

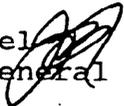
UNITED STATES GOVERNMENT

U.S. CONSUMER PRODUCT  
SAFETY COMMISSION  
WASHINGTON, D.C. 20207

MEMORANDUM

June 18, 1993

TO : Joseph Z. Fandey, Engineering Sciences

Through: Jerry G. Thorn, General Counsel   
Richard W. Allen, Assistant General Counsel 

FROM : Joseph F. Rosenthal, Attorney 

SUBJECT: Gas Appliance Manufacturers Flammable Vapors  
Consumer Awareness Campaign

You have asked whether the Commission can appropriately support the above campaign. As discussed below, I see no legal impediments to doing so.

The campaign, sponsored by the Water Heater Division of the Gas Appliance Manufacturers' Association, is designed to disseminate information to the public about the fire hazards associated with liquids that give off flammable vapors -- specifically, gasoline. The principal themes are: don't use gasoline except as a motor fuel; don't use or store it indoors; don't let children handle it; keep it in closed containers; and don't refuel hot lawn mowers. GAMA is presumably doing this because gasoline vapors tend to flow horizontally and downhill, and are as likely to reach the pilot light of a gas hot water heater as any other potential source of ignition. A secondary theme is avoiding scalds by keeping hot water temperature below 125 degrees and getting the current gas hot water heater warning label attached to older heaters.

The materials I reviewed is a kit apparently intended for members of the GAMA. It includes a videotape and samples of printed materials to be used in the campaign. The videotape includes a short speech about the campaign by a GAMA official, the public service spots that will be distributed to television stations, and illustrations of some of the printed materials that will be distributed to schools, for example. The printed materials in the kit include materials for classroom use by children and their teachers. Finally, there is a list of trade publications in which GAMA will place advertisements seeking support for the campaign.

Only two products are specifically mentioned in these materials: gasoline and gas hot water heaters. (Generic references to other flammable liquids are not identifications of consumer products.) The Commission has previously publicized the fire and explosion hazards of gasoline and the scald hazards of hot water heaters, and gas hot water heaters are the very products produced by the sponsors of this public safety campaign. Accordingly, no 6(b) problems are seen.

If GAMA or the staff wishes the Commission to endorse the GAMA program, they should submit their request to the Commission for its approval.

C



U.S. CONSUMER PRODUCT SAFETY COMMISSION  
WASHINGTON, D.C. 20207

May 24, 1993

Mr. C. Reuben Autery  
President  
Gas Appliance Manufacturers Association  
1901 North Moore Street  
P.O. Box 9245  
Arlington, VA 22209

Dear Mr. Autery:

Chairman Jacqueline Jones-Smith has asked me to reply to your letter regarding CPSC's endorsement and/or promotion of the GAMA Water Heater Division's Safety Awareness Campaign [on gasoline ignition, handling and storage to prevent ignition by water heaters and other sources]. The request necessitates formal consideration and balloting by the Commission. It is my intention to request staff resources to prepare the necessary papers for the Commission to consider and decide the extent to which CPSC support can be described in your literature.

Thank you for your interest in product safety as demonstrated by the materials you have developed and presented. As further events take place, I will keep you informed.

Very truly yours,

  
Joseph Z. Fandey  
Project Manager

injury incidents which involve flammable vapors around the home; however, staff believes that the program will, at best, be only partially effective. Staff believes that CPSC endorsement would make the program more attractive to TV and other potential outlets as a public service.

The General Counsel's office has examined the request and the materials and report (Tab B) that they see no legal impediments to Commission support for the campaign.

When the request from GAMA was received, this writer responded that the Commission would be requested to consider the matter. Tab C. During the review of the materials received in order to develop this package, staff found a number of points of emphasis, error or variation from what has been consistent staff position on warnings that it found it could not recommend that the Commission endorse the program. While these are not all inclusive, examples of the difficulties encountered by staff are the following:

- The Vapora™ label does not comply with the ANSI standard on hazard labeling.
- Staff had made recommendations on the water heater label which were not incorporated into the standard and therefore are not reflected in the label used on water heaters. Nevertheless, the label is included as a part of the package aimed at the plumbing trade.
- In the home activity guide, confusing but unexplained statements are made that "Flammable vapors come from flammable liquids, like gasoline. . . Vapors spread quickly, . . . up stairs, . . . between floors." \*

#### IV. Options:

1. Grant the request to use CPSC's name with the phrase "...developed (or sponsored) by GAMA in cooperation with the Consumer Product Safety Commission."
2. Extend option one by allowing the CPSC logo in conjunction with the phrase.
3. Deny the request.

V. **Recommendations:** Staff recommends that the Commission commend the effort but ~~deny the request~~ and disallow the use of either the CPSC name or logo on the materials presented.





United States  
**CONSUMER PRODUCT SAFETY COMMISSION**  
 Washington, D.C. 20207

RECEIVED OFFICE  
 OF THE SECRETARY

'94 MAR 29 P3:41

**BALLOT VOTE SHEET**

DATE: March 28, 1994  
 SAFETY COMMISSION

TO : The Commission

Through: Sadye E. Dunn, Secretary *S. Dunn*  
 Bertram R. Cottine, Executive Director *RC*

FROM : Eric A. Rubel, General Counsel *ER*  
 Stephen Lemberg, Assistant General Counsel *SL*

SUBJECT: Request from Gas Appliance Manufacturers Association  
 for Permission to Use Commission Name and Logo in  
 Children's Workbook on Dangers of Flammable Vapors

**TIME CRITICAL**

BALLOT VOTE DUE: APR 1, 1994

A memorandum from the staff transmits a request from the Gas Appliance Manufacturers Association ("GAMA") to the Commission for permission to use the Commission's name and logo on a children's workbook on the dangers of flammable vapors. The language suggested is "Prepared [or sponsored] by the GAMA Water Heater Division in cooperation with the [U.S.] Consumer Product Safety Commission."

The staff recommends that the Commission grant the request. The Office of General Counsel has reviewed the materials submitted by GAMA and has determined that the recommendation is legally unobjectionable.

Please indicate your vote:

**I USE OF COMMISSION'S NAME**

A. Permit GAMA to use the phrase "developed [or sponsored] by the GAMA Water Heater Division in cooperation with the [U.S.] Consumer Product Safety Commission" on the children's workbook on the dangers of flammable vapors.

30

Signature

Date

CPSA 6 (b)(1) Cleared

3/29/94 *MLL*

No Mfrs/PrvtLblrs or  
 Products Identified

Excepted by \_\_\_\_\_

Firms Notified,  
 Comments Processed.

NOTE: This document has not been  
 reviewed or accepted by the Commission.

Initial hh Date 3/29/94

B. Do not permit GAMA to use the phrase "developed [or sponsored] by the GAMA Water Heater Division in cooperation with the [U.S.] Consumer Product Safety Commission" on the children's workbook on the dangers of flammable vapors.

\_\_\_\_\_  
Signature Date

C. Take other action (please specify): \_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Signature Date

## II USE OF COMMISSION'S LOGO

A. Permit GAMA to use the Commission's logo on the children's workbook on the dangers of flammable vapors.

3/6  
\_\_\_\_\_  
Signature Date

B. Do not permit GAMA to use the Commission's logo on the children's workbook on the dangers of flammable vapors.

\_\_\_\_\_  
Signature Date

C. Take other action (please specify): \_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Signature Date



United States  
CONSUMER PRODUCT SAFETY COMMISSION  
Washington, D.C. 20207

MEMORANDUM

DATE: MAR 28 1994

TO : The Commission

Through: Sadye E. Dunn, Secretary *S. Dunn*  
Through: Eric A. Rubel, General Counsel *E. Rubel*  
Through: Bert Cottine, Executive Director *B. Cottine*  
Through: Ronald L. Medford, Acting Assistant Executive Director, EXHR  
Through: James E. Bradley, Acting Associate Executive Director, ES  
Through: William S. West, Director, ESEE *W. S. West*

FROM : Joseph Z. Fandey, Project Manager (Tel: 504-0508 ext.1293)  
Directorate for Engineering Sciences *J. Fandey*

SUBJECT: Request from the Water Heater Division of the Gas Appliance Manufacturer's Association (GAMA) for permission to use the Commission's name and logo on "Step Up To Safety With Sparky," a children's workbook on the dangers of flammable vapors.

I. **Issue:** Whether the Commission should allow the use of the Commission's name and logo on a children's workbook, which is a new part of the GAMA consumer education materials on ignition of flammable vapors for kindergarten through third grade.

II. **Background:** On February 11, 1994 the Commission voted to allow the use of the Commission's name and logo in GAMA's consumer education campaign on the dangers of flammable vapors. In the briefing materials presented to the Commission when it voted, it was pointed out that the campaign is a response of the GAMA Consumer Information and Education Committee, Water Heater Division, to safety concerns about the ignition of flammable vapors by gas appliances, especially water heaters. The campaign is a multi-million dollar investment that takes a multiple approach with video segments for television, a program for children in kindergarten through eighth grade including a comic book and other print products.

III. **Discussion:** As an addition to the materials which the Commission approved on February 11, 1994, the GAMA Water Heater Division produced a workbook, "Step Up To Safety With Sparky," intended for use in schools with age groups kindergarten through third grade (K-3), attached at TAB A. Staff made recommendations for three minor changes to improve the booklet and they were all made.

