therefore never included in the E.I.R.'s original work plan. When permeation eventually became a public issue, various environmental and labor organizations, some legislators, and even the Department of Health Services requested that an evaluation of pipe permeation be included in the E.I.R. Despite the strong evidence that this problem needs a careful analysis, the Department of Housing & Community Development acceded to the demands of the plastic industry and refused to permit the inclusion of a permeation study.

Q. WHAT REASONS DID THE DEPARTMENT OF HOUSING & COMMUNITY DEVELOPMENT GIVE FOR REFUSING TO INCLUDE PERMEATION TESTING AS AN ELEMENT OF THE E.I.R?

A. The department contended that underground pipes are outside of their jurisdiction. That contention is not true. While water mains are the responsibility of the Department of Health Services, the subsurface pipes which carry water from the meter (usually at the property line) to the structure are within the jurisdiction of DHCD. Clearly, if a plastic water main can be permeated, so can a plastic service line carrying water under a residential yard. DHCD has frequently sided with the plastic industry representatives during E.I.R. Task Force disputes, so the department's refusal was not surprising.

Q. WHAT IS THE MAGNITUDE OF THE PROBLEM?

A. No one can know for sure, but we believe it can be a problem with enormous consequences. Until a comprehensive test is completed, we can not know with absolute certainty which chemicals will permeate plastic pipe, which soil conditions contribute to it, nor how long it takes for permeation to reach truly hazardous levels. The vetoed study could have given us those answers. Its possible, however, to speculate with some assurance about the magnitude of the problem:

The E.I.R. draft prepared by SRI estimates that over 25% of all Californians will live in homes plumbed by plastic pipe within the next 25 years if the proposed new uses of plastic are approved. It is safe to estimate that at least that many, and probably many more, will also be served by underground pipe systems which include at least some plastic. (The manager of the San Juan Suburban Water District in Sacramento County has estimated that 98% of the new homes in his district have plastic water lines from the house to the main.) Consider also that

there are thousands of recorded toxic spills each year in California (every one of them could eventually trigger some permeation activity), that there are now tens of thousands of California homes near hazardous waste sites (such as the Coyote Hills tract near McColl), and that many new communities are projected for development on land which had formerly been contaminated by pesticides. The potential for extreme danger is high; its time for clear answers.

Q. IS ANYONE BESIDES THE CALIFORNIA PIPE TRADES COUNCIL ACTIVELY SUPPORTING PERMEATION TESTING?

A. There is, of course, considerable support within the Legislature. Additionally, the California Pipe Trades Council is part of a coalition of organizations which have been actively pushing for permeation testing. Other members of the coalition include the Citizens for a Better Environment, the Consumer Federation of California, the Friends of the Earth, and the Natural Resources Defense Council. Additionally, the Sierra Club has taken strong supportive positions.

(1)

A STATEMENT OF CONCERN FOR A NEW PUBLIC HEALTH RISK POSED BY TOXIC SUBSTANCES THAT PENETRATE PLASTIC DRINKING WATER PIPES

Presented to

The Assembly Ways and Means Subcommittee Number 1
Art Agnos, Chairperson

by

The Consumer Federation of California, Friends of the Earth, Citizens for a Better Environment, The Natural Resources Defense Council, and the California Pipe Trades Council

October 19, 1983

We wish to alert the Committee to a new and previously underestimated source of environmental contamination. We are gravely concerned that California consumers may be unknowingly exposed to hazardous chemicals which may enter drinking water supplies from contaminated soils by migrating through the walls of permeable plastic water pipes.

The degree of our concern is heightened by two facts:

1) the increasing occurrences of soil contamination following accidental spills, leaks from underground storage tanks and, chemical migration from landfills [from the records of the Environmental Protection Agency we know of 58 episodes of major spills of gasoline or diesel oil in one month in California alone (January, 1983)]; and,

2) the increasing reliance of many municipalities on plastic pipes as the conduits for potable water.

In the past, such episodes of soil contamination had been thought to be rare and small in magnitude. From the EPA records we know that spills in the million-gallon range may occur monthly. In early May, 1983, the Regional Water Quality Control Board in Santa Clara reported a total of 57 major underground leaks from storage tanks containing industrial solvents and stripping solutions.

Municipalities either have been unaware of these problems or have underestimated its seriousness. San Francisco uses plastic piping in over 50 percent of its water service connections. The East Bay Municipal Utility District (EBMUD), in spite of having uncovered over a dozen such episodes since 1978, relies almost exclusively on polybutylene plastic pipe for its mains and recommends such use for service laterals.

Research done at the Anlab Laboratory in Sacramento under the supervision of Prof. Marc Lappe' of the UC Berkeley School of Public Health has shown that several major groups of hazardous chemicals can permeate different types of plastic pipe. Some of these pipes, such as polybutylene and polyethylene, are strikingly permeable to chlorinated solvents including some which are carcinogenic in animals.

At the Fairchild plant in San Jose, for instance, soils have been contaminated with chlorinated solvents like 1,1,1 trichloroethane and 1,1 dichloroethylene. Homes in the immediate

vicinity of the plume of contamination are plumbed with subsoil polyethylene (PE) and polyvinychloride pipe (PVC). PE has proven to be extremely permeable to these solvents, PVC less so.

Homes sold throughout California are commonly sprayed with lindane, a carcinogenic and teratogenic pest control agent which the EPA has just recertified for use as a structural pest control agent. The labels on several such formulations carry the instruction to spray directly on exposed pipes. Anlab studies show that prolonged contact (1-7 weeks) between PVC pipe and a concentrated lindane solution results in substantial contamination of water inside the intact pipe with this highly persistant pesticide.

Although it contains less toxic ingredients than lindane, the chemical of greatest concern remains gasoline because of its ubiquitous presence in the environment. In spite of studies done in 1978-79 by EBMUD which showed that gasoline will readily penetrate PE and PB (polybutylene) pipe, the level of concern of health officials for this now commonly recognized permeation event remains inexplicably low. A survey of water utility districts in California performed in the summer of 1983 by the Sanitary Engineering Branch of the State Department of Health Services showed that 62 percent of the representatives of districts which regularly recommend the use of plastic pipe for water lines knew nothing about State regulations which proscribed their use in the presence of petroleum distillates.

In spite of their familiarity with permeation problems with plastic pipe, the Department of Health Services failed to specify permeability when asked to indicate what public health concerns were properly within the scope of an Environmental Impact Report on expanded use of plastic pipe being conducted by the Department of Housing and Community Development. This omission is all the more questionable in the face of the fact that Robert Stephens, then the Department's head of hazardous substances, had just returned from an oversight mission in Holland where he had observed the most serious environmental episode involving plastic pipe permeation then known (Lekkerkerk).

Perhaps of greater concern, is the fact that the attorney for the Society for Plastics, Inc., failed to divulge any data about plastic pipe permeation when asked to do so by the Department of Health Services in March of 1981 following the first public reports of the Lekkerkerk event. It is clear from material submitted for the public record that such industry data were available.

Part of the lack of the Department's concern may have stemmed from the mistaken belief that problems of the magnitude of the Lekkerkerk episode (often called Europe's Love Canal) could not happen in the United States. But we know now of several episodes reported to American water districts and the EPA which have involved potential human exposure to extremely hazardous substances such as benzene as the result of permeation of plastic pipe.

Another explanation for Department passivity is the belief that the taste or odor of the water will alert consumers to the existence of a problem. Published data on odor thresholds for the chemicals of concern for permeation establish that consumers cannot be expected to detect them before they are already above the level of health concern.

A case in point is benzene, a human leukemia-causing agent. Data from the Anlab studies showed that this constituent of gasoline will readily go through PB and PE pipe walls and reach extremely high concentrations (100 ppm) after just one week of exposure. This observation could have predicted a permeation contamination episode in Columbus, Ohio, where seven people were exposed to levels of benzene well above those considered the threshold for regulatory action. For benzene in particular, the odor detection threshold is known to be substantially above this threshold, set by the EPA at 0.66 parts per billion (ppb). At 100 parts per million, the levels found by the Anlab work--albeit with pure gasoline--are over 100,000 times the action level.