CPSA 6 (b)(1) Cleared 3/27/94 *list*  
 No Mfrs/Prvtlbrs or  
Products Identified  
\_\_\_\_ Excepted by \_\_\_\_\_  
\_\_\_\_ Firms Notified,  
Comments Processed.

As in the prior instance, GAMA requests permission to use the CPSC name and logo with a statement indicating that the document was prepared or sponsored by the GAMA Water Heater Division, in cooperation with the CPSC. The specific language suggested is: "Prepared [or sponsored] by the GAMA Water Heater Division in cooperation with the [U.S.] Consumer Product Safety Commission."

**IV. Options:**

1. Grant the request to use the suggested phrasing with the CPSC name and logo and instruct the staff to inform GAMA of the Commission's approval.
2. Deny the request.

**V. Recommendation:** Staff recommends that the Commission grant permission for GAMA to use the Commission name and logo in the suggested phrase on the workbook, "Step Up To Safety With Sparky," and instruct staff to inform GAMA of this approval.

## Index of Tabs

Tab A - Draft Gas Appliance Manufacturers Association (GAMA)  
consumer education program on flammable vapors  
"Step Up To Safety With Sparky" workbook.

**A**

GRADES  
K-3

# Step Up To Safety!



Can you step up to safety? In this book you'll learn words and see how to prevent them. After you solve the puzzles in this book, play this game and Step Up To Safety!

**START**

If your house has a fire extinguisher take another turn!

You can have a fire extinguisher in your house. You can have a fire extinguisher in your house. You can have a fire extinguisher in your house.

Name the things that are in the picture. You can have a fire extinguisher in your house. You can have a fire extinguisher in your house. You can have a fire extinguisher in your house.

Name two warning label words and a chance four spaces.

Asking the fire back to START. Name the things that are in the picture. You can have a fire extinguisher in your house. You can have a fire extinguisher in your house. You can have a fire extinguisher in your house.

**YOU WIN!**

Name the correct use for gasoline. or go back four spaces.

Name two flammable vapors, flammable vapors, move up two spaces.

Name two fuel sources. Move up one space.

Name two things that have flammable vapors, move up two spaces.

Name the correct use for gasoline. or go back four spaces.

Start at this space!

Step Up To Safety! is a registered trademark of the National Fire Protection Association, Quincy, MA 02269

©1994 1 1/4" PRINTED IN U.S.A.

Game rules on page 16

**SPECIAL TO ME...**

**"I am important. So is my family and my home."**



**"I will learn to be careful and keep away from danger."**

**THIS BOOK BELONGS TO..**

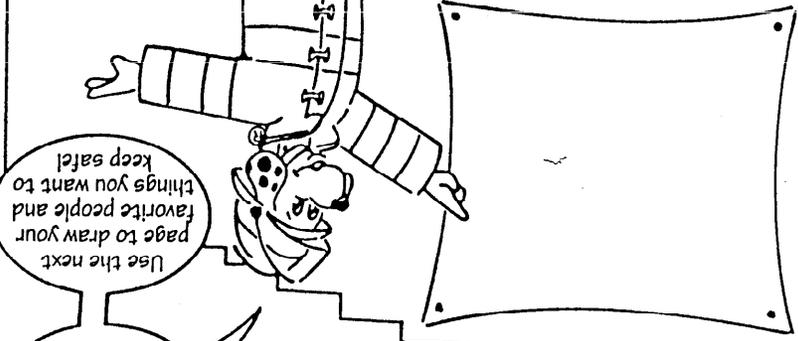
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

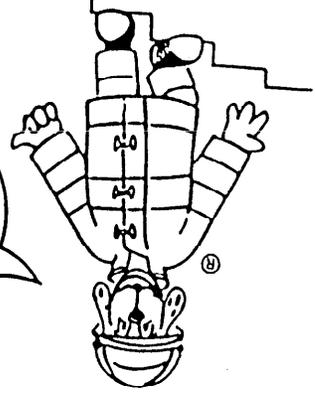
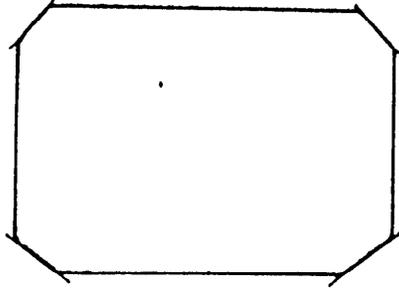
Write your school name here!

Use the next page to draw your favorite people and things you want to keep safe!



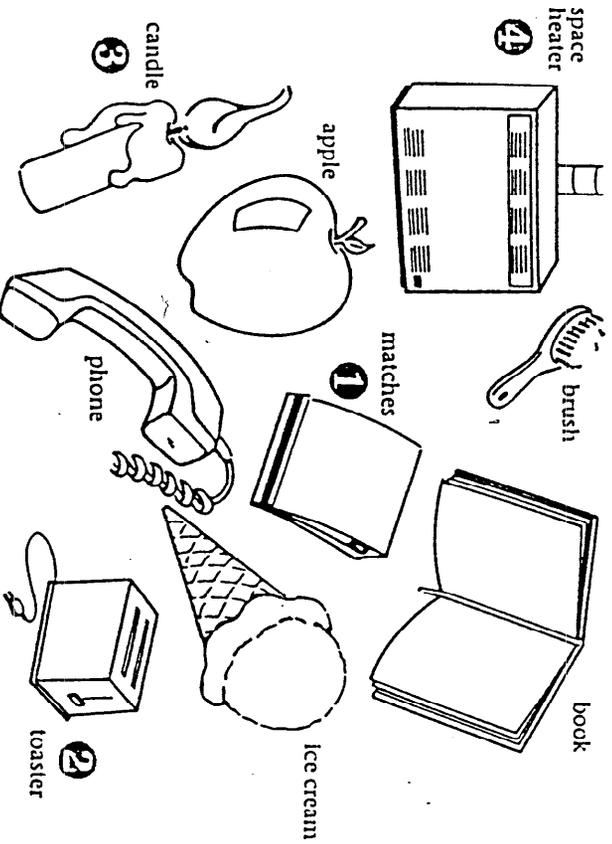
Use this space for the name of your teacher.

or anything else you want to draw or write!



# WHAT'S HOT?

Circle the things that are so hot you should not touch them...



Write the name of the things numbered 1, 2, 3 and 4 on the correct blanks below. Write across, and put one letter on each blank. Now read the word spelled down in the black box below. Write that word across in the red box at the bottom.

1 \_\_\_\_\_  
 2 \_\_\_\_\_  
 3 \_\_\_\_\_  
 4 Space \_\_\_\_\_

Things that are too hot to touch are

\_\_\_\_\_

sources.

# LEARN WHAT BURNS

Use this code:

1=a 2=b 3=c 4=c 5=f 6=i 7=l  
 8=m 9=n 10=p 11=r 12=t 13=u

Sometimes, in the oven, Grandma burns

a  $\frac{8}{13}$   $\frac{5}{5}$   $\frac{5}{9}$

Keep the  $\frac{13}{13}$   $\frac{11}{11}$   $\frac{12}{1}$   $\frac{6}{9}$  from the

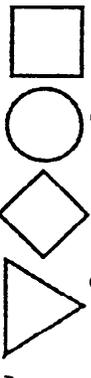
candle or you'll have more than you can handle.

$\frac{10}{1}$   $\frac{1}{10}$   $\frac{4}{11}$ , when it's near a flame, can spread a fire — and who's to blame?

A  $\frac{12}{1}$   $\frac{2}{7}$  that is made of wood can burn up, and that's not good!

Copy the letters that are in the square, circle, diamond, and triangle shapes above, and write them in the shapes below to get a message.

Things that burn are all called \_\_\_\_\_, now here's another message to stay cool:



These things catch fire very easily and are very dangerous...

LAMMABLE

LIQ IDS

LIK

GASO INE





It takes three things to make a fire - a heat source, fuel and oxygen. Oxygen is everywhere in the air. These three parts of fire are called the fire triangle. Match these "triangles" with the things they make.