The lack of response on the part of the plastics industry to the Department's request for data on permeation (March, 1981) is even less understandable, since several industry studies on the resistance of various plastics to attack by chemicals, show that they have known about the vulnerability of various plastics since the early 1960's. That they permitted water pipes to be constructed of these same materials without public disclosure of this vulnerability to appropriate public agencies is cause for concern.

Because of the gravity of the potential health hazards posed by these and other carcinogenic chemicals, and the uncertainties surrounding where and when health-threatening episodes may occur throughout the state, we believe that the following moratoria requirements and authorizations should be adopted immediately:

1) A specific moratorium on use of underground plastic

pipes for carrying potable water in and around high-risk sites in the state. These sites, to be specified by the Department of Health Services, Department of Food and Agriculture, and CalTrans, would include, but not be limited to, areas of proximity to present and abandoned hazardous waste disposal sites; land in proximity to underground chemical storage tanks; agricultural land where residual contamination with pesticides or soil sterilants may occur; and, rights-of-way at high risk for accidents or spills that contaminate soils with potentially permeating chemicals.

2) A requirement that soils at all major construction sites and rights-of-way in which contractors intend to use plastic pipe be monitored prior to use to determine the presence of significant levels of permeating chemicals.

3) A directive to the Department of Health Services to rigorously enforce relevant statutes and regulations dealing with the siting of water mains and service laterals.

4) A notification requirement that householders whose service lines have been plumbed with plastic be warned of the health risks associated with permeation of toxic chemicals from contaminated soil.

5) A requirement that CalTrans and other emergency agencies notify local water utilities known to use plastic pipe of any spill or leakage of hazardous chemicals which can permeate plastic piping (A model notification request for PCB permeation of PB pipe was recently developed by the North Marin County Water District).

6) A requirement that the Department of Food and Agriculture monitor agricultural soils for residual contaminants which can permeate underground plastic irrigation pipes and thereby recontaminate crops or workers (examples include DBCP and dichloropropanes). And

7) An authorization for the Department of Health Services to modify its existing regulations proscribing the use of plastic pipe where petroleum distillates are present to encompass all classes of chemicals known

to permeate plastic pipe.

We believe that the health and welfare of California citizens will be substantially served by taking the steps outlined above to offset the real and potentially damaging health threat posed by the permeation of plastic water pipes by toxic organic chemicals.

INCIDENTS OF PERMEATION OF PLASTIC WATER SUPPLY LINES

SITE	NUMBER OF EPISODES
East Bay Municipal Utility Districts, Oakland, California: Reports of at least twelve specific incidents of potable water being contaminated by gasoline distillates via permeation of plastic pipe. Specific types of plastic pipes permeated are unknown at this time.	12
Marin Municipal Water District, Corte Madera, California: Episodes of gasoline permeation of PB pipe at two residences.	2
North Marin County Water District, Novato, California: Permeation of PB pipe by gasoline (accident near meter) at a residence.	1
State of Delaware: Department of Health and Social Services Division of Public Health reported an episode of permeation at a shopping center of PE pipe by Tetrachloroethylene (PCE).	1
Columbus, Ohio: Shopping center, 2492 Morse Road, Columbus, reports of permeation of PE by gasoline distillates. Adverse health effects reported.	2

(2)

INCIDENTS OF PERMEATION OF PLASTIC WATER SUPPLY LINES
(Continued)

SITE	NUMBER OF EPISODES
Chattanooga, Tennessee:	
Permeation of a residential plastic service line by gasoline.	1
Lekkerkerk, Nederlands:	
See attached description. 800 Inhabitants evacuated; 270 homes contaminated.	270

CONTACT:
Raymond Leonardini
(916) 444-0223

FOR IMMEDIATE RELEASE
October 19, 1983

3

A new danger associated with the use of plastic pipe was revealed today in Sacramento at an Assembly committee hearing. Laboratory tests have shown that lindane, a carcinogenic chemical commonly sprayed on or near pipes for the control of termites and other structural pests, will penetrate the walls of some plastic pipe and contaminate drinking water according to Dr. Marc Lappe of the U.C. Berkely School of Public Health.

Testifying before an Assembly Ways & Means Subcommittee chaired by Assemblyman Art Agnos (D-San Francisco), Lappe urged the state to adopt an emergency regulation to prevent the application of lindane on or near plastic pipe.

Under California law, all structures must be treated for termites before sale or resale. The average home in California is resold every four years, according to Lappe, and lindane is the second most common chemical used for the required treatment. Lappe speculated that, by the year 1990, most Californians will have drunk water from lindane contaminated pipes.

Lappe warned the committee that "the state departments which are responsible for health and environmental protection need to conduct comprehensive examinations of plastic pipe permeation and do a better job of coordinating information amongst themselves." The testing for lindane permeation was recently completed under Lappe's supervision by an independent laboratory in Sacramento. Previous research had indicated that gasoline and other toxic chemicals commonly spilled, dumped, or sprayed in or on soil will permeate plastic pipe.

"Despite the reports of gasoline permeation episodes by three different California utility districts and independent confirmation of my findings by the American Water Works Service Co. in New Jersey, the state has attempted to ignore this serious health hazard," Lappe charged.

Agnos had called the hearing in response to an unreleased report by the Department of Consumer Affairs that the Department of Health Services and other agencies had failed to properly protect drinking water quality in a housing tract developed near the McColl hazardous waste site in Fullerton. The hearing also questioned the Governor's veto of a Budget Bill appropriation which would have commissioned a study of pipe permeation.

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LINDANE

Common Name: Lindane

Synonyms: Hexachlorocyclohexane; gamma benzene hexachloride; BHC

Uses: Fumigant in homes and gardens* (See attachments); control of body lice

*Approximately 29,000 pounds of Lindane were used for structural pest control in California in 1981. Pesticide Use Report, Dept of Food and Agriculture, State of California, 1981.

Type of Chemical: Organochlorine (chlorinated hydrocarbon)

Chemical and Physical Properties: Colorless; persists in environmeant for approximately 10 years**

** An Assessment of the Health Risks of Seven Pesticides Used for Termite Control. Committee on Toxicology, Board on Toxicology and Environmental Health Hazards, Commission on Life Sciences. National Academy Press, Washington, D.C. August, 1982.p.3.

LD_{50}: Acute oral: 88 mg/kg. in male rats*

*Thomson, W.T. Agricultural Chemicals, Thomson Publications, California. 1977.

Antidote: No antidote available

Acute Health Effects: As an organochlorine, lindane may disrupt the function of the nervous system, principally that of the brain. Acute symptoms may include headache, disorientation, apprehension, weakness, muscle twitching and convulsions. Chlorinated hydrocarbons are fat soluble and may be stored in human body fat.

Morgan, D.P., 1977. Recog. & Mgmt. of Pesticide Poisonings, U.S. EPA, Washington, D.C.

A 2-year-old boy developed aplastic anemia after playing with a dog treated with lindane solution for mange.

Vodopick, H. "Cherchez la Chienne: Erythropoietic Hypoplasia After Exposure to -Benzene Hexachloride." JAMA, 234(8), 850-851, 1975.

Lindane can be absorbed through the skin.

Chronic Health Effects: Lindane has been shown to cause cancer in rats and mice.

Reuber, M.D., 1979. "Carcinogenicity of Lindane." Environ. Res. 19(2): 460-481.
Reuber, M.D., 1979. "Carcinomas and Other Lesions of the Liver in Mice Ingesting Organochlorine Pesticides." Toxicol. Annu. 3:231-256.

Lindane has been found to be mutagenic in human cell cultures and plant root tips.

Vachkova-Petrova, R.(Inst. Hyg. & Occup. Dis., Med. Acad., Sofia, Bulgaria), 1978. Mutagenna aktivnost na pestitsidite. (Mutagenic activity of pesticides). Khig. Zdraveopaz. 21(5):496-605. (Bulgarian).
Kolmark, F.C. "The Induction of Cytogenetic Changes and Atypical Growth by Hexachlorocyclohexane." Science, 109, 467-468.

Long-term administration of lindane to rats resulted in decreased fertility and produced teratogenic, carcinogenic and central nervous system effect.

Petescu, S., V. Dobre, M. Leibovici, Z. Petroscu, S.A. Ghelberg, 1974. "The Effects of Long-Term Administration of Organochlorine Pesticides (Lindane, DDT) on the White Rat." Rev. Med. Chir. 78(4):831-842.

CAUTION

May be fatal if swallowed. Harmful if inhaled or absorbed through the skin or eyes. Do not swallow or inhale vapor or spray mist or allow contact with skin, eyes or clothing.

Avoid contact with food or feeds.

If swallowed, induce vomiting by giving the victim 1 Tablespoon of table salt in a glass of water. If on skin, remove contaminated clothing and wash with soap and water; if in eyes, flush with running water. Call a physician in all cases of suspected poisoning. Do not use in dairy barns or milkhouses.

Do not use in edible products areas of food processing plants, restaurants or other areas where food is commercially prepared or processed. Do not use in serving areas while food is exposed.

This product is toxic to fish, birds, and other wildlife. Keep out of lakes, streams, or ponds. Do not contaminate water by cleaning of equipment, or disposal of wastes.

Apply this product only as specified on this label.

NOTICE — Recommendations for the use of this product are based upon information believed to be reliable to the time of printing. The storage and use of this product being beyond the control of Los Angeles Chemical Company, no guarantees expressed or implied are made as to the effects of such, or the results to be obtained. If not used in strict accordance with the recommendations and established safe and sound practice. The Buyer assumes all responsibility including any injuries and/or damages resulting from its misuse as such, or in combination with other products. No recommendations are made under abnormal storage or use conditions, or under conditions not reasonably foreseeable to the seller.

EPA REG. NO. 962-366 AA
EPA EST. NO. 962-CA-1

Lacco

HI-LIN

CONTAINS 1 LB. LINDANE PER GAL.

FOR SPOT APPLICATION ONLY

ACTIVE INGREDIENTS:

Lindane (Gamma Isomer of Benzene Hexachloride)	12.9%
Xylene	78.4%
INERT INGREDIENTS	8.7%

CAUTION

KEEP OUT OF REACH OF CHILDREN

KEEP CONTAINER CLOSED. DO NOT LEAVE IN SUNSHINE.

Do not reuse empty drum. Return to drum reconditioner or destroy by perforating or crushing and burying in a safe place away from water supplies.

WARNING — FLAMMABLE!

KEEP AWAY FROM HEAT OR OPEN FLAME

See other precautions on the back/side panel.

LOT NUMBER NET CONTENTS

1 GALLON

BYTT0579 MANUFACTURED BY

LOS ANGELES CHEMICAL COMPANY

DIRECTIONS

LACCO HI-LIN is prepared for use against certain household and structural pests as listed below. Dosages are given in terms of fluid quarts of this product.

HOUSEHOLD: 1 quart in 25 gallons as a coarse, wet spray or with a paint brush as directed for the control of the following pests. Repeat as needed to maintain effective control. May cause staining in some cases.

ANTS: Apply to ant trails, door sills, window frames, openings around water pipes, heat ducts, electrical outlets, baseboards and other areas where ants may enter rooms.

ROACHES, WATERBUGS: Apply to infested cracks, hiding places and adjacent exposed surfaces where pests may crawl when not in hiding.

MOSQUITOES: Apply to doors, door sills, screens, window frames, and other areas where the pests frequently alight.

SILVERFISH: Apply to baseboards and areas behind shelving, bookcases and storage spaces.

FLEAS: Apply to infested areas around baseboards, windows and door frames, wall cracks, sleeping quarters of household pets and localized areas of floors and floor coverings; place fresh bedding in animal quarters after treatment and do not apply directly to pets.

DIRECTIONS (Continued)

FLIES: 1 quart in 8 gallons of water. Apply to doors, door sills, screens, window frames, and other areas where pests frequently alight.

STRUCTURAL: 1 quart in 25 gallons of water, pre-construction. Apply as a coarse, wet spray, or with a paint brush. Inspect treated areas annually for signs of infestation.

SUBTERRANEAN TERMITES: Slab construction, use a solution of 1 quart to 3½ gallons of water. For treatment before gravel or cinder fill has been added, apply 1 gallon of solution per 10 square feet of soil surface. Where fill has already been added, apply 1½ gallons per 10 square feet. Conventional construction, use a solution of 1 quart to 3¼ gallons of water. Apply to trench 6 inches wide and up to 30 inches deep for buildings with deep foundations along both sides of exterior and interior foundations, around piers and under utility entrances; placing about 1/3 of the solution in the bottom of the trench with the remaining 2/3 mixed into the soil as the trench is backfilled. Use 2 gallons of solution per 5 linear feet for trenches not over 15 inches deep and 4 gallons per 5 linear feet for trenches exceeding 15 to 18 inches in depth. On voids or unit masonry walls, apply to 125 linear feet, from the surface of the soil to the footing.

CAUTION

Do not use in dairy barns or milk houses.
Keep container closed.
May be absorbed through skin.
Avoid inhalation and skin contact.
In case of contact, wash immediately with soap and water.
Avoid contamination of feed and foodstuffs.
Do not use on household pets or humans.
Harmful if swallowed.

DO NOT LEAVE IN SUNSHINE. DO NOT USE, POUR, SPILL OR STORE NEAR HEAT OR OPEN FLAME.

DESTROY OR RETURN THIS CONTAINER WHEN EMPTY.

Do not reuse empty drum. Return to drum reconditioner or destroy by perforating or crushing and burying in a safe place away from water supplies.

DIRECTIONS

LACCO LIN-O-FLY is prepared for use against certain household pests, listed below. Use as a spot treatment inside dwellings. Do not use as a general space spray or broadcast vapor. Use a coarse type spray.

ANTS: Spray around doorways, windows and cracks or openings of any kind in floor, walls or ceiling where ants might enter the room. Pay particular attention to space behind baseboards, under sinks, in cupboards and behind built-in drawers. Repeat as needed for complete control.

FLIES, MOSQUITOES: Spray to heavy dampness on and around doors, around windows, on screens and any surface on which flies or other insects congregate. Repeat often as necessary to maintain maximum killing value.

SPIDERS, CENTIPEDES: Spray infested baseboards, corners, behind pipes, storage or dark areas. Pay particular attention to basements or areas under houses, garages and storage sheds. Repeat often as needed to maintain killing efficiency of treatment.

EPA REG. NO. 962-375 AA
EPA EST. [illegible]-CA-1

Lacco

LIN-O-FLY

KILLS FLIES WITH LINDANE

ACTIVE INGREDIENTS:	
Lindane (Gamma Isomer of Benzene Hexachloride)	.50%
Deodorized Kerosene	95.10%
Toluene	4.25%
INERT INGREDIENTS:	.15%

CAUTION!

KEEP OUT OF REACH OF CHILDREN

SEE CAUTION STATEMENT TO LEFT.

LOT NUMBER 3351 NET CONTENTS 1 GALLONS

CITY 9274 MANUFACTURED BY

LOS ANGELES CHEMICAL COMPANY

DIRECTIONS (Con'L)

CRICKETS: Spray baseboards, floors of closets and storage places. Spray thoroughly around doorways and openings of any kind through which crickets might enter. Repeat each 2 to 4 weeks during heavy cricket infestations.

ROACHES, WATERBUGS: Spray around doors, windows, and into any cracks or spaces (such as around drain pipes) through which insects might enter. Pay particular attention to areas behind built-in drawers and cupboards. Repeat as needed to maintain control.

CARPET BEETLES: Spray infested areas of carpets and surrounding floor. Spray dark corners and into cracks where insects might hide. Repeat as needed.

CLOTHES MOTHS: Clothing, blankets and other woolens to be protected should be cleaned and thoroughly sprayed so as to dampen all surfaces. Pay particular attention to seams, cuffs and pockets. Dry thoroughly and place in good tight storage. Treated items should be dry cleaned before being used as clothing or bedding.