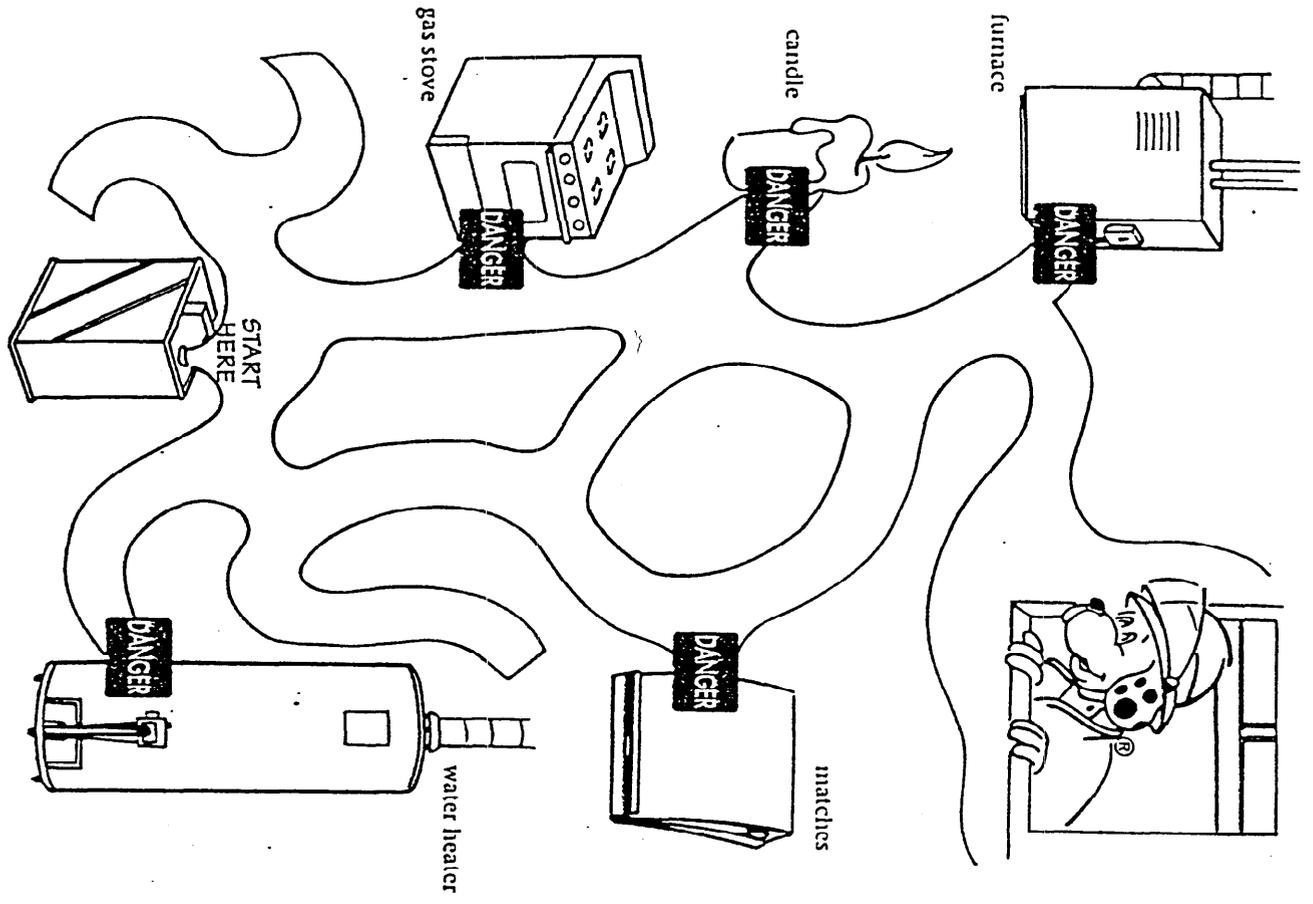
# WORD SEARCH

B	E	X	P	L	O	S	I	V	E	G	V	D	E
C	Y	H	J	A	S	L	O	A	E	L	H	K	L
O	N	G	S	B	K	E	E	P	A	W	A	Y	B
M	N	A	P	E	S	X	N	O	V	L	Z	W	A
B	S	S	A	L	P	P	G	R	D	T	A	R	A
U	M	O	R	E	I	L	B	S	A	R	R	A	M
S	E	L	K	E	R	O	S	S	E	N	E	D	R
T	L	I	Q	U	I	D	S	Q	G	A	O	N	L
I	L	N	W	F	T	E	R	O	E	D	U	I	F
B	Z	E	Y	I	S	E	E	I	R	T	S	N	O
L	F	T	U	R	P	E	N	T	I	N	E	G	E
E	O	R	T	E	M	E	L	Y	M	P	R	C	N

Flammable liquids, like gasoline, give off vapors. You cannot see vapors but you sure can smell them! Gasoline vapors are so dangerous they can catch fire and explode with just one spark! Cans and bottles with these words on the label should be kept closed and away from heat:

- Gasoline
- Explosive
- Turpentine
- Keep Away
- Combustible
- Danger
- Warning
- Hazardous
- Kerosene
- Oil

All the words in red are in the word search puzzle above. You can look for the words going up, down, across and backwards.



Oh, not stinky, flammable vapors are escaping through the air. The vapors come from the gasoline can and are going toward heat sources! Find your way to the open window and tell Sparky® to get help!

Sparky® and the image of Sparky® are registered trademarks of the National Fire Protection Association, Quincy, MA 02269.

# PEEK-A-BOOM!

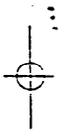
Gasoline vapors can't be seen. But you can smell them, if you know what I mean. If you smell that stinky odor anywhere, Go get a grown-up and get some air! Tell an adult to get rid of the vapors, And any smelly other stuff like rags or papers. It's very important to get out of the room. If you don't do these things, your home may go BOOM!

*WHO AM I? I'm tiny, I'm blue, I'm very hot, I'm used in cooking, cleaning, warming and drying. I'm always lit. If vapor finds me, we could start a fire!*

Answer: *THUll Jolliq*  
 (Hold up to the mirror to read, then write it below.)  
 \_ \_ \_ \_ \_

These tiny flames are sometimes hidden in things around the home. Use letters from PLOT and LIGHT to complete the names of these items and other heat sources

- Hint: They're pictured in the maze to the left.
- WA \_ \_ ER \_ \_ EA \_ \_ ER
  - CAND \_ \_ E
  - MA \_ \_ C \_ \_ ES
  - \_ \_ AS \_ \_ S \_ \_ OVE



# CROSS THE FIRE TRIANGLE

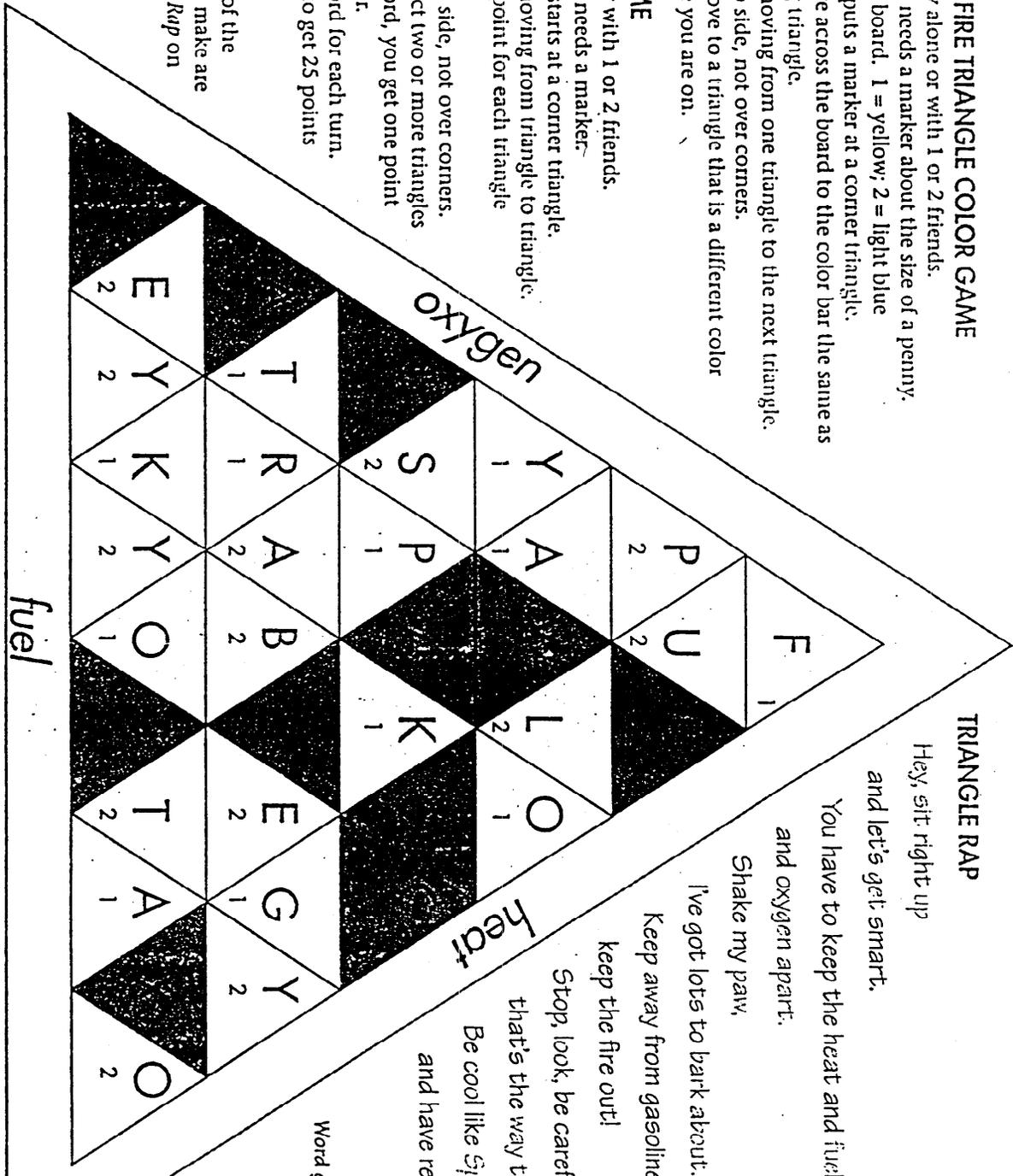
## CROSS THE FIRE TRIANGLE COLOR GAME

- You can play alone or with 1 or 2 friends.
- Every player needs a marker about the size of a penny.
- Color in the board. 1 = yellow; 2 = light blue
- Each player puts a marker at a corner triangle.
- To win, move across the board to the color bar the same as your starting triangle.
- Take turns moving from one triangle to the next triangle.
- Move side to side, not over corners.
- You must move to a triangle that is a different color than the one you are on.

## WORD GAME

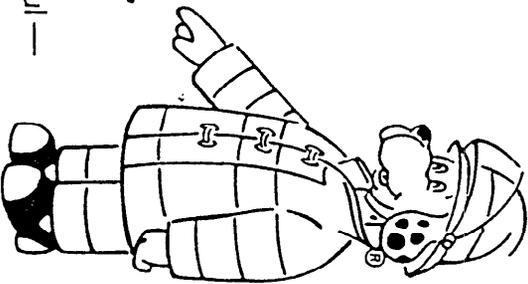
- You can play with 1 or 2 friends.
- Every player needs a marker.
- Each player starts at a corner triangle.
- Take turns moving from triangle to triangle. You get one point for each triangle moved.
- Move side to side, not over corners.
- If you connect two or more triangles to make a word, you get one point for each letter.
- Only one word for each turn.
- First person to get 25 points wins!

**HINT:** Some of the words you can make are in the *Triangle Rap* on the right.

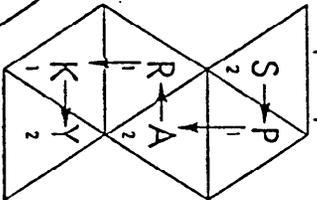


### TRIANGLE RAP

Hey, sit right up  
and let's get smart.  
You have to keep the heat and fuel  
and oxygen apart.  
Shake my paw,  
I've got lots to bark about.  
Keep away from gasoline,  
keep the fire out!  
Stop, look, be careful —  
that's the way that pays.  
Be cool like Sparky®,  
and have reBARKable days!



Word game Example: 6 points



# THE RIGHT PLACE...

Here are some things that your mom and dad probably use.  
Can you match the thing on the left with the place it is used  
on the right.

Charcoal



Milk



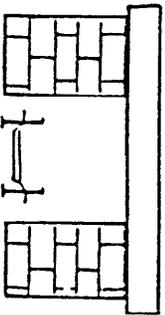
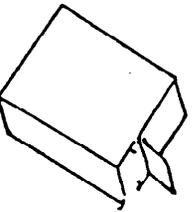
Gasoline



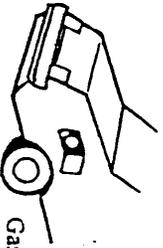
Firewood



Laundry Soap



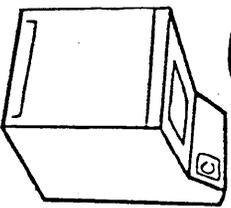
Fireplace



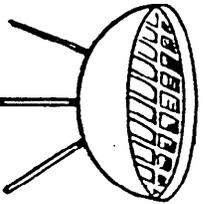
Gas Tank



Cereal Bowl



Washer



BBQ Grill

# THE TIGHT PLACE!

The only safe place to store gasoline is:

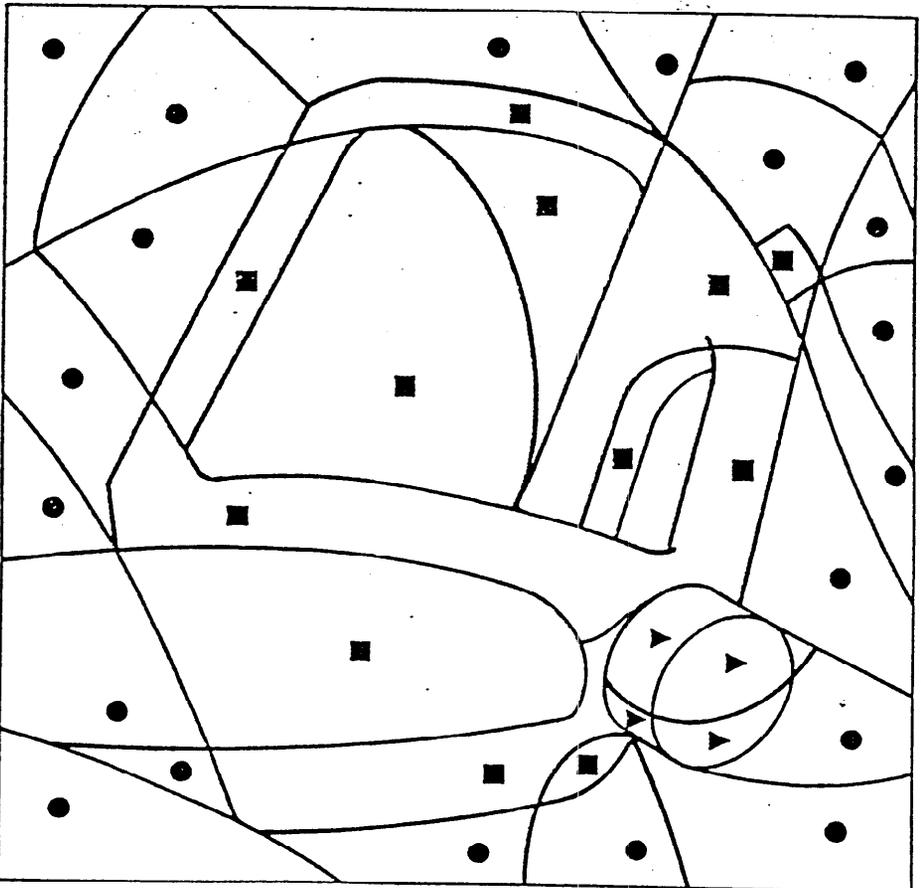
- in a tightly sealed gasoline container
- outside of the home
- high on a shelf
- away from heat sources

Color below to see the correct container:

■ = red

▲ = black

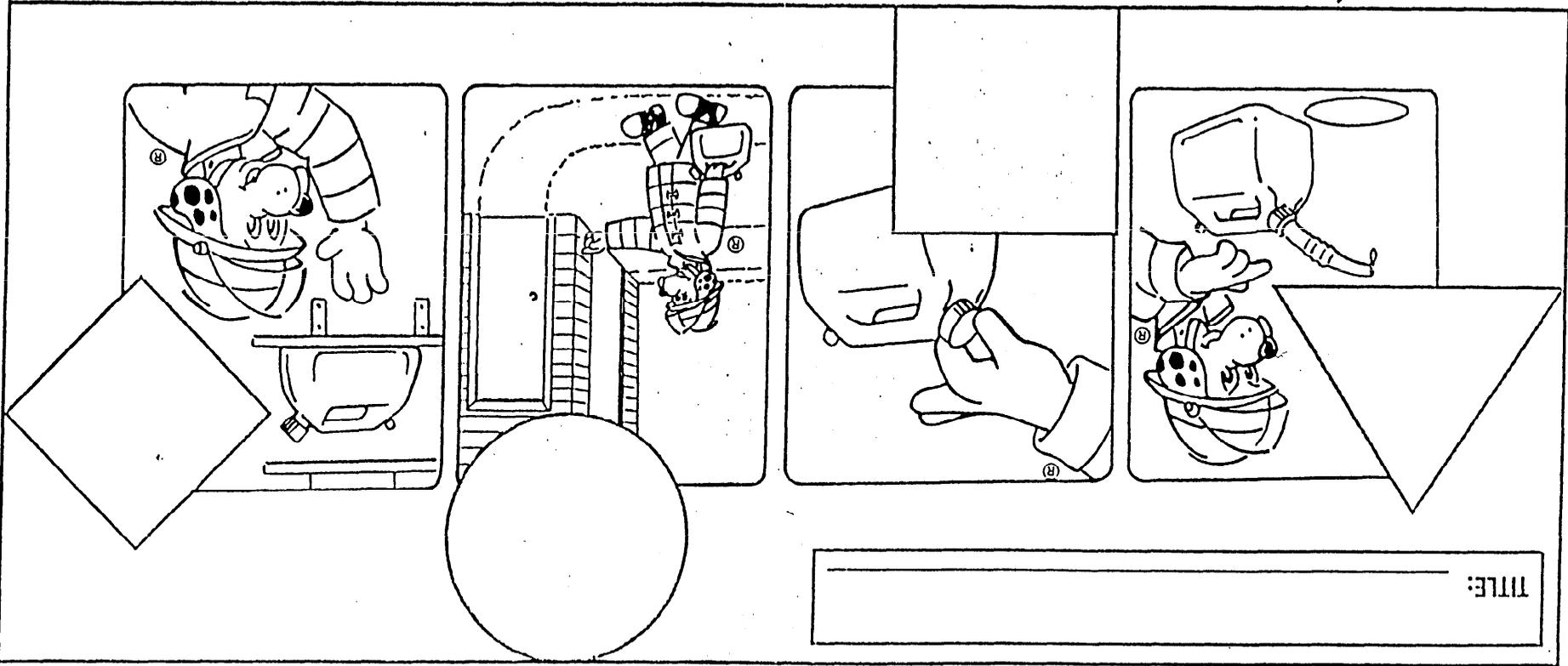
● = you choose



Here is a comic strip without words. It tells a story. At the bottom are some things you can do:

- Write your own title for the comic strip.
- Color the pictures.
- Cut out the four word shapes below and paste them in the correct white spaces of the comic strip.