FLEAS: Spray infested areas carefully. Direct spray into cracks, crevices and other hiding places in out-houses, yards and kennels, so that all infested areas are dampened. Repeat at monthly intervals. Do not use in human habitations. Do not spray animals. Dry treated areas carefully before allowing pets to re-enter.

SILVERFISH: Spray baseboards, behind drawers or shelving, book cases and storage areas. Repeat as needed to maintain efficient control—usually about each 2 to 3 months.

NOTICE: Recommendations for the use of this product are based upon information believed to be reliable at time of printing. The use of this product being beyond the control of LOS ANGELES CHEMICAL COMPANY, no guarantee, expressed or implied is made as to the effects of such or the results to be obtained if not used in accordance with directions or established safe and sound practice. The BUYER must assume all responsibility including injury and/or damage resulting from its misuse as such or in combination with other products.

ASSEMBLY

CALIFORNIA LEGISLATURE

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ASSEMBLYMAN SIXTEENTH DISTRICT

DEMOCRATIC CAUCUS SECRETARY

CHAIRMAN
WAYS and MEANS SUBCOMMITTEE on HEALTH
and WELFARE

AGENDA

SUBCOMMITTEE #1 on HEALTH and WELFARE
OVERSIGHT HEARING on PLASTIC PIPE
WEDNESDAY OCTOBER 19, 1983
1:00 - 3:00 P.M.

Background

In July the Governor blue pencilled $200,000 for a study to assess the public impact of the permeation and infiltration of plastic pipe and pipe water mains by toxic chemicals. The study called for a comprehensive and independent literature search on permeation; the development of new test protocols to assess permeation; and risk assessment based on the likelihood and dose of human exposure to chemicals which could enter drinking water supplies.

The study designed by the Assembly was to be carried out by an independent contractor under the supervision of the Assembly Office of Research. It was to be completed by March 1, 1984, and it was funded entirely by the Hazardous Waste Control Account.

The Governor's veto message stated that the item was vetoed because it was more appropriate for the study to be funded by the pipe industry.

Major Issues

This hearing will address five critical issues relating to the plastic pipe issue.

1. How much do we know about the phenomena of permeation? Do existing studies and available information suggest that this is a serious health issue?

2. What type of studies are currently being done by industry? Are they comparable to the study proposed by the Legislature?

3. Is it prudent public policy to rely on the industries which manufacture plastic pipe and have direct financial interest in its use, to perform an important public health study?

4. Is there a legitimate need for an independent study of plastic pipe permeability? How should such a study be funded?

5. Are existing regulations being adequately enforced? Are there immediate steps that should be taken to limit or restrict the use of plastic pipe?

Witnesses

Mr. Richard Spohn, Attorney
Consumer Federation of America

Mr. Michael Paparian
Sierra Club

Mr. Marc Lappe
Coalition of Consumer Labor and Environment Groups

Resident
McColl Dump Site

Mr. Alan J. Olson
B. F. Goodrich Corp., representing the Vinyl Institute

Mr. Jim Blumencrantz
R & G Sloane, representing the Plastic Pipe & Fitting Association

Mr. Robert Harris, PhD, Co-Director
Hazardous Waste Research Program, Princeton University

Mr. Robert Fugina, Chief Deputy Director
State Department of Health Services

Mr. Harvey Collins, Chief
Environment Health Division - State Department of Health Services

SACRAMENTO ADDRESS
STATE CAPITOL
SACRAMENTO 95814
(916) 445-8253

DISTRICT OFFICE
1064 STATE BUILDING
350 MCALLISTER
SAN FRANCISCO, CA 94102
(415) 557-2253

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WAYS AND MEANS SUBCOMMITTEE ON HEALTH AND WELFARE

PLASTIC PIPE AND PERMEATION; DOHS OVERSIGHT HEARING
OCTOBER 19, 1983

BACKGROUND PAPER FOR
ASSEMBLY WAYS AND MEANS SUBCOMMITTEE NO. 1
ON HEALTH AND WELFARE

Summary

This briefing document provides background information on the phenomena of plastic pipe permeation and discusses what the state has done to restrict the use of plastic pipe. The document is organized as follows:

I. Overview of the Issue ...pg 3.

A. Types of Pipe
B. Reports of Permeation
C. Related Public Health Issues
D. Jurisdictional Issues
E. Economic Interests

II. What is Known About Permeation? ...pg 6.

A. East Bay MUD
B. Lekkerkerk
C. Housing and Community Development EIR
D. McColl Dumpsite/Coyote Hills
E. Stringfellow Dumpsite
F. Department of Consumer Affairs
G. Shell Study
H. New Studies
I. Miscellaneous Notes

III. Does California Need an Independent Study of Permeation? What are the Issues?1 ...pg 14.

IV. Are Existing Regulations Being Adequately Enforced? Are there Immediate Steps that Should be Taken to Restrict the Use of Plastic Pipe? ...pg 15.

A. Existing Regulations
B. The Need for Emergency Regulations
C. The Need for an Information Program

I. Overview of the Issue

Permeation refers to the phenomenon by which chemical substances travel through the walls of plastic pipe from surrounding soils and contaminate fluids transported within the pipe. Permeation is of concern whenever drinking water is transported by plastic pipe through soils that are contaminated with hazardous substances. The evidence demonstrates that permeation does occur, although the data necessary to determine the extent and severity of the problem is not conclusive. Uncertainty rests both with the potential frequency of the problem and with the often unknown health effects resulting from chronic (long-term) exposure to low levels of toxic substances.

A. Types of Pipe:

There are three major types of plastic pipe commonly in use for water service. The types of pipe are refered to by their prime constituents: polybutylene (PB), polyethylene (PE) and polyvinylchloride (PVC). Pipe used for water mains is generally from two to twelve inches in diameter. Pipe used to service individual customers is two inches or less in diameter. Evidence indicates that the higher the density of the molecules of the plastics used in the pipe, the lower the permeability of the walls and the lower the rate of permeation.

B. Reports of Permeation:

Permeation has been reported in California and in the Netherlands and EPA data indicates that other states have also experienced permeation problems. Alleged incidents of permeation have been connected to contaminated soils in the vacinity of both the McColl and Stringfellow dumpsites. Permeation could also be a problem if plastic pipe is installed to carry drinking water near any of the hundreds of other identified California sites with known soil contamination.

The experience of one major California water utility demonstrates that the installation of plastic pipe in localized areas subject to soil contamination from the spillage of gasoline can lead to permeation. Other situations of concern include: a) cases in which pipe is installed in new housing developments located on old

agricultural lands that have [illegible]
persistant pesticides; and b) application of common pesticides in a residential setting. In summary, the preconditions for permeation may be a common feature of residential and urban settings.

C. Related Public Health Issues:

Permeation is only one of several public health issues related to the use of plastic pipe. One major concern is the contamination of tap water from the leaching of plasticizing agents which are used in the manufacture of plastic pipe, and of solvents and glues used in connecting pieces of pipe. There are also concerns about toxic fumes that are generated during structural fires. Leaching and plastic fumes are major issues in an EIR being developed by SRI International for the State Department of Housing and Community Development (HCD). By contrast there is no scientific study of permeation being carried out in California.

D. Jurisdictional Issues:

Jurisdiction over the use of plastic pipe in California involves a split at the property line of the individual homeowner. The laying of water mains and the delivery of water up to, and away from the property line is regulated by the Sanitary Engineering Branch of the Department of Health Services (DOHS). The use of plastic pipe inside of the property line and within buildings is regulated by HCD. The failure to properly evaluate the threat of permeation in the five years that DOHS has known of the concern, and the failure to take appropriate preventive action, is partially due to this split in jurisdiction. In larger part, DOHS's failure on permeation is a function of:

- o very poor follow through once regulations are developed;
- o a tendency to downplay the potential severity of public health threats and;
- o understaffing.