TITLE: \_\_\_\_\_



and store the  
container high up  
on a shelf

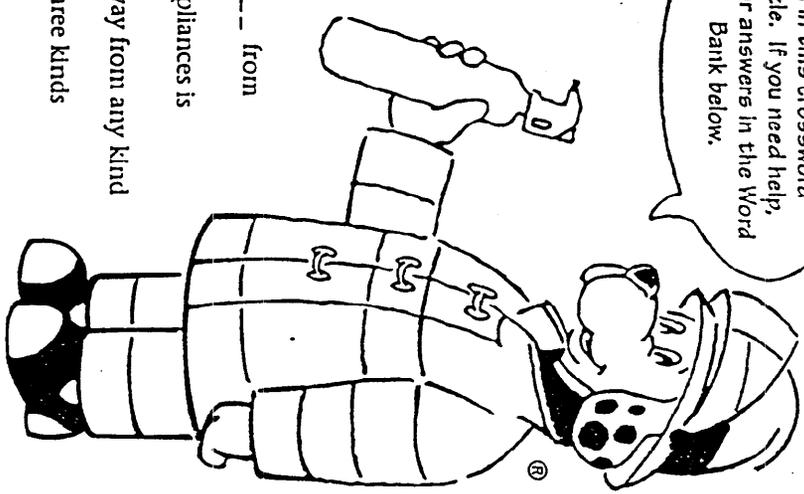
If you must  
store gasoline,  
store it away  
from your  
house...

This  
gasoline  
container  
is open...  
That is dangerous!

Gasoline  
containers  
must be  
tightly sealed  
with a cap!

# PUZZLER

Fill in this crossword puzzle. If you need help, look for answers in the Word Bank below.

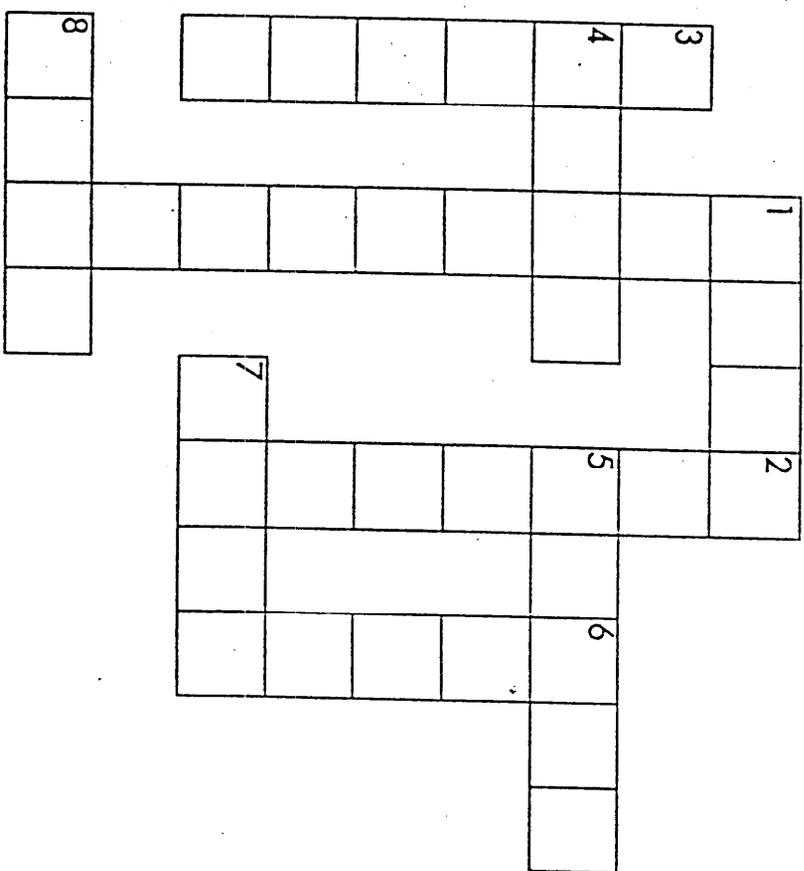


### ACROSS

1. It burns things. \_\_\_\_\_
4. Gasoline should be kept \_\_\_\_\_ from the house!
5. A tiny flame found in gas appliances is a \_\_\_\_\_ light.
7. Gasoline should be stored away from any kind of \_\_\_\_\_ source.
8. Wood, paper and cloth are three kinds of \_\_\_\_\_ sources.

### DOWN

1. Gasoline is a \_\_\_\_\_ liquid, and can catch fire easily.
2. If flammable vapors catch fire, they can \_\_\_\_\_ with a big, loud BOOM!
3. These smelly things rise up in the air from gasoline. \_\_\_\_\_
6. A tiny flame that is in gas appliances is a pilot \_\_\_\_\_.



WORD BANK:

AWAY	HEAT	EXPLODE
LIGHT	FIRE	PILOT
VAPORS	FUEL	FLAMMABLE

# RULES FOR STEP UP TO SAFETY GAME



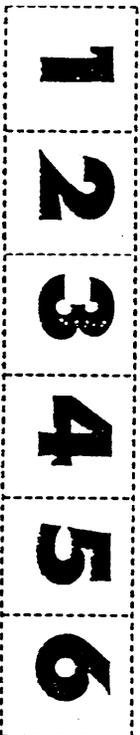
You will need...

- The game board.  
*Open this book and lay it flat, cover side up.*
- Two to four players.
- One marker for each player.  
*Try buttons, coins or pebbles.*
- Something to tell you how many spaces to move.  
*Use a die or cut out the number squares below to pick out of a bag.*
- The stuff you learned from this book.

## To Get To The Top and Win...

- Everyone starts with their markers on "start."
- Decide who will take the first turn.
- To take a turn...  
Throw a die or pick a number from a bag, and move your marker forward that many spaces.  
*then...*
- Follow the instructions on the space where you land.  
(One instruction per turn)  
*then...*
- Let the next person take a turn.

**Whoever gets to the "You Win" space first WINS!**



**Hey Kids:**

Hope you had fun stepping up to safety with this activity book. Remember these important safety tips:

- Children should NEVER use gasoline
- Gasoline is a motor fuel only.
- Never use gasoline indoors.
- Never store gasoline indoors.

*National*  
**SAFE KIDS**  
**\*\*\*\*\***  
*Campaign*

Technical review provided by the National Fire Protection Association, developer of the Learn Not to Burn® fire and burn prevention education materials for preschool through grade eight. For information on implementing a year round Learn Not to Burn program in your classroom, please contact NFPA's Public Education Division at 617-984-7285.

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(code number to come)

This educational program is sponsored by the Water Heater Division of the Gas Appliance Manufacturers Association.





MEMORANDUM

DATE : July 7, 1993  
TO : Eric Peterson, Executive Director  
FROM : Dan Rumelt, Acting Director, EXPA  
SUBJECT: GAMA Update

Here is the status of the GAMA-related matters we discussed last week:

- I checked with Joe Fandy on the status of co-listing CPSC on GAMA's water heater safety campaign materials. He said he just recently got an opinion from OGC saying it was OK to proceed in getting Commission approval to co-list CPSC on the materials. Based on that he is drafting a memo to the Commission recommending the Commission approve, by ballot vote, use of the CPSC logo, along with a statement that the water heater safety campaign is "...sponsored by the Gas Appliance Manufacturers Association in cooperation with the U.S. Consumer Product Safety Commission," or words to that effect. Joe will be contacting GAMA to get their wording preference before finalizing the recommendation.
- I also mentioned to Joe GAMA's interest in working with us on a campaign on the importance of maintenance "to improve safety and efficiency" of gas heating systems. Joe thought this was a good idea but that there are no staff resources presently available for this purpose. Therefore, I recommend that GAMA and CPSC staff meet to outline a mutually agreeable program for possible submission for Commission approval, and that CPSC staff resources be estimated and identified. Keep in mind that participation in this project may mean that staff is unable to undertake some other project. Thus, a decision to reprogram resources may be required. However, participation in a joint information effort would complement the planned fire/gas voluntary standard project in FY 1994.
- Lastly, I mentioned to both Stacey Reuben Mesa and Don Switzer that GAMA is interested in working with us on a CO information campaign. I believe that it is too late to involve GAMA actively in our FY 1993 CO program, but that CPSC staff should meet with GAMA staff to explore joint CO information activities in FY 1994 and beyond. For this year's CPSC CO program, GAMA provided suggested wording

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 3/13/95 JAP

Page 2

changes for our materials, which, following review by the technical staff, have been adopted. We plan to fax GAMA additional information on our FY 1993 CO program and offer an opportunity to comment before we finalize our plans.

I would like to discuss these matters in greater detail with you at our meeting on July 8.

cc: Stacey Reuben Mesa  
Don Switzer  
✓ Joe Fandy





# 21 ACCREDITED STANDARDS COMMITTEE

ON PERFORMANCE AND INSTALLATION OF GAS BURNING APPLIANCES AND RELATED ACCESSORIES

HOWARD I. FORMAN, Chairman - P. O. Box 66, HUNTINGDON VALLEY, PA 19006 - (215) 947-4154  
W. H. JOHNSON, Vice Chairman - 1600 EISENHOWER LANE, SUITE 100, LISLE, IL 60532 - (708) 515-0600  
ALLEN J. CALLAHAN, Adm. Secy. - 8501 E. PLEASANT VALLEY RD., CLEVELAND, OH 44131 - (216) 524-4990

June 26, 1992

TO: Members of the Z21 Committee  
Members of Chairman's Advisory Committee and Associates  
Members of Subcommittee on Standards for Gas Water Heaters

Re: Incidents Involving Flammable Vapors and Gas-Fired Water Heaters

1. It is my understanding that each of you has received copies of materials from Edward F. Downing, III, Esq., of the law firm of Gauthier & Murphy in Metairie, Louisiana. It is believed that those materials probably consist of a transcript, with exhibits, of the presentation which he gave before our Water Heater Subcommittee at its meeting in Cleveland on November 13, 1991.
2. Mr. Downing was so kind as to send me those materials by his letter dated April 20, 1992 (a copy of which is attached hereto as Tab A). I believe that letter aptly summarizes Mr. Downing's purpose and recommendations for change in the design of gas water heaters. He didn't say so expressly in his letter, but a collateral recommendation he made in his presentation to the Subcommittee was that the Z21.10.1 standard be revised so as to require water heaters to be constructed or installed so that their ignition sources be at least 18 inches above the floor.
3. For your information, I replied to Mr. Downing by my letter of May 8, 1992 (copy attached as Tab B).
4. At the aforementioned Subcommittee meeting on November 13, 1991 the Chairman, Mr. Daryl L. Hosler, declared at the conclusion of Mr. Downing's presentation that he would forthwith establish a Working Group to study the matter and make appropriate recommendations regarding the Downing proposal. A Working Group was established and met in Nashville, Tennessee on March 17-18, 1992. As part of the materials which were studied and discussed at that meeting was a "position paper from the staff of the CPSC on the subject of the need for standards for preventing such ignition from water heaters," which was provided by Mr. Joseph Z. Fandey, Project Manager, Gas Voluntary Standards, Consumer Product Safety Commission. Mr. Fandey was present at the Subcommittee meeting in Cleveland on November 13, 1991, and he volunteered to serve (and in fact did serve) on the Working Group which met later in Nashville.
5. The CPSC position paper and transmittal letter was described by Mr. Fandey as being the views of the CPSC technical staff and "not necessarily the official position of the Commission". It disclosed that on April 4, 1991 CPSC technical staff met with Mr. Downing and received his presentation (which was described as being similar to that which Mr. Downing made to our Water Heater Subcommittee on November 13, 1991).

COPIES DESTROYED: 3/13/95  
SAB  
 No Name Identified  
 Escorted  
 No Name Identified  
 Comments Provided

# Gauthier & Murphy

A PROFESSIONAL LAW CORPORATION

3500 N. HULLEN STREET  
METAIRIE, LOUISIANA 70002

April 20, 1992

TAB A

TELEPHONE  
(504) 486-8800

FACSIMILE  
(504) 486-8824

WENDELL H. GAUTHIER  
ROBERT M. MURPHY  
EDWARD F. DOWNING, III  
THOMAS KEASLER POUTZ  
SCOTT LABARRE  
DANIEL G. ABEL  
D. KIM CORMIER

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mr. Howard Forman  
Chairman  
Z21 Accredited Standards Committee  
8501 E. Pleasant Valley Road  
Cleveland, Ohio 44131

RE: Flammable vapor fires ignited by gas water heaters

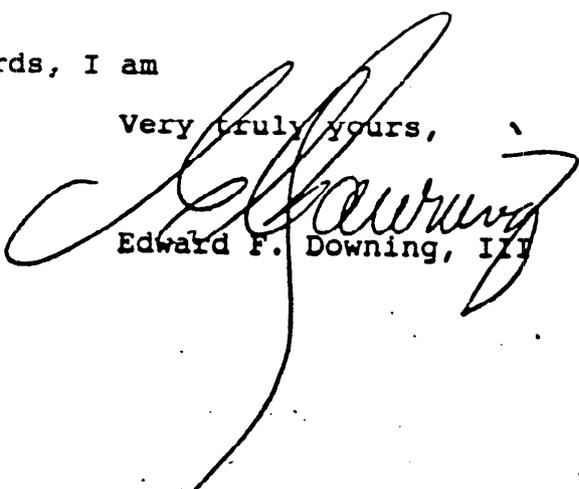
Dear Mr. Forman:

Enclosed please find a transcript, with exhibits, of the presentation given before the ANSI Z21.10.1 committee on November 13, 1991. As you know, this committee is responsible for writing the design standards for gas fired water heaters.

Our goal is to eliminate the injuries to consumers from the ignition of flammable vapors by gas fired water heaters. By informing persons in the water heater and gas industries of this problem we hope to enlist the help of persons like you in eliminating these tragedies. This can easily be done through prohibiting the taking of combustion air from an area below 18 inches above the floor of the room in which the gas water heater is installed. Hopefully this will be incorporated in the design of gas water heaters soon.

With best personal regards, I am

Very truly yours,

  
Edward F. Downing, III

EFD/egf  
Enclosure

June 26, 1992

To: Members of Z21 Committee, et al.  
Re: Flammable Vapors and Gas Water Heaters

6. The Conclusion to the CPSC position paper is as follows:

CPSC staff believes that it is technically feasible to reduce the hazards associated with flammable vapor ignition by water heaters. Mr. Downing suggested that an appropriate height is already in the NFPA standard for installation of water heaters in garages, 18 inches. However, whether an 18 inch height or its equivalent is necessary or even sufficient has not yet been determined. The CPSC staff therefore recommends that the subcommittee's working group examine various heights and make a determination of the actual performance requirement necessary to reduce or eliminate the existing hazard. Subsequently, it will be necessary to devise a test method whereby non-height related fixes can be evaluated and certified.

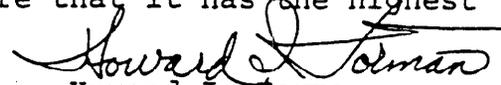
7. The Minutes of the Working Group's meeting in Nashville have not yet been released, but I understand that its initial draft comprised some 20 pages, single-spaced, commenting on the proceedings. Many, quite diverse suggestions for solving the problem which Mr. Downing has very commendably called to everyone's attention were made at the meeting. A number of proposed design changes in addition to Mr. Downing's suggestion were discussed. Further, a number of other possible solutions to the problem were discussed, many of which appeared to require additional research.

8. As a result of the Nashville meeting the American Gas Association, the Gas Appliance Manufacturers Association, and the Consumer Product Safety Commission have become involved in a number of ongoing plans to study the problem in depth, consider its many ramifications, and seek to resolve it in the public interest at the earliest possible time. Specific work and study assignments have been made to a number of people attending the Nashville meeting and others, and the results of their efforts are to be evaluated at the next meeting of the Subcommittee which tentatively has been scheduled to be held in September 1992.

9. The principal purpose of this letter is to inform you that our Committee is both responsible and responsive to matters such as those called to our attention by Mr. Downing. We appraise all such matters, first and foremost, from the point of view of safety to individuals and the avoidance of hazards of any kind whenever possible. If any gas appliance is involved in a potentially hazardous situation we are committed to seeking ways and means to minimize or eliminate the hazard. If we can do this by drafting appropriate standards we should try our best to accomplish that objective without unreasonable delay.

10. I am confident that our Water Heater Subcommittee, the CPSC and other organizations involved will do their utmost to resolve the vapor ignition problem, and both the Subcommittee Chairman and I will keep on top of this matter so as to assure that it has the highest possible priority for action.

HIF/db

  
Howard I. Forman  
Chairman, Z21 Committee





# INTERNATIONAL APPROVAL SERVICES

A JOINT VENTURE OF A.G.A. LABORATORIES AND CGA APPROVALS, INC.

8501 East Pleasant Valley Rd. • Cleveland, Ohio, U.S.A. 44131-5575 • Phone: (216) 524-4990 • Fax: (216) 642-3463

Mr. Allen J. Callahan  
Z21 Administrative Secretary  
8501 E. Pleasant Valley Road  
Cleveland, Ohio 44131

September 20, 1993

Subject: Agenda Item for Gas Water Heater Standards Subcommittee

Dear Mr. Callahan:

**Action Requested:** Review sections 1.15.3 and 1.15.4 of ANSI Z21.10.1-1990 to determine, if they can be revised to allow a manual means to interrupt the ungrounded leg of the electrical power to the appliance control valves as shown below.

**Background:** This is acceptable for appliances installed in recreational vehicles. A control manufacturer has asked the Laboratories to allow this option on a conventional water heater. Internally, the Laboratories considers this acceptable. Your consideration of this matter is greatly appreciated.

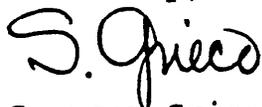
**Proposed Revisions to ANSI Z21.10.1-1990:**

~~1.15.3 A water heater not for installation in a recreational vehicle shall have a manual gas shutoff valve provided in a readily accessible location for turning on or shutting off the gas to the main burner(s).~~

1.15.43 A water heater for installation in a recreation vehicle shall have either:

- a. A manual gas shutoff valve provided in a readily accessible location for turning on or shutting off the gas to the main burner(s); or
- b. A readily accessible means at the appliance for manually interrupting the ungrounded leg of the electrical power to both appliance control valves, provided that the appliance does not have a continuous pilot ignition system and it has ~~if the appliance has a nominal 12 volt, or less, direct current (d.c.) direct ignition system and two solenoid valves for controlling main burner gas flow.~~

Sincerely,



Spencer Grieco  
Vice President  
U.S. Operations

(b) CLEARED:

1 No Name Identified  
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# INTERNATIONAL APPROVAL SERVICES

A JOINT VENTURE OF A.G.A. LABORATORIES AND CGA APPROVALS, INC.