E. Economic Interests:

The debate on permeation is often clouded by the large economic interests involved in the issue. Plumbers unions have generally been opposed to the use of plastic pipe on several grounds including:

- occupational health issues involved in using glues that contain synthetic organic compounds to join pieces of pipe and;

- public health issues of fire safety, leaching and permeation.

In addition, plastic pipe is generally less expensive than metal pipe and is more easily installed, particularly by homeowners and other nonprofessional plumbers that can use glue and avoid the soldering necessary with metal pipe. Plumbers have not been vocal in raising potential health concerns with nonplastic pipe. Yet there are also occupational and public health issues related to the use of asbestos in pipe, and the lead and cadmium used to solder metal pipe.

II. What is Known About Permeation?

The following is a summary of incidences of contamination and studies related to permeation. Events are presented chronologically where possible.

A. East Bay MUD:

In the late 1970's the East Bay Municipal Utility District (EBMUD) began to receive complaints about drinking water tasting and smelling of petroleum. After investigating several complaints EBMUD concluded that gasoline and other petroleum distillates must have been present in soils into which plastic water mains and service pipes were installed, and that these chemicals permeated through the walls of the pipe and into the tap water.

EBMUD conducted laboratory studies demonstrating that permeation occurs when PE and PB plastic pipe is allowed to soak in a solution of gasoline diluted with water. Results of an identical test of permeation through PVC pipe were negative. Several of the first incidents of petroleum distillate permeation were linked to: (1) the uncontrolled drainage of materials used to clean motorcycles and the corrosion of asphalt, and (2) the contamination of soil caused by the spillage of gasoline from the tanks of automobiles parked on a steep hill.

A third reported incident of permeation in the EBMUD service area involved the presence of butyl mercaptan in tap water. Mercaptans are added to natural gas to produce an odor for safety reasons. The mercaptans apparantly permeated from a natural gas service pipe made of PE and through a PB water pipe with which the gas pipe was in direct contact. EBMUD conducted a simple laboratory test of permeation using butyl mercaptan and PE pipe. Strong mercaptan odors were detected in several of the samples.

Several aspects of the EBMUD experience deserve note:

- Although one of the reported cases of permeation occurred on the premises of an operating chemical manufacturing plant, EBMUD did no test for substances other than gasoline and butyl mercaptan.

- The EBMUD lab tests demonstrate that permeation occurs. There was no attempt, however, to quantitatively correlate concentrations of specific substances with the rate of permeation for each type of pipe.

- EBMUD conclusions that permeation is not a common phenomenon because of the relatively low number of reported cases may be erroneous. As the utility notes, permeation will not likely be reported unless the taste or odor of the tap water is adversely affected. Thus there may be unreported incidents of permeation that involve substances at concentrations too low to be detected by end users.

- A number of the EBMUD incidents involved contaminated soils on the property of the building involved. There is serious concern that the application of pesticides near a residence, particularly fumigation with lindane and chlordane for termite or ant control, may increase the likelihood of the permeation of service pipe running through soils within the property line. One consultant notes that it is common practice when fumigating for termites to deliberately spray both the soil and any pipes entering the house.

- The EBMUD permeation experiences resulted in the 1979 promulgation of PG&E regulations prohibiting the use of plastic pipe in soils contaminated with petroleum distillates.

B. Lekkerkerk:

Lekkerkerk is a town in the Netherlands that experienced what appears to be the most serious reported incident of permeation. PE pipe was installed in Lekkerkerk in soils that were heavily contaminated with a variety of substances including known carcinogens. Many of the buildings were located on top of an old chemical waste dump. Trichloroethylene (TCE), for instance, was found in concentrations of from 140 to 160 parts per million (ppm). In 1980, 800 inhabitants were evacuated from 270 houses which were then put up on piles while the contaminated soil, totalling 150,000 tons, could be removed.

Dutch scientists subsequently did several studies of

permeation. One was a 1981 study of the permeation of gaseous methyl bromide through PE, PB and PVC pipe. An incident of suspected permeation involved this soil disinfectant which is commonly used in both the Netherlands and the U.S. PVC pipe was found to be the most resistant and of the three was the only one that did not permeate. These results are of concern in California because of the chemical similarity of methyl bromide to ethylene dibromide (EDB). Although EDB is now being banned for use by the EPA, the substance is very persistant and has been used for many years on California soils.

C. Housing and Community Development EIR:

The Department of Housing and Community Development is currently preparing an EIR on the impacts of expanding the legal uses for plastic pipe in residential buildings. Legal use is currently restricted to effluent and prohibits the use of plastic pipe to deliver potable water. Development of the EIR began in 1978 with the formation of a task force chaired by HCD and including representatives of DOHS, Consumer Affairs, Cal-OSHA, the Fire Marshall, the Pipe Trades Council (plumbers), the California Building Trades Council, a plumbers union and several manufacturers of plastic pipe. The study is being conducted by SRI International and funded by the Society of the Plastic Industry.

Although SRI identified permeation as an important public health concern, HCD does not want to include the issue in the EIR because:

- o the concern was brought up too late in the process;
- o too much basic scientific research is required before permeation can validly be evaluated in an EIR and;
- o the issue is outside of HCD's jurisdiction. Despite ongoing efforts of the Pipe Trades Council and a coalition of environmental and consumer organizations, it is not clear that the EIR is the proper forum for a study of permeation. The EIR focusses on the use of pipe in buildings and permeation occurs outside of residences.

D. McColl Dumpsite/Coyote Hills:

In 1981 residents of the Coyote Hills housing development near the McColl dumpsite began to complain of petroleum odors and tastes in their drinking water. Little was done at either the local or the state level to respond to these concerns. Two years later, during the summer of 1983, DOHS finally conducted water sampling and laboratory analyses of Coyote Hills tap water. Although DOHS concluded that permeation probably is not a problem in this Fullerton community, the report has been criticized by local residents and the Pipe Trades Council. Specific objections to the study include:

- o Water was only allowed to accumulate in the plastic service lines for two hours. Such a short period may not adequately reflect actual residential use, tending to understate any permeation.

- o No soil testing was done in the vacinity of the plastic pipe from which water entered the houses.

- o Instead of testing a random number of houses, essential for statistical validity, DOHS allegedly tested the first twelve houses they came across.

- o The Department never took the measurements of water flowrate necessary to assure that the sampled water came from the service pipe, where it was supposed to be static for two hours.

The Department found extremely low levels of one or more of three toxic organic compounds (toluene, styrene and tetrahydrofuran) in the water of three houses. The Department concluded that although the source of the substances is unknown, none of the substances is related to the oilfield wastes that contaminate the soils of the area, and that permeation is not demonstrated to be occuring. McColl residents will vociferously dispute the results of the DOHS study. The Department intends to do further water sampling at the Coyote Hills subdivision. The nature of this testing has not been announced.

E. Stringfellow Dumpsite:

Permeation has also become a concern at the Stringfellow dumpsite. In 1978 the regional water board released part of the liquid contents of one of the Stringfellow ponds during a heavy rainstorm in order to avoid a breaching of the pond walls. The effluent ran down the canyon and across a portion of the playground at the Glen Avon school. Synthetic organic compounds have recently been found in water from the school drinking fountains. It is possible that some of the Stringfellow wastes may have percolated into the school's soils and permeated plastic water service pipe.

F. Department of Consumer Affairs:

The Department of Consumer Affairs has been involved in the issue of permeation in several different contexts:

- In mid-1982 Dr. Marc Lappe, a consultant for Consumer Affairs during the Brown Administration, learned of the Lekkerkerk incident and obtained a copy of the EBMUD studies that had been part of the hearing record for the DOHS regulations. Lappe designed a protocol, working with Consumer Affairs and funding from the state Building Trades Council, to duplicate the EBMUD tests on petroleum distillates and to test a broader range of organic compounds including solvents and pesticides. As with the EBMUD studies, the aim was to qualitatively rather than quantitatively, demonstrate the threat of permeation. The work was conducted by AnLab, a independent laboratory in Sacramento, and the results were relesed by Consumer Affairs in December 1982.