8501 East Pleasant Valley Rd. • Cleveland, Ohio, U.S.A. 44131-5575 • Phone: (216) 524-4990 • Fax: (216) 642-3463

September 20, 1993

Mr. Allen J. Callahan  
 Administrative Secretary  
 Z21 Accredited Standards Committee  
 8501 E. Pleasant Valley Rd.  
 Cleveland, Ohio 44131

Subject: Agenda Items for the Z21 Water Heater Subcommittee

Dear Mr. Callahan:

The Laboratories is requesting that the Z21 Water Heater Subcommittee revise the water heater and pool heater standards. The sections needing revision are:

Z21.10.1 section 2.20 covering flue gas temperatures. It is proposed that a new section, 2.20.1, be added to cover temperatures of non-metallic venting systems used in water heaters. This test should be carried across to Z21.10.3 and Z21.56.

Z21.10.1 section 2.28.1 covering outlet blockage tests of water heaters having power burners or induced drafts.

Z21.10.3 section 2.25.1 covering outlet blockage tests of water heaters having power burners or induced drafts.

Z21.56 section 2.20.1 covering outlet blockage tests for pool heaters having power burners or induced drafts.

Attached for your consideration is proposed text of the revised test procedure for the above noted sections. The intent of these changes is to strengthen the standard's coverage of non-metallic venting systems and clarify the test conditions of the outlet blockage tests.

Thank you for your attention to this matter.

Sincerely,

S.P. Grieco  
 Vice President  
 U.S. Operations

(1) CLEARED:

✓ No file needed

3/13/95 JAP

## Proposed Revisions to Evaluating Temperatures of Nonmetallic Venting Systems in Water Heaters.

2.20.1 The temperatures of the nonmetallic venting system of a water heater shall not exceed the temperature for which the venting system material has been determined to be acceptable. The allowable temperatures of typical venting system materials are specified in Table .

### Method of Test

a. For venting materials having a Heat Deflection Temperature (HDT) only.

The water heater shall be installed in an enclosure as specified in 2.20. The venting system shall be installed in accordance with the manufacturer's instructions at maximum vent length and at the clearances from combustible materials specified by the manufacturer. The first elbow of the vent system shall be located at the closest possible distance from the outlet of the appliance permitted by the manufacturer's instructions but not more than four feet from the appliance outlet connection.

Five No. 24 AWG (0.20 mm<sup>2</sup>) bead-type iron-constantan thermocouples shall be imbedded in the vent material within 1/32 inch of the inside wall of the material. The thermocouple positions shall be along the outside radius of the first elbow of the venting system. The thermocouples shall be spaced one inch apart with the first thermocouple located at the start of the radius at the outlet connection of the elbow. The remaining thermocouples shall spaced back towards the water heater.

This test shall be conducted at normal inlet test pressure following the conduct of 2.20. The appliance shall be placed in operation and temperature readings obtained by means of the thermocouples, individually connected to a potentiometer. Temperature readings shall then be recorded at 15-minute intervals until equilibrium conditions have been attained as indicated by temperature changes of not more than +/- 5°F (+/- 3°C) between readings. The temperature of the venting system shall be the maximum temperature of the five thermocouples imbedded in the wall of the vent material. When maximum temperatures have been attained, the maximum temperature recorded shall not exceed the temperature indicated by Table .

b. For venting materials having a Heat Deflection Temperature (HDT) and a Relative Thermal Index (RTI).

Four thermocouples, spaced 90° apart, will be secured to the inside surface of the vent pipe. They shall be located as close as possible to the outlet of the appliance vent or in the highest temperature area, which may be at the closest elbow. An additional four thermocouples shall be located around the outside

circumference of the plastic pipe directly opposite the thermocouples on the inside surface. See Fig. 1.

**Test Condition:**

The appliance will be operated at the fire hazard test condition.

**Acceptance Criteria for the Plastic Vent Materials:**

Under the above set-up and test condition, the following two conditions must be met:

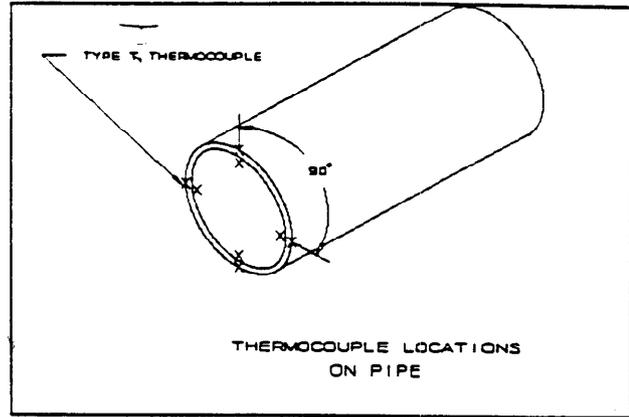


Figure 1

1. None of the thermocouple readings inside the vent pipe test section shall exceed the heat deflection temperature (HDT @66 psi) of the vent material.
2. The average of all thermocouple readings inside and outside the vent pipe test section shall be calculated and recorded. The average temperature shall not exceed the relative thermal index (RTI) of the vent material.

**TABLE**

Maximum Allowable Temperatures of Typical Nonmetallic Vent Material Used in Water Heaters

<u>Material</u>	<u>Heat Deflection *Temperature, F (C)</u>	<u>Relative Thermal Index Temperature, F (C)</u>	<u>Standard</u>
PVC	157 (69)	-	ASTM-D2665
CPVC	230 (110)	-	ASTM-D2846
ABS	180 (82)	-	ASTM-D2261
Ultem	410 (210)	338 (170)	UL-1738

\* - Based on mid-range of Heat Deflection Temperature (HDT @ 66 psi)

## Rationale

No current test procedure for nonmetallic vent system temperatures are found in the standard for non-direct vent appliances. Section 2.35.4 covers direct vent appliances only. Since the test is intended to verify the integrity of the vent material, the procedure should actually record the vent material temperature, not the vent gas temperature as is commonly used in other appliance standards. The thermocouples should be actually imbedded as close to the surface of the inner wall of the material to avoid any radiation effects of the vent gases. The maximum temperature is used to afford an added margin of safety.

The second part is a procedure for evaluating the application of high temperature plastic pipe. This type of pipe is specified as the venting material in some energy efficient appliances. This test procedure has been adopted by IAS for use during the testing of furnaces and boilers.

The following is an excerpt from a May 27, 1992 Notice letter sent to manufacturer's of furnaces and boilers from IAS. It is provided for additional background information.

"Recently the Laboratories has evaluated acceptance of high temperature plastic pipe based on it's UL Certified vent gas temperature rating. High temperature plastic pipe operates in the range of 200°F to 480°F. However, we have learned that the maximum vent gas temperature alone does not provide an adequate performance requirement to make this evaluation.

It appears that the current method of rating may not represent actual field conditions. Based on a recent meeting with A.G.A., UL, and vent manufacturers, it is felt that the flue gas generator firing rate that is currently being used to qualify special gas vent materials may be inappropriate. Test data has been generated which indicates certain furnace and boiler applications can produce flue gases which have temperatures within the temperature limits of the Listed pipe, but cause inside wall surface temperatures that exceed the material's "relative thermal index." This results because the volume of flue products in furnaces and boilers is much greater than those used in the UL 1738 test method, and/or because the vent is installed in a more restrictive configuration than described in UL 1738."

Proposed Revisions to Section 2.28.1 of the ANSI Z21.10.1 Gas Water Heater Standard

2.28.1 With the flue outlet or outlet of the draft diverting device, if one is provided, blocked to any degree up to and including complete closure, the concentration of carbon monoxide in an air-free sample of the flue gases shall not exceed 0.04 percent when the water heater is tested in an atmosphere having a normal oxygen supply. Should outage occur; raw gas shall not be forced into the combustion chamber on reopening the flue outlet.

Method of Test

The appliance shall be operated at normal test pressure and maximum vent length for at least 15 minutes. When the appliance incorporates a control to automatically shut off the main gas supply under blocked flue conditions, the area of the flue outlet shall be gradually decreased to the lowest point at which the control will allow main gas flow ~~remain in its open position~~, including tolerances as specified by the manufacturer. The minimum operating point of the control shall be recorded. A sample of the flue gases shall then be secured and analyzed as specified by 2.4.1.

When a draft diverting device is supplied, its outlet shall be completely closed off and a sample of the flue gases secured and analyzed as specified in 2.4.1.

In case of outage, the blocked condition shall be maintained for 3 minutes to allow for operation of safety devices, and then removed and observation made.

Rationale

The revised wording clarifies the definition of the word "control" and removes the restriction of the original wording implying this test applies only to controls that are normally open during appliance operation. The addition of the tolerances is to cover the design of the appliance and not evaluate an actual control on an appliance.

Proposed Revisions to Section 2.25.1 of the ANSI Z21.10.3 Gas Water Heater Standard

2.25.1 With the flue outlet or outlet of the draft diverting device, if one is provided, blocked to any degree up to and including complete closure, the concentration of carbon monoxide in an air-free sample of the flue gases shall not exceed 0.04 percent when the water heater is tested in an atmosphere having a normal oxygen supply. Should outage occur; raw gas shall not be forced into the combustion chamber on reopening the flue outlet.

Method of Test

The appliance shall be operated at normal test pressure and maximum vent length for at least 15 minutes. When the appliance incorporates a control to automatically shut off the main gas supply under blocked flue conditions, the area of the flue outlet shall be gradually decreased to the lowest point at which the control will allow main gas flow remain in its open position, including tolerances as specified by the manufacturer. The minimum operating point of the control shall be recorded. A sample of the flue gases shall then be secured and analyzed as specified by 2.4.1.

When a draft diverting device is supplied, its outlet shall be completely closed off and a sample of the flue gases secured and analyzed as specified in 2.4.1.

In case of outage, the blocked condition shall be maintained for 3 minutes to allow for operation of safety devices, and then removed and observation made.

Rationale

The revised wording clarifies the definition of the word "control" and removes the restriction of the original wording implying this test applies only to controls that are normally open during appliance operation. The addition of the tolerances is to cover the design of the appliance and not evaluate an actual control on an appliance.

Proposed Revisions to Section 2.20.1 of the ANSI Z21.56 Gas Fired Pool Heater Standard

2.20.1 With the flue outlet or outlet of the draft diverting device, if one is provided, blocked to any degree up to and including complete closure, the concentration of carbon monoxide in an air-free sample of the flue gases shall not exceed 0.04 percent when the water heater is tested in an atmosphere having a normal oxygen supply. Should outage occur; raw gas shall not be forced into the combustion chamber on reopening the flue outlet.

Method of Test

The appliance shall be operated at normal test pressure and maximum vent length for at least 15 minutes. When the appliance incorporates a control to automatically shut off the main gas supply under blocked flue conditions, the area of the flue outlet shall be gradually decreased to the lowest point at which the control will allow main gas flow remain in its open position, including tolerances as specified by the manufacturer. The minimum operating point of the control shall be recorded. A sample of the flue gases shall then be secured and analyzed as specified by 2.4.1.

When a draft diverting device is supplied, its outlet shall be completely closed off and a sample of the flue gases secured and analyzed as specified in 2.4.1.

In case of outage, the blocked condition shall be maintained for 3 minutes to allow for operation of safety devices, and then removed and observation made.

Rationale

The revised wording clarifies the definition of the word "control" and removes the restriction of the original wording implying this test applies only to controls that are normally open during appliance operation. The addition of the tolerances is to cover the design of the appliance and not evaluate an actual control on an appliance.



02-18-36

1901 North Moore Street . P.O. Box 9245 . Arlington, Virginia 22209 . 703/525-9555



March 11, 1993

Mr. Joseph Fandey  
Electrical Engineer  
U.S. Consumer Product Safety Commission  
5401 Westbard Avenue  
Bethesda, Maryland 20207

Dear Joe:

Attached for your information is a copy of a September 15, 1992 letter from GAMA that summarized the work plan for the A. D. Little research project on flammable vapors. This letter was distributed at the Z21/CGA joint water heater subcommittee meeting that you attended on September 21-22, 1992. This is essentially the work plan specified in the contract.

At this time, I do not have the flow field model from A. D. Little to provide to you. We will forward that once we have received it.

Sincerely,

J. P. Langmead  
Vice President and  
Director of Technical Services

JPL:mom  
Attachment

(b) CLEARING  
✓ No Action  
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5/13/95  
JAP





September 15, 1992

Mr. David Bixby  
American Gas Association Laboratories  
8501 East Pleasant Valley Road  
Cleveland, Ohio 44131

Dear David:

Following up the oral presentation that I made at the September 9 meeting of the Z21 Working Group Addressing Suggested Revisions to Reduce Possible Ignition of Flammable Vapors by Volume I Water Heaters, this is the work plan for the project that we have contracted Arthur D. Little, Inc. to perform.

Project Objective - An analysis of the hazard associated with the ignition of flammable vapors by residential gas water heaters.

Task 1. Data Collection and Analysis

Collect data on flammable vapor ignition incidents which identify residential gas water heaters as the source of ignition. Sources from which such data will be obtained include National Fire Incident Reporting System (NFIRS), Consumer Product Safety Commission "In-Depth" reports, National Fire Protection Association fire data. Other sources will also be used.

- The data will be analyzed with the focus on the following key variables:

- . Location of the water heaters
- . Type and source of flammable vapor ignited
- . Type of accident (fire or explosion)
- . Geographic region where accident occurred.

The resulting analysis will attempt to identify trends and patterns related to such accidents. It will also compare the data to accidents involving flammable vapors ignited by other sources.

Using information obtained as a result of the analysis a computer diffusion model will be developed simulating the most common accidents. This computer model will be used as a tool for preliminary analysis of possible mitigating measures and as a means to evaluate the sensitivity of various parameters contributing to an accident.

No fire identified  
 Escaped  
 Substantiated  
 Confirmed  
 /continued  
 3/13/95



Mr. David Bixby  
September 15, 1992  
Page 2

## Task 2. Experimental Testing

Tests will be conducted to validate the computer model developed in Task 1 and to investigate the factors affecting the ignition of flammable vapors by residential gas water heaters. The tests will be conducted in facilities simulating garages and utility rooms.

The test facilities will be instrumented for monitoring of flow fields, vapor cloud size and composition, flammable limit boundaries, ignition characteristics and consequences of ignition. The test will evaluate the influence of factors such as air currents, air changes, room size and floor materials.

## Task 3. Analysis of Consumer and Installer Activities

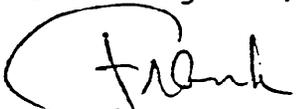
Field interviews and telephone surveys will be conducted to assess current installation and operating practices. Plumbers and gas utilities will be interviewed for information on current installation practices and consumer education efforts. The resulting information will be used to develop a survey questionnaire. Then a telephone survey of 3000 consumers and 150-200 installers will be conducted. The survey results will be summarized to describe current practices and procedures. These surveys will also attempt to evaluate how well the current warning label is understood and followed.

## Test 4. Conclusions and Recommendations

A comprehensive report will be prepared establishing the extent of the flammable vapor ignition hazard associated with residential gas water heaters based on the analysis of accident data, experimental testing and information obtained in the installer/user surveys. This report will be finalized by April 30, 1993.

I trust this description will help the working group and others to better understand what is involved in the study initiated by GAMA's Water Heater Division. If you have any questions, please call me.

Best Regards,



Frank A. Stanonik  
Associate Director of  
Technical Services

FAS:mom

cc: Daryl Hosler, Chairman Z21 Working Group

ITEM 1.  
Z21/CGA Joint Water Heater  
Subcommittee Meeting,  
September 23-24, 1993

**STATUS REPORT ON HARMONIZATION OF Z21/CGA  
WATER HEATER AND POOL HEATER STANDARDS**

Action Requested

Review a status report on efforts to harmonize the ANSI Z21 and Canadian Gas Association (CGA) water heater and pool heater standards.

History

At its September 21-22, 1992 meeting, the subcommittee agreed to request the Water Heater Division of the Gas Appliance Manufacturers Association (GAMA) to consider hiring a qualified outside consultant to draft a North American document(s) covering gas water heaters and pool heaters. The harmonized document(s) would be based on Z21 and CGA standards for gas-fired water heaters and pool heaters.

In addition, the subcommittee established a working group to provide assistance (on behalf of the subcommittee) to the above project, pending its approval by the GAMA Water Heater Division. It was agreed that such assistance would be needed in order to provide appropriate direction and background on this undertaking, in addition to determining the format/ framework of the draft document(s). Messrs. Thurton (Chairman), Myers, Beach, Hamos, Boros, Krause, and Bartholomew, volunteered to participate on the working group.

Chairman Hosler noted that the above group is to make recommendations to the joint subcommittee regarding the harmonization of the Z21/CGA water heater standards. This includes identifying which Z21 and CGA standards, including a format, to base development of the draft harmonized document(s). It was noted that the Z21/CGA furnace standard is one example of a format that could be employed, although other harmonization efforts have used other formats. It was acknowledged that the working group would benefit from reviewing the standards harmonization history of other groups, such as the joint furnace subcommittee's efforts.

In addition, Chairman Hosler indicated that Mexican standards for gas water heaters should be reviewed in conjunction with the above activity, although it was acknowledged that the group's main emphasis is to harmonize the Z21/CGA standards.

(1-1) "water heater division has agreed to fund outside party." Will solicit bids for  
around in early 1994. Draft should be available at least by next meeting. 3/13/95

(b) CLEARED: 3/13/95  
No Missed Meetings  
Exempted  
Missed Meetings  
Continued Previous

### Background

The subcommittee's working group held its first meeting on December 15, 1992. Attached is a copy of a December 23, 1992 letter from Mr. Raymond Thurton, CGA Standards, to Mr. Frank Stanonik, GAMA. Mr. Thurton's letter contains a proposed harmonization work statement adopted by the working group at its above meeting.

### Additional Background

It is anticipated that Mr. Stanonik will update the subcommittee prior to or at this meeting on the status of the GAMA Water Heater Division funding a qualified consultant to carry out the working group's attached work statement.