The results included:

- o In testing permeation of pipe with soil saturated by gasoline, AnLab found that benzene (a potent carcinogen) accumulated in pipe at levels of up to 100 ppm in one week. The federal regulatory action level for benzene in drinking water is approximately ten thousand times lower.

- o In testing a range of pesticides, AnLab obtained negative results for chlordane, but positive results for lindane. This result raises serious questions regarding common methods of ant and

termite control that include spraying pesticides on water pipes.

- In the spring of 1983, Gus Koehler, then a research analyst with Consumer Affairs, learned of the experiences of McColl area residents. Koehler researched and wrote a paper entitled, "Plastic Water Pipe in Coyote Hills: A Case Study of Regulatory Failure", that became available in draft form in August 1983. The Koehler study is as an indictment of a state regulatory structure that is intended to protect the public health. The report demonstrates the ineffectiveness of the existing DOHS permeation regulations, due largely to lack of enforcement, and the finger pointing concerning the lack of soil testing prior to the installation of plastic pipe between the developer, the water agency and county health officials. Koehler has since been removed from his post at Consumer Affairs and shuffled to a desk with no phone in a different department.

G. Shell Study:

In July 1983 the Governor vetoed budget item 4260-001-014 which would have allocated $200,000 from DOHS' Hazardous Waste Control Account for an independent study of permeation. Department representatives testified in budget hearings that such a study would be useful.

DOHS is now working with Shell scientific staff at the firm's corporate headquaters in Houston to develop a protocol for a study to be both funded and conducted by Shell. Department spokepersons have indicated that Shell and DOHS are a long way from agreement about the initial protocol submitted by Shell. For example, Shell does not want to test soils contaminated above 1 part per million. In practice, soil is often contaminated at levels far in excess of this.

A number of questions are unanswered:

- o What was the impetus for the veto of the budgeted study and the Shell study? Did Shell offer to do the study or was the firm approached by the Administration?

- o How will the Shell study address the fundemental issue of permeation if it involves only one type of pipe, PB, of which Shell is the major manufacturer? Does the Department have any plans for more exhaustive study of permeation?

- To what degree will DOHS be able to exercise control over a study that is funded by Shell and is conducted in Texas? Will this study just be another example of suspect results from private testing by an affected industry?

The Shell study is already controversial. The Department contends that no actual work has been done by Shell and that only the protocol is now under discussion. The Pipe Trades Council asserts, however, that Shell has already conducted testing and is unhappy with the results. This controversy highlights the dangers of relying on a study such as Shell's as the basis for major public health decisions.

B. New Studies:

The results of several new studies are now becoming available including:

- Recent laboratory studies by a New Jersey utility, the American Water Works Company, strengthens the case on permeation. American Water Works conducted tests using substances present in low concentrations in the gaseous phase, rather than soil saturated with liquids. One major result is that PE, PB and PVC all were permeated by a gaseous solvent in periods ranging from one day to one week.

- AnLab, with funding from the Pipe Trades Council, has replicated its 1982 experiments using tighter controls to avoid any possible entry of substances through the joints between the pieces of pipe, rather than through the walls. The results, to be released at the hearing, include:

  - The degree and rate of permeation appears to be a function of identifiable chemical characteristics of a permeant. Constituents of gasoline, such as benzene, and chlorinated solvents permeate readily while pesticides permeate more slowly.

  - In order of the threat of permeation, PE pipe poses the greatest danger, PB pipe is of intermediate danger, and PVC appears to pose the least threat.

- o California Analytical Labs, also under contract to the Pipe Trades Council, is conducting tests on a carbon water filter from one of the McColl area houses sampled by DOHS. The results, also to be released at the hearing, indicate the presence of over thirty organic chemicals, including a number of benzene-related molecules. Some of the chemicals are known or suspected carcinogens. A number of the chemicals are related to crude petroleum and could probably be linked to the McColl wastes.

I. Miscellaneous Notes:

Ray Leonardini's group, the Pipe Trades Council and a coalition of organizations including Friends of the Earth, Citizens for a Better Environment and the Consumer Federation of California, is suing the International Association of Plumbing and Mechanical Officials (IAPMO). IAPMO is developing rules governing the installation and use of plastic pipe. Although the rules do not have the weight of law, it is common for IAPMO rules to be incorporated into state building codes. The suit is now in the discovery phase and is expected to go to trial in Los Angeles in December.

IAPMO contends that sufficient data exists to certify plastic pipes as safe. The plaintiffs assert that there is insufficient data and that the development of the rules is premature.

III. Does California Need an Independent Study of Permeation? What are the Issues?

There are significant drawbacks to relying on an industry organization to both fund and conduct a study of permeation. The Shell study will examine only PB pipe, of which the company is the major manufacturer. In addition, representatives of DOHS indicate that Shell and the Department are far from agreement on the protocol initially submitted by the firm. The State has little if any leverage over research funded and conducted by a private firm. Is the public good served by a prolonged study that addresses only part of the issue? The results of the Shell study will be inconclusive for all parties except Shell.

IV. Are Existing Regulations Being Adequately Enforced? Are there Immediate Steps that Should be Taken to Restrict the Use of Plastic Pipe?

A. Existing Regulations:

In 1979 the Sanitary Engineering Branch promulgated two new regulations relating to the permeation of plastic pipe. These regulations were the direct result of studies by East Bay MUD, and were added to Title 22, Article 5, Water Mains and Appurtances.

- Section 64624 (f) states that:

  "Plastic pipe shall not be used in areas subject to contamination by petroleum distillates."

- Section 64630 (g) states that:

  "Installation of water mains near the following sources of potential contamination shall be subject to written approval by the Department on a case-by-case basis:

  (1) Storage ponds or land disposal sites for waste water or industrial process water containing toxic materials or pathogenic organisms.

  (2) Solid waste disposal sites.

  (3) Facilities such as storage tanks and pipelines where malfunction of the facility would subject the water in the main to toxic or pathogenic contamination."

B. The Need for Emergency Regulations:

The scope of existing regulations appears to be inadequate to protect public health from toxic contaminants. Existing regulations apply only to petroleum distillates and exclude many solvents, pesticides and other toxic substances that can permeate plastic pipe.

Section 64624 should be expanded beyond petroleum

distillates to include all hazardous substances, including wastes. In addition the regulations could require:

- o certification that soil has been tested prior to installation of plastic pipe
- o that end users of water receive notice from the entity installing the pipe that plastic pipe has been used and that in the event of contamination of adjacent soils delivered water could become contaminated through permeation.

C. The Need for an Information Program:

The Department has no procedures to inform affected parties of the permeation regulations. A Department survey of water utilities found very poor knowledge of the regulations. It is unlikely that housing developers have any knowledge of the regulations. In the case of the alleged permeation in the vacinity of McColl, there were three forms of regulatory failure.

- o The contractor was unaware of Section 64624 which prohibits the use of plastic pipe in areas subject to soil contamination.
- o The water purveyor relied on the contactor to inform him of any soil contamination.
- o Despite the proximity of the McColl dumpsite the water purveyor did not request the Department's permission to install plastic pipe, in violation of Section 64630.

DOHS should develop procedures to:

- o Inform water utilities and contractors of their responsibilities under the permeation regulations.
- o Utilize data from a variety of sources within the Department, and from the regional water boards and the State Waste Management Board, to aid local governments in locating sites of known or potential contamination. This data base should include information on abandoned sites, underground storage facilities, solid and industrial waste disposal facilities and liquid waste surface impoundments.

PRESS INFORMATION

for

WAYS & MEANS SUBCOMMITTEE NUMBER 1
ART AGNOS, CHAIRPERSON

HEARING ON PLASTIC PIPE PERMEATION

1 p.m. Room 437

October 19, 1983

Presented by:

The Consumer Federation of California, Friends of the Earth, Citizens for a Better Environment, The Natural Resources Defense Council, and the California Pipe Trades Council

Coordinator:
Raymond J. Leonardini
(916) 444-0223

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ENCLOSURES

1. Joint Statement of Environmental, Consumer and Labor Coalition on Health Risks in Permeation

2. List of permeation episodes

3. Press Statement, Fact Sheet and Labels re Lindane permeating plastic water pipes.

4. E.P.A. Description of major permeation event--Lekkerkerk

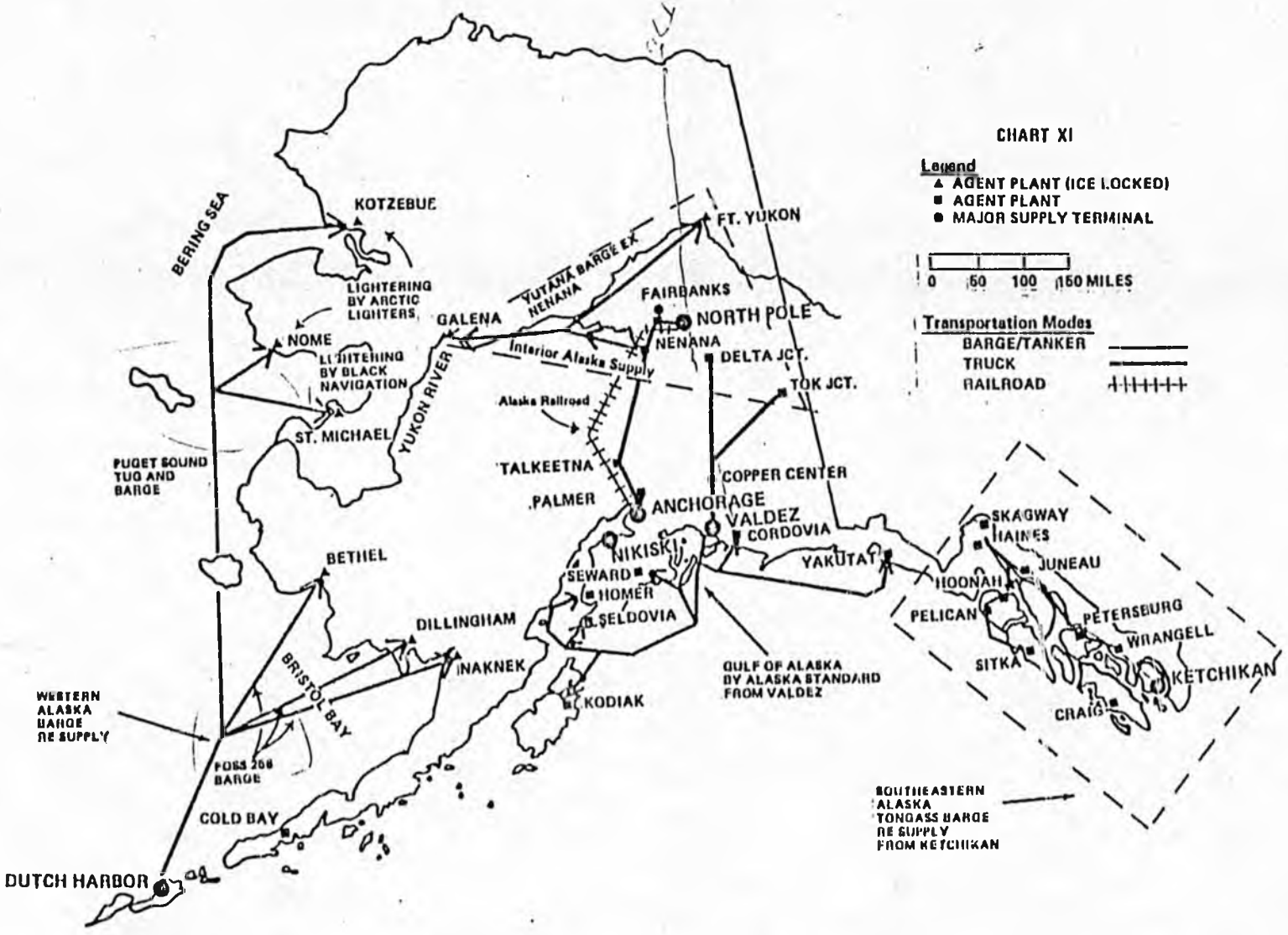
5. Summary of ANLAB Test Data of Permeation

6. Commonly asked questions on the permeation problem.

HB

509

Alaska Secondary Distribution



FISCAL NOTE

Revision Date:

REQUEST
Bill/Resolution No.: HB 509
Title: "An Act relating to aviation fuel refiners;..."
Sponsor: Repr. Hurlbert
Requestor: House Labor & Commerce
Date of Request: 3/28/84

FISCAL DETAIL
Agency Affected: Department of Law
Program Category Affected: General Government
BRU, Program or Subprogram(s) Affected: Legal Services Operations

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	-0-	-0-	-0-	-0-	-0-	-0-
PART-TIME						
TEMPORARY						

SOURCE OF FUNDS TO OFFSET FISCAL IMPACT OF BILL:

ANALYSIS: Attach a separate page for analysis

Prepared By: Richard I. Pegues, Director (Richard I. Pegues)
Phone: 465-3672
Division: Administrative Services Division
Date: 3-28-84

Approved by Commissioner: Norman C. Gorsuch (Richard I. Pegues, for)
Date: 3-28-84
Agency: Department of Law

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

12/1/83

Fiscal Note
Analysis
HB 509

March 28, 1984

This bill amends Alaska's Code of Civil Procedure by exempting aviation fuel refiners from liability in a civil action for injuries resulting from the use of contaminated or impure fuel unless the fuel refiner intentionally, recklessly, or through gross negligence, causes or contributes to an injury. This exemption from liability would also not apply when an aviation fuel refiner transfers aviation fuel directly into the fuel tanks of an aircraft. This bill also amends Title 45, Trade and Commerce, to provide that an aviation fuel refiner may not refuse to sell aviation fuel solely because the purchaser provides drums of 50 gallons or more into which the aviation fuel is to be delivered.

Enactment of this bill will probably not have any direct fiscal impact on the Department of Law because it deals with private sector liability matters rather than the legal operations of state government. State funds could be significantly impacted, however, in a more indirect manner.

If, for instance, a major aircraft disaster occurred at a state operated airport, the state could be one of several parties with potential liability. When another party is shielded from liability, as is provided for in this bill, that portion of the liability that is shielded is not extinguished but, rather, it is transferred to the remaining liable parties. In this event, the total potential liability would be shouldered by the remaining parties, including the state, but excluding the aviation fuel refiner, even though contaminated or impure fuel might be a contributing cause. Because there are so many uncertainties involved in assessing potential liability, the cost of such an eventuality cannot be estimated. Consequently, no fiscal impact has been shown in this analysis.

MEMO

FEBRUARY 28, 1984

TO: JOHN

FROM: KEN

RE: HB 509

DUE TO ADDITIONAL CHANGES IN THE LANGUAGE OF HB 509 "RELATING TO AVIATION FUEL SUPPLIERS", THE COMMITTEE SUBSTITUTE IS STILL IN THE DRAFTING STAGE. HB 509 HAD BEEN PLACED ON TODAY'S CALENDAR. IT WILL BE RE-SCHEDULED SOON.

ALASKA STATE LEGISLATURE
HOUSE OF REPRESENTATIVES
RESEARCH AGENCY

Pouch Y, State Capitol
Juneau, Alaska 99811
(907) 465-3991

January 12, 1984

TO: Representative John Cowdery
ATTN: Merrill Sikorski

FROM: Nancy Pease *Nancy Pease*
Legislative Analyst

RE: Product Liability Laws for Aviation Gasoline
Research Request 83-249

Merrill Sikorski of your office requested information regarding product liability for aviation gasoline in other states. He expressed a special interest in legislation that would limit the liability of suppliers and distributers of aviation gasoline.

I contacted Chevron USA, the Office of Air Worthiness Standards of the Federal Aviation Administration (FAA), the Aircraft Owners and Pilots Lobbying Association, and the aeronautics and consumer protection agencies in Alaska and five other sta es. It appears that no states have laws which limit product liability for aviation gasoline. However, several of the agencies I contacted mentioned other issues regarding the quality control of aviation fuel which may be of interest to you.

According to Thomas Horess, manager of the Propulsion Branch of the FAA's Office of Air Worthiness Standards, the FAA has seen no need to federally regulate aviation gasoline in the past. However, since August of 1982, the FAA has authorized the use of high octane automobile fuel in 12 or more models of general aviation engines and airplanes. As a result, concern has increased in several states over liability for auto fuel used in aviation. Automobile fuel normally is not subject to the strict quality controls that assure the purity of aviation gasoline. The FAA stipulates that automobile gas used in aircraft be handled according to the American Society of Testing and Materials (ASTM) standards for aviation gasoline. However, Mr. Horess said that the gasoline industry has difficulty controlling product quality at the gas station distribution level, a problem that has raised concern about product liability for the fuel suppliers.

Pat Chapman, a researcher fo. the Aircraft Owners and Pilots Lobbying Association, also mentioned the issue of product liability for automobile fuel used in aviation. Mr. Chapman noted that the fuel manufacturers are increasingly concerned over major settlements and awards in product liability lawsuits, but he could find no legislation addressing the issue in other states.

Jim Day of Chevron's public affairs office in Anchorage reported that he was not aware of any efforts to legislate limits to liability for aviation fuel. However, Mr. Day mentioned that Chevron had refused to supply some remote fueling sites in Alaska in instances where facilities were inadequate to assure against fuel contamination. According to Mr. Day, general aviation in Alaska involves unique fuel liability situations which are not likely to have arisen in other states.

Mr. Sikorski indicated that he thought Ohio might have a law limiting the product liability of aviation fuel, but I could find no such law in the Ohio Revised Code or through talking with numerous Ohio state agencies. I contacted aeronautics and consumer protection agencies in four other states with similar negative results.

While no states have limited the liability for fuel products, approximately 15 states have adopted ASTM quality standards for the production and handling of petroleum products, and a few states have developed fuel inspection programs.[1] Otherwise, states have little involvement in regulating fuel quality.

I am still trying to contact the Product Liability Defense Bar, an association of attorneys based in Washington D.C. If they can provide any further information on this issue, I will certainly pass it on to you. However, it appears that no states have passed legislation to limit product liability for aviation gasoline.

If we can assist you further on this or other issues, please feel free to contact us.

NP

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[1] Brad Parker, investigator for the Alaska Consumer Protection Agency, telephone conversation, December 20, 1983.

MEMORANDUM

RE: HB 509 - Aviation Fuel Liability

The importance of aviation, both commercial and general, to Alaskan communication and commerce cannot be overstated. It is common knowledge that more air miles per resident are flown in Alaska than in any other state; indeed, aviation is the only mechanism by which modern commerce and communication can be undertaken to the vast majority of Alaskan locations.

1. Marketing Aviation Fuels in Alaska.

In order to fuel the ever growing aviation traffic in Alaska, it has become necessary to develop an enormous marketing system to distribute the relatively few gallons of aviation fuel to many geographically diverse locations across the state. However, because of the increasing exposure to liability from the sale of aviation products, many companies have removed themselves from the Alaskan market. Due to the relatively low volume, and geographically diverse, aviation fuel market in Alaska, the increased exposure to liability has resulted in a declining incentive to market aviation fuel in the state.

This is particularly true with aviation gasolines, as opposed to jet fuels. For the most part, jet fuels are used in commercial aviation where the volume sales are high, and the geographical distribution is not as great. Aviation gasoline constitutes a relatively minor portion of the total market for aviation fuels. On the other hand, because of its low volume, the relative multitude of individual sales, and the geographical diversity of the ultimate customers, aviation gasolines account for the greatest exposure to liability in the aviation fuel market.

For example, in 1981, Chevron U.S.A. Inc., the largest marketer of aviation fuels in the state of Alaska, sold a total of 375 million gallons of aviation fuel in the state. Of that total, jet fuel sales accounted for 360 million gallons. Only 15 million gallons of aviation gasoline were sold. As stated before, although aviation gasolines account for only 4% of Chevron's annual aviation fuel sales, these sales provide by far the greatest exposure to liability.

2. Aviation Fuel Refiners - Unprecedented Exposure to Liability.

Aviation fuel refiners are at an unfair disadvantage with respect to the sale of their products as opposed to the sale of other products by other companies. The exposure to liability is much greater than with almost any other product because of the serious consequences of any aviation accident.

The court's development of the strict liability theory for defective products has created a legal situation wherein the refiner is virtually guilty until he proves himself innocent.

Because most refiners are large companies, the Deep Pocket Theory invites plaintiffs' attorneys to join them in actions even were liability is unlikely. Refiners may at times find it more economical to settle a case than spend thousands in defense, even when they believe there is no liability.

Even where the refiner is successful in defending such cases, the court's award of costs and attorneys' fees rarely represents even one-half of the actual expenditures. This, of course, does not even consider the in-house costs of the refiner in investigative and administrative endeavors related to the litigation. In addition, where the court makes a cost award for attorneys' fees and costs incurred in defending such an action, collection of the award is never guaranteed and often is not possible.

Examples of the effect of this increased exposure to liability are not difficult to find in Alaska. In 1980, Texaco quietly withdrew from the aviation fuel market because of the potential liability it faced. This removal prompted a letter from Governor Hammond to Chevron U.S.A. Inc., asking that Chevron do everything possible to remain in the aviation fuel market, and inquiring as to whether there might be any assistance the State of Alaska could render in that regard.

Union Oil Company withdrew from the aviation fuel market in Southeast Alaska sometime ago for the same reason. Others may do the same thing in Southcentral Alaska as a result of the Spernak Airways incident.

In that case, a plane carrying four people crashed on take-off at Merrill Field in Anchorage. It was determined that the cause of the crash was water in the gas lines of the airplane. According to the investigator for the National Transportation Safety Board (NTSB), the source of the water which contaminated the plane's fuel lines was the storage tanks kept by Spernak Airways at Merrill Field. Spernak Airways maintained a $500,000 general liability policy, and has settled the case for the policy limits. However, in spite of the NTSB's findings that the source of the water was the Spernak storage tanks, Union Oil was sued for damages in the amount of $5,000.000.

3. The Use of Barrels in the Distribution of Aviation Fuels.

In an attempt to reduce its exposure to liability, Chevron has declined to place aviation fuel in used barrels for distribution to the popular aviation market. Chevron continues to market aviation fuels in new barrels only in Alaska, and only as an accommodation to the unique reliance this state has on general aviation in remote areas where the most practical means of supply is by barrel. In all other states, Chevron will not sell aviation fuel in a barrel.

In this regard, it should be noted that there is no such thing as a "sealed barrel." All barrels, whether new or used, are susceptible to moisture contamination particularly when they are stored outside in the widely fluctuating temperatures encountered in Alaska. During such fluctuations, when moisture is present on top of the barrel near the bung hole, moisture can be pulled right through the threads on the bung with the expansion and contraction of the barrel. There in thus no guarantee that uncontaminated, clean, dry fuel purchased in a new barrel will remain so when it is stored improperly.

Typical supply routes of aviation fuel in rural Alaska include the following:

A) Direct purchase by the consumer from a Chevron-owned bulk plant - such as the bulk plants located at Kotzebue, Nome and Bethel.

B) Purchase by a Chevron aviation fuel dealer from a Chevron-owned bulk plant and sale by the Chevron aviation fuel dealer to the consumer.

C) Purchase by anyone acting as a "middleman" from a Chevron-owned bulk plant or a Chevron aviation fuel dealer and sale by the middleman to the consumer or to another middleman - such an ultimate sale by the middleman would be of unbranded product.

Chevron has learned that some of its dealers and some "middlemen" who buy aviation fuel from Chevron have (while not be under any obligation to do so) adopted Chevron's policy of declining to deliver aviation fuel in used drums supplied by the customer.

A recent example may help to illustrate the complex supply routes and the impact on rural residents